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Teaching Dossier

Semesters' Reactions

Fall 2016 – Overview

Adjusting to Colgate University from the University of South Carolina was slightly more challenging than I had thought it would be. The students here not only desire to be challenged but seek it. The level of rigor expected in the upper-level courses is unparalleled to my previous experience and getting the level right took some getting used to.

I had an idea that the difference in student population would be significant moving from an R1 state school to a smaller, private and prestigious liberal arts college but this difference was larger than I had anticipated. I assumed that students would be generally better prepared but they outpaced my expectations!

After receiving many inquiries for an independent study in Machine Learning we put together a small group of students via a Slack channel. These students worked together on a handful of data science competitions and often did quite well with very little training. This was just for interest and they received no credit but it was exciting to see students guide their experiences toward their interests.

My goal is to empower students to reach their highest potential by making difficult subjects in math and statistics seem more comfortable by displaying material with relevant examples in digestible pieces. I am hoping to find a balance of digestible, challenging and interesting going forward in a way that does not negatively affect any students in a mixed experience classroom by considering the items mentioned above.

I had a conversation with a student after the final exam; they were the last student to hand in their exam and they were visibly upset with how they had done. He mentioned the course is difficult for those who might not be up to speed on their calculus but that I had given him all the opportunities to do well, even though he might not have taken advantage of all of them he appreciated those opportunities.

I aim to not only teach the facts and formulas of mathematics but to help mentor and guide my students towards personal and academic growth and success throughout aspects of their entire college experience. My goal is to make learning an interesting and inspirational experience. I try to get the students to realize they are the most important advocate for their education and I back it up by taking their input and making changes.

Outside of the classroom, I was able to help students with their theses in other disciplines, e.g. Geology and Astrology. I also had the opportunity to complete more rigorous work with a mathematics major over the summer in conjunction with Aaron Robertson. Working in this capacity with students is new to me but also very exciting. It is excellent seeing what students are capable of. Our summer student was able to do some great work in the cross-section of mathematics and statistics; her summer research presentations went very well and we should submit the work as a paper next year.

I am very happy to see all of the interest in statistics on campus. With all the requests for independent studies, student theses, and further coursework I imagine being very busy! I look forward to working with the chair of the department towards proposing more statistics courses culminating in a statistics major and perhaps working with computer science to create a data science concentration for students across the university.

MATH 316: Probability

I was given the freedom to plan the Probability course as a new prep. I changed the textbook to *Statistical Inference* by George Casella and Roger Berger; this text is standard issue first-year students at most graduate schools. I decided to make the change from *A First Course in Probability* by Sheldon Ross, which is the standard choice for most undergraduate schools at this level – in fact, I took my first course in probability with this text. While this text is renowned by many faculty for its plentiful examples, students generally find the book uninspiring. The examples speed through calculations by skipping steps replaced with phrases like "it's clear" or "it follows that" without fully explaining jumps. Proofs are generally not rigorous or omitted while some conceptual explanations are largely missing.

This change in text was motivated by student sentiments of the text. The more advanced book would allow us to cover more challenging material and research-like questions, but I was worried that this level of text would not be digestible for students. In parallel to having the text I have developed notes for the course which covers topics in *Statistical Inference* but with all the necessary steps and real-world motivated examples.

I think this change was the most successful; the students really appreciated the clarity of the course notes. Since I wrote and coded 175 pages of notes and code for the course during the semester there were, unfortunately, some typos and needs for clarification as we went which was largely done in class. I created class worksheets where the derivations and examples were left blank to be filled in during class. I hoped this would require students to stay focused as they follow along with the discussion, which could be deeper due to the time saved printing the definitions and example set up.

Originally, I projected the notes and we did the examples on the board but after one class where the projector was not working I realized students were more engaged when we did more work than we had to on the board. Having to write out the assumptions and taking the time to talk about their implications was very beneficial towards connecting material from throughout the semester and the logic behind the solution.

Additionally, I implemented the use of Cran R for the course. While it is still not a coding course, the use of Cran R would provide many students with their first exposure to a statistical programming language and give them some practice while allowing them to visualize what we're doing with the theory. Initially, we did some Cran R coding in class so that we could see what was happening graphically while we derived the results. I provided code in the notes and for homework that could be run by the students and tweaked to answer further questions.

There was an interesting reaction to the use of Cran R in class. It contributed to the knowledge as many students enjoyed learning a statistical tool that they would be able to tout on their resumes and leverage for future work in other classes. Some students, however, mistook the purpose of using Cran R as more than just a visualization tool. Some students wanted a ground-up coding experience and some students took the use of Cran R to indicate that we may be doing more application and less calculus.

Finally, I added an online forum for discussion on Moodle with the following instruction on the syllabus:

> *Students should use the discussion board in Moodle as a safe place to ask questions and be curious about the course material. I expect students to answer such questions and to feed the curiosity of their peers through furthering the discussion; I will monitor the discussion board and chime in from*

time to time. This is intended to foster students' creativity and curiosity, and prepare them to think critically, ask questions and gain a lifelong value out of their education.

The reason I had instituted this part of the course evaluation is that it is very important that students are able to converse about the topics including their curiosity, wonder, and questions. Particularly in the sciences, I feel the critical thinking skills associated with the topics of courses are often undersold compared to getting the correct answer – as computers increasingly complete the hard work the interpretation, the wording, and the questioning are key.

Some students argued that this should not be part of their grade and, while I agree that there are better ways to implement this, I will continue to require it. I will be making some edits to how I do this going forward to avoid the thoughts about it being unhelpful. This semester I graded them at the end of the semester and instead I will now do so every few weeks. I tried to be clear in the syllabus and with reminders in class; however, the useful narrative did not reach all students. Since participation is an 'easy A' in most high school classes, earned by just showing up, I should have made this part of the grade calculation seem more important to students by thoroughly explaining the reasons and benefits of doing so.

I had prepared roughly the first month of lectures before the semester started. Having checked my class roster and noticing that most students were not declared mathematics majors I drew back some of the theoretical math in favor of the application of the theory. In class, we would derive and prove results and for homework and on exams they would apply those results and make small extensions.

I think this approach worked for a lot of the class – particularly the Economics and Computer Science students, but the Mathematics and some Physics students felt like they could have done more. The workload was plentiful, but I can imagine the Mathematics and Physics students who are well versed in Calculus I and Calculus II found the course much easier than those who were not. In hindsight, I would have likely done more evaluation on derivations and I will do so in later semesters. These questions would make it slightly harder, but not impossible, for the Economics and Computer Science students while making it more interesting and fruitful for the Mathematics and Physics students.

It seemed like some Economics and Computer Science students thought that the course could have better served them by being more applied and having more real-world examples. I often argued that we, in fact, have likely done far more application in this semester than many other probability courses and that some course development needed to occur to create the classes they wanted to take. This lead to the development of a data science club on campus as an outlet for these curiosities.

The next time I teach Probability there are several changes I would like to make, many of which extend to other courses I would teach. Now that I have a better understanding of both major and non-major requirements, I think that I can move a bit quicker at the beginning of the semester. Since courses such as Number Theory and Combinatorics are available, many students had a comfortable understanding of set theory. I believe that working with the few exceptions outside of class to bring them up to speed would benefit the course schedule greatly – we can get more done and spend more time on the more challenging topics.

Another improvement would be to provide stronger rubrics to students. Often I equally weighted homework questions regardless of the amount of work necessary to complete them, which made the number of points for similar mistakes seem inconsistent. Going forward, I will judiciously assign point values to each part of each question based upon the amount of work required. This is an easy change that I think will be impactful for students – this way they do not have to wonder about how points will be awarded. I still plan to continue the speedy feedback – this semester I returned both homework and exams the following class meeting.

Spring 2017 – Overview

This semester, on April 1st, we received an advisory from the Dean of the College about a possible sexual assault on campus and May 1st we received an advisory of an alleged armed person on campus. It is a common, and generally well-founded, criticism that professors in the sciences are hands off when it comes to social concerns or "feelings" of students, but I try to break that mold.

Attending teaching tables wasn't quite enough to know exactly how to react to these sensitive events in class, but things I learned there gave me the tools to figure it out. At the LGBTQIA inclusive teaching table, we talked about othering students by making students feel marginalized in a heteronormative environment. Since then, I have made an effort to broaden examples recounting lived experiences by including those of marginalized populations, including but not limited to LGBTQIA. I took a similar approach to these events on campus.

After the alleged sexual assault, we talked about the 2015 HEDS Sexual Assault Campus Climate Survey. This allowed me to describe some sampling techniques and numerical summaries while educating students about their community, the services and educational opportunities available to them and, perhaps, how to view their actions through another's lens.

After the alleged armed person on campus, we talked about *Seeing Black: Race, Crime, and Visual Processing* (Eberhardt et al., 2004). This research suggests that merely exposing people to Black male faces lowers the perceptual threshold at which they detect degraded images of crime-relevant objects (e.g., guns and knives). Using data from the paper I was able to have students recognize experimental design and practice statistical inference while exposing them to quantitative social psychology research.

I care enough to mention what happened by not making it an invisible problem and to reconsider these events in the educational setting. It is important to recognize there's a problem, to take a stance of prevention, and revisit how we think about the action and inaction of our community when something does happen. I hope to spark curiosity in students to seek education on the topics that matter to them so they can ensure that they're making the right decisions.

Continuing with my influence outside of the classroom, I was able to interact with students during a Speakeasy funded by the Psychology department. I was invited to talk about artificial intelligence and found it was a great way to break down the barriers between what happens in and outside of the classroom. I found myself thoroughly enjoying the conversation we were able to have together. They were very knowledgeable and genuinely curious.

I also planned and brought math students to the Hudson Valley Math Conference at Westfield State University. Three students attended and two presented their research, including one student who worked with Professor Robertson and me during the last summer. I am constantly impressed by the quality of work provided by these summer research students and this was a very nice opportunity to see it off campus – they were quite impressive.

That same weekend I had organized students from the data science club who attended an ASA Datafest event at Vassar. I was pleased to find out that one of these students was on a winning team and the other students did a great job, too. I hope that as interest in data science grows at Colgate, we might soon be hosting a DataFest of our own!

This excitement about statistics and data science is echoed by the many students that I had visit my classroom during April Visit Days this spring. It was exciting to meet incoming freshmen, particularly one student that found me at the Faculty Reception to thank me and share their excitement for taking my course that coming fall. I enjoy advocating for the school and the area of Central New York – I've learned a lot about the community and I find that a very important part of what Colgate University is.

As I continue to adjust to Colgate University from the University of South Carolina, I keep finding new

things I have to become accustomed to. The first semester I found that the level of rigor expected in the upper-level courses is much higher here than in my previous experiences. I extended this lesson to the Introductory Statistics and Mathematical Statistics courses in which I increased the amount of difficulty and the rigor of the assessment of quality.

As a first generation student, I've come to realize that I, perhaps, have a point of view about education that differs with many students where I am perceived harsh or as expecting too much. While many things affect performance and learning, a student's resolve to do well is paramount to their success. My goal is to work will all students so that they are earning the grade they want while learning something new.

To foster curiosity and effort in class I encourage students to ask for what they need. I aim to teach challenging topics but also to provide enough resources that any student has what they need to succeed. In this light, I am overly welcoming to answering questions in my office or by email. Continuing my open door policy with almost 180 students, who are not timid about their education, was not my best idea; providing a chart denoting how likely it is that I'll be in my office didn't help. Although I held eight office hours per week some felt I wasn't available because I wasn't in my office outside of office hours at some points when I generally expected to be there.

While I always want to be available to guide my students, I found myself becoming frustrated with the constant interruptions of all the other work I had to do outside of office hours and this, at times, was visible to students even if the frustration was through the lens of wanting to create resources for the students in an effective and timely manner. I feel like starting the semester saying yes to every student every time created this expectation and confusion when I started asking students to come during office hours instead. Between stopping in and emails I felt interrupted every ten minutes and rarely got the opportunity to zone into my work; this was a result of trying to teach the course as if it were small.

Next semester, since I will have a significant number of students again I have to be more careful with my time. When I was cautioned about this, I thought it sounded self-serving; I wanted to give whatever time was necessary to my students. I realize now that protecting my time will make the time I dedicate to student interactions better. If I'm stretched thin and feel like I can't get things done, I can't be as effective or approachable as I strive to be. I am going to make significant changes to increase the efficiency of communication with students next semester.

First, I will offer strictly-timed office hours and I will be available by appointment for those with conflicts but I cannot have the open door policy with so many students. Second, I will answer questions asked anonymously through Moodle instead of via email; instead of responding to ten emails asking the same question I can do it once and the history of question is available to other students. This will remove the frustrating repetition and time crunch, while still remaining overtly and now consistently welcoming of students questions and comments outside of class.

MATH 317: Mathematical Statistics

Mathematical Statistics is a continuation of Probability and I continued with the second half of *Statistical Inference* by George Casella and Roger Berger. Due to the success from last semester, I continued to develop notes for the course that parallel the text, with all the necessary steps and real-world motivated examples.

I continued using Cran R to visualize the theoretical concepts of the course. Since some students did not take Probability last semester, I had to take extra care to make sure that this course, too, was a gentle first exposure. I provided full examples of code in the notes and provide guided opportunities for students to practice using and editing code to complete new examples on homework.

Students continued to suggest that they wanted the course to be more applied, though it is designed to be a theoretical course. Toward the end of the semester, when appropriate, I used motivating examples to

introduce new topics. I plan to continue this next semester; I look forward to finding and adding interesting motivating examples to notes and homework.

I believe students' desire that applied experience in these theoretical courses because the applied part of statistics curricula is missing at Colgate. With this in mind, I will pilot a Normal and non-Normal model inference sequence of courses as an independent study with a handful of students next fall. I hope that by offering these courses we can reset the expectation that our Probability and Mathematical Statistics courses would provide the application too.

Seeing Moodle discussion for a second semester, led to more frequent participation on the forum set up for the course. This semester I altered the grading to include multiple checkpoints to provide a stream of feedback, instead of just once at the end of the semester. I received feedback from students that it was more helpful this semester and the expectations were more clear with the stream of feedback, but many students still seemed hesitant; private discussions with students suggest that this is largely due to being perceived as "dumb" or their cultural values and norms inhibit their participation.

I believe that the ability to communicate the ideas of the course is integral to learning the subject, but it's hard to do so at the expense of student comfort. Going forward, I will not count participation in their final grade calculation, but I will encourage students to be curious and ask questions in the same way. While students might be shy or reticent, feel like they have nothing to contribute, or unsure how their question might be perceived by peers, I want students to understand the importance of discussion.

Next semester, I will engage a new strategy for spurring classroom discussion and questions. I will take care to explain how and why students benefit from talking and asking questions about the material in class by modeling asking good questions through inquiry-based lectures. I will continue to encourage students to incorporate content and new sources or concepts by asking questions that require them to extend their skill sets, perhaps adding open-ended questions to homework assignments that model this behavior and require meaningful discussion in response. Additionally, now that it won't count toward the grade, I will explore anonymous forums so that student might feel more comfortable asking questions. I hope by defining discussion and question asking in a positive light, modeling that behavior, and removing some barriers to participation will lead to more productive conversations both in and out of class.

Participating in class is important for students learning outcomes as well as their academic and professional development of communication skills. Looking back on the semester I think I may have discouraged students by addressing the lack of participation so often. I believe, counter to conventional wisdom, that bringing attention to the issue only adds pressure; instead, I hope to encourage students to want to participate by praising good questions as much as correct answers.

I've been working on showing students how to ask questions and what it looks like to be wrong in public and have a vigorous conversation about why. Part way through this semester, I started bringing only a summary of what I planned on covering each class. Instead of having a script, I had to work through the problems by modeling how to decide when you're wrong and how to ameliorate these problems as they would at home. Lecturing this way allowed me to better describe the thought process behind solving problems, and when a mistake was made we were able to talk about the recognition of the problem and how to solve them.

I think this approach might be key to getting the students to participate in discussing the course material. I want to make them feel comfortable by modeling what curious critical thinking looks like and by removing any judgment of their performance by showing being wrong provides a new learning moment. I had tried asking questions of them and group work, but this approach really seemed to have the biggest effect and most buy-in, while providing the opportunity to see what effectively grappling with a mathematical result looks like.

I think that reminding students of this approach is something that is important should I continue to go

down this route. Some students, likely those that had the strongest Calculus background, commented on mistakes in class and taking the time to work out every step; while this approach doesn't help all students equally, I think that given the dispersion of math experience in the room it's important to emphasize pragmatic problem solving and to remind students of that purpose. Going forward, I will keep this feedback in mind – there could be more of a balance between problem-solving and lecturing and a steady stream of explaining the benefits of those learning experiences in class to better serve all students.

Within such an environment, I hope to lead students to feel like their ideas are welcomed – even if they're wrong or disagreed with. Mistakes and disagreement are paramount to knowledge creating and a well-rounded education. By encouraging students to realize the freedom to question, debate, and learn from each other while wrestling complex mathematical theory, I hope to guide students toward becoming critical thinkers who can persuade with facts and well-reasoned arguments.

I think I can still work on the level of rigor. There was a wide variety of mathematical experience in this semester's students which made finding balance difficult. This semester I added some more theoretical derivations on homework and exams based on previous feedback but I don't think that equally affected all students. Students with a stronger calculus background perhaps found these extensions interesting but not more challenging whereas students with a weaker calculus background found these extra problems quite challenging and too complex. Another avenue I can explore is to emphasize interpretations of the theoretical works in the context of applied topics of the course; this provides students with a strong background a new challenge and students with a weaker background an opportunity to excel in a less calculus-heavy aspect of probability and statistics.

I look forward to teaching and fine-tuning this sequence again. I think that a second run through the almost three hundred pages of lecture notes and implementing changes motivated by a year of experience at Colgate will make this a valuable course for students. I find it reassuring that two students asked me to be their advisor – I look forward to guiding them through their college experience.

Finally, I would be remiss if I did not comment on Student 18's response about quality. Having had over 1,000 student evaluations this is the first time I received a comment anything like this and it really bothered me, even though the student couched this criticism by saying they didn't think I meant it. I earnestly try very hard to make every student feel comfortable coming to my office hours by keeping a relaxed environment accompanied by an open door policy to come talk about class, the news, anything that they need. I believe these small-group or individual interactions are often the most beneficial aspect of education at a small liberal arts school and having experienced that myself, I strive to provide those opportunities for all of my students and take much pride in hearing that feedback most often. I did not like hearing that I failed to do that for even one student.

I've reached out to several faculty members, particularly those that see me in office hours and while I am upset that I made any student feel this way, I can come away with the benefit of keeping this in mind going forward. I know that all students have widely differing experiences and even though I leave the door open, remain entirely professional – though welcoming and laid back – some students might perceive what I know to be innocuous as discomforting. I think being a young male who is very excited about teaching and getting students incited with similar excitement with the intent of nurturing curiosity can be taken a different way; as a colleague mentioned 'is he excited about the math or about me?" Keeping this feedback in mind, and that fact that not every student can know or expect that my intentions are pure will definitely ignite a more careful viewing of my actions and behaviors through particular lenses for next semester.

MATH 105: Introductory Statistics

Introductory Statistics is one of the largest lecture classes at Colgate. The course, as originally designed, contained much online course material – homework assignments and in-course evaluation were completed through WebAssign. My goal while planning and teaching the course was to make it feel like a usual,

smaller, Colgate course.

I implemented the use of Cran R for the course instead of spreadsheets; Google Sheets had previously been used. Students aren't expected to learn how to code from scratch, but to be able to get to a point where they can copy and paste the working code and make minor changes to answer questions on homework and the writing assignments. There were some issues with hesitation to use a programming language, and difficulty with Mac file paths but the use of technology is important to the students' outcome.

While we used R in class, the only time I required students to use R was for the writing assignment. Since interacting with the technology was recommended, not required, but there were no assignments some students became frustrated when completing the writing assignment. Even though the code for the writing assignment was largely copy and paste, students who didn't start their assignment early were frustrated while trying to complete the paper shortly before it was due.

Students who had missed instruction or did not look back in the notes might have felt like they had to a complex coding assignment, but I never required more than copy and pasting from the notes with slight altercations. Next semester, I will include R in each homework assignment so that students are required to familiarize themselves with R as a calculator before the larger writing assignment and to make it very clear that the code necessary to solve the problem can be found on Moodle and specifying which file to look in. I think that a prolonged exposure to this "copy and paste" level of calculation will much improve the experience with R next semester as it requires the learning curve to spread out over time.

I incorporated a textbook into the course requirements. I thought the online content available through Pearson would help students in their review of the material. I was able to create longer online homework assignments that build the students' knowledge along the way by allowing them to access the appropriate pages of text if they're stuck on a problem and they have access to walkthroughs of similar problems. Reading through the students' comments this was largely successful, but using the online tool and not explicitly using the text made it feel like a waste of money since I didn't effectively explain that they are using the copyrighted material of the book through these homework assignments.

Feedback from the students suggested that they looked at the lecture slides more than the online textbook and, although they found the walkthroughs helpful, they thought the benefit of the text and online material wasn't worth the investment; particularly with the plethora of practice examples and solutions, I made available. With this in mind, I plan to create my own homework assignments through Moodle that include questions with R that will lead students to practice more and realize the power of technology while providing many additional practice problems and solutions for each chapter to make up for the resources that had been available through the textbook. This will entail a lot of work over the summer, but I believe that being able to further customize the homework to match student interests and current events will be added benefit.

I added a writing assignment to the course as well. Particularly with this broad-scoped introduction to statistics, I try to present a holistic and accessible approach to understanding the communication of numbers by focusing on the reporting and interpretation of statistical information seen in daily life. By providing a foundation for interpreting and writing about statistics, I hope to lead students toward statistical literacy and an ability to evaluate the veracity of research and news. This full-scoped assignment is also aimed at tying the semester's work together in a way that allows students to use their newfound statistical reasoning to real data about them.

As an introductory course that is often taken to fulfill a graduation requirement, Introductory Statistics attracts students from all over Colgate. A lot of times students from the humanities have trouble with motivation to learn statistics. I added a *Naked Statistics* for these students in particular. Many students benefit from reading this text, as it provides interesting anecdotes that motivate and explain the methodology as we cover it. This interpretation and reading of statistics is most important for a broad

audience and so the course is aimed at statistical literacy too.

For a large number of students, multiple choice and fill in the blank evaluations are effective because they can rapidly provide feedback to students. With statistical literacy in mind, however, I want to ensure that evaluation of students required both calculation and interpretation – to incentivize students to learn the material in their own language instead of picking it out of a line-up. I think it's an important consideration to construct evaluations that measure learning rather than test-taking skills. Toward this goal, I fashioned all of my evaluations after real-world statistics ranging from political news to quantitative research. This allows students to connect the material in class to their lives and practice their statistical literacy while learning something new about the world.

In Introductory Statistics we cover roughly twenty statistical concepts, termed standards, in this course. Instead of giving class-long exams, students completed short pop quizzes across the semester where they were being evaluated on any of standards recently covered or, perhaps, be re-assessed on previous standards. These pop quizzes do not get a percentage score but, instead, questions are graded and tracked individually. I took much care to hold students to a high expectation while giving students enough resources to succeed regardless of their previous math experience.

Each standard is scored on a scale of zero to four as follows: four is perfect for the standard being assessed; three essentially contains the correct answer but contains rounding or final calculation mistakes; two does not contain the correct answer but does show work in the correct direction; one does not contain the correct answer or work in the correct direction; zero is for no response.

Students saw each standard at least twice and the most recent score made up this part of their grade. The most current score is used for grading to encourage long-lasting learning and discourage simple memorization of a particular standard for a quiz or test. Generally, it turns out that the most recent score is the best score as initial attempts are often taken as an invitation to revisit a topic more thoroughly. In other words, initial scores aren't permanent and students have opportunities to change them by taking poor performance as an incentive to learn. Since this was the first time many students have seen a grading model where they can do worse through retesting it seems unfair but we walked through an example that shows there's a letter grade increase in their second attempts relative to their first attempt.

This choice was clear after going to a few meetings to talk about how Colgate serves its first-generation students and talking about how retention of particular students in NASC majors past the bigger introductory courses. I wanted to implement an achievement-focused course so that students can learn at different paces or students that require additional feedback have equal opportunity for success in a Mathematics class that is dependent of their previous Mathematics experience.

Since the scoring of standards is in terms achievement, the number of attempts to reach the mastery level, and a weighted average of your standards are considered when assigning actual point values of this part of the grade. The reason that even one standard at a level other than Mastery drops a student to the B range for this portion of their grade is that to truly achieve an A, a student must be a master at all topics.

I have designed this course to be challenging but very doable if students engage with the resources for the course, even for students who may be nervous about math or "think" they are not good at math. The course is designed for students of vastly different mathematics experiences to do well – students that need more time to master the material are granted such time through retesting. The course is designed for students to have the opportunity to perform poorly, take it as an invitation to ask for help. Retesting is a tool for learning how to learn and conquering a challenging course that rewards long-term performance and discourages memorization.

The standards-based grading methodology, which involves measuring students' proficiency on well-defined course objectives, facilitates this retesting. Previous research suggests that a better understanding of essential principles is needed for grades to accurately reflect students' achievement. Providing feedback

about how well a student has mastered each of the course's important topic allows for a more nuanced conversation with students about where they are strong and where they can make plans to improve their knowledge.

Unfortunately, I'm not sure I effectively communicated the benefits of such a grading scheme. There were many students that appreciated the incentive to stay on top of the material and the repetitive nature of the course, but there were several students that found that it felt unfair and I had a hard time convincing those students otherwise. Students were immediately displeased with the nature of the evaluations in that they were unexpected and several students felt that the system disadvantaged them because of the stringent requirement to get an A on that portion of their grade; I think I lost a lot of the students in the first few classes as it was perceived that I had aimed the evaluation at too high of a level which might be true compared to what is usual.

This issue was more strongly based in feeling than in fact. The truth is that students were doing remarkably well. Students averaged 85% on that section of their grade, they were responsible for and succeeded in completing complex statistics problems in their own language. Allowing students to succeed at their own pace and take poor performances as an invitation to succeed was an academic success; students overwhelmingly performed better on subsequent tries indicating that students had an increased understanding of the material.

I hope that much of this discontent comes from this increased demand for quality work, and the need for a more comprehensive and nuanced conversation about why I engage this type of pedagogy, which research suggests significantly improves students' learning outcomes and my misplaced extrapolation of the desire for challenging coursework from my previous semester of 300-level electives. The knowledge of the previous workload and my first semester's experience and this extrapolation created a gap in my expectations and theirs. This was a good learning opportunity for me. There were times I felt like I wasn't speaking the same language as some of the students; we were operating on entirely different sets of assumptions. I'm happy to have a better understanding of student expectations.

Toward the end of the semester, I created a draft of the syllabus for next semester taking much of their constructive criticisms into account. This included an additional explanation, with reference to pedagogical research; vastly different scheduling and language to better portray the grading scheme that many of them took exception to. I think the inflated expectation due to my first-semester experience lead me to perhaps expect too much. I expected pushback on that based on the classroom experience, but I'm quite surprised to see how often students used the word "condescending" in evaluations. I try very hard to be constructive and nurturing with my criticism and I mimic this behavior by taking constructive criticism very seriously myself by changing things throughout the semester to better serve the students.

I was troubled to read that this didn't come across to some students – I never thought that my responses, which were intended to explain my choices, would come across as dismissive particularly as I often took their constructive criticism to make changes in the classroom. I also kept students in the loop about massive changes to the syllabus based on very excellent and helpful student feedback. I take all feedback seriously and very often take constructive criticism as an invitation to make changes for the better and because of this, I think that next semester will be significantly improved with my experience and the feedback provided this semester. I was sad to see that this wasn't clear to many students.

Next semester, I will take more care in explaining the benefits of this system as well as the reasoning and research supporting it at the beginning of the semester. This is particularly important because it will likely be the first time most students are exposed to standards-based learning and also the first time students have seen retesting that only helped their grade. To take the first steps in doing so, I created a new syllabus that more deeply explains this methodology and the reasons for it and asked for constructive criticism regarding the new, increased explanation and reasoning so that it might be clearer next semester.

Something I learned through the experience of teaching a large, freshman and sophomore filled course is understanding Colgate students and my interaction with them better. Being a first generation student, I don't think I had the same pressure that some of the students here face; it was amazing that I made it there at all. This pressure, which had not occurred to me, caused many students a lot of stress as they felt that they had to be perfect when, in fact, imperfection was built in.

I didn't have to be perfect and the welcoming, nurturing and light-hearted professors that guided me through my education really helped me grow through light-hearted but very constructive criticism of my work; this is something I've taken into my own approach in the classroom. I often point out when I make mistakes indicating that I too am fallible in order to help students understand that making mistakes is part of learning and that we're all here to learn and improve, myself included. This allows for that conversation of quality to feel less condemning of their effort and more like an invitation to work toward improvement together. This allows for nuanced discussion about our definitions of "doing well in class," and allows students to feel on equal ground.

This chasm was difficult to work around because it was hard for me to understand and communicate effectively and on a personal level with all of the students based on the size of the class. I think this is largely responsible for the how dichotomized the student evaluations were. Students that I was able to connect with during office hours and have more nuanced conversations with had an experience similar to that of my upper-level courses and students that never made it to office hours or an outside of class tutoring hour may not have fully understood my intentions. Teaching this course, at this size, made me more cognizant, empathetic and understanding of the student perspective – particularly those with less exposure to me, to whom my intentions and candor might not have been clear.

I strongly believe that I just need to make a few tweaks and I have a game plan for communication next semester. I care very much to be an impactful professor who cares an immense amount and leads students to a life-long learning. I am definitely growing and figuring out the culture at Colgate; state and community colleges have students who are in awe when professors demonstrate they care at all – students who see hard love as love. I have perhaps become accustomed to this expectation as it was very similar to my undergraduate experience. It is good to recognize, and start understanding, many Colgate students' point of view- students who expect faculty to care, where the hard love is not as welcomed. I will work hard to find a balance of rigor, demand for quality in a more verbally nurturing manner.

Fall 2018 – Overview

This semester put me in a largely different place than the start of the Spring 2017 semester – I needed to rework how I communicate with students. I think that I may have overshot the level of difficulty in some of the courses, but I didn't provide sufficient support for doing so. The students are capable of doing the work and have done well and my goal was to show them that this is true and to make the growth experience less uncomfortable.

I want to help students see that although some of the material might seem uninteresting, disconnected from their life and difficult, that there are some connections and it is sincerely worthwhile to explore them. I also want to break the belief that professors always think they don't know enough or don't reward their curiosity too.

Mathematics, especially Statistics, is more important to the world than anytime as the solutions to the world's problems become more quantitatively driven. As computation power grows so does the scope and problem-solving power of applied mathematics; this should incite growing interest in mathematics.

While there is much concern about using computers in the classroom, and certainly varied opinions in student evaluations of teaching, using computers is the best way to connect education in mathematics to the real world.

There is a lot of methodological research in mathematics and statistics, some of which is covered in my upper-level Probability and Mathematical Statistics courses. In the real world, however, mathematics and statistics are used by all types of quantitative researchers in disciplines from biology and engineering to psychology and sociology where the statistical and mathematical modeling are paramount to scientific advances.

Very often, to make applied mathematics palatable to a general audience we use simple or contrived problems that we can calculate by hand that doesn't seem to be a solution to the real world problem or at least a difficult real-world problem. It's difficult for students to know why they need to learn mathematics.

Part of teaching must be showing why it is so important beyond getting a technical job. Introductory Statistics is important to checking your bank statements or checking the veracity of quantitative information consumed. Probability and mathematical statistics help training students in pragmatic, logical problem solving by exposing students to why and how the methods quantitative researchers use to create knowledge work.

This semester, I charged with myself with changing the focus of my courses away from by-hand calculations where it makes sense to in favor of statistical reasoning in a way that allows students to follow their interests. By giving students the ability to think about what they want to ask, and how they can best find what they're trying to look at.

In my Introductory Statistics course, we discuss places where researchers ask the wrong question, get the wrong answer and don't realize it. This semester, as I bring our course up the new professional standards, we explore these examples and how we can approach a problem and translate it from a real word problem into a statistics problem. This puts a heavier emphasis on the human side of the problem, allowing students to ask a computer to complete the computation step to translate back into the real world for verification.

By removing the time spent teaching students to do every step of a multi-step problem by hand, we open up more possibilities. We can use computers to do harder problems that aren't possible by hand and extending the curriculum of the course and allowing students to spend more time thinking about the translation of the real-world problem to and from statistics. This can help show students that statistics is more than algebra, it's a tool for answering questions about the real world.

In Probability, this type of reform is more difficult; paramount to probability is Calculus, Set Theory, and some Real Analysis. While it is more difficult to ask a computer to do the theoretical math, we can use it as a tool to visualize the problem and guide our pragmatic decision making for solving a problem or deriving a result. While there are many arduous calculations that span pages in Probability, we can check our answers or see if our answers make sense by asking R to calculate these quantities numerically. Visualizing theory can help students make connections to the theory that they couldn't close their eyes and think about before, and that's important even for certain conceptual thinking that requires by hand derivation.

In either course, teaching these mathematical skills can allow students the agency to follow their own interests to their own majors by providing students the ability to translate a real problem into a question statistics or mathematics can answer and the basics of computational knowledge to get the problem answered even if the data are too numerous to be written on a page. By exposing students to the best tool available they can apply the principles they've learned to new and more difficult calculations.

This semester I aimed to guide students toward understanding and away from repetition and memorization of seemingly unrelated mathematical results. I think that understanding the life cycle of a statistical or mathematical analysis is important. This understanding allows for new ways to engage students by guiding them to use their understanding to translate problems into mathematical statements that a computer can help them answer. These techniques make even difficult problems more approachable by providing ways to explore a problem visually or making the problem-solving process more practical.

The varied success of this semester is from attempting to open up more possibility in both classrooms by exploring new and more real-world problems. By emphasizing process, intuition, and understanding while experiencing challenging problems I hope to lead students to see what they gain from a mathematics course. I hope that by demonstrating the usefulness of mathematics and statistics students might see problems in a new light that removes obstacles.

There's still much work to be done and better ways of engaging students in higher level mathematics courses but this was not an incremental change, it was a big leap of faith in the curriculum, students and myself to create a new classroom that matches the problem-solving capability of the future.

I hope that inquiry-based learning, instead of memorizing the steps to an answer without the motivation of a real question helps students see the importance of mathematical and statistical thinking.

By exploring profound questions about the world, it allows for the time to struggle and the opportunity to learn what mathematical thinking is, opposed to many secondary school problems that can be solved in less than a minute. This time-consuming thought leads students to ask questions that even I hadn't thought of; they are inquisitive.

Sometimes students go down the wrong track and don't get a correct answer but accepting these ideas allow us to discuss and fine-tune the thinking mathematical thinking that got us there; how do we know that we haven't ended in the right place? This style of discussion allows us to understand why incorrect answers cannot be true, not just that they're incorrect. Nurturing students' curiosity allows them to explore mathematics, experience its power in creative and courageous ways.

This approach was easier to apply to and more successful in my Introductory Statistics course. Since Introductory Statistics is a survey course about much of statistical approaches in quantitative research the examples available are endless. With the wide access of publications and publicly available datasets, students can learn with real data, motivated by real research questions.

Using quantitative research from a variety of disciplines and political polls really opened the interest of the course while increasing the rigor of the topics. Leaning on a computer for the machinery of these approaches allows students to focus on what the impact of their analysis is. This power to create

knowledge and critically evaluate information was widely appreciated as we covered the topics of the course.

In Probability, this approach is more challenging. There are many real-world conceptions that can lead a student to be badly mistaken if they do not proceed cautiously. It is the science of not knowing, and that's difficult to conceptualize. If we knew what was going to happen we would not need probability, but the uncertainty of life requires is. In fact, students regularly have to wrestle with the personal probability they use every day – "I'm 95% sure I'll be in class today."

A Student's own evaluations of these unknowns is important and relatable, whereas predicting the chance of an observable event that hasn't yet occurred in a new and opposing way causes discomfort. Considering these uncertainties in a pragmatic and careful way is very new for many students and alluring conclusions via personal probability are impossible with formal probability.

Learning probability is like learning a new language. Fortunately, the Algebra and Calculus courses give us most of the tools of being successful in Probability, however, our memory of those topics and our experience with probability make the topic difficult to see right away.

Certainly, basic probability when rolling a dice or flipping a coin is simple to consider – there are a finite number of outcomes. What happens when we need to enumerate the possible high-temperature tomorrow, the population of invariant killer T cells in a mouse, or the risk of a hurricane landfall?

In probability, we use programming in R to visual probability theory. The link between the programming and the theory is important because the increased power of calculation allows the practical application to difficult real-world problems like those posed above. Some questions are intractable, impossible to complete by hand and simulation is the best way to numerically develop an expected outcome.

Thinking about mathematics is sometimes easier from a numerical or graphical point of view than proving the theory. It was a goal to introduce some essentials of probability using numerical and graphical solutions in R so that students can conceptualize about mathematical probability and use that as a stepping stone to interpreting and thinking about uncertainty in very precise ways.

I think that this approach was less successful in Probability because of its inherent difficulty. The solution is not to avoid discussing difficult concepts but to fine-tune the narrative of the application. In the past, I had professors who created homework assignments that lead me to learn as much as I did in class and in readings. I tried to implement this by providing questions on the homework that required an application.

These problems would take the foundation students gained from derivations in class and earlier skills learned one step further by giving students code to simulate a complicated probability scenario. My hope was that seeing how it worked would help students with the more complicated theory behind the application. I don't think, however, that I created an effective storyline for students to follow.

In future iterations of these courses, it's clear that learning by example with R is not the best approach. Even though tidy solutions are provided to tweak and run, some time needs to be spent on Core knowledge of R and how to deal with errors. I've found debugging broken code to be a deal-breaker for many students and I think normalizing this and providing tools for solving those problems is needed.

Also, there needs to be much communication. In both courses, I had some success in creating a collaborative classroom space where many students felt comfortable and heard sharing their thoughts, questions, and answers. However, there are concerns in the student evaluations of teaching that leaves me feeling like I was missing something. While it's hard to know the status of 180+ students at any one time, having access to weekly updates on their progress and how the course is working for them is invaluable and something I need to expand in later semesters. These weekly diagnostics were paramount to the successes in my Introductory Statistics course this semester and I look forward to applying those changes more broadly later.

MATH 105: Introductory Statistics

In 2014 the American Statistical Association (ASA) and the Mathematical Association of America (MAA) released a report *Guidelines for Assessment and Instruction in Statistics Education*, which outlined significant updates to the professional associations' recommendations for teaching introductory statistics at the college level. The sentiments of the guideline updates were well summarized by the ASA president Nat Schenker who stated the following.

> "The importance of statistical thinking and knowledge is rising across the entire collegiate educational spectrum. To meet this growing demand, more and more colleges and universities are offering introductory statistics courses in non-statistics departments. These ASA/MAA guidelines will help faculty leaders create the best course to prepare students for using solid statistical reasoning in their chosen career fields."

This past summer, I spent much time developing course materials to make our Introductory Statistics course satisfy these new guidelines which required many changes. The main piece is a collection of lecture notes that explore the required topics through published research across disciplines in an inquiry guided manner. Below I discuss alterations to the MATH 105 curriculum to address the nine goals of the updated guidelines report.

i. **Students should become critical consumers of statistically-based results.**
   As a statistics researcher and statistical consultant I thought to lead students toward critical statistical thinking and numeracy by mimicking statistical consultation. This allows students to learn the material by exploring and taking part in the investigative process of real-world problem-solving. Most importantly, this allows the students to consider the decision-making process required for deciding when a particular statistical analysis is appropriate.

   These decisions are often made incorrectly and we are able to explore, recognize and ameliorate these mistakes by reanalyzing data to make more appropriate claims. This type of experience-based learning allows students the chance to consider numbers and the evidence they provide. Of particular importance is the design of the study and whether or not the appropriate steps were taken to make inference on the population of interest; this is generally the issue with political polls which are increasingly ubiquitous.

   Instead of blindly accepting that numbers are facts, students begin to critically think about the information they consume and recognize when numbers are mathematically accurate but so misleading as to be untrue making them more responsible consumers of statistics. Students are able to judge information and recognize when claims being made are well-founded by the end of the semester.

ii. **Students should be able to recognize questions for which the investigative process in statistics would be useful.**
   By experiencing statistical inquiry in published research across many disciplines, students are able to experience a variety of questions we can answer with statistics and a goal of the course is to guide students toward asking questions statistics can answer. It's not only important to understand which questions we can answer with statistics, but also which questions are most appropriate.

   Throughout the lecture notes, we ask and answer questions using statistics to mimic the thinking we want to see from students. An example in lecture is guiding rock crab researchers to tell the species of a rock crab, orange or blue using statistical inference. Such guidance is required because the crabs lose their coloring when they die and the scientists want to label their samples correctly. We explore the data collected by the scientists and recommend measuring the sampled crabs' carapace width which is *significantly* different among species.

Much care is taken to discuss the difference between mathematical and statistical thinking. In the example above we didn't *prove* that one species always has a larger carapace width but we showed that the data provide evidence for this, on average. Students are constantly reminded of this – statistics is the art of exchanging certainty for information. Students are able to utilize their statistical thinking to be critical of their own approach by ensuring they have a representative sample, appropriate analysis and a clear and concise interpretation of such analysis mentioning any limitations or assumptions.

iii. Students should be able to produce graphical displays and numerical summaries and interpret what these do and do not reveal.
Students learned `Cran R` to do such data summarization, giving them a valuable opportunity for exposure to a covetable skill across disciplines. The TI line of graphing calculators, seen in previous math courses, is antiquated technology that is only used in schools; practically no academic researcher or professional uses this technology. Students don't learn how to code from scratch but learn to ask the right questions to be able to find a working solution and make minor changes to answer new questions.

We also explore and evaluate a variety of graphs from research papers, popular media, and other outlets. Using software to produce publication quality graphical displays makes visualization of large data sets relatively easy. We talk about having a large spreadsheet of data and how scrolling through the thousands, or possibly millions, lines of data provides little information as it is difficult to perceive or make judgments even though all the data is available. It is in this vein students are motivated to produce graphs and statistics that are worth a thousand words.

By summarizing these data both numerically and graphically students are able to experience the ease of interpretation over the raw data. It also allows students to explore the relationship between the two ways of summarizing data bringing graphical meaning to the numbers. This exploration is an important first step to any data analysis and is repeated throughout the semester.

We also explore new types of graphs. Something students who consume infographics every day found interesting was our use of word graphs to identify a book. Given a text file, obtained from the Gutenberg database, students were able to find commonly used words in the file to draw conclusions. From the infographic students created in R, they can make an, admittedly knowing, interpretation that the main character is "Holmes," a "man" who takes "cases", "asks" questions, and "found" things to after much "thought" with "Watson" by his "side," which might take place in the past when people referred to each other as "sir" and "lady." This leads us to name the book as a Sherlock Holmes book which we confirmed to be *The Adventures of Sherlock Holmes* by Arthur Conan Doyle.

We also consider heat maps in an analysis of voter support in Florida from the infamous 2000 election between Gore, Bush, and Buchanan. Students can see from the graph that Palm Beach County has outlying support for Pat Buchanan which lends credence to voters' claims that the machines incorrectly cast their ballots for Buchanan instead of Gore.

iv. Students should recognize and be able to explain the central role of variability in the field of statistics.
We explore variability in the real world by looking at several examples of variability in published studies and political polls. It's helpful for students to see many examples of dispersion in data. Our discussion revolves around responsible reporting of information.

We start with a quote from Sherlock Holmes.

> While the individual man is an insoluble puzzle, in the aggregate he becomes a mathematical certainty. You can, for example, never foretell what any one man will do, but

> you can say with precision what an average number will be up to. Individuals vary, but percentages remain constant. So says the statistician.

We then talk about how some social psychologists defend the use of stereotypes by trying to show their "correctness." Even though some stereotypes are correct on average, the problem lies in their individual application. Using statistics, we can talk about the variability of a group and what that means for applying the mean as a summary. We can help guide people to asking new questions to further evaluate that have influence over measurements on any individual. Acknowledging variation allows better inference.

v. Students should recognize and be able to explain the central role of randomness in designing studies and drawing conclusions.

Sir Ronald Fisher, commonly referred to as the father of modern statistics, once said,

> "To consult the statistician after an experiment is finished is often merely to ask him to conduct a post mortem examination. He can perhaps say what the experiment died of."

Sampling is perhaps most paramount to any statistical analysis as statistical inference is only as good as the data from which it is born. This semester's course includes much more discussion about sampling techniques with particular attention to each sampling technique's ability to provide a random, representative sample as well as their possible pitfalls.

This increased attention to sampling is important because it allows students the nuance to determine what type of conclusions can be drawn from a statistical analysis born from a variety of data sources. For example, students learn to discern when it is appropriate to make inference on the population from which the sample is taken and when causal inference can be made.

A particular example of this is when we consider the variety of polls conducted the week before the 2016 Presidential election. This shows students that even when measuring the same outcome, sampling introduces its own issues when trying to make inference. This provides students with a familiar example of how results vary from sample to sample which helps them understand why sample size and sampling technique are so important in any statistical analysis whether it be a political poll or a randomized clinical trial.

vi. Students should gain experience with how statistical models, including multivariable models, are used.

Students are introduced to multivariate models through two-variable associations, both categorical and continuous. These topics are introduced through real world examples by looking at several examples in published studies. We consider problems in engineering, education, and medicine allowing students to view the value in such statistical analyses in a variety of settings.

We take much care to compare these results from data obtained in an observational study versus a randomized comparative experiment as well as possible confounding. We discuss several examples of confounding and discuss our tendency to story-tell and avoid statistical uncertainty. In practice, it is often important to do both – we use statistical analysis to explain uncertainty but expert knowledge is necessary to ensure the story is told correctly. It is because of this that a good understanding of statistics is so important and why it has increasingly become the "grammar of science" as it is referred to by Karl Pearson.

Spending more time on experimental design and sampling techniques allow us to have more nuanced discussion of the life cycle of a statistical experiment. This ground up experience allows students to critically evaluate the use of statistical models and ask questions statistics can easily answer as setting up an experiment is of utmost importance when approaching a problem of statistically modeling some

phenomena.

vii. **Students should demonstrate an understanding of, and ability to use, basic ideas of statistical inference, both hypothesis tests and interval estimation, in a variety of settings.** This is, to me, perhaps the most important aspect of students' outcomes in an introductory statistics course. Almost all of the statistics the public consumes appear as statements of fact. It is important that students learn a sense of numeracy where they don't blindly accept numbers as facts but understanding and being critical of which inferential methods were employed.

To model this behavior we often discuss news articles that state statistics as fact and click through to the actual polling report to assess the limitations of such hyperbolic interpretations of polls or survey that might be significant just by random chance.

I've added much more content to the chapter on confidence intervals. The Wald confidence interval, which is covered in most introductory texts due to its ease of calculation, is really an asymptotic result and doesn't provide the coverage often suggested to students. This semester, I also covered the Agresti-Coull and Wilson's confidence intervals which are much better performing at smaller sample sizes. Many introductory texts solely present the Wald interval for simplicity, but I think the improved approaches aren't more difficult to implement when using technology and we used simulation in class to show the benefit of learning these improved approaches.

While hypothesis testing is the inference of choice in many sciences, we note that confidence intervals should be preferred as they provide a more nuanced interpretation. For example, if you needed to make a decision between two choices where the first had a confidence interval for its financial impact from \$1 to \$1.50, while the second had a confidence interval from \$1000 to \$5000. The first is more precise and more predictable but the second is probably more important. Two hypotheses will likely tell us that the effects are greater than zero but will miss the details of the story.

My main goal is to be clear that there exist many approaches to asking and answering questions with statistics. This makes students aware of the multitude of ways to engage in statistical thinking and problem solving, some that are just beyond the foundation they're building. This knowledge can lead students to knowing that they can search for R packages and documentation for methods that might better fit a new situation. This is particularly important as each approach has its own set of assumptions that need to be thoroughly checked.

Confidence intervals and hypothesis testing are widely used because it appears to be "objective proof;" they are easy to calculate with software and these results are reported in the popular media outlets and practically every area of academic research. Regardless of the venue, I strongly emphasize the duty to provide a full and detailed picture when completing any statistical analysis and equal scrutiny when evaluating information.

viii. **Students should be able to interpret and draw conclusions from standard output from statistical software.**
This goal is omnipresent in every topic of the course. Instead of performing calculations by hand, which is unrealistic for all but the smallest datasets which are often contrived specifically for the classroom.

There has been a push away from the by hand approach, but not necessarily in the direction of the guidelines. Many introductory courses have introduced education tools like Microsoft Excel, Google Sheets, or textbook specific software like Pearson's StatCrunch. Additionally, there are texts that refer students to other internet applets, those that run R in the background and not statistical software itself.

The difficulty with these approaches is that many aren't as generalizable or well documented enough to use in application whether in the professional or academic setting. Instead, I focus on creating a curriculum that allows students to practice asking questions that statisticians can answer using R, the premier choice for statistical computing and graphics.

I don't expect students to become experts in R or learn any formal coding practices, but we do enough examples and homework problems that they become familiar with the syntax and are capable of tweaking widely available solutions to new problems. This gives students a valuable opportunity for exposure to a covetable skill across disciplines. I hope to have found perhaps an ideal balance allowing students to complete a variety of analyses for numerous datasets with the best statistical technology available.

ix. Students should demonstrate an awareness of ethical issues associated with sound statistical practice.

The added level of detail to the section of the course on sampling techniques allows for a more nuanced discussion on clinical trials. In this section, we explore the ethics of such experiments or observational studies. We start this discussion with a quote from Dr. Charles Hennekens.

> "There's a delicate balance between when to do or not do a randomized trial. On the one hand, there must be sufficient belief in the agent's potential to justify exposing half the subjects to it. On the other hand, there must be sufficient doubt about its efficacy to justify withholding it from the other half of subjects who might be assigned to placebos."

This quote gets at two very important points, one may be obvious and well known to students and the other which often catches students by surprise. Although a new treatment could benefit the patient, there are also potential risks associated with it. Patients are therefore subjected to potential harm. If a new treatment is suspected to be better, can we justify ethically assigning some patients not to get it?

We discuss equipoise, the balance of genuine uncertainty about which treatment might be superior for each individual patient, as we explore previous questionable research studies. We discuss the Tuskegee Study of Untreated Syphilis in the Negro male where researchers didn't provide the cure that was of penicillin for years after the drug became a common treatment for the disease. The researchers never informed the participants of the study of its real purpose and had misled the men. This brought a $10 million out-of-court settlement and lifetime medical benefits to all living participants at the time of the trial. Unfortunately, these types of unethical experiments aren't difficult to find and we discuss several others including the Stanford Prison Experiment, Milgram's Experiment, the Willowbrook Study, Homosexual Aversion Therapy, and Henrietta Lacks Cells.

We also explore what some people call "lying with statistics." Instead of weaponizing the field which many popular press books do, we explore various misstatements by companies, researchers, and popular media. We find it is often the case that such analyses aren't meant to be lies but are inappropriate in a variety of other ways. For example, during the week leading up to the special Alabama Senate special election, two polls came out of interest. Fox News, in a sample of 1,127 likely voters, and Emerson College, in a sample of 600 likely voters, painted a very different picture of the race. Each poll used a complicated sampling technique that decided what a "likely voter" is. Fox News's poll suggested Jones (D) had a 10% lead and Emerson College's poll suggested Moore (R) had a 9% lead. In this case, it's possible that the samples contain different people and thus they result in a different statistic by random chance, the sampling techniques of one or both polls might not provide a representative sample or be biased from how each agency defines a "likely voter." Each analysis is well-meaning, but it's difficult to define a representative sample; while these results are mathematically sound, they are so misleading as to be untrue from a statistical standpoint.

While altering this course to better align with these modern goals of an introductory course I've developed a first draft textbook that pushes the boundary of an introductory class by putting faith in the technological skills of the modern student. I want the textbooks I write to have examples that discuss projects like The Social Justice Sexuality Project which explores how the intersectionality of sexuality and race affect those populations. I want to scour the news and literature to highlight mathematicians in underrepresented groups to show that a future in science is possible for anyone. In fact, computer science might not be what it is today if it wasn't for pioneering women like Lady Lovelace.

At Colgate, I've had many experiences talking about inclusivity in the classroom; we have teaching discussions organized by the Center for Learning, Teaching, and Research as well as a yearly event where we explore topics like power, privilege, and pedagogy. In one such session, we looked at textbook examples across several disciplines and notice how normative the examples were. The boss asked *his* secretary if *she* would make copies. The scientist finally proved *his* hypothesis. A text without diverse examples makes under-represented groups invisible.

I take much time to make a concerted effort to ensure that no student feels invisible by emphasizing learning at students' own pace, providing resources for students of all math experience and curating new examples that explore all demographics and disciplines. I want to continue to grow in that area, to ensure I make *all* students feel understood and listened to. I want students of all experiences to feel like they have control in the classroom to make the experience something that is empowering for them.

Leadership in STEM disciplines is challenging the status quo to enhance science education. I try to do this in a couple of ways by questioning what science is. Teaching numeracy is an important objective in my courses as a student's scientific literacy depends on this, particularly as mathematics and statistics become the grammar of science. However, numeracy has become a moving target; the pace of scientific advancement leads us to ask – what science is today?

For decades, we have taught introductory mathematics and statistics that can be done on a legal pad. Slowly, as technology becomes more prevalent, textbooks and classrooms have inched forward using technology in the classroom that allows students to experience answering complicated questions without an assumed mastery of algebra or calculus. This learning experience allows students to feel they are on the same page as they experience asking and answering better questions using technology together while learning a coveted skill.

While all of these solutions have allowed us to answer more challenging questions, which empowers us to ask better questions, each step forward has faced much resistance in terms of buy-in from both faculty and students. Making monumental changes to a course causes both faculty and students to experience shifts in the classroom and their accompanying growing pains. As leaders in STEM, we should accept and manage the liability of pushing for change as we consider our approaches to teaching whether or not our teaching is compliant with current school policy or our comfort level. I aim to be someone that pioneers those changes, creating a path for others.

I was able to share these ideas about technology and teaching techniques that I use in the classroom at this year's Joint Mathematical Meetings in San Diego where I was invited to participate in a teaching with technology panel discussion organized by Project NExT. I appreciated the national recognition by the early-career teaching community and the opportunity to share a few of the real-world research paper and political poll analyses from my introductory statistics class which display how technology allows me, and the students, to ask and answer questions about the world using math and technology; particularly those for which technology is essential to the solution.

Teaching an optimistically rigorous course and tackling topics often left for later courses also comes with additional concerns – how is it fair to expect so much, particularly from students with less mathematical experience? While using technology allows a level playing field for calculation, students with practice in

pragmatic thinking and problem solving are likely to pick up R and these challenging topics more quickly. I decided to explore measuring success in a more thoughtful way.

As a statistician, I am acutely critical of measurement. When we talk about learning is it best measured by the ability to answer a question once at a specified time and date? Particularly in a rigorously challenging course, a student's understanding and mastery should be measured along the learning process, not at the beginning. Another question that came up was how to use the uncalibrated instrument of points to score understanding. What is worth more points, a perfectly executed wrong answer or a partially flawed correct answer?

To answer these questions I consulted pedagogical research to develop a focused idea of what I wanted grades in my courses to mean. By basing a student's grade on achievement, as opposed to points, I hope to help students experience the importance of quality and attain a higher degree of self-sufficiency by giving clearer and more meaningful feedback about their academic achievement.

This system consists of several testing periods, instead of the pop quizzes from last semester, so that students can receive a steady stream of feedback throughout the semester about their learning without the anxiety of testing. The repetitive aspect of this system promotes proactive, long-lasting learning while discouraging short-term memorization of material. Additionally, the steady stream of feedback allows students to quickly recognize their weaker points while affording them the opportunity to improve upon them before becoming overwhelmed with poor test grades and new material that builds on those topics.

Mirroring changes in technology, there is much resistance to any changes in grading as there is perhaps no more firmly held ritual. There is a need for strong communication and narrative building as I try to get the students to realize they are the most important advocate for their education. I want to empower students to reach their highest potential and I do this by emphasizing learning and by making difficult subjects in math and statistics seem more comfortable by displaying material with relevant examples in digestible pieces that they can learn at their own pace through retesting. I've found that having faith in my students to do more is often richly rewarded and that, by the end of the semester, a lot of my students feel the same way. This isn't to say the benefit doesn't need to be more clearly stated or remain unchanged.

This semester I made several changes to the grading methodology to make both its implementation and execution clearer. In the syllabus, I thoroughly summarize the educational research that suggests transforming grades leads to better learning outcomes and I discuss the improved measurement of learning. I think both steps are important to the improvement in buy-in and understanding of the grading system. Students better understand that the ability to retest is an opportunity and incentive for them to revisit material which is particularly important in such a cumulative course and better measures their long-lasting learning. This leads many students to feel ready for the final exam without a massive re-learning experience that traditional grading rewards. This makes the alteration of the grading ritual more palatable to students as they are better able to understand its purpose and benefits.

While I have done much research getting my courses to be as accessible as they are challenging, I know that I can continually improve and learn to more fully consider the impacts of these transformative methodologies on diverse cultures within my courses. A theme in my student evaluations from the course in Spring 2017 had a theme of condescension or sternness in the classroom. While much of this reflected poor choices I made in the classroom – mismatched expectations and trying to teach it as a small class which spread me too thin, etc. – I thought much about how I come across to students in this course.

The communication about the high expectations coming from a place of respect for the experience they bring to class and that I've updated to the new standards of teaching out of respect for their ability. The added information and clarity of the grading system, tying it to learning in a meaningful way. I was very careful to be effective in communicating the reasons for and benefits of such a "desirably difficult" course. I learned that sometimes reasons sound like excuses or dismissive of concerns and the best way to avoid

that is to be extraordinarily purposeful and reasoned ahead of time and to commiserate with concerns when they come up.

The information from my first semester of teaching a large, 100-level course was invaluable. I learned a lot about the language of Colgate students and how necessary it is to make my intentions and reasons clearly communicated, particularly in a large class. The few tweaks and utmost dedication to effective and clear communication have made a big difference which I was happy to see reflected in classroom morale and student evaluations of teaching. I think that the curriculum changes made the class more challenging, but the constant communication has made a world of difference; communication is the key to balance the high expectations of quality in a rigorous class.

These are skills that I look forward to experiencing and practicing here at Colgate. It's a valuable experience to teach among some of the best in their disciplines. Our students, with experiences in their other classes, have the opportunity to experience and expect such excellence in their professors and being held to that standard has already made me a largely improved teacher. I look forward to continuing that growth.

In this vein, I altered the feedback system I had used in previous iterations of the course. Instead of a few surveys a semester, I decided to incessantly ask for feedback throughout the semester through weekly diagnostic assignments. The reason I survey students and rigorously review their comments about what could be changed models the behavior I expect from them. Having an accurate snapshot of what I am doing well and what I can work on, in terms of serving students, helps me become a better professor for current and future students. I take all feedback seriously and very often take constructive criticism as an invitation to make changes for the better. The increased frequency allows me to keep a finger on the pulse of the classroom and the agility to make changes as necessary by discussing the needs of students in real time.

Next semester, I have a few alterations I'd like to make to the course. I've spent some time consulting the educational literature for a far less complicated calculation of a percentage grade for their standards. I think this is important to the improvement in buy-in and understanding of how they're doing. Though I send an email after every exam period students often mention wanting to calculate their own grade. The method of decaying averages, which I plan to implement next semester should allow students the ability to calculate their own grade using a simplified conversion formula that closely ties this new style of grading to something they are used to. I hope that this continues to make this grading methodology, which demands students experience quality and long-lasting learning, more transparent and clear.

I also plan to make a couple changes to the weekly diagnostics. Instead of only assigning them for extra credit, I'm going to require them as part of the homework. By adding an exam-like question to the diagnostics and requiring them I hope students will see their value to be twofold – exam preparation and their agency in the course. I also don't want students who aren't engaged in the extra credit of the course to be silenced as some of these students need to communicate with me most. This change has been an invaluable learning tool for me as I acclimate to Colgate students, their interests, needs, and ability. I look forward to using this line of communication to continue to give students a voice in my classroom decisions.

Observation: Ken Valente

–Sessions–

- 11/06/17: The session was primarily dedicated to a discussion of confidence intervals. It frequently and effectively returned to past information and situations to motivate the day's presentation.
- 12/04/17: The session introduced the basic idea of hypothesis testing and put this into context relative to other aspects of the course.

–Strengths–

- Effective PowerPoint presentation / prompts

- Retaining a clear and robust sense of where students are with the material, past questions and comments they've raised. This is impressive evidence of a notable facility for engaging students.
- Making the content current by connecting it to 'live' events
- Refraining from filling silences. This, to me, is another skill that is a challenge for faculty to practice. It can be awkward, a perhaps somewhat unwieldy in a large lecture class (rather than a seminar-sized discussion) but I'm glad to see that your inclination is not to fill silences.
- Using humor
- Calling out a ringing telephone without becoming a disciplinarian: "That was embarrassing."

–Areas for improvement or concern–
- I'm sure that many students appreciated the introductory comments regarding time management. Just be aware, as I'm confident you are, that some students will find this demeaning. I think pitching this message in relation to studies and quantitative evidence should work well for MATH 105. Could / does such a study feature in the course materials?
- With large classes, students anticipating the end of the session can be disruptive. I thought you made an important comment at the very end of the session but fear many missed it due to the sudden rise in the ambient noise level. Can / should you set ground rules for this?
- The boardwork is just readable from the back of the space. Increasing your font just a bit might be advisable.
- Remember to repeat the main aspects of student questions so that those in the back can hear.
- The noise created by students anticipating the end of the session is an unfortunate consequence of the large lecture section.

–Suggestions–
- The lecture is, understandably, closely connected to the material to which students have prior access. It might be worthwhile for classroom observers to have access to the day's materials, at least in terms of better understanding the choices you make in the classroom presentation.
- A provocative question: The course is very carefully developed in terms of information delivery and access. This investment in 'flipping the classroom' is, however, undertaken in support of large-lecture section. In light of these (competing?) motivations, what do you see as the added value for students in attending the lectures? That is, what do see as the primary incentive(s) for students to attend the lectures? How would you succinctly answer this question?

–Response to classroom observations–
I really appreciate this feedback. I was glad to see the comments about not filling silence and that Ken noticed that I retain and revisit past questions and comments by students. In such a large lecture course there is a lot of hesitation to participate. What I've found is that allowing silence allows students the time to carefully consider the idea being posed or the question being asked. I think allowing the students to craft a cogent thought or question makes that effort more approachable. The excellent questions they come up with are easy to remember and often segue us into further topics – rewarding them with recognition when we get there closes that feedback loop in a manner that is pleasing to everyone rewarding good questions as much a correct answers. I'm very happy that my experience the previous semester allowed me the feedback to create such an environment in the classroom this semester.

To address the areas of improvement, as I did with Ken in our meeting, the time management comments were in response to a specific question asked on a weekly diagnostic that I send students. Every week I use a short questionnaire on Moodle to check in with the class and that week a student had commented the following.

> *"I feel like the homework, exam, and writing assignment all being due in the same week is a lot but also realize we have had a lot of time in advance to work on them all."*

I appreciate this note. Something I do to make the class more accessible to students with extracurricular activities, sports practice or events, and those that have jobs on or off campus. The comments were in response to this and Ken missed the transition as he had to rush over from his course just before. I set deadlines in a way that takes the variety of college experience into account, but the self-scheduling aspect of far due-dates is a challenging new experience on its own.

I wanted to take a minute to address this concern and explain that I choose longer due dates to create flexibility for students that need it. I explained and cited some educational research that reports that both scores and retention are higher when work is spread over time and not crammed into one night. Additionally, it takes no more time just more organization to complete the same amount of work in self-regulated work over time. I'm happy to see that many students positively commented on this learned skill in their student evaluations of teaching.

I think it is important to address this in detail because it was something that came up in my first annual review – to stay away from "life lessons." I've taken this advice into account by creating the weekly diagnostic so that I can, instead, respond to student inquiries than have any discussions about what I think students might be worried about or struggling with. I want to work with students to help them grow in all aspects of their college experience. After a year at Colgate and with guidance provided by student evaluations and experienced faculty I'm learning to do this in a way that is pleasant and growth-inspiring.

Teaching in the auditorium, in a class with 150 students does provide unique challenges. The issue with packing up is something that I address often, but always slowly creeps back. Instead of being stern I do remind students to be respectful of each other with respect to packing up early, using technology and other distracting behaviors. I think this is a theme I can start with earlier, perhaps when discussing the rules of engagement in the classroom; I definitely want mutual respect among students to be a mainstay of my classrooms.

The auditorium is also long which causes some challenges in hearing and seeing everything that goes on in the front of the room. I try to make it very clear that students are welcomed to let me know if they can't hear or see something. While I've increased my board writing in size it's hard to be efficient with space and so I try to write only as large as is necessary. I very often check in with the class as I teach so that there are moments that students can ask for clarification but being proactive is important.

Something I've gotten better about, but still need work on, is recalling a question for the rest of the room. A student in the class this semester is profoundly deaf but has learned to hear electronically thanks to technological advances. That makes this skill quite pertinent. Working with this student has been enlightening and has lead me to think in ways I hadn't previously – including the importance of recalling questions myself before answering. It was very helpful working with this student as we met frequently to discuss their needs and what I could do to better serve them. Clearly, there will always be more fine-tuning.

Between the two observations, I added Ken as a member of the Moodle course giving him access to all the course materials and communications with students. This allowed Ken to have access to the course materials for his next observation, leading to his proactive question.

I want the classroom to be a welcoming place for all students and so I'm open to everyone's preferences in learning. While there is research supporting that note worksheets – text with places students can write notes or work done in class – is a useful tool for retention, I try to discuss topics thoroughly so that students can write down everything if they choose while also allowing students that prefer to listen and discuss instead of writing the same freedom.

While all of the resources are available to the students no one piece gives them everything. The note worksheets have some blanks that need to be filled in and the slides in class don't cover all of the materials explored in the notes. Further, in class, we often cover current events or questions about the class in addition to examples in the notes. Students mention that it makes the topic of the course more relatable

and interesting. Students seeking to do well find that they need to attend the course as often as possible.

While the investment in “flipping the classroom" is made, it is not a flipped classroom. The many resources of the course are intended for students with a variety of math experience to have enough to get them to succeed with the rigorous goals of the course. Having multiple ways to consume and practice the information with the slides, note worksheets, the discussion board, homework problems and extra opportunities for practice I hope to create a course that is challenging but startlingly doable if students engage with the resources as necessary. For an introductory mathematics course, I find it to be very important for students who may be nervous about math or *think* they are not good at math. This thought is echoed in the grading methodology for the course where students that need more time to master the material are granted such time through retesting.

Succinctly, I aim to provide enough resources for *all* students to grow and learn regardless of their math experience. Though I provide materials in a way that is similar to a “flipped classroom" much care is taken to make lecture the place where it is all tied together.

MATH 316: Probability

The information from my first semester teaching Probability at Colgate were generally quite positive. There were a couple of students that made a compelling case for making the course more challenging and this came up in my annual review which made it a goal to work toward this semester teaching probability.

The difficulty with this task is that the comments did seem balanced – there were also students saying the course was too difficult as well. The divide, I think, was due to the experience of the student. I view Probability as a service course, as generally there are more Economics and Computer Science students than there are Mathematics students.

I think the difficulty of the course was desirable for non-majors but left something desired for majors who have already had number theory or combinatorics. I thought carefully about how to define the need for added difficulty and landed on a technique where I would provide more theoretical problems to satisfy the need for that among Mathematics majors and I would provide some simulation for students I thought might struggle with these added expectations.

The changes made this semester reflected this goal. First, I removed the textbook which some students mentioned wasn't helpful to study from or too theoretical. I also learned that students found a solution guide for many of the homework problems in the book. While the solutions don't require the level of detail I require for homework this certainly robbed some students of valuable practice. The flexibility offered by not having a textbook allowed me to alter the notes of the course to include some more advanced theoretical topics and the guided simulation for students to visualize the theory.

Without the textbook, however, I had to create new homework assignments. I used the previous homework assignments as a guideline for length and topics but replaced a problem on each with something a little more theoretical requiring visualization to help guide those with less experience in theoretical math. The idea was to guide students into a question that goes a step further with tools to make it more approachable. Simulation tools allow us to consider real-world problems where the theoretical work is difficult or impossible to solve – I hoped that this would make the added complexity approachable. I think providing access to the full set of notes, not just the worksheets for class, would be an additional improvement as removing the textbook left students who missed class without an important resource.

This yielded varied success. I think Mathematics majors were happier this semester and non-Mathematics were less happy. There were homework problems that were more challenging for students than I had thought and some that involved calculus topics that I thought were covered in the Calculus series here but not uniformly. A drawback of using newly created, more challenging problems is that I generally found issues, such as calculus background mismatches when consulting students during office hours or in

questions on Moodle in an incremental fashion. This caused some discomfort as the feedback to students felt in piece-mail, largely because it was.

A decision I made that worsened this effect was relaxing the requirements of communication through Moodle from last semester. This, as it came up in my classroom observation with Dan Shult, disconnected me from the thoughts of many students that elected not to participate in that feedback loop. Moodle previously served as a safe place for students ask questions, be curious about the course material and provide feedback about how the course was working for them individually. This was intended to foster students' creativity and curiosity, and prepare them to think critically but also a place for me to gauge how the homework was going and how they were engaging with the material of the class. This, unfortunately, has made some of their anxieties invisible to me and something that I will consider a new way forward within the next iteration of this classroom.

I want this course to be challenging but doable and I want to provide all the resources students need. While I think I create a nice rapport with students and try to be empathetic, patient as well as understanding some of the student comments make the need for more frequent and detailed communication more salient. The technique I've used in Introductory Statistics has a lot of benefits that might translate to Probability and I think that by including homework problems into these weekly assignments I can help guide students toward self-scheduling their work efficiently.

In hindsight, this semester of Probability is reminiscent of my first semester teaching Introductory Statistics – I shot a little too far with the increased difficulty of the course and I need to work toward creating a narrative of the benefits and communicating with students about their comfort level. I want to lead students to take steps just outside of their comfort level by getting them to ask questions and follow their own curiosities. I wanted the HW questions to further students' knowledge about Probability, to an applied context to reach students who are looking for that and challenge students to apply and derive theory.

I want to lead students toward thinking critically by showing them that answering questions isn't the only part of their education, that asking questions is equally as important. Many questions in Probability have several paths to the correct answer. It is important that students evaluate their work and ask questions because even though there is so much information available to us we cannot confuse that with meaning or process.

Probability, for some students, is the first mathematics course where they no longer need to memorize every fact but they need to demonstrate the process of critical thinking and interpret meaning. This is a narrative I can more effectively craft for later semesters. While the students will learn facts and formulas through the semester, I want to convey the wisdom they have, the understanding of why Probability is important and how it fits into the world. Instead of trying to impose upon them every theorem I've learned in my career, I want to lead students to think why and how they can continue learning by asking and answering questions.

Much care has to be taken while pushing students to the edge of their potential by building and following their own curiosity. I've spent much attention creating a space, a truly safe space, to be curious, ask questions and become independent critical thinkers. This is clear to those observing my classroom. In the past, I tried to extend this welcome online as well for quieter or more reticent students that don't feel comfortable speaking up in class, particularly about their needs.

I really feel the new iteration of weekly diagnostics, with questions pertinent to the coursework helps in this endeavor. I've found that creating a space where every student feels welcomed and encouraged to share their thoughts and questions brings a surprising amount of curious wondering about the topic. Letting students lead the way gives them control over the classroom and the realization of agency in their own education.

This semester I wanted to continue forward with rewarding curiosity, instead of just talking about how important it is. What gets graded in most mathematics courses is how they do on the exam, not their curiosity, wonder, how much further they took it, how well they considered the subject matter, or whether or not they know what needs to be done to solve a problem. By taking students feedback into account and removing the discussion Moodle requirement, I had to look for another way to highlight and reward their curiosity in action and in grades.

I tried to create a grading rubric that fosters this by rewarding students that can show they understand the material even if they can't get to the correct answer while truly requiring excellence for an A. While the reward is equal in the classroom, curiosity is praised just as much as the right answer, it generally isn't on an exam or assignment. The grading rubric I used this semester marks a student that didn't provide the correct answer but showed work in the correct direction and that they know what needs to be done to solve the problem as adequate, just below the level of expectation instead of failing.

Through this technique, I was able to develop a focused idea of what I want grades in this course to mean. By basing students' grades on achievement, I hope to help students experience the importance of quality and attain a higher degree of self-sufficiency by requiring such for an A. Using a rubric also helped me providing more consistent feedback, something that was mentioned in several student evaluations last semester. I think the rubric gives students something to aim for by focusing on specific aspects of the importance of quality solutions and allows for more clear feedback than just removing a point here or there.

In reflection of the comments in student evaluations, there was some tempered feedback about this methodology where students felt it disadvantaged them. Using numbers as designations might not be the best way to go about it – I think that some students thought that a designation of 3 was a 3 out of 4 or 75% and not the B-level grade it was. There are some changes that I will make the next time I teach this course. I think changing the numbers to letters might make a big difference. Additionally, more carefully discussing the rubric and its objectives at the beginning and reiterating that narrative throughout the semester to ensure that results on assignments are reviewed as intended.

I think that students here are capable of any work we can put in front of them. While I've had some success fostering a classroom where students feel comfortable asking and answering questions, I've discovered a need to communicate decisions, their reasoning, and their intentions while providing agency to students. I really appreciate this feedback and take it very seriously as I look forward to effectively communicating my goals for the class in a narrative that is clear to students.

Observation: Evelyn Hart

–These comments are from the first observation of Will Cipolli on October 19 and November 7, 2017.–

Lots of good things – see notes.

A few suggestions:

- Pausing for students who take detailed notes despite handout – what to do? Suggest copying notes? If many students are writing -wait until most are done (takes up class time – what to do?)
- Would writing smaller help with Dan's comment of erasing too soon? I did not have this problem, but I had trouble taking notes on the class and notes on teaching. (I couldn't keep up – but that is probably okay.) Hand writing was not as big in the follow up session and better organized than last time, but still big.
- Asks before erasing.
- Same people answer questions? My techniques might help.
- Students leaving and returning – share a copy of my course info sheet.
- Students packing up while you are summarizing – tell them it makes it hard for others to hear. Use "class dismissed?" No one packed up early the second the second time, but students got up during class to visit the restroom.

- Answered a question after class about leaving early from class by saying “sit near the door."
- Student on phone in obvious way for first half of class.
- Simulation spin is new to balance out bimodal grades
- Provides well document (short) code
- Writing a book – time for research?
- Do you expect students to read the details during/before/after class?
- Did verbal review – students are lively before class, not writing down summary.
- Good voice modulation.
- Asks questions and gets responses. Recaps well with detailed explanation of consequences.
- Explained answers to question more than required for students who asked, good for other students. Perhaps say office hours to some questions?
- Mistakes are okay, students pointed it out. Use colored chalk to fix mistakes.

– Response to classroom observations –
I really appreciate this feedback. I've been working hard to get the worksheets right for in-class filling in. I recommend and hope that students review it quickly before class and in detail once they're filled in. I think this has been effectively communicated and executed as students generally aren't hectically writing everything down and contributing to classroom discussion. The earlier comments about writing size are important – sometimes I got used to teaching in Love Auditorium and I wouldn't adjust back to our normal sized classrooms. The feedback about board usage from Evelyn and Dan were very helpful in organizing board work and I'm happy to see that the improvement was noticed.

While the worksheets do take additional time, I find that they are extraordinarily helpful in the classroom and with later preps. I'm hoping the initial investment of time will be worth it in terms of added effectiveness and saved time with later preps of the same class. Additionally, when I go on leave having the class fully documented in LaTeXwill be valuable for whoever steps in to teach the course.

The worksheets also help with the introduction of `R` code into the classroom. As we use and run code students can annotate things that I point out so they can more easily tweak these solutions for homework. While many of the simulations in class are successful in guiding the students to understand theory there needs to be some improvement on the homework where they are trying to make the connection. I think going forward I'll have to be more explicit about how the graphics or simulations are connected to the next part of the problem involving theory.

Our discussion after the first observation about students getting up in class or using their cell phone and distracting others led me to be more careful about what I allow and don't allow. The packing up problem occurs in both of my classrooms and I've taken more care to remind them about respecting the end time of class with increased frequency. I've found that explaining this in terms of respect for other students leads students to follow verbal cues from me more carefully – this includes asking students who need to leave early or frequently to sit close to the door to minimize distraction.

I absolutely love the feedback about using colored chalk; I can't believe I didn't think about that. This will be very helpful. I like to model what being wrong looks like as there are strict intervals of acceptable solutions in probability, this will help display that purposefully while also serving a purpose for accidental mistakes during lecture. This will be particularly helpful while recapping to students who might be catching up with writing down a derivation or example.

The cumulative nature of the course, involving heavy algebra and calculus, does lead to a lot of “review" questions. While I do take much time to answer some of these questions, I do offer to pick them up during office hours if the discussion starts feeling circular. This is something I can be quicker to do but I'm hesitant because I also think it's important to fix the confusion before moving on to the next step. Going forward, I'll try to pay attention to the rest of the class and perhaps more quickly shift questions to office hours when it seems to be a one-off question.

Observation: Dan Shult

–These comments are from the first observation of Will Cipolli on October 18, 2017.–

Class seems very comfortable with speaking.. good amount of back and forth... probably with mostly the same people, but it seemed to let others talk too.

Class not as comfortable in the sense of anxiety. This is Ok if it is used to motivate. But it can make negative comments show up on SET forms. It seemed to me that only 1 or 2 people were verbalizing this anxiety. Hard to know if others are feeling similar. You(Will) probably know. Advice: use that anxiety to motivate them to study, but remove anxiety due to unclear expectations or unanticipated material or problems.

This material requires lots of algebra/calculus. You are handling it by admitting it is there – making students confront it, and then skip some of the steps in class and tests and put the steps in the homework solutions. My guess is that very few people will read the details of the solutions, but that guess is not widely held in this dept. In your case, you refer to solutions and to class handouts many times during lecture, so they clearly know to use that material as they would a textbook.

I like how you are owning up to the algebra while still being able to cover the material in class. I'm going to guess that SET forms will mention the "vast amounts of" algebra needed to do the homeworks. And a little of that is seen as a good thing so long as students appreciate that the algebra is needed to get to the meaningful results (answers).

The students were able/willing to speculate on what answer would be. They are not threatened by the classroom setting. I like the way you took what they said, even when wrong, and brought that into the discussion. You did this on the question of "when to use which method" and again on "<= or >=". I think in neither case did it take long to steer the conversation back where you wanted it to go. And it didn't take much time to explain. Perhaps most importantly, the respect you showed for potentially wrong answers makes it easier for students to speak up and speculate in class.

You stated that the homework took you 6–8 hours to do. This is potentially dangerous information if they turn it around to say it is too much. It does help them understand that you are thinking about the length of time it takes. and it gives them a ballpark timeframe which they should be aiming for. Expectations are so important in teaching. And this can be effective for setting expectations.

Sometimes you talk about side–topics, or motivations for why we are talking about this example. Realize that if you just say it, some students won't recall that part. Also if you just write it, others won't recall it. It is best to say and write each thing you want them to recall long term. I tend to verbally say (without writing) things that embellish the material for more advanced students, but I wouldn't test them on. It's harder to write things without saying anything.

You clearly know their names, make them work hard, set high expectations. You even remember who asked about a topic in a previous lecture. Very personal. Your lecture steps are clear. You related it to previous work/discussion and it seems to all be fitting into a story that is the course. These are all good things.

I would say that this observation showed that your lecture style is effective, that you are challenging your students and you have a good rapport with students. Some of the students seemed anxious about learning material and expectations, but I think that is a one–day event due to the upcoming exam. It's important to reassure them at some point – help them know that you are aware of potential issues (and you did – with talk about people being sick and stuff) and that the exam will not penalize them for not doing such–and–such. I could see that you were laying the foundation for this. Keep it up and you will do well. Empathy and patience are important teaching characteristics and you seem to have both. Good job overall.

–These comments are from the second observation of Will Cipolli on November 1, 2017.–

Board usage is good. Student rapport is good. Clarity is good. I think you are speaking to the students at a level they can understand and relate to even if the material is sometimes difficult.

I think some students (in the back and in the front) are anxious about the length of the homeworks. If you see that on the SET forms then you can address it next time. If it doesn't show up then you are OK. One way to do that is to split up the long assignments into smaller chunks due more often. That means you have to know the timing of the class well. So it will improve over time – and that's what we are looking for.

I liked your use of terms "template" and "first principles". The "templates" referred to the approach to solving a particular type of problem, e.g. finding the pdf for a transformed random variable. Often the idea of templates is used in teaching, but not stated explicitly. I like that you make it explicit. Similarly, when you discuss different methods of solving the same problem you talk about first principles as one of the methods. You did that in the first observation an I heard a student in my office hours talk about your course and using first principles as one of 4 methods to solve something or other. The phrase reminds them that of the methods available to them, one is in some sense more fundamental than the others. That's good.

You had good coverage at end of a problem for students to ask questions. By describing the context of the problem and how it might differ from the others, students were able to ask questions and it really did seem like they all understood before you were moving on. I liked that you were throwing R code at them even if they couldn't write it. They can certainly run it. And they can read it and try to mimic it or change it if they need to. It is not a programming course and that's OK. They don't need programming to use the code. Familiarity is helpful for when they do have to use code.

Your discussion of using Technology and the Web was really good also! They need to use it, but they also need to use it wisely. Use it to check their results and to make sure their results make sense. Don't use it to provide a result that they don't understand or blindly trust. Overall, this was a very good observation. I'm able to see the parrot with students, the clarity of lecture and board work and integration of course notes, lectures, homeworks, and exams. You are well on your way. There are some aspects that students may complain about (anxiety perhaps causing some of those) and that will improve over the years. Look for consistent comments on the SET forms – more than one person mentioning the same thing. Try to deal with those either by discussing why you do it in class, or by changing something. It is often easier to counter a complaint by managing the information they get than to change the way the course runs. Both are effective tools for managing SET form responses.

Good job!

–Response to classroom observations–
I really appreciate this feedback. One thing I've discovered over my time teaching at Colgate is that you can ask the students to complete just about any work and they will do so happily and successfully as long as it is effectively communicated and the narrative is clear. While I think I've had some successful in creating a mathematics classroom that is very comfortable to speak in. I know the students are thinking a lot and probably have some spectacular curiosities and comments about the material – I want to create a classroom environment where everyone feels comfortable and encouraged to share these thoughts.

I am aware, but perhaps not as aware as I should be, of some of the students' anxieties. There are six assignments which should take 10-15 hours each over the semester. I've become aware of some students' realizing that waiting until the last day is not a strategy that works with that set up. I've had conversations with certain students, I do think that this is something I need to dig further into. While there shouldn't be any unexpected material or unclear expectations, but I do recognize that a student might feel this way despite my initial efforts.

One of the changes I made this past semester was removing the requirement of communication on

Moodle. This previously served as a safe place to ask questions and be curious about the course material. This was intended to foster students' creativity and curiosity, and prepare them to think critically but also a place for me to gauge how the homework was going and how they were engaging with the material of the class. This, unfortunately, has made some of their anxieties invisible to me and is something that I will consider a new way forward with in the next iteration of this course.

This course is challenging because it pulls from almost every mathematics course students have taken algebra through calculus while introducing them to derivation-style proof techniques. The variety of skills and topics make the class very interesting and applicable but it also creates the need for recollection and practice of the pre-requisites of the course. While I can't reteach them calculus, I want to be there to admit that it's tough. I also want to be there to help when students get stuck – this is where the communication is so important.

I want this course to be challenging but doable and I want to provide all the resources students need – referring to the techniques we use in class by name has helped before so I try to do it as often as I can. The problem sets are long, but don't take any more time than weekly assignments would. I do try to stress this in my comments about the homework when the due date is approaching in the upcoming week. I do this to make the course accessible for students who might not have a traditional schedule and to give students the opportunity to have flexibility in their other courses, but this is something I have to think about going forward in terms of anxiety for those that have trouble self-scheduling.

While I think I create a nice rapport with students in class and try to be empathetic, patient as well as understanding, your outside view and what you hear in office hours makes the need for communication more salient. It's a bit late in the course to require any such communication or feedback but I will have to make more efforts to coax this type of information out and communicate more clearly that I am here to help and I want them to ask me for what they need. I can consider a new way forward for future semesters. The technique I've used in Introductory Statistics has a lot of benefits that might translate to Probability.

I'll keep an eye on the SET forms but this feedback has my wheels turning for the next time I teach this course already.

Events

Fall 2016

Start Date	End Date	Event
05/10/2016	05/11/2016	White Eagle Conference
09/06/2016	09/06/2016	Student Summer Research Series
09/11/2016	05/04/2016	Data Science Club Advisor
09/13/2016	09/13/2016	QPR Training
09/23/2016	09/23/2016	Grants for Science and Social Science Research Colloquium
09/28/2016	09/28/2016	Teaching with Technology Brown Bag
09/29/2016	09/29/2016	Math Department Student Research Seminar
10/04/2016	10/04/2016	LGBTQIA Safe Zone Training
10/14/2016	10/14/2016	Textbook Review for Wiley Publisher
10/20/2016	10/20/2016	Shaping the Classroom to Include All Identities
10/20/2016	10/23/2016	KnockTober Data Science Hackathon – 78th place
10/24/2016	10/24/2016	HMMI Inclusive Excellence – FGen students in STEM at Colgate
11/04/2016	11/04/2016	Meeting and Dinner with NASC Speaker David Mimno
12/03/2016	12/03/2016	Putnam Exam Proctoring

Spring 2017

Start Date	End Date	Event
01/23/2017	01/23/2017	Black Love, Black Art, Black Joy: Southern Womanism Sings a New Song of the South
01/25/2017	01/25/2017	HMMI Inclusive Excellence – FGen students in STEM at Colgate follow up
02/24/2017	02/24/2017	Teaching Table: Obtaining and Using Mid-Semester Course Feedback
03/02/2017	03/02/2017	Speakeasy – Has Siri Taken Over? The Roles of Artificial Intelligence Versus Humans in our Shared Future
03/21/2017	03/21/2017	Teaching Table: Bringing Queer into the Classroom: LGBTQIA – Inclusive Teaching and Advising
03/23/2017	03/23/2017	Teaching Table: Handling Student Crises
04/08/2017	04/08/2017	Hudson Valley Math Conference 2017 Planning/Attendance
04/06/2017	04/09/2017	ASA DataFest17 at Vassar
04/10/2017	04/10/2017	April Visit Days Luncheon and Faculty Reception
05/04/2017	05/18/2017	Division of Natural Sciences & Mathematics Retreat Planning Committe
05/16/2017	05/17/2017	White Eagle Conference
05/22/2017	05/24/2017	Division of Natural Sciences & Mathematics Retreat
06/02/2017	06/02/2017	Bridges: Building a Supportive Community Online Training
06/07/2017	06/07/2017	Cross-Cultural Communication Training

Fall 2017

Start Date	End Date	Event
08/22/2017	08/22/2017	New Faculty Orientation
09/05/2017	09/05/2017	Student Summer Research Series
09/21/2017	09/05/2017	Faculty Gathering at the Colgate Inn (CLTR)
11/03/2017	11/03/2017	Teaching Table: I Love Teaching, I Hate Grades: Rethinking the Ways We Motivate Students
11/08/2017	11/08/2020	Appointed (3yr) to Faculty Development Council
11/10/2017	11/10/2020	Meeting with Chemistry Candidates
12/05/2017	12/05/2017	Meeting with Chemistry Candidates
01/11/2018	01/11/2018	Project NExT Panel discussion – Incorporating Coding Into All Levels of the College Math Curriculum at JMM
01/12/2018	01/12/2018	Judge for the MAA Undergraduate Student Poster Session

Student Outcomes

Last updated: February 6, 2018.

This section provides a complete summary of student outcomes from Fall 2016 to the date last updated above.

Course	**Semester**	A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F	W	S
MATH 316	Fall 2016	2	3	3	7	5	2	0	1	0	0	0	0	0	1	1
MATH 316	Fall 2016	0	0	5	1	5	3	0	1	0	0	0	0	0	1	0
MATH 105	Spring 2017	5	17	16	32	39	18	8	3	2	2	1	0	2	0	0
MATH 105Z	Spring 2017	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
MATH 317	Spring 2017	0	8	6	1	4	2	0	0	0	0	0	0	2	1	0
MATH 317Z	Spring 2017	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
MATH 105	Fall 2017	1	7	22	46	36	11	7	4	4	4	4	3	3	0	0
MATH 316	Fall 2017	0	3	3	6	9	8	1	1	0	0	0	0	1	2	0
MATH 399Z	Fall 2017	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0
–	–	2.0%	9.9%	13.9%	23.3%	24.9%	10.9%	4.0%	2.5%	1.5%	1.5%	1.2%	1.0%	2.0%	1.5%	0.2%

Student Feedback

Last updated: February 6, 2018.

This section provides a complete summary of student evaluations from Fall 2016 to the date last updated above.

As an Assistant Professor at **Colgate University**, I have taught 3 different courses:

- MATH 105: Introductory Statistics
  - *Target audience:* Mostly freshmen and sophomore non-major students from across the university.
- MATH 316: Probability
  - *Target audience:* Upper level undergraduate students mostly Math, Math-Econ, Math-Computer Science majors
- MATH 317: Mathematical Statistics
  - *Target audience:* Upper level undergraduate students mostly Math, Math-Econ, Math-Computer Science majors who have taken MATH 316

It is required that each student completes a course evaluation towards the end of the semester. Likert analysis provides five meaningful dimensions of teaching I find particularly important – "Course Difficulty/Workload," "Effectiveness at Conveying Course Material," "Grading/Evaluation," "Student Self-Rated Learning" and "Teacher-Student Interaction and Rapport." A standard 5-point scale is used as a measurement system (5 = best) and these ratings are provided in the table below.

Course	**Semester**	"**Difficulty**"	"**Effectiveness**"	"**Grading**"	"**Learning**"	"**Rapport**"
MATH 316A	Fall 2017	4.50/5	3.86/5	3.61/5	3.66/5	4.23/5
MATH 105A	Fall 2017	4.29/5	4.38/5	4.16/5	3.95/5	4.59/5
MATH 105A	Spring 2017	4.21/5	3.66/5	3.43/5	3.44/5	3.79/5
MATH 317A	Spring 2017	4.03/5	3.59/5	4.12/5	3.65/5	4.10/5
MATH 316A	Fall 2016	4.15/5	4.32/5	4.17/5	4.24/5	4.61/5
MATH 316B	Fall 2016	4.30/5	4.24/5	4.67/5	4.29/5	4.70/5

Below I provide written student comments taken from the evaluation forms at Colgate University for the questions

- **(Reason)** "Why did you take this course?"
- **(Effort)** "Describe the effort that you put into this course;" "How did this course contribute to your understanding and appreciation of the course subject?"
- **(Understanding & Appreciation)** "In what ways did the course contribute to your intellectual growth or education, beyond your understanding and appreciation of the course subject?"
- **(Intellectual Growth)** "In what ways did the course contribute to your intellectual growth or education, beyond your understanding and appreciation of the course subject?"
- **(Quality)** "Please describe in precise terms your opinion of the quality of teaching in this course, giving special attention to what you consider important strengths and/or weaknesses."

MATH 105: Introductory Statistics

Fall 2017: Section A

- Student 1
  - **Reason:** pre-med
  - **Effort:** I put substantial effort into this class. But it was designed so that everyone could succeed in terms of the homework as Cipolli have ampul time to complete it and was flexible on deadline.

- **Understanding & Appreciation:** Made me see that it was harder than initially thought to be.
- **Intellectual Growth:** N/A
- **Quality:** I think Cipolli is a great guy and the lectures were fine, some were very interesting and others were quite dry, but that's the nature of a lecture class. What frustrated me the most was the standard grading method. As someone who studies A LOT for each and every test I found them unfair and didn't show my full knowledge. I don't in some standards from a 4 to a 2 which will really hurt my mark. Exam 3 was not comparable to the previous exams in terms of difficulty and I walked out feeling horrible. And i'm someone that had an above 95% homework average. Like I understood the material and felt like the questions were not representative. Other than the grading method I think the class is run well.

○ Student 2
- **Reason:** Interest in the course material
- **Reason:** seemed interesting
- **Effort:** Lots of effort. Tough homeworks. Lots of looking over class notes to try to better understand material. Studying up to a week in advance for a test
- **Understanding & Appreciation:** It helped me know why statistics are important and how they are applicable to other areas of study.
- **Intellectual Growth:** It helped me see things from a more analytical point of view and gave me enough insight to challenge faulty statistics when i see them.
- **Quality:** Will Cipolli was a good professor. Clearly cared a lot. Talked a lot about how much effort he put into teaching. I believe him.

○ Student 3
- **Reason:** Core or Areas of Inquiry (distribution) requirement
- **Effort:** I feel like I should've put more effort into this course, such as more time studying outside of class.
- **Understanding & Appreciation:** Learning the basics of statistics has helped me understand more thoroughly the world around us.
- **Intellectual Growth:** believe it teaches critical thinking skills that are necessary in today's political climate.
- **Quality:** I believe Professor Cipolli is an awesome teacher – he takes a lot of time to teach subject matter and truly cares about his students. However, the standards based grading system does not work well for me personally

○ Student 4
- **Reason:** Major or minor requirement
- **Reason:** Core or Areas of Inquiry (distribution) requirement.
- **Effort:** I put a significant amount of effort into this course. Between the lengthy homework assignments and frequent tests, I would say this class required the most effort our of all of my other classes this semester, some of which were at a higher level than this class. This class required extra amounts of effort because of the lesser quality of the classroom experience and the lecture. Likewise, all of the tests and assignments in this course are cumulative, necessitating a greater output of effort and studying.
- **Understanding & Appreciation:** This course did not at all contribute to my appreciation of Statistics. It did contribute to my understanding, but marginally so, as I have only had a rudimentary knowledge of statistics from High School mathematics courses. I may have been taught new concepts and formulas, but I do not think I have gained an "understanding" to a significant degree. Many of the concepts of Statistics learned in this class remain confused and complex for me. If anything, this class has pushed me away from engaging in any math or science classes at Colgate, and has reduced my confidence and interest in math as a whole.
- **Intellectual Growth:** This course made me rely on myself and my peers more to engage in and

teach ourselves the material. I would not say this course made a significant contribution on my intellectual growth or education in any manner.
  - **Quality:** This course was taught in a very poor and disappointing fashion. I feel like this course was not described accurately in its course description. I was not aware of how the use of the computer program Cran R would be so significant to the class and important to grasping the concepts and succeeding in the course. I feel as though the use of this computer program made me more confused in the class, less confident, and learning how to use this rather complex program distracted me and many others from focusing on and learning the actual relevant subject matter. Similarly, I feel the class lectures were not intuitive and engaging, especially when taking in consideration the size of the class. Similarly, the rather obscure grading procedures instituted by the instructor made it very difficult to know how well we were doing and to know our actual grades. I will say the professor did put in genuine effort to ensuring our success, but it was not enough, and I am disappointed with this class.
- Student 5
  - **Reason:** Major or minor requirement
  - **Reason:** Interest in the course material
  - **Effort:** I have put a lot of effort into this course. Whenever we had homework assignments, I always made sure to finish the extra problems and ask questions about them if I didn't understand the material. Overall, this was great preparation for exams.
  - **Understanding & Appreciation:** Professor Cipolli was really invested in all of his students doing well. Because he had such great expectations, and was always available if you needed help, it made me appreciate the class. Because I appreciated the class, I was devoted to learning the material to the best of my ability.
  - **Intellectual Growth:** I think one of the major factors that contributed to my intellectual growth was time management. Even though I may have learned this the hard way, due to last minute scrambling to finish homework assignments, I think, overall, I've become better at managing my time in this class.
  - **Quality:** I thought the quality of teaching was great. Unlike any professor I have had, Professor Cipolli was always available. I loved the Moodle board we had. We could ask any questions we wanted, and he would get back to us almost immediately.
- Student 6
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I completed the homework and studied for tests according to the standards that were being taught plus past standards. I worked with classmates when not understanding problems fully.
  - **Understanding & Appreciation:** I learned a lot more than I thought I would in the sense that I thought it would be a basic learn the formula but Professor Cipolli taught more through examples that made me more aware of the application of this course. Even though I will not be continuing in any math courses I am happy that I took this one.
  - **Intellectual Growth:** It made me more aware of how to apply this in daily life and how to read things for what they really mean.
  - **Quality:** I really like the teaching style of Professor Cipolli. I had friends that took this course last semester with him and at first I was a little nervous that I was going to be in over my head but I am glad that I did take this course. I like that he removed quizzes and was open to feedback from the class. He is passionate about this area of study and it shows up in each of his classes. It was really nice to have a professor that would email us randomly with new information on studies and be excited about how to apply the material to not just STATS 105 but life. Thank you!
- Student 7
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** study groups

- **Understanding & Appreciation:** made me dislike the subject more
- **Intellectual Growth:** made me a more independent learning
- **Quality:** love his personality, very genuine guy. The material is rather hard. Personally I hate cran R just because it was so hard to access, However the calculations would be almost impossible if students were expected to do them by hand. Lectures are not that helpful as he can get off track with his teaching.

- Student 8
  - **Reason:** Interest in the course material
  - **Effort:** I put significant effort into this course, making sure to complete all assignments to the best of my ability and on time.
  - **Understanding & Appreciation:** I gathered an appreciitiation for how the course material affects our lives daily.
  - **Intellectual Growth:** It made me more engaged with current events and daily news, making me a more analytical thinker and causing me to view things in a different light than before.
  - **Quality:** The teaching quality was very high, for a lecture hall it was very interactive and interesting.
- Student 9
  - **Reason:** Major or minor requirement
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I put in a lot of effort in this course to succeed and get good grades to pass the class.
  - **Intellectual Growth:** This helped me to learn more about basic statistics that actually apply in my other classes such as economics. This course made material in other classes easier to understand.
  - **Understanding & Appreciation:** This class taught me more about how to apply what I learned in class to the real world and why it is relevant material to know in today's world.
  - **Quality:** Quality: I thought the professor did a good job at teaching the material, at times it seemed a little too advanced for a basic statistics class, but overall I enjoyed the class and was able to understand the majority of the material covered in class. He did a very good job at applying everything we did to real life situations and backing up everything we did with actual research studies to demonstrate the relevance of the material we learned.
- Student 10
  - **Reason:** Elective outside major or minor
  - **Reason:** Reputation of the instructor
  - **Effort:** I put a lot of effort into the homework assignments and tests for this course. I studied well for each exam.
  - **Understanding & Appreciation:** This course made me appreciate the difficulty of statistics, yet how it applies to the real word and how much we see it in our daily lives without recognition.
  - **Intellectual Growth:** This course exposed me to a whole new category of mathematics, and made me look at statistic in a whole new way.
  - **Quality:** I think Professor Cipolli is a motivating and very understanding teacher. He takes class input and convenience into consideration, even with such a large class. Although statistics can sometimes be very dry, he used relevant examples in our world right now in order to keep us tuned in. Also, he keeps his energy high which in turn keeps ours high as well. There were many resources for extra help which I greatly appreciated.
- Student 11
  - **Reason:** Other requirement
  - **Effort:** Considerable studying and practice
  - **Understanding & Appreciation:** Alot
  - **Intellectual Growth:** Growth: Important stuff to know, may want to learn quant compsci
  - **Quality:** He cares a lot. Could be better at teaching but not at the effort he puts in.
- Student 12

- **Reason:** Interest in the course material
- **Effort:** This class is very challenging. Many hours of studying and doing homework are needed to do well in the class. Therefore I put in a lot of effort in this class in order to understand the material.
- **Understanding & Appreciation:** this course helped me better understand and appreciate statistics and why it is important to learn about it.
- **Intellectual Growth:** The course has helped me increase my learning capabilities and really challenged me as a student. It has helped me stay organized and focused on school.
- **Quality:** The Professor has a tough job trying to teach a class of 150 students but he does a great job. Many of the students are unmotivated and its tough teaching a class that doesn't want to be taught. But he does a great job staying motivated to teach and is very clear when he introduces new topics. I think he did an excellent job teaching this semester I hope I have another class with him and recommend other students to have a class with him.

◦ Student 13
- **Reason:** Major or minor requirement
- **Reason:** Core or Areas of Inquiry(distribution) requirement
- **Reason:** Interest in the course material
- **Effort:** I usually study a week in advance for exams, and attend tutoring sessions if i do not understand something. I spend a lot of time on this subject.
- **Understanding & Appreciation:** This course taught me statistics much more in depth then AP statistics did in highschool.
- **Intellectual Growth:** A lot of questions in this course have to do with critical thinking, so this course helped a lot with that.
- **Quality:** Quality: I think the course is overall solid and fair, however i think that the grading system should be changed from the 1-4 on each standards. I also think that retest I'm certain standards should be offered to students who want it, not forced on every student. Because the grading is 1-4, and a small mistake will result in you getting a 3, if you get all 4s in a test the first time, the second time where the grade is weighted more heavily, even if you know the material, it is easy to make a small mistake and get a 3 and end up with the lower grade. Retesting is definitely a good idea because it encourages students to retain the information, however mixing it with the grading system of 1-4 i feel penalizes people who study really hard to get all 4s on the first test.

◦ Student 14
- **Reason:** Other requirement
- **Reason:** Pre-med
- **Effort:** I put a decent amount of effort into the course. Especially outside of lectures... to be honest I found statistics to be easier to learn outside of class since it's so practice based.
- **Understanding & Appreciation:** I have a greater appreciation for probability games like roulette and cards, etc. I can see how statistics can be a valuable tool in all types of career paths. I'm glad I am better versed in these types of concepts because I can see how they are applicable to the real world.
- **Intellectual Growth:** Growth: It helped me think more logically and more holistically. There is something to be learned from the "big picture" mentality of studying populations. More than anything, statistics has helped refine my inductive reasoning.
- **Quality:** Quality: I think Professor Cipolli did a great job with the size of his class. I especially liked all the resources he made available to students on the moodle page. It was incredibly easy to communicate with him and he effectively fostered an environment where questions were encouraged. With that being said, I'm not quite bought into his grading technique using standards. It doesn't sit well with me that scoring a lower score on the most recent standard is more heavily graded than the next. By nature of the question type appearing twice throughout the semester, the more prepared student will keep up with the material cumulatively. I don't think its necessary to make the later one

count more for that reason. There are so many reasons someone might do worse later in the semester/the next time he or she sees the question and its not directly indicative that they weren't keeping up with it.

- Student 15
  - **Reason:** Major or minor requirement
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Reason:** Interest in the course material.
  - **Effort:** Of all my classes my first semester of my freshman year, this class has been the easiest for me. Therefore I have put less effort into it than my other classes this semester. I only put a lot of effort into studying.
  - **Understanding & Appreciation:** I knew statistics was an important subject to know about, and I was interested in the subject material. This class has taught me the basics of what I need to know for statistics, and will help me later on if I ever take a more advanced statistics course. I have grown to appreciate the subject.
  - **Intellectual Growth:** This course helped me grow intellectually based on how it was designed. Although at times it was annoying and painful, having cumulative tests helped me retain the information a lot better, and I enjoyed the standard method of grading to a degree.
  - **Quality:** Quality: Professor Cipolli did a fantastic job teaching this course. The only qualm I have is about the grading system, specifically the two try method. It would be so much better and a lot less stressful if the better of the two tries was recorded as the final score, instead of the second try being weighted so heavily. On multiple occasions I was negatively impacted by this grading system, as I would get 4s on standards the first time and then 2s the second time. This was not because of me forgetting the material, but rather the question being a different style and tripping me up. Overall I very much enjoyed the class and appreciated Professor Cipolli's teaching style.
- Student 16
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I put a fair amount of effort into this course. It wasn't the type of class where I have to study every night, but the course becomes most rigorous when we are getting closer to homework due dates or exams.
  - **Understanding & Appreciation:** Though I had taken a statistics class in high school, this class forced me to look at statistics from a new angle and contributed to everything I know about statistics today.
  - **Intellectual Growth:** Beyond the math of this class, this class has contributed to my overall ability, as a consumer of news, to dig deeper when a news outlet tells us about a statistical study. I know think critically about the polling techniques used in media today.
  - **Quality:** Quality: Professor Cipolli was a good lecturer day by day. However, when he tried to explain things further or answer a question, sometimes he used the same terms he had been using to describe the subject initially, and didn't fully help us understand the topic. His standard-based grading system was confusing and I wished he had taken our interest in understanding the system more seriously. Although, the system did promote a deeper understanding of topics becuse it gave us two attempts at a particular standard. I also found his slides very easy to understand and were instrumental in studying. I found his lectured easy to understand and straightforward for those of us who weren't very interested in math.
- Student 17
  - **Reason:** Major or minor requirement
  - **Reason:** Interest in the course material
  - **Effort:** I spent approximately 2.5 hours on each of the homework assignments for the course. I spent approximately 7 hours studying for each exam.
  - **Understanding & Appreciation:** This course deepened the knowledge of statistics I had acquired

in high school.
  - **Intellectual Growth:** The writing assignment helped me think about statistics not from a purely mathematical standpoint. This assignment also detailed for me the structure of a scientific paper.
  - **Quality:** I think the quality of teaching in this course is high. Professor answers any and all questions from students and tries to fully explain the course material.
- Student 18
  - **Reason:** Exploration of possible major or minor
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Reason:** He is very accessible in that if we ask a question on the Moodle page he answers the question almost within the hour.
  - **Effort:** I did almost all the diagnostics at the end of each week and started the homework about 4-7 days before the due date.
  - **Understanding & Appreciation:** Appreciation: I never took stats before taking this class and Cipolli made the course subjects very clear and understandable for me as well as everyone else in the same boat as I was.
  - **Intellectual Growth:** For this intro stats class, Cipolli had us use R code, which I personally probably would never have used in my life. However, using R allowed me to see a little bit of the basis of computer science major and department, which I thought was rather interesting. It also showed me the use of coding.
  - **Quality:** I believe that Cipolli wants the best for his students and pushes us to do what we are capable of doing. I felt that one of the weaknesses was that homework would sometimes be long and redundant, and often times the questions involving R-coding would be rather hard. Other than that, his grading style is rather clear and understandable, which I think is a strength.
- Student 19
  - **Reason:** Exploration of possible major or minor
  - **Reason:** Interest in the course material
  - **Effort:** Effort: I normally reviewed my notes after every class and completed the homework problems a handful of days before the due date. Towards the end of the semester, I could have done this much more efficiently, but I tried to continue this work ethic throughout.
  - **Understanding & Appreciation:** This course expanded my conceptual and theoretical thinking of mathematics as a whole and caused me to appreciate the way studies are done by using statistics.
  - **Intellectual Growth:** This course fostered some intellectual growth beyond the world of statistics by teaching me ways to think about any type of problem and coming up with a solution. By considering every aspect of a problem, the solution does not have to be conventional yet requires you to sometimes think outside the box.
  - **Quality:** The quality of teaching in this course represented the ideal for all Colgate professors in how this professor was a constant resource for the students, used technology for the class as a whole to communicate and receive feedback, and allowed every student the opportunity to reach their full potential whether in class or on homework problems.
- Student 20
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I have put so much effort into this class. I will literally study FOREVER before tests and I spend so long doing the homework (also given I work kind of slow).
  - **Understanding & Appreciation:** I really have learned a lot and have a larger appreciation for this subject material. Professor Cipolli presents the material in a really interesting that gives you an appreciation for the course material.
  - **Intellectual Growth:** Professor Cipolli does a really good job of showing you how the things that you learn applies to things in the real world. This course has helped me to appreciate how this material can be interpreted and used and specially how to understand statistics when confronted with

them (especially in the media).
  - **Quality:** Quality: I think professor Cipolli is a great professor!! I think he's very fair and very patient (even with a class that has 1/7 of all of colgate students). He present information in a very interesting and helpful way. He makes a point to learn student names even with such a large class size and he makes himself available to students, making time for the huge number of students he has. His way of grading is a little confusing, but it seems fair. He speaks loudly and very clearly. The course material is very hard but I think he does a good job of presenting it. Professor Cipolli is a great professor.
- Student 21
  - **Reason:** Elective outside major or minor
  - **Reason:** I thought that a good basic knowledge of statistics would be useful going forward for all the fields I am considering.
  - **Effort:** I put some effort into this class, I did all the practice problems for tests, and completed all homework and extra credit but this course did not require the hours of extra work that some of my other courses did which I really appreciate!
  - **Understanding & Appreciation:** It helped me understand what commonly referenced statistics actually mean which was interesting. Overall the examples were the most interesting part of the class.
  - **Intellectual Growth:** I think the probability chapter will help me in assignments for my major (computer science) courses.
  - **Quality:** He was a really good professor, super attentive to student needs etc. I think the class could have benefited from more practice problems done in class but I can understand how that it is difficult with so many students. Also he seems stressed a lot which is understandable
- Student 22
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** This course required a good amount of effort in preparing for exams and finishing homework.
  - **Understanding & Appreciation:** This course has made me rethink the statistics that are portrayed and often skewed by the media. I think this is especially important in today's culture and has allowed me to be better informed on contemporary issues.
  - **Intellectual Growth:** This course required me to adjust my learning capabilities for the first time in a larger class setting. I have never been a class this large and think that because of the size of the class, I had to take more of my learning into my own hands.
  - **Quality:** Professor Cipolli's attention to student feedback and genuine concern with the classes grasp for the material was something remarkable. I have no idea how he dealt with all of our classes input and still managed the course in a more timely manner than any of my other professors. Although there were areas of class where I would get distracted or lost in the slides (this is merely because of the class size), I think that Prof. Cipolli's concern with our classes understanding and intellectual growth will be hard to match from any other professor I take at Colgate.
- Student 23
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I did all of the homework assignments on time and I made sure to engage myself in class and to prepare well for tests, etc.
  - **Understanding & Appreciation:** I was able to understand the course material very well through engaging myself with the topics covered and by delving into the subjects we discussed.
  - **Intellectual Growth:** This course benefited me by testing my ability to organize myself and to think critically and analytically about the different topics.
  - **Quality:** I liked the amount of organization and thought put into designing this course , and I thought the notes provided and the slides were crucial to my understanding the different topics covered.
- Student 24
  - **Reason:** Core or Areas of Inquiry (distribution) requirement

- **Reason:** Reputation of the instructor
- **Reason:** Interest in the course material
- **Effort:** I have put forth a good effort in this class trying hard on the homeworks, exams, and writing assignment.
- **Understanding & Appreciation:** I really like how this course applies to the real world
- **Intellectual Growth:** I understand more about how the real world polls and statistical news stories work.
- **Quality:** I think the quality of teaching was excellent. It is hard to teach a math course in lecture format, and it was done very well with tutoring and extra hours as ways to clarify something if it was unclear.

- Student 25
  - **Reason:** Major or minor requirement
  - **Reason:** Elective within major or minor
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Reason:** I think it is great that we retest teach standard twice. But, I think each try should be worth 50% of each overall standard grade. Not the 15% the first time and 85% the second time.
  - **Effort:** I went to almost all the nightly tutoring sessions on Tuesdays and Thursdays. Went to all office hours when I had questions or wanted to do practice problems. Never missed a class, and sit in front row.
  - **Understanding & Appreciation:** My understanding has definitely improved substantially I think because we get tested twice on each
  - **Intellectual Growth:** I want to go into government policy for a career field. I think that by understanding now how to get a thorough interpretation of what a poll is really saying about a candidate applies to my interests.
  - **Quality:** Quality: I think the quality of teaching is very good. The things I like is there are two sessions a week to attend to with questions for a TA, we have class notes to access for reference and following the class, and we get two chances on each standard. The weak part I see is Professor's availability. He only has office hours, but rather than that, it is unlikely to set up a chance to meet.
- Student 26
  - **Reason:** Other requirement
  - **Reason:** Interest in the course material
  - **Effort:** A lot. Did the extra homework to prepare for the tests, rewrote my notes from previous classes to make them into a useable study guide.
  - **Understanding & Appreciation:** Gave me a bit of an introduction to R, so that's nice since I've ended up using it for other things outside of class. Other than that I think that it gave me a good foundation for statistics and a better understanding of what makes a statistic.
  - **Intellectual Growth:** It's given me reasons beyond general cynicism to be skeptical of numbers and a few ways to think about their significance.
  - **Quality:** It was pretty high I think. The instructor did a very good job at explaining things and was very open to questions from students to clarify or to explain concepts again in a different way.
- Student 27
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Reason:** I am a senior and needed a natural science/ math course to fulfill a graduation requirement
  - **Reason:** All of the natural science courses were filled and taking a math course was the only option I had.
  - **Effort:** I have dedicated many hours to this course to complete homework, diagnostics, tutoring, and exams outside of class. I log in to the class moodle page daily news review notes and our class discussion board.
  - **Understanding & Appreciation:** I hadn't taken a math course since I was in high school. I

definetly appreciate feeling like I am able to understand vocabulary and be equipped to understand how statistics are used to describe data. I am interested in many of the applications of statistics outside of this course. I am interested in researching processs and outcomes of education and this course will help me with future social science research. I am also interested in journalism and current events, and this course helped me learn how interpret statistics that are presented in the news.
  - **Intellectual Growth:** I realized that I am more capable than I allow myself to think I am and that I am able to be my best when I reach out for help.
  - **Quality:** Professor Cipolli is a great educator. He cares deeply about the students, and he wants us to understand the material and to succeed in the class. He is an effective communicator and describes concepts clearly and concisely. He has taken time to write chapter notes for us so we didn't have to purchase the text book or search for what was important. He is clear about expectations, and works with us to set deadlines that are reasonable. I appreciated the weekly student diagnostics that allowed us to give feedback, ask questions and make any comments that we would like. I wish more professors would offer that as an option. I also appreciated his pedagogical note in the syllabus that described why he used the grading system that he does. I was challenged in this course and I learned more about statistics than I feel that I could have with other systems of grading.
- Student 28
  - **Reason:** Major or minor requirement
  - **Reason:** Economics major
  - **Effort:** This course is pretty rigorous. You have to put a good deal of effort into the homework and tests, but it is very possible to do well in the class if you put the time in.
  - **Understanding & Appreciation:** I think this course gave me more appreciation for this subject and its importance in the media. Professor Cipolli's real world examples help with this.
  - **Intellectual Growth:** It helped with time management. Also the standards forced me to really retain information since anything we learned throughout the semester could come up on any test.
  - **Quality:** Professor Cipolli is a great professor. He is very intelligent and explains the course material in a clear and interesting way. He is also always finding new ways to portray the information to make it more understandable for different styles of learners . He was always available when needed for questions or help. I really enjoyed him as a professor.
- Student 29
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** In order to succeed in this course, I felt I had to put in a good amount of work. I had to read over the notes and the slides to fully grasp the concepts and the professor's use of standards forced me to study all the course material before exams and remember things I likely would have forgotten otherwise.
  - **Understanding & Appreciation:** This course gave me a new appreciation for statistics. Before this course I had of course been exposed to statistics and statistical analysis, but I never truly understood how to interpret them or grasp the information they were giving. Now, I understand more about statistics than I thought I ever would and I appreciate how useful statistical analysis can be.
  - **Intellectual Growth:** Statistics are everywhere, and while I had at least a working understanding of them before I took this course, I feel I now have a much deeper understanding of how to interpret them. Due to the prevalence of graphs and statistics in most other subjects, the knowledge I gained from this course will doubtlessly be useful in better understanding data and statistics in other courses and in other aspects of life.
  - **Quality:** felt the lectures were especially effective and it was obvious that there was a great deal of work put into creating lectures and slides that would facilitate the learning of the material. The professor would always take into account the opinions of the class, which I very much appreciated. The ability to ask questions through Moodle was also very nice, and being able to see what questions other students had was very useful, and I'm sure cut down on the number of repeat questions. The

use of standards, while sometimes frustrating, was effective in forcing me to remember material from earlier in the course. Overall, the class was very well taught and I appreciate the effort that was put into the teaching of it.

- Student 30
  - **Reason:** Core or Areas of Inquiry (distribution) requirement.
  - **Effort:** Completed hw multiple days in advance and studied days before exams due to cumulative nature of class.
  - **Understanding & Appreciation:** N/A
  - **Intellectual Growth:** N/A
  - **Quality:** N/A
- Student 31
  - **Reason:** Major or minor requirement
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Reason:** I took this class to fulfill a distribution requirement and because I felt it would be useful to have an understanding about statistics in my career.
  - **Effort:** I put a lot of effort into this class which included doing additional problems on my own , going to office hours, going to the tutoring sessions and making sure that I completed all assignments on time. I also made sure to ask questions when I did not understand something.
  - **Understanding & Appreciation:** now appreciate polls that are properly displayed in the news and have a strong sense of why statistics are valuable and how they influence the world around us and how they can identify and solve issues.
  - **Intellectual Growth:** This course has taught me resilience and persistence. The material was just challenging enough that I could make an effort to understand it and in turn succeed. I feel encouraged to run towards things that I do not understand until running away from them.
  - **Quality:** Professor Cipolli has been hands down the best professor I have ever had at Colgate and I could not say enough good things about him and his teaching. He is the epitome of a great teacher. Professor Cipolli truly cares about all of his students and their well-being. He let the class determine the pace of the course and slowed down and spent more time on things that we didn't understand. At the same time, he was humble enough to admit when he was wrong and messed something up and always made amends for it. One major strength Professor Cipolli also had was always making himself available through moodle postings (where he probably answered over 200 questions), diagnostics, and extra appointments and meetings outside of class. The effort that he put in to helping his students understand the material was outstanding. Due to Professor Cipolli, I looked forward to going to class, studying and working on statistics and I by no means consider myself to be a math oriented individual. If he does not have tenure yet, I wholeheartedly believe he deserves it. 10/10.
- Student 32
  - **Reason:** Major or minor requirement
  - **Effort:** I put a lot of effort in this course. Started hw early went to get help, made study guides and flash cards for exams went to review sessions.
  - **Understanding & Appreciation:** I think it advanced my knowledge of the course.
  - **Intellectual Growth:** Time management, studying through out the semester on everything we have learned rather than just what was new-should create an easier time studying for final exams
  - **Quality:** I think the teaching was very good, he was clear and concise, very approachable and helpful in office hours. I do like the grading system and it's purupose but I think the only thing I would change is rather than a significantly more amount of weight on your second time seeing the standard it should be an average of both- this facilitates his goal of continually studying but doesn't significantly hurt your grade if you do significantly worse on he second one
- Student 33
  - **Reason:** Major or minor requirement

- **Reason:** Core or Areas of Inquiry (distribution) requirement
- **Effort:** Because every test within this class was cumulative, this required a larger amount of studying than would have been necessary if it was only covering recent material. Therefore, it was necessary to begin to study greatly in advance. Further, the homework sets were long and extensive, and typically quite challenging, and therefore I was required to put in a large amount of effort, many days in advance, when it came to these assignments as well.
- **Understanding & Appreciation:** I have become more cognizant about how often I use statistics and terms I have learned within statistics, particularly within other class I was enrolled in this semester
- **Intellectual Growth:** This course, through presenting a very different way of grading called "standards" challenged me to not only learn information for tests but retain this information, due to the fact that the tests were cumulative and material was weighted much heavier when we were tested on it the second time.
- **Quality:** This course is structured in a very difficult, hard-to-comprehend manner due to the fact that it is graded via standards. Being tested on material a second time and having it weigh 85% as opposed to only 15% seemed to eliminate the purpose of these standards, for the second one was generally make-or-break, and the testing on the first standard didn't seem to matter at all. Therefore, earlier tests counted much less, leaving students panicking and scrambling when taking those in which material is being looked at a second time, for, even though you could've done very well on the first test, it will not significantly impact your overall grade in the class

◦ Student 34
- **Reason:** Major or minor requirement.
- **Effort:** I put a large amount of effort into the class starting homeworks and studying for tests three to five days before these things were due. I also went to several office hours and took time to go to the tutoring sessions.
- **Understanding & Appreciation:** It helped my understanding of statistics in that I didn't have any experience with the statistics that we have thus far paid attention to. No comment on my appreciation.
- **Intellectual Growth:** Caused me to think better about certain problems I faced and allowed me to know when to accept that things would just simply be out of my control.
- **Quality:** There were definitely a lot of strengths in professor Cipolli's teaching. He kept the attention of this huge 150 person class and also wanted people to give him feedback so he could then improve the course. I think the only weakness I would note are certain unrealistic expectations. I feel like professor Cipolli expects each student to gain and achieve a lot from this large introductory course. His standards based grading are meant to produce long lasting learning, I just felt like certain areas of the course (such as combinations and permutations and probability) didn't at all fit in with the rest of the subject matter and that the course could have been taught without this additional confusion of these two topics.

◦ Student 35
- **Reason:** Major or minor requirement
- **Reason:** Other requirement
- **Reason:** Interest in the course material.
- **Effort:** I put a good amount of effort into this course. Problem sets and studying worked out to about 1.5 hours of homework per class.
- **Understanding & Appreciation:** This course has been very interesting and I have gained a better understanding of statistics and the representation and summarization of information.
- **Intellectual Growth:** Topics from this course can be applied to almost any subject and frequently comes up in daily life while looking at information presented to you. Statistics are everywhere and this course has given me a basic understanding of how to interpret them.
- **Quality:** Processor Cipolli did a great job teaching this course. I appreciate the challenge that is

teaching a class this large. I have taken a fair number of large lectures at Colgate and this was by far the most engaging one. If all lectures were taught like this I wouldn't hate them so much! Professor Cipolli gave countless chances to provide feedback and help steer how the course is going. Standards, although confusing at first, seem to do a good job promoting lifelong learning. The only suggestion I have is to make the first attempt at the standards worth a higher percent. Professor Cipolli was very accessible considering the class size and made an effort to get to know the students. Course materials were relevant and showed how statistics can be applied to daily life. Professor Cipolli does a great job with this class!

- Student 36
  - **Reason:** Elective outside major or minor
  - **Reason:** Interest in the course material
  - **Reason:** I intend to go into the health field, so I thought that a background in statistics might be useful.
  - **Effort:** put in adequate effort. This was an introductory course so it did not require much effort, in my opinion. The homework assignments required the most work but we had ample time to complete them.
  - **Understanding & Appreciation:** I now have a greater understanding of statistics and how statistics represent the world we live in.
  - **Intellectual Growth:** Outside of this course, I am better able to understand how people may or may not be able to manipulate statistics in order to portray what they want to. Statistics can be presented in so many different ways, and now that I am aware of this I can differentiate between biased and reliable sources of information.
  - **Quality:** Prof. Cipolli was a great lecturer. He constantly was asking the class questions and keeping us intrigued, and given the fact that there were upwards of 150 or so students I was very impressed. He always made himself available, and you could tell that he genuinely wanted us to learn something from this course. The standards concept of testing was annoying because it forced you to review everything you had previously learned, but in the end I gained a deeper and more lasting knowledge of the course material because of it. Basically, he was right about everything and I'm glad I took this course. He taught us a lot of life lessons too that I will think back to from time to time. I would recommend him as a professor to anyone taking Intro to Stats.
- Student 37
  - **Reason:** Exploration of possible major or minor
  - **Reason:** Reputation of the instructor
  - **Reason:** Interest in the course material.
  - **Reason:** I had heard that it was a good class and I was interested in the material.
  - I thought statistics would be a good subject to have an understanding of no matter the major I choose.
  - **Effort:** I put a lot of effort into this class. I attended almost every lecture, asked questions, and visited the professor's office hours. I worked diligently on the homework assignments, completed the extra problems, and reviewed my materials for the exams.
  - **Understanding & Appreciation:** This course gave me a greater appreciation for the course material. I already knew that statistics was an important and complex part of academia and life, but this course showed me just how important it is and how misleading it can be.
  - **Intellectual Growth:** This course helped me learn how to analyze statistics and has made me a more cautious consumer of data. I enjoy psychology and this basic understanding of statistics will come in handy when analyzing psychological data.
  - **Quality:** I think this professor really cares about the success of his students. He allows us to reach out with questions and allows us to have a say in the structure of the course. He tries to make the class interesting and relevant to daily life by including real-world examples in his slides

- Student 38
  - **Reason:** Major or minor requirement
  - **Reason:** Interest in the course material
  - **Effort:** I would typically spend a few hours on each homework assignment. I came to class and took notes, but generally did not need to study hard for anything.
  - **Understanding & Appreciation:** I use stats in Econ, so this class was helpful for my comprehension.
  - **Intellectual Growth:** I think that stats is a very practical course for both at Colgate and beyond.
  - **Quality:** I think the teaching level was very high. If anything the quality was too high as the professor would be running ragged at times. Most other teachers are much lazier when it comes to class preparation.
- Student 39
  - **Reason:** Major or minor requirement
  - **Reason:** Interest in the course material
  - **Effort:** Given that I took AP stats in high school, the most difficult part of this course recalling some of previous material, learning new material covered in this course, and learning how to use R instead of a graphing calculator.
  - **Understanding & Appreciation:** Although I have always found statistics to be extremely useful and interesting, the course has provided even greater insight for me into statistics and data collection. I can now read studies with much greater understanding of the language and terminology
  - **Intellectual Growth:** I was forced to use computer coding/R to complete the course. Although I have a strong dislike of it, it is useful that I have gained some understanding of how code works, however small that understanding is.
  - **Quality:** Cipolli really does try his best to be the best professor he can be for a course of this size. He is great at explaining the lectures in the simplest way possible. The only wish i have is that he can provide more short summaries of the material covered in the chapters, as the wording can often be overly complicated and confuse students.
- Student 40
  - **Reason:** Core or Areas of Inquiry (distribution) requirement. I was going to take Psych 150 so I could get the natural science requirement but then I got scared that I would fail and therefore be unable to graduate, so I decided to take this class instead. It is my first math class in five years.
  - **Effort:** I put in a lot effort. I went to every class session, took notes, listened, and asked questions. I spent hours on each home, went to a few tutoring sessions and office hours, and studied a lot for the exams. I put much effort into the writing assignment also. I used the moodle board and met with peers outside of class very regularly
  - **Understanding & Appreciation:** now know much more about statistics than prior. From day one when he was saying why some statistic about shooting was "the worst social statistic in history," I had no idea why it was a bad statistic. Now I do. The class has helped me to understand statistical inference and also some math parts moving from a sample statistic to a population parameter. I am confident heading into the final exam
  - **Intellectual Growth:** I had to use learning methods that I haven't used since high school, I had to remember how to "study" which I haven't had to do in such a long time because my other classes only have essays. I had to learn to ask questions about what I don't understand and ask for help in vulnerability, which I haven't had to do in other classes
  - **Quality:** Cipolli is really fantastic. He was super present and available to us over Moodle, email, and office hours as well as always responding to questions in class. He was clearly super focused on class achievement and encouraging us to really learn the material (which I did, against my will even because of the standards grading model which forces cumulative thinking). I liked the grading system but I also got a good grade so if I didnt get a good grade I probably wouldn't have liked it. The

grading system did encourage me to learn far more than other class systems

- Student 41
  - **Reason:** Major or minor requirement
  - **Effort:** I worked decently hard by studying for tests and doing homework assignments, but I never felt overhwelmed after seriously focusing in on my work.
  - **Understanding & Appreciation:** Yes it did as I see stats used day to day now and appreciate it much more.
  - **Intellectual Growth:** I think it makes you think more analytically.
  - **Quality:** I think the professor is very accessible, clearly in knowledgable, and makes the best effort out of any teacher I've ever had to truly benefit and help the students. His only weakness is due to the size of the class, such as class participation/discussion which is out of his control as it is an intro level.
- Student 42
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** N/A
  - **Understanding & Appreciation:** N/A
  - **Intellectual Growth:** N/A
  - **Quality:** N/A
- Student 43
  - **Reason:** Exploration of possible major or minor
  - **Reason:** Interest in the course material
  - **Effort:** I put in a fair amount of effort to this course. I completed all homework assignments before the due date and went to class on a regular basis
  - **Understanding & Appreciation:** I now have a better understanding for how statistics can help in daily lives whether it is a news report or political poll.
  - **Intellectual Growth:** This course helped me to look beyond the "facts". Some "facts" presented to us may actually not be completely true and if you use statistics, you can get a confidence interval that shows a range of numbers rather than just one
  - **Quality:** Professor Cipolli did an excellent job presenting class material in a clear and orderly manner. He is always prepared for class and is able to clearly answer any question a student has. The one area in which I think he could improve in is feedback on tests. I am still confused how my exam grade is determined and do not particularly like how we do not get a percentage on our exams so I am not completely sure how I am doing in the course
- Student 44
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** put a considerable amount of effort into this course. I always tried my best to finish assignments ahead of time and complete all the diagnostics. I studied hard and my attendance was stellar.
  - **Understanding & Appreciation:** This course contributed to my understanding and appreciation of the course because i have never taken a statistics class before and didn't realize how complex they were. I was anticipating this class to be easier than it was, so now I appreciate how much complexity there is to statistics.
  - **Intellectual Growth:** This course challenged me far beyond what I expected. I learned new ways to apply math and really think about what the question is asking.
  - **Quality:** Professor Cipolli was one of the best professors I have had here. He is very captivating to listen to, explains the material in a way that mostly everyone can understand, he's extremely available for help, and wants all his students to succeed. He is great.
- Student 45
  - **Reason:** Major or minor requirement

- **Effort:**had to put a lot of effort into the homework assignments which required me to start a week before the due date. I also looked back into my AP Stats book and watched online videos when I didn't or had trouble with the course material. I also made really dense study guides prior to every exam.
- **Understanding & Appreciation:** I actually like the course – AP Statistics didn't fit into my schedule as a high school student and I was interested in taking math classes at Colgate, and this class in particular was a requirement.
- **Intellectual Growth:** A lot of what we've learned applies to real-world every day events
- **Quality:** Honestly a lot of times I felt confused or unprepared for that the tests wouldn't reflect much of what we had in the homework. I thought that the homework would help us prepare but the majority of it really seemed to never have anything to do with the tests. Also, I never use the notes to help with the homework because Ive found that it is only slightly helpful when in lecture

- Student 46
  - **Reason:** Interest in the course material
  - **Effort:** It is on me. I failed to pay attention in a lecture class. At times I would feel intimidated to respond in class. And then R-code was difficult in the beginning so anything about r-code flew through my head–I don't feel like I have mastered the concepts.
  - **Understanding & Appreciation:** As a psychology major I am preparing myself for the quantitative side of research.
  - **Intellectual Growth:** Most importantly, I have started to question research and how researchers form a conclusion based on the data available.
  - **Quality:** N/A
- Student 47
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I put a lot of effort into this course, took time to study, finished homework assignments in order to push myself and get good results
  - **Understanding & Appreciation:** This course has taught me a lot, I now understanding many topics I didn't know about before. I also enjoyed the course
  - **Intellectual Growth:** This course taught me to understand the material rather than learning it. I am ready to apply my knowledge outside of this course
  - **Quality:** I think that the material covered was sometimes too advanced for this intro class. However, the professor made it easy for students to voice their concerns and he was very open to our opinion. He knows the material and is able to teach it properly
- Student 48
  - **Reason:** Major or minor requirement
  - **Reason:** Interest in the course material
  - **Effort:** I put a lot of effort into this course. The fact that students have normally a few weeks to complete the homework allows me to go to tutoring hours when I don't understand something. I also had to study previously learned material for tests because of the professor's standards style of grading which I like.
  - **Understanding & Appreciation:** The professor obviously loves this subject so his passion for it made learning the material more enjoyable. He explained topics in multiple ways in order for everyone to understand. If I didn't understand a topic, help was very accessible through the professor directly or the frequent tutoring sessions. The style of grading also encouraged me to retain information from the beginning of the year that I would have otherwise forgotten.
  - **Intellectual Growth:** learned more about time management from this course because the homework is usually due within a few weeks of when it is assigned. This encouraged me to start it early so that it would not be overwhelming and so that I could go to tutors if I was stuck on something
  - **Quality:** I think that Professor Cipolli is an amazing professor. He made one of my least favorite

subjects enjoyable and understandable. While some of the notes can seem overwhelming, the numerous examples he provides are helpful. I really appreciate the diagnostics and moodle discussion board as a way to find answers to questions I didn't even know I had. He is great at making sure everyone understands the material and will go above and beyond to do so. I really enjoyed his class this semester

- Student 49
  - **Reason:** Major or minor requirement
  - **Reason:** Interest in the course material
  - **Effort:** I put in effort by doing the assigned work, extra problems, asking questions, and going to the review sessions.
  - **Understanding & Appreciation:** I did not have much experience with statistics before taking this class. I learned a lot about statistics and the way they are calculated.
  - **Intellectual Growth:** By doing the writing assignment, I learned more about preparing essays and doing work that does not have clear instructions.
  - **Quality:** Professor Cipolli was a good professor who is passionate about statistics and teacher. I think the class should have relied less on R. I still don't feel comfortable using it and question its usefulness outside of the classroom.
- Student 50
  - **Reason:** Interest in the course material
  - **Effort:** I put a good amount of effort in this course. This entailed reading the notes and slides, doing longer homeworks, and studying for the cumulative tests we have.
  - **Understanding & Appreciation:** I think this course definitely improved my understanding of statistics and it also heightened my interest in it because of the great job professor cipolli did in relation four lectures to real world situations
  - **Intellectual Growth:** I think this course helped me get a broader view on statistics in the world and their presence in the media which helps me better understand relations that can be important in other classes
  - **Quality:** His strengths are that he is very interesting during lecture and does a good job of making a PowerPoint type lecture fathomable. He also has a very well organized class page in moodle which I know helps me and my peers greatly. As far as his weaknesses, I think sometimes when he uses code to write the homeworks and assignments, it often gets typos so that we cant actually do it unless we search to see if there is something wrong on the class page.
- Student 51
  - **Reason:** Major or minor requirement
  - **Effort:** I ws challenged by the course but the homework and extra problems helped tremendously
  - **Understanding & Appreciation:** I understand much more about the subject through the course material and homework.
  - **Intellectual Growth:** I now understand the importance of providing accurate information through statistics.
  - **Quality:** The lectures were very thoughtful and informative. The teaching style was easy to follow and clear.
- Student 52
  - **Reason:** Major or minor requirement
  - **Effort:** think my effort was fairly average, this resulting a grade that will be fair. I attended class, and studied for the exams.
  - **Understanding & Appreciation:** think that this course made me realize that statistics is not something I'm interested in pursuing.
  - **Intellectual Growth:** I feel more knowledgeable of how and where stats comes from which is good for conceptual learning and life.

- **Quality:** I think that there are strengths with the professor's teaching methods, but there are also weaknesses. I think that the grading system was understandable and helpful. However I think that there was a sense of disorganization when it came to exams. There were opportunities to redeem our grades, but on exams there were some mistakes that weren't acceptable. The professor was accessible out of class, and it is my fault for not utilizing office hours more. However I believe that others who put in immense effort would agree about the errors/organization. The workload was manageable, and I think the course could be improved with more clear exams. The other aspects were well done and Professor Cipolli did a good job for the amount of students he had to address. Thank you.

- Student 53
  - **Reason:** Core or Areas of Inquiry (distribution) requirement.
  - **Effort:** I completed all coursework on time. I spent a lot of time doing the homeworks and the extra problems. Additionally, I filled out ever diagnostic and completed the writing assignment. I studied for tests by using the powerpoint slides and the extra problems.
  - **Understanding & Appreciation:** I took a statistics class in high school, but this course went further and helped me to understand some concepts that I either didn't understand or wasn't taught in high school. It also helped me to understand that I should be wary of news outlets and other sources when they talk about statistics.
  - **Intellectual Growth:** This course helped me to improve my time management skills and to think about thinks critically.
  - **Quality:** I really appreciated having the powerpoint slides, the notes, and the q&a form on Moodle. I didn't feel rushed in taking down notes. I also enjoyed working on problems in class, because it helped me to apply concepts we learned in class to the homework
- Student 54
  - **Reason:** Major or minor requirement
  - **Reason:** Exploration of possible major or minor
  - **Reason:** I took this course as a requirement for Economics major
  - **Effort:** I have taken a statistics class before but felt that I did not understand the material that well back then. For this class I put in a lot of effort to relearn the material of the past.
  - **Understanding & Appreciation:** I felt that this course was a good refresher of knowledge that I had forgotten from my previous course.
  - **Intellectual Growth:** I had to remember formulas and methods from previous statistics courses in order to do the problems and tests in this class.
  - **Quality:** Prof. Cipolli is a wonderful teacher of the material and when responding to our questions and inquiries. He tries to inspire a classroom discussion, but with the lecture style of the course he sort of expects people to respond and sound out their ideas on a topic. Sometimes this is successful but most often it ends in a silent room. Overall, an excellent instructor of the concepts and moderately inspirational in terms of student discussion in class
- Student 55
  - **Reason:** Major or minor requirement
  - **Reason:** Exploration of possible major or minor
  - **Effort:** Not as much as I should have but before tests I would study mainly 1-2 days before
  - **Understanding & Appreciation:** Its difficult and I don't really like the subject, however I do understand a lot about certain topics in the subject.
  - **Intellectual Growth:** It helps be think about how polls especially elections are calculated. The process is very difficult, yet interesting.
  - **Quality:** The quality of teaching was great. He really cared about the students and whenever a question was asked he answered it in a way until the student would understand.
- Student 56
  - **Reason:** Major or minor requirement

- **Reason:** Exploration of possible major or minor
- **Reason:** Interest in the course material
- **Effort:** I put in a decent amount of effort into the course. It is very easy to access extra problems and have other resources available to further my studies in every topic covered. I probably spent more than 10 hours of studying weekly.
- **Understanding & Appreciation:** There were so many examples where real life issues were used and that helped relate what I already know into the course material. The lecture slides and the diagnostic made it very easy to reflect and review what has been learned so that the transition from one topic to the next was very smooth, and this was also beneficial for exams, as they are mostly cumulative.
- **Intellectual Growth:** The translation of language, from a formula to english, helped tremendously as I feel that I am much stronger at understanding complex formulas and symbol meanings. Professor Cipolli placed a large focus on this matter and I think it tremendously helped my intellectual growth.
- **Quality:** I was honestly blown away by the amount of time and effort Professor Cipolli seemed to put into our class . He always ensured that everyones needs were accommodated and questions answered. I can easily say that he was has been the most willing out of all my professors to make the effort for every student's success. The notes provided are very thorough and in depth, and the extra opportunities for further studying giving on each homework proved to be tremendously helpful.

◦ Student 57
- **Reason:** Interest in the course material
- **Effort:** I would give myself a few days for the homework so that if I had questions I could go to office hours . I studied for all the exams and did all the extra opportunity questions so I could see what I needed to look back at in the notes.
- **Understanding & Appreciation:** I took the class because I was considering an econ major/minor. While that is no longer of interest to me I am still really good I took this class because it was right up my ally subject wise and I'm hoping that maybe I'll be able to take more similar classes in the future.
- **Intellectual Growth:** Since the homework was always posted in pdf form I was more motivated to print it out and work on it piece by piece over time. This definitely helped me with time management.
- **Quality:** I thought Professor Cipolli did a really good job of keeping everyone engaged. The diagnostics were a good touch to allow for additional comments and extra credit. However, I personally feel that if people eliminated themselves from being considered for extra credit because they didn't fill out enough diagnostics then there shouldn't have been another extra credit opportunity given, it was made clear at the beginning what the requirements were. Also, while the moodle board was incredibly helpful, I was definitely hesitant to post at first and I am sure there are students who were hesitant to post at all. I was hesitant because of how public it is and would have liked if I could have emailed Professor Cipolli with my questions until I felt I was comfortable with posting it on moodle.

◦ Student 58
- **Reason:** Core or Areas of Inquiry (distribution) requirement
- **Effort:** I put maximum effort into this course. Like a couple other subjects, mathematical statistics is an area you cannot afford to fall behind. Every week, I was either attending tutoring sessions or looking at my notes to constantly review and stay caught up with the material from class.
- **Understanding & Appreciation:** My understanding for this course increased drastically. Additionally, it made me appreciate the course subject even more. Coming into Colgate I knew I was not keen on taking science/math classes since that was not what I wanted to deal with later in life. However, 105 allowed me to appreciate math even more especially statistics.
- **Intellectual Growth:** Intellectually, I have seen a major growth in my ability to calculate numbers and recognize math in the real world. I am constantly finding examples in the real world that correlate with the subject matter we learned in class.
- **Quality:** Professor Cipolli is fantastic. In a class of 100+ students he is able to cater to each

individuals' needs by making himself accessible. He works tirelessly to make sure we understand the material and we do well. He motivates me every class to listen and take good notes allowing me to understand what is going on. He is constantly answering questions on his board he created on Moodle, he always makes space for extra office hours, and he sets up weekly tutoring hours with two other upperclassmen. I appreciate every single effort Professor Cipolli makes to ensure the best learning environment for his students .

- Student 59
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** To succeed in this class I attended every lecture and took diligent notes. I completed all of the homework problems and most of the practice problems. I reviewed my notes and practice problems and lecture slides to prepare for the exams. I have not attended any of the additional tutoring sessions.
  - **Understanding & Appreciation:** Prior to taking this course I had never studied statistics or critically thought about them when I was presented with statistics in the news. While this course effectively taught me a great deal of math and of general understanding for how to calculate statistics, what I think the most important take-away I have gained from this course is the ability to understand and think about the statistics presented in the news and how those numbers may be presented more honestly
  - **Intellectual Growth:** I am not a student who has taken many math courses and I took this course because I needed to fulfill a requirement. That being said, I really appreciate being in classes that challenge me in fields I do not take many classes in. I think that it forces me to study harder and find the most effective study tools for me. This course really pushed me to avoid procrastination and to find study tools that would promote long-lasting learning.
  - **Quality:** Professor Cipolli is amazing. It is clear from day 1 of this course that he cares so much about his students and wants to work with each and every one of us to make this course understandable and digestible. He really listens to the feedback of his students and changes the course to best fit our needs.
- Student 60
  - **Reason:** Major or minor requirement
  - **Reason:** Exploration of possible major or minor
  - **Reason:** The professor could have managed the class better, sometimes the class is boring and I feel like I can learn more effectively. But the professor has a very clear schedule and this is what I appreciate.
  - **Effort:** Do the homework and extra opportunity very carefully can really handle the class
  - **Understanding & Appreciation:** I'm ery clear about what he is doing in very chapter and he makes me understand that statistics is really applicable in the reality.
  - **Intellectual Growth:** Logic and carefulness
  - **Quality:** He is putting much time to make us understand as much as possible, but I feel like he sometimes put too much time on easy ones but talk a little bit less on difficult ones.
- Student 61
  - **Reason:** Major or minor requirement
  - **Reason:** Interest in the course material
  - **Effort:** Homework assignments usually take a while so i will spend a couple days on them, and a couple days to study for tests as well.
  - **Understanding & Appreciation:** I've taken statistics in high school but this class has helped me gain a better understanding of the material.
  - **Intellectual Growth:** It has helped me see how statistics play a role in every day life because the professor will mostly use real studies or discuss current events.
  - **Quality:** Professor Cipolli is a great educator. His friendly manner makes his students feel

comfortable with him and that they can approach him for extra help which is important. He is also a clear and organized lecturer and his notes and lecture slides are easily accessible on moodle.

- Student 62
  - **Reason:** Core or Areas of Inquiry (distribution) requirement.
  - **Effort:** This course was the kind of course I definitely had to put a lot of work and time into to understand basic concepts. I found it very difficult and time consuming.
  - **Understanding & Appreciation:** I think it made me understand what statistics were and how they were taken and what they meant but also I appreciate them less because it was hell.
  - **Intellectual Growth:** It made me think about the statistics I take as fact without questioning them
  - **Quality:** I think that the lecture style is hard but Professor Cipolli did his best to make himself accessible and make sure he tried to meet with everyone who tried. He was very understanding and kind. There was a lot of material but he did his best to adjust to the pace of the class.
- Student 63
  - **Reason:** Major or minor requirement
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I put a lot of effort into this course. I studied very hard for every single exam and always tried completing the homework with enough time to go to the tutoring hours available for my class.
  - **Understanding & Appreciation:** I have never taken stats before so it was definitely very fast paced and hard for me, but I am glad that I was able to pick up so many different "standards" as he calls them. I am very happy with how much I've learned this semester.
  - **Intellectual Growth:** I really liked when professor Cipolli would bring in real statistics to class – it made everything he was teaching more tangible and not like some of my other math classes in the past where there was no real world application that made sense. When looking at different statistics I will always think critically about them, which is a sign of the course contributing to my intellectual growth beyond the course itself.
  - **Quality:** Cipolli was very clear. He answered questions in a way that allowed us to understand the subject at hand very well. I think one of his strengths is speaking confidently about the material covered in class and never hesitating when answering a student's question. he also had a great sense of humor which made this class pretty fun at times!
- Student 64
  - **Reason:** Major or minor requirement
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Reason:** Interest in the course material
  - **Effort:** Homework assignments usually took 1 to 3 hours to complete, but I did not spend a significant amount of time studying for tests.
  - **Understanding & Appreciation:** I had wanted to take statistics since high school just to see what it was all about and I've now been able to do that.
  - **Intellectual Growth:** It helped me learn to think in a different kind of way regarding how statistics apply to many scenarios in everyday life.
  - **Quality:** Professor Cipolli is a very knowledgeable and effective professor. He does very well given the task of teaching so many students at once, but I feel that his grading procedures regarding standards could be touched up a bit. Also, I really wish tests would be returned so we could find out exactly what went wrong.
- Student 65
  - **Reason:** Major or minor requirement
  - **Reason:** Other requirement.
  - **Reason:** Prof Cipolli is a great guy and he wants the best for his students.
  - **Effort:** I put a lot of effort into this class. The homework takes a long time to complete and since all of the exams are accumulative, reviewing all the material takes memorization and effort.

- **Understanding & Appreciation:** Since Professor Cipolli was so excited by Stats, it transferred to the class.
- **Intellectual Growth:** It taught me that I should not wait until the last minute to complete assignments or study for exams.
- **Quality:** Professor Cipolli is a hard professor, but he wants the best for all of his students and he looks to make sure we succeed. A weakness of his may be that we have to use a computer program called R to do our homework, and if you have no computer programming background it can be difficult to navigate. A strength go his is that he is always ready to help and explain to make matters more clear for the students.

- Student 66
  - **Reason:** Major or minor requirement.
  - **Effort:** Pre-read the class notes and review the conceptions that taught before in order to get a clear conception of each method.
  - **Understanding & Appreciation:** This course helps me to understand how statistics is used in our lives and what kind o statistics is called a unbiased one which helps me to judge those news on the TV.
  - **Intellectual Growth:** The use of probability and some other methods requires a lot of logic which helps me to strengthen my way of thinking
  - **Quality:** Professor Cipolli is very passionate in teaching this class and prepared well during each class and he shows every conception very clearly but I think he could build the class more interesting and challenging.
- Student 67
  - **Reason:** Major or minor requirement
  - **Reason:** Exploration of possible major or minor
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Reason:** Interest in the course material
  - **Effort:** I put an immense amount of effort into this course. The material did not always come easy to me in class, so I spent a lot of time studying for each exam. Also, I spent a lot of time on the homework assignments, as some of the questions challenged me and required a lot of thought
  - **Understanding & Appreciation:** This course challenged me. This was my first time taking a statistics course, so now I have a solid understanding of the different components of statistics. I found the course very interesting, so I also gained an appreciation for the components of statistics.
  - **Intellectual Growth:** The homework assignments typically contained many questions, and this taught me to spread out my work over time. My time management skills surely improved from taking this class.
  - **Quality:** The quality of teaching in this course was very high. Professor Cipolli is a great professor who always asks for his students' input on his weekly diagnostics, and it was evident that he takes our comments and concerns into consideration
- Student 68
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** This class did not have day-to-day assignments, but I worked hard to complete homework assignments and study for exams effectively. I also came to every class, despite the large lecture setting.
  - **Understanding & Appreciation:** I generally do not enjoy math, but I found that in this course there were times were I actually did enjoy what I was learning. While it could still be frustrating for me when I could not figure out a particular problem or I did not understand how to use R studio in the moment, I think overall I did grow to appreciate the material.
  - **Intellectual Growth:** I think it is important to take courses outside our comfort zone, and statistics/math courses in general are that for me. Taking the course helped me think critically about

statistics and media in a way I wouldn't have otherwise.
  - **Quality:** Professor Cipolli worked very hard to make this course accessible and interesting to a class of over 100 people, and I think he did so effectively. He was always helpful during office hours, and willing to answer questions in class as well as on the moodle forum. He is engaging as a person and as a professor, which made the class environment an interesting one. The only changes I would make to the course would be 1.To teach R more thoroughly at the beginning of the semester, as it was very foreign to me and I believe many other students and 2. The homework was sometimes confusing when there would be many mistakes. I understand that this is changing at the end of the semester, which I think is an improvement. Overall, I think for an intro level math course this class was interesting and effective in facilitating learning.
- Student 69
  - **Reason:** Major or minor requirement
  - **Reason:** Elective within major or minor
  - **Effort:** My effort was not outstanding, as I often devoted only one to two times a week for this course. However, I did go to extra tutor sessions and when I did work for this class it was for extensive periods of time. Overall, my effort was good.
  - **Understanding & Appreciation:** As I have already taken stats, I wasn't sure how much different this course would be. Overall, the instructor made me learn things in new ways and this has broadened my understanding of stats. Also, we had to use technology, such as the program R Cran, which was unfamiliar to me before this class.
  - **Intellectual Growth:** This course attributed to my intellectual growth in lots of ways, as I was challenged to think in different ways and fully grasp the theoretical side behind topics
  - **Quality:** I thought the quality of teaching overall was very good. With such a large class, lots of content, and not much time to teach it all, I think the instructor did a very good job getting through everything without rushing. He was always very accessible and organized which made the class run smoothly. Furthermore, his assistants who held extra tutoring sessions were very helpful.
- Student 70
  - **Reason:** Other requirement
  - **Reason:** Interest in the course material
  - **Effort:** There was a lot of effort put into making sure my homework was done properly, and preparing for the tests.
  - **Understanding & Appreciation:** This course gave me knowledge on stats and how probability and polling works in the real world.
  - **Intellectual Growth:** This course gave me abilities to be a better critical thinker.
  - **Quality:** This Professor had strengths in being prepared for class each day, and helping me understand what he was teaching through his teaching style.
- Student 71
  - **Reason:** Major or minor requirement.
  - **Effort:** I put a fair amount of effort into this class.
  - **Understanding & Appreciation:** Examples of really world applications made understanding the course subject much better.
  - **Intellectual Growth:** I now know how to appropriately read through statistics presented in various periodicals and how to identify bias and/or misrepresentation.
  - **Quality:** Statistics can often not be super intuitive to someone who has not been exposed to it in the past, especially when dealing with coding. It was always helpful when Professor Cipolli provided an example for a concept that occurs in the real world. However, there were some times we would be going through a concept and not example would be presented along with it, just the concept itself. This makes understanding the material particularly challenging for me as I don't have anything to associate the topic with. Other than this, the homework was helpful, particularly the extra problems

tied to the homework. I also wish the standards grading gave more weight to the first attempt. The class was overall enjoyable, and Prof. Cipolli is very enthusiastic.

- Student 72
  - **Reason:** Major or minor requirement
  - **Effort:** A lot of effort. Really challagend myself with a math course I wasn't too ready to take.
  - **Understanding & Appreciation:** Math is hard
  - **Intellectual Growth:** It shows me a lot about the news and other things we see.
  - **Quality:** I didn't like the class because it was too big. The teacher was great he did his best to teach a big class which i did like
- Student 73
  - **Reason:** Major or minor requirement.
  - **Effort:** I found that the course was pretty easy. Despite Professor Cipolli saying that you needed to start Homework early, I always found that I could do it the night before. Same for tests.
  - **Understanding & Appreciation:** Statistics has always been an interest of mine, I think this class did a good job of stoking the fires of my intellectual interests.
  - **Intellectual Growth:** I think this class taught me how to work with numbers. Always important to know.
  - **Quality:** I think Professor Cipolli needs to get ride of R. The hassle of the program is not worth the hundredth of a decimal place worth of clarity that it provides.
- Student 74
  - **Reason:** Other requirement
  - **Reason:** Reputation of the instructor
  - **Reason:** It was the only "science" course offered this semester without a lab requirement
  - **Effort:** I came to class everyday, went to office hours and I tried to ask questions when things didnt make sense.
  - **Understanding & Appreciation:** I've always liked math but I never understood it or was good at it. This course helped make sense of a lot of things in math as well as my major, sociology, which uses a lot of statistical jargon that I've never understood before taking this course.
  - **Intellectual Growth:** I've always liked math but I never understood it or was good at it. This course helped make sense of a lot of things in math as well as my major, sociology, which uses a lot of statistical jargon that I've never understood before taking this course.
  - **Quality:** I think that professor Cipolli was a really good and really insightful teacher. He has high expectations for us but is also realistic about what students will/will not or can/can't do. I think that the workload was a bit much some times and the schedule was a lot to deal with but overall I was satisfied and even pleasantly surprised with how well this class went, because of professor Cipolli.
- Student 75
  - **Reason:** Major or minor requirement
  - **Reason:** Other requirement
  - **Reason:** Medical school requirement
  - **Effort:** I completed the homework, attended all lectures, and studied for exams. I also attended weekly tutoring sessions lead by our TAs on Tuesday and Thursday from 7-9pm.
  - **Understanding & Appreciation:** This course was taught very well and in a very interesting way that heightened my appreciation for the subject. In addition, the enthusiasm from our professor made it easy to be interested in the course material.
  - **Intellectual Growth:** Personally, this course required a decent amount of effort outside of lecture and taught me a lot about time management. I learned valuable things about my personal study habits etc. that are applicable to all my other courses.
  - **Quality:** I think a strength of the teaching in this course is the accessibility and consideration from the professor. He was always available to students and really took our opinions into consideration in

terms of deadlines, the pace of the course, etc. I have never had a professor who puts in as much work outside of lectures than this class. We are given an abundance of extra practice material, summary presentations, and review sessions. One weakness to this course could be the lack of personal engagement with the professor due to the section size. I understand this is unavoidable with such a popular course, but in terms of feeling comfortable to ask questions etc. a course section of 120 students is not the best.

- Student 76
  - **Reason:** Major or minor requirement
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I believe that I worked fairly hard, enough to earn me a good grade and generate a higher understanding of statistics.
  - **Understanding & Appreciation:** It increased my already significant appreciation for statistics even after I took it in my senior year of highschool.
  - **Intellectual Growth:** I have learned, through Professor Cipolli's unique way of grading, how to study so that I retain my knowledge from early in the semester throughout the length of the course and beyond.
  - **Quality:** I absolutely love Professor Cipolli. He manages to keep a class of 125 kids entertained and alert. He also demonstrates a profound interest in his students and their well-being and often asks them questions on how to improve his class. His greatest quality, though, is that he structures the class to move at a speed determined by the students. I have no critiques for Professor Cipolii at all and, overall, he has made my first semester at Colgate one to remember!
- Student 77
  - **Reason:** Major or minor requirement
  - **Effort:**I spent most of my time doing the homework and studying for the exams in this class. This didn't involve doing work for this class every night, but when I did do work for this class it was relatively difficult and took a long time, but I think it was fair and definitely helpful.
  - **Understanding & Appreciation:** I like this course because Professor Cipolli had us look at real-world examples which allowed me to see statistics all around me on a regular basis. He has definitely increased my interest and appreciation of statistics.
  - **Intellectual Growth:** This class requires a lot of independence. The fact that it's a large lecture class and that the homework are due so far apart from each other allows students to manage their own time and take charge of their own understanding in this course . This course helped me figure out what I needed to do to succeed.
  - **Quality:** Professor Cipolli was a fantastic teacher. He was clear with his expectations for the class and how this course would work. He explained things clearly and did his best to ensure everyone understood the material by encouraging questions and reexplaining things that people didn't understand. He really cares about his students and wants them to succeed and is always cheerful. The only thing I would have preferred to be different is how accessible he was. All of his office hours were during my other classes and he didn't have much other time to meet. That being said, he did put his whole schedule online which easily allowed us to schedule appointments with him, even though he didn't have much time.
- Student 78
  - **Reason:** Elective outside major or minor
  - **Reason:** Interest in the course material.
  - **Effort:** I did all the homework and extra problems in preparation for exams but I never felt like I needed to cram right before a test.
  - **Understanding & Appreciation:** I took AP stats in high school and enjoyed the class so I wanted to take it in college. I like the material and found it easy to understand.
  - **Intellectual Growth:** I am a sociology major so I do not do a lot of math in any of my other classes.

It was nice having a class that is so different, yet still applicable, to my major.
  - **Quality:** I think Professor Cipolli does a good job of engaging such a large class. He is very open to student feedback, which I appreciate and definitely makes an effort to answer questions and help students succeed. His standards grading is a little confusing at first, but I actually think it is beneficial in the long run.
- Student 79
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** As I am not a math or science major, this course proved to be exceptionally challenging for me. That being said I had to put in a great deal of effort to understand the material in this course. I spent countless hours on the homework assignments and attended tutoring sessions on Thursday evenings. I have also attended office hours several times to ask questions about the homework or previous exams.
  - **Understanding & Appreciation:** I definitely think I have a better understanding of the concept of statistics and now know that there is a lot more behind a statistic than a random percentage. I think the instructor did a really good job of making the class interesting even for people who may not be math or science majors.
  - **Intellectual Growth:** I haven't taken a math class since high school so I think this class was a good refresher for me. When I read or watch the news I now think differently about the numbers that they throw out there from polls and other surveys because I can actually conceptualize how they would have gotten that data. Statistics are a part of every day life so I think this class is really applicable to me even though I am not a math major.
  - **Quality:** Despite the fact I found this course to be incredibly difficult, I do think the instructor did as much as he possibly could for all of our personal achievement in it. Class lecture was always very clear and we were constantly reminded about tutoring hours, extra credit opportunities, etc. When questions were asked on the moodle discussion board or in class, answers were provided in a very timely manner. I truly appreciate all of the effort put forth by the instructor to make sure we had as many opportunities as possible to grasp the material.
- Student 80
  - **Reason:** Major or minor requirement
  - **Effort:** A put a lot of effort, had hard time with some topics
  - **Understanding & Appreciation:** It made me think very differently about probability compared to my previous knowledge
  - **Intellectual Growth:** This course hrlped me a lot understand things like news polls
  - **Quality:** The teaching was good, professor very open to suggestions and feedback
- Student 81
  - **Reason:** Exploration of possible major or minor
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Reason:** Other requirement. Interest in the course material
  - **Effort:** Most of my effort manifested itself in homework problems and exams. Besides filling out moodle forms and studying for exams, I never focused on the subject material outright.
  - **Understanding & Appreciation:** This course acted as kickstart to seeing the world in different lights.
  - **Intellectual Growth:** This course helped change the ways I see the news.
  - **Quality:** I believe Professor Cipolli has a clear passion for statistics, and that shines through.
- Student 82
  - **Reason:** Major or minor requirement
  - **Effort:** This course demanded a fair level of effort. The course was definitely designed so that almost anyone can do well, but it is incredibly hard to do VERY well. This is the result of the standardizing grading system in my opinion.

- **Understanding & Appreciation:** I feel much better about the course material, but wish we had gotten to future units sooner. Having not gotten to hypothesis testing and regressions yet is somewhat frustrating.
- **Intellectual Growth:** I am able to think more clearly and critically about the statistics I hear in the news.
- **Quality:** Cipolli is very organized and very smart. This is clear to anyone who walks into a room with him. However, I think that sometimes he lets "small" things go unaddressed, which can be very frustrating for his students. On our homework assignments, for example, there were constantly errors that needed to be adjusted. This was a consistent issue from the first assignment to the last. Lastly, it may be worthwhile to consider the way that his standardized system favors students who are newer to math and introduces much more double jeopardy for students who are not.

◦ Student 83
- **Reason:** Interest in the course material
- **Effort:** This class didn't have nightly homework, yet since the homework consisted of many problems and took lots of time, I would have to invest a good amount of time into the homework. I would collaborate with students and go to office hours. I take notes in class and read the powerpoints. This class wasn't that challenging overall, yet I needed to work for my grade.
- **Understanding & Appreciation:** This course gave a broad introduction to the world of statistics. I had already taken a stats class before, yet this class just broadened my understanding of the subject material.
- **Intellectual Growth:** I learned better time management skills due to the length and difficulty of the homework. Additionally, I learned how useful office hours are. I came in frequently with questions about the homework and the professor was very willing to help me.
- **Quality:** He is clearly passionate in this subject material and really respects his students. On numerous occasions, he would ask for our opinions on due dates and course load. He wants to make our lives easier, which I really appreciate. Overall, he is a passionate, kind professor.

◦ Student 84
- **Reason:** Major or minor requirement
- **Effort:** I put in a great amount of effort that consisted of hours dedicated to studying and doing practice problems as well as forming study groups to improve my understanding of the topics.
- **Understanding & Appreciation:** I gained an understanding on statistical analysis especially in the real-world and how to be aware if it is accurate or not.
- **Intellectual Growth:** I feel more aware of the world around me and observant of statistics.
- **Quality:** The quality of teaching is very high for this course, but I wish we can move at a slightly slower pace and be more clear and concise on concrete facts and formulas. There are lots of resources provided for us such as slides posted online, tutoring hours, office hours, diagnostics, etc. so it is very helpful.

◦ Student 85
- **Reason:** Core or Areas of Inquiry (distribution) requirement
- **Reason:** Interest in the course material
- **Effort:** I have put in more effort for this class than any of my other ones.
- **Understanding & Appreciation:** its quite cool to see how stats played a part in the real world especially when we talked about weapons of math destruction.
- **Intellectual Growth:** I look at everyday life with a different eye now because of all the statistics thrown at us each day
- **Quality:** I would say the quality of teaching is pretty high

◦ Student 86
- **Reason:** Core or Areas of Inquiry (distribution) requirement
- **Effort:** I put a great deal of effort into this class which is necessary for this class since tests are

cumulative, also the homeworks are long and time consuming so dedication to this material is necessary but pays off
  - **Understanding & Appreciation:** It made me recognize the great deal to which statistics we come across in daily life are faulty and how to look at data in a more interpretive way
  - **Intellectual Growth:** It made me grow as an intellectual by helping me start from very fundamental concepts and analysis in order to apply complex and descriptive calculations. Helped me understand the importance of working from the ground up, and that laying a strong foundation of knowledge allows for better understanding once it gets difficult .
  - **Quality:** Overall the teaching quality is very high, Professor Cipolli is highly engaged and passionate about the material which is a positive reinforcement as a student. He also makes the material relevant which helps conceptualizing material and makes me feel like what I'm learning matters and is relevant. Although his grading methods are unorthodox, I do genuinely think he has the best interest of the student in mind.
- Student 87
  - **Reason:** Major or minor requirement
  - **Effort:** I was attentive in class and completed all assignments on time. I spend a very large amount of time preparing for assessments swell
  - **Understanding & Appreciation:** It helped me better understand the importance of statistics and their real world uses
  - **Intellectual Growth:** It helped me further analyze information
  - **Quality:** Professor Cipolli is a wonderful professor he knows his craft inside and out and uses interesting examples in lecture that make this large class interesting. He always gives us access the all the lecture power points and the notes packets in advance which is incredibly helpful.
- Student 88
  - **Reason:** Major or minor requirement
  - **Effort:** I put a consistent amount of time and dedication into this course. Professor Cipolli's style of teaching is very interesting and constantly engages students with the course material.
  - **Understanding & Appreciation:** This course strengthened my understanding and appreciation of the course subject. Professor Cipolli's consistent enthusiasm and relatable lectures keep the students involved and interested to learn more.
  - **Intellectual Growth:** Professor Cipolli's grading system requires students to constantly review course material throughout the semester in order to do well on tests, which promotes intellectual growth.
  - **Quality:** The quality of teaching in this course has been very high throughout the semester. Professor Cipolli is a great teacher with an evident passion for statistics that makes this class very enjoyable.
- Student 89
  - **Reason:** Major or minor requirement
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Reason:** Interest in the course material
  - **Reason:** I took this course because it was a requirement for an Economics major and I also enjoyed the topic.
  - **Effort:** I put in the amount of effort that I thought an A in the class would require. At times it was a lot of effort and at others it was minimal effort.
  - **Understanding & Appreciation:** This course pretty much taught me everything I now know on the subject so I'd say it did a very good job.
  - **Intellectual Growth:** This course made me think in different ways and from other viewpoints. There were many different ways in which we could learn the course material.
  - **Quality:** The quality of teaching was pretty outstanding. We were able to ask questions during the lecture which is a rarity for such a large class.
- Student 90

- **Reason:** Other requirement
- **Effort:** I came to class prepared everyday including have the notes printed and paying attention to the lecture. I also visited the professor's designated office hours, met with the tutor and worked with classmates to further my learning.
- **Understanding & Appreciation:** This course did not positively contribute to my understanding of the course. I took it to fulfill a requirement and I never wanted to take it. Nonetheless, at the beginning of the course I was optimistic that I would at least learn something and maybe even improve my math skills. I was definitely challenged by the course, but I don't think I learned much. Perhaps it's my learning style and I work better in larger classes, but I just feel like at one point I was confused my the course just kept moving forward at a fast rate and everything was built on my confusion. Now that we're towards the end of the course I just want this to be over with so I can move on.
- **Intellectual Growth:** It didn't.
- **Quality:** I think Professor Cipolli is very organized and post a lot of resources on the portal and is open to answering questions which I really appreciate. I just think the first time he teaches a concept he could spend more time on it, that way there were are less questions later. Often times when I would go to office hours with a question he would say it was something we had discussed on a certain day in class, but during the lecture he would go over the concept once and just move on. Although the lecture slide are posted online, they don't actually show how to solve the problems they mostly just show solutions so it ends of feeling relatively pointless for me.

- Student 91
  - **Reason:** Elective within major or minor
  - **Reason:** Interest in the course material
  - **Effort:** I put a considerable amount of effort into this course. Due to the nature of the grading, this was mostly in the form of creating detailed notes from each chapter so I can study them for each test, and just generally keeping my knowledge of past units as good as possible.
  - **Understanding & Appreciation:** I actually find the real-life applications of statistics pretty interesting. I don't think I am ever going to pursue statistics alone as a career path, but I see that it connects heavily to many of my interests. As such, I think this was a valuable course to take and that I will use the curriculum from this class later in my life.
  - **Intellectual Growth:** It showed me that statistics are used and manipulated all the time in my life and I had no idea. This class has taught me to be more critical of the ways in which data is presented to the public, and how to correctly read data myself.
  - **Quality:** This course was well taught. Professor Cipolli clearly cares about his students and has put a lot of effort into making the class interesting, clear, and accessible. His ways of teaching are very straight forward, and he encourages asking questions, which is great. Sometimes, he cuts people off and answers what he thinks they're asking, but it wasn't actually their question, so that can get a bit frustrating. I don't know if I love the grading system, but it does make sense, and I think I am coming around to it. I feel very prepared for the final, which is a load off my back for sure
- Student 92
  - **Reason:** Major or minor requirement
  - **Reason:** Interest in the course material
  - **Effort:** I completed the assigned homeworks, attended class, and studied for exams.
  - **Understanding & Appreciation:** I didn't really know much about statistics before this class and now I feel like I have a solid grasp of the subject.
  - **Intellectual Growth:** It made me evaluate problems in a way that I had not before.
  - **Quality:** I think that professor Cipolli does a good job with this course. He usual interesting examples in class and he cares a lot about student feedback.
- Student 93

- **Reason:** Exploration of possible major or minor
- **Effort:** Introduction to Statistics was I class I added during Drop/Add period. Right away I thought the class was very interesting but did see that it was going to challenge me in a good way. It took a couple weeks for me to really understand that it was necessary to put a lot of hard work in including, extra help tutoring hours, doing extra practice problems, and requesting a tutor. I am put in a lot of work but it is through that work I was really able to get a grasp of the class material.
- **Understanding & Appreciation:** I feel that in our everyday lives you see statistics everywhere, whether it is in the news or on websites. Therefore I am really happy I took a course on it because it will help me grasp a better understanding for statistics and knowing how accurate they are. Especially thinking about being an Econ major, taking this class will potentially help me succeed in Intro to Econ.
- **Intellectual Growth:** I think this course is going to set a really good foundation for me at Colgate. It has helped me as a student learn time management, the importance of using all the resources given to me, and showing me that I can take on challenging classes.
- **Quality:** I think the energy and passion Professor Cipolli brings to class in really special. He loves what he teaches and shares that joy to all his students. I also feel he is very accommodating, meaning that he always makes sure were all on the right page and provides many extra help resources. My only critique would be that some of the information that we learn is harder to understand. I feel being an Introduction class, students would benefit on learning information a little more simplified and direct. However all together I really enjoyed coming to this class and how he challenged us but also shared his love for the subject

◦ Student 94
- **Reason:** Core or Areas of Inquiry (distribution) requirement
- **Effort:** For this course, I put in a lot of effort into the homework and preparing for exams. When a due date was not approaching there was less effort required outside of class, but there was a lot of work when there was a due date or exam coming up.
- **Understanding & Appreciation:** have never particularly enjoyed mathematics courses, but this statistics class made me realize that it can be interesting to learn! It is still difficult for me, but I do enjoy learning it.
- **Intellectual Growth:** This course made me challenge myself and get out of my comfort zone, which will push me to try things I may not be the best at in the future, including other classes and beyond.
- **Quality:** Professor Cipolli is a challenging, but passionate professor who I can tell loves teaching this subject and wants everyone to appreciate it as much as him. He made the class a lot more interesting than I thought possible, and although sometimes he moves really fast through material, I feel I learned a lot from him. I feel as if my grade won't reflect how much I have learned, however, which is frustrating as a student.

◦ Student 95
- **Reason:** Core or Areas of Inquiry (distribution) requirement
- **Reason:** Reputation of the instructor. Interest in the course material
- **Effort:** N/A
- **Understanding & Appreciation:** N/A
- **Intellectual Growth:** I hope to go to graduate school, and this course prepared me for the subject area that I am interested in.
- **Quality:** Professor Cipolli is one of the first professors at Colgate that I've had (as a senior) who truly seems to care about teaching. He is dedicated to learning what works and what doesn't and accommodating different learning styles. He listens to student feedback and implements changes. Every day, he seems upbeat and excited to help us through the material. He provides endless opportunities outside of class for extra help. One of my favorite areas of the class was the online question board. Often professors at Colgate emphasise class participation and ignore the fact that

not everyone learns best this way. I learn best through listening and processing, so the online option was a great resource for me. I cannot say enough positive things about Professor Cipolli. As someone who hates math, I loved this class and am now considering taking statistics courses in graduate school. I hope he stays at Colgate for a long time.

- Student 96
  - **Reason:** Major or minor requirement.
  - **Effort:** I put a great deal of effort into this course. Although it was tough to always have accumulative tests, I believe that I have learned a lot more than if I had just memorized the material,.
  - **Understanding & Appreciation:** Although I am not really a math person, I think that the professor did a good job of catering to non math people. He used interesting examples that helped everyone learn. My knowledge and appreciation for the subject matter had greatly increased.
  - **Intellectual Growth:** I think it made me use a different part of my brain that I generally do not use.
  - **Quality:** I think he did a really good job explaining things and giving relevant examples in class.

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- Student 1
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** This course required a demanding but steady level of effort. With the pop quizzes, I had to review my notes every day in order to be prepared for class. Also, the homework assignments were relatively time consuming so I had to plan in advance to complete them. In order to do well in this class I did have to put in a lot of effort into the class, but it was very manageable and doable.
  - **Understanding & Appreciation:** I had never taken a statistics class before this one and so I didn't really know what to expect. I ended up enjoying statistics because even though I don't plan on taking any more math classes, I can see how my knowledge from this class will be helpful in my future endeavors.
  - **Intellectual Growth:** I believe the things I learned in this class will be helpful in whatever discipline I decide to go into. The knowledge from this class will also help me to simply better interpret data when presented for example in the news. Also, this class helped me to be my own advocate and take initiative because with such a large class, you had to actively seek out help.
  - **Quality:** Professor Cipolli obviously cares a great deal about his students and wants us to succeed. He had many office hours and if you came prepared, he was always willing to help. It was also obvious that he put a lot of effort into the course. I found the practice problems and powerpoints he posted to be helpful. Professor Cipolli also was very open to feedback as he periodically would ask students to give input on the class and then tailor it to our wants. Sometimes in class, however, he would move really quickly or not introduce a topic well. Sometimes I would leave a class feeling even more confused and would end up just having to teach myself through the powerpoints.
- Student 2
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I came to class every day and took notes on all of the power points. I put a great of effort into this class through the homework assignments, the writing assignment, and the numerous pop quizzes/standards that we had. I was constantly reviewing material and making sure I knew everything in order to do well on the standards because for most of the semester, they were pop quizzes.
  - **Understanding & Appreciation:** I want to be a psych major, so being in this class has definitely helped me to better understand statistics that would be necessary to have a career in psych, etc. I am not very much of a math person, so this class was just the right amount of math that I like to be involved in. However, I don't think that the methods that the professor used to teach the subjects to us were very effective. For the most part, I learned most of the material from the online homework assignments than I did in class.

- **Intellectual Growth:** I think that, being in a huge lecture style class, has taught me that this is not the right style of class I can learn most productively in. For a math class, I thought it was okay, but if I want to take a math class again, it will not be in a huge class.
- **Quality:** I do believe that Professor Cipolli does want us to understand the material and get good grades. However, he seems to be very stuck in his notion of teaching and, although he gives out numerous surveys to see what we think of his teaching, he rarely actually listens to what the students have to say. The way that he does quizzes is very frustrating because we can be pop quizzed on the same topic more than once, but rather than the highest grade being the one that counts, it is the last grade that counts. I have had numerous times where I have scored well on the first standard/quiz and then on the retake of the same topic I have scored poorly, simply because it was an off day for me or I was so swamped with other work the night before I couldn't review the material. I believe that this is a horrible way of teaching because it assumes that all students are equal in their learning styles and review strategies. It also diminished all the hard work I put into studying for a specific topic simply because I didn't review all the material every single day. Overall, I enjoyed the topic of statistics and I liked the examples he used and his humor. I also liked the homework as a way to learn the topics better and as a grade booster, but there were parts of the semester that really frustrated me, and I'm sure many other people in the class.

◦ Student 3
- **Reason:** Major or minor requirement
- **Effort:** I put effort into this course by doing the homework, attending lectures, and spending time studying for the cumulative quizzes and exams.
- **Understanding & Appreciation:** This course helped me better understand the methods of calculating and representing data in a way that is easy to understand.
- **Intellectual Growth:** The concepts I've learned in Stats have found their way into my other courses; when writing lab reports for General Chemistry, I found myself going back to the methods I learned in this course and applying them to the task at hand when organizing my data.
- **Quality:** Prof. Cipolli is very down-to-earth and very approachable and has a vast understanding of statistics, both theoretical and applicable. He has a quirky personality that makes something as boring as mean, median, and mode tolerable and possibly even enjoyable.

◦ Student 4
- **Reason:** Core or Areas of Inquiry (distribution) requirement
- **Effort:** I completed all assignments and attended all class lectures. When I did not understand a topic I found a tutor that I worked well with and attended office hours
- **Understanding & Appreciation:** The last time I took statistics I was in high school. This course broadened my understanding of statistics and provided a space where the content of the classroom became applicable to real world.
- **Intellectual Growth:** The course challenged me and required me to think in ways I was not necessarily accustomed to and an Educational Studies and Women's studies major.
- **Quality:** I struggled with the large class settings and found myself getting lost in the lectures, which is symptomatic of the class size not the teaching style. The moments I learned most were in Professor Cipolli's office hours when I was able to receive more one-on-one time. Professor Cipolli took steps to try to create an inclusive space for his students.

◦ Student 5
- **Reason:** Other requirement
- **Effort:** There was a lot of quizzes which I felt I should be prepared for so I spent a lot of time with that. I also put a lot of effort in the homework.
- **Understanding & Appreciation:** This course opened my eyes to the math department which I was scared of before.
- **Intellectual Growth:** This course contributed to my intellectual growth because it is a class I didn't

think I was interested in and was taking to fulfill a requirement but I realized I do like having some sort of "math" class in my schedule.
    - **Quality:** Professor Cipolli was helpful in office hours and easily accessible. However, in class, he could sometimes be belittling and rude. I also did not know what was going on in class all the time, but in such a big class, was scared to ask questions because I knew that he was not always helpful in answering them. I also did not like the standards quizzes. He counted the most recent, not the best grade, which I think hurt instead of help the students. I think the amount of testing we had was similarly not beneficial because I feel that I spent more time trying to memorize how to do problems instead of actually learning the material. I do think that 1 on 1, Professor Cipolli is helpful and personable and is definitely easily accessibly and seems like he genuinely cares about his students. However, I think the amount of testing in the class causes unnecessary stress for the students and therefore isn't beneficial.
- Student 6
    - **Reason:** Other requirement Additional Reason(s): Med School Requirement
    - **Effort:** I put a great deal of effort into this class. the first half of the semester was random pop quizzes, so we had to study all the material everyday before class. On top of that the homework typically took 3 hours to complete, and that coupled with the writing assignment and the readings was a lot to handle but also manageable
    - **Understanding & Appreciation:** I now have a strong appreciation for statistics and statisticians. I didn't think I would like this course but Professor Cipolli has made it extremely interesting and engaging
    - **Quality:** I really enjoyed Professor Cipolli's teaching style. He has great concern for his students at that really shows through. He is extremely funny and approachable and alway brings in great class discussion. I thought he did a great job teaching this class, the only part I did not like was his grading style. There has been a lot of pushback from use of the standards (Random pop quizzes) but I actually think they are a good idea. it makes us student more often and more frequently, and as a result I know the material better and feel much more prepared for the final. What I dont like is how these quizzes are graded and scaled. I don't think that an A should be 4 (100%) on all quizzes. Thats basically saying that a 90 and a 100 are the exact same grade, because if you get a 3 on just one of the quizzes your already down to an 89 and that doesn't seem fair to me. Now I know that you have mentioned various times that you dont have to get a A on the standards portion to be able to get an A in the class, but my point is that it should be somewhat more achievable to get an A on the standards. Now yes, there are apparently 30 students in the class who do have an A, but I think that again, this grading system is not appropriate, and just because I have two 3s and the rest 4s I have an 87, and that does not seem fair to me.....Overall though I think Professor Cipolli is great and I really enjoy his teaching style, I wish I was planing n taking more classes in the math department because I would enjoy having him as a professor again
- Student 7
    - **Reason:** Other requirement; I knew that statistics are complicated and are not always straight forward, did not need to be constantly retested on old material that I did well on but not the second time around because I was studying the new material and forgot a thing here or there; I've demonstrated that I knew the material before hand so why penalize me when I failed to remember every aspect of it while I was studying for the new material and while I had other chaotic things going on in my schedule.
    - **Effort:** The course was challenging, I often had to devote more time than I expected on learning the material. I hate how our grades for the standards can drop even if we got a perfect score on them once or twice but forgot a detail here or there as we were studying for the newer material. If he told us what the older material was going to be retested again, then I would be okay. But what I am not okay with is doing hypothesis testing we learned in late April and then being asked to recall

probability questions that we learned in the third week of class with no notice. I get that Cipolli wants us to know the material but expecting us to know everything from early in the semester up until now and constantly study it, is asking for too much.
  - **Understanding & Appreciation:** None, knew that statistics are complicated and are not always straight forward, did not need to be constantly retested on old material that I did well on but not the second time around because I was studying the new material and forgot a thing here or there; I've demonstrated that I knew the material before hand so why penalize me when I failed to remember every aspect of it while I was studying for the new material and while I had other chaotic things going on in my schedule.
  - **Intellectual Growth:** None, knew that statistics are complicated and are not always straight forward, did not need to be constantly retested on old material that I did well on but not the second time around because I was studying the new material and forgot a thing here or there; I've demonstrated that I knew the material before hand so why penalize me when I failed to remember every aspect of it while I was studying for the new material and while I had other chaotic things going on in my schedule.
  - **Quality:** I do not like his grading and learning philosophy when it comes to the standards. Cipolli is a smart and talented person but he expects way too much from a 100 level introductory course. I know that he wants us to be interested in math but no all of us are math majors, some of us just took this course to have a little breathing room from our other courses but instead he expects us to care and master the course as if it were a seminar or 300 level course. I admire the passion but it is very disproportional to the actual level of the course; some students just want to learn the material and do well but he expects us to think about statistics in such a broad way that it seems a little presumptuous for a 100 level class
- Student 8
  - **Reason:** Interest in the course material
  - **Effort:** I put a good amount of effort into this course to prepare for the frequent pop quizzes in the beginning of the semester. Reviewing the subject material on a pretty consistent daily basis was necessary to grasp the material for these quizzes. I also put in a lot of effort into the writing assignment. This assignment challenged us to use concepts taught in class along with a coding program, which required a lot of effort to try to understand how to use the R code properly.
  - **Understanding & Appreciation:** This course contributed to my understanding and appreciation of the course subject by teaching me mathematical concepts and procedures that are very applicable and relevant in the outside world.
  - **Intellectual Growth:** This course contribute to my intellectual growth beyond my understand of the course subject by enabling me to apply the things we learned in this class to other classes. This course also taught me the importance of making the effort to understand what is taught by reviewing a little each day instead of waiting the day before a test to review the information.
  - **Quality:** Professor Cipolli did a good job of engaging with the students. He was enthusiastic about his teaching and the subject matter. He also made a great effort to answers all questions and to be available for office hours. I feel like it was effective when we had days where students would just ask any questions they had about the chapter. I also like when professor Cipolli spends time working out example problems on the board. This is more helpful than listening to the power points, which I wasn't always clear on. I think it would have been helpful if this style of teaching was introduced earlier in the semester.
- Student 9
  - **Reason:** Core or Areas of Inquiry (distribution) requirement Additional Reason(s): I took this course to satisfy my math distribution requirement. It was the only class available that I could take without a lab.
  - **Effort:** I put a great deal of effort into this course. It's frustrating that I had to struggle so much in

an introductory class that doesn't apply to my major or interests.
  - **Understanding & Appreciation:** This course taught me a decent amount about statistics but I had learned a lot of the material in high school. I think the instructor made it more complicated than it needed to be and as a result we didn't get through all the material.
  - **Intellectual Growth:** This course didn't contribute to my intellectual growth beyond the course subject.
  - **Quality:** This course was my least favorite. The material wasn't difficult yet the Professor complicated it and quizzed us relentlessly but didn't tell us what we were going to be evaluated on. I studied and did all my homework and put a great deal of effort into my writing assignment yet I continued to struggle in this course. It wasn't until the last few weeks that I began to feel like I was not only getting it but also able to demonstrate that on my quizzes. The power points he used for the beginning of the course were not helpful. The last few weeks he began to do examples on the chalkboard and this helped a lot. Also switching the quizzes from pop quizzes twice a week to once a week on a set day was helpful. The professor's office hours were not stable and confusing. I went to his office many times expecting him to be there and he was not. Also he expected us to use computer software R but didnt effectively teach us how to use it. Further, this course was a massive waste of money. The online "textbook" cost $105 and we never used it. Also the instructor required us to buy an uneccesary book and iClickers which also are expensive and can't be reused or resold. This was a poor choice and I'm disappointed that 154 of us had to suffer the consequences.
- Student 10
  - **Reason:** Major or minor requirement
  - **Reason:** Exploration of possible major or minor
  - **Effort:** I put in a good amount of effort into this course. I would go through the powerpoints and do the practice problems to prepare for the quizzes.
  - **Understanding & Appreciation:** I have learned some introductory statistics topics. This course made me like statistics more.
  - **Intellectual Growth:** It allowed me to see how statistics are prevalent in everyday life.
  - **Quality:** The quality of teaching in this course was fair. The professor kept changing the way the course was taught, differing from what it said on the syllabus. He tried to challenge us and truly wanted everyone to learn. I understand this is a lecture class with many students but the professor seemed to get frustrated with attendance and how some people were performing on the standard quizzes and he seemed to put the consequences on everyone. When I submitted my extra credit assignment, I went into the specifics of the revised syllabus for next semester and mentioned many great constructive points but happened to mention one incorrect statement. He responded saying I did not read the new syllabus at all, neglecting all my other helpful comments. This is an example of how the professor was not always receptive and kind, showing in the light turn out of office hours.
- Student 11
  - **Reason:** Interest in the course material
  - **Effort:** i came to class ready to take copious notes each day, i completed every assignment on time and attempted to prepare for each standards quiz beforehand, even when they werent announced.
  - **Understanding & Appreciation:** I didn't find the material all that interesting or helpful, but people say it will be.
  - **Intellectual Growth:** I was challenged to teach myself frequently because I felt that professor Cipolli could not do so in a way that i truly understood. I would get lost frequently and feel afraid to speak up because he was sometimes condescending in class.
  - **Quality:** He seemed like he cared but was unfriendly in office hours and in person. He made me feel bad about myself and my level of learning for not getting some things. He encouraged students to ask questions and handled them well when they did. his teaching was somewhat unclear
- Student 12

- **Reason:** Major or minor requirement; Exploration of possible major or minor; Core or Areas of Inquiry (distribution) requirement; Interest in the course material
- **Effort:** I put a LOT of effort into this course and did all of the HW and practice problems.
- **Understanding & Appreciation:** It made me interested in the applications of statistics.
- **Intellectual Growth:** Made me get outside my comfort zone and learn R Studio.
- **Quality:** I think the quality of teaching was half-decent. I feel as though I could have looked at the power points online from my bed because there was not a whole lot of explanation from the professor, up until the end of the semester. I think some aspects need to be revisited of this course, such as the weekly quizzes. Although it forces us to keep on top of the standards, it is simply a lot of material to always have to review before the quizzes because we don't know what they could be on. I could understand weekly quizzes with topics we had just learned, but getting retested on a super old standard, only to do worse than you did before, is aggravating and disheartening. I understand that statistics is a cumulative subject, which is why I think that as the semester progresses, the quizzes should only be of what we learned because it incorporates previous skills and knowledge.

- Student 13
  - **Reason:** Major or minor requirement; Interest in the course material
  - **Effort:** I have always been good at math and I assumed that through hard work, I would enjoy Statistics as well. However, I was wrong. First of all, Statistics is not math. It just isn't. There is very little quantitative problem solving until much later in the semester. Second, I worked so hard in this course purely based on the fact that I don't like to feel like i'm in the dark and when i'm confused, it just makes me work harder.
  - **Understanding & Appreciation:** I still feel like I have absolutely no idea what I'm doing, all of the time. And i promise, I went to tutoring hours, office hours, and had my peers help me.
  - **Intellectual Growth:** I guess you could say it taught me how to not have mental breakdowns every time I did poorly since it was happening frequently. There was little to no help provided and the little help there was did nothing. So, it was a very independent semester.
  - **Quality:** Cipolli is a funny guy. However, he is not a very compassionate teacher. I would feel like I couldn't go into his office hours and be totally confused because he would get frustrated with me. That shouldn't be the case. He also should work on being so passive aggressive. In a class of 150+ students, many people will not feel comfortable talking. That's unfortunately just how it is.
- Student 14
  - **Reason:** Major or minor requirement
  - **Effort:** I did most of the practice problems before quizzes, but usually studied the night before. This wasn't my top priority class, but I still think I gave it a decent amount of my time.
  - **Understanding & Appreciation:** The class did show some interesting things that you can do with stats. I especially noticed this in the writing assignment, where we got to play with data ourselves.
  - **Intellectual Growth:** I think this class has taught me to take statistics reported in the news and elsewhere with a grain of salt, and to be skeptical when someone reports general numbers like that.
  - **Quality:** I think the professor genuinely did care about how the students did in this class. He really seemed invested in what we were learning. However, I think his expectations for the amount of work that we could put into one class were very inaccurate. His grading procedures, while clearly explained, did not seem to make much sense. I get that retesting is supposed to keep you improving throughout the semester, but it's difficult to appreciate when I've made four errors on quizzes all year and my grade drops a whole letter grade. I don't understand why answering 95% of questions correctly gives a score of an 85. Additionally, incorporating R Studio and coding into a mandatory writing assignment was very frustrating, and I found myself focusing more on the software than the statistics. The time necessary to get every single question correct all year and learn how to manipulate a coding software felt unreasonable with three other courses. I simply didn't have enough time in the day to live up to the professor's expectations of me.

- Student 15
  - **Reason:** Major or minor requirement; I have never skipped class, or even had the desire to, before this class.
  - **Effort:** I put in considerable effort outside of class, because it was required to teach myself the material. I did not learn in class very often, as his teaching was more lecture style than working through the mathematical processes.
  - **Understanding & Appreciation:** I'm glad I learned the few skills I learned, I feel as though they will be useful and have real world application, but I will also never take a math class again. This is very irritating because I know how valuable these skills are. I wish I had taken this class with a professor that didn't talk down to the students so much.
  - **Intellectual Growth:** I was able to use the skills I acquired on my own in other classes – but that is all. That, and all the skills were skills I learned because I put in the effort to teach myself – I did not learn a great deal from prof. Cipolli.
  - **Quality:** Putting aside how condescending he was, and how distracting that was from the actual content of the course, he did change his style a bit at towards the end of the semester, making it more geared toward problem solving. However, at that point in the course, I had stopped caring entirely. Maybe this is his first time teaching a class this large, and he wasn't prepared.
- Student 16
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I did all the homework and asked questions. I would have went to office hours, but as the semester progressed, I felt less comfortable doing because the professor became condescending. By the end of the semester I had no desire to put any effort into this class.
  - **Understanding & Appreciation:** It didn't.
  - **Intellectual Growth:** It didn't.
  - **Quality:** I'm very disappointed in the quality of teaching. When going through problems together on the board, the professor would explain things as if we were all statisticians. He rarely ever did problems with the class that were from class worksheets, instead he would go online and find an article and make up a random problem. That would have been an interesting way to present course material if we did that at the end of a unit. He would do that the first day we started a new unit and then never go over how to solve worksheet problems. Then he'd randomly have days where we'd work on a worksheet on our own and he'd "float around to answer questions." That was a horrible idea because we have almost 150 students in the class...I never had a question answered. He was also often very insulting and condescending and fostered an environment that I did not feel comfortable in. I'm so glad this semester is over.
- Student 17
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** Until about halfway through the year, we had 1-2 pop quizzes a week on any information from the entire year so I would have to review all of the material we had learned. Now our quizzes are announced but we still do not know what topics are going to be on them. We also had online homework, optional practice problems (essential to do well on quizzes), a writing assignment, and a midterm/final exam.
  - **Understanding & Appreciation:** I enjoyed learning about how statistics is applicable in real life in our everyday actions. It helped me to appreciate the subject as more than just math, which I usually find to be time-consuming and rather boring.
  - **Intellectual Growth:** It helped me to look at everyday statistics in the news/media/etc. with a more critical eye. I think these techniques will help me in real-life scenarios when I have to gather and summarize data, whether it be for a class paper or a job assignment.
  - **Quality:** This class took a long time to get on track; from the beginning there was a disconnect between what the professor expected and what students were doing. The unannounced pop quizzes

added chaos and stress to the class, yet the professor was extremely reluctant to hear us out or make any changes that we proposed until second semester after spring break. When he posted solutions online, there were so many typos that I could not understand how to correctly do the problems. Additionally, he has expected us how to use R Coding Software without giving us any explanation on how to use it. When going to his office hours to ask for help on this, he was rather condescending and unwilling to help. Overall, I think the class has gotten better throughout the semester but he has been extremely reluctant to make positive changes.

- Student 18
  - **Reason:** Other requirement; Interest in the course material; Need stats for grad school
  - **Effort:** I reviewed my notes for at least 10 mins before each class, read from Naked Statistics, did the practice problems, and completed the Pearson homework.
  - **Understanding & Appreciation:** I thought the examples that were used were really interesting and engaging.
  - **Quality:** I personally really enjoyed the class. I am not very math inclined and I was able to do well in this class by putting in the effort. While I did not have a problem with Prof Cipolli's humor, I do know that other students found it to be insensitive and mean. I enjoyed the teaching style. I thought all the assignments were productive to out learning and thought it was great that the WA were based in other subjects so we could choose what interested us. In the surveys that we completed in class, I was surprised by some student responses that this class required too much work as most of us do not want to be statisticians. I would just like to respond that as a Junior here who has taken multiple intro level courses, this class asked nothing extreme. The standards quizzes were extremely fair and I don't think it is unfair to ask students to review their notes for these quizzes (I read over for 10 mins each time and I got 4s on all of them). I thought the idea of standards quizzes was great even though slightly terrifying at first. I can honestly say that I have a great understanding of what we learned in this course and I don't think this would be the case without these standards quizzes.
- Student 19
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** In the beginning I did not try very hard until I realized that I would need to teach myself some of the material and do practice problems in order to understand anything and actually do well in the course. After that I started to put more effort into understanding the material. I also spend a considerable amount of time on the homework because it takes so long to get through all of the questions, especially because some of the homework questions include material that is never taught in class.
  - **Understanding & Appreciation:** This course did help me to understand probabilities better, and I do appreciate it more so because I have realized that statistics is harder than I first believed it to be. Overall though I did not enjoy this class.
  - **Intellectual Growth:** This course showed me how to teach myself and actually do practice problems in order to do well, which will help me later in school. Overall I do not feel that it furthered my education much because we did not do much actual analysis of real world problems where we could learn to use statistics in our everyday lives.
  - **Quality:** Professor Cipolli did not teach the material in a way that made it easier to understand and even over-taught sometimes, making the material more confusing than it needed to be. He should have spent more time on certain chapters and done more practice problems in class because I feel that was the best way for the class to learn. Much of his lectures taught me nothing.
- Student 20
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** This course was extremely difficult for an intro level statistics course. I put in time studying before each class as there were often pop quizzes. Despite changing this to announced quizzes I am still required to study just as much if not more to prepare for each class.

- **Understanding & Appreciation:** I honestly will never enjoy math but I can understand on a conceptual level that statistics is pertinent to almost every academic discourse and therefore extremely important.
- **Intellectual Growth:** This course required that I relearn how to study for a formula based math course as it has been years since I have taken such a class.
- **Quality:** Professor Cipolli was figuring this class out as he went. He is extremely approachable and easy to talk to, provided many resources in order to succeed. However, the workload was unrealistic if his goal was mastery. This was a consistent frustration for me as well as many other students in the course.

- Student 21
  - **Reason:** Elective outside major or minor
  - **Effort:** I worked really hard for this course and reviewed all course material before almost every class. I spent around 12 hours on the writing assignment.
  - **Understanding & Appreciation:** I now have a better understanding of statistics.
  - **Intellectual Growth:** Prior to this class, I hadn't taken a math class for a really long time, so this course helped me use skills that I hadn't used in a long time. I am also now more critical of the statistics that I read about in the news.
  - **Quality:** Prof Cipolli is intelligent about the subject matter. However, he is very condescending. One time when I went to his office hours, I realized I had an additional question that I wanted to ask. It took me about 20 seconds to formulate my question and in that time he thought it was appropriate to put his head down on the table, without explaining why he was doing so. While I understand that people get tired and/or have headaches, it is incredible rude to put your head down without explaining why you are doing so while a student is with you in office hours. PLEASE OMIT THIS PART WHEN IT IS PASSED ON TO PROF. CIPOLLI AS IT IDENTIFIES WHO I AM: I emailed Prof Cipolli asking questions about a writing assignment after I had asked him questions over email and in person during office hours. I emailed him because I was still having trouble understanding what he was saying. In response he said, "It is important that you read through the instructions – you are missing pieces that are explicitly offered through the prompt. Review the notes that I wrote out on your hard copy – I practically wrote the code for the uniform case, I'm having trouble seeing how you wrote what you did with what I gave you yesterday." (direct quote from his email). For this writing assignment, it was my first time using the statistics software R, and I was having a lot of trouble understanding what to do. I spent several hours trying to figure things out on my own, but was having trouble understanding it. I don't think it is ever appropriate to give a student attitude for not understanding something, especially after I tried really hard to figure it out by myself. This is just one example of how he is condescending. In class he openly berated a student, without saying their name, for simplifying a fraction incorrectly. The student had done so on a test that they forgot to put their name on. After saying the student was stupid in front of the whole class, he asked it the student could come forward to pick up the test. Who on earth would want to admit it was them who made that mistake after their professor spent forever saying the student was stupid?!
- Student 22
  - **Reason:** Major or minor requirement; Core or Areas of Inquiry (distribution) requirement; Interest in the course material; I was really interested in the subject matter.
  - **Effort:** I put a lot of effort into this course.
  - **Understanding & Appreciation:** I like how he incorporated real-world relevance
  - **Intellectual Growth:** it taught me to think critically.
  - **Quality:** I liked his teaching style. The only thing i disagreed with was his grading of the standards.
- Student 23
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I put a great deal of effort into this course.

- **Understanding & Appreciation:** It did not contribute to my understanding or appreciation for the course. It made me strongly dislike statistics.
- **Intellectual Growth:** It did not.
- **Quality:** Very condescending and arrogant in lectures. Cipolli did not make himself available to students. Not good at explaining material clearly or concisely. Uses convoluted and long-winded sentences in person and over email- as evident by the ridiculous amount long emails we would receive in succession (these emails were often passive aggressive in tone). Doesn't think students want to be challenged (he's said this more than once in response to expressed frustrations with the course). They do. They just want to feel that they are being challenged for the right reasons- that information is being given clearly, that the schedule is kept, that professors are making themselves available, and that jokes aren't being made at their expense. Even when I attended scheduled office hours I felt like I was seen as a nuisance and was given a hard time for being there more than once. One time Cipolli even groaned at me as I walked in the door. Guess what? I have things I'd rather be doing too. Also, I would have fewer questions if his materials didn't have so many typos! I'm a pretty competent person and most of the learning that took place in the course was me teaching myself the material only to get confused by his wrong answer keys. The extra credit assignment, just as every survey he provided was just a tool for him to man-splain why he thought his way was right. This was made clear by the fact that minutes after sending my extra credit assignment critiquing next year's syllabus, before he could have had time to read it fully, I received one of his long-winded messages that appeared to be pre-written defending his decisions. He didn't actually take any of the criticism we gave to heart. I hope set forms are received differently. Professor Cipolli, I think you'll find Colgate students like to be challenged, but what they don't like is to be treated as lesser than. Respect us, make yourself available, answer questions- don't complain about office hours or make jokes at our expense. Also, know who you are teaching- you say the course is designed for students with varying experience but this was not my experience at all. It felt like you were weeding out non-math people.

- Student 24
  - **Reason:** Elective outside major or minor
  - **Effort:** There were quizzes once a week, so it was my job to have an understanding of the material before I came to class everyday. Additionally, doing the extra practice problems he posted helped and the homework assignments that were do every couple weeks were very beneficial.
  - **Understanding & Appreciation:** I thought this course did a great job giving me an understanding and appreciation for stats. Stats is extremely relevant in our world around us so to be able to apply some basic knowledge and formulas was extremely important.
  - **Intellectual Growth:** I learned to value time management as well as asking for help when I needed it. R was a program he introduced to our class that I was not familiar with and found extremely challenging. Therefore, it was imperative I swallow my pride and make time to see him regularly to ask questions and learn how to use him as a resource/ for help. I also learned time management skills because I had to make sure to put some time aside each night to study the material instead of waiting until the last minute until it all piled up.
  - **Quality:** I really enjoyed this Professor, I thought he did a great job entertaining his students and making this course very applicable to our lives. Two thumbs up
- Student 25
  - **Reason:** Major or minor requirement
  - **Effort:** I spent a good amount of time and effort reviewing powerpoint slides and looking over worksheets before every standards quiz that effectively helped my grade.
  - **Understanding & Appreciation:** I now have a basic understanding of how to analyze statistics and how some statistics are used in my everyday life.
  - **Intellectual Growth:** The standards quizzes helped me stay prepared for class regularly prompting me to review my material before other classes as well.

- **Quality:** I felt that I learned a lot from this course and discovered a new way of learning through the standards quizzes. All the required material I felt was well explained and easy to understand under these teaching methods.

- Student 26
  - **Reason:** Interest in the course material
  - **Effort:** I put my best effort into learning the material as best I can in order to achieve the best grade I can.
  - **Understanding & Appreciation:** This course gave me a solid base of understanding to the bottom layer of statistics.
  - **Intellectual Growth:** This course taught me how to learn material in a way that lasts a long time. Instead of cramming the night before, and forgetting the material ten minutes after the assessment, I actually learned the material and gained a knowledge for statistics, thanks to Professor Cipolli.
  - **Quality:** Professor Cipolli had a lot on his hands this semester with a 150 student classroom. He did a great job making a large lecture feel like a small class. He was able to get student participation, and was constantly available for office hours. I had a great experience with Professor Cipolli.
- Student 27
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I put in a nightly effort into this course. Whether I was studying for a quiz or completing a homework assignment I was always working on statistics.
  - **Understanding & Appreciation:** I have a greater appreciation for statistics from taking the course. I have a much stronger understanding of statistics and it is interesting to see how often statistics are used in everyday life.
  - **Intellectual Growth:** The course allowed me to think about things from a statistical standpoint. As a sports fan it is very interesting to see how statistics has such an impact on the sports world.
  - **Quality:** I enjoyed Professor Cipolli's class. He is a good Professor who is a fair grader and despite the large amount of students in the class he always got our assignments graded as soon as he could. I think he connects with his students very well and is open for suggestion which I like.
- Student 28
  - **Reason:** Elective within major or minor
  - **Effort:** I put a lot of effort into this course. As it is part of my Economics major, I tried with my best effort.
  - **Understanding & Appreciation:** This course helped me make inferences regarding statistics. What was cool about this course was that it was real-world applicable.
  - **Intellectual Growth:** I will be able to use what I learned in this class in the real world.
  - **Quality:** The initial grading system of Professor Cipolli was extremely difficult. His "Standards" quizzes were near impossible to keep up with the course and not fair at all for the students.
- Student 29
  - **Reason:** Core or Areas of Inquiry (distribution) requirement; Interest in the course material
  - **Effort:** I put a decent amount of effort into this course, while I certainly spend time completing homework and practice problems, the amount of work was never overwhelming.
  - **Understanding & Appreciation:** As it i an introduction class, I had no prior learning of statistics before taking this class, therefore this class did give me new understanding in the course subject. However, some of the material was somewhat dry and therefore didn't really lead me to appreciate the subject.
  - **Intellectual Growth:** Being in a lecture-style class, I was required to listen in class and often also attempt to understand new concepts outside of class. I think this contributed to my own overall intellectual growth.
  - **Quality:** I thought Professor Cipolli was a good professor, especially since teaching such a large lecture must be difficult and at times frustrating. I thought the concept of standards to be somewhat

confusing, and preferred the way in which he gave us once-a-week quizzes towards the end of the semester. I also wish he had either stuck to teaching through power points or simply on the blackboard, as the combination of the two led me to sometimes be confused when reading the powerpoints individually.

- Student 30
  - **Reason:** Major or minor requirement
  - **Effort:** Above average
  - **Understanding & Appreciation:** Math skills got better
  - **Intellectual Growth:** Realized some teachers grade unfairly
  - **Quality:** Decent teaching. Grading style is out of whack though
- Student 31
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I put so much effort into this class! I was constantly looking over my notes and going back through power points. I always did the hw and practice sheets. I had to basically teach myself EVERYTHING because his lectures were so confusing and unhelpful. I had to put in way more effort than I needed to because he was such a bad teacher. I went to office hours a lot to ask him questions and to go over questions I got wrong. I always got the impression that I was bothering him when I asked him questions because he always rushed me and made me feel small.
  - **Understanding & Appreciation:** I feel as though the course itself didn't help me at all because I did most of my learning on my own time. I learned more about stat concepts that I will actually need to use in my research methods class for psych. Overall, a lot of unnecessary stress for a class that wasn't that helpful.
  - **Intellectual Growth:** This class was absolutely infuriating because unless you are some wizard who never makes mistakes you can not do well. Also, if you aren't one of his favorites he will not respect you. This course contributed to my intellectual growth in that it had made me really cynical regarding the motivations of my professors and had really butchered my confidence.
  - **Quality:** I hate professor Cipolli. I think he is cocky and condescending. He always claims that he has our best interest in mind, but then does nothing to show it. He is SO unwilling to listen to us and would always make us feel bad for being stressed out. He belittled us CONSTANTLY and then blamed us for feeling belittled. I think he is a very smart guy who know a lot about stats, which is great, but he taught us as if we were supposed to know everything already. He often made really demeaning jokes to our class and would taunt us for feeling uncomfortable speaking up. He told us to email him about concerns or to talk about how things could be different in the class, but he would then put these responses on the board so that he could rip them apart in front of everybody. When things like this were brought to his attention he had tons of excuses prepared. He is filled with excuses and claims that he knows better than all of us. I think it is really telling when an entire 150 class is stressed and are encouraged to talk to their professor about it but are then very harshly shut down. I don't feel respected by this man and I don't feel like he wanted me to succeed. I acknowledge that he gave us extra credit, believes his standards system works, answered questions in class, and even gave us surveys to comment on his teaching. All of these things were great! It's his responses to all of these things that made me feel so uncomfortable in class. He felt as though since he did all of these things that we should be kissing his feet for being so generous. I never felt good about the "nice" things he did for us because they were followed by him mocking us and making us feel guilty for being overwhelmed. Based on his syllabus for next year it is clear to me that he knows he was unorganized and unfair yet he would NEVER admit that in class because apparently everything is our fault. I would absolutely never recommend that anyone take a class with him. I think he is a mean person who is totally unwilling to accept the opinions of other people. I talked to my therapist about him constantly. A student should never have to feel this way about a professor.
- Student 32

- **Reason:** Core or Areas of Inquiry (distribution) requirement
- **Effort:** At the beginning of the semester Professor Cipolli gave pop quizzes frequently, so I spent a half hour a day reviewing the course material. After Professor Cipolli promised to only give quizzes on Wednesdays, I stopped studying every night and focused only on studying a few days before the quiz. I actually started improving my quiz grades and understood the material better because I wasn't anxious about the possibility of a pop quiz.
- **Understanding & Appreciation:** Professor Cipolli pulled all of our statistic problems from real world situations, so it was easy to see how statistics applies in the real world. However, even after taking this course I don't know how often I'll use the knowledge I now have in my everyday life. I was expecting this class to help me get more from reading scientific articles/essays, but it hasn't.
- **Intellectual Growth:** The writing assignments Professor Cipolli assigns made me appreciate statistics more than anything else in the course. I really enjoyed writing about superiority illusion, and I'm glad I now have the skillset to write a paper in a scientific format.
- **Quality:** Professor Cipolli is really great at explaining questions on the board and replying to students questions in class and via email. He could improve at handling criticism. He sends out surveys throughout the semester to check in on students and see how they're learning and how the class can improve. He made significant changes to the course for the benefit of students, i.e. quizzes are weekly rather than spontaneous. However, if someone sent an email he disagreed with, he would mock said email in class (omitting the students name of course). I'm sure he received a lot of obnoxious emails, but it's never appropriate to caustically deal with a student's legitimate concerns in front of others.

◦ Student 33
- **Reason:** Core or Areas of Inquiry (distribution) requirement
- **Effort:** I attended office hours and tutoring consistently. I also used outside resources like Khan Academy for further assistance in helping understand the material being learned and for extra practice.
- **Understanding & Appreciation:** I have never taken a statistics class before this one, neither in middle or high school. This class was definitely a challenge but it helped me appreciate solving real world problems using statistics. I, at first disliked the class, it seemed too difficult for me. I felt way behind compared to other students, but attending office hours and tutoring helped greatly.
- **Intellectual Growth:** I learned how to statistically analyze data and how to solve problems I thought were too difficult for me to solve.
- **Quality:** Weaknesses were not getting the class to participate much or show up. There was one instance where groups were made to work on a standard, which is when we were learning about probability. Besides that, no one really participated besides just 3-5 people. In regards to students not showing up, I believe there could have been a way to ensure everyone attended class. On days there were not any quizzes a good amount of students did not even bother showing up to class – which is problematic because they the ones who are falling behind with the material and result in tons of people showing up to one office hours meeting.

◦ Student 34
- **Reason:** Major or minor requirement
- **Effort:** Did a pretty decent amount of studying
- **Understanding & Appreciation:** Learned a good amount about statistics
- **Intellectual Growth:** Lots of real world statistics problems that I found interesting
- **Quality:** Really good overall, satisfied

◦ Student 35
- **Reason:** Core or Areas of Inquiry (distribution) requirement
- **Effort:** A good amount
- **Understanding & Appreciation:** It did not, I hated math before I hate it still now
- **Intellectual Growth:** N/A
- **Quality:** He is a great guy and tries his best to create the best course for the students at Colgate. It

is difficult when dealing with students who hate math and aren't good at it to make a course they would like (like me). But he is a great guy and was always available through email and extensive office hours.

- Student 36
  - **Reason:** Major or minor requirement
  - **Effort:** I put a lot of effort into this course. However, Professor's availability and ability to explain concepts well allowed my efforts to show great results.
  - **Understanding & Appreciation:** I have gained a much better understanding of the world of statistics and I have come to appreciate how helpful it can be.
  - **Intellectual Growth:** I learned that statistics are everywhere and understanding these statistics can lead to a better understanding of many different topics.
  - **Quality:** I think there was a very high quality of teaching in this course. Professor Cipolli would go out of his way to make sure that students understood topics and constantly encouraged participation. He was very accessible as he held office hours much more frequently than what was required of him and he was always reachable by email. He sincerely cared about the performance and happiness of his students and I would be happy to take another one of his classes.
- Student 37
  - **Reason:** Exploration of possible major or minor
  - **Effort:** I had previously taking the class in high school, so not too much
  - **Understanding & Appreciation:** I gained a deeper understanding of statistics, and how to analyze stats in the real world
  - **Intellectual Growth:** I was able to manage my time wisely when it came to the homework, and the writing assignment was helpful for conducting a scientific experiment.
  - **Quality:** Cipolli was a good professor, there were some confusing aspects of the grading system, but other than that I found the course to be very straightforward and informative.
- Student 38
  - **Reason:** Other requirement
  - **Effort:** A good amount of effort on the problem sets and studying on a weekly basis.
  - **Understanding & Appreciation:** It helped my develop knowledge in statistic and be able to better understand how to interpret statistics.
  - **Intellectual Growth:** Well this course has helped teach me to always continually study, because things are cumulative, and you never know when you will need to know something you previously learned.
  - **Quality:** The professor is very knowledgable and made class as interesting as he could given the subject, but he needs to work on his one on one skills. I went to his office for help and he was very rude and condescending when I didn't understand one thing. The whole point in me going to his office hours was to learn the thing I didn't know, but he made that difficult and made me feel like an idiot.
- Student 39
  - **Reason:** Major or minor requirement
  - **Effort:** I didn't put in a lot of effort in the beginning and really struggled. Now that I got my act together I am doing much better.
  - **Understanding & Appreciation:** I appreciate the practical applications of statistics in society. Professor Cipolli placed an emphasis on practicality and it helped me enjoy the class much more.
  - **Intellectual Growth:** It made me realize that I needed to focus on each little intricate step of my learning and not take any days off. I appreciate statistics as a form of math and think it is going to be a big area of study for what is to come in this world.
  - **Quality:** Professor Cipolli made an effort that was above and beyond to reach out to his students, coming from a student that slacked off for the most part and wishes he could have been more

diligent with his work. He is a great teacher and challenges you to be better every day.

- Student 40
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** Online homework, quizzes, and practice sheets
  - **Understanding & Appreciation:** I did not learn much about the topic of statistics from this course.
  - **Intellectual Growth:** It showed me how to think critically about the certain topics that included probability and stats?
  - **Quality:** This instructor seemed completely unphased and brought up no concern for the welfare of students after the incident of Sunday, April 30 that portrayed complete racial profiling and biases from the university. No extensions or thoughts were given in support of the very few students of color in this large stats class of 150.
- Student 41
  - **Reason:** Major or minor requirement
  - **Effort:** I put a lot of effort into this course. In the beginning of the semester when we had pop quizzes, you always had to be on top of the material every day. Towards the end, when we did bigger cumulative quizzes every week, I had to put a lot of time and effort into studying all the material. It took a lot of time because you had to make sure you understood all of the material.
  - **Understanding & Appreciation:** This course didn't really contribute to my appreciation of the course subject. I took this course because it is a requirement for Economics major. Obviously, I am grateful that I took this course because I know that I will need a basic understanding of Stats in the future.
  - **Intellectual Growth:** I think that along the way, I will have to use Statistics in future classes or careers. Stats gives you a base of the mathematical aspect of business and allows me to be a more dynamic student.
  - **Quality:** I think that, for the class size, Professor Cipolii did a good job. I think that maybe in the future, Colgate should consider making Intro to Stats a smaller sized class, for it is really hard to have math classes be lectures. I don't think Professor Cipolli is to blame, but I think class was often hard to pay attention in because math problems were presented through power point slides. I think this hinders learning because we weren't really able to work through / fully understand concepts. I also think the standards situation, specifically not taking the students best score, is kind of absurd. It shows that Professor Cipolli doesn't really truly care about the success of his students, for if he did he would allow students to take the best score. I understand the reasoning behind not, but maybe at the end of the course he should take the best score (so don't tell students you are taking the best score until after all the standards).
- Student 42
  - **Reason:** Major or minor requirement
  - **Effort:** I finished homework and practice problems in time and utilized them as reviewing materials. I reached out to the instructor when I needed help.
- Student 43
  - **Reason:** Interest in the course material
  - **Effort:** I would think this class was the most challenging class that I took for this semester.
  - **Understanding & Appreciation:** I learned about many concepts such at the Central Limit Theorem.
  - **Intellectual Growth:** I was able to take a math course even though I was busy with other assignments and commitments.
  - **Quality:** As I a student I felt that I could connect with this professor more than others. He is younger and understands where many students are coming from which is important.
- Student 44
  - **Reason:** Core or Areas of Inquiry (distribution) requirement

- **Effort:** Did homework, came to class, took the quizzes and studied for the tests. I put an above amount of effort into the course considering it is a 100 level.
- **Understanding & Appreciation:** I know more about stats and its applications in the real world.
- **Intellectual Growth:** I know how stats is applied in the real world, for example in election polling data.
- **Quality:** He was ok. Professor Cipolli clearly cares about the students and definitely cares a lot about statistics. I think he came on a little too strong in the beginning of the semester, he can be sarcastic as well. Towards the end of the semester he got better at teaching/communicating in general. I do not think the class was all that bad, but the tone at the beginning of the semester, specifically in terms of the standards and confusion surrounding their grading, caused panic and a lot of disgruntlement among the students. Also for a lot of the subjects I had to go into tutoring or have one of my statistically inclined friends explain the topic to me because the powerpoints were overly complicated for such simple topics. With that being said, I definitely know more about statistics now than I did in the beginning of the semester. Also, the syllabus for next semester is much improved and more clear. I think next semester will go a lot more smoothly in terms of students liking the course and learning the material.

- Student 45
  - **Reason:** Major or minor requirement
  - **Effort:** I put a great deal of effort into this course, including everything from the homework to the practice problems. I think the professor did a great job in giving us materials to work with that allowed you to do well in class, as long as you put the effort in.
  - **Understanding & Appreciation:** This course fav me a thorough introduction to statistics and it was all taught in a way that was easy to understand and hence made it even easier to get a good grasp of the subject
  - **Intellectual Growth:** I think this course helped me to think more critically in classes such as these and make me understand that you have to put effort in to do well.
  - **Quality:** I believe that this professor was one of the most admirable that I have ever had. It is not easy to teach a class of 150 students, and I believe this professor did it in a way that was effective, meaningful, and truly showed his desire for us to learn. I believe he did an amazing job when it came to giving us material to prepare for upcoming assignments, as well as making sure that he was available and accessible when we needed him. I understand that his course may be very different than some others, but he truly encouraged me to put effort into this class and work towards learning, rather than just a grade. Honestly, I would not have changed one thing about how he taught each topic in this class, and although many other students may have felt this class had unfair grading procedures and whatever else, I believe that this professor really helped everyone learn.
- Student 46
  - **Reason:** Exploration of possible major or minor; Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I had to put a lot of effort into this course, more so than my other classes this semester, just to fulfill a prerequisite. I had to be prepared to study for a pop quiz for every single class period on any part of the material in the course.
  - **Understanding & Appreciation:** This course did not really contribute to my appreciation of the course subject as I only took it in order to fulfill requirements. I did not enjoy taking this course. My understanding has increased as I do believe I learned. However, I believe that the way in which we were graded (pop quizzes once or twice per week) did not help my understanding in the long run. I felt that I had to just memorize material in a certain amount of time for a potential graded exam, rather than gain a real understanding of material.
  - **Intellectual Growth:** This course helped me in terms of time management and planning out a workload over a broad amount of time. It was my first every experience in a course larger than 30-40 students, so it helped me in terms of really learning the material on my own.

- **Quality:** The professor often was often careless in a lot of instructions on exams or assignments, with many issues in explaining what he wanted. I felt that the vast majority of the material was left for me to learn on my own outside of class (not in a good way). I did not feel like I got very much out of the lectures. This course really needs to be taught in smaller sections, rather than one 150+ student lecture. The professor's guidelines for grading were never clear throughout the entire semester, as students were still asking him about how he graded the standard quizzes even in the last week of classes. The professor was much more effective in conveying material in a smaller setting (i.e. office hours) than in the large lecture.

- Student 47
  - **Reason:** Major or minor requirement
  - **Effort:** I put a considerable amount of effort into this course. I reviewed class material frequently and completed practice problems before quizzes and the midterm. I also spent one week working on our writing assignment. In addition, I went to office hours about 4 or 5 times throughout the semester if I had questions that I felt couldn't be answered by my peers.
  - **Understanding & Appreciation:** I needed to take stat as a pre-req for another class. I'm disappointed because I felt like we spent a lot of time on probability and definitions of different types of experiments. While spending extra time on these subjects was helpful at the time, I feel like I might be unprepared for the other courses I want to take. We did not learn chi squared tests and we skipped another chapter. While I appreciate spending extra time on probability because it was something I struggled with, I wish we had spent less time on experimental design and definitions.
  - **Intellectual Growth:** I think statistics are useful in almost every subject. I do think that the concepts I learned in this class will help me in other academic areas as well as increase my understanding of current events.
  - **Quality:** I think Professor Cipolli puts a lot of effort into this course. We did not like taking quizzes with i-clickers so now we get to take hand-written quizzes. While this is easier for students, it makes grading more time consuming for the professor. I do think this change was beneficial though. He also tries to make class interesting with the examples he uses. My biggest issue with class, and I feel many other students will voice the same opinion, was standards. In the beginning, standards were pop quizzes that could be on any subject matter we had learned in the semester. I think pop quizzes just do not work in a class this size. It's difficult to know where students actually are at with the concepts we learn in class. Homework grades are not indicative of our understanding, as a lot of the homework problems were multiple choice and I will admit I guessed on a lot of them when I was too lazy to learn the material. He changed them to announced quizzes where we still would not know what material would be on them. My biggest problem with standards (which prof Cipolli has already heard) is that he would take our most recent grade rather than our best grade. I found it unfair that a short quiz could change your grade so dramatically if you made a silly mistake (grade drops from 100 to 89 if you get one standard below 100). He claims we did not need to review all material ever night, but there really is not other way to guarantee yourself a 4 on every standard unless you do this.
- Student 48
  - **Reason:** Major or minor requirement
  - **Effort:** I put a great deal of effort into this course as I studied before every class in case of possible pop quizzes. I made sure to complete the assigned homework problems as well.
  - **Understanding & Appreciation:** I have gained great understanding from constantly studying and reviewing which you are forced to do because of the pop quiz system.
  - **Intellectual Growth:** This course has taught me the value of consistently learning rather than cramming.
  - **Quality:** I feel like the teaching is of a very high quality and that good grades in the course are achievable if you put in the work.
- Student 49

- **Reason:** Core or Areas of Inquiry (distribution) requirement
- **Effort:** I put significant effort into this class by reviewing class notes and doing practice problems before class (usually in preparation for standard quizzes).
- **Understanding & Appreciation:** Not only did I learn the material, but from the first day Professor Cipolli made a clear effort to relate the material to relevant issues. As an International Relations major this course has been helpful in my other classes, particularly political science classes that often use statistics and polls in elections and public opinion.
- **Intellectual Growth:** I have pretty much all avoided math classes in my 3 years here. Statistics is a particularly useful topic, but overall I think it was a beneficial course in that I had to think differently than my other courses.
- **Quality:** Professor Cipolli has put more energy and effort into ensuring that his course can be the best version for his students than probably any professor I've had at Colgate. He holds office hours pretty much all the time, constantly asks for feedback to improve his current and future course, and responds to student emails constantly. Large lectures such as this are uncommon at Colgate and I think they can be difficult; I know that I tend to learn better in smaller classes. I can imagine Professor Cipolli is particularly good at teaching in smaller classes. That being said his lectures were great and he always included funny and relevant examples. From what I've heard and expected prior to taking the course, students tend to take statistics as an easy A. Professor Cipolli really wants his students to understand the material and does not want this class to be an easy A, but rather makes students put in the work. I can imagine some students were frustrated by this, but I rarely learn a lot from my easy A classes.

◦ Student 50
- **Reason:** Core or Areas of Inquiry (distribution) requirement
- **Effort:** I made sure to attend class as well as do the homework assignments on time as well as the worksheets for each chapter.
- **Understanding & Appreciation:** This course made me have to use my math skills more conceptually than I have in the past.
- **Intellectual Growth:** This course caused me to take more time out of my schedule to sit down and do practice problems.
- **Quality:** Although I do believe that Professor Cipolli has the best interest of the student one thing that I was frustrating was his many lack of errors and careless mistakes on worksheet packets as well as his powerpoints.

◦ Student 51
- **Reason:** Core or Areas of Inquiry (distribution) requirement
- **Effort:** There was homework for every chapter that I had to learn to do, and a quiz every week that could be on literally anything we had learned, so I had to go back and study things that were covered months before.
- **Understanding & Appreciation:** I understand how to use several formulas, but I do not know their context.
- **Intellectual Growth:** I can understand how statistics are used in the news and advertising.
- **Quality:** Professor Cipolli was not very effective at teaching in class. In order to study for a quiz or do homework, I had to go back to his powerpoints and teach myself the material. Some of his policies disincentivized students from attending class at sometimes, and once he announced which days the quizzes would be, many students I know decided that it was not worth coming to class at all because they would have to learn it later anyway. He asked us to use R for some assignments, and no one in the class had any idea what it was, much less how to use it. He was willing to adapt and learn, but often that only meant making the class easier rather than more clear and understandable.

◦ Student 52
- **Reason:** Core or Areas of Inquiry (distribution) requirement; I am a senior and thought I had

completed my NASC/MATH requirements because had already taken three natural sciences, but did not know that they couldn't be in the same discipline. So, one didn't count, and I needed to make up for it with a math class.
- **Effort:** I showed up to almost every class period and completed all homework. I studied for over an hour for each quiz.
- **Understanding & Appreciation:** I had never taken a statistics class before, so I now can appreciate the way it applies to so many societal issues.
- **Intellectual Growth:** i learned the ways that statistics applies to other subjects, and the course certainly helped improve my analytical skills.
- **Quality:** Professor Cipolli was very available to answer questions over email. He also was open to all questions in class. Where Professor Cipolli could stand to improve is during his general tone towards his students. For example, announcing how poorly everyone did on a recent "standard quiz," followed by "I don't know what is going on; up until now this has literally only been low high school level math" is not helpful or productive, in fact, it is rather condescending (whether intentional or not). Furthermore, though I can appreciate that the concept behind the "Standards Quiz" system is to force cumulative learning, I found it quite unfair that if you did worse on a standard later in the semester that you did well on earlier, your better score gets replaced by your worse one. I understand the logic, but I didn't find it effective. Additionally, the fact that each Standard Quiz was technically cumulative made it feel like you had to study all the material from the entire course before each one. Perhaps for someone more naturally mathematical with a very good memory, this wasn't a problem. For me, it was. In general, I found the grading system very confusing. I tried so hard in this class and had a terrible average on "pearson" the entire time- yet I had multiple friends who had grades 10/20/30 points higher than me who literally missed multiple quizzes and barely attended class. I did not understand the grading system at all. I am a senior, and felt like I was on the cusp of failing and therefore not graduating because of it the entire semester, despite working extremely hard in this course.

- Student 53
  - **Reason:** Major or minor requirement
  - **Effort:** Throughout this course, I completed all recommended readings even in cases where they were not essential to our comprehension of the subject matter. All homework was done with dedication, accuracy and to the best of my ability overall. When studying for exams, I contributed a great deal of time and effort into my understanding, worked with classmates and ensured that I had a firm grasp of all required concepts. Office hours were not all that frequent for me, primarily in cases when I picked up papers and quizzes or had a very specific question.
  - **Understanding & Appreciation:** I enjoyed any real world applications that Professor Cipolli was able to bring to the table, and in these cases was able to earn a greater appreciation for the impact statistics has on factors in the economy, politics and other social complexities in areas across the United States.
  - **Intellectual Growth:** Given the intensified course load for the end of the semester, I can reflect on this class as a means for me to amplify my learning on topics that I had known little about prior to taking statistics – such as coding. Whereas this wasn't relevant in many cases throughout the semester, I found that it can be a great resource and contributes to my learning in other avenues outside of the class.
  - **Quality:** I am a big fan of Professor Cipolli, as he has a highly prepared, enjoyable and well-humored way of going about his teaching of this course. Each step of the way we were engaged by methods of connecting topics to the real world and using examples to explain dense material. Unfortunately we spent a great deal of time attempting to communicate standards for grading in the course, but I believe in the syllabus Professor Cipolli has created for next semester that he has corrected the issues originally voiced by the students.

- Student 54
  - **Reason:** Exploration of possible major or minor
  - **Effort:** I took AP stats last year so I felt as though I would feel somewhat prepared for the new material, however I found this class to be challenging and I had to put a lot more effort in than I thought I would. Even though this is not a bad thing, I found it difficult to do well even though I already had previous knowledge of the material.
  - **Understanding & Appreciation:** My appreciation for statistics somewhat decreased as it was fairly high in high school, but the way we went about learning the material was confusing and frustrating
  - **Intellectual Growth:** My intellectual growth was stimulated and this challenging course improved my work ethic because I had to work hard and keep up with the material on a daily basis
  - **Quality:** I think considering the class size and since Cipolli was new to teaching, he did a fairly good job trying to figure out how to best serve the class. I think students were frustrated because this course required them to really pay attention and come to class every day, which they should be doing so it's not fair to blame this on the professor. One weakness I think was the confusion I felt during class when learning when I came to every class and tried to pay attention. I felt lost numerous times. I was able to do well but it was because I had to teach myself a lot of the material on my own. Strengths come in the fact that Cipolli was extremely funny, nice and the effort he put into this class was evident
- Student 55
  - **Reason:** Other requirement
  - **Effort:** Several hours a week spent studying for standards or doing homework
  - **Understanding & Appreciation:** I now have a much better understanding of statistical calculations and methods
  - **Intellectual Growth:** This course will help me in understanding polling and sampling in many of my other science courses
  - **Quality:** The professor was always available to help and had very clear standards for class
- Student 56
  - **Reason:** Major or minor requirement
  - **Reason:** Interest in the course material
  - **Effort:** I have put a lot of effort into this class. I work a lot on long homework assignments, I go to his office hours when confused, and I study a lot for regular (often pop) quizzes we have had in this class.
  - **Understanding & Appreciation:** I am definitely a math person so this course has enhanced my appreciation for math in general and more specifically, statistics.
  - **Intellectual Growth:** I think i have grown as a student in my independence and perseverance in trying to get through tricky academic situations on my own. I have been forced to step out of my comfort zone, specifically by using computer programming (R studio).
  - **Quality:** I think my opinion for the teaching of this course varies from day to day. Some days, Professor is extremely helpful and approachable, and other days not as much. I enjoy his humor but I can see how some people begin to take it personally. I do not think of him as a bad professor and I have enjoyed this course, but some of his syllabus decisions are confusing and often your questions are dismissed.
- Student 57
  - **Reason:** Major or minor requirement
  - **Effort:** Due to the nature of the course (ie. timely homework assignments), I had to expend little effort in preparation for quizzes/exams because I found material to be highly cumulative.
  - **Understanding & Appreciation:** I have a solid basis knowledge regarding statistical concepts that I have already begun to see implemented in my Microeconomics course.
  - **Intellectual Growth:** Professor Cipolli based a majority of the class around real-life polls and data,

allowing for me to see the true reasoning behind why we were learning a topic.
  - **Quality:** Professor Cipolli is one of the most genuine professors I have met at Colgate, and I feel this reflects in his course structure. He allows ample opportunities to recover from less than stellar grades and is always available to help despite having 150+ students in the class. He was constantly polling the class regarding preferences on quiz formatting, office hours, and many other components so that he could tailor the class to suit the overall class's needs in the most efficient way possible. I truly enjoyed my experience in his class, and would enroll in another taught by him.
- Student 58
  - **Reason:** Major or minor requirement
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I put a decent amount of effort in. I found that tests and quizzes had me studying quite a lot.
  - **Understanding & Appreciation:** I gained an appreciation for the course subject due to its practicality in the real world.
  - **Intellectual Growth:** It increased my critcal thinking.
  - **Quality:** I think that the professor was extremely accessible and open to contribution from the class on a lot of aspects such as quiz dates and practice problem assistance, whichw as great.
- Student 59
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** This class required a lot of effort in terms of everyday preparation. Initially, the class was structured through giving pop quizzes twice a week. What that meant was that we constantly had to be reviewing out material for the possibility of a quiz. This turned out to be frustrating because of the amount of time necessary that had to also be used towards other classes. Homeworks were manageable, and a switch to tests every Wednesday helped plan out studying, but overall the class was very time consuming and unpredictable.
  - **Understanding & Appreciation:** I had never taken a Stats class before, therefore, I was able to learn about the importance and prevalence of stats in every day life.
  - **Intellectual Growth:** Stats is extremely important to learn about biases within different polls and charts and data provided by the media for example. It makes me think critically about the actual source of information and particular motives they have about presenting data.
  - **Quality:** Professor Cipolli did what he could for a class of over 150 students which has to be difficult, especially since students at Colgate are used to small classes and direct engagement with their teachers. His power points and practice problems were useful, but I found myself teaching the material to myself outside of class. So I had the resources, but didn't feel adequately taught in class. He, however, did set is up for success I believe as long as we put in the effort.
- Student 60
  - **Reason:** Other requirement Additional Reason(s): Pre-med/ graduate school requirement
  - **Effort:** I have put some effort into this course and have enjoyed some of the material I think the beginning of the semester was very rough for my understanding of the material
  - **Understanding & Appreciation:** I think stats is interesting when we are actually analyzing real data. I hate the probabilty unit and still don't understand it.
  - **Intellectual Growth:** I think it has helped me in some other classes that use statistics to understand where formulas are coming from.
  - **Quality:** I think Professor Cipolli is a good professor and he genuinely wants students to learn, but he does seem to put students down sometimes when he is frustrated and doesn't seem to see that the majority of this class are students that are not going to be math majors or are even good at math.
- Student 61
  - **Reason:** Major or minor requirement
  - **Effort:** I put in the necessary effort to do well in this class. I would pay attention in class, do the homework, and study well for the tests.

- **Understanding & Appreciation:** I have a better understanding of the basic ideas behind statistics. I am able to better appreciate how much stats is a part of day to day life.
- **Intellectual Growth:** I had to learn to study and look over my notes consistently because of the constant chance for a pop quiz. Since this was such a big class I learned to be more independent with my studies and make sure to reach out for help, either from the teacher or classmates, when needed.
- **Quality:** I think the professor is clearly very smart and knows a lot about what he was teaching us. He was always open to critique from the students on how he did his teaching. His standards for the class were confusing at the beginning of the semester but it got easier to understand what he wanted from us once the semester went on.

◦ Student 62
- **Reason:** Major or minor requirement
- **Effort:** I did the homeworks and took the tests.
- **Understanding & Appreciation:** It didn't.
- **Intellectual Growth:** It wasn't.
- **Quality:** Made me pay $105 for an online homework subscription then $50 for an iclicker that wa barely used and a textbook that was never needed. Seemed like a good guy who is organized and motivated, but grading was unclear and made the course much harder and more confusing than it had to be. I wouldn't be as upset if I still had the over $150 in my pocket, and there were no standards quizzes or quizzes with better grading.

◦ Student 63
- **Reason:** Core or Areas of Inquiry (distribution) requirement
- **Effort:** I worked to complete the homework assignments and be prepared for the quizzes.
- **Understanding & Appreciation:** Statistics is an important discipline, but this course really did not make me feel that way. The course really did not help me to appreciate the subject matter.
- **Intellectual Growth:** The instructor was good at relating statistics concepts to the outside world.
- **Quality:** The quality of teaching was fine, though it seemed class members were frustrated with the instructor during every class. I don't think we accomplished as much as we could have, and a lot of the work was tedious, but he certainly cares about his students and tries for us, so that is noted.

◦ Student 64
- **Reason:** Core or Areas of Inquiry (distribution) requirement
- **Effort:** decent
- **Understanding & Appreciation:** it made me think in a way that i wasn't used to.
- **Intellectual Growth:** numbers tell a lot more about society than i previously thought.
- **Quality:** quality of teaching was good.

◦ Student 65
- **Reason:** Major or minor requirement
- **Effort:** I put a good amount of effort into this course, with weekly or daily quizzes and really long hw assignments it took up a lot of my academics.
- **Understanding & Appreciation:** I am not a very big math person so it did not make me appreciate stats. However, it was sometimes cool to read some of the statistics out there and know how to get those answers.
- **Intellectual Growth:** This course challenged me to learn stuff outside the classroom and teach myself skills. A lecture hall of 150 students does not play to my strengths and I was not able to learn well during class.
- **Quality:** Professor Cipolli was an interesting teacher, Occasionally very unfair and rude to his students but also listened to criticism well and tried to change that. He taught a 150 person class which must be hard but he went very fast sometimes and it was hard to understand.

◦ Student 66
- **Reason:** Major or minor requirement; Elective within major or minor; Interest in the course material

- **Effort:** 6/10. Slightly more effort than the average collegiate course
- **Understanding & Appreciation:** In all honestly I barney even gained the least bit of statistical knowlandge. We mostly worked off common sense
- **Intellectual Growth:** It added some aspect of critical thinking, but nothing I could not have gotten from a different mathematics class.
- **Quality:** Poor!! I like Cipolli as a person, he seems like a really nice guy. I really hated the way this class was taught though. From the power points to the clicker questions to th Pearson homework i HATED this class. probably my least favorite class i've taken, definitely the worst class I have taken for my major. I would give this class an honest 2.9/10.

- Student 67
  - **Reason:** Major or minor requirement
  - **Reason:** Interest in the course material
  - **Effort:** Outside of class I put a good amount of effort into learning the course material. I learn better in smaller classroom settings, and because this class was so large, I felt it hard to focus and thus would reteach myself material after class.
  - **Understanding & Appreciation:** Professor Cipolli did a good job explaining the material and was very organized. I think questions and examples are one of the best ways to learn this specific subject material, but again, in such a large group such as this class, most students did not feel comfortable asking questions, and I think that may have hindered everyone's learning.
  - **Intellectual Growth:** This course has taught me how to teach myself things out of the classroom, and also how to be a more organized and driven student.
  - **Quality:** Professor Cipolli has very good intentions and is very organized and detail oriented. He gave us "standard" quizzes which were random pop quizzes on the subject matter which most students complained about, but I thought these were effective because they forced students to be keeping up with course material. Sometimes he can be unclear as to what he wants, such as when he assigned writing assignments in which the rubric was very vague and thus most people got a bad grade because no one knew exactly what he wanted. He also made us use the program R, which is a coding program used to generate statistics and graphs. I think this is a useful tool for the course, however, we never got any direct instruction from Professor Cipolli on how to use it, and he would get very fed up when people would come to office hours asking him to explain R. I think if he wants to use this program, he needs to dedicate at least 2 classes to learning how to do it because although it is not coding and computer science directly, it is very close and is something many students just have no idea how to go about. He posted a sheet on R with explanations, but I have read that over multiple times and was still very confused.
- Student 68
  - **Reason:** Other requirement
  - **Effort:** I went to office hours where I had to wait 20 minutes to ask a question and then felt patronized once I actually got to speak to the professor. I always completed the homework assignments on time with the formula sheets, using "view an example" and my class notes. I would work on the worksheets he would hand out in class and review the solutions of the past standards. My own effort is the only reason I was able to pass this course. This was a class where everyone had to go home and reteach themselves.
  - **Understanding & Appreciation:** It didn't.
  - **Intellectual Growth:** It showed me how important reviewing and relearning material is in a math class. Nothing beyond that!
  - **Quality:** I am so disappointed with the way this professor thinks he can treat students. He's young so I guess he compares us to how he remembers himself just a few years ago, but it is completely uncalled for. He thinks he is being funny, but he is always just condescending and rude. His emails are insensitive and I often heard people complain about how uncomfortable they were with him as a

professor. I did not appreciate the quality of teaching at all and would never recommend taking a course with this professor to any other student on this campus.

- Student 69
  - **Reason:** Elective outside major or minor; Interest in the course material
  - **Effort:** I put more effort into the course than I was expecting. However, my expectations were that this would be something I could just skate through, and it wasn't that at all. The effort required to do well was no more than for many other courses. I expect many of the negative reviews that come in concerning this course are due to the lack of effort students put into the course, which confused them and has caused them to have a far more negative experience of the course than what Professor Cipolli provided for those students who actually put in the requisite effort.
  - **Understanding & Appreciation:** I know a lot more about statistics, methodological applications, and interpreting results of statistical analyses when coming across them
  - **Intellectual Growth:** Very little, but this is to be expected from a 100 level course with over 150 students in it. However, there were clear attempts by Prof. Cipolli to connect the course material and our problems to events throughout the contemporary world, which was quite beneficial in being able to visualize statistics within the broader complex world we all live in today.
  - **Quality:** The teaching was on the whole, in my opinion, very good. Professor Cipolli tried to present a relaxed attitude towards the course that i could imagine coming across as aloofness. However, on the balance of things, he was approachable in office hours (which were offered far more frequently than what the university expects) and very much did care for his students. The difference between preconceived expectations and our actual experience in the course I believe has muddied the experiences of many of my peers–however, Professor Cipolli was clear with his expectations, gave plenty of time to ask questions in a number of different forums, allowed adequate time for homework while providing extra practice problems for students, and spent many lectures going over the material until students demonstrated a base level of mastery. Though I don't quite understand the grading schema at this point entirely, I do think that it has been quite fair and accurately reflects the effort and time students were willing to put into the course. It is not harsh at all, and if a student has drive to do well, then Professor Cipolli allows students to get there. Unfortunately, for one reason or another Intro to Statistics has gained a reputation among the student body that attracts students who have no drive for this particular material and are looking to just skate by, which has likely clouded their experiences in the course.
- Student 70
  - **Reason:** Other requirement
  - **Effort:** I put a tremendous amount of time and effort into this course. I went to office hours, tutoring hours, and devoted ample time to homework and quiz preparation.
  - **Understanding & Appreciation:** I realized statistics is very practical in everyday life.
  - **Intellectual Growth:** I learned how to handle difficult subject matters by asking for outside help.
  - **Quality:** The structure of the course did not allow me to benefit from learning stats. The class was heavily focused on clicker quizzes the first half of the semester that caused tremendous anxiety for myself and many classmates, as they constituted a large part of our grade. Additionally, the size of the class allowed Professor Cipolli to only use power points as a guide, which often is not the best way of learning for many students. Professor Cipolli answered questions well if asked but other times would be sarcastic in his responses, making some students hesitant to ask questions in class. I think Professor Cipolli is a good professor and really does want his students to learn; however, I think many students are not accustomed to this type of class and course structure in which complex material is quizzed regularly when concepts may not be fully understood. I know Professor Cipolli hopes to make change for next semester and I am confident these changes will benefit future students.
- Student 71
  - **Reason:** Core or Areas of Inquiry (distribution) requirement; Interest in the course material

- **Effort:** I would argue that I put a high amount of effort into this course, including attending every class, paying attention in class, going to office hours frequently, doing all the homework ahead of time, doing all the practice problems, and studying the material outside of class.
- **Understanding & Appreciation:** I had vowed never to take another math course after honors calc in high school, but I am really glad I took stats. It showed me a much more useful and fun side of mathematics., and gave me a very useful knowledge of the subject.
- **Intellectual Growth:** It really helped me to think more precisely and numerically about data, science, and society, especially since I tend to think more generally and abstractly. Looking ahead, I am confident that stats will help me in my research and career.
- **Quality:** While some students may be disgruntled with Professor Cipolli's pedagogy and personality, I believe that there is abundant evidence (with 99% confidence) which indicates the highlights of Professor Cipolli's teaching and character. Professor Cipolli was remarkably humorous, friendly, and knowledgeable. All of his lectures were easy to understand, if you put in sufficient effort. He was also extremely receptive to feedback, asking 4-5 times throughout the semester for students to fill out a survey about the course and about his teaching. He was very open to questions inside of class, and made the class fun and interactive with the clicker and other online resources. The moodle page was meticulously maintained, and he made a stellar effort to ensure we were prepared for tests and projects. During office hours, he was generally helpful, but the R code was very confusing. Since there were 158 students in the class, the time spent in office hours was typically short, but he made a genuine effort to offer more hours to demanding students (even offering review hours on this coming Saturday the 6th). I can't imagine how many emails he must have sent to students in the course for problem help or for general questions, but he was always very responsive to me, and would let me know if he couldn't respond for a time. I only wish I could have gotten to know Professor Cipolli better during this semester. But with all professor's pedagogy, there were some weaknesses with Cipolli's pedagogy and the course in general. Towards the beginning of the semester, his humor and authenticity were slightly overpowering, often making funny, yet minorly degrading jokes about student's participation, writing skills, and math skills. While some found this funny, others did not, but I personally didn't mind it. I think it served to really tell students that they need to step up their game. Paying 100+ dollars for homework and an online textbook weren't totally worth it, but the practice problems were helpful. The iclicker idea, for $80 per clicker, also failed. One thing that I would consider unprofessional were the amount of errors in the homework, practice problems, and even in class that Professor Cipollo made, which did not help to adequately prepare students or build trust. It was clear that Cipolli was a green professor, but through continually checking in, it was remarkable to see how quickly he adjusted his style. I think this is strongly indicative of his potential as a professor in the future. Thus, with a balanced understanding of both praise and critique, it is my hope that I will Professor Cipolli will continue to share his humor, authenticity, care, and knowledge with the Colgate Community for many years to come. Thank you for a deeply enjoyable semester, Professor!

- Student 72
  - **Reason:** Major or minor requirement; Interest in the course material
  - **Effort:** I put conscious effort into this class. There were assigned homeworks due every week or so that required effort and time, there was a writing assignment that required a lot of effort and independent thinking, and I had to study before every quiz, which was every week. Required effort but if you pay attention in class the class is super doable and not too demanding.
  - **Understanding & Appreciation:** I enjoyed real life examples the professor gave-it was interesting to see stats related to outside of class life, like politics and economics and such. Overall was an interesting class and made me like and understand stats more.
  - **Intellectual Growth:** We had a writing assignment that required us to use R and do outside research. I thought it was difficult but really interesting!! We had to use the R statistics program on our

computer which I think was helpful to learn how to use because I really don't understand technology much so it was nice to learn other skills. Also the assignment required us to analyze statistical data in a science context which I thought was interesting. We learned about stats in the real world.
  - **Quality:** The professor was organized, gave good examples, and overall was very clear if one pays attention in class. I didn't really have any issues not understanding topics. However, his grading scale was kind of confusing-I'm not quite sure how all the sectors of class go towards my final grade and he hasn't made it that clear. Other than that it was a good class, pretty interesting, and difficult but not too difficult.
- Student 73
  - **Reason:** Major or minor requirement; Core or Areas of Inquiry (distribution) requirement; Interest in the course material
  - **Effort:** I put in a lot of effort.
  - **Understanding & Appreciation:** This course showed me that statistics is much bigger than I thought.
  - **Intellectual Growth:** I am not really sure it did?
  - **Quality:** I think the teaching was good. The professor used good examples and taught well, in a class of 150 when people dont speak up when they are confused its easy to go fast if you have no reason not to. I dont agree with some of his grading procedures and believe they are unfair but that is how he decides to run his class.
- Student 74
  - **Reason:** Major or minor requirement
  - **Effort:** homework, studying for standards, going to class
  - **Understanding & Appreciation:** The course gave me a deeper understanding for statistics.
  - **Intellectual Growth:** It helped me understand other forms of math.
  - **Quality:** Sometimes the class went to fast or I was confused when we did problems.
- Student 75
  - **Reason:** Major or minor requirement; Exploration of possible major or minor; Interest in the course material
  - **Effort:** I put in a lot of effort. Since this course requires you to build on material you already learned, missing a day / assignment would greatly impact your score.
  - **Understanding & Appreciation:** I had a very minimal stats background, and taking this course expanded that.
  - **Intellectual Growth:** Naked Statistics, a book that we were required to read, presented many interesting ways in which stats affect our lives.
  - **Quality:** I recommend the professor to be a little less harsh with grading. Especially with standards, one mistake on material you clearly know could heavily impact your grade.
- Student 76
  - **Reason:** Other requirement
  - **Effort:** I put significant effort into this course through completing all homework assignments, studying often for the standards, and attending tutoring hours as often as possible in an attempt to better understand the material.
  - **Understanding & Appreciation:** This course made me realize how widespread the use of statistics are.
  - **Intellectual Growth:** This course contributed to my intellectual growth by forcing me to learn how to learn the subjects on my own as well as outside from class time. I feel as though my understanding of the topics came largely from my time spent at tutoring hours, or collaborating with other students.
  - **Quality:** I think that the style of teaching employed in this course would serve the students better if it were in a smaller class. I feel as though Professor Cipolli had too many students to ensure that all of his students were keeping up with their understanding of the material.

- Student 77
  - **Reason:** Other requirement; Statistics is an important, relevant knowledge to have no matter what career path one is on.
  - **Effort:** I put a great deal of effort into this course.
  - **Understanding & Appreciation:** I appreciate and understand statistics greatly, and this is my first experience taking a statistics class.
  - **Intellectual Growth:** It definitely contributed to my intellectual growth and education, as it provided me with the skill to understand numbers and data in a way I was never able to before.
  - **Quality:** The quality of teaching was outstanding. Professor Cipolli got a lot of unnecessary, unfair critiques from students for his constant pop quizzes, but I believe these were in our best interest. They forced students to review every night. They required an engagement and commitment to the course material that is fair considering this is a college course at a highly ranked institution. He also cares about his students so so so deeply. When the sexual assaults came to light on campus, Professor Cipolli took the time to write us a letter expressing his sadness, and his wish to be there for us in anyway possible. He took any opportunity he could to remind us that he was on our side, and more than just a Professor. Colgate needs more Professors like this, Professors that are empathetic and compassionate and recognize that the classroom is not separate from life, and life is not separate from the classroom.
- Student 78
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Reason:** Interest in the course material
  - **Effort:** I would spend many nights working on the homework and practice problems with study groups.
  - **Understanding & Appreciation:** It has made me dislike the material.
  - **Intellectual Growth:** It did not.
  - **Quality:** Professor was very unclear when it came to his syllabus and communicating the grading policy. Also I have heard that he has been condescending to my peers in office hours.
- Student 79
  - **Reason:** Major or minor requirement
  - **Effort:** Doing the homework assignments, reviewing material before each class, learning how to use R to do the writing assignment
  - **Understanding & Appreciation:** I now know how to do certain statistical analyses
  - **Intellectual Growth:** I am not typically a math student, so this course gave me a wider range of knowledge and understanding beyond the fields in which I feel most comfortable.
  - **Quality:** Professor Cipolli tries really hard to be the best he can be, but he is a work in progress. He held a lot of office hours and posted helpful things on Moodle, but he would get really frustrated with us in class, have a mini freak-out, and apologize a little bit later. He would also frequently send us very long messages (either over email or attached to our tests) explaining himself. This seemed like it was more for him than for us. Regardless, he puts in a genuine effort to help us succeed in this class.
- Student 80
  - **Reason:** Major or minor requirement
  - **Reason:** Interest in the course material
  - **Effort:** I put in a decent amount of effort in this course.
  - **Understanding & Appreciation:** The examples used caught my attention and helped me learn better.
  - **Intellectual Growth:** It increased my knowledge of this course which will help me down the road towards my major.
  - **Quality:** Good teaching but sometimes forgets its such a large class.
- Student 81

- **Reason:** Major or minor requirement; Exploration of possible major or minor; Interest in the course material; Need it for economics major
- **Effort:** I did all of the homework and showed up to class most of the time.
- **Understanding & Appreciation:** Stats can be cool and I see how it fits with economics.
- **Intellectual Growth:** The course has enriched my understanding of statistics.
- **Quality:** Cipolli isn't a great teacher unfortunately and I think his role as instructor for our class took away from the course's potential. The standards quizzes are in awful idea which are more punitive than anything else. His class is usually boring and he seems like he doesn't really know what he's doing. His practice problems are litter with errors, to the point where I start to question if he's qualified at all. However he does seem like a cool guy who'd be great to chill out and have a beer or two with.

◦ Student 82
- **Reason:** Other requirement; Statistics is highly recommended for graduate school programs that I am interest in.
- **Effort:** I did not put a large amount of effort in the course. Prior to quizzes and tests I would review my notes and online answer keys and that seemed to be sufficient.
- **Understanding & Appreciation:** This is my favorite subject within in math and therefore I did enjoy learning it, especially with my past experience taking calculus.
- **Intellectual Growth:** I think this course issues applicable yo life outside of the classroom and I have used the subject matter countless times in conducting research here at Colgate and within various upper level courses within my major that require statistics, such as epidemiology.
- **Quality:** I think that Professor Cipolli genuinely cares about his students and wants them to succeed as long as they are willing to put in the effort. In theory this is very good and it was definitely conveyed multiple times within his course, but I think his biggest downfall was implanting this idea within the class structure and grading policies. I understand professors frustration when people are only concerned with getting an A and I do agree that they should be reserved for mastering the subject matter at hand, but reducing the grading system to 0-4 scale of subjects puts a lot of pressure on students and can unfairly hurt them. I found myself worried and in a difficult position where one rounding error or calculation malfunction, that would normally be the cause of a minuscule point loss within a course, resulted in my quiz grade (a grade worth 40% of my final grade) being reduced 11 percentage points. I kept hearing multiple times from the professor that he makes mistakes all the time, especially in such a big class like this, whether it be a typo on the answer key or a miscalculation of grades and this is only to be expected from professors. But mistakes were addressed as a natural phenomenon for everyone yet when it came to student mistakes or small errors his grading policies were not conducive to dealing with them. Grading policies were established as a range meaning that the obtaining of an A should not be reserved for only those who can get everything right 100% of the time. Besides his grading policies which, I did not suffer greatly from, although I know others that did and felt like they put an additional stress on me this semester, I think that Professor Cipolli is doing a great job teaching. He is always engaged and wants his students to be as well.

◦ Student 83
- **Reason:** Exploration of possible major or minor
- **Effort:** I worked very hard
- **Understanding & Appreciation:** I had to learn all of the course material quite thoroughly, mainly as a result of the standards. In terms of appreciation, I feel like my frustration at the standards made me more focused on obtaining better grades rather than learning, but that is likely due to the emphasis I place on my grades. It's hard to find a balance between making the course challenging and fostering appreciation for the course material within students, especially when they are all very focused on obtaining grades rather than actually learning. I think Professor Cipolli really manages to make the course challenging and tries to guide us to appreciate the material better, and he does this

to a fairly successful standard.
  - **Intellectual Growth:** Oddly enough I learned more about myself in terms of how I deal with tests, challenges, and frustration. The fact vs feeling issue really comes up in this class and makes you wonder about whether you came here to learn or get good grades.
  - **Quality:** The professor was very accessible. The standards were very frustrating but from a macro point of view, they were actually pretty fair, especially considering the extra credit. He also takes our feedback into consideration. In terms of weaknesses, I think we could have more practice and go through these practice questions on the board. This is already covered to some extent but more practice is never a bad thing.
- Student 84
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I always made sure that I completed the homework before it was due because he usually gave us a while to complete it. Also, for most of the semester we had pop quizzes, so I was constantly going over my notes and doing practice problems just in case we were going to be quizzed that day.
  - **Understanding & Appreciation:** I can now see how statistics can be used in any part of daily life. Statistics are everywhere and even if they are not correct statistics, they are still important to note.
  - **Intellectual Growth:** Because we had pop quizzes so often, I learned how to always be prepared to be tested on the material and know it really well.
  - **Quality:** This class was much more boring than I thought it would be. For most of the semester, professor Cipolli would just read off of his power points and lecture us on math topics. Once we started actually doing examples on the board, I was able to understand the material a little better. However, I think I learned more from just reading the power point slides myself and doing practice problems than I did from any class this entire semester. I do not think Professor Cipolli understands that this is Colgate University and students have an insane amount of work and other activities and do not have time to spend 2 hours a day studying for potential pop quizzes. This was not my only class. Also, I received one of the rudest emails I have ever gotten from Professor Cipolli regarding my writing assignment for the class. I did not find him to be very helpful or sincere.
- Student 85
  - **Reason:** Core or Areas of Inquiry (distribution) requirement; Interest in the course material
  - **Effort:** I would say that I put a good amount of effort into this class. I definitely did not spend time everyday doing problems for stats as I probably should have to get a better grade, but overall I didn't find myself slacking in any way. I think that after I didn't do great at the beginning of the semester that I focused more and tried to do everything I could in order to get a better grade. I am sad that it took me not doing well to study more, but it served as my motivation.
  - **Understanding & Appreciation:** This class made me realize that stats isn't as easy as I assumed it to me. I though tit would be very straightforward in nature, but in reality there is more than meets the eye. I think it is easy to follow along with the equations, but understanding what it means serves as the difficult part.
  - **Intellectual Growth:** I learned how much time and effort it takes into performing surveys and taking into account individual's responses on polls, etc. Stats made me realize that we cannot always rely on it for it to be valid so doing more testing will represent more confidence.
  - **Quality:** I think that a lot of people didn't like Cipolli because of his grading system. I can see where it can be beneficial because it pushes students to study consistently if they want to get a good grade. I just think a lot of people are lazy and are not willing to put in all of the effort necessary in order to get the grade they are looking for.
- Student 86
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I did the necessary work Such as homeworks, moderate studying and getting help when I need it

- **Understanding & Appreciation:** I am now more confused about statistics then when I started this course because I am not a math person and statistics is so confusing and ambiguous. Like there's not a right answer even because you can use a different confidence interval and you can never trust a sample
- **Intellectual Growth:** I know I don't want to go into a math related field and always to have a statistician on hand for when someone needs to calculate this stuff
- **Quality:** He really cares about the students learning and tries to make himself accessible. Overall he's a little intimidating and he goes fast for us slow learners

- Student 87
  - **Reason:** Major or minor requirement
  - **Effort:** I put a lot of effort into this course in doing the homework, studying for the standards, and in doing the writing assignment.
  - **Understanding & Appreciation:** I had already taken AP Stat and received a 5, but I wanted to review for it because I am going to take Econometrics in two semesters. Overall, I thought this course was very helpful for learning about Stat, and Professor Cipolli made stat very interesting.
  - **Intellectual Growth:** I learned how to use Statistics in areas that are not just related to statistics, but in every possible subject.
  - **Quality:** Professor Cipolli is a very good professor and is very good at conveying the information. I thought that he made the course interesting, and was one of the most helpful professors I have ever had. The only weakness I believed was I wish we could have gone faster and covered more material as often I was not challenged, but doing so was made impossible by the many students in the class who had never taken Stat.
- Student 88
  - **Reason:** Interest in the course material
  - **Effort:** I put a significant amount of effort into this course. I studied and reviewed the material every night before class, in preparation for the standards testing. I worked on the homework throughout the week so that I would not have to do it all in one night.
  - **Understanding & Appreciation:** I didn't have any background in Statistics before this course so this gave me a good base of understanding which made me more interested in the subject.
  - **Intellectual Growth:** This course showed the various applications of statistics in the real world, and showed how important it is to have a knowledge of statistics in any job.
  - **Quality:** Sometimes it seemed like grading was a little harsh, but the professor was still very clear about the ways he would grade things. As talked about in depth throughout the semester, the standards testing put a lot of stress on the students and it seems like there could be a different way to test the standards than how they were tested. But the professor did try to be as helpful as possible in class, sometimes devoting a whole class period to only answering people's questions.
- Student 89
  - **Reason:** Elective outside major or minor
  - **Effort:** I could have taken a much easier course second semester of senior year but I wanted to learn statistics, I have tried to give this class the old college try as they say. I have done all the assignments and studied for every assessment. In retrospect I could have done more practice problems but I just did not have the time.
  - **Understanding & Appreciation:** I learned stats but also gained an understanding of all the discussions in the news that refer to stats. Very valuable.
  - **Intellectual Growth:** As I said, basic understanding of stats is an everyday useful skill
  - **Quality:** He was okay, I think this class is too big, I don't think he should be teaching to a huge lecture hall.
- Student 90
  - **Reason:** Core or Areas of Inquiry (distribution) requirement

- **Effort:** I attended every class, did the homework assignments and studied for the standard quizzes. Math is a challening subject for me so I put in effort to do well.
- **Understanding & Appreciation:** I don't like math and ony took this course because Colgate forces us to take math/science courses. While my understanding grew, my appreciation for the subject stayed about the same.
- **Intellectual Growth:** I am potentially interested in going into Foreign Service and statistics is a course they suggest to take.
- **Quality:** Professor Cipolli does not do well teaching an introduction course that is mostly made up of underclassmen. He is condensending and judgemental when students ask questions, to the point that I do not enjoy going to his office hours for clarifications on assignments. His office hours, up until 2 weeks ago when he changed them, were incredibly inconvenient because I was always in class. He seems passionate about the subject he teaches but he needs to recognize that many people in the room haven't been exposed to math in several years (upperclassmen who take the couse to fulfill a requirement) or underclassmen who are still getting accustomed to Colgate. His expectations were very high, which can be a positive thing if the professor is encouraging, but he has not been particularly encouraging.

- Student 91
  - **Reason:** Interest in the course material
  - **Effort:** I would say I put a good deal of effort into this course, almost aways reviewing material before class in the case that there was a quiz. In terms of the writing assignment, I think I put an extreme amount of effort into this, which may have been excessive considering it was only worth 10 points. However, the prompt seemed convoluted and the R code was extremely difficult to manipulate, as we had never been required to use it or had learned much about how exactly to use it.
  - **Understanding & Appreciation:** This course caused me to gain appreciation for the subject of statistics.
  - **Intellectual Growth:** This course helped me to understand and question the polling that occurs and is published so often in popular media.
  - **Quality:** Although I realize there is not much you can do as a professor of such a large lecture, but I do think the class could benefit from different styles of teaching. Towards the end of the semester, I thought it was much better that you did problems on the board rather than flipping through powerpoints. I also liked the few days that we did practice problems with others in the class. I think a combination of these three class styles would be best for the future, as it would not only make class more interesting, but also teach the material better. In terms of weaknesses, as I mentioned above, I think the requirement to complete R code was unfair, as we never truly have used it before. I have heard from many people the frustration they felt when they went into office hours and received little to no help even though they had attempted to do it on their own multiple times. If someone is coming in for office hours, it clearly means they are struggling. They don't want to be sent away at the door and accused that they "did not try it". It is a huge double standard to make such a big point of promoting office hours only to not help the students who actually show up.
- Student 92
  - **Effort:** I put a lot of effort in trting to stay on top of the homework and studying for quizzes.
  - **Understanding & Appreciation:** I was able to learn a lot about how useful statistics can be and how once you can understand it, its not that bad.
  - **Intellectual Growth:** I was able to realize how valuable stats can be in the real world and how it can also be very misleading.
  - **Quality:** He was very good at allowing for questions in class at any time throughout the lecture. It was hard to learn anything from the lectures alone.
- Student 93
  - **Reason:** Core or Areas of Inquiry (distribution) requirement

- **Effort:** I put a good amount of effort into this course.
- **Understanding & Appreciation:** I gained a new appreciation for Statistics after taking this course, not only did it motivate my interest in the subject matter, but it was also very interesting–very different from my AP stats class in high school.
- **Intellectual Growth:** It taught me to be critical of all information, and to do research to check its validity.
- **Quality:** I thought Professor Cipolli was an excellent professor.

- Student 94
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I would always re-read the notes and write my own notes based off them. Before the quizzes, I would solve practice problems as well as complete the homework to prepare me for the quizzes.
  - **Understanding & Appreciation:** This course allowed me to see and visualize the beauty of statistics as it contains the possibility of calculating almost any possibility, which is a powerful tool.
  - **Intellectual Growth:** Basic probability has allowed me to make more logical and rational decisions. As a result, I have become a better person. In addition, I believe that I had to teach myself a lot of the course given I wouldn't gain much from class lectures; thus, I feel better about myself knowing that I was able to navigate myself through the abyss of statistics.
  - **Quality:** Personally, I did not like the professor or the way the class was set up. I thought it had too high of standards for an introduction class which, for most people, is only taken to complete a requirement that most have no desire of taking. As a result, I don't believe that he should have pop quizzes twice a week and require us to code math as that is egregious and silly to require students to do so when most of them don't even share the desire to take the course. This course could've been managed a lot better. I do think he brought a lot of enthusiasm and passion to the course but that wasn't enough to create a beneficiary learning environment.
- Student 95
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  - **Reason:** Other requirement; I supposedly need this class for the MCAT
  - **Effort:** Regular Honework and practice problems and constant studying and stress for daily pop quizzes
  - **Understanding & Appreciation:** I did not.
  - **Intellectual Growth:** It did not.
  - **Quality:** The instructor has designed the grading procedures in such a way that it maximizes stress on the students. When your entire grade is based on your most recent preformance on pop-quizzes, and the only way to get an A in this section is to have a perfect score, students become overwhelmed. The instructor also seems to think that this class should be equal, in terms of time and effort, with our major classes. This is a little ridiculous. The instructor felt the need to make homework problems and the writing assignments almost impossible to do without R-studios. This wouldn't be that bad if the class focused on how to use R-studios, but the only time that is done is at office hours. This is a stats class not a comp-sci class, leave that to CORE. In all I think the instructor has unrealistic expectations and grading standards.
- Student 96
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** This class required a lot of effort outside of the classroom. Being a large lecture style class it was mostly note taking during the actual class and we would go through a lot of topics very quickly. I found that I usually had to reteach myself everything that we had learned again on my own time because it was not necessarily taught thoroughly in class. We also had a ton of pop quizzes that required us to always be studying everything that we had learned.
  - **Understanding & Appreciation:** Being an introduction level course I had never had any exposure to statistics, so it definitely gave me an overview of the topics. I definitely have more knowledge than

I did going in to this class, but the constantly worrying about a pop quiz and some of the other assignments prevented me from actually appreciating the material.
  - **Intellectual Growth:** This class definitely taught me how to be an independent thinker. I had to spend a ton of time outside of the class teaching myself material from the beginning again and doing the homework/studying for tests and quizzes on my own.
  - **Quality:** I think that teaching an intro level class to 150 college students is a difficult task to do and I acknowledge and appreciate that. However, I think that it could have been handled in a better way and he could have been more receptive to students critiques. One thing that the majority of students asked to change was taking the higher standard grade as opposed to the most recent because we thought his policy was greatly unfair yet he did not doing anything to change it. I think that there were a lot of things that could have been covered more thoroughly/clarified in class so the students wouldn't have had to spend as many extra hours as they did relearning everything then completing the assignments.
- Student 97
  - **Reason:** Core or Areas of Inquiry (distribution) requirement Additional Reason(s): I took this course because Colgate is the epitome of white male supremacy and I am/was quite eager to graduate
  - **Effort:** A lot. I went to tutoring often and used outside resources
  - **Understanding & Appreciation:** It showed me the importance of looking further into how information and data are gathered and to be critical of information presented to you
  - **Intellectual Growth:** N/A
  - **Quality:** Prof. Cipolli was really dope and always dresses like it's Easter. He tried to engage students in multiple ways. He also cared about the humanity of his students
- Student 98
  - **Reason:** Other requirement
  - **Effort:** I put in a lot of effort into this course; quizzes were given nearly every class so studying was important and the material in class was very unclear so I generally had to go back through the powerpoint slides on my own and teach myself.
  - **Understanding & Appreciation:** Statistics is wicked hard. I can certainly appreciate its utility but my interest in it has not really increased.
  - **Intellectual Growth:** The frequent quizzes and my lack of understanding in class helped me grow intellectually in the sense that I had to put in the work outside of class and manage my work responsibly in order to succeed
  - **Quality:** Professor is very eager and willing to help his students. Super cool and wants them to succeed but is often unclear in lectures, thinking that students understand his thought processes as he writes them out on the board but without fully explaining them. In his defense the course if cumulative so if you don't understand something there's a snowball effect and the size of the class isn't really all that conducive to learning in this manner anyway but the style of teaching that does not specify what we will need to know makes it confusing as we have no clue what to study for or review on any given day.
- Student 99
  - **Reason:** Major or minor requirement
  - **Effort:** I put a great amount of effort into this course on every assignment.
  - **Understanding & Appreciation:** Not one bit
  - **Intellectual Growth:** In no ways.
  - **Quality:** Cipolli is a smart guy, but is not fit to be a professor at all. He looks down on his students, has extremely unclear grading methods, and expects far too much of his introductory students.
- Student 100
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** not enough apparently.

- **Understanding & Appreciation:** Not much. Honestly, we moved so fast through the course that it's hard to even pick up an incident where I actually "understood" what we learned in class.
- **Intellectual Growth:** Not much. I am not great at mathematics, this course really just showed me that this is not where I should put my emphasis academically. Stats is just not for me.
- **Quality:** Well. The professor's teaching style was not (in my opinion) the best. Since this was a bigger class, I feel like he could have had a different approach in explaining the material. we had a lot to cover and it was all very important, but we were moving so fast through the material that somewhere in the middle of the semester I realized I was lost and was unable to follow after that. I ended up spending the rest of my semester learning from YouTube since I clearly was not understanding what was taught in class. I don't think that should be the case considering the amount of money I was required to spend on this course, and the amount of money my parents pour into my education. I expected better for this class. and honestly, I wish the course moved at a slower pace so that everyone would be on the same page.

- Student 101
  - **Reason:** Major or minor requirement
  - **Understanding & Appreciation:** This course contributed to my understanding and appreciation of statistics and the value of statistics in our society today especially in areas such as scientific research. A lot of the material that I learned in this course will be applicable in my future classes and reading of scientific papers.
  - **Quality:** The instructor had clear explanations of the material in lecture, and provided very helpful powerpoints. The practice questions and the homework were extremely helpful in terms of understanding the material and the standards quizzes reflected the material that was taught. The instructor did everything he possibly could to ensure that the students could succeed if they put in the effort . The only slight issue with the course was that the grading policy was not very clear and it still seems a little ridiculous that your grade can drop from an A to a B if you do not get a perfect score on all of the standards.
- Student 102
  - **Reason:** Core or Areas of Inquiry (distribution) requirement; Other requirement; Interest in the course material
- Student 103
  - **Reason:** Other requirement
  - **Effort:** I put in countless hours each day to go over practice problems in case there was a pop quiz. I also reviewed the powerpoint notes for at least 2 hours every night. I went over many things that I did not understand with a friend almost every night.
  - **Understanding & Appreciation:** This course did not contribute to my appreciation of the course subject. Rather, I have grown to not like statistics after the course.
  - **Intellectual Growth:** This course really pushed me to learn many of the materials on my own outside of class. On a different note, I believe the course contributed to my intellectual growth in a way that now I think I would be able to analyze data.
  - **Quality:** Professor Cipolli was very organized and was willing to go over questions instead of rushing students to move onto a new chapter. However, his sarcasm often sounded condescending, preventing me to feel like I was capable of knowing what was being taught in class. Professor also encouraged many students to visit him at office hours, however, whenever I was by his office, he was never there. Not only was his office hours schedule was confusing because he had written his schedule by saying "the probability that I will be in my office", he was not in his office even when the "probability that he would be in his office" was high. He also was eager to get feedback from students, yet, whenever we made complaints or voiced our concerns (specifically on standards quizzes), he dismissed our concerns and had not really changed anything to the course until 3 weeks left of classes. With so much material given to us in such a short time, professor expected us to be

prepared to be tested on things that we may have already known but forgot due to the fact that there were so many other things that we had to know. Students did not know what to expect on those standard quizzes and to have standards be worth the majority of our overall grade, I felt as though professor was trying to fail us. He never listened to our concerns, he never explained the materials well enough for me to leave class feeling comfortable. Coming to such an elite liberal arts college, I understand that I have to be responsible for how much I get out of during my time here. However, I also believe that professors should take into account that their teaching affects how we learn. Unfortunately, I don't think I received the education that i deserved from professor Cipolli.

- Student 104
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I dedicated the most energy to this class this semester. I often times would place the work for this class above the work for others such that I would not fall behind.
  - **Understanding & Appreciation:** I love stats, but hated this course.
  - **Intellectual Growth:** I learned a lot, and developed new tools to think critically.
  - **Quality:** The structure of this class is insane and is not rewarding by any means. It just does not make sense.
- Student 105
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** Review topics daily to stay on top of all standards and spend multiple hours on homework going through each step of every question
  - **Understanding & Appreciation:** Course made me appreciate and understand the subject of statistics significantly more
  - **Intellectual Growth:** Course contributed positively to my intellectual growth
  - **Quality:** Quality of teaching is good, but Cipolli often speeds through various topics, so I have to often learn some of the material on my own. Also, I feel that he could use the chalkboard in his room to go through problems step-by-step, rather than just have the question and answer on a slide in a powerpoint. Otherwise, Cipolli is a great professor.
- Student 106
  - **Reason:** Major or minor requirement
  - **Effort:** I put the amount of effort that was required for this course, which included homeworks and studying for standards.
  - **Understanding & Appreciation:** This course taught me the basics of statistics that will be helpful in the future.
  - **Quality:** Professor Cipolli is a good guy who cares about his students and wants everyone to do well. However the structure of his class was sometimes questionable and confusing. I could tell he really works hard to make the class as productive as it could be, which i appreciate. But some things we did and his grading system is definitely different from most.
- Student 107
  - **Reason:** Elective outside major or minor; Interest in the course material
  - **Effort:** Weekly homeworks and studying for standards quizzes
  - **Understanding & Appreciation:** I took AP stats in high school but I definitely feel like I understand the subject matter more now than before
  - **Intellectual Growth:** Statistical analysis knowledge is useful in many other classes. Also thinking in a statistical way is good for problem solving
  - **Quality:** A major strength of Professor Cipolli is his willingness to learn and improve as a professor
- Student 108
  - **Reason:** Major or minor requirement
  - **Effort:** Studied really hard for about 3 hours every tuesday night.
  - **Understanding & Appreciation:** He gave use a quiz that was almost equivalent to a final every

wednesday which forced me to learn.
  - **Intellectual Growth:** It didnt
  - **Quality:** Prof Cipolli is a fine instructor who clearly is clearly very intelligent. His grading standards are unfair and incomprehensible to the student. 40% of our grade is based on quizes. His grading of these quizes, and the percent score we receive is left to his discretion. The student has little idea of how his grade is calculated. Prof Cipolli also may be the most pretensious instructor that I have encountered since all my time as a student. It often seems as if he looks down on his students and claims that our poor performances are a result of a poor work ethic. In all, I have learned a lot from him, but I leave this class with much distain.
- Student 109
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I put a lot of effort into this course, considering I am not naturally great in mathematics or confident in my math abilities and had to study every day, take notes on my homework, and try to follow along in class just so I would have a basic understanding of what was happening.
  - **Understanding & Appreciation:** This course contributed to my understanding and appreciation of the course subject because it was taught in a very cumulative manner; thus, all of the topics are connected and built off of one another which gives me a more solid understanding of statistics rather than trying to memorize various different formulas or functions.
  - **Intellectual Growth:** This course contributed to my intellectual growth beyond my understanding of the course subject because statistics was something I was extremely uncomfortable with and only took to fill my core requirements; however, I really challenged myself and am pleased with how far that I have come and proud of the work I have done.
  - **Quality:** Professor Cipolli is a very intelligent mathematician, which is great and the quality of his teaching was very high; however, sometimes I got confused trying to follow along with the speed of his teaching. I think in order to aid this dilemma, he could assign the powerpoint notes as readings, so we walk into class with some form of understanding of what we are going to be learning. A strength that he has is his ability to take questions and answer them and completely cater the class to all of our learning needs. He is funny, personable, and accessible and many of the times asks for student's input when making a decision for scheduling or what have you.
- Student 110
  - **Reason:** Interest in the course material
  - **Effort:** I would do all homework assignments and came to class prepared to learn. I also put in time to do all practice problem worksheets and tried to really teach myself the material.
  - **Understanding & Appreciation:** This course taught me how to do confidence intervals and how to do reject a null hypothesis. I've heard of these terms before but never understand what they were or how you determined it. Thus, this course taught me how to do calculations I didn't know how to do.
  - **Intellectual Growth:** This course taught me how to teach myself material if I had no idea what was going on. Often times I found myself learning the material on my own and realizing that going to class wasn't very helpful. However, I still went to every single class.
  - **Quality:** Honestly, I've never been so disappointed in a Professor here at Colgate. I went to office hours multiple times and was told to come back later because Professor Cipolli was too busy with other work. When visibly frustrated with the R software, the Professor told me he'd send me the codes to help to solve my problems. Even after doing this I was still having a difficult time. I wish that I could've been taken more seriously about my questions during office hours but I simply wasn't. Furthermore, I'm grateful for all the material that was posted on moodle because through all that material I was able to teach myself and do fairly decent in the class.
- Student 111
  - **Reason:** Major or minor requirement
  - **Effort:** I had previously taken AP Stats in high school, sophomore year, so I was familiar with the

material but did not feel comfortable using AP credit. Since I had taken this class four years ago I needed some refreshers and went to office hours a few time but did not require what I believe to be too much effort
  - **Understanding & Appreciation:** Professor Cipolli's quizzes/midterm all used real life studies/experiments which I found to be incredibly interesting. As a result I have picked up tidbits of knowledge I was previously unaware of all the while learning statistics.
  - **Intellectual Growth:** I had never used R before and I'm sure many students will complain about that on here. We were given pretty much everything we needed to copy and paste and if we hadn't used R we would have had to use Excel or do things by hand. I'm sure students dont have that in depth knowledge of Excel either and R is much easier to use. I appreciated what R was able to do in terms of writing the writing assignment and checking my work
- Student 112
  - **Quality:** Professor Cipolli did an incredible job teaching this class to 150+ students. Students constantly doubted his approach to the "standards", myself included initially, that it was impossible to earn an A. Plot twist, it is possible and honestly not too hard. He dealt with constant questions incredibly well and was incredibly helpful in office hours. Assignments were returned graded faster than any of my other classes, which says a lot considering the size of this course. He holds well beyond the required number of office hours and if you stop by outside of those he is more than willing to answer questions. He is also incredibly receptive to feedback on his teaching, sending out several surveys throughout the semester to get feedback. I appreciated that he took the feedback and made small changes but still remained committed to his overall method of teaching. My little sister, a freshman at Colgate, is in CORE Stats and I was almost jealous she was going to be taking this class in a smaller setting, but I was truly surprised and impressed with how Professor Cipolli taught this course- in a good way.
- Student 113
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I practically studied for this course every day. He gave us quizzes almost every class in the beginning of the year and it was really frustrating because no matter how much I studied it seemed like I could not get the grade I wanted. I would meet up in the library with my friends most nights before class and have a group study session and that helped towards the end of the year but it is ridiculous that we had that many quizzes.
  - **Understanding & Appreciation:** I not only don't appreciate the course subject but I hate it now because of my professor. He was just incredibly unfair and he had unbelievably high standards for the class. It was like I was taking a 300 level course but we are in a 100 level. This is INTRO to stats not statistics 400. I should not have more work in this class than I do for my 200 and 300 level classes.
  - **Intellectual Growth:** Did not contribute at all. It made me want to stay away from the math department all together at Colgate. In fact I can say not that I will never take another math class at Colgate.
  - **Quality:** I think he was a really bad teacher. His grading is unfair because for the quizzes I should have around an 86 percent and yet he gave me an 84 because he uses his discretion. What does that even mean? He does not like me as a student because math is not my favorite subject, so you are going to take two points off of my grade just because you feel like it. It just makes no sense to me. He also gave no partial credit on the midterm and he just expects a ridiculous amount from his students for a 100 level course. I would also email him for help and his response was always, "read the syllabus." I have read the syllabus 40000 times but I still do not understand and he just would not bother helping.
- Student 114
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Understanding & Appreciation:** I appreciate all of the different sides to statistics and how

applicable it is to our lives when I used to think it wasn't at all.
  - **Intellectual Growth:** I realized it is a lot more useful than I thought it was and very useful in many situations and I could use it one day or maybe do something with it in the future.
  - **Quality:** I thought he could be rude/condescending at times. The extra credit assignment was to give him constructive criticism and the way he responded sounded like he didn't want it, so I didn't really see the point of that. He basically was fighting what I said when I was just giving suggestions from my personal experience.
- Student 115
  - **Reason:** Core or Areas of Inquiry (distribution) requirement; I needed to take this course for my math/science credit.
  - **Effort:** I put a great deal of effort into this course and felt very dismayed at the lack of respect that I received from the professor. I worked very hard and still did not do great in the class due to his weird and ineffective grading standards.
  - **Understanding & Appreciation:** This course gave me a basic understanding of the material, but the professor often did not explain things fully to the class when he was doing problems on the board. If you did not understand something he made you feel as if you were dumb and told us multiple times that "it's a freshmen level class, high school even and you all should be understanding this. It's not that hard..." Comments like these made me insecure to ask questions because I felt as if he was judging me every time I did not understand something.
  - **Intellectual Growth:** It did not.
  - **Quality:** I was very put off by the disrespectful treatment that I received from the professor. His office hours were inaccessible, due to the limited time and how they were always during other classes and I once emailed him a question and he told me to come to office hours, when the purpose of me emailing him was that I couldn't make it to his office hours. I did once go to his office during scheduled office hours and he physically blocked me from going into his office by poking his head out of the door and after 30 seconds of me asking a quick question, he said "now you understand? ok good." and proceeded to slam the door in my face. This treatment made me not want to seek out help for this course and thus, when I didn't understand something I did not know where to go to get help as I was not comfortable asking the Professor. Time and time again he insinuated that our class is spoiled, coddled, and does not have the desire to learn new material, which was insulting as everyone at Colgate is driven, passionate, and dedicated to academics. I was also extremely confused by his weird and arbitrary grading style. If you got one 3 on a standard then you automatically were dropped down to an 89, which shouldn't make any sense and quite frankly I do not understand why and how the University lets him grade this way. Also, it was not necessary to spend over $100 on an online platform to submit homework on. We do not use the platform in class and it was a waste of money.
- Student 116
  - **Reason:** Core or Areas of Inquiry (distribution) requirement
  - **Effort:** I put a significant amount of effort into this course. However, I often put off studying until the last minute, rather than putting in consistent effort throughout the semester. I worked hard on all of the homework assignments and studied a lot for the midterm and standards quizzes. I went to office hours all of the time, tutoring hours a good amount of the time, and worked with another professor for outside help.
  - **Understanding & Appreciation:** I honestly only took this course to fulfill a requirement so that I can graduate. I do not really enjoy math. However, I do think I improved and gained some limited appreciation of the topic. It was helpful that the professor used relevant topics to engage with us.
  - **Intellectual Growth:** It required a different type of thinking than the majority of my Colgate coursework. I had to work extremely hard to study and attempt to understand the material, whereas I usually take courses that focus on mostly writing assignments. It was very challenging for me.

- **Quality:** I thought this course was taught well. My main problems with it stemmed from the huge class size, not the teaching style for the professor. I think that Professor Cipolli would be able to teach a very strong course if he was given a smaller class size. He was extremely accessible in office hours and always available to answer questions. To be honest, this is the only math class I have taken at Colgate, so I don't really have anything to compare it to. I did find that the constant quizzes caused a feeling of never-ending evaluation and anxiety. However, it did help me stay up to date with the material throughout the semester, so that I did not have to cram at the last second for the final or the midterm. I hope that this balance can be struck in the future. It was very straightforward in that the quizzes were almost identical to the practice problems, so I think that some students did not really have a right to complain as much as they did about the quizzes.

- Student 117
  - **Reason:** Major or minor requirement; Prereq for econometrics
  - **Effort:** Way more studying than had to be done
  - **Understanding & Appreciation:** None
  - **Intellectual Growth:** None
  - **Quality:** This course was made harder than it had to be, concepts (especially t values, hypothesis testing, and probability) were explained terribly, or never even fully explained, everything was made to seem harder than it actually was, and the overall attitude of the professor is not conducive to a positive environment.
- Student 118
  - **Reason:** Other requirement Additional Reason(s): I took this course as a math class for medical school, and because I heard the work was very manageable.
  - **Effort:** I had to put a lot more effort into learning this course than expected. But I feel as though I spent a lot of time just teaching myself the material rather than studying and doing practice problem sets, because this course never really had a consistent method of teaching.
  - **Understanding & Appreciation:** I liked statistics before this course. I was really good at it in high school, and scored a 4 on the AP statistics exam. Now I feel like if I had to take that test again I would fail it. I always saw statistics as a helpful subject in math that allowed for us to really understand phenomena we see in the real world, but this class made me never want to perform statistical analysis again.
  - **Intellectual Growth:** If nothing else, I learned how to teach myself material that was difficult and had nothing to do with the course being taught. Using a computer program that I will never use again for a writing assignment that was a lot more work than it was worth taught me to work with friends to problem solve and take the time to teach myself the material.
  - **Quality:** Prof. Cipolli was definitely one of my least favorite professors I've had here at Colgate. While he did hold plenty of office hours, I was always afraid to go because of how he talks to us at times in class. He can be rude and condescending, as he asks for our feedback and then gets defensive about the feedback given. He made passive aggressive comments, and once even accidentally antagonized a prospective student. One day, he taught calculus 3 because he wanted people to take his other classes. And he made us use a computer program that we weren't allowed to use on tests and seems completely pointless for real life applications of statistics. In short: he wasn't very kind to students and he barely taught statistics.
- Student 119
  - **Reason:** Core or Areas of Inquiry (distribution) requirement; Interest in the course material Additional Reason(s): I think an understanding of statistics is crucial in today's world and wanted to gain more understanding.
  - **Effort:** I didn't put in an extraordinary effort into this class
  - **Understanding & Appreciation:** I am learning how much statistics impact our daily lives. I have also learned to always look behind to statistics to see where the data came from.

- **Intellectual Growth:** I think this course forced me to be frustrated and work through it which is very beneficial.
- **Quality:** I think it is obvious that the professor is a skilled statistician, but forgets that we are not. Sometimes he looks through problems jumped from step to step with no clear explanation on how he got there.

- Student 120
  - **Reason:** Major or minor requirement
  - **Effort:** I complete all the assignments on time and studied before every class due to the prevalence of cumalitive pop quizzes.
  - **Understanding & Appreciation:** I now have a decent undertasnding of the course but the class was not very interesting. Preofessot Cipolli tried his best to give interesting examples and to take contributions from students but it is hard to make statistics very appealing to someone who does not that a desire it learn it. Nonetheless, Professor Cipolli emphasizes learning the material throughly and not just memorizing
  - **Intellectual Growth:** I learned a basic understanding of statistics which is important for the economics major and generally for everyday life
  - **Quality:** Professor Cipolli had very peculiar and at times unfair grading standards. Quiz grades were 40% of your grade where any rounding error or improper notation on any problem throughout the year would result in a 100 dropped down to a 89 which is frankly illogical. Additionally, Professor Cipolli consistently changed and strayed away from the syllabus which made my obligations and grading standards unclear. Additionally, the class required a sophisticated knowledge of computer science which few students actually possessed. Due to this Professor Cipolli would become angry and be mostly unhelpful. He did seem overwhelmed by the amount of students he needed to account for but after I had heard he was angrily sending away students from his office hours I no longer seeked innperson assistence when it could have been useful. In saying this, Professor Cipolli did convey the majority of the material well and was dedicated to making himself as accessible to all his students as possible. He tried his best to be cortious and thourough but at times was bisibally overwhelmed and fustrated with the class.
- Student 121
  - **Reason:** Major or minor requirement
  - **Effort:** This course, because it was so large, required a lot of personally motivated work, like going to tutoring for questions. All the notes were provided on line so it was easy to go back and learn what you missed.
  - **Understanding & Appreciation:** This course helped me understand that we can't believe all the stats that are put out there in media. We have to pay attention to the sample and determine if the sample is really representative of the whole population.
  - **Intellectual Growth:** This course really helped me to break down problems and take them step by step.
  - **Quality:** I enjoyed Professor Cipolli as professor this semester. Even though we were his guinea pigs and the course structure was somewhat confusing at the beginning of the year, he was fair to us at the end and always made sure we were also in favor of the changes he made. He was always answering emails and was always willing to help. I know its hard to care about all your students when there are so many in the class, but Professor Cipolli really made that effort and I appreciate it. I know some people were frustrated with him, but I think they just didn't want to put any work into this course.
- Student 122
  - **Reason:** Other requirement; I took this course as a premed requirement.
  - **Effort:** I put an incredible amount of effort into this class because I taught myself everything. I have gotten A's and high B's on everything no thanks to the professor or his TA. I spent countless hours simply trying to interpret his notes and how to use R with several of my classmates.

- **Understanding & Appreciation:** This course did not contribute to my understanding or appreciation for this course because I taught myself everything.
- **Intellectual Growth:** Truthfully, I learned how to take my education into my own hands and not to rely on a professor for help.
- **Quality:** -Cipolli was incredibly condescending when we would ask for help -When I sent him an email of what he could improve (after him asking us to do so), he sent me an essay defending himself and did not take my suggestions seriously -His TA graded my test and gave me an 85, when I had actually gotten a 95. I went in and told him this and he scolded me for rushing him (but then realized I still had a 85 in the gradebook and told me "well I guess its a good thing you came in". -He told us how he was grading the standards but then completely changed it last minute. Nobody knew how he was grading us because he would be rude if anyone asked. -We never learned how to use R and I spent days trying to teach myself how to code. -His office hours were a chart of the "probability that he would be there" (including graphs). He was never there (even at a probability of .9). -I pay a lot of money to go here, and while I realize that my education is my problem, I expect to at least get something close to the education I am paying for. (i.e someone like Professor Liu). -So many grading mistakes Strength: moodle was organized nicely

◦ Student 123
- **Reason:** Interest in the course material
- **Effort:** I unfortunately had to put FAR more effort into this course than expected of an introductory level course .
- **Understanding & Appreciation:** Important to see where stats in the news come from/not always an accurate stat depending on what the population is.
- **Intellectual Growth:** Taught us to be skeptical, and check the facts which is always important.
- **Quality:** I honestly think Cipolli is a good professor – he's a lot of fun and really cares about his students, but this was just not appropriate for an introductory level course. As someone who studies math at Colgate, I thought this was way too difficult for Math 105. Also he told one of his 300 level students that he was going to make this course a lot harder than it had been and was going to "make us use R" (again: so unnecessary- while most of it was copy and paste, we only used R for the writing assignment). Also, the standards, while he claims help learning, I think it just discourage the students overall. What does help is homework- doing the homework online really helped prepare me for the class and while lengthy, they were do-able. My recommendation would be to have 2 quizzes (one before and after the midterm), the midterm, and the final and then more but smaller homework assignments. It seems to me that Cipolli would be an incredible professor (he really is caring, passionate, and fun) for 300 level classes, but this was far too much and far too difficult for students who are not math students and don't necessarily have a passion for the subject.

◦ Student 124
- **Reason:** Major or minor requirement
- **Effort:** taking notes in class and being attentive, completing online homework assignments, going into office hours, studying for quizzes and tests and making sure to stay on top of the material for pop quizzes at the beginning of the semester, trying to figure out code for a writing assignment
- **Understanding & Appreciation:** I had never taken a stats class before besides the math involved, all the material was new for me
- **Intellectual Growth:** Since all the material was new it pushed me to pay close attention in class and study more and go into office hours. The writing assignment also taught me I need to give myself more time than I think I'll need in the future when I am working with a completely new program/code
- **Quality:** I think Professor Cipolli is a great teacher. He made classes interesting and presented the material in a clear way. He was more than happy to meet with us in office hours and help out if we didn't understand something

◦ Student 125

- **Reason:** Exploration of possible major or minor; Elective within major or minor
- **Effort:** I definitely tried for this course–i was studying for hours before possible quizzes and did numerous practice questions.
- **Understanding & Appreciation:** This course did not fully cover what i thought it would. I took AP Statistics in high school, and we were able to explore many more topics with greater understanding and conceptualized thinking
- **Intellectual Growth:** I did learn how to use R programming, and use less of my calculator.
- **Quality:** Professor Cipolli had a lot of trouble actually respecting students when they asked questions that he denoted as "stupid" and if we had just read the syllabus more in depth, we would know the answer. He honestly needs a reality check since he is dealing with college students who dont really appreciate paragraph long apology emails after class, they would just appreciate some respect in class. For the entire semester, i was generally scared to ask questions because every time someone had a question, he would basically criticize them for having that questions, and answer very rudely, and sometimes not even answering at all, just saying "Check the syllabus"

◦ Student 126

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- **Reason:** Elective within major or minor
- **Effort:** I had to put a great deal of effort into this course. I was continually studying. This was good to a certain extent but at sometimes it was too much. With quizzes twice a week sometimes I felt like I never had breathing room. I definitely spent most of my free time studying stats this semester.
- **Understanding & Appreciation:** I have learned a lot as a result of this course. I've never taken a stats course before so it was cool to take this kind of math. I really like math and this course helped that appreciation grow even more.
- **Intellectual Growth:** This course taught me how to remain disciplined. I really had to hold myself accountable to studying continuously and learning the material.
- **Quality:** Professor Cipolli is a great guy. You can tell he really cares about what he does. He also cares a lot about his students it seems like. The only thing I wasn't a huge fan of was his grading. I know he knows best, but sometimes it felt a little harsh. I got literally one part of one little question wrong on his midterm and got a B. I know A's should be "mastery", but I was so close and really got frustrated with that. I guess it was just something I wasn't used to.

MATH 316: Probability

Fall 2017: Section A

◦ Student 1

- **Reason:** Elective within major or minor
- **Reason:** Interest in the course material
- **Effort:** I spent about 20 hours on each homework, including working on my own and going to office hours. I spent a couple hours preparing for each exam.
- **Understanding & Appreciation:** The questions in homework and examples in class are interesting, not too abstract. I also saw the connections between probability and calculus, and other areas in math.
- **Intellectual Growth:** I am now able to think about many probability scenarios in life in ways that I had not been able to.
- **Quality:** Quality: I can tell that Prof. Cipolli tried hard to make the course interesting and be accessible to students. Yet I think the success is limited in certain aspects, for many reasons. He made TOO MANY MISTAKES instructing in class and drafting questions for homework, to the extent that class time was always wasted on us pointing out his mistakes, and homework time was always wasted on us struggling with unsolvable problems and then going to his office hours to correct

them. He was not always helpful during office hours because he would not look at his solution sheets when he forgot how to do certain problems, and we, for many times, wasted a ton of time on one or two not very complicated problems. His office hours are scheduled in a way that students who take class in a certain period would never be able to attend. He scheduled all his exams for all his classes during the same weeks, so it was extremely difficult to find time to talk with him around those times. He used google calendar for appointment scheduling, which was not effective because a couple times two of us booked the same times! What he did was to let one student use up the entire time slot and the other just sit there waiting (from 8:30-9:00 in the morning!!) Even though he apologized in the end, it was very frustrating and unfair. He spent months getting back to me about one homework problem that I had a different solution than his own. He could have managed his time a lot better, because "being busy" is an excuse – everyone is busy!!

- Student 2
  - **Reason:** Major or minor requirement
  - **Reason:** Interest in the course material
  - **Effort:** Too much. This class and its tendency to give 24hr long assignments in a single week took away time I needed for other classes.
  - **Understanding & Appreciation:** I thought all I really needed to know went by in the first chapter but from then on, nothing seemed integral or of any applicable interest to a non-statistician.
  - **Intellectual Growth:** It made me realize that at times its necessary to stop pouring all focus on an exam or homework and spread out my attention to other assignments whether or not the ones for this class were done.
  - **Quality:** The teaching is alright. The style of teaching is difficult for me to learn from and so I just take notes and read them on my own. The professor seems to care for his students but it seems to be lost in translation when he interacts with them in seemingly condescending ways.
- Student 3
  - **Reason:** Major or minor requirement
  - **Effort:** I put a great deal of effort into this course. I went to office hours/scheduled appointments pretty much every week and made sure that I started my Homeworks far enough in advance to be able to ask questions on problems that I was stuck on. I also worked with my classmates on problems to understand material more clearly.
  - **Understanding & Appreciation:** Going into this course I thought it was going to be similar to intro to statistics, but it was very different. I appreciate how the material builds on itself so that you need to use things you learned from the beginning of the semester, but this also made the class difficult because you had to remember material from weeks prior.
  - **Intellectual Growth:** This course, as most math courses do for me, made me be proactive in my work and studying. I had to actively plan to meet with the professor to ask questions and get help. I wanted to do well and I knew that would be challenging since the material doesn't come easy to me.
  - **Quality:** At first, I was a little discouraged with how the course was ran because the material seemed very confusing and the lectures weren't helpful because the material was so theoretical. It's unfortunate that the course has to start with the most difficult chapter because it is not encouraging to students. As time went on, we were able to do more examples in class which really helped. I think the homework questions deviated too much from the examples we did in class. I felt that I had to learn completely knew things to do the homeworks which made them frustrating because I was nervous that for the tests I wouldn't understand how to do the questions either. The grading method used sometimes seemed helpful, but I also didn't love that a few errors still made you get a 3 on a question vs a 4 because that seemed to drop the grade significantly. The professor was very available to meet and made time in his schedule for appointments. Later in the semester, he was more flexible with taking opinions from the class about homeworks and test formats. Overall, I think it would be better if the course didn't start off so strong so that students don't get overwhelmed.

- Student 4
  - **Reason:** Elective within major or minor
  - **Effort:** Read notes and do the homework
  - **Understanding & Appreciation:** Understand the probability: CDF PDF PMF, complex counting.
  - **Intellectual Growth:** I learned myself this class.
  - **Quality:** He's notes are the same as what he taught in class, which is unnecessary.
- Student 5
  - **Reason:** Major or minor requirement
  - **Reason:** Exploration of possible major or minor
  - **Reason:** As a prerequisite for econometrics
  - **Effort:** The course was very challenging, and this added many new skills to me. I learned a markup language and was exposed to R coding. I'm happy that I acquired these skills. There were long and hard homeworks.
  - **Understanding & Appreciation:** I realized that I really like statistics and mathematic after this course, so I registered for two more math courses. I'm considering majoring in math because of this course. This course made me understand math is a very important tool which has applications in a very wide range.
  - **Intellectual Growth:** In addition to statistics, the course gave also some insight into proving. I liked this aspect
  - **Quality:** Th professor was very organized and flexibile at the same time. I believe this was the most important strength. We always knew what to learn and study, and he managed the time conflicts well. I also liked that he supplied notes. I don't know if I would learn as much had I taken the course with another professor.
- Student 6
  - **Reason:** Major or minor requirement
  - **Reason:** Elective within major or minor
  - **Reason:** Interest in the course material
  - **Effort:** I did all of the homeworks, came to almost every class, and participated in almost every lecture
  - **Understanding & Appreciation:** I feel like I have a very good understanding of probability distributions and the beginnings of statistics
  - **Intellectual Growth:** Math always helps in developing critical thinking skills, so it helped me with that.
  - **Quality:** Professor Cipolli is great, but sometimes he overexplains things instead of just moving on, leaving me and surely others more confused. Otherwise, the class was perfect in almost every way.
- Student 7
  - **Reason:** Major or minor requirement
  - **Effort:** I have put forth a great deal of effort into every assignment given (no less than 10 hours per assignment and over 20 on some). Having a 20 hour+ assignment during midterms week with 1.5 weeks to complete it in order to get the answer key before a test in this course 2 days later was beyond absurd and greatly hurt me in this class.
  - **Understanding & Appreciation:** This course has worsened my appreciation for mathematics immensely.
  - **Intellectual Growth:** I have been forced to learn how to teach myself in a number of different fields of probability and calculus after this course, as even though the professor knew some of us were 4 years out of calculus he offered no refresher courses, which even economic classes offer.
  - **Quality:** The in class lectures were poorly structured, hard to follow and incoherent at times. The homework assignments were obnoxious as we later learned we were expected to have to look up answers and figure out how to get to them to solve it correctly (on the first homework two problems

with entire wikipedia articles outlining how complex they are were given). The grading scheme is obnoxious, as completing the entire problem correctly and forgetting to add a minor detail bumps one down an entire letter grade. This is the first non-positive review I have ever written for a professor on sets forms since I feel so strongly that this class was so mismanaged. Also, I have received lower grades in other courses and written positive reviews so this is not a complaint due to my grade.

- Student 8
  - **Reason:** Major or minor requirement
  - **Reason:** Elective within major or minor
  - **Reason:** Interest in the course material
  - **Effort:** The effort needed for this class was by a large margin the most effort, in terms of time, I have ever needed to put into any class at Colgate. The expectations for the amount of work to be completed outside of class was more than my other 3 classes combined this semester. Most importantly, I did not find the work to be helpful to understanding the material.
  - **Understanding & Appreciation:** This class is not at all what I expected it to be when enrolling. It was far more theoretical than I anticipated. I feel as though if asked about probability in a job interview, I would struggle to answer the question, which is unfortunate.
  - **Intellectual Growth:** I needed to play my time very well to complete this course because the HW assignments were extremely long and took up a significant amount of my time, which detracted from the time I had to complete assignments for other classes.
  - **Quality:** Professor Cipolli clearly is passionate about the subject and prepares thoroughly for class. However, I have not had a good experience in this course. As mentioned above the shear amount of work was overwhelming at times and I did not feel it was necessarily helpful for understanding the course material. The grading standards were very confusing and hard to understand how/why certain grades were achieved. I found the lectures to occasionally be confusing with a lack of concrete examples to reinforce the theory being taught.
- Student 9
  - **Reason:** Major or minor requirement
  - **Reason:** Elective within major or minor
  - **Reason:** Interest in the course material
  - **Effort:** I put in the number of hours expected; roughly 6.5h every week. I try to spend most of my time understanding the concepts and doing the homework.
  - **Understanding & Appreciation:** Appreciation: I really really enjoyed this course. It helped me synthesize everything I have been learning in the mathematics major so far. It has been my favorite course this semester. I have a better understanding of calculus as a direct result of this course.
  - **Intellectual Growth:** I found the examples very engaging and interesting. It has also meshed well with the other courses I am taking this semester.
  - **Quality:** Fantastic. Prof. Cipolli is on time with everything he says he's going to do. He's accessible with good office hours and many appointment slots. He's also willing to (and does) answer questions on the Moodle forum. His goal is to make the course "challenging but doable" and he succeeds admirably in that goal. In class, he is sociable but focused, and welcomes questions, which means that the classroom environment is a pleasure to be in. He welcomes and solicits feedback which means that I feel heard as a student. He also does not give us the answer when we ask a question, which means that I don't need to worry when going into office hours about whether the problem will be ruined for me. I would 110% take a class with him again and hope to see him at Colgate for many years in the future.
- Student 10
  - **Reason:** Major or minor requirement
  - **Effort:** heavy workload but I like it
  - **Understanding & Appreciation:** Great

- **Intellectual Growth:** As a pure math student there are many applied cases in this course which are interesting
- **Quality:** He is really great and chill, I love the notes, work load is heavy but I like it

- Student 11
  - **Reason:** Elective within major or minor
  - **Reason:** Interest in the course material
  - **Reason:** I'm a mathematical economics major, so this is technically an elective within my major, but it's highly recommended that we choose this course as one of our electives.
  - **Effort:** I always take very careful notes during class. The problem sets are where I do the majority of my learning, since there we get to practice using the concepts that we've learned in class. Generally, I would say each problem set takes about 15-20 hours total, and I spread it out over several days. I always work with partners on the problem sets but we write up our own solutions. Before tests, I generally spend about 5 hours reviewing all my notes, going over the examples we did in class, and going over the solutions to the problem sets.
  - **Understanding & Appreciation:** I came into this course knowing very little about probability, since the last time I had studied it was sophomore year of high school and I found it very confusing then. Cipolli's teaching methods and fun personality in class helped interest me in the subject and make sure that I had a much higher understanding of the course material.
  - **Intellectual Growth:** I think that this course has been good practice in how to work really hard to understand something, work well with other people in the class, and ask for help from the professor when I need it.
  - **Quality:** I think that he does a great job of making a lecture class of more than 30 people actually fun to be in, because he's always making funny jokes and he actually knows all of us pretty well. Also, he feels really accessible, and he's super understanding if you need an extension on something. He definitely cares the most about making sure you learn the material and not killing you with work when you have too much going on in life.
- Student 12
  - **Reason:** Elective within major or minor. Interest in the course material.
  - **Effort:** This class required more work than any other class I have taken at Colgate. The amount of time spent studying and completing assignments was simply unreasonable. At various points throughout the semester we were assigned 16-24 hours of homework during weeks we also had an exam in this class.
  - **Understanding & Appreciation:** This course was excellent at contributing to my understanding of probability and math as a whole.
  - **Intellectual Growth:** I have become much better at not sleeping as a result of this course. Hopefully this helps in a potential future investment banking job.
  - **Quality:** The quality of lectures was good, but it was hard to review material effectively outside of lecture because we did not have a textbook for this class.
- Student 13
  - **Reason:** Major or minor requirement
  - **Effort:** I completed all the homework, showed up to every class, and prepared for the tests.
  - **Understanding & Appreciation:** Before this class, I didn't really like probability because I had never been taught it appropriately. Taking this class made me confront my dislike for the course material and I now have an appreciation for the complexity of the subject.
  - **Intellectual Growth:** Probability is applicable in many different disciplines. As my second major is neuroscience, I was able to use the concepts talked about in this class to better understand neuroscientific problems.
  - **Quality:** Professor Cipolli is definitely interested in the material that he is teaching and was flexible with the due dates and test dates so they better fit the schedule of the class. However, instead of

using his passion for probability to inspire the class, his great interest in the material sometimes came across as arrogance.

- Student 14
  - **Reason:** Interest in the course material
- Student 15
  - **Reason:** Major or minor requirement
  - **Effort:** Interest in the course material
  - **Understanding & Appreciation:** I put in a lot of time on homework, and studied extensively before all exams.
  - **Quality:** Professor cipolli provides a high quality of teaching. He is dedicated to helping students learn, and he really knows the material well. One thing that would have made the class easier for me is if we were given complete notes instead of partial ones (I'm bad at taking notes and paying attention in class) and also if only tests were graded, not problem sets. This has little to do with Professor cipolli himself though. He is great and I would recommend him to future students.
- Student 16
  - **Reason:** Elective within major or minor
  - **Reason:** Interest in the course material
  - **Effort:** Substantial, to the point where I became worried about time for this class cutting well into my other classes, including seminars.
  - **Understanding & Appreciation:** I understand certain aspects of probability, but not nearly as well as I would have hoped going into this class. I am a math major yet am very unsure when and where the subject material is applicable, or how to apply it.
  - **Intellectual Growth:** I learned how to deal with someone in a position of authority who is condescending and refuses to acknowledge that he or she could ever possibly be wrong about anything or make any sort of mistake without at least partially blaming it on someone else or other circumstances. While this may serve me well in the future, it is not an ideal lesson to be learning in probability.
  - **Quality:** Strengths: Legitimately seems to care about the subject material. Weaknesses: Classroom attitude and mannerisms were condescending and boorish. Grading standards were peculiar at best and egregiously inconsistent at worst. Often made mistakes on the board, then when corrected, would blame a student for saying the wrong thing, which entirely defeats the purpose of being a professor, who should be able to see that error before the rest of the class. The material was written in a way that leaves me wildly confused about the relevance and potential purposes.
- Student 17
  - **Reason:** Major or minor requirement
  - **Reason:** Elective within major or minor
  - **Reason:** Reputation of the instructor
  - **Effort:** I put a lot of effort into this course. Not only did I attend every class, except for one that I missed for an interview, I came to class, was attentive and asked questions often. I started each homework ahead of time, according to the syllabus we were to be given a weeks notice once we had finished the chapter to complete the homework, and for each homework assignment I planned to start and did start well before the chapter was finished. Professor cipolli did not always give us sufficient notice for the deadlines of these assignments, as he noted in the syllabus.
  - **Understanding & Appreciation:** I feel that I have a good understanding of the basic probability concepts, even though we have not finished the course material.
  - **Intellectual Growth:** In this class problems were assigned in which I felt were more like brain teasers than actual math exercises, so I did not feel that they contributed to my understanding, however, I do feel that some problems did help me learn skills that will help me beyond the scope of this course.
  - **Quality:** I think that Professor Cipolli was a little over-ambitious in what he wanted to accomplish in

teaching this course, and what he wanted us to accomplish. This happens from time to time in other classes I have taken, but I felt very often that I was rushed going in to exams or handing in assignments because it was not explicitly clear from the syllabus, or far enough in advance to know when they would be or when they would be due. I personally was taking a heavy course load this semester, and have a lot of extra curricular commitments that I juggle by managing my time, which I do not have a problem with my courses doing, but I felt that these assignments/exams threw me off. Professor Cipolli is very helpful in office hours and also over email/moodle and answers questions clearly and in a timely manner, so I wish that he would have more office hours! Maybe once he has taught this course enough to figure out the correct timing of exams/assignments it would be better, but I felt that deadlines and assignments were not clear at the beginning of the semester, and that made this course very difficult for me.

- Student 18
  - **Reason:** Major or minor requirement
  - **Reason:** Elective within major or minor
  - **Reason:** Interest in the course material
  - **Effort:** It took me 10 hour for each homework approximately. And I take an hour to review the stuff I learned every two days.
  - **Understanding & Appreciation:** Probability is fun but troublesome. It needs tons of calculations.
  - **Quality:** Professor Cipolli's lectures are clear and organized, and he is an easygoing person. However, he makes mistakes frequently. In class, he makes algebraic mistakes and typos in every class perhaps. In homework, we were often offered with wrong formulas and every homework assignment has tons to typos (at least 5 in each). His grading method in homework and exams is horribly bad. Making 2 tiny mistakes (such as an unimportant typo) decreases about 10% in the overall grade. Unreasonable.
- Student 19
  - **Reason:** Major or minor requirement
  - **Reason:** Elective within major or minor
  - **Reason:** Interest in the course material
  - **Effort:** I usually left all the work until the last minute
  - **Understanding & Appreciation:** While I did enjoy the topic, I found it to be too theoretical and we spent a lot of time getting bogged down in calculus which made it much less interesting.
  - **Intellectual Growth:** Probability has applications in everyday life, and the models you learn can be used in the decisions you make
  - **Quality:** Prof Cipolli has clear guidelines and is pretty flexible. He does explain the material well. This course does require a lot of time, and a lot of the work done comes down to calculus and algebra and the concepts in probability sometimes take a back seat when you do so much of it.
- Student 20
  - **Reason:** Major or minor requirement
  - **Effort:** This course required a great deal of effort. The homework assignments were long and challenging, so I had to spend several days to complete each one. The tests were fair, but challenging, and required a significant amount of time devoted to studying and preparation. This course probably required the most out of class time to complete homeworks and prepare for class and exams.
  - **Understanding & Appreciation:** Appreciation: I feel that I have a solid grasp on the basic ideas and methods of probability. This course is a great review and application of calculus methods in real world scenarios.
  - **Intellectual Growth:** This course has helped me improve my time management skills greatly. At the beginning of the semester, I struggled mightily with the homework assignments because I did not give myself enough time to complete them, but I have done much better since then, which was reflected in my improving grade throughout the course.
  - **Quality:** Professor Cipolli always comes to class engaged and teaches the material in an interesting

way. He is very helpful in office hours or through email, and though the workload in this course was very high, especially when taking other courses, the assigned problems were rarely unmanageable.

- Student 21
  - **Reason:** Elective within major or minor
  - **Effort:** I put a decent amount of effort into this course, enough to get a passing grade. I felt that sometimes it was hard to learn some of the topics.
  - **Understanding & Appreciation:** I appreciate math more coming out of this class. I understand the course fairly well but sometimes I wish we did more real world examples and discuss what we calculate and what it actually means.
  - **Intellectual Growth:** I think that I learned how to connect different units I the course pretty well. Also, I have learned to work through harder problems and have endurance.
  - **Quality:** The quality of teaching is one of the best I've had here at Colgate. The professor is intriguing, smart, respectful, and also approachable. He answers every question perfectly but also allows room to joke around. He is lively and engaging which makes me look forward to coming to class.
- Student 22
  - **Reason:** Major or minor requirement
  - **Effort:** I feel like I put a lot of effort into this course. I would start homeworks as soon as they were assigned in our to not be overwhelmed. The one part I did slack on is studying for tests. I definitely should have spent more time reviewing the material.
  - **Understanding & Appreciation:** I had never learned about probability before. After this course, the material began to pop into many of the other courses I was taking this semester and it allowed me to greatly appreciate learning this course.
  - **Intellectual Growth:** The biggest part of this course for me was learning how to use LaTeX. I never would have done that and it has been amazing. I love it and I am using it to write my thesis.
  - **Quality:** I thought the homeworks and tests were written in a perfect way to test our knowledge in a situations we had already been in before as well as in new problems to deepend our knowledge of the subject. I am not sure how helpful I found the notes posted on moodle since I wrote the notes in my notebook anyway.
- Student 23
  - **Reason:** Major or minor requirement
  - **Effort:** I put an enormous amount of effort into this class. Each homework assignment required approximately 25 hours of my time to complete. Additionally, I coded homeworks into a nicer format which took additional time.
  - **Understanding & Appreciation:** I thought I would really like the course material, but after taking this class, I realize maniupulating distributions is probably not what I want to do with the rest of my life.
  - **Intellectual Growth:** I think this course challenged me to think through incredibly difficult problems. It forced me to ask for help and utilize all of the resources accessible to me.
  - **Quality:** Professor Cipolli is an absolutely amazing professor. He cares about his students and is passionate about the class he teaches. He is always willing to help and is very accessible.
- Student 24
  - **Reason:** Elective within major or minor
  - **Reason:** Interest in the course material
  - **Effort:** This course definitely challenged me more than I expected it to, but not necessarily in a bad way. The homework assignments were time consuming and required a lot of thought.
  - **Understanding & Appreciation:** This made me realize how applicable probability is to a wide range of settings and made me confident in my abilities for the future.
  - **Intellectual Growth:** It taught me time management skills because the homework assignments took

so long.
  - **Quality:** Professor Cipolli is a really good professor and knows a lot about statistics. However, I found some of his material to be unnecessarily difficult, expecting us to know things we could not possibly know. Also, his grading procedures were really weird and didn't really make sense to me.
- Student 25
  - **Reason:** Major or minor requirement

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- Student 1
  - **Reason:** Elective outside major or minor
  - **Effort:** I studied for all the tests and worked hard for all the homework but could have gone to office hours more
  - **Understanding & Appreciation:** The subject is extremely interesting to me, because I am interested in Data science and it is really relevant to that
  - **Intellectual Growth:** I will likely be using information from this course in my research next semester so it is really relevant
  - **Quality:** He worked extremely hard for this course. Everything was graded extremely fast. It felt like he spent too much time on the easier stuff at the beginning of the semester and then by the end of the semester he didn't have enough time for the more difficult topics. So I think in the future he could speed up the course in the beginning of the semester to allow for more time on the harder topics. The last HW, in particular, seems at little forced considering the notes were released 3 days before it was due and we didn't learn a lot of what's on it until 2 days before it was due. I really liked having the notes available. I would not print them out and take notes in a notebook in class. Then could review them along with the textbook after I heard it for the first time.
- Student 2
  - **Reason:** Elective within major or minor
  - **Reason:** Interest in the course material
  - **Effort:** I spent a bunch of time reading both his notes and the textbook, and also doing the homework and studying for the tests.
  - **Understanding & Appreciation:** Taking this course showed me what probability actually is and how is done with math and why its important.
  - **Quality:** I thought he did a great job teaching. Everything was very clear and instructive, he is the quickest grader I've ever had at this school, he was always around and willing to help and answer any questions about the material and was just a great person to have as a professor and everyone loves him.
- Student 3
  - **Reason:** Major or minor requirement
  - **Effort:** I put forth genuine effort throughout the semester. I completed all homework assignments and thoroughly reviewed the notes and past examples for exams.
  - **Understanding & Appreciation:** The course helped me gain a greater appreciation for applying probability in the real world. I was able to learn the theory while still learning about real world examples.
  - **Intellectual Growth:** The course improved my organization skills given the professors high standards for homework assignments and tests. I learned to be clear in explaining my answers.
  - **Quality:** The professor is very passionate about the subject and has a strong background in the field. He is able to explain complex concepts with ease and is good at getting the students involved. The professor's method of typing up most of the notes was effective. His lengthy homework assignments helped when preparing for the exams. He was also always accessible.
- Student 4

- **Reason:** Elective outside major or minor
- **Effort:** I attended every class with only a few absences. For every test and every homework assignment, I would spend hours review and re-reading the notes and textbook to understand the material.
- **Understanding & Appreciation:** While I struggle to keep up with the course, it still has contributed greatly to my understanding of probability and statistics and how these subjects are used in real-world applications. This is most apparent in our examples or homework problems where you can see where a probability distribution is used and how you interpret that.
- **Intellectual Growth:** Time management and actively seeking help when you need it, I would say, are the two most important skills or traits that you would learn from this course beyond the course subject.
- **Quality:** Professor Cipolli has taken great steps to ensure that every student has the tools they need to succeed in his class. It is obvious just from attending class that he spends a great deal of thought and time planning his lectures, grading assignments, and crafting the class notes. Most of his examples are both informative and interesting and he definitely accomplishes a great deal when simplifying the Cassela-Berger textbook in his own notes. His personality is a breath of fresh air and he is remarkably accessible and easy to talk to. I wish I had made the time to go office hours more. The only weaknesses I can think of are circumstantial. By that I mean, I feel that the course moves a little too quick for comfort sometimes and escalates at bizarre intervals. One day, we might be spending our 3rd class in a row going over calculus and then the next day it feels like we've moved on 2 chapters. The tests are difficult, for me. While I know other students are doing fine, I find that the homeworks are, contrary to his reassurances, much more difficult than the homeworks. Maybe easier tests or harder homeworks would be nice? His last weakness are his jokes. (I'm kidding. They're pretty funny.)

- Student 5
  - **Reason:** Major or minor requirement; Reputation of the instructor; Interest in the course material
  - **Effort:** This class required a lot of work to be put into homeworks, but these prepared me for the exams quite well, so there was less study time when it came to exams.
  - **Understanding & Appreciation:** Professor Cipolli put the problems and material we learned in real world context, so it was easy to see the applications of what we learned even in a theory based course. By doing this, it is easier to appreciate and understand the subject in a greater view.
  - **Intellectual Growth:** This course furthered my ability to approach problems analytically and systematically. It is very different from most math courses in the sense that some of the material is slightly more abstract and theory based.
  - **Quality:** Great Professor, very clear, very willing to help his students succeed, and very accommodating to having extra office hours. He definitely puts a lot of effort into writing notes for us and giving back assignments incredibly quickly . I really appreciate his commitment to the course and his students.
- Student 6
  - **Reason:** Major or minor requirement; Elective within major or minor; Interest in the course material
  - **Effort:** I put in twice a weekly to do assignments and additional studies for exam.
  - **Understanding & Appreciation:** Conceptual learning on the probabilistic problems
  - **Intellectual Growth:** It had me think in terms of probability more outside the context of math.
  - **Quality:** Emphasis on learning is great, but handout materials are in working progress, hence more typos than what he would want
- Student 7
  - **Reason:** Major or minor requirement
  - **Effort:** I spent a fair amount of time on the homework in the class. I felt like the homework did a great job preparing me for the exam so when the exams came around I only had to do minimal

revision.
  - **Understanding & Appreciation:** I took this course for a major requirement.
  - **Intellectual Growth:** The course was useful in helping me with interview questions. Many interviews that I had asked questions about conditional probability and having an understanding from the course definitely helped.
  - **Quality:** Professor Cipolli was a pretty good professor. I felt like the material in the course was presented in a relatively clear manor but the frequent typos and delays on the notes was slightly annoying. The notes were, however, very helpful throughout the course. The professor was also open to questions and had plentiful office hours. Overall, I have no complainants about the quality of teaching. I think Professor Cipolli did a pretty good job.
- Student 8
  - **Reason:** Major or minor requirement; Exploration of possible major or minor; Elective within major or minor; Interest in the course material
  - **Effort:** I didn't work that hard at the beginning, but as the material became more difficult I began to put in a good amount of effort.
  - **Understanding & Appreciation:** I already had some experience with probability and statistics, but this course has pushed me well past my previous understanding and appreciation. The professor did a good job of making this course interesting and useful to students with different backgrounds.
  - **Intellectual Growth:** This course has improved my intellectual growth in general because we learned various ways that probability and statistics can be used. We discussed various fields of study in this mathematics course.
  - **Quality:** Strengths – good at conveying the information in a unique and interesting way, kept me engaged with humor, the homework was often great preparation for exams, and the professor was available to help outside of class. Weaknesses – the tests varied in difficulty and it was sometimes hard to prepare for that Overall – the class was taught very well and I plan to take Math 317 with the same professor next semester
- Student 9
  - **Reason:** Elective within major or minor; Elective outside major or minor; Reputation of the instructor; Interest in the course material
  - **Effort:** A LOT of work. I have literally spent entire days on Professor Cipolli's problem sets, and I always took a lot of time to study before exams.
  - **Understanding & Appreciation:** Professor Cipolli explained some very complex concepts in interesting and understandable ways. I did not have much background in this area before but now I definitely do.
  - **Intellectual Growth:** This course contributed greatly to my quantitative reasoning skills. Also forced me to brush up on calculus (to mixed degrees of success). Will be helpful for future work in mathematical economics.
  - **Quality:** Professor Cipolli is a wonderful human being. I've heard peers (and myself) variously describing him as a genius with a cool-high-school-math-teacher vibe, a force of nature, a well-oiled German machinery, and a runway model. He made a very intimidating topic very approachable, thanks to his effective methods in lectures and in office hours, and thank god for his notes. He is also super efficient and organised, and it was a wonder if he did not have assignments or exams fully graded by the following class. His fun personality and quirky sense of humor also made classes a joy. The online discussion requirement was kind of a pain, but that's probably the only gripe. Please give this guy tenure.
- Student 10
  - **Reason:** Elective within major or minor
- Student 11
  - **Reason:** Major or minor requirement

- **Effort:** I put a decent amount of effort in my home works, reviewing notes and our class discussion forum as I went along and making sure that I understood what I was doing. This was enough too prepare me to prepare me for the tests for the most part.
- **Understanding & Appreciation:** Probability is definitely more theoretical than I thought before taking the course. I can definitely see its use cases though, and the few examples in class really helped me realize the potential of all the theory we were learning.
- **Intellectual Growth:** It taught me to learn from my peers.
- **Quality:** Professor Cipolli is an amazing teacher, dedicated to making sure that students learn. He is definitely enthusiastic about the subject matter and genuinely finds it interesting. This really helps when covering boring sections, where he'll try to keep the class interested by talking about he he found it relevant in real life or by just keeping the class lighthearted. He is also extremely helpful in office hours and is definitely one of the more accessible professors here. All in all 10/10, I think he nailed it.

◦ Student 12
- **Reason:** Major or minor requirement
- **Reason:** Elective within major or minor
- **Effort:** The homework is always harder than the exams which will take me lots of time.
- **Understanding & Appreciation:** Since this class is more conceptual, it gave me some basic concepts and ideas of probability problems and distributions.
- **Intellectual Growth:** As the preparation for MATH 317, it gave basic ideas and concepts which will be used later maybe in real life problems.
- **Quality:** Professor really cares about students since he asked for a survey every time after an exam. The notes are well formed and are easier to understand compared to the book. Examples are extremely helpful to understand the material.

◦ Student 13
- **Reason:** Interest in the course material
- **Effort:** I completed all assignments and went to office hours frequently when I didn't understand something
- **Understanding & Appreciation:** I see economics models and other models also as relating to probability theory, as I think what I learned in this class is very applicable to other subject areas.
- **Intellectual Growth:** I now think more critically about different problems and concepts in a way I didn't before.
- **Quality:** I thought the Professor made class entertaining with his jokes and also welcoming all questions. However, I think the moodle posts should either be required every week or else not be graded.

◦ Student 14
- **Reason:** Major or minor requirement; Interest in the course material
- **Effort:** I put a decent amount of effort into this course. However, this course was much less demanding/difficult than any other math course I've taken at Colgate (including 113). I think that the main issue in this class is that it was too easy.
- **Understanding & Appreciation:** I felt like I learned the material so that I could answer most questions. However, I feel like there can be more emphasis on giving an intuition about the formulas we derive.
- **Intellectual Growth:** Probability theory is one of those subjects that's applicable in tons of places outside of the class room. Helps you evaluate probabilities of things happening, and its actually been useful in my research.
- **Quality:** Professor Cipolli is a good lecturer, and I really like his style of giving class notes before hand. The class was well structured and well taught, and class was usually interesting. I really liked the theoretical aspect of the course, and actually enjoyed the examples much less than the theory.

Professor Cipolli is attentive to class needs, and is good about gathering and responding to student comments/suggestions. That said, you will not get honest answers from students if you ask them about the difficulty of the course . I know from talking to other students that many people think the course is far too easy. However, no student is going to tell the professor that while they're taking the course. It is certainly the easiest math course I have ever taken at Colgate by a long shot. Mainly, the problems are repetitive and are often not particularly challenging. I would have liked more theoretical homework problems involving more proofs and derivations. Tests should also be more difficult.

- Student 15
  - **Reason:** Major or minor requirement
  - **Effort:** I put a lot of time and effort into this course
  - **Understanding & Appreciation:** Significantly contributed to my understanding of the material. Enjoyed this class more than any math class I have taken due to both subject matter and professor
  - **Intellectual Growth:** Helped me develop my study skills further, especially since it was a difficult class
  - **Quality:** Professor Cipolli was great. Helpful and extremely accessible. Lectures were very good, although they could be a little dry at times but overall the teaching was excellent
- Student 16
  - **Reason:** Major or minor requirement
  - **Effort:** This was one of my easier math courses, however, it was extremely interesting and the work load was pretty good so I definitely had to put in effort there. I also went to office hours when I was unclear on a topic. Overall I would say I put a good amount of work into this class, but being one of the more manageable work loads and easier conceptually, it often took a backseat to my other courses.
  - **Understanding & Appreciation:** I really enjoyed the course. I think the professor does a great job of inspiring interest in the subject with his effort and use of real world examples. It allows you to see how important these topics are and applicable to the real world.
  - **Intellectual Growth:** This class helped again with application of math and has helped continue my appreciation for math and reinforce my desire to work in this field.
  - **Quality:** The professor for his first semester here did a great job. He was interesting and enthusiastic and conveyed material very clearly. I really enjoyed the use of R, even though it was kind of a pain in the butt, because that is how these subjects are actually carried out in the real world, thus his knowledge of the industry side was helpful. His work load was fair as was his grading. It was a little slower than some of the other math courses, but this also may have been due to the diversity of major backgrounds among students in this course taking their first theory class. Overall, very clear and very willing to learn as a professor, kept checking in throughout the semester to see how the class was doing, so that he could adjust within the semester, not waiting until the end.
- Student 17
  - **Reason:** Major or minor requirement
  - **Effort:** Attend every class, finish homework and exams.
  - **Understanding & Appreciation:** I have understood probability in a better way and it is interesting to see how to apply all these toolkits in the real life situation.
  - **Intellectual Growth:** I have also learned show to use calculus as a very useful tool to solve problem.
  - **Quality:** Prof Cipolli is a very funny person. He is also very nice and approachable.
- Student 18
  - **Reason:** Major or minor requirement; Elective within major or minor
  - **Effort:** I put in a great deal of effort. Doing the homeworks was pretty challenging and took a lot of time
  - **Understanding & Appreciation:** I feel like I have a strong grasp of probability theory
  - **Intellectual Growth:** Besides probability this class was also a strong revision of calculus

- **Quality:** Professor Cipolli is very organized which I think is really important. The lecture notes are a good proof of that. Class is always interesting and fun. He always graded and returned our exams and homeworks as soon as possible so I was able to understand my mistakes rather than him returning them really late and me not understand what's going on. I thought he was a great professor overall

- Student 19
  - **Reason:** Interest in the course material
  - **Effort:** Read the notes after class, and finish homework assignments.
  - **Understanding & Appreciation:** Knowing probability is much more complicated than calculating a probability of an event. Understanding probability in a statistician way.
  - **Quality:** Professor Cipolli always make the class fun.
- Student 20
  - **Reason:** Major or minor requirement
  - **Effort:** I spend about 4 hours to do every homework
  - **Understanding & Appreciation:** I understood some basic concepts of probability
  - **Intellectual Growth:** I might take more advanced level probability class in the future
  - **Quality:** I think the teaching quality is ok. The professor tried to present the material clearly and interestingly. However for some reason his lecture is a bit hard to understand.
- Student 21
  - **Reason:** Major or minor requirement; Interest in the course material
  - **Effort:** I put in a lot of effort in the course by studying a lot, attending office hours often, and putting a lot of care into homework assignmnets
  - **Understanding & Appreciation:** I always thought probability was just the probability of events but it was so much more than I knew existed
  - **Intellectual Growth:** I realized I really liked applied math and statistics and it inspired me to continue studying the subject matter next semester
  - **Quality:** Professor Cipolli genuinely cares about his students and I really like how he gives us printed notes so that we can pay attention in class rather than scrambling to write everything down. I like how the homework is good preparation for tests, and how there were a lot of tests to ensure we were keeping up with the material. As for weakness, I don't like how there is a grade for posting on the Moodle discussion board, as I don't see how that indicates anything about our knowledge of Probability, and definitely lead to people posting on the forum for the sake of the grade.
- Student 22
  - **Reason:** Major or minor requirement; Elective within major or minor; Interest in the course material
  - **Effort:** Moderate – Weekly problem sets, reading discussion forum, some extra reading
  - **Understanding & Appreciation:** I had never taken an introductory stats class, so this was a rapid introduction to some of the basic concepts.
  - **Intellectual Growth:** My senior thesis is based in probability and statistics, so I was glad to have a class in the same semester
  - **Quality:** Will is extremely accessible and transparent in his teaching. He was well prepared for lectures, and he returned assignments and exams unbelievably quickly. Having typed up lecture notes on moodle was extremely useful, and helped clarify some of the notation used in class. My only complaint would be that grades on homework were a little unclear, and that assigning 1.25 points per question makes deducting points a little more difficult. Perhaps scaling the points to 50/100 would make grading/pointing out mistakes more clear.
- Student 23
  - **Reason:** Major or minor requirement
  - **Effort:** I attended all the classes, handed in homework, and reviewed before the exams.
  - **Understanding & Appreciation:** This course gives me more understanding of applied side of mathematics, also provides me with basic concepts about statistics and data.

- **Intellectual Growth:** I was able to view data from a more critical perspective.
- **Quality:** Professor Cipolli is good, he provides very clear class notes, and reasonable tests and homework. He sometimes makes little mistakes in class, it will be great if he can check those tiny errors before presenting.

- Student 24
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  - **Reason:** Major or minor requirement
  - **Effort:** I spent about 5-10 hours on each homework assignment which included reading the notes and making sure I understood the topic before completing the assignment. I studied for at least that much for the exams.
  - **Understanding & Appreciation:** Math is fun
  - **Intellectual Growth:** It definitely helped with my problem solving and analytical skills as some of the homework questions were very challenging and not quite straight forward.
  - **Quality:** Professor Cipolli is a great professor and I'm glad he is at Colgate. He is engaging and explains everything clearly. He is also very accessible for help which shows a dedication to his students. His grading was the only weakness but it wasn't terrible, just unclear. He also gives us all surveys after each exam to make sure that we are all satisfied with his pace, which is great and shows how much he cares again. Overall I've really enjoyed this semester with him and hope other students get a chance to learn from him.

Fall 2016: Section B

- Student 1
  - **Reason:** Major or minor requirement; Interest in the course material; Strong interest in the course material
  - **Effort:** I came to nearly every class, spent HOURS on every homework, and attended office hours on average about twice per week. I am very attentive in class and participate more than most students. I worked very hard in this class.
  - **Understanding & Appreciation:** Very much so. At first I was genuinely confused by a lot of the theory in this course but once I began frequenting Professor Cipolli's office and meeting with classmates to complete Problem Sets I began to really understand what was going on. I know much more about Statistical Theory than I once did and I am excited to take 317 with Professor Cipolli next semester.
  - **Intellectual Growth:** I think that by forcing myself to take a step back, and analyze theory as much as I "grinded" out problems, forced me to understand the course material in a more complete way. This has helped shape my intellectual growth here at Colgate undoubtedly.
  - **Quality:** Professor Cipolli is the most organized and hard working Professor I have had at Colgate. He is well prepared and loves helping students. His notes are usually helpful and I always learn at least something from his lectures. Often times I understand everything we go over in class but it is in the nature of this course I believe that that is not always the case. Sometimes I think that Professor Cipolli doesn't truly understand our questions – on Problem Sets and/or in Office Hours. There have been a small number of occasions where I have left office hours or read an email from him that has just served to confused me further. Nonetheless I would highly recommend Professor Cipolli to anybody who asks if they should take his class.
- Student 2
  - **Reason:** Major or minor requirement; Interest in the course material
  - **Effort:** I put a great deal of effort into this course. Especially when the course began to get more theoretical, I would spend hours trying to understand the material.
  - **Understanding & Appreciation:** It helped me appreciate the probability theory that underlies all of statistics. The theory is super important so that we understand what we are actually doing when

moving towards more applied statistics. I really appreciated this course.
  - **Intellectual Growth:** It stretched me to think in ways I have never thought before. The material was quite abstract at times, and this forces you to think through a different lens. I'm happy I got through it even though it was difficult at times.
  - **Quality:** Professor Cipolli is the man. I cannot think of any weaknesses in his teaching, and I think the quality of teaching was exceptional. I'm looking forward to taking his class again, and I'd recommend a class of his to any of my peers.
- Student 3
  - **Reason:** Exploration of possible major or minor
  - **Effort:** The effort I put into this course consisted of 4-5 hours about once every two weeks, when I would do the hw at the last minute.
  - **Understanding & Appreciation:** This course contributed to my understanding of the course material in that I now know more theory behind probability than before. I would say my appreciation for the subject has decreased, as I am not too fond of the straight theory of probability, and instead am interested more on application. This is not the fault of prof Cipolli. In fact, he mentioned trying to get a data anylytics class offered soon. I would love to see the department offer that class.
  - **Intellectual Growth:** The course helped me realize how bad my study habits can be sometimes.
  - **Quality:** I believe that Cipolli did an outstanding job teaching, especially given that it was his first year here. He cracked jokes in class constantly, trying to engage the class. Given it was an 820, most students were quiet, be he tried his best. When teaching, I would have preferred that maybe he not teach straight out of his notes. However, this method was not bad, just maybe not the best way that I learn. Cipolli was very accessible outside of class and always willing to help us.
- Student 4
  - **Reason:** Major or minor requirement
  - **Reason:** Interest in the course material
  - **Effort:** I take notes in each class and review my notes after class. I also use online forum on a regular basis to learn from my peers and raise questions. I also spend extra time before each test reviewing and doing practice problems.
  - **Understanding & Appreciation:** I learned more about statistics and probabilities due to this course, and especially how to incorporate R and other programs into a math class.
  - **Intellectual Growth:** It helped me thunk critically and logically. I also learned to pay close attention to details, especially when writing a proof. I also get the hang of basic programming and graphing skills due to this class.
  - **Quality:** Prof. Cipolli is very nice, helpful and accessible. He always tries his best to help students learn and make his lectures interesting and insightful. He is always available during office hours and via emails, and he is willing to set up extra time for students. He gives clear grading criteria and gives feedback on time, which helps students to review and improve. His lectures are organized, interesting and detailed. I really enjoyed his style and class.
- Student 5
  - **Reason:** Major or minor requirement
  - **Reason:** Interest in the course material
  - **Effort:** I did all the homeworks; had never missed any class so far.
  - **Understanding & Appreciation:** it helped me understand some theories and concepts behind probability models, and see a little bit how they are applied in real world.
  - **Intellectual Growth:** The course has helped me realize how much theory work has to be done in order to model some real-life scenario.
  - **Quality:** The teaching is of great quality, but it'd be better if the instructor could provide more in-depth examples on how the concepts and theories we've learned in class are applied in solving real world problems.

- Student 6
  - **Reason:** Interest in the course material
  - **Effort:** I'm addition to the extremely long and difficult assignment which usually takes 3 to 4 hours, I usually spend 30 minutes everyday, when time allow, to review the material we learned in class that day.
  - **Understanding & Appreciation:** I learned that probabilities is not as easy as stats.
  - **Intellectual Growth:** It helped prepared me for interviews I have had with companies known for asking probability questions.
  - **Quality:** Prof. Cipolli cares about his student a lot and has many office hours. However, I felt like I didn't really learn in class. Maybe he was going too fast to the point I wasn't sure what was teaching anymore. It could also be the the way he was presenting the material that didn't make sense to me.
- Student 7
  - **Reason:** Elective within major or minor
  - **Quality:** Professor Cipolli came up with many interesting examples both in class and in homework. He also did a very good job in incorporating R into the class, in addition to calculations by hand. However, he could improve on his style of lecturing, especially in focusing only on class content and talking less about class irrelevant things or comments. Also, he could come more prepared and give his lecture more organized than he did this semester given that this is his first semester of teaching. He did a really good job in asking for feedback: He sent out survey multiple times throughout the semester. In general, he has potentials but he could improve on his lecturing.
- Student 8
  - **Reason:** Major or minor requirement
  - **Reason:** Interest in the course material
  - **Effort:** hours of study every week
  - **Understanding & Appreciation:** A better sense of applied math
  - **Intellectual Growth:** More practice on math logic
  - **Quality:** Fair
- Student 9
  - **Reason:** Major or minor requirement
  - **Effort:** I put a lot of effort into this course. I frequently studied and each homework required a fair amount of time. I Leading up to assignments being due, several hours a day had to be put aside to complete it. There were also four tests, so we frequently were reviewing those as well.
  - **Understanding & Appreciation:** I believe the course has really helped me appreciate the subject. At the beginning of the course I wasn't even quite sure what would be discussed but I came out of it hoping to continue on in the subject.
  - **Intellectual Growth:** The course helped my intellectual growth for several reasons. Firstly, it was very difficult and reasoning intensive. I believe it has helped me approach problem solving more carefully, because most of the work was theoretical. So, ideas, rather than equations were taught. Also, considering I enjoyed the class, it helped my education by encouraging me to take more math courses, including Math 317.
  - **Quality:** The quality of teaching was outstanding. Professor Cipolli was my favorite teacher since coming to Colgate. He made the class challenging, but rewarding. He facilitated learning in exciting ways Professor Cipolli was excited and enthusiastic every class, and it was infectious. He welcomed questions almost with vigor, which was actually really encouraging. IT seemed everyone felt comfortable speaking in class with a question if they were unsure, and the positive feedback allowed for an easier learning environment. That would have to be one of Professor Cipolli's strengths: how he responds to questions. He placed a great amount of import on students' getting their questions answered. I cannot think of any weakness exactly; if there was something occurring that the students didn't feel was helpful, he would send out a survey and fixed it. That was very helpful and thoughtful.

MATH 317: Mathematical Statistics

- Student 1
  - **Reason:** Interest in the course material
  - **Effort:** I attempted to do every assignment. I spent a lot of time poring over the notes and trying to understand the concepts that Professor Cipolli explained in class and apply it to the fairly challenging homeworks.
  - **Understanding & Appreciation:** Statistics is hard. Much harder than you would think from an intro level stats class. Unfortunately, I was not able to master the course subject to the extent that I would say I understand math stats in the context of layman stats. I still don't know exactly where or how the concepts we learned in class fit into how real world analysis is done.
  - **Intellectual Growth:** This course showed me that sometimes trying just isn't enough. You have to really have a talent or a passion for some of the harder things in life. If you're just not good at something and you discover that you weren't interested enough in the first place, it's difficult or almost impossible to make things work out. Some people thought this class was easy and understood concepts immediately. It would take me hours and hours to ask a decent question about the material, let alone 'get it.' No hard feelings though.
  - **Quality:** Professor Cipolli is a very energetic professor. He has consistently been transparent to his students and very accommodating and happy to help. He gives surveys every so often to allow students to give him anonymous feedback to aid his teaching. He has very high expectations for achievement and so does not dwell on small stuff very often. With students that are both talented and hard working, Professor Cipolli gives them the tools to succeed and cultivate their understanding of the class. As energetic as Professor Cipolli is, he is also a very busy man. As someone who struggles in class, I often found that he did not really have time to explain basic concepts to me for the second or third time (which is fine). He engaged with students on a higher level of understanding and was optimal in that regard.
    Professor Cipolli's notes, while comprehensive, lacked context and exposition. I often did not know what or why I was doing something or solving a problem. It only showed how I could solve a problem but not where that problem and its solution fit in the greater context of the class, if that makes sense. Additionally, sometimes in class, his explanations and methods can border on "hand-wavey", which can be very confusing at times. This is something I think could be improved in the future. Otherwise, Professor Cipolli shows great promise in being a good fit in the Colgate math department. His enthusiasm is almost infectious.
- Student 2
  - **Reason:** Major or minor requirement
  - **Reason:** Interest in the course material
  - **Effort:** This course required a lot of time for the homeworks to be completed, there was never really a lull in the workload in this course. The exams did not require as much work to study for as much as the homeworks since the homeworks served as prep for the exams.
  - **Understanding & Appreciation:** I enjoyed the course material sometimes it was too theory laden and was had to see the actual value in learning the material with real life applications. I think Cipolli did a good job in preparing us for the exams and helping us understand what the math really meant.
  - **Intellectual Growth:** I don't know that this course extended beyond the scope of the classroom, but I enjoyed the class and will maybe pursue statistics in the future in a more applied realm. I hope Colgate's addition of the applied math major is able to accommodate this for students that wish to pursue it.
  - **Quality:** Cipolli always made himself very available with office hours which I really appreciate. The balance of this class was also nice being heavy on the homeworks and lectures rather than on the exams. That being said, I think the exams are often not wholly representative of how well students know the material. Sometimes Professor Cipolli can come off as slightly arrogant and condescending

about the material, but overall very helpful and a hard working professor.

- Student 3
  - **Reason:** Major or minor requirement
- Student 4
  - **Reason:** Major or minor requirement; Elective within major or minor; Reputation of the instructor; Interest in the course material
  - **Effort:** A ton of effort. I spent hours on the homework and studying. This is not an easy course.
  - **Understanding & Appreciation:** A ton. I really enjoy statistics, and to this point I have only learned how to apply it. It is nice to have a course exploring the theory behind it.
  - **Intellectual Growth:** A ton. It helped me to think deeper about some of the applications of statistics. Also, seeing the mathematics behind it and developing statistical concepts with rigor gave me a different perspective and helped me appreciate the area more so than I already did prior to taking the course.
  - **Quality:** I really like Cipolli. I wish he had more office hours though. I think him teaching the big statistics course cuts into the time he has to meet with us. Overall, great teacher, and great course.
- Student: 5
  - **Reason:** Major or minor requirement; Interest in the course material
  - **Effort:** I came to almost every class and I completed every assignment on time. I spent a fair amount of time reviewing for each exam.
  - **Understanding & Appreciation:** The course was a big step forward after taking Probability, since the material was built upon it but went much further. The course also gave me a direct sense of how real world events may be modeled, and introduced me to many theoretical aspects of the modeling process.
  - **Intellectual Growth:** The course prompted me to read and understand hard materials on my own, because I couldn't understand them within the short amount of time spent in class listening to lectures. The homework problems also forced me to reflect on the concepts and proactively make a connection with real world scenarios.
  - **Quality:** Strengths: graded homework really fast with detailed comments, detailed lecture notes online, enthusiastic about the material and eloquent in class, collected feedback from students often and very willing to listen to our feedback, facilitated discussion by using an outside class forum which I think is a great idea. Weaknesses: didn't cover as much material as planned on syllabus, potentially making the topics we did cover somewhat disconnected (and I also felt that the topics themselves are too theoretical as we always had to skip proofs), assign more problems so that we forget less, and assign more book problems (some book problems are crafted in unexpectedly interesting ways to help us grasp the concepts). Suggestions: in need of a better forum where we can post formulas, like Piazza
- Student: 6
  - **Reason:** Major or minor requirement
  - **Reason:** Elective within major or minor
  - **Effort:** I put a great deal of effort into this course, but it has been a frustrating experience
  - **Understanding & Appreciation:** I have gained some level of understanding and little to no appreciation of Mathematical Statistics
  - **Intellectual Growth:** Not much, the course didn't inspire me to do any thinking outside of the material
  - **Quality:** Strengths – the prof worked hard to grade assignments, create class notes, etc. He was also relatively accessible as well as interesting to listen to during class. Weaknesses – the class was simply too hard or at least much harder than it needed to be. The homeworks were graded harshly, tests were too difficult, and there was no curve at all, which I find strange in an upper-level math class. If there was any kind of a curve, it would have at least been manageable. In addition, during class, we

did things that were not helpful for the tests and homeworks, and it was actually difficult to even practice because, in class, we were proving things that we weren't required to prove on exams

- Student: 7
  - **Quality:** Ive come around to Cipolli. I was not a big fan in the first half of the semester, but I realized in the second half, that he actualy really cares about his students and making sure they learn. If he makes some changes and gets better at lecturing he may actually be a pretty good professor. Right now, his lectures arent great. He makes a lot of mistakes on the board which is confusing at times. Also, he lectures straight from his notes so I did not feel I needed to attend many classes. I think if he were to have examples outside of the lecture notes for class that would be benefitial. The book used for the course I think is quite horrific. It was a complete waste of money and his curriculum did not follow the book in any order. The problems in the back of each section were often times irrelevant and useless to understanding the material. The book also assumed knowledge of real analysis and algebra. I have taken these courses so I was able to get through it but I think it was meant for a graduate audience. After taking most courses in this department, I can say it does not teach you the fundamentals. Most professors here assume knowledge.
- Student 8
  - **Reason:** Major or minor requirement
  - **Effort:** The effort I put into this course consisted of completing long and grueling problem sets about once a month . These problem sets, while long and difficult, were very helpful in preparing us for the exams.
  - **Understanding & Appreciation:** As someone who might want to pursue a masters in stats after graduation, this course really opened my eyes to what that would be like. While at the moment I am looking to learn more Applied stats, it was still really cool to learn the theory behind a lot of stats, and I have no doubt that this class will be useful to me in the future.
  - **Intellectual Growth:** This course helped grow my work ethic. Like I said, the problem sets were tough, and required a lot of hours grinding away. This class made me work hard.
  - **Quality:** Cipolli is funny and knowledgeable and overall a very good prof. One complaint I have is that in office hours, he sometimes seemed very annoyed when students came by for help. This subject material is difficult, and I would have appreciated more of an effort to help outside of class.
- Student 9
  - **Reason:** Elective within major or minor
- Student 10
  - **Reason:** Elective within major or minor; Interest in the course material
  - **Effort:** Participated in class, completed all homework questions and prepared well for the exams.
  - **Understanding & Appreciation:** This course introduced the basics of mathematical statistics to me. However, it seems a course with a lot of techniques but lacks a overall big picture and applications of those techniques covered in this course.
  - **Intellectual Growth:** NA.
  - **Quality:** The focus of this course seems mysterious to me. Majority of the time is spent on multi-variable transformation, different kinds of statistics and some methods of estimation. Although some of the materials do appear as premises for other theorems, I was not able to see a coherent story for all the materials covered in this semester. In other words, I have learn all those techniques but not sure why do we need to learn about them. Another major issue of the course is absence of application of the course material. Nothing applicable to real life problems or related fields, especially economics, was introduced during this semester, which was actually the reason I enrolled in this course. I assume the same feelings exist for students who entered the course from a computer science background as well. It is hard to see why the instructor did not make references to those two subjects. Last of all, the course moves extremely slowly. I can count the topics covered the entire semester with just one hand. What could be done in one day was covered over a prolonged period of

time, which seems pointless to me. If the pace of the course was faster, more materials could be introduced and the course would potentially be more meaningful.

- Student 11
  - **Reason:** Elective within major or minor
- Student 12
  - **Reason:** Elective within major or minor
  - **Quality:** The instructor should provide an outline for the lecture on that day and progress as the proposed outline. The instructor should use the time in class more efficiently than just doing out algebra and calculus. The instructor should focus more on conceptual understanding and how to apply the theory and method. The instructor should pay more attention to details and make less major and minor mistakes when writing on the boards, making notes, or making homework. The instructor is very good at giving back homework in time and asking for feedback from students. The instructor is also very available during office hours.
- Student 13
  - **Reason:** Elective within major or minor
  - **Effort:** Somewhat.
  - **Understanding & Appreciation:** Not too much. I'm a little disappointed that the professor did not have enough time to cover important topics in statistics like hypothesis testing, ANOVA, etc. Most of the topics covered in class have little added value in terms of both knowledge and applicability in industry.
  - **Intellectual Growth:** Not much
  - **Quality:** I find the professor to be very underprepared in class and sometimes it feels like he doesn't know the materials very well as he constantly makes mistakes on the blackboard. Also, I find the required participation in the Moodle forum to be very unnecessary and cumbersome. I prefer asking questions in-person and typing out an equation on Moodle takes much more time than just coming to office hours. I think that there should be more preparation and organization from the professor's side in planning the timeline and outline for the course.
- Student 14
  - **Reason:** Elective within major or minor
  - **Effort:** Sometimes the homework is really long and takes lots of time and it is fun overall.
  - **Understanding & Appreciation:** Since this course is the extension of MATH316, I gradually understand how all the materials that we have discussed before interact with each other.
  - **Intellectual Growth:** It helps me strengthen my knowledge learned in probability and introduce new materials that wrap up almost everything discussed before.
  - **Quality:** I think sometimes the introductions of new materials are not sufficient. It can be really confusing for a couple of days and gradually make sense. I think maybe because professor assumes that all the students have some background of stats, but I hope he could spend more time introducing new definitions. Homework and exams are reasonable and I am glad that we only have two exams now. I also really like the r codes in homework because they help me visualize the distribution and see how the theories work. However, the required discussions on portal have increased which give me lot of pressure.
- Student 15
  - **Reason:** Elective within major or minor
  - **Effort:** I constantly reviewed notes and spent swathes of time on the strenuous homework assignments. I put a lot of time into studying for tests and tried to consistently stay up to date with class discussion.
  - **Understanding & Appreciation:** I feel as though i gained a very solid understanding of the course material. Although it was difficult, i am leaving the class confident I learned a lot this semester.
  - **Intellectual Growth:** The class had assignments that encouraged consistent anr constant work.

Also the problems were designed to foster creative thinking for problem solving.
  - **Quality:** The teaching from Professor Cipolli was excellent. He clearly knows the subject well and answers questions helpfully. Strengths include his helpfulness during office hours and his willingness to listen to the class on what we want. The tests and homework were long and difficult, but excellent preparation and fairly assembled from our in class work. The course was conceptually difficult for me, but Professor Cipolli made a personal and genuine effort to help me.
- Student 16
  - **Reason:** Elective within major or minor
  - **Effort:** I put maximum effort into this course. This course was extremely hard probably the hardest course I've taken, so I had to put maximum effort into this class to not fail.
  - **Understanding & Appreciation:** The course really confused me a lot, there were somethings that I understood and made more sense to me, but a lot of what we learned confused me more about the topic. The subject of statistics is really interesting, but this class was extremely hard and didn't further my understanding of the subject.
  - **Intellectual Growth:** This course caused me to have to really use time management, so that I could do okay in this class, while still putting effort into my other classes and not forgetting that those were important too.
  - **Quality:** The professor definitely cared about the students a lot, however the class was extremely difficult and in terms of the material I always felt behind in the class even when I would be going to class. A strength of professor Cipolli would be how much he wanted the students to succeed, however a weakness would be the emphasis this class had on material from previous classes that were not Math 317. I also do not feel that I have gotten anything out of the out-of-class discussion board. It is nice to have the option to get help or help peers, however it is extremely hard to ask questions or answer questions from behind a computer screen, which makes the out-of-class discussion board not very helpful.
- Student 17
  - **Reason:** Major or minor requirement; Elective within major or minor; Interest in the course material
  - **Effort:** This course was quite a bit of work. Problem sets were long and difficult but helped reinforce material and were given with plenty of time. Tests were reasonable.
  - **Understanding & Appreciation:** Its given me a nice understanding of statistics and the theory behind it to add to basic intro stat material.
  - **Intellectual Growth:** Its definitely motivated my interest in statistics and hopefully will help me pursue a career in a similar field.
  - **Quality:** Professor Cipolli is interesting and very knowledgeable on the subject. He has tons of office hours and gives out lecture notes that are extremely helpful if lectures are confusing. He is also very helpful in office hours answering questions clearly and with regards to hw, he guides us in the right direction as opposed to just giving us the answer.
- Student 18
  - **Reason:** Major or minor requirement; Elective within major or minor
  - **Effort:** I put a good deal of effort into the course by working hard on problem sets and going to office hours
  - **Understanding & Appreciation:** I did not know much about statistics other than the basics, so I learned a lot more as a result
  - **Quality:** Prof. Cipolli really cares about his students' learning and wants to make sure everyone understands the material. He puts a great deal of effort in the class notes and making sure he writes them on time. He should just be careful not to make some of his female students uncomfortable. I don't think he means to, but sometimes I felt as if he were hitting on me, and my friends agreed, so I felt uncomfortable going to office hours alone.
- Student 19

- **Reason:** Major or minor requirement; I really enjoyed having Cipolli in 316.
- **Effort:** I put a lot of effort into this course. Homeworks took me at least 15 hours each and studying for tests was a little more. I went into office hours as much as I could.
- **Understanding & Appreciation:** I definitely know 316 material really well after taking 317.
- **Intellectual Growth:** It definitely helped with my critical thinking. I was forced to think in different ways; we set both X and theta as set in different instances and learned how to work with different kinds of equations. It was a pretty thought provoking class.
- **Quality:** Prof Cipolli is a good professor and a great fit for Colgate. This semester he was a little less accessible and sometimes grumpy because of his intro to stats class. Since I had taken him before I felt comfortable going to office hours but he definitely wasn't as eager to help or as available as last semester. His teaching in class however was great and I like his presentation style. I also think Moodle was a really helpful learning tool that made us interact and learn from our peers.