San Diego State University
Faculty Senate Executive Committee (SEC)
Task Force on Class Size Writing Report

April 26, 2017

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"Design a study or studies that examine the influence of class size on student success in first-year composition courses that satisfy GE Communication and Critical Thinking 2 (Composition) and 3 (Intermediate Composition and Critical Thinking). Propose the optimal study design and the study's related costs to SEC. If invited to implement the study, conduct the study. Based on the results of the study, recommend a fiscally responsible model for reducing class sizes where such reduction may have the most significant effects on student success as supported by the results of the study."

Members of the Task Force at the time this report was submitted:
Marilee Bresciani Ludvik, Professor, ARPE, Chair of Task Force
Rich Levine, Professor, Mathematics & Statistics
Madhavi McCall, Associate Dean of the College of Arts & Letters
Chris Werry, Associate Professor, Rhetoric and Writing Studies

In Gratitude for Their Service:
The individuals listed below generously provided insight and analytical expertise that is represented in this report. We wish to thank:
Suzanne Bordelon, Professor, Rhetoric and Writing Studies
Lingjun He, Post-Doc, Analytic Studies & Institutional Research
Doreen Mattingly, Chair, Women's Studies
Glen McClish, Professor and Chair, Rhetoric and Writing Studies
Rey Monzon, Director, Student Affairs Research and Assessment
Stephen Schellenberg, Associate Dean, Division of Undergraduate Studies
Jeanne Stronach, Director, Office of Analytic Studies & Institutional Research

Executive Summary

Our interpretation of this report is that class size makes a small but detectable difference in the probability of success on the Writing Proficiency Assessment (WPA). At the same time, this study also finds that other predictors such as high school GPA and living on campus may have a stronger relationship to success on the WPA. While our analysis also examined these covariates that we understand to significantly influence student success, this Task Force was unable to determine with a high degree of confidence that class size reduction across the board would have a fiscally prudent impact on student success as defined by WPA performance. However, there is some indication that targeted interventions for those with lower high school GPAs and those who

live off campus may produce significant positive outcomes on student success as defined by WPA performance.

The Task Force presents these findings based on WPA performance but also notes that caution should be used if policy decisions are based strictly on WPA performance. Namely, there are indications that the WPA may not be the best mechanism through which to analyze student success. The WPA is primarily a placement tool rather than a comprehensive test of student writing, and changes have occurred to the WPA, the General Education (GE) program, Student Learning Outcomes (SLOs), and other important factors over the period of time examined. Therefore, because class size appears to impact certain populations of students but also because the WPA does not allow for more meaningful analysis of student success, the recommendation of this Task Force is to share this report with SEC to determine 1) whether to support a study to ascertain if class size reduction makes a fiscally responsible impact on WPA performance in particular student subgroups; doing so may allow SDSU to provide focused, cost-effective class size interventions (in alignment with proposed strategies in the SDSU Strategic Plan, Initiative One), 2) how faculty define and evaluate student success in order to provide other, perhaps more meaningful indicators of student success, 3) whether to ask the faculty to design a longitudinal study that assesses class-size's influence on students' writing ability of which results can be verified by an external evaluator, and 4) how faculty discern which pedagogical approaches and student preparedness characteristics inform class size restrictions. We describe this interpretation in greater detail within this executive summary and the narrative that follows.

We note that SDSU's first-year composition class sizes, with current caps at 30, are higher in relation to equivalent courses in the CSU system, as well as in relation to national comparisons and the recommendations of respected professional organizations (see appendix F1 and F2). Such comparative data does not help determine whether lower class sizes could have a fiscally responsible impact on student learning, but may suggest the importance of proceeding with a more robust, detailed, comprehensive future study to determine this.

In response to the charge given the Task Force, the Task Force sought to gather as much existing data as possible in order to describe the predictors of student success based on historical student performance with class size in first-year composition courses that satisfy GE Communication and Critical Thinking 2 (Composition) and 3 (Intermediate Composition and Critical Thinking) as the focal predictor variable. There are multiple ways to gauge student success; the SDSU Strategic Plan Initiative One outlines several of the strategies in which the university is engaged in order to improve student success. This Task Force chose to define student success in the context of student learning.

While the Task Force members understand that there are recent samples of students' writing available, the Task Force was not able to obtain that data. As such, the Task Force secured the assistance of the Office of Analytic Studies & Institutional Research (ASIR) to conduct a quantitative analysis using readily accessible data; the results of which are summarized below. A detailed explanation of this analysis and narrative providing important contextual information is contained in the full summary of the report. Five essential contextual points are that 1) class size was the variable of intentional focus in this study; 2) class size of the courses included in this study positively correlates (although with a small correlation coefficient) with the class

grades of those courses; 3) student success was determined by WPA score, an exam originally designed to satisfy the CSU system-wide Graduation Writing Assessment Requirement (GWAR); 4) the WPA has been refined for use primarily as a placement exam, encouraging students to enroll in one additional second sequence writing course prior to their graduation, and 5) graduation rates and time-to-degree were not used to define student success because the Task Force chose to define student success as direct evidence of student learning.

The population included in this analysis focused on first-time freshmen with the entry cohort ranging from Spring 2004 to Fall 2015. The analysis utilized three datasets pulled from official SDSU databases. The three data sets included in this analysis are:

1. Demographic data
   - First-time freshmen who have WPA scores on record (population size: 41,625)
   - Covariates include gender, ethnicity, major, pre-major, STEM status, admission status, honors, disability, Pell indicator, low income, first-generation college student, high school GPA, ACT/SAT scores, math proficiency, compact, and WPA score/term/test date (see Appendix C)
2. GE course data
   - Students who took GE courses that count towards WPA (population size: 68,546)
   - Covariates include course name/grade/taken period/size/faculty/faculty work load
3. AP course data: Converted into an AP indicator (1=yes, 0=no) if AP credit counted towards the pre-WPA "Communication and Critical Thinking" and "Intermediate Composition and Critical Thinking" level GE writing courses.

The final sample size is 22,147, accounting for the fact that the analysis data set does not contain any student record that contains missing values in the inputs. Details describing the data can be found in Appendix C.

A random forest analysis of class-size thresholds identified a class size of 24-25 students in Communication and Critical Thinking writing courses and 21-23 students in Intermediate Composition and Critical Thinking writing courses as the primary cut point for predicting success on the WPA. After controlling for other covariates, compared to students enrolled in other sized Communication and Critical Thinking classes, those enrolled in a Communication and Critical Thinking writing course with a class-size of 24-25 have a significantly higher probability of receiving a high or medium WPA score relative to low WPA score ($p < 0.0001$). After controlling for other covariates, students from an Intermediate Composition and Critical Thinking writing course with a class-size of 21-23 have a significantly higher probability of receiving a high or medium WPA score relative to low WPA score ($p < 0.0001$). Note that controlling for other covariates is a standard statistical practice that improves power and provides insight into the independent contribution of each predictor variable from a large collection of predictor variables not addressed by univariate (single variable) analyses. This practice can also account for more complicated relationships among multiple predictor variables. Evaluation of the contributions of the other variables provides complementary information on predictors of success and is detailed in the summary of this report.

Note also that these cut points in class-size are the most important thresholds that have a positive impact on the probability of receiving a high/medium WPA score in Communication and Critical Thinking and Intermediate Composition and Critical Thinking writing courses, respectively. For the Communication and Critical Thinking writing class, all the class size categories are significantly related to success on WPA. Controlling for Communication and Critical Thinking writing class size, the Intermediate Composition and Critical Thinking writing class size categories are not significantly related to success on WPA. We also emphasize that this analysis will be sensitive to the class size categories chosen. (Refer to the narrative to understand how class-size categories were identified.)

The relationship between class size and success on the WPA is fairly small, both in absolute terms and also relative to the strength of other predictors. For example, the model predicts a 0.36% increase in probability of success on the WPA (score 8-9 as compared to a score of at most 7) for a one-student decrease in the size of a Communication and Critical Thinking writing course. Put another way, reducing Communication and Critical Thinking writing classes from 30 to 20 students would be predicted to increase student success on the WPA by 3.60%. In comparison, a one-point increase in high-school GPA is associated with a 10.2% increase in success (scored 8-9) on the WPA. These results, while undoubtedly useful and suggestive, are somewhat limited by the nature of the data, and by contextual factors that influence the confidence with which conclusions can be drawn. Among the most salient are as follows: A) The WPA, the GE program, SLOs, writing assignment sequences, and the number of writing assignments changed over the period examined. B) The WPA changed in terms of its nature, duration, content, and scoring range, and only exists in its current form since 2007. C) Class size variation occurs mainly between 2003 and 2005. Subsequent "smaller" class sizes are understood to largely be taught by TAs, with differences in class sizes resulting from different caps for TAs versus lecturers (25/28, versus 30/32). However, comparing classes taught by TAs and lecturers may be problematic. D) We understand that the composition of teachers and their background and training changed. Questions have also been raised about changes in the amount of extended writing students engage in outside their GE classes having a potential influence on WPA scores. We recommend that any future study of student learning that includes WPA data combine this data with a broader set of direct-evidence of student learning and accounts for contextual factors by focusing on a single year in which these factors can be controlled, or in the very least, taken into consideration.

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Full Summary Report

The Story of Class Size

The previous Task Force (See Appendices A & B) reported wide-spread concern among faculty that increased class size impeded student success. Specifically, the previous Task Force recommended to:

"1) Reduce the size of classes fulfilling the Composition and Intermediate Composition and Critical Thinking General Education Foundations requirements (I.2 and I.3) from 30 to 18.
2) Reduce the size of recitation sections to a maximum of 30 and increase the contact time from one to two hours in lower-division mathematics and statistics courses for STEM majors."
(See Appendices A and B for more details on this previous work).

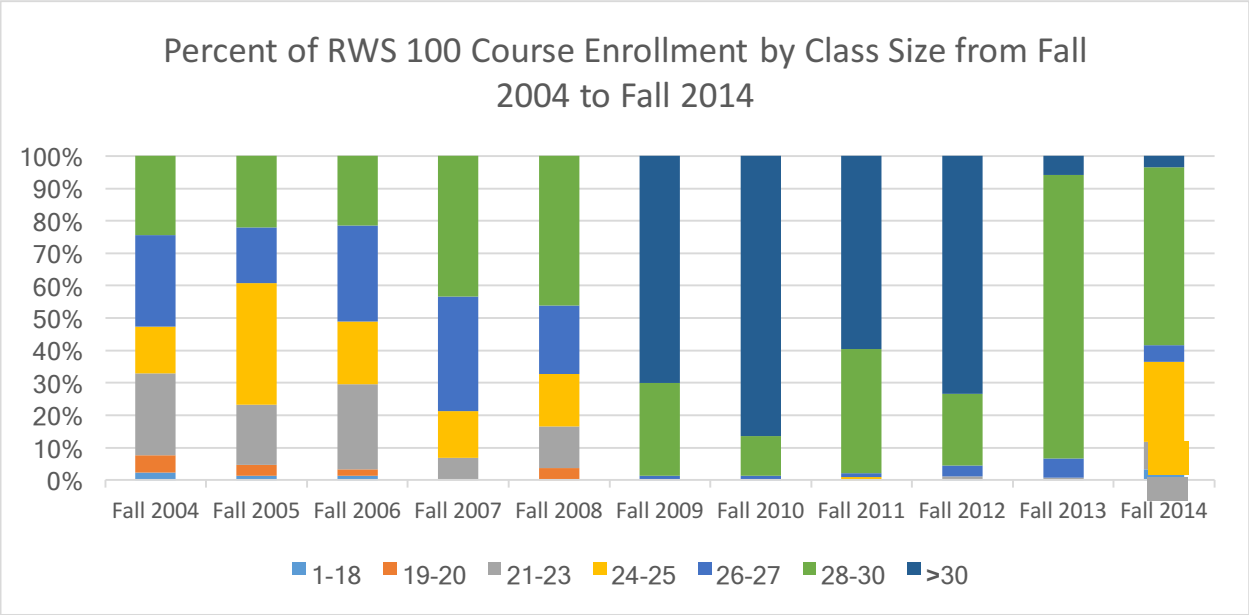
To begin exploring this context in the framework of the charge, it is important to understand the history of class size changes in RWS 100 and 200, as well as other courses that students could have taken to meet the Gen Ed writing requirements. Indeed, SDSU has seen extensive shifts in class size changes. The most compelling changes seem to correlate with the state of the economy and a significant decline in state appropriations funding.

[Note that the class size categories of 1-18, 19-20, 21-23, 24-25, 26-27, 28-30 and greater than 30 are based on recommendations from various RWS faculty, as well as recommendations made by the previous Task Force. This Task Force felt strongly that if we are to differentiate the influence of RWS class size on student success, we need to respect the class size preferences of RWS faculty.]

Table 1 illustrates percent of course enrollment in RWS 100 by class size and Table 2 indicates percent of course enrollment by class size in RWS 200. Fall 2009 to Fall 2012 denote a high number of enrollments with class sizes of greater than 30. Class sizes of 18 and less appear to be a practice of the past and even then, involved a low percentage of overall enrollment.

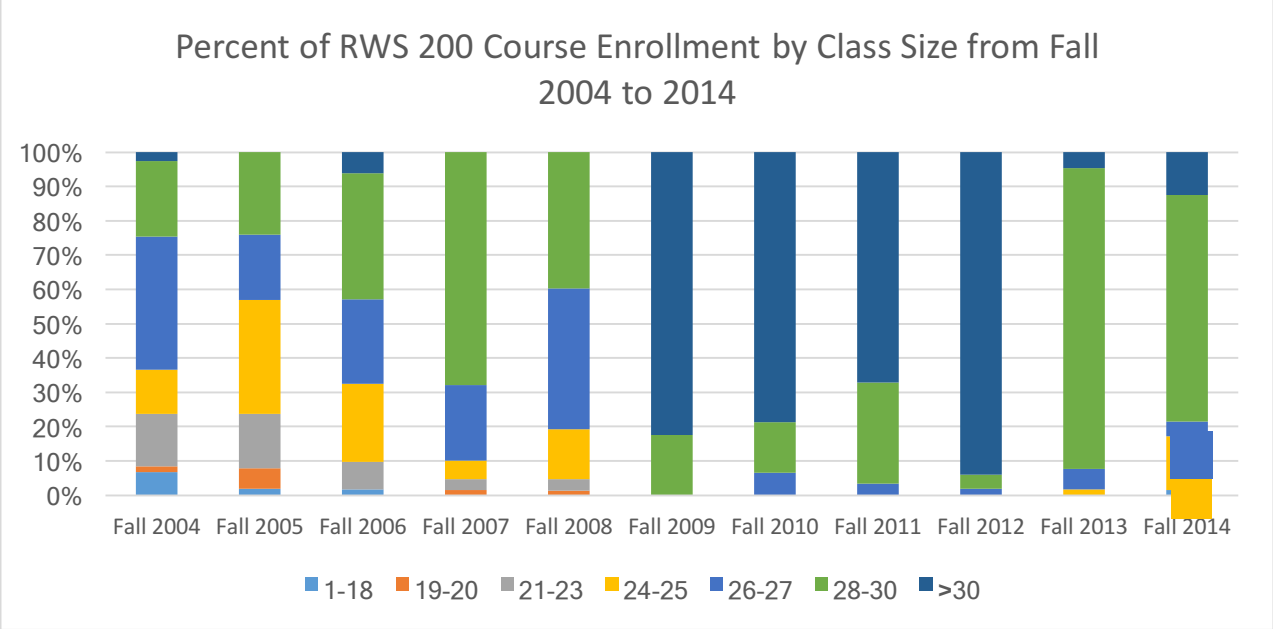
This caused the current Task Force to wonder whether an immediate recommendation to reduce class sizes from 30 to 18 would be economically feasible. Referring to the previous task force's work, members did recommend a reduction of class size to 18, but later on in the report, they presented analysis of costs for reductions to 18 and to 24. (Reduction to 18 costs approximately $1.2 million and to 24 costs approximately $374,000). RWS faculty affirm that analysis based on 24 students seems much more feasible and meaningful in terms of a) national comparison of writing caps, b) comparisons to the rest of the CSU, and c) perceived affordability.

Table 1. RWS 100 Percent of Course Enrollment by Class Size



Data Source: SDSU Analytic Studies and Institutional Research

Table 2. RWS 200 Percent of Course Enrollment by Class Size



Data Source: SDSU Analytic Studies and Institutional Research

Determining Quality of Learning

RWS faculty reported that pedagogy changes were made in order to accommodate shifts in class sizes. RWS faculty also reported that these changes required divergence from best practices outlined by professional organizations specializing in writing pedagogy (e.g. meetings with students, number of assignments, feedback, amount of revision, etc.). Additionally, appendix A details how 621 faculty across a range of departments responded to increased class sizes with pedagogical and assignment changes. We were not, however, able to detail those changes and use

them in this analysis. Such inclusion of this kind of data would require access to earlier syllabi and an extensive syllabi analysis. The SEC may consider this an option for future studies in order to determine whether there is a correlation in changed pedagogy and assignments with class size and class grade.

Tables 3 and 4 illustrate average RWS 100 and 200 grades by RWS 100 and 200 class size. A more sophisticated analysis of how class grade was influenced by class size is provided later in the report, as the use of these tables did not foster additional understanding.

Table 3. Average RWS 100 grade by RWS 100 Class Size

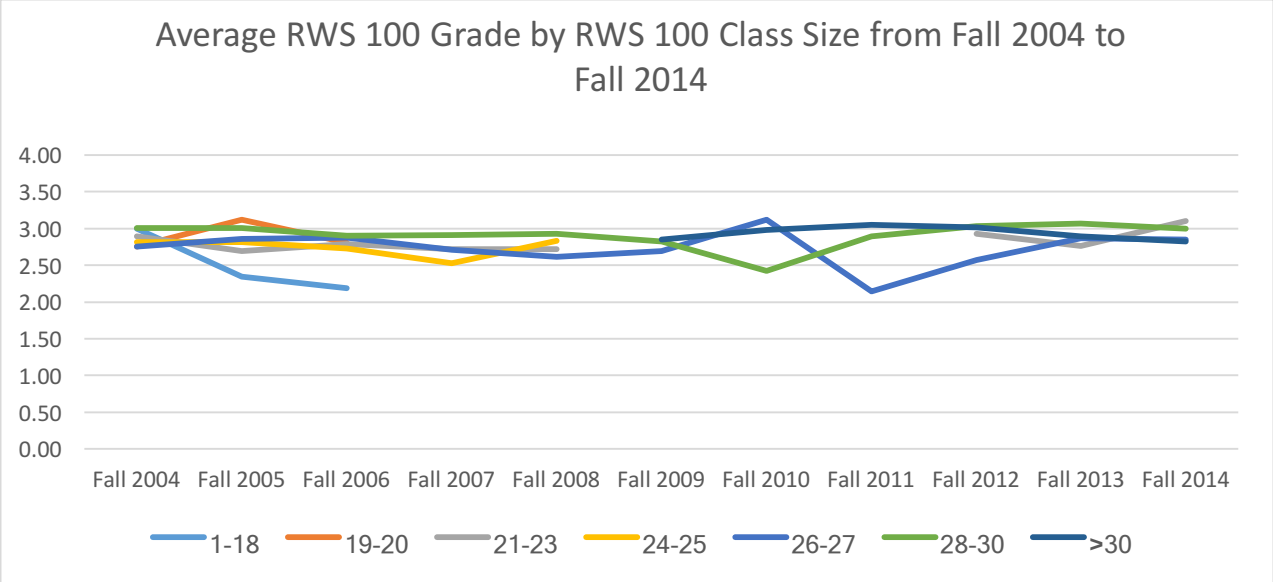


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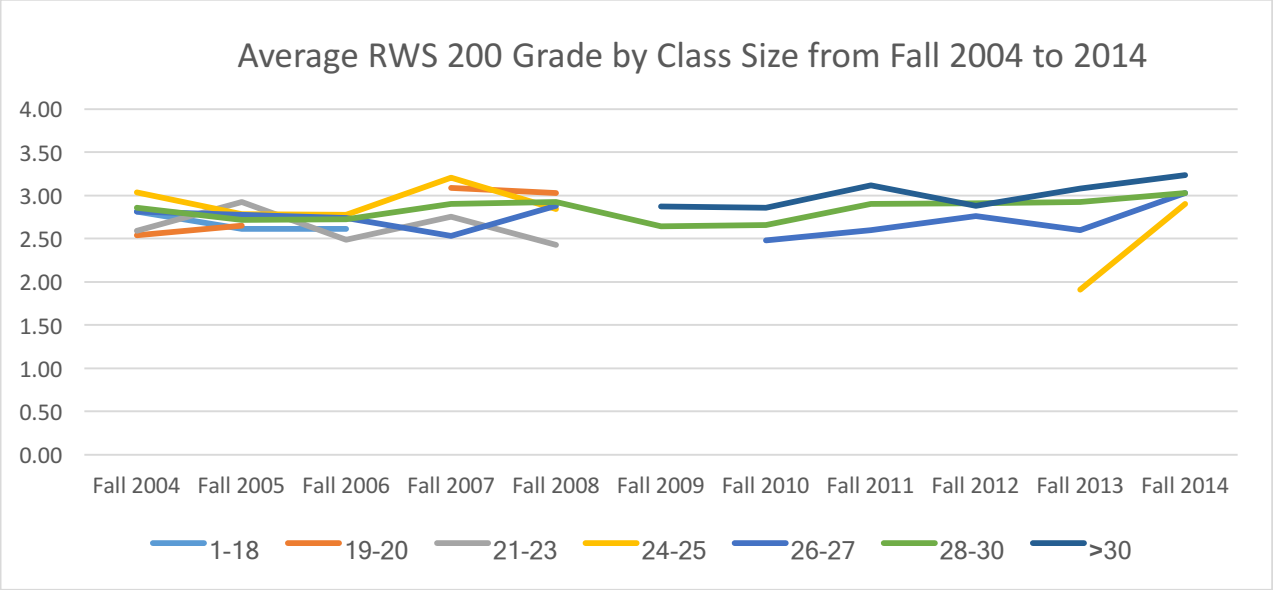
Table 4. Average RWS 200 grade by RWS 200 Class Size



Data Source: SDSU Analytic Studies and Institutional Research

The task force was not able to ascertain quality of learning in any other way than class grades because we were not able to secure written artifacts of students that were collected over a period of time. As such, if the analysis of learning were to be completed using actual evidence of students' papers, it would need to be intentionally designed for future data collection and analysis. In addition, future analysis could be strengthened by focusing on a single semester or year so that factors influencing learning are more easily compared.

Measuring Student Success

Student success is a complicated topic which many scholars define differently (Astin, 1993; Schlossberg, 1989; Tinto, 1975; Bandura, 1989; Lent, Brown, & Larkin, 1986; Multon, Brown, & Lent, 1991; Richardson, Abraham, & Bond, 2012; Robbins et al., 2004; Schunk, 1983; Kuh, 2003; Rendón, 1994; Solorzano, Ceja, & Yosso, 2000). Still, many scholars agree that if a university admits a student, it is the university's responsibility to see the student through to graduation in the most efficient and effective manner, while ensuring optimal learning and development. In the context of this analysis, we understand student success to be multi-faceted as well.

The SDSU strategic plan indicates its commitment to student success by stating, "San Diego State University will continue to focus on Student Success by emphasizing high-impact practices that produce transformational educational experiences and by fostering an institutional culture that recognizes and rewards student achievement." (extracted from http://go.sdsu.edu/strategicplan/student-success-updates.aspx?) With three initiatives to "1) promote student success across the university, 2) enhance transformational educational experiences, and 3) pursue pedagogical innovation through faculty support," the task force could still not ascertain how to define student success. Listed under initiative number 1 are several strategies that SDSU has provided to promote student success across the university.

Practically speaking, for a study that is designed to "examine the influence of class size on student success in first-year composition courses that satisfy GE Communication and Critical Thinking 2 (Composition) and 3 (Intermediate Composition and Critical Thinking)," the following indicators of student success may be considered: 1) achievement of the four main goals for the "Communication and Critical Thinking" component of the GE program,[1] 2) achievement of a level of writing and rhetorical ability as defined by the research and recommendations of major professional organizations,[2] 3) as a first sequence or second sequence writing course grade, 4) as a passing mark on a comprehensive exam, and 5) as high achievement on a placement exam. As mentioned, the task force did not have access to student writing samples that could support detailed analysis of learned writing comprehension or the time and resources to do a comparative study with faculty assigned to smaller and larger classes within a single semester or year. As a result, scores on WPA placement exams were used as indicators of student success.

The Story of the Writing Placement Assessment (WPA)

[1]The four "Communication and Critical Thinking" GE goals are defined as the ability to 1) craft well-reasoned arguments for specific audiences, 2) analyze a variety of texts commonly encountered in the academic setting, 3) situate discourse within social, generic, cultural, and historic contexts, 4) assess the relative strengths of arguments and supporting evidence.

[2] By this we mean the body of disciplinary research and recommendations published by professional organizations such as the National Council of Teachers of English, the Council of Writing Program Administrators, and the National Writing Project. At SDSU the student learning outcomes for our writing program are closely aligned with the "Writing Program Administrators Outcomes Statement for First-Year Composition," which establishes guidelines for composition courses across the country.

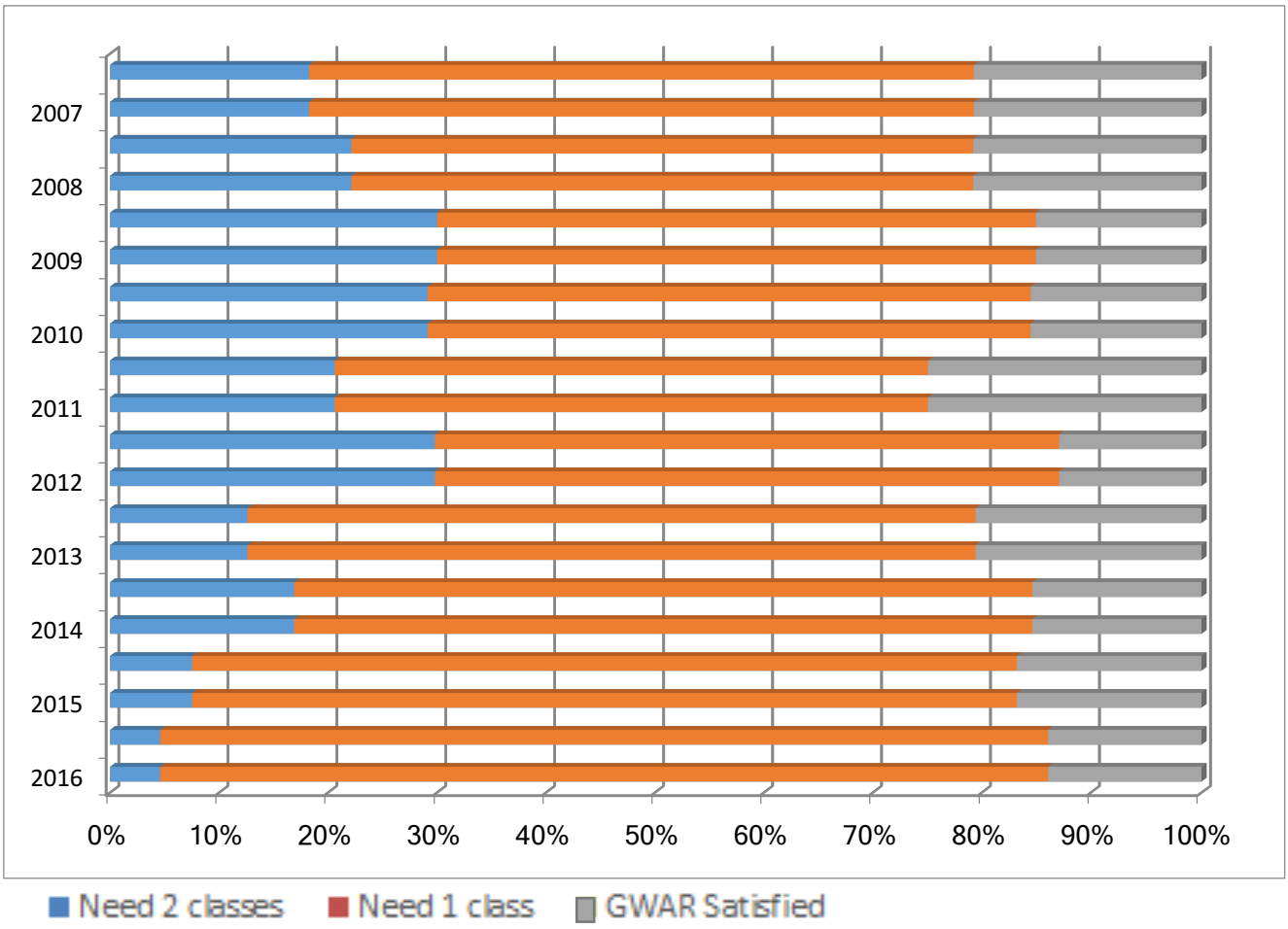
At San Diego State University, the Writing Placement Assessment (WPA) serves as both a placement exam and the evaluation method intended to satisfy the CSU system-wide Graduation Writing Assessment Requirement (GWAR). For most students, the WPA places students in appropriate writing courses so that they then can meet the GWAR through their coursework. However, for about 10-15 % of the students, the exam is used as the evaluation method intended to satisfy the GWAR. The WPA is a two-hour reading and writing placement exam that is administered to all SDSU students. Continuing SDSU students take the WPA during the semester in which they are completing 60 units or the semester immediately following. Transfer students are eligible to take the WPA once they receive an offer of admission from the University.

Based on data from Testing Services, in 2016 to date, 81.5 % of students scored an 8 on the exam, which means that they were considered ready for junior-level writing. To satisfy the GWAR, these students then are required to take an approved upper division writing course and earn a grade of C or higher. Throughout the CSU system, the norm is for students to take at least one upper division writing course, which is exactly what the WPA is designed for and is what it accomplishes at SDSU.

In 2016, approximately 4.6 % scored a 6 on the exam; thus, they were not considered ready for junior-level writing. These students were required to complete RWS 280 (or Rhetoric and Writing Studies 281 or Linguistics 281 if English is the student's second language) with a grade of C or higher before enrolling in one of the approved upper division writing courses. The 2016 data for 2016 indicates that 13.9 % of juniors who took the exam were writing at a level appropriate for graduation. It's important to underscore that 81.5 % of the juniors who took the exam were considered to be writing at a level appropriate to their class standing. Again, this infers that the WPA is serving the role in which it was designed to achieve.

A detailed memo of the changes that the WPA has undergone since 2007 can be found in Appendix D. If the WPA is perceived as a competency exam, representation of the pass rates of the WPA are indicated in Table 5. As the WPA Percentage Summary Pass Rates table indicates, the WPA serves as both a placement exam (intended to place students into an second sequence writing course) and the evaluation method intended to satisfy the GWAR.

Table 5. WPA Percentage Summary Pass Rates 2007-2016



Data Source: Testing Services

In 2005, registration blocks were administered to ensure that the WPA was taken after 60 units had been accumulated by each student. To date, we understand that the practice of registration holds has been effective in ensuring students take the WPA after 60 units. So, the next logical question is, "how often do students retake the WPA?"

Rey Monzon reported that, "From January 2004 to December 2016, there were 43,308 (unduplicated) Native Freshmen students who took the WPA. The data reflects the current test registration blocking function, which doesn't allow the student to register for the WPA after their second try. Thus, the frequency summary shows (Appendix E) that about 92% of the students took the WPA only once, and almost 8% took it twice. Less than one-tenth of a percent took the WPA three or more times."

As you can see from this table, it appears that the number of students needing 2 classes to satisfy the GWAR has decreased, while the number of students needing one class has increased. According to RWS faculty, "the percentage of juniors writing at a level considered appropriate for graduation has had little fluctuation since 2007. This limited fluctuation is not surprising given that juniors taking the exam have completed only two years of their coursework and need additional writing experience to be able to write at a graduation-appropriate level." The GWAR pass rate seems to have had very little fluctuation since 2007.

In asking the RWS faculty about their level of satisfaction with the WPA, Chris Werry reported this, "I believe the consensus in the department amongst those who work on the WPA is that overall the WPA is a pretty good instrument. It is efficient and cost-effective, and does well on measures of reliability, agreement, and validity. It appears to be one of the best GWAR placement exams we know of in the CSU; the others seem more uneven and less rigorous, sometimes assigning personal 'response' writing, or vague 'agree/disagree' questions. These placement exams are not as analytic or centered on argument as ours, and not as clearly aligned with the kinds of writing valued by professional organizations such as the Council of Writing Program Administrators or the National Council of Teachers of English, or reports outlining 'best practices,' such as the recent "Framework for Success in Postsecondary Writing" (produced by the Council of Writing Program Administrators, the National Council of Teachers of English, and the National Writing Project).

We can certainly imagine using different tools to help meet the GWAR requirement. A reflective student portfolio (suggested by Marilee) would be an excellent alternative, but portfolios could face three main challenges: A) they are more expensive and more labor intensive, B) they take more time to arrange and are organizationally more complex, and C) they require that students be assigned writing in other classes, and if this doesn't happen often, then students may not have material to include in their portfolios. We have suggested replacing the WPA with portfolios in the past and have not found much support for this."

While we never expect any one faculty member to speak for all faculty, this Task Force acknowledges and respects that the WPA is the measure chosen by SDSU to determine whether the GWAR is met. While the WPA is not the sole indicator of writing comprehension, nor is it the sole indicator of student success, it plays a key role in each student's journey to degree completion. As such, the WPA is one important indicator of student success as it determines whether students are writing at an acceptable level following 60 units of their degree at SDSU. Because of RWS acceptance of the WPA and because the historical data was readily available, we based our analysis of the influence of class size on student success as defined by the WPA.

Analysis

The following analysis was completed by the Office of Analytic Studies & Institutional Research (ASIR). We are grateful for their thoughtful and objective analysis and representation of the available data.

Sample

The population included in this analysis focused on first-time freshmen with the entry cohort ranging from Fall 2004 to Fall 2015. The analysis utilized three datasets pulled from official SDSU databases. The three data sets included in this analysis are:

1. Demographic data
    - First-time freshmen who have WPA scores on record (population size: 41,625)
    - Covariates include gender, ethnicity, major, pre-major, STEM status, admission status, honors, disability, Pell indicator, low income, first-generation college student, high school GPA, ACT/SAT scores, math proficiency, compact, WPA score/term/test date (see Appendix C)
2. GE course data
    - Students who took GE courses that count towards WPA (population size: 68,546)
    - Covariates include course name/grade/taken period/size/faculty/faculty work load

3. AP course data: Converted into an AP indicator (1=yes, 0=no) if AP credit counted towards the pre-WPA first sequence - and second sequence GE writing courses.

After removing any student records with missing data, the analysis data set has a sample size of 22,147. Details describing the data set can be found in Appendix C.

Data Compilation
ASIR compiled the course data for each student and merged it with the demographic data. New variables (LW.course) and (UW.course) were created, capturing the grade in the most recent or highest scored first sequence and second sequence writing courses taken at SDSU for each student. The corresponding course grade, size, faculty, and faculty workload were also obtained and treated as predictors in the model. First sequence level writing courses included RWS101, RWS100, GENS250A, AFRAS120, CCS111B, LING 100, AMIND120. Second sequence writing courses included RWS200, AFRAS200, PHIL 110, GENS250D, CCS200, LING200, GENS260D.

Methodology
ASIR first conducted a correlation analysis on course size and grades, and tested the statistical significance of the correlation. Next, ASIR applied random forest to obtain the measure of importance for each predictor of WPA score, assuming WPA scores are continuous (quantitative scale) and ordinal (three categories: 0-7, 8-9, 10 or above) respectively.

Random forest is an ensemble learning method used for classification or regression decision trees (CART). CART partitions data (students here) into homogeneous groups using binary decision rules that may be presented in a decision tree representation. At each tree node, an optimal split rule is identified from the input variables to partition the data. A random forest is a collection of decision trees created by randomly selecting a sample of students for each tree (called bootstrap aggregating) and scanning a random subset of split rules from which to choose at each tree node. Random forests have been found to excel in classification and regression problems and provide a natural routine for ranking the most important predictors of a given outcome (here WPA score).

As such, ASIR used the random forest to select the top 15 most important predictors and construct a model regressing WPA score on these inputs. A linear regression model was fit on the continuous WPA scores. A multinomial regression model was fit on the ordinal WPA scores. The best model is chosen via a stepwise Akaike Information Criterion (AIC) procedure. The model selection process was conducted in both forward (add one predictor each time) and backwards (eliminate one predictor each time) directions. Broadly speaking, AIC is a measure of model goodness of fit or quality. Stepwise AIC thus aims to find the model with the best quality. Critiques of AIC argue that AIC tends to over fit models in large datasets, leading to complex models with many secondary or tertiary predictors. BIC (Bayesian IC, or Schwarz's IC) often leads to simpler models that focus on the strongest predictors. This task force did not feel that re-analysis is needed nor suggested; we offer this critique as perspective of other analysis that may have been completed but was intentionally not selected. As such AIC is the criterion selected in the analysis.

Summary
The analysis suggests a significantly positive correlation between course size and grade in both RWS100 and RWS200. However, students' academic preparation (i.e. SAT scores, English proficiency, high school GPA, etc.) and their performance in writing courses were identified to be the most influential predictors of WPA score. Thus, the writing courses' class-sizes were found to be of borderline importance, relative to these other inputs, in the predictive modeling.

Nevertheless, larger first sequence writing course size was found to have a significantly negative impact on a student's probability of receiving high/medium WPA score relative to a low WPA score, after accounting for other covariates. On the other hand, larger second sequence writing course class-size was found to positively influence student's performance on the WPA. Though statistically significant, this latter relationship was found not to be of practical significance. This relationship may exist largely because data on smaller second sequence writing classes comes mostly from courses taught in computer labs. Second sequence writing courses taught in labs prior to 2008 were capped at 23 and 25 (the number of computers in the labs). A small number of teachers regularly used these labs and the mode of instruction may have had a small impact on student learning. Computer labs (particularly older ones) can inhibit some forms of group work, collaboration, discussion and peer review work. Because TAs, whose classes have lower caps, do not teach second sequence writing classes until 2014, data from smaller second sequence writing classes appears to come largely from computer labs. The RWS department is interested in investigating these results further, and the larger question of the relationship between class size and mode of instruction may be worth taking up in future discussion of class sizes.

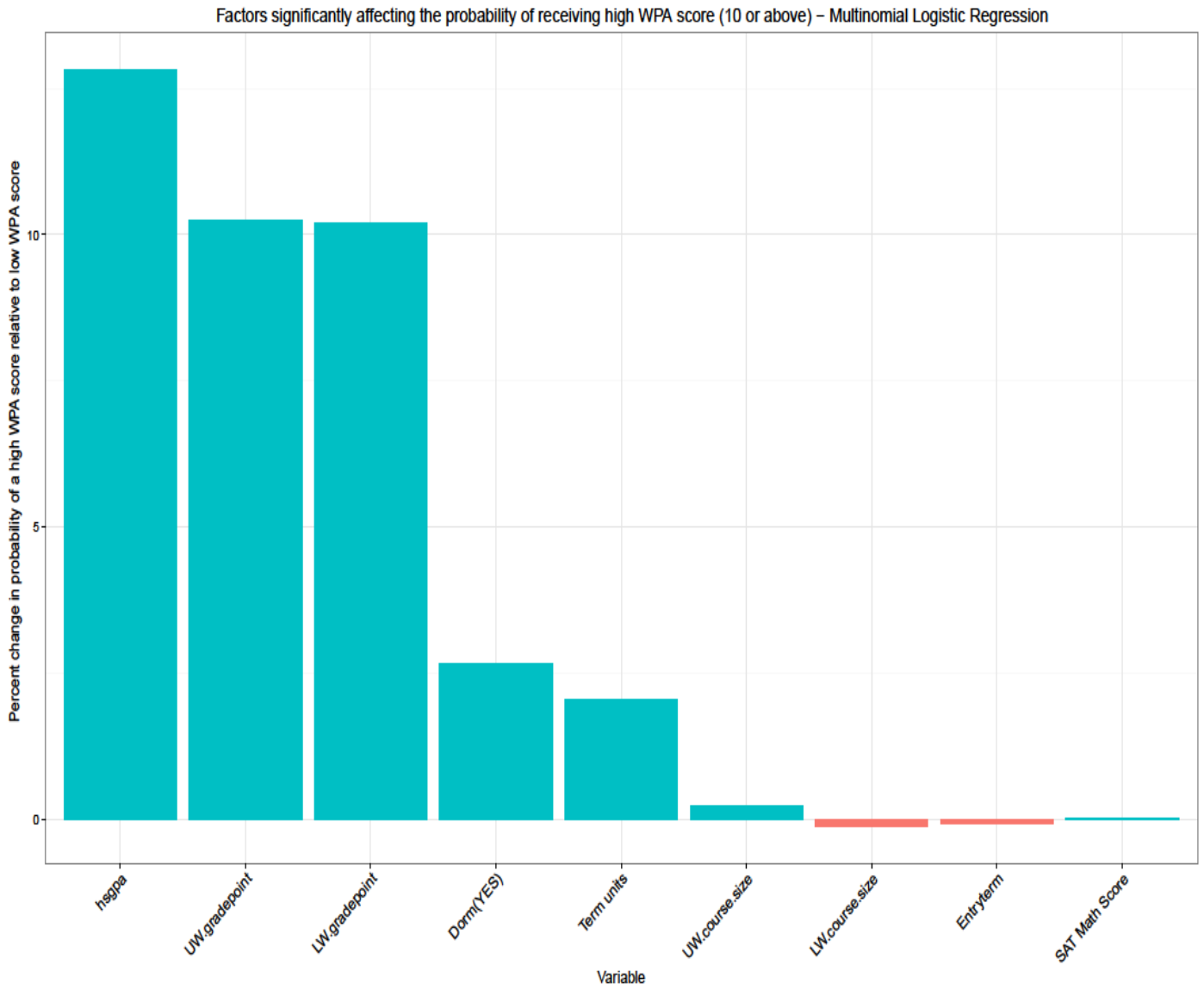
Findings on Class-size

We find a significant, but small positive correlation between course size and course grade in RWS100 and RWS 200 respectively (correlation coefficients 0.04 and 0.05, $p < 0.0001$). Entry term, high school GPA, SAT verbal score, Student College, English proficiency, SAT math score, math proficiency, ethnicity, first sequence writing course (i.e. RWS100) size, first sequence writing course grade, second sequence writing course (i.e. RWS200) size, and second sequence writing course (i.e. RWS200) grade are identified as important variables for predicting WPA grade groupings (three categories: 0-7, 8-9, 10+) via a random forest.

Figures 1 and 2 present the variables that are significantly related ($p < 0.05$) to WPA score from a multinomial regression model (stepwise model selection). Controlling for other covariates, second sequence writing course size has a significantly positive impact on receiving high/medium WPA scores (above 7) relative to low WPA scores (7 or below). However, note that for an increase of 1 student in the second sequence writing course section, the probability of getting a high WPA score (10 or above) increases by 0.22%, and the probability of getting a medium WPA score (8-9) increases by 0.15%, relative to a low WPA score (see Figures 1 and 2).

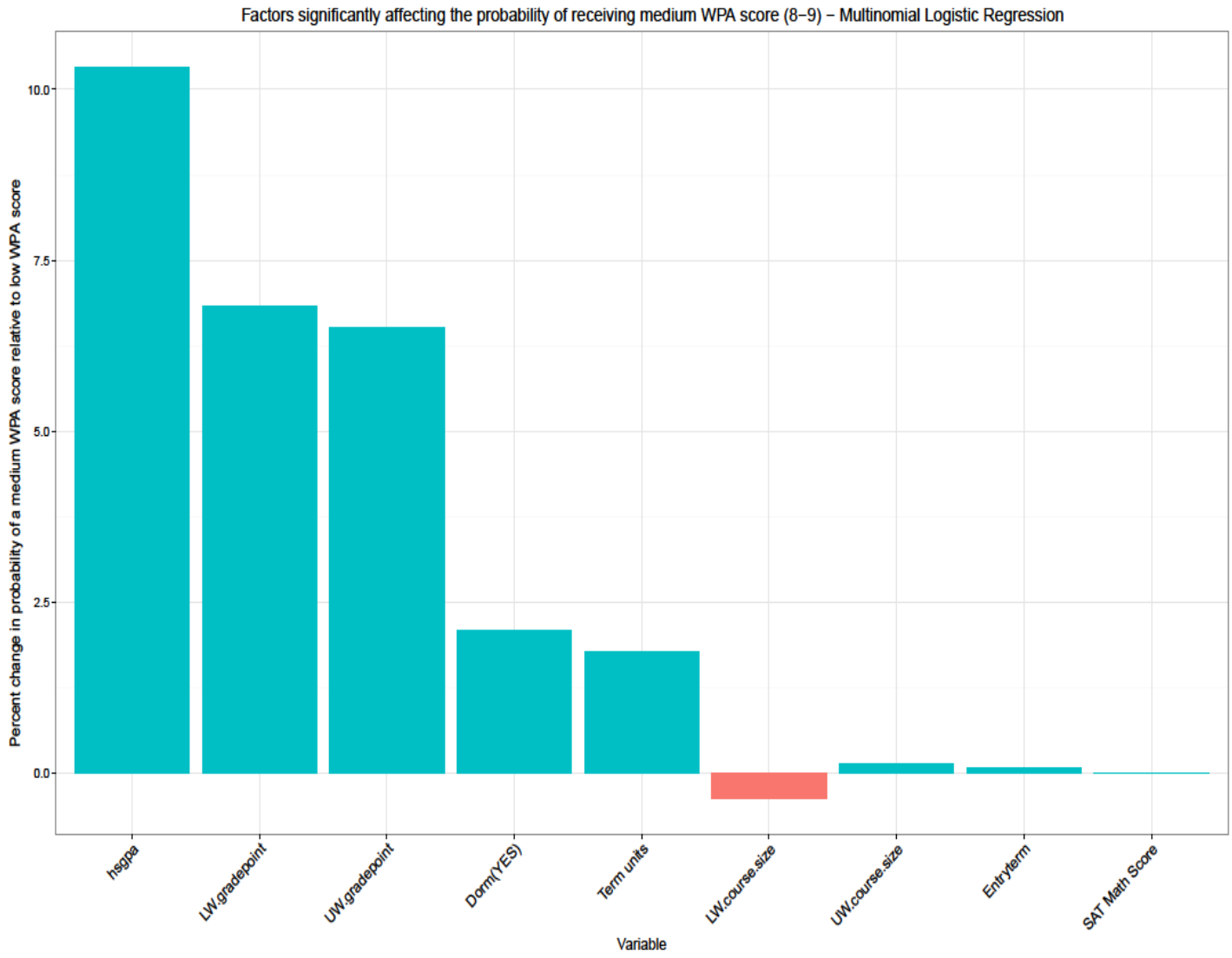
Controlling for other covariates, first sequence writing course size has a significantly negative impact on receiving high/medium WPA scores (above 7) relative to low WPA scores (7 or below). For an increase of 1 student in the first sequence writing course section, the probability of getting a high WPA score (10 or above) decreases by 0.12%, and the probability of getting a medium WPA score (8-9) decreases by 0.36%, relative to a low WPA score (see Figures 1 and 2). The latter result is likely caused by smaller classes being taught in computer lab courses capped at 23 and 25, thus mode of instruction may be the more significant factor. But the point of emphasis here is that the impact was practically quite small for both first and second sequence writing classes.

Figure 1



Significant categorical variables in the model: Math Proficiency, LW.course, Ethnicity, Student college, and EFC status. The plot presents the changes in student's probability of getting a high WPA score relative to a low WPA score, given a change in the values of each associated factor labeled on the x-axis. These are not displayed in this coefficient plot to ease the visual presentation.

Figure 2



Significant categorical variables in the model: Math Proficiency, LW.course, Ethnicity, Student college, and EFC status. The plot presents the changes in student's probability of getting a medium WPA score relative to a low WPA score, given a change in the values of each associated factor labeled on the x-axis. These are not displayed in this coefficient plot to ease the visual presentation.

Given faculty workload (measured by number of sections taught by the faculty in the same semester among those 14 writing courses, see Data Compilation), the correlation between course size and course grade in RWS100 remains positive except for faculty with 6 teaching sections (Figure 3). Given faculty workload, the correlation between course size and course grade in RWS200 remains positive regardless of the number of sections taught by the faculty in the same semester (Figure 4).

Figure 3:

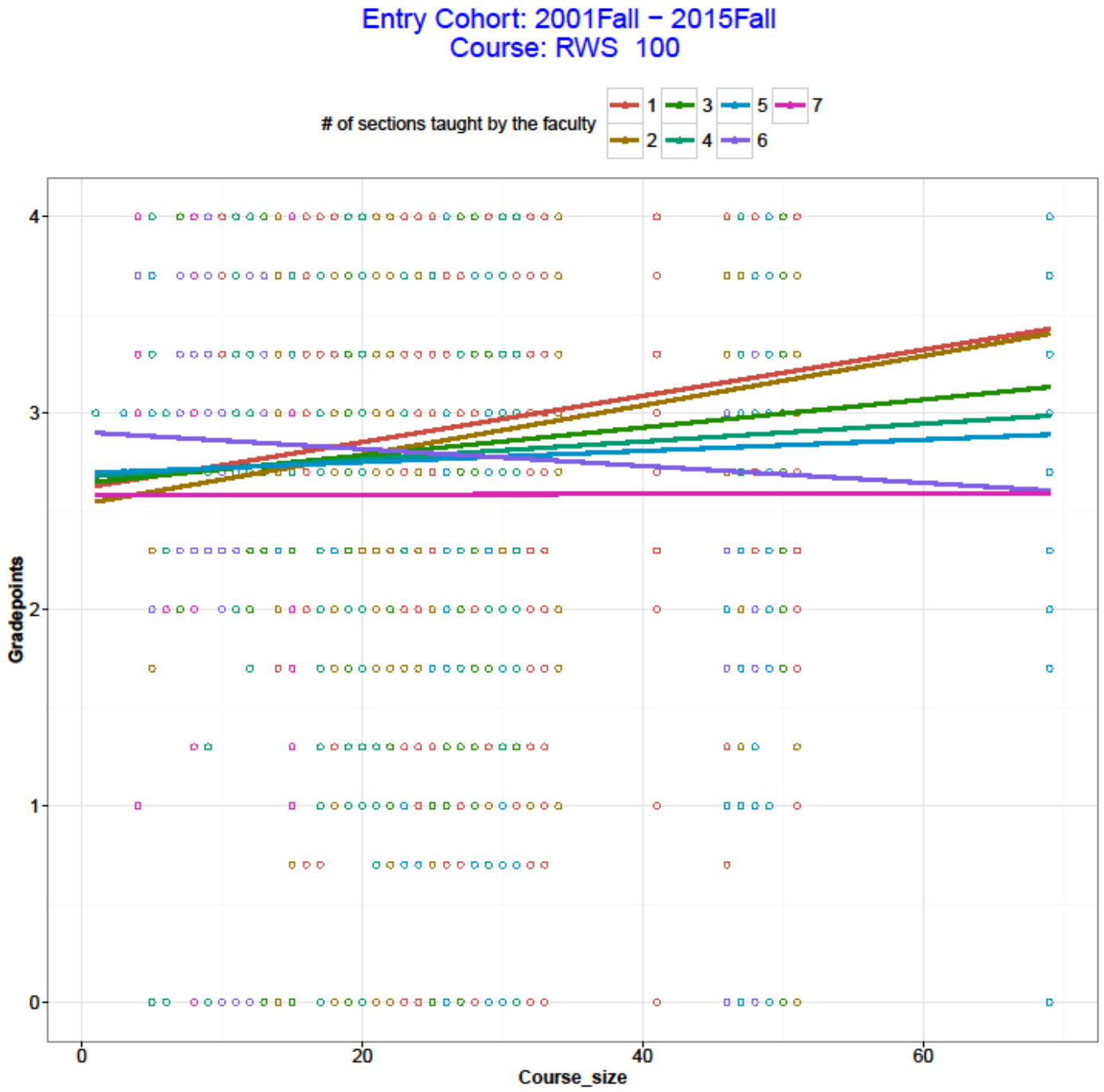
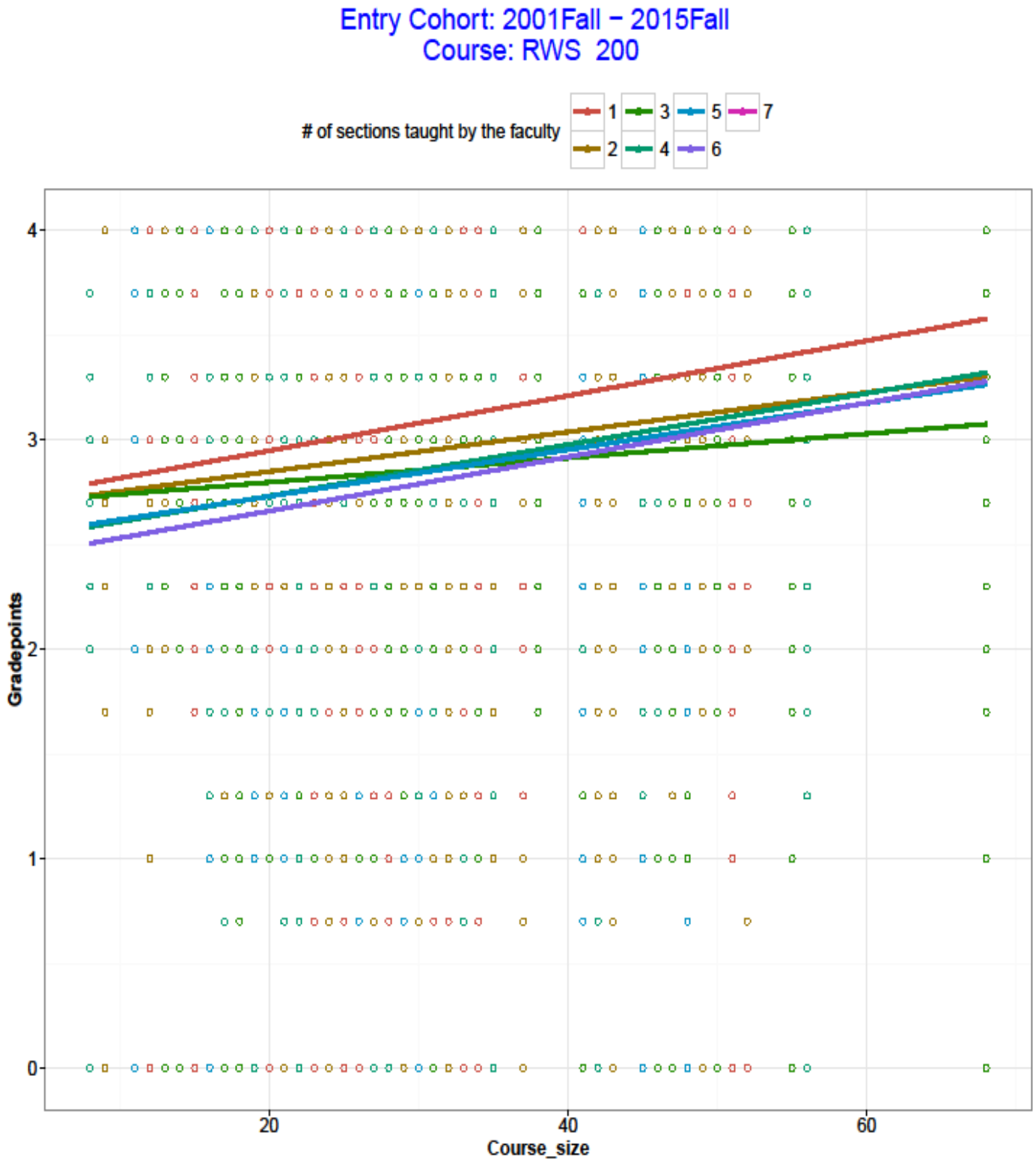


Figure 4:


Entry Cohort: 2001Fall – 2015Fall
Course: RWS 200
# of sections taught by the faculty
1
2
3
4
5
6
7
Gradepoints
0
1
2
3
4
20
40
60
Course_size

Additional findings on course size threshold

A random forest analysis of class-size thresholds identified a class size of 24-25 students in first sequence writing (100-level) courses and 21-23 students in second sequence (200-level) writing courses as the primary cut point for predicting success on the WPA. After controlling for other covariates compared to students enrolled in other sized first sequence writing, students from a first sequence writing course with a class-size of 24-25 students have a significantly higher probability of receiving a high or medium WPA score relative to low WPA score ($p < 0.0001$). After controlling for other covariates, students from an second sequence writing course with a class-size of 21-23 students have a significantly higher probability of receiving a high or medium WPA score relative to low WPA score ($p < 0.0001$). Note that controlling for other covariates is a standard statistical practice that improves power and provides insight into the independent contribution of each predictor variable from a large collection of predictor variables. This practice can also obscure more complicated relationships among multiple predictor variables.

Note also that these cut points in class-size are not the optimal thresholds, they are the most important thresholds that have a positive impact on the probability of receiving a high/medium WPA score in Communication and Critical Thinking and Intermediate Composition and Critical Thinking writing courses, respectively. For the Communication and Critical Thinking writing class, all the class size categories are significantly related to success on WPA. Controlling for Communication and Critical Thinking writing class size, the Intermediate Composition and Critical Thinking writing class size categories are not significantly related to success on WPA. We also emphasize that this analysis will be sensitive to the class size categories chosen.

The relationship between class size and success on the WPA is fairly small, both in absolute terms and also relative to the strength of other predictors. For example, the model predicts a 0.36% increase in probability of success on the WPA (score 8 or higher) for a one-student decrease in the size of a first sequence writing course. Put another way, reducing first sequence writing classes from 30 to 20 students would be predicted to increase student success on the WPA by 3.60%. In comparison, a one point difference in high-school GPA is associated with a 10.2% difference in success on the WPA. These results, while undoubtedly useful and suggestive, are somewhat limited by the nature of the data to which we had access, and by contextual factors that influence the confidence with which conclusions can be drawn. Among the most salient are as follows: A) The WPA, the GE program, SLOs, and writing assignment sequences changed over the period examined. B) The WPA changes in terms of its nature, duration, content, and scoring range, and only exists in its current form since 2007. C) Class size variation occurs mainly between 2003 and 2005. Subsequent "smaller" class sizes are largely taught by TAs, with differences in class sizes resulting from different caps for TAs versus lecturers (25/28, versus 30/32). However, comparing classes taught by TAs and lecturers may be problematic. D) The composition of teachers and their background and training changes. E) The number of assignments, the amount of writing completed, and student learning outcomes for GE classes change. Questions have also been raised about changes in the amount of extended writing students engage in outside their GE classes having a potential influence on WPA scores. We recommend that any future study of student learning that includes WPA data combine this data with a broader set of measures of student learning and accounts for contextual factors by focusing on a single year in which these factors can be controlled, or in the very least, taken into consideration. However, this would require more extensive research.

Final Recommendation

Because this analysis controlled for these other covariates, such as high-school GPA, that we understand influence student success, the task force was unable to determine with any confidence that class size reduction across the board would have a fiscally prudent impact on student success as defined by WPA performance. As such, the recommendation of the Task Force is to share this report with SEC to determine

1) whether additional quantitative analysis is requested of ASIR to take into account the influence of class size on WPA performance based on covariates that are influential in student success; doing so may allow SDSU to provide focused class size interventions for particular students who would benefit from smaller class sizes at a higher rate (in alignment with proposed strategies in the SDSU Strategic Plan, Initiative One).
2) how faculty define and evaluate student success in order to provide other, perhaps more meaningful indicators of student success,
3) whether to ask faculty to design a longitudinal study that assesses class-size's influence on students' writing ability of which results can be verified by an external evaluator; and
4) how faculty discern which pedagogical approaches and student preparedness characteristics inform class size restrictions.

Appendix A – See Attached

Appendix B – See Attached

Appendix C - Summary of Characteristics of the Students in the Analyzed Data

		Students (n*=22,147)
Predictors		
Entry term	Range	2001Fall – 2014Fall
Sex	Female	61%
Ethnicity	White	40%
	Mexican American	23%
	Filipino	8%
	Other, Not Stated	6%
	Other Hispanic, Latino	6%
	African American	5%
	Asian	5%
	Southeast Asian	4%
	Multiple Ethnicities, Non- Hispanic	3%
	Pacific Islander, Native Hawaiian	1%
	Native American	<1%
	International	<1%
Enter as a STEM student	No	78%
Entering college	Professional Studies & Fine Arts	19%
	Sciences	18%
	Business	17%
	UG Studies – undeclared	17%
	Health & Human Services	11%
	Engineering	9%
	Arts & Letters	8%
	Education	1%
Enter as a pre-major student	Yes	74%
Honor student	No	98%
Disability	No disability services	99%
EOP program	No	81%
Live on campus	No	64%
Student status	Full-time	86%
Age at entry	mean	17.94
	Standard deviation	0.45
Low income status	No	63%
Pell grants recipient	No	80%
Admission basis	First-time freshman(FTF) from CA	94%
	FTF not from CA	5%
	FTF Non-disadvantage Exception	1%
	FTF Foreign apps	<1%
	FTF Disadvantaged	<1%
	FTF Veteran	<1%
SAT composite score	Mean	1045.21

	Standard deviation	136.55
ACT composite score	Mean	22.16
	Standard deviation	3.66
SAT mathematics score	Mean	536.20
	Standard deviation	81.63
SAT verbal score	Mean	509.02
	Standard deviation	72.26
ACT mathematics score	Mean	22.90
	Standard deviation	4.18
ACT English score	Mean	21.53
	Standard deviation	4.43
High school GPA	Mean	3.54
	Standard deviation	0.32
Have transferred GPA on record	No	84%
First generation college students - National Center for Education Statistics (NCES) definition, parents with no	No	80%
First generation college students	No	55%
Learning community (parents with some college)	No	88%
High school graduation year	Range	1995-2014
Entry Level Mathematics (ELM) score	Mean	47.93
	Standard deviation	11.54
Compact scholar	Not a compact scholar	95%
	Compact scholar	5%
	Compact comparison group	<1%
Mathematic proficiency status (Method of clearing remediation and remedial indicator)	SAT I	35%
	ELM Test	17%
	ACT	13%
	Two terms	11%
	One term	10%
	EAP Test	4%
	SAT II	3%
	AP Test	2%
	EAP Sr. Experience	2%
	GE Breadth	1%
	Early Start	<1%
	Late Clear	<1%
	1 to 3 terms	<1%
	Failed ELM	<1%
	Three terms	<1%
	Unknown	<1%
English proficiency status	SAT	32%

(Method of clearing remediation and remedial indicator)	One term	30%
	EPT Test	18%
	ACT	10%
	EAP Test	8%
	Late Clear	1%
	Early Start	1%
	Conditional EAP Sr. Experience Not Cleared	1%
	GE Breadth	<1%
	Failed EPT	<1%
	SAT II	<1%
	1 to 3 terms	<1%
	AP	<1%
	EAP Sr. Experience, EAP test	<1%
	Two terms	<1%
Transferred units	Mean	3.75
	Standard deviation	5.97
Veteran	No	99%
Study abroad status	No	94%
Local student	No	60%
Expected Family Contribution (EFC)	Lowest EFC (0)	28%
	Low Cost of Attendance (COA), no Pell (5000+-15999	22%
	Above COA, not Pell-eligible (24000+ EFC)	17%
	Mid COA, not Pell-eligible (16000-23999	10%
	Mid Pell-eligible (800-2499 EFC)	8%
	Low EFC (1-799)	7%
	Mid-High Pell-eligible (2500-3999 EFC)	5%
	High Pell-eligible, no SUG (4000- 5000+ EFC)	3%
First sequence writing course	RWS 100	84%
	RWS 101	11%
	CCS 111B	2%
	AFRAS120	2%
	AMIND120	1%
	LING 100	<1%
	GEN S250A	<1%
First sequence writing course - GPA	Mean	3.12
	Standard deviation	0.65
First sequence writing course -	Mean	27.75
	Standard deviation	3.95
First sequence writing course – Faculty work load (# of	1	35%
	3	21%

assigned)	2	20%
	4	13%
	5	11%
	6	<1%
	7	<1%
Second sequence writing course	RWS 200	90%
	PHIL 110	6%
	CCS 200	2%
	AFRAS200	1%
	LING200	1%
	GEN S250D	<1%
	GEN S260D	<1%
Second sequence writing course - GPA	Mean	3.11
	Standard deviation	0.68
Second sequence writing course - Size	Mean	28.23
	Standard deviation	3.83
Second sequence writing course – Faculty work load (# of sections assigned)	2	32%
	3	28%
	1	21%
	4	12%
	5	6%
	6	<1%
Response		
WPA score	Mean	7.94
	Standard deviation	1.28
WPA score - category	Medium (8-9)	64%
	Low (0-7)	19%
	High (10 or above)	17%

*: The data presented was the analyzed dataset used in the predictive modeling. Compared to raw data (n=41,625), these data do not contain any student record that has missing values in the predictors.

Appendix D – See Attached

Appendix E – See Attached

Appendix F1 and F2 – See Attached

SDSU University Senate Class Size Committee
Final Report
April 16, 2014

Committee Members:
Farid Abdel-Nour, Associate Professor, Political Science; Jill Esbenshade, Associate Professor, Sociology; James Gerber, Professor, Economics; Jonathan Graubart, Associate Professor, International Security and Conflict Resolution; Doreen Mattingly, Associate Professor, Women's Studies; Glen McClish, Professor, Rhetoric and Writing; Karina Russ, MA Candidate, Sociology

Executive Summary

Background to this report:

This report was generated by an ad hoc committee of the SDSU University Senate created in response to senators' concerns about the context of student learning at SDSU. Academic senators and the faculty they represent have witnessed dramatic increases in class size over the last decade, intensified by the budget crisis. Our understanding of the impact of these increases in class size on student learning at SDSU has thus far been anecdotal and not informed by any campus-wide data. Now that the worst of the crisis is behind us, it is crucial that future decisions about the distribution of resources be informed by data about the impact of increased class size on student learning.

Data and method:

This report makes use of two data sources: University data about all classes taught at SDSU, and a survey of SDSU faculty collected in December 2013. The survey asked faculty to indicate the changes they had made in response to class size increase—broken down by fourteen different kinds of classes—in order to evaluate where the impact is the greatest. A total of 621 faculty took the survey for a 40.8% response rate. Over 60% of respondents came to SDSU before 2005. Although open-ended questions were optional, 70% of all respondents provided them, a testimony to the importance of the issue to them. While there is differentiation between colleges and between types of classes, our data identify the following general patterns of great significance:

Class sizes have dramatically increased since 2001:

- Average class size increased between 2001 and 2013 at every level.
- In 2001, over 60% of enrollments were in classes of under 50 students. In 2013, the proportion dropped to 35%.
- In 2001, only 17% of enrollments were in large classes (with 100 or more students). By 2013, the proportion increased to 40%.
- The greatest increase was in lower division (100 and 200-level) classes, in which the "median student experience" nearly tripled from 41 in 2001 to 118 in 2013.

- In upper-division writing intensive (W designated) courses, the class size for the median student in 2013 was 30% larger than in 2001 (23 to 30).
- According to Department Chairs and Program Directors, pedagogical criteria have played little to no role in determining increases in class size.

Increased class size has resulted in less rigorous and less interactive pedagogy:

- The majority of faculty teaching in all fourteen types of classes reported that they are giving fewer writing assignments, while 44% or more reported shortening the length of writing assignments.
- Two-thirds or more of faculty in all categories of General Education (GE) classes reported a decrease in the number of writing assignments, while 65% of more reported shorter assignments in GE classes.
- There was a marked shift from essay exams to multiple choice exams.
- Although less dramatic, faculty teaching laboratory classes reported a decrease in the number and complexity of lab assignments.
- Where information about research was solicited, faculty reported decreases in assignments involving research.
- Almost three-fourths (72%) of faculty reported a reduction in the feedback they were able to provide students.
- Many faculty reported being less able to help students who are falling behind.
- The majority of faculty reported a decrease in class time spent on discussion.

Increased class size has had an unequivocally negative impact on student learning:

- In *all* class types, at least two-thirds of faculty who have experienced increases in the size of the classes they teach reported a negative impact on student learning.
- Over 85% of faculty teaching writing courses, practicums, graduate courses, and upper-division GE courses reported that larger classes have had a negative impact on student learning.
- Faculty repeatedly discussed marked declines in student writing skills, critical thinking, abstract reasoning, conceptual learning, and ability to incorporate data into research.
- Faculty repeatedly reported more students falling behind and fewer participating in class.
- Overall, faculty comments indicated a striking concern with a decline in direct faculty-student interactions.

Table of Contents

Patterns of Class Size Increase

The tables below compile data provided by the SDSU Office of Analytical Studies and Institutional Research. They show the number of filled seats in undergraduate and graduate classes, broken down by size categories. There are two sets of tables, one for undergraduate courses and the other for graduate, and there are two semesters of data: Fall 2001 (the earliest available Fall semester for which there is data) and Fall 2013. The Appendix contains additional tables (A1-A7) in the same format detailing changes in courses numbered 100-299, 300-499, 500-599, as well as lab courses and writing-intensive courses.

The top part of each table shows the actual distribution of students across sections of different sizes. For example, Table 1 indicates that during Fall 2013, the university had two sections with 500 or more students and 32 sections of 300-499 students. These sections held, respectively, 1,006 and 13,752 students. The bottom part of the table shows the mean number of students in each section size category, and the percentage of the total enrollment. For example, for courses in Fall 2013 numbered 100-500, sections of 300-499 students had on average 429.8 students which made up 11.44% of the total enrollment in courses numbered 100-500.

Table 1: Undergraduate Enrollment by Class Size (100-599 numbered courses)

	2001		2013	
SIZE	SECTIONS	STUDENTS	SECTIONS	STUDENTS
500+			2	1,006
300-499			32	13,752
200-299	23	5,904	39	9,493
100-199	120	16,308	179	24,422
50-99	440	27,257	438	29,983
25-49	1307	45,772	912	30,603
<25	1,845	33,029	825	10,982
SUM	3,735	128,270	2,427	120,241
SIZE	AVG SIZE	PCT ENROLL	AVG SIZE	PCT ENROLL
500+			503	0.84%
300-499			429.8	11.44%
200-299	256.7	4.60%	243.4	7.89%
100-199	135.9	12.71%	136.4	20.31%
50-99	61.9	21.25%	68.5	24.94%
25-49	35	35.68%	33.6	25.45%
<25	17.9	25.75%	13.3	9.13%
Mean section size	34.3		49.5	
Median student experience	41		75	

The last two rows of each table show the mean section size and the median student experience (defined as the 50th percentile section size based on total number of seats filled). For example, in Fall 2013, half of all students in 100-500 numbered classes were enrolled in sections with 75 or more students, and half were in sections with 75 or fewer students. Thus, undergraduates had a 50% probability of being in a class of 75 or larger.

The most striking component of Table 1 is the increase in the median student experience since 2001. While the average section size increased from 34 to 49.5 students, what is far more important is the change in the distribution of students across the various size categories. In 2013, 50% of all students were in much larger classes—75 or more—compared to the situation in 2001, where the corresponding number was 41 or more. The distribution across section sizes is even more telling. By 2013, over 20% of all students were in sections of 200 or more, while in 2001, less than 5% were. Similarly, in 2013, more than 40% of students were in sections of 100 or more, while in 2001, 17.3% were. Moreover, in 2001, over 60% of students were in classes of under 50, while in 2013, only 35% were.

The increase in class sizes is even more striking if one looks at data disaggregated by class number. Table 1 shows that the median student experience for 100 and 200 (lower division) courses rose from 41 in 2001 to 118 in 2013. Tables A1-A7 in the Appendix provide more detail on changes in the size of specific course types and levels.

Table 2: Graduate Enrollment by Class Size
(600-900 numbered courses)

	2001		2013	
SIZE	SECTIONS	STUDENTS	SECTIONS	STUDENTS
50-99	8	423	12	751
25-49	137	4,300	149	4,932
<25	428	5,460	302	4,303
SUM	573	10,183	463	9,986
SIZE	AVG SIZE	PCT ENROLL	AVG SIZE	PCT ENROLL
50-99	52.9	4.15%	62.6	7.52%
25-49	31.4	42.23%	33.1	49.39%
<25	12.8	53.62%	14.2	43.09%
Mean section size	17.8		21.6	
Median student experience	23		26	

Increases in the size of graduate courses also occurred, but to a much smaller degree than increases in undergraduate courses. The percentage of graduate students enrolled in courses with 50-99 students increased from 4.15% in 2001 to 7.52% in 2013. The median student experience rose from 23 to 26.

The table below shows the overall changes in the number of sections. From 2001 to 2013, the number of undergraduate sections fell by over 35%, graduate by over 19%, and combined, the university reduced the number by just under 33%. Meanwhile, the number of seats filled by students fell just under 6%.

Table 3: Summary of Changes in Sections Offered and Students Taught

	100-599 Numbered courses	
	Sections	*Students*
2001	3,735	128,270
2013	2,427	120,241
Change	-35.02%	-6.26%
	600-999 Numbered courses	
	Sections	*Students*
2001	573	10,183
2013	463	9,986
Change	-19.20%	-1.93%
	All levels combined	
	Sections	Students
2001	4,308	138,453
2013	2,890	130,227
Change	-32.92%	-5.94%

Description of the Survey and the Sample

In response to concerns raised in the SDSU University Senate about the changing contexts of learning, a "Committee of the Willing" was formed in the Fall of 2013 to investigate the impact of increased class size on student learning. This committee constructed a survey to document the experience of faculty in teaching larger classes. Bill Eadie, Chair of the Senate, sent an email to all instructional faculty on December 4, 2104, asking them to complete the survey by December 13. The survey can be viewed at https://www.surveymonkey.com/s/Class_Size_1. A total of 621 faculty took the survey for a 40.8% response rate, which is quite high, especially considering that it was sent at the very end of the semester when faculty were busy with exams. Furthermore, no incentives were offered to increase faculty participation. The survey asked respondents whether they ever taught each type of class and whether any had increased in size. Only those responding "yes" to both questions were asked the detailed questions about their experiences teaching larger classes. Although qualitative responses were optional; 70 % of faculty completing the survey supplied them. The survey also included specific questions for faculty who are or have been department chairs or program directors. A total of 95 current and former chairs completed this portion.

As shown in Table 4, faculty from all colleges completed the survey, although response rates varied by college. Faculty in the College of Arts and Letters had the highest response rates and faculty in the Colleges of Education, Sciences, HHS and IVC had the lowest.

Table 4: College of Survey Respondents and All SDSU Faculty

	Distribution of survey responses	***Distribution of all faculty[1]***	***Difference***
College of Arts and Letters	40.0%	26.0%	+13%
College of Business Administration	8.8%	8.6%	+.2%
College of Education	8.6%	12.6%	-4%
College of Engineering	5.2%	5.5%	-.3%
College of Health and Human Services	10.8%	13.1%	-2.3%
College of Professional Studies and Fine Arts	13.4%	14.2%	+.8%
College of Sciences	11.7%	14.2%	-2.5%
Imperial Valley Campus	1.5%	4.3%	-2.8%

[1] Based on data from Office of Faculty Affairs for Fall 2013

With the exception of the College of Sciences, the colleges with low response rates all have disproportionately large numbers of lecturers, and as the table below shows, lecturers were dramatically less likely to complete the survey than were tenure/tenure track faculty.

Table 5: Position of Respondents and All SDSU Faculty

	Distribution of survey responses	***Distribution of all faculty***	***Difference***
Professor	33.1%		
Associate Professor	20.9%		
Assistant Professor	6.7%		
Total Tenure/Tenure Track	60.7%	49.3%	+11.4%
Lecturer	39.3%	50.7%	-11.4%

Over half (61.82%) of respondents came to SDSU before 2005, giving them a long-term view of changes in class size and student learning.

Table 6: Year Respondents were First Employed at SDSU

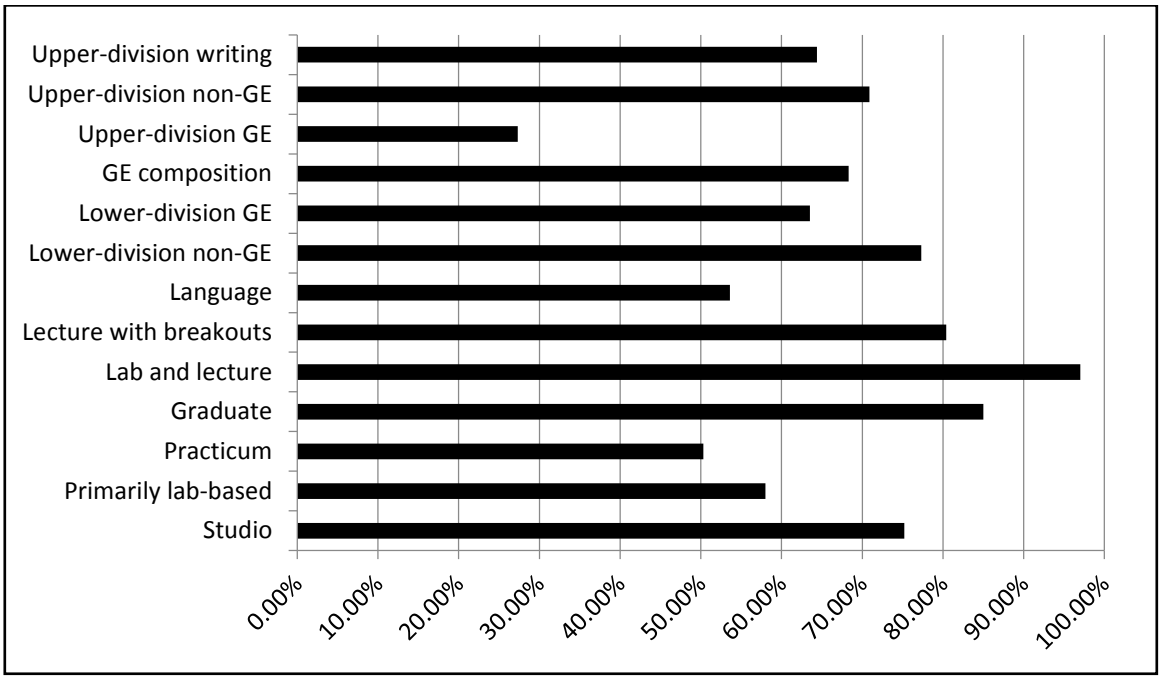
Date first hired at SDSU	***Distribution of survey responses***
2010 or later	15.4%
2005 to 2009	22.8%
2000 to 2004	19.9%
1995 to 1999	16.8%
1994 or earlier	25.1%

Faculty Perceptions: Increased Class Size and its Impact on Student Learning

To get a more robust and nuanced picture of the impact of increased class sizes on both teaching and learning, this section draws from both the closed-ended survey questions and the extensive qualitative statements provided by faculty in optional open-ended responses. Both types of data show widespread concern with a notable decline in essential learning skills, such as writing, engagement of ideas, and critical reasoning. Below we present the data broken down by class type, beginning with the percentage of faculty experiencing class size increase and their perceptions regarding its effect on student learning. We then look at the various aspects of pedagogical practice and faculty-student interaction, reviewing first the quantitative results and then a rich sample of qualitative responses.

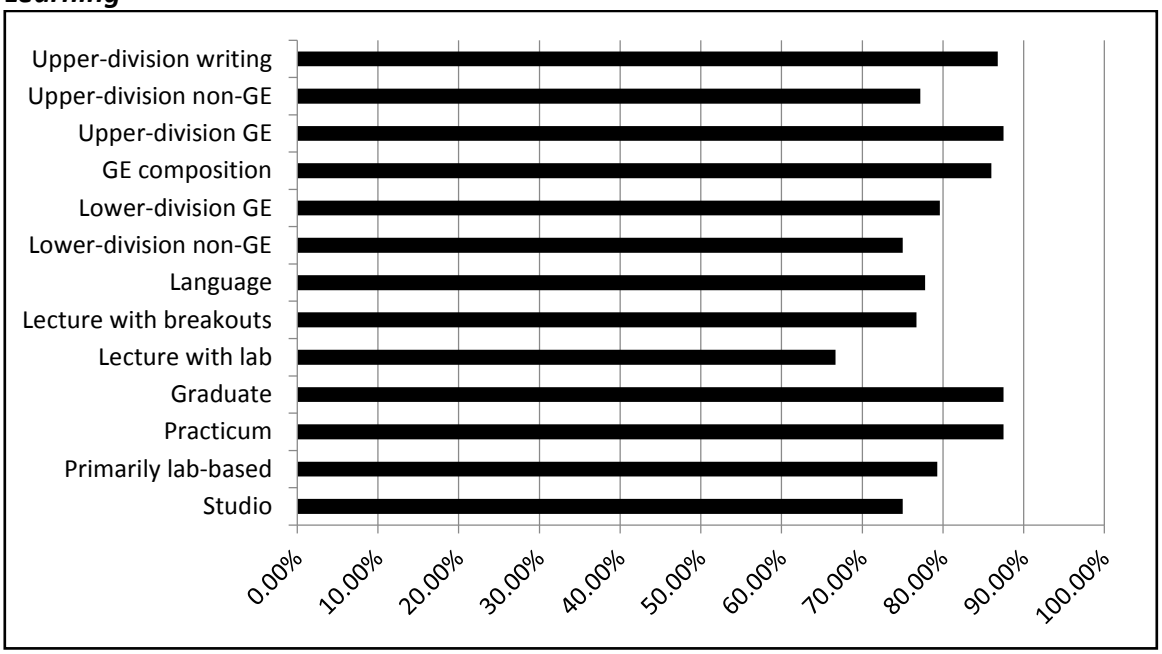
In nearly every type of class, more than half of all instructors who responded to the survey reported an increase in class size.

Figure 1: Percent of Respondents Reporting an Increase in Class Size, All Colleges



Of those who reported an increase in class size, the vast majority, often over 70 percent, also reported negative impact on student learning. In 100 and 200 level composition courses, upper-division writing courses, practicums, graduate courses, and upper-division GE courses, more that 85% of faculty stated that student learning was negatively impacted. The second figure shows the percent of respondents who teach each type of class who have experienced larger classes. Specific charts for each college are included in the Appendix. Data for Imperial Valley College is not shown separately because the number of respondents is too low.

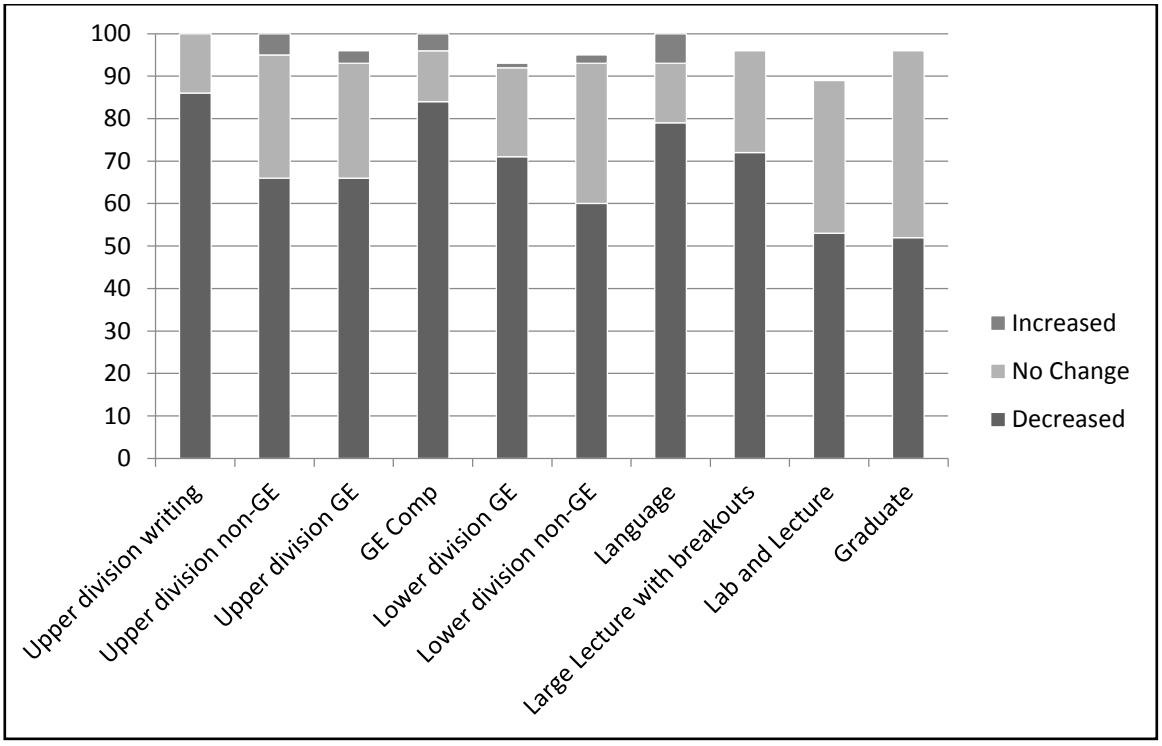
Figure 2: Of Those with Increased Class Size, Those Reporting Negative Impacts on Student Learning



Assigned Writing

One of the most important findings of the survey is the decrease in writing throughout the curriculum due to the increase in class size. Among all faculty who gave qualitative comments, 45% mentioned the negative effect of larger classes on student writing. Faculty who reported that their classes had increased in size were asked focused closed-ended questions about whether they had changed the writing assignments to accommodate larger classes. Uniformly across all types of classes, the majority of faculty reported a decrease in the *number* of writing assignments. There has simultaneously been a decrease in the *length* of the writing assignments. Figures 3 and 4 show the changes to the number and length of writing assignments by each class type.

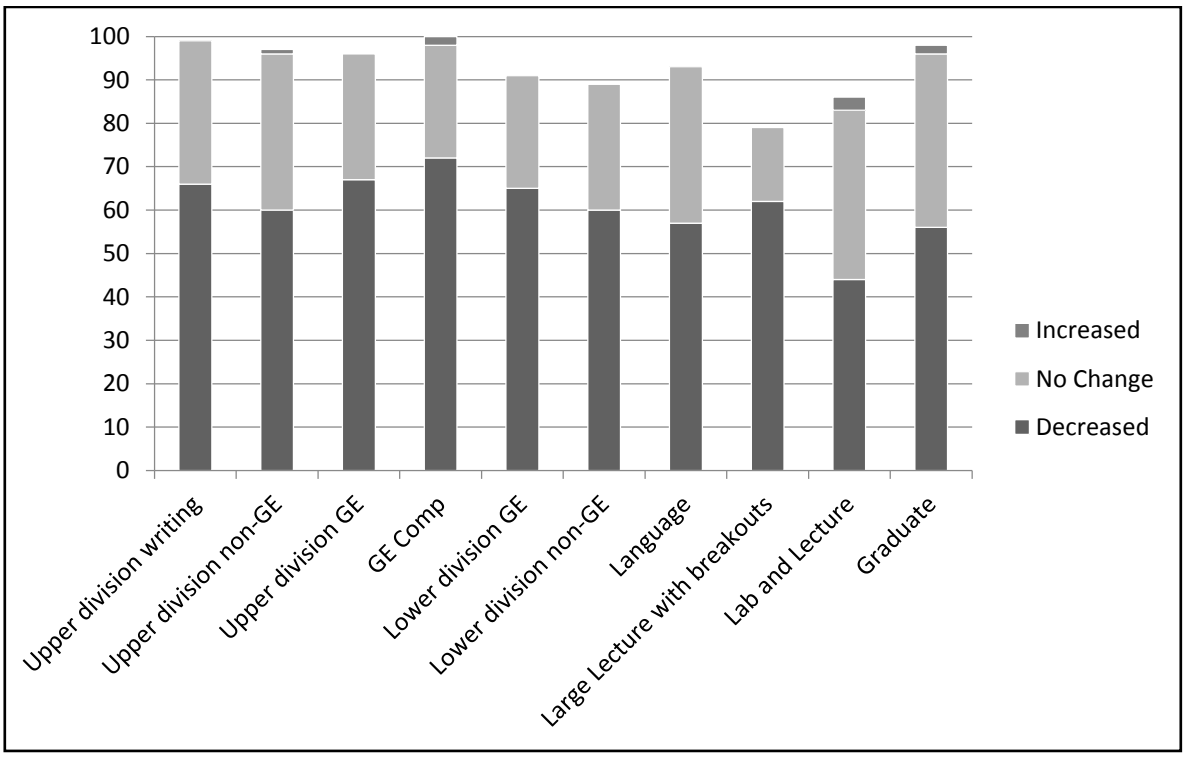
Figure 3: Number of Writing Assignments



*Where responses do not add up to 100%, the missing percent is faculty that responded "not applicable."

The percentage of faculty reporting a decrease in the number of writing assignments ranges from 52% in graduate courses to 86% in upper division writing courses. Importantly, GE courses have been strongly affected, with two thirds or more of faculty reporting a decrease.

Figure 4: Length of Writing Assignments



*Where responses do not add up to 100%, the missing percent is faculty that responded "not applicable."

With the exception of Lab/Lecture classes (44%), all types of classes have a majority of faculty reporting that the length of writing assignments has decreased. Almost no one reported increasing the length of assignments. It is therefore *not* the case that while faculty are assigning fewer papers, the papers are longer. In fact, it is clear that faculty are assigning *fewer and shorter* papers. The decreased length of assignments is particularly prevalent in GE courses.

Impact of Increased Class Size on Student Writing:

A complete summary of faculty responses to open ended questions is included in Table A7 in the Appendix. The most common response was a decrease in student writing ability. A quarter of all responses mentioned writing, including over a third of those teaching upper-division courses (both GE and Non-GE), and 29% of those teaching lower-division composition courses and upper-division "W" courses. Typical statements are below.

- "Students in SDSU's upper division writing classes often come in with vague ideas about writing rather than a solid mastery of very basic skills . . . entire assignments must be dedicated to the review of freshman level skills."
- "Many do not know the basics of academic writing such as how to properly cite."
- "So they begin the seminars with weaker writings skills. This means that much of the focus for writing seminars has become basic essay construction and rudimentary research, instead of advanced writing and research skills. These courses remain robust

but cannot compensate for lack of writing experience earlier in the students' educations. So they cannot reach the level of mastery seen before enrollments began to grow."

- "Students do not have much academic writing competency as a result of the lack of writing in classes."
- "I think the students do less writing overall before I see them, and many are less able to organize their thoughts in a short time (i.e., in an in-class essay) than they were several years ago."
- "My junior level classes write on par with where my entry level classes use to write at the completion of their freshman classes."
- "I can no longer assign enough formal writing for students to improve their essay-writing skills."

Reduced Expectations in Length, Number, Rigor, Creativity, and Complexity:

Open-ended questions allowed faculty to describe changes they made to assignments or assessment tools to accommodate larger classes. Table A8 summarizing all responses by class type can be found in the Appendix. Twenty-eight percent of respondents mentioned reducing the number of assignments, while 26% reported that they had standardized assignments or assessment. The comments below are typical.

- "I now focus on only 2 or 3 very specific parts of a prompt, instead of giving students the opportunity to explore multiple ways of addressing their responses….What this does is limit the student in terms of being creative or innovative in discussing the understanding of the issues studies."
- "Writing prompt less likely to be open-ended...less likely to develop critical thinking skills and individual argument."
- "Fewer writing assignments mean that students are not developing critical thinking techniques, doing less research, getting less practice in writing competently."
- "With the loss of one major assignment, students are missing valuable opportunities to develop critical thinking skills."

Less Mastery of Material, of Critical Thinking, and of Complex Reasoning:

It bears emphasis that instructor comments frequently linked larger class sizes to the deterioration in student abilities to apply critical thinking in their writing. As shown in Table A7 in the Appendix, 18% of faculty volunteered that that increases in class sizes had reduced student mastery of content, while 17% mentioned reduced critical thinking when discussing the impact on student learning.

- "While students are learning to make arguments, they are more likely under these circumstances to a more limited field of argument, one that's more prescribed, rather than individualized. They get less of the critical thinking skills than we ideally would like….we are turning out people who know less than previous times, when education could be more tailored to individual learning."

- "Less ability to synthesize multiple sources. Student seem less able to reason on their own without step by step logical assistance."
- "Ability to engage in writing the ideas and concepts is definitely diminished."
- "Larger class sizes has affected writing and critical thinking negatively. Students in larger groups tend to do their tasks in a standardized manner and only fulfill requirements. It is difficult to encourage them to seek excellence."
- "Many are unable to summarize succinctly main ideas of college level journal articles and then extrapolate those ideas to current events, which was something most juniors had learned already."
- "They don't know as well how to deal with asking a scientific question, how to define their variables, how to verify and present their data, and how to write conclusions and discussion."

Perspective of Chairs and Directors on Student Writing:

Many chairs' and directors' responses to the question "To what extent have increased class sizes influenced student learning in your department?" reinforce faculty observations about the erosion of writing instruction and the corresponding pedagogical effects on student skills. Thirty-six percent of chairs and directors mentioned the diminishment of writing in their responses. A selection of these comments follow:

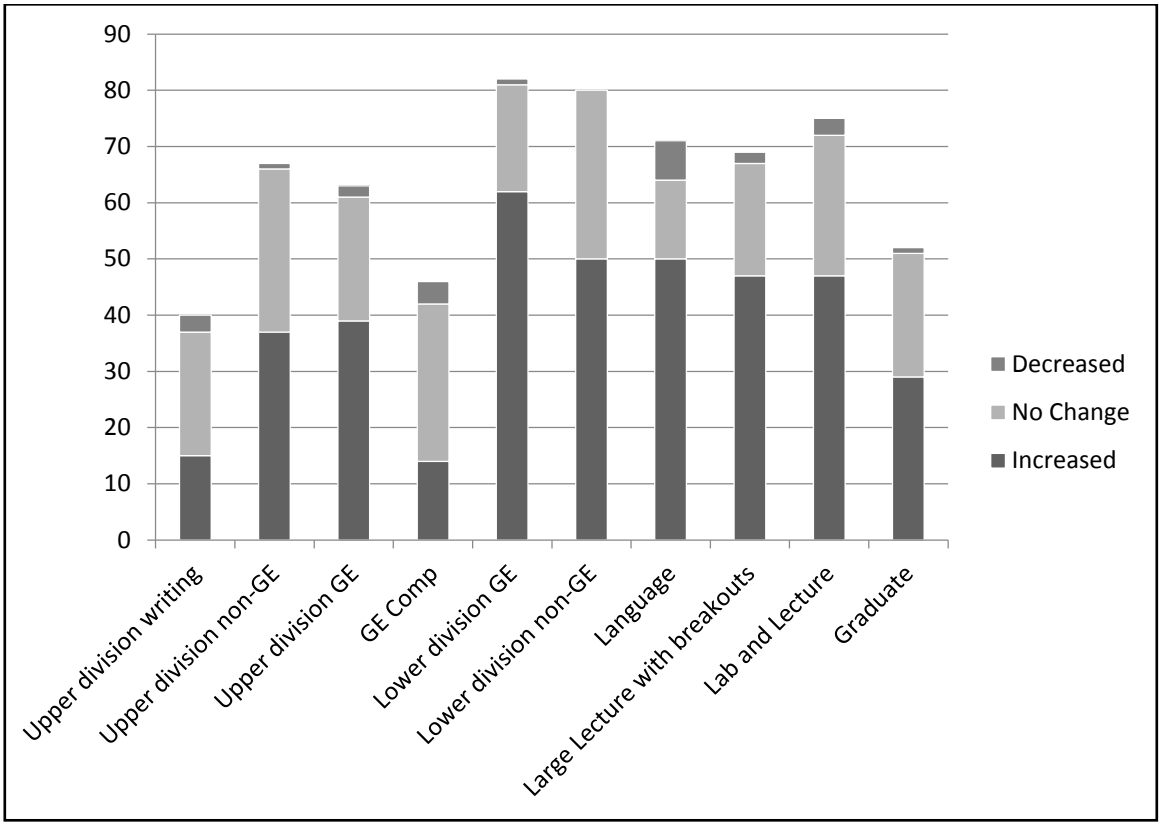
- "To a considerable extent, especially regarding writing instruction courses. Also, many of us may have cut back on the number of required essay exams in our courses b/c we don't have the time to read 60+ essays 3 times a semester multiplied by 3 or 4 courses a semester."
- "I've seen significant declines in student's ability to write and do research."
- "It also made it difficult for some instructors to assign work that requires substantial writing."
- "Essentially, we have had to move from assigning four major papers to assigning three. This change means that we are unable to emphasize at least one major Student Learning Outcome for each course."
- "The writing component has been drastically reduced."
- "Greatest difference is in the reduction or elimination of writing assignments at all levels: lower division, upper division, etc."
- "A lot of the undergraduate classes cut their paper requirement."

Rigor of Other Assignments

In addition to reducing the assigned writing, faculty across the university reported the diminished rigor of their courses more generally. Forty-five percent of faculty who gave open-ended comments mentioned the negative effect of larger classes on the rigor of other assignments, including a decrease in essay exams, cuts in the amount of assigned reading, research, and oral presentations, and the declining overall amount of course content.

While the quantitative trends in exams are more mixed than in writing, it appears that some faculty are doing assessment through exams that was previously done through writing assignments. There is clearly a much greater reliance on multiple choice exams and a decrease in the use of essay exams overall.

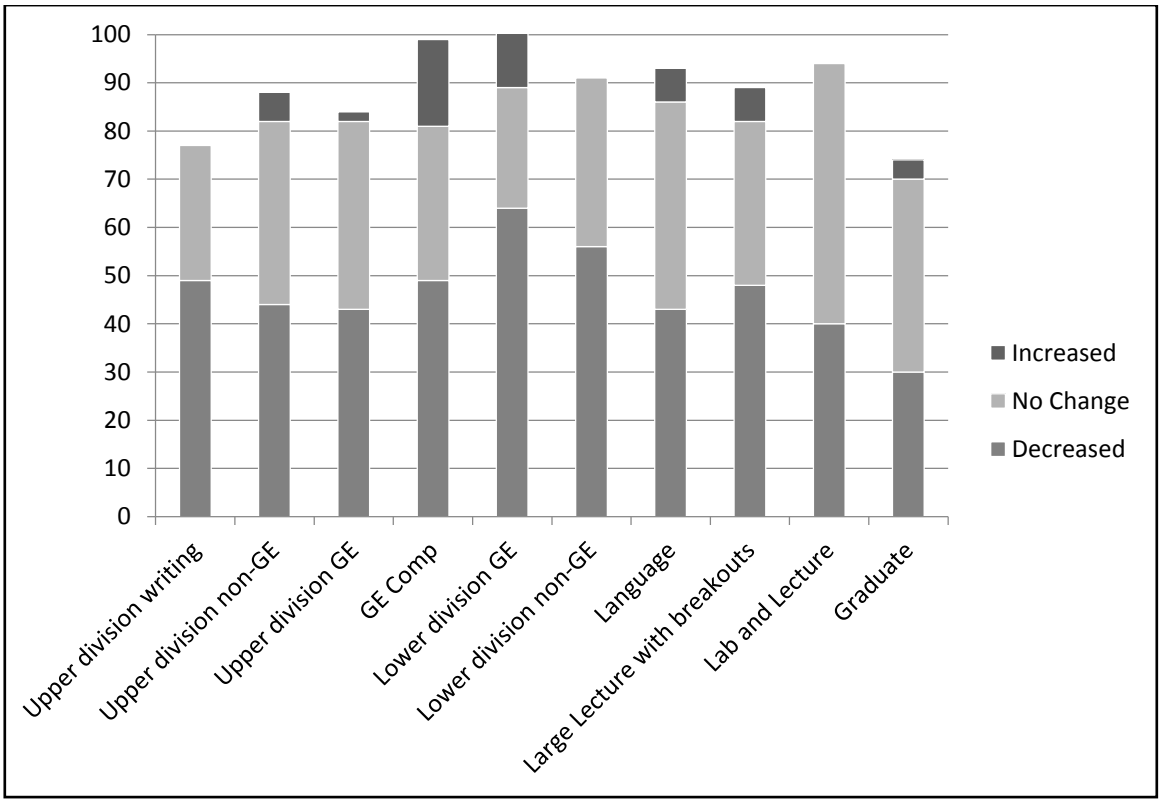
Figure 5: Use of Multiple-Choice Exams



*Where responses do not add up to 100%, the missing percent is faculty that responded "not applicable."

There has been a substantial increase in the use of multiple-choice exams, especially in lower division classes and language courses where the majority of faculty reported increasing their use of such tests, especially in lower division GE course. Even in large lectures that have breakout sections and TAs, we see an increased use of multiple-choice exams in nearly half of classes. While a smaller percentage of writing and graduate instructors reported an increased use of multiple choice, it is still striking that there is an increase at all given the nature of these courses. Very few faculty reported a decrease in the use of these tests, with large numbers reporting "not applicable."

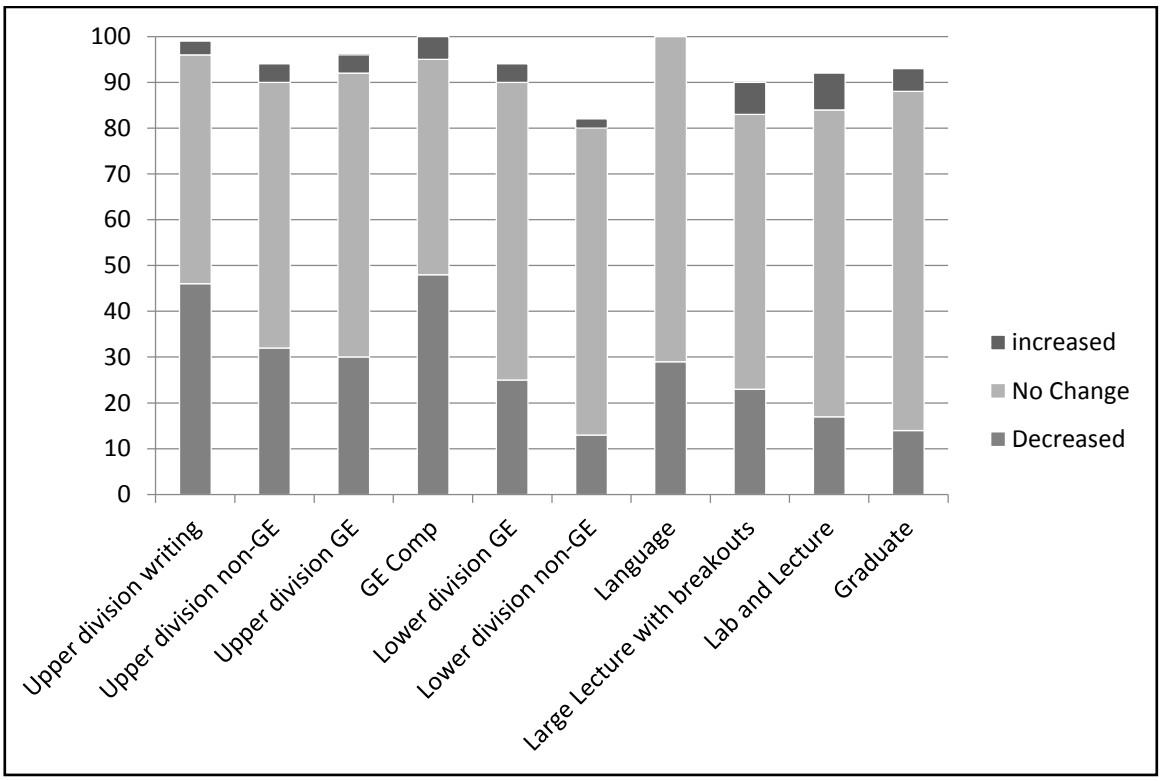
Figure 6: Use of Essay and Short Answer Exams



*Where responses do not add up to 100%, the missing percent is faculty that responded "not applicable."

Corresponding to the increase in multiple-choice exams, there has been a decrease in the use of essay and short answer exams, again particularly striking in lower division courses where the majority of instructors reported reducing the use of these exams. Interestingly, there is a notable percentage of faculty (18%) who reported an increase in essay exams in GE Composition courses, corresponding to a decrease in actual composition writing.

Figure 7: Reading Assignments



*Where responses do not add up to 100%, the missing percent is faculty that responded "not applicable."

Even reading assignments have decreased to some degree with increased class size. We speculate that some instructors are reducing reading assignments because the increased class sizes leave them unable to assess student learning of the reading either in class discussion or through assessments.

As shown in Figure 7, while most instructors have not changed their reading assignments, over 10% of faculty in every type of class reported reducing reading, with over 40% in writing courses. Moreover, very few faculty reported increasing reading, so while writing assignments decrease so do reading assignments, making classes less demanding overall.

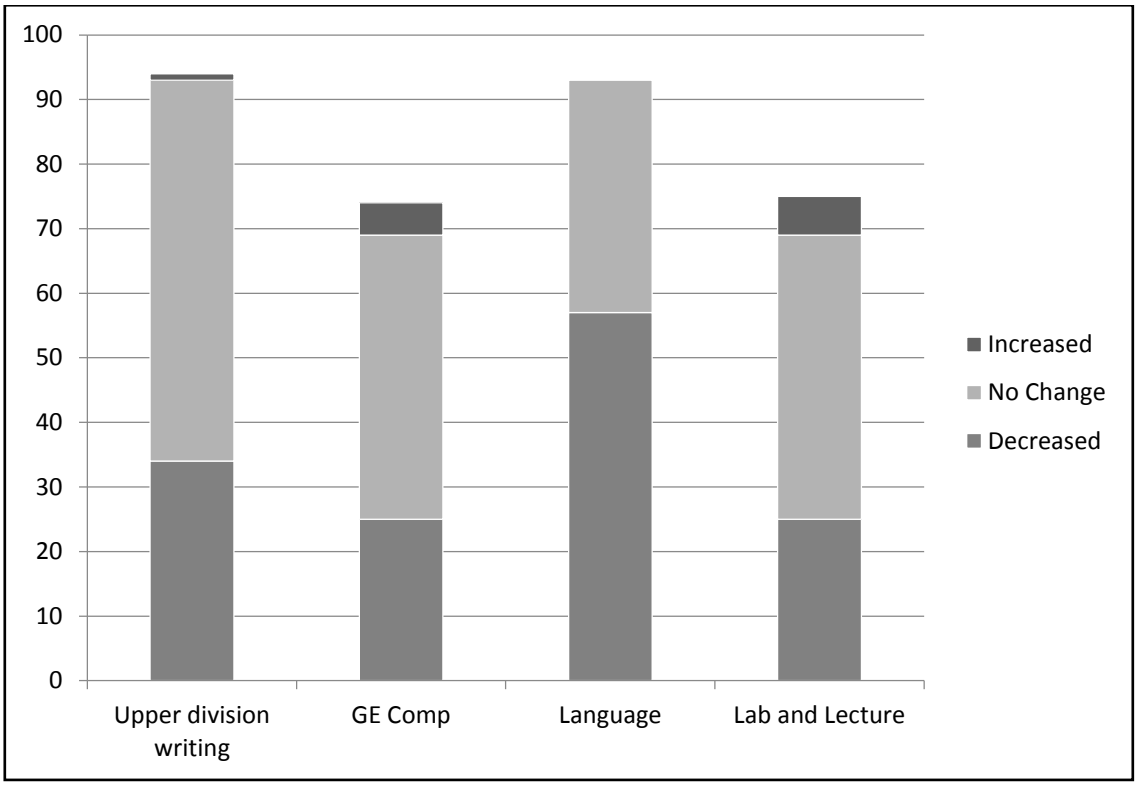
A summary of the qualitative data discussing the changes (if any) made to assignments or assessment tools are in Table A8 in the Appendix, broken down by class type. Thirty-eight percent reported giving fewer assignments, 26% stated they had standardized the assignments or their assessment/feedback, and 24% reported giving shorter assignments. Moreover, in responses to the final open-ended question about the overall impact of increased class sizes on student learning, 18% called attention to decreased mastery of content, 17% mentioned decreased critical thinking skills, and 9% reported decreased oral communication skills. The following quotes illustrate faculty concerns about the overall reduction in rigor.

- "My students used to write long papers and presented their work in class….Students also had to write shorter papers every week. These papers required they read all the works

assigned in class. Students now have the opportunity to avoid much of the required reading. They do not have to write as much or learn as much from scholars. They have fewer opportunities to learn or to show they learned."

- "I have replaced required/graded weekly reading questions with short quizzes, which don't tell me as much about what they are thinking and don't cause them to think as critically, either.
- "No individual opportunities for oral presentation, etc."
- "Too much reliance on standardized testing to assess student learning."
- "Students no longer achieve professional-level mastery of skills and abilities—there isn't sufficient time for all students to perform and present for critique."
- "Decreased critical thinking at the expense of getting through the basics of statistical methods."

Figure 8: Use of Assignments that Require Research



*Where responses do not add up to 100%, the missing percent is faculty that responded "not applicable."

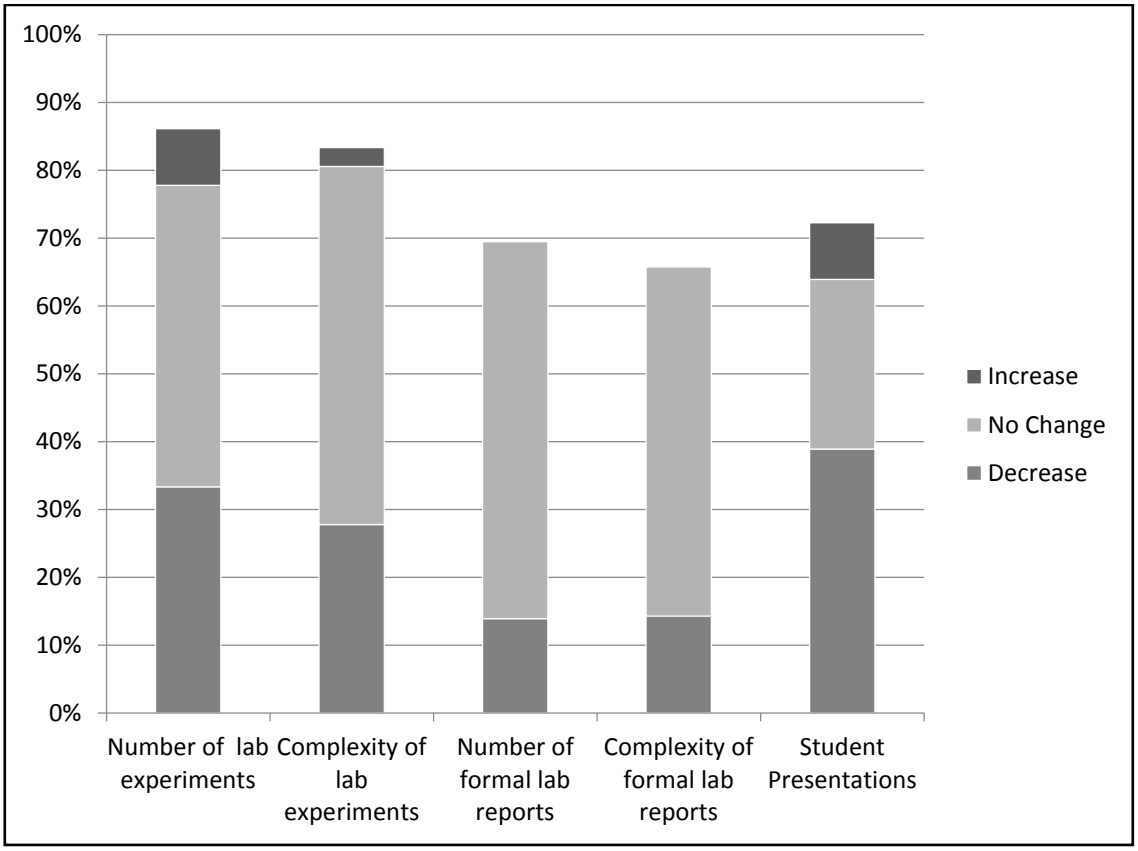
Research assignments have also been reduced as evidenced in Figure 8. Regrettably, we only asked this question for four types of classes. These data reveal a clear pattern. Instructors in a variety of classes (upper-division, lower division, language and science) all reported reducing research assignments in significant numbers. Ten percent of all faculty making qualitative remarks mentioned research without being prompted. This decrease indicates a contradiction between the university's well-publicized trajectory as a research institution and our ability to

widely train our students in this area. The increased class size is hindering faculty from assigning research to their students, especially that which requires more sophisticated skills.

The qualitative comments offer striking evidence that research has often been eliminated or that students' individual choices and initiative in the research process have been reduced.

- "I have eliminated the research component of their writing assignments, reduced the size and number of assignments."
- "Transformed a research paper into a group project presentation."
- "I wish I could give students a more research-oriented project that requires collecting and analyzing data. With 30-40 students, that would become very unwieldy, especially if they were each collecting and analyzing their own data under my supervision. Having them all collect the same data solves that problem, but then forces students to work on what I tell them to work on instead of picking a topic of their own interest."
- "Less opportunities for every student to be challenged in critical thinking; no chances for individual research"
- "Students have fewer opportunities to explore data sources on their own."

Figure 9: Changes in Lab Experiments



*Where responses do not add up to 100%, the missing percent is faculty that responded "not applicable."

Questions about the number and complexity of lab experiments and reports were asked of the lecture classes with labs. The results are in Figure 9.

Although science lectures have increased in size, the increase in lab size has been limited by infrastructure. Even so, given the number of students in the overall class and the number sometimes squeezed into the labs (in some cases having to share stations), between 14% and 33% of faculty reported having to reduce the number and complexity of lab experiments and reports. Nearly 40% of faculty have decreased student presentations, meaning students are not provided sufficient opportunity to practice publicly presenting their work. One qualitative comment gives sharp insight into the serious problems that occur when lab sections are expanded:

- "Increased student-faculty ratio means our students do not have time to become comfortable working in the lab, operating the tools the employers expect them to know how to use. Most electrical engineers don't even learn how to solder or use an oscilloscope, resulting in employers expressing discontent with our fresh grads."

Perspectives of Chairs and Directors on Assignment Rigor:

Nineteen percent of the chairs' and directors' responses to the question "To what extent have increased class sizes influenced student learning in your department?" indicated that assignments have become less rigorous since classes have increased in size and that this decrease in rigor undermines student learning. Here are several representative comments:

- "We are giving fewer and less complex assignments now."
- "Graduates do not feel they are ready to do the necessary science activities they will need to do once they teach in the elementary schools. The Credential Program science methods instructors find them poorly prepared."
- "It has decayed student learning; upper division students no longer have a grasp of the basics that they need, and this has eroded learning there as well."
- "At the MPH level the rigor of many classes decreased."
- "Major reduction in student learning outcomes in writing and mathematics."

Feedback and Evaluation

The survey asked all who reported larger class sizes whether they had changed the feedback they provide; 72% reported affirmatively. As shown in Table A9 in the Appendix, a majority of faculty teaching all types of classes reported providing less feedback. The change in feedback was particularly marked in graduate classes (89%), GE composition courses (83%), studio courses (83%), laboratory courses (79%) and upper division "W" writing courses (76%). In open-ended responses, faculty reported not only offering less feedback (mentioned by 44%), but also less individualized feedback (23%), reducing opportunities for student revisions (13%) and cumulative improvement in writing, critical analysis, and other essential learning skills. The following selected comments describe the situation, which has particularly hindered progress in student writing.

- "For weaker students, weaker writers, the decrease in assignments, comments, and tutorial time has limited their ability to improve and succeed."
- "As increased enrollments reduce the amount of time I have for grading and meeting with students to discuss writing, they receive less personalized feedback on their work. Standardized rubrics have their place in education, but are no substitute for careful, personalized comments on student work."
- "More students in an English class means less attention to the individual writer. This extends to less student conferences, less teacher-student interaction, and less opportunity to communicate effectively with students"
- "Students are getting less feedback and less one-on-one attention on their writing problems and, therefore, are not making the type of improvements in their overall ability to write effectively."
- "I have had to limit my comments to focus on only what is asked for on the prompt. Anything extraneous (or interesting or important or relevant to the student) must be cut or ignored."

- "There are basic writing problems that I completely ignore now. I no longer work on syntax or grammar with students, in spite of the fact that all students need this help."
- "My ability to thoughtfully grade and quickly return student work is reduced by increased class size. As such, I cannot return student work in a timely enough manner that the students would benefit from seeing my feedback."
- "There is less time for me to give comments on assessments, so there is less feedback for students to improve….I also no longer give feedback on rough drafts b/c there is simply not enough time and energy w/o having graders—and even if I had a grader, it's not the same as having a professor provide feedback."
- "One of the largest impacts has been on the kind of reflective thinking that student would have been required to perform in the past. Before classes were doubled, my students wrote two kinds of reflection on every text we read: personal responses…and they also had assignments that gave them many days to think about texts. With these assignments…students could send me a thesis statement or even have me read a draft of their essay….Now I give students exams in class because I would not be able to offer all my students the feedback. "
- "In a recent semester, I was astounded by the serious and chronic issues in a particular student's writing. I felt surprised that she had reached this level without having had to improve her writing. Sadly, I was not able to give her the personal attention that she needed."

<u>Perspective of Chairs and Directors on Feedback, Interaction, and Evaluation</u>:

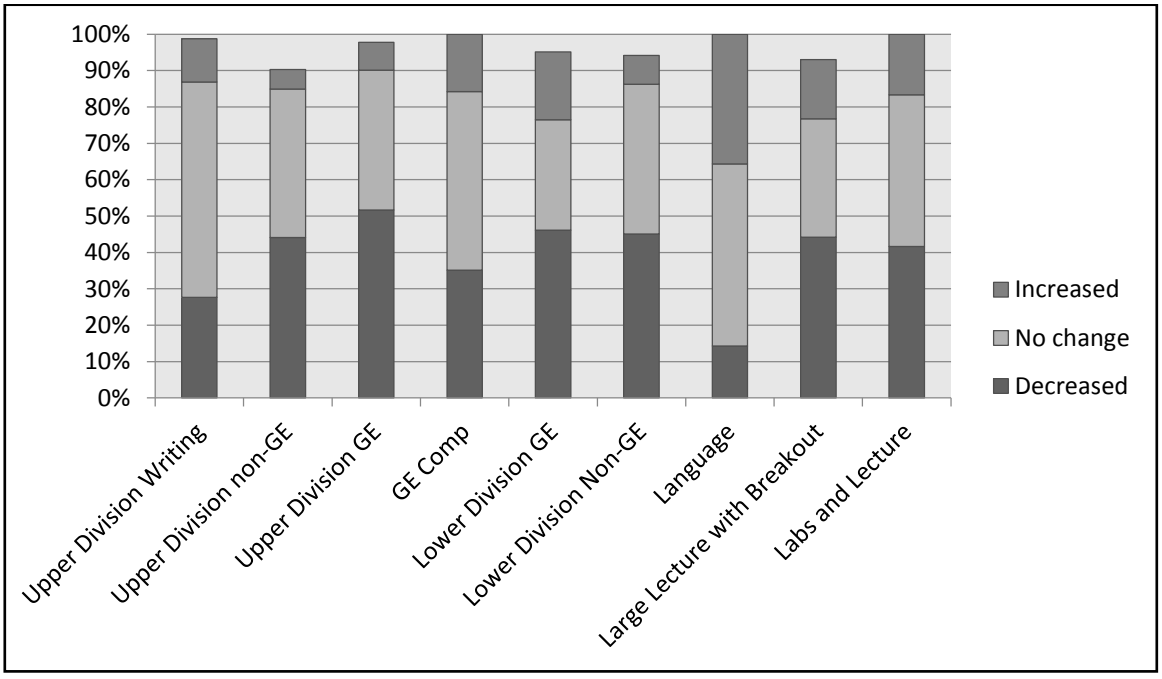
Twenty-six percent of the chairs' and directors' responses to the question "To what extent have increased class sizes influenced student learning in your department?" echoed faculty perceptions that larger classes have reduced feedback, interaction, and involvement, as the following comments indicate:

- "A lot. More than 100 students in the first programming course with limited teaching assistant support is like shooting yourself in the foot. Similarly pushing 80+ students to a sophomore class and expecting students to learn by themselves is not helping our students. . . . If we cannot provide a considerable amount of help we set them for failures (we also set ourselves for failure)."
- "Instructors typically keep the same number of office hours, so each student will get less of the instructor's time."
- "Faculty also do not receive additional assigned time. With significant workload increase, but no change in research requirements, faculty afforded less time to devote to pedagogical innovations to improve student learning."
- "Great negative impact and faculty now stay off campus as much as possible to avoid large numbers of students"
- "Less time for the skill based greatest impact is on time to provide instructional Support necessary for excellence in student work product. . . . There is only so much time."

Attendance and Preparedness

Large percentages of faculty reported a decline in attendance and even higher numbers reported a decrease in the preparedness of those attending classes.

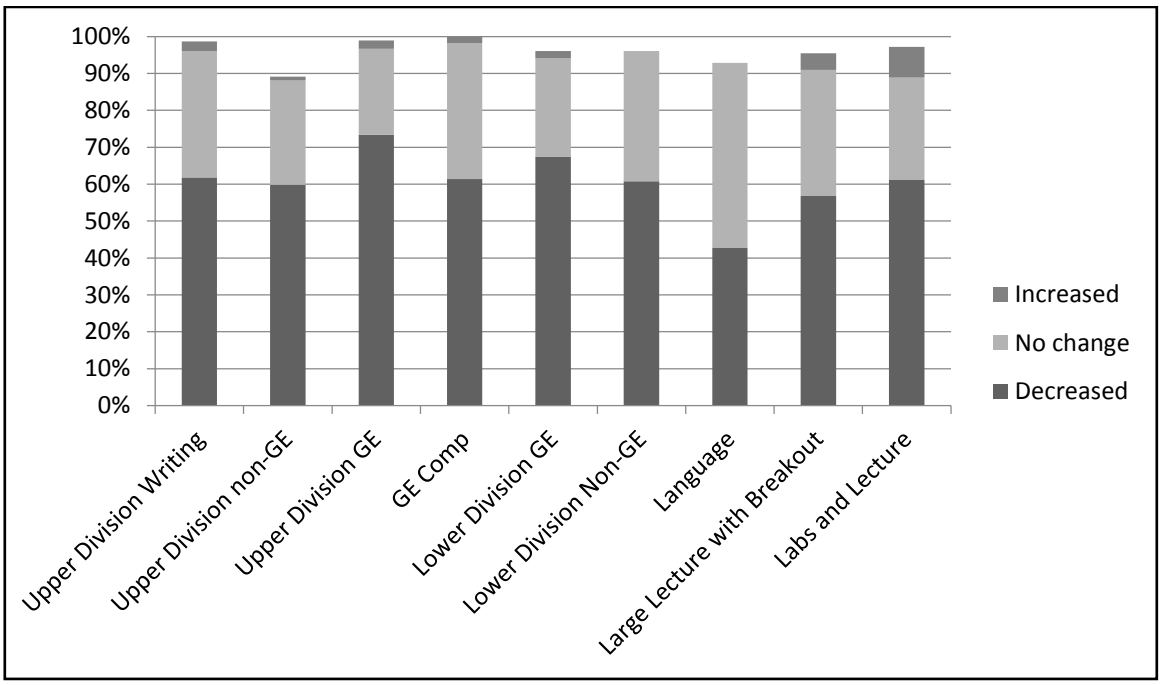
Figure 10: Attendance



*Where responses do not add up to 100%, the missing percent is faculty that responded "not applicable."

With the exception of language courses, more faculty reported a decrease rather than an increase in attendance. In GE courses between 35% and 50% reported declining attendance, with over 40% in large lectures with breakout sections or labs.

Figure 11: Student Preparedness



*Where responses do not add up to 100%, the missing percent is faculty that responded "not applicable."

Especially striking is the percentage of faculty reporting that students are coming to class unprepared. Over half of faculty in every type of class, with the exception of languages, reported a decline in student preparedness. Over 60% of those teaching GE classes reported that students' preparedness has decreased. This decline suggests that because of the large class sizes, students conclude that they are either not obligated to be prepared or/and their lack of preparedness is unlikely to be revealed.

Fifteen percent of faculty who gave open-ended comments mentioned the negative effect of larger classes on student attendance and preparedness. Table A7 in the Appendix provides more detail on the perceived impact of class size increase on student learning; it shows that 20% of faculty reported fewer students being engaged in class. The problem is particularly noticeable in General Education classes: 28% teaching upper-division GE classes mentioned declining engagement of students, as did 24% in lower-division GE classes. The increased class size appears to have made students conclude that they do not need to be ready to discuss material and perhaps even that their presence is not essential to their learning.

More troubling is that it has become more difficult for faculty to identify or help at-risk students. Nineteen percent of faculty raised this issue. It was particularly common among faculty teaching practicums (38%), laboratory-based classes (31%), GE composition courses such as RWS 100 and 200 (27%) and lower division courses that are not for GE (26%). (See Table A7 in the Appendix).

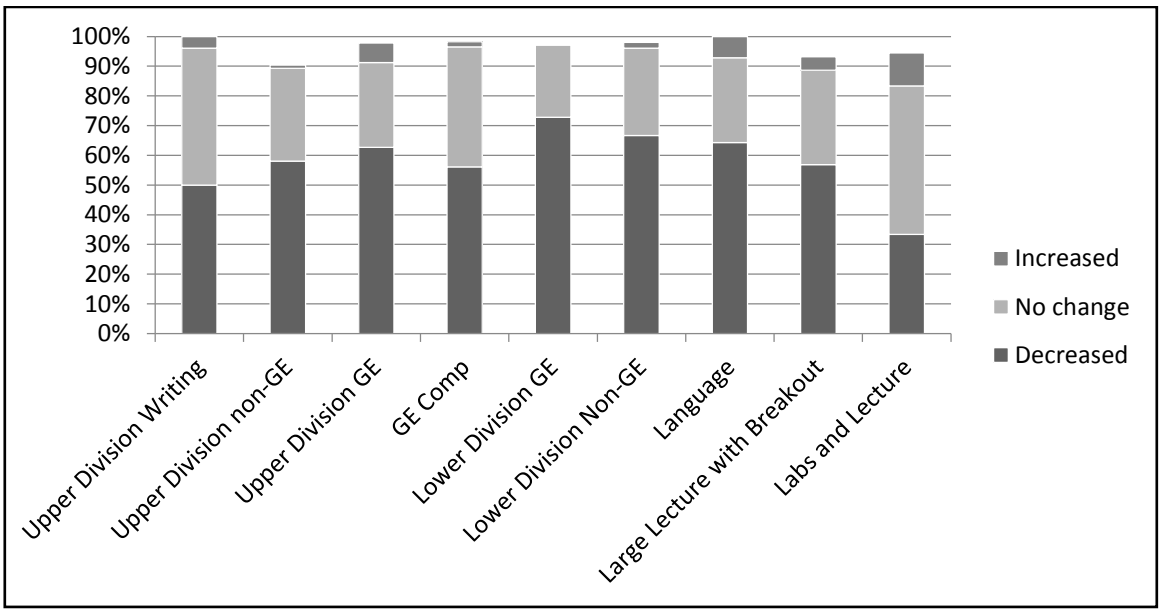
- "Only a small number are prepared and enter into discussions. The majority can kind of 'hide' in the larger group."

- "I had a number of students who took the W class when its size increased who failed to understand the nature of the research they were required to perform, failed to participate, failed to attend class, failed to turn in any assignments, and indeed failed the class."
- "Students who are either lazy, shy, unconfident, poorly prepared, or just overwhelmed can slip through the cracks more easily."
- "But larger classes allow struggling students to fade into the background There is less personal accountability for them—so it is easier for them to skip class—and they are less identifiable to me, which makes it more difficult for me to tell who needs my help."
- "It used to be that I would have one student who would fall through the cracks….This student would represent 1 in 30. I now have 7 students in 50 who aren't attending, are not reading, are not prepared, are not writing, are not helping their group, and are not learning or succeeding."
- "There are more students than before who hide in the crowd and perform poorly, particularly foreign and transfer students. I have little personal interaction with students and cannot assess at-risk students to the degree I used to."
- "I also now have students simply getting up in the middle of lecture and leaving class—something they never did when I taught the same course with 50 students."

Discussion and Engagement

When students do show up to class, their opportunities to participate and their willingness to do so have diminished. The majority of faculty for almost all class types reported a decrease in discussion and a decline in the percentage of students actually participating. Of course, the ability of faculty to maintain interactive classes in the face of increased class size may also influence attendance.

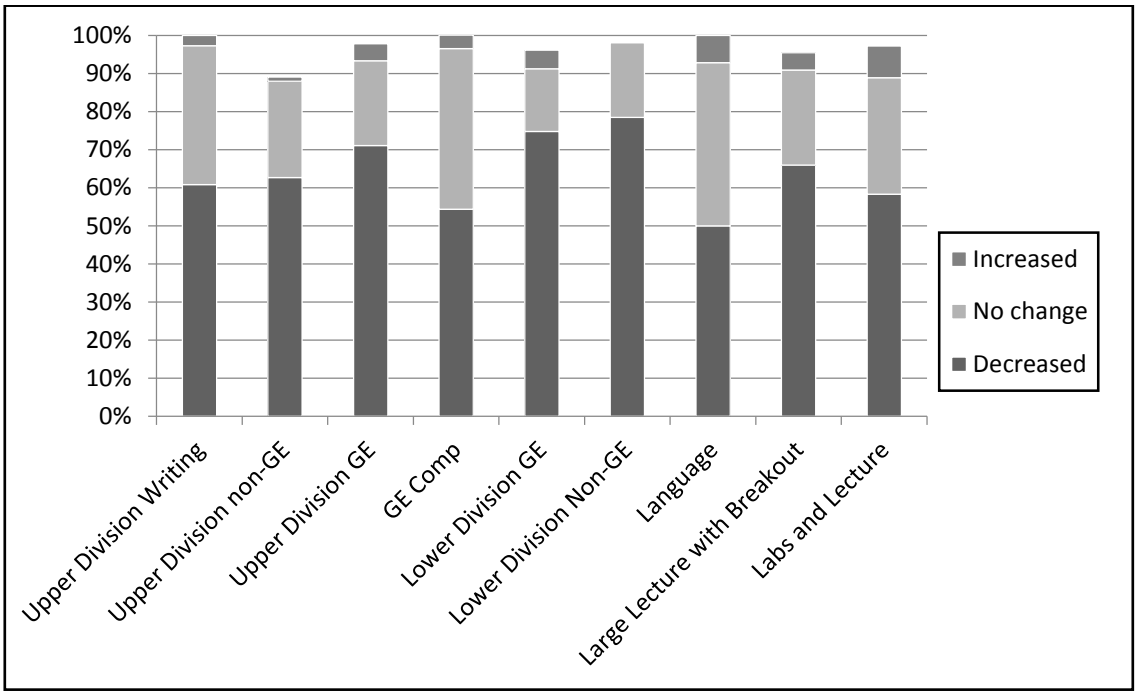
Figure 12: Time Spent in Discussion



*Where responses do not add up to 100%, the missing percent is faculty that responded "not applicable."

With the increase in class size, time spent in discussion has decreased, according to the majority of faculty, in every kind of classroom, except lecture and lab, where discussion may traditionally have been a less integral component of the course. In lower division GE classes over 70% of faculty reported a decrease.

Figure 13: Percentage of Students who Participate in Discussion



*Where responses do not add up to 100%, the missing percent is faculty that responded "not applicable."

Not only has the *amount of time* spent in discussion decreased, but the *percentage* of students involved in the discussion has also declined. The majority of faculty across *all* types of courses reported this decrease, with lower division course reaching nearly 80%.

Forty-three percent of faculty who gave open-ended comments mentioned larger classes hinder student discussion and engagement. As with the category of writing, instructors observed this decline carrying multiple pedagogical costs in such areas as communication skills, independent thinking, comprehension, effective argumentation, and critical analysis. They report particularly negative impacts on less confident and shyer students.

- "As class size increases, the alpha students in any given class will increase. The result is that these alpha students dominate class discussions to the exclusion of all other students. Even if these quieter students have good ideas, because they don't get the opportunity to express their ideas, they're not sure if their take on an issue is valid or acceptable. What I see happening over and over, is that these students end up adopting the vocal students' ideas."
- "Without interaction in class or in writing, students cannot learn to analyze materials for themselves. Lectures support content delivery, not critical thinking, writing or analysis."
- "Lower % of students engaged in class discussion means lower % of students improving communication skills."
- "The idea of making a circle with the desks with that many people becomes much more difficult. There is less of a 'community' in the class for students to engage in, and so they get less out of it."
- "Larger classes inevitably mean less contributions from students in class. There will always be a few active voices in any room, but for those students who are more hesitant or unsure about the value of their potential contribution, oversized classes keep those students from actively engaging in the subject matter—they become passive, rather than active, learners."
- "Students don't pay attention in larger classes; it's more difficult to generate discussion; larger writing groups often mean less accountability to group peers."
- "Lecture/discussion is essential for students to internalize the process of critical thinking ….And students learn through careful, meticulous critical reading and discussion ….When you reach 30 or 32 students in a class, the dynamic changes and student quickly fall into passive lecture mode."
- "With larger class sizes, I notice fewer students feel comfortable speaking, which leads to fewer ideas presented when trying to have a discussion to stimulate critical thinking. Also, many students seem to feel like they can 'hide' a bit more in these larger classes."
- "The number of students who are engaged in the class is definitely reduced. Students have fewer opportunities to ask questions and get clarifications on the spot in class. The result is that in the papers and exams they hand in often contain more misunderstandings or misapplications of theories and concepts than they used to when classes were smaller."

- "My impression is that a small cohort of students in 180 size classes get a lot out of it but that the large majority are largely checked out."
- "I find myself doing a bit more lecturing than facilitating discussion in these courses because of the number of students….As a result, I think that it is more difficult for them to learn how to think through concepts and how to develop an argument and to support it with evidence."
- "Intense discussion of complex works, e.g., Plato's Republic, is basically impossible when class size passes 50."
- "I have a much harder time gauging whether or not students are absorbing the material. The lack of class discussion I believe has severely inhibited learning for some of the students."
- "I also see that only perhaps 30 of the 144 students I am currently teaching….are willing to participate in discussions in such a large class….I feel that I 'lose' a much higher percentage of the class then I used to, because I can't learn nearly all their names and thus can't call on them by name, and they feel far away from the podium and disconnected."

Perspective of Chairs and Directors on Class Discussion and Engagement:

In their responses to the question "To what extent have increased class sizes influenced student learning in your department?" 17% of chairs and directors mentioned declines in class discussion and student engagement. Here are two such comments:

- "Reduced interest in classes, lower student evaluations. Strong negative pedagogical effect.
- "Discussion, which is critical to the discipline, has been hampered."

Insights from Chairs and Directors on Criteria for Class Size Increases

Responding to the question "What criteria has your department used to decide which classes should be increased?" most chairs and directors stated that deans, rather than academic departments and programs, make this determination (see table below). When the rational for increases in class size is made clear (and often it is not), classroom size and the administration's sense of student demand are as important as pedagogical or departmental concerns salient.

In response to an open-ended question about what criteria your department used to decide which classes should be increased, chairs responded as follows:

Table 7: Criteria for selecting classes to increase

	Percent of chairs giving this response
Ordered/pressured by dean's office	31.1%
Student demand	16.7%
Protect certain courses that required smaller size	15.4%
All classes increased	14.4%
Physical classroom size/Space availability	10.0%
Budget	10.0%
Based on needs of faculty	7.8%
Pressure to meet FTE Targets	6.7%
Other	6.7%
Increased lower-division courses	4.4%
Don't Know	4.4%
Increased GE courses	3.3%
None	2.2%

Comments from chairs and directors such as the following are common:

- "Pretty much no criteria is used. The class size is determined by the number of seats in the room. The administration does not discuss with faculty the class size. . . . There is really no interest in how the class size will impact the quality of education."
- "Our department didn't have a choice."
- "Whichever ones the dean's office thought there was demand for."
- "We don't have criteria; decisions to increase or course numbers are not really a department choice. It seems we are strongly encouraged to increase our numbers for specific courses by the dean's office. Their criteria for increasing course numbers are not entirely clear."
- "The college upped our enrollment without asking for our permission."
- "Pressure from the dean. No criteria was used other than what we were told was the budget necessity."
- "What we can physically manage without additional resourcing."

Concluding Remarks

We are deeply concerned about the increase in class sizes and the corresponding widespread faculty perception of deteriorating undergraduate teaching and learning at SDSU documented in this report. This deterioration may seriously undermine the quality of the undergraduate degrees awarded both present and future SDSU students. Although it is not our charge to provide specific policy recommendations, we offer these findings in hopes that they will stimulate further research and conversation leading ultimately to reductions in class sizes in key areas.

APPENDIX

Table A1: Courses Numbered 100-299

	2001		2013	
SIZE	***SECTIONS***	***STUDENTS***	***SECTIONS***	***STUDENTS***
500+			2	1,006
300-499			25	10,946
200-299	15	3,778	25	6,314
100-199	81	11,069	93	12,875
50-99	195	12,054	145	10,531
25-49	595	20,679	373	12,054
<25	1,006	20,450	246	4,251
SUM	1,892	68,030	909	57,977
	AVG SIZE	***PCT ENROLL***	***AVG SIZE***	***PCT ENROLL***
500+			503	1.74%
300-499			438	18.88%
200-299	252	5.55%	253	10.89%
100-199	137	16.27%	138	22.21%
50-99	62	17.72%	73	18.16%
25-49	35	30.40%	32	20.79%
<25	20	30.06%	17	7.33%
MEAN SECTION SIZE	36		64	
MEDIAN STUDENT EXPERIENCE	41		118	

This table includes both GE and non-GE courses. It shows that lower-division classes have been most affected by the increase in class size. The number of sections offered decreased by 52%, from 1,892 to 909, and the mean section size grew from 36 to 64. The section size increase understates the impact on students, however, as the median student experience rose from 41 in 2001 to 118 in 2013. Over 30% of all seats were in sections of 200 or more in 2013, while 5.5% were in 2001, and over 50% were in sections of 100 or more, while this had been only 22% in 2013.

Table A2: Courses Numbered 300-499

	2001		2013	
SIZE	***SECTIONS***	***STUDENTS***	***SECTIONS***	***STUDENTS***
300-499			7	2,806
200-299	8	2,126	14	3,179
100-199	39	5,239	86	11,547
50-99	217	13,501	263	17,419
25-49	550	19,918	305	11,187
<25	485	7,397	273	1,882
SUM	1,299	48,181	948	48,020

	AVG SIZE	***PCT ENROLL***	***AVG SIZE***	***PCT ENROLL***
300-499			401	5.84%
200-299	266	4.41%	227	6.62%
100-199	134	10.87%	134	24.05%
50-99	62	28.02%	66	36.27%
25-49	36	41.34%	37	23.30%
<25	15	15.35%	7	3.92%

MEAN SECTION SIZE	37	51
MEDIAN STUDENT EXPERIENCE	45	71

Unlike the 100-200 level classes, those at the 300-400 level did not see a notable decline in the total number of students enrolled. They did see a decline of more than 350 sections (>27%), however. As a consequence the mean section size rose from 37 to 51 and the median student was in a class of 71 instead of 45. In 2001, 15% of students were in classes of size 100 or more; by 2013, 36% were.

Table A3: Courses Numbered 500-599

	2001		2013	
SIZE	***SECTIONS***	***STUDENTS***	***SECTIONS***	***STUDENTS***
50-99	27	1,638	30	2,033
25-49	128	4,253	96	3,317
<25	241	3,111	173	2,369
SUM	396	9,002	299	7,719
	AVG SIZE	***PCT ENROLL***	***AVG SIZE***	***PCT ENROLL***
50-99	61	18.20%	68	26.34%
25-49	33	47.25%	35	42.97%
<25	13	34.56%	14	30.69%
MEAN SECTION SIZE	23		26	
MEDIAN STUDENT EXPERIENCE	29		35	

Classes at the 500 level are a crossover level between graduate and undergraduate, and which often includes “capstone courses” where undergraduates are meant to experience a seminar-style class of intense participation, writing, and individualized feedback. The number of these classes dropped by almost 100 (24.5%). The number of students fell as well, by 14.25%. The increases in the mean section size (23 to 26) and the median student experience (29 to 35) were more modest than was the case for courses numbered at the 100-400 levels.

Table A4: Lab Courses

	2001		*2013*	
	SECTIONS	***STUDENTS***	***SECTIONS***	***STUDENTS***
25-49	22	590	36	1,047
<25	73	1,319	118	2,229
SUM	95	1,909	154	3,276
	AVG SIZE	***PCT ENROLL***	***AVG SIZE***	***PCT ENROLL***
25-49	27	30.91%	29	31.96%
<25	18	69.09%	19	68.04%
MEAN SECTION SIZE	20		21	
MEDIAN STUDENT EXPERIENCE	23		23	

Lab courses are primarily 100 and 200 level (109/154 = 70.7%) or 300-400 level (38/154 = 24.7%). Lab courses exhibit a different pattern from most of the rest of the curriculum as both the number of students and the number of sections had larger increases. Students rose by 71.6% and the number of sections by 62%. Overall, there was a slight increase in the mean section size, from 20 to 21, and no increase in the median student experience.

Table A5: Writing Intensive Courses

	2001		*2013*	
	SECTIONS	***STUDENTS***	***SECTIONS***	***STUDENTS***
50-99	1	64		
25-49	12	332	102	2,998
<25	40	752	15	251
SUM	53	1,148	117	3,249
	AVG SIZE	***PCT ENROLL***	***AVG SIZE***	***PCT ENROLL***
50-99	64	5.57%		
25-49	28	28.92%	29	92.27%
<25	19	65.51%	17	7.73%
MEAN SECTION SIZE	22		28	
MEDIAN STUDENT EXPERIENCE	23		30	

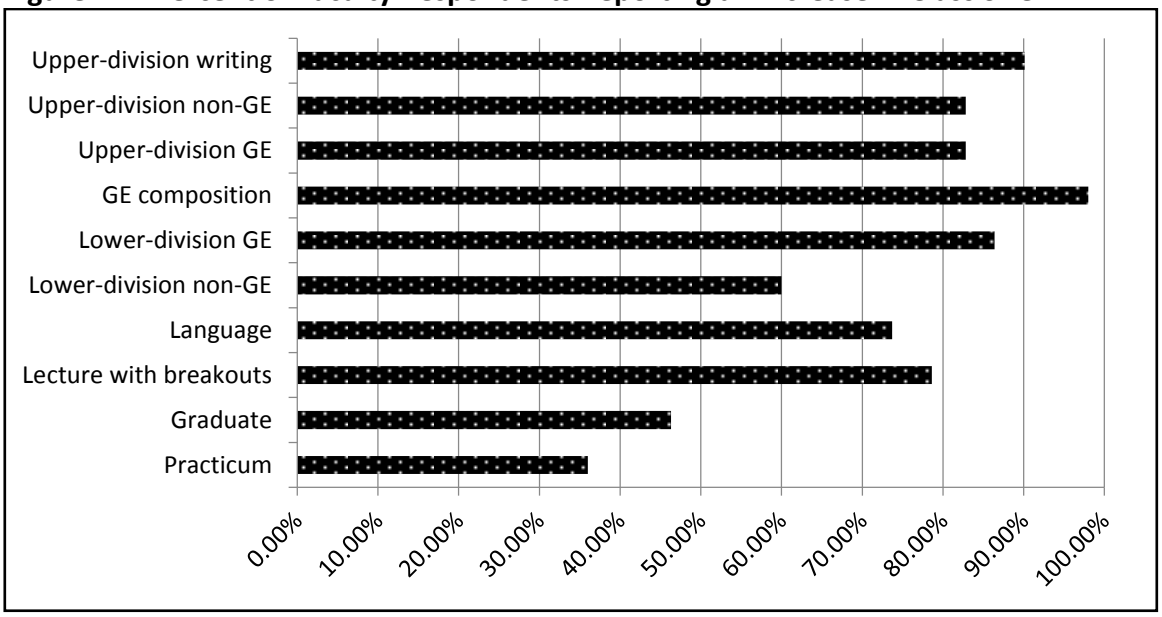
Writing intensive courses are upper division courses with the “W” designation. They are taught in a discipline and fulfill the upper division writing requirement. While the number of students rose by 183%, the number of sections increased by a smaller 120.8%. As a result both the mean section size and the median student experience saw increases of close to 30%.

Table A6: Summary of Changes by Course Number and Type

	100-299		***300-499***	
	Sections	***Students***	***Sections***	***Students***
2001	1,892	68,030	1,299	48,181
2013	909	57,977	948	48,020
Change	-51.96%	-14.78%	-27.02%	-0.33%
	Writing Intensive		***Lab***	
	Sections	***Students***	***Sections***	***Students***
2001	53	1,148	95	1,909
2013	117	3,249	154	3,276
Change	120.75%	183.01%	62.11%	71.61%
	500-599		***600-799***	
	Sections	***Students***	***Sections***	***Students***
2001	396	9,002	485	8,331
2013	299	7,719	411	8,873
Change	-24.49%	-14.25%	-15.26%	6.51%
	800-999		***All Levels Combined***	
	Sections	***Students***	***Sections***	***Students***
2001	88	1,852	4,308	138,453
2013	52	1,113	2,890	130,227
Change	-40.91%	-39.90%	-32.92%	-5.94%

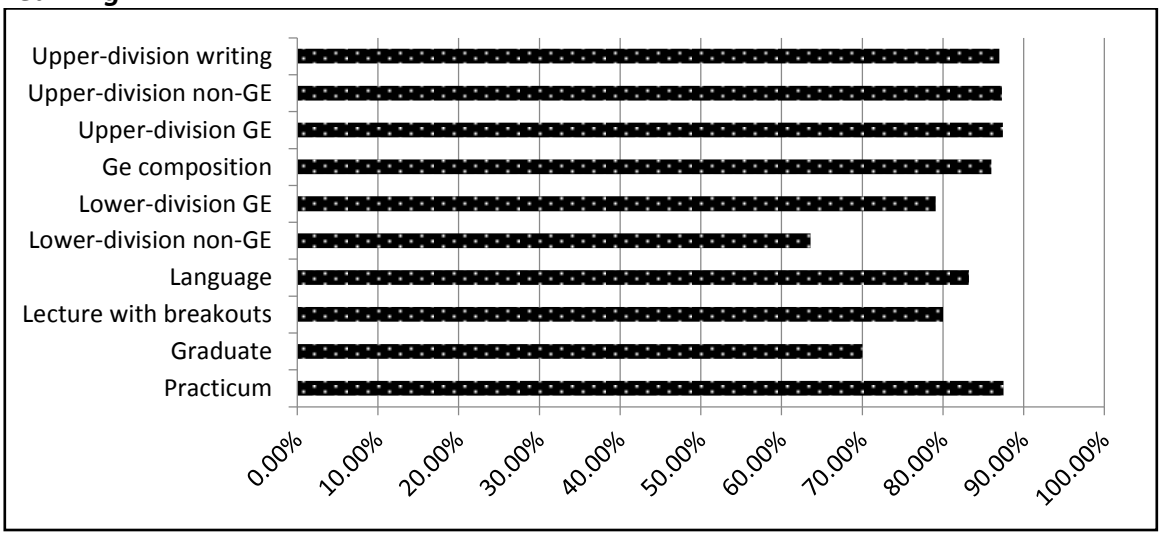
College of Arts and Letters

Figure A1: Percent of Faculty Respondents Reporting an Increase in Class Size



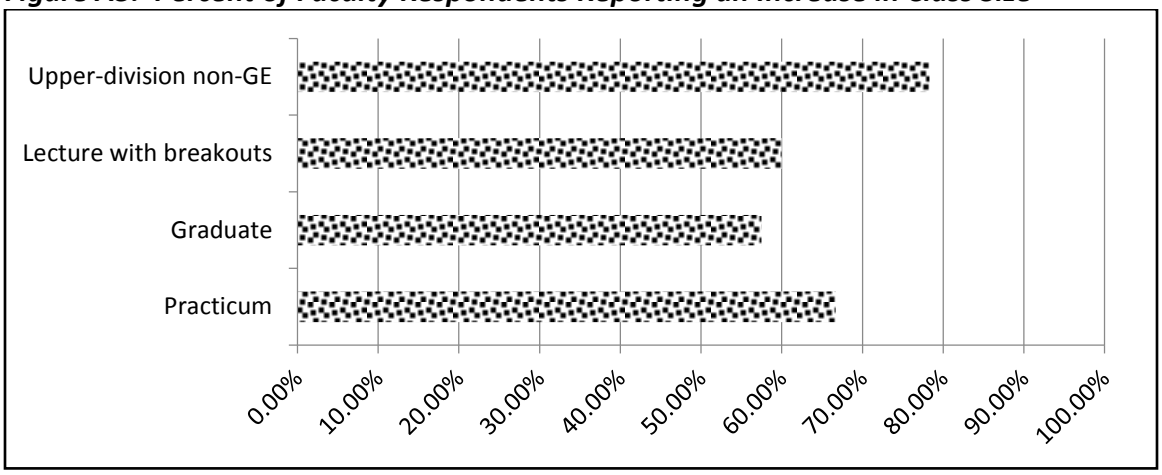
A majority of Arts and Letters faculty reported increases in class sizes. Particularly notable are writing courses and GE courses. A large majority of faculty reporting increased class size also indicated a negative impact on student learning.

Figure A2: Of Those Reporting an Increase in Class Size, Those with Negative Impact on Student Learning



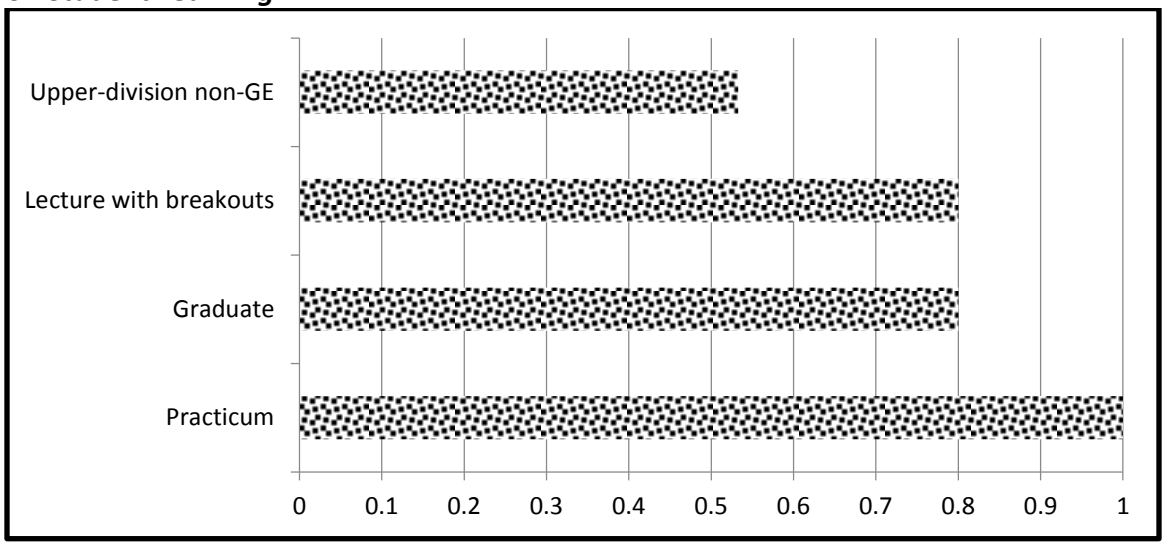
College of Business Administration

Figure A3: Percent of Faculty Respondents Reporting an Increase in Class Size



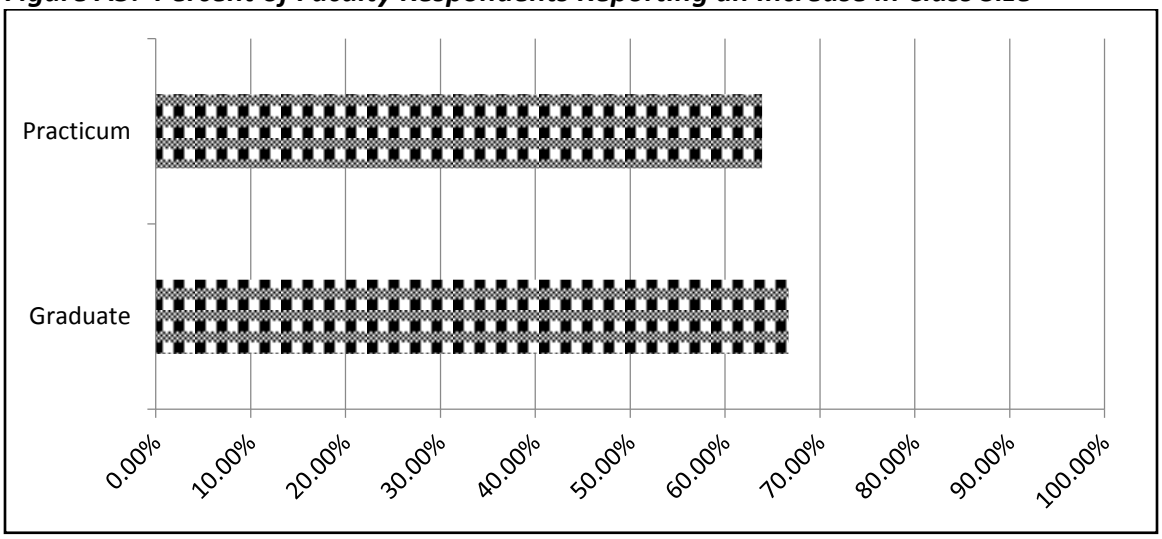
Well over one-half of all College of Business Administration respondents reported increases in class sizes and 55%-100% reported a negative impact on student learning.

Figure A4: Of Those Reporting an Increase in Class Size, Those with Negative Impact on Student Learning



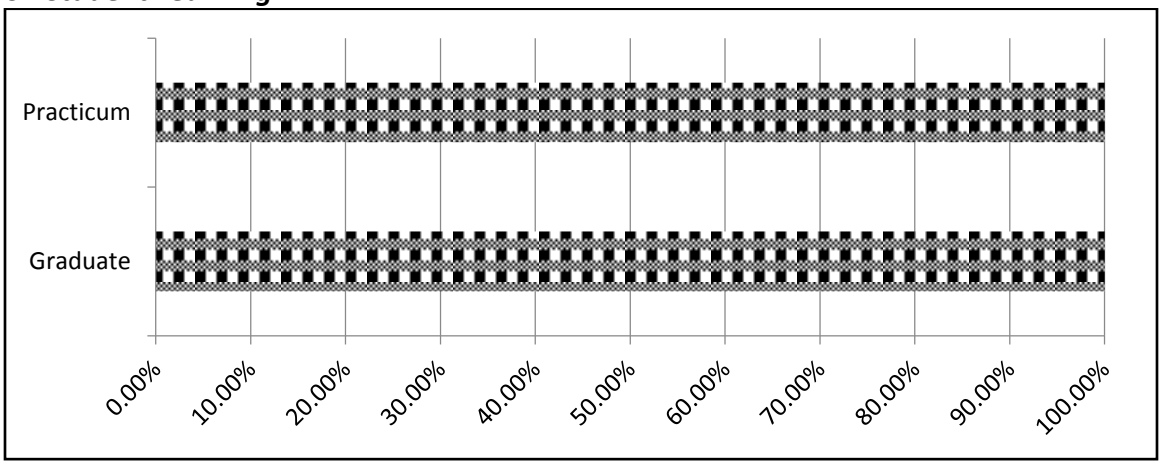
College of Education

Figure A5: Percent of Faculty Respondents Reporting an Increase in Class Size



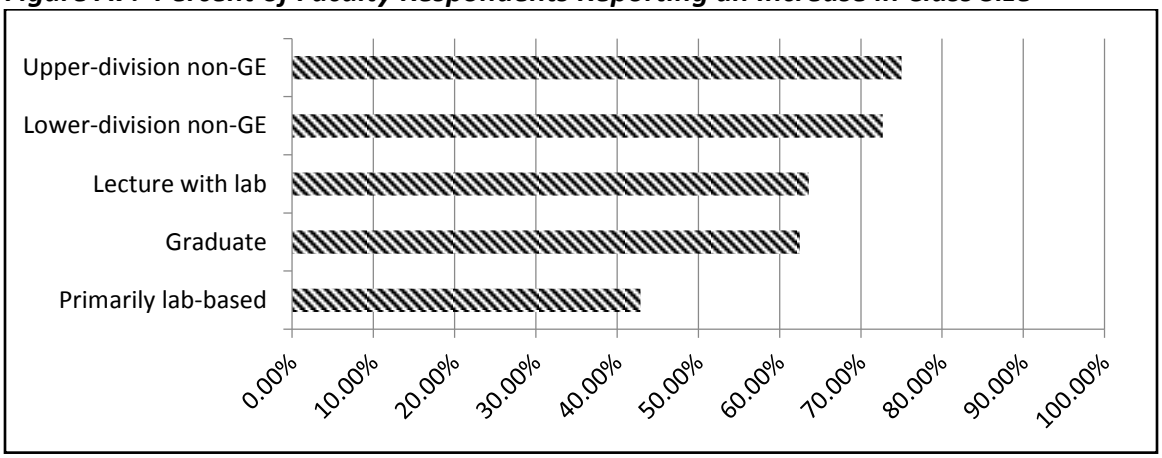
Over 60 percent of all respondents from the College of Education reported increases in class sizes, and 100% of those agreed that there was a negative impact on student learning.

Figure A6: Of Those Reporting an Increase in Class Size, Those with Negative Impact on Student Learning



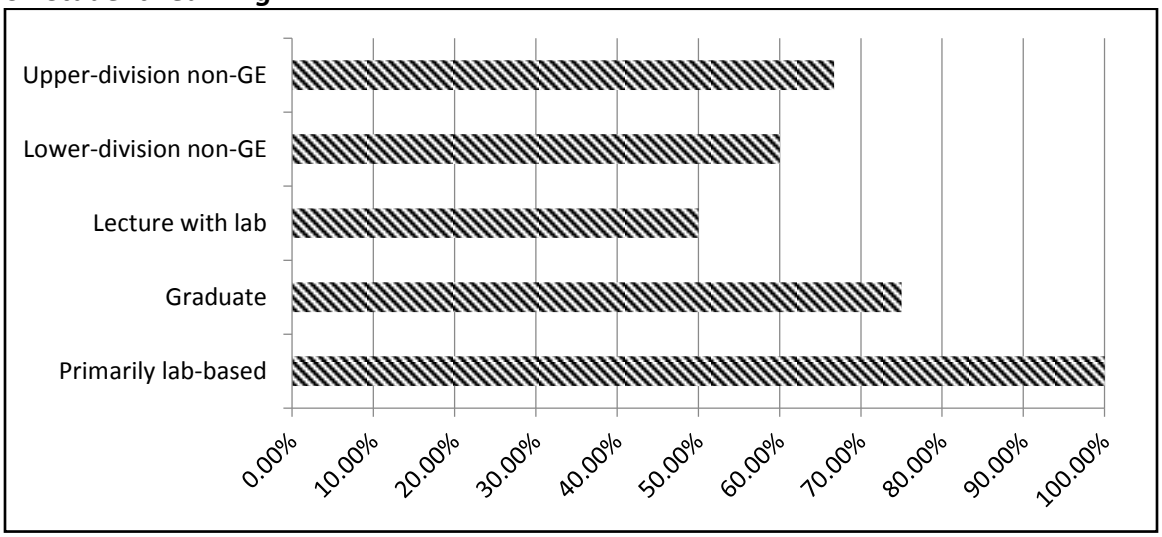
College of Engineering

Figure A7: Percent of Faculty Respondents Reporting an Increase in Class Size



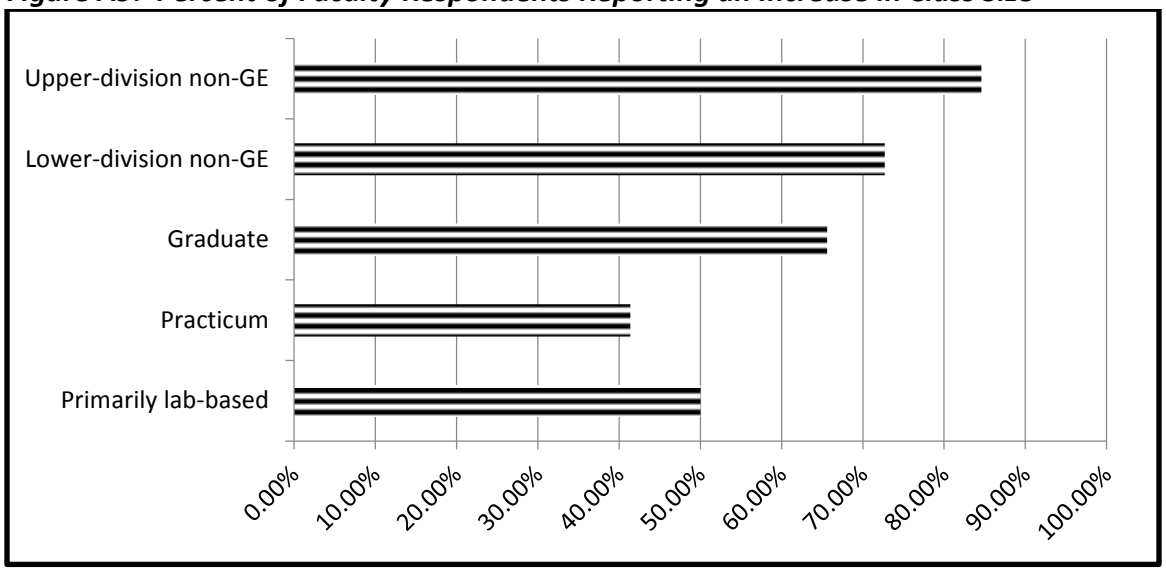
Except for lab-based classes, over 60% of all College of Engineering respondents reported an increase in class sizes. Of those reporting increases, 50%-100% noted a negative impact on student learning.

Figure A8: Of Those Reporting an Increase in Class Size, Those with Negative Impact on Student Learning



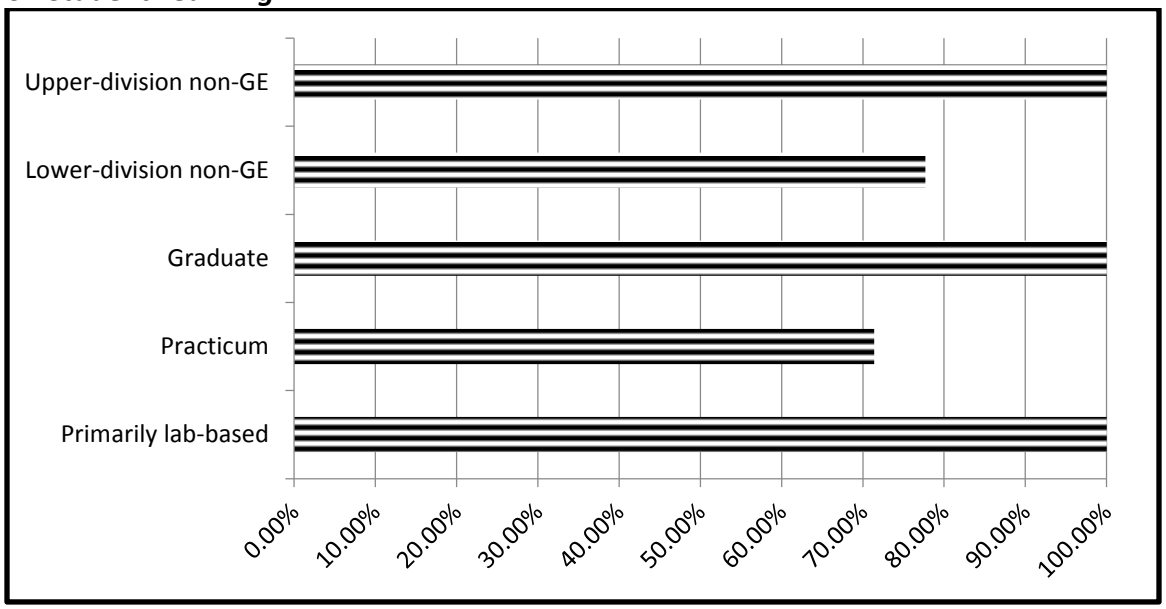
College of Health and Human Services

Figure A9: Percent of Faculty Respondents Reporting an Increase in Class Size



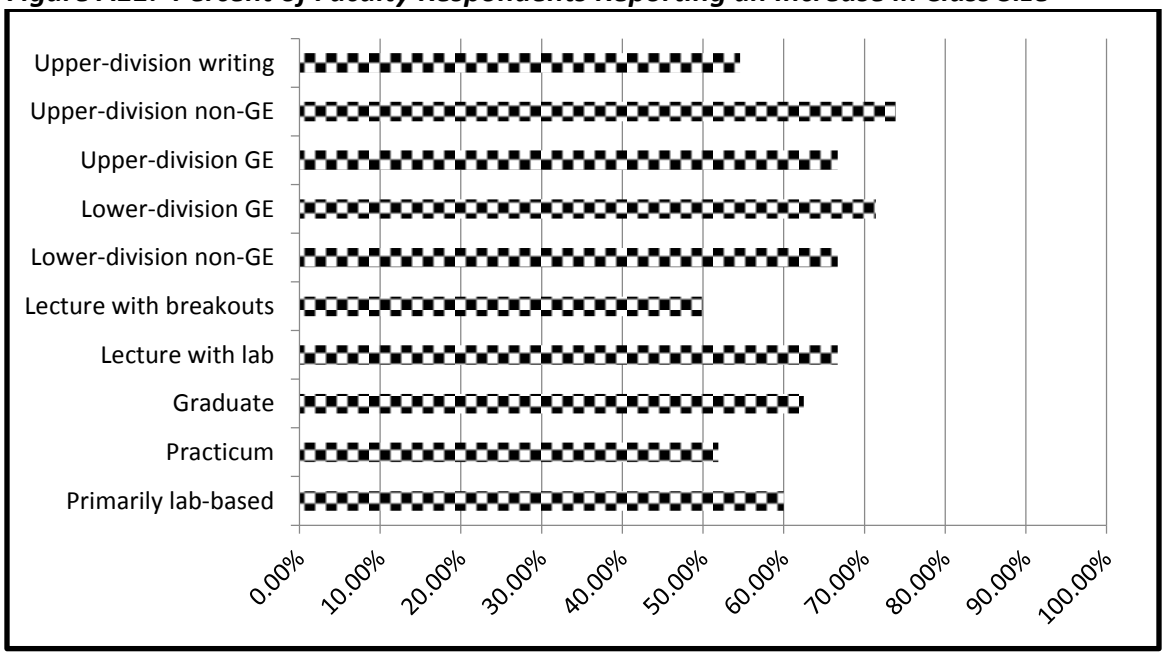
A majority of College of Health and Human Services faculty respondents reported increases in class sizes and 70%-100% of those faculty noted a negative impact on student learning.

Figure A10: Of Those Reporting an Increase in Class Size, Those with Negative Impact on Student Learning



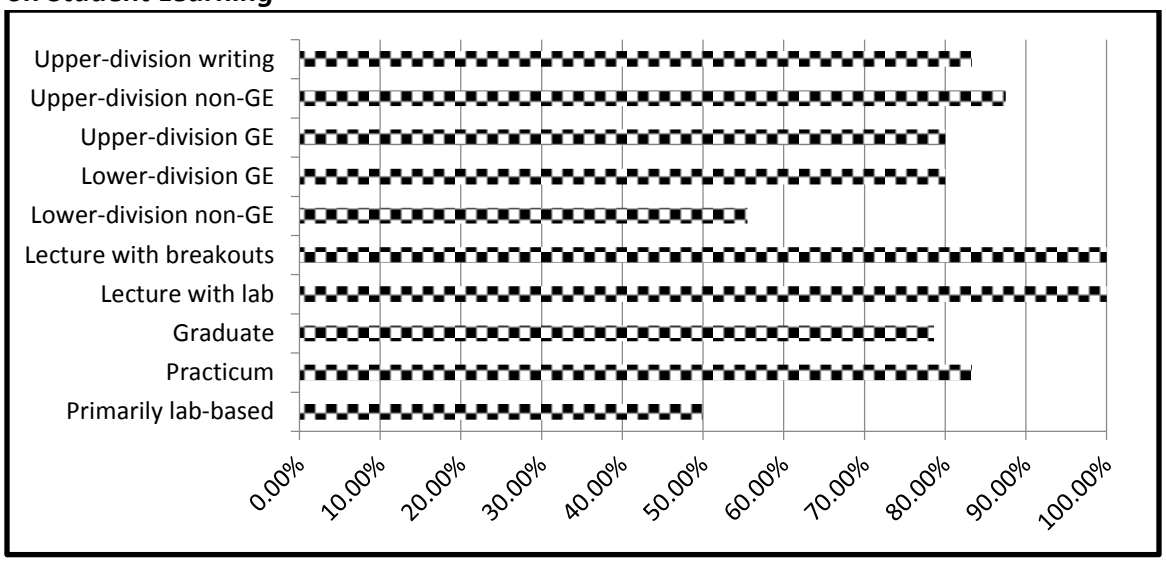
College of Professional Studies and Fine Arts

Figure A11: Percent of Faculty Respondents Reporting an Increase in Class Size



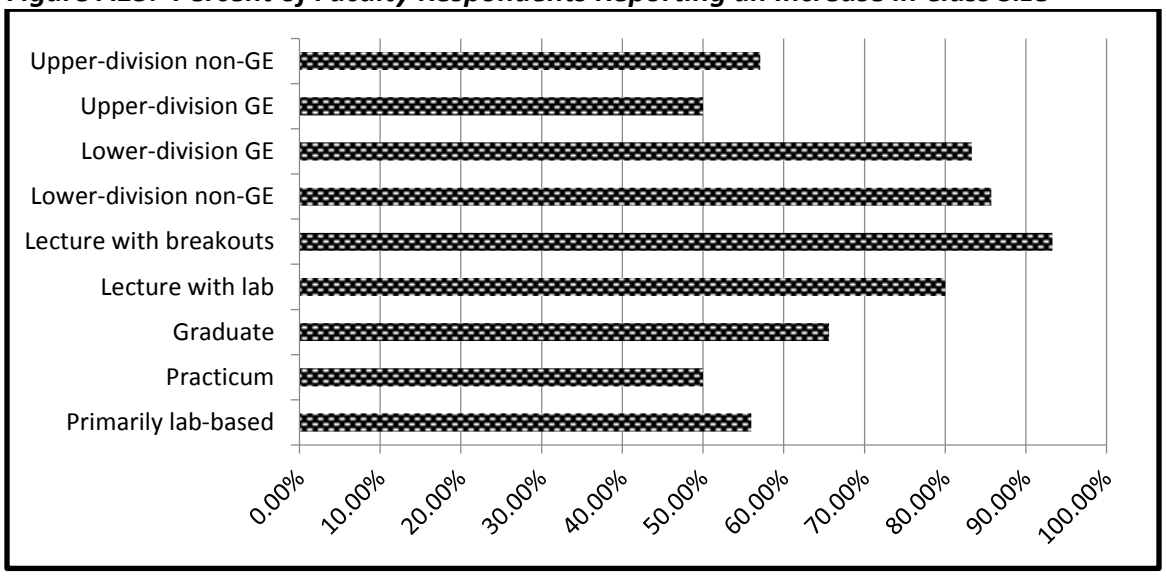
Well over a majority of respondents from the College of Professional Studies and Fine Arts reported increases in class size, and for most types of class, 80% or more reported a negative impact on student learning.

Figure A12: Of Those Reporting an Increase in Class Size, Those with Negative Impact on Student Learning



College of Sciences

Figure A13: Percent of Faculty Respondents Reporting an Increase in Class Size



Fifty percent or more of all College of Sciences faculty respondents reported increases in class sizes for all types of classes. With the exception of lectures with labs, an overwhelming majority of instructors of all types of classes reported a negative impact on student learning.

Figure A14: Of Those Reporting an Increase in Class Size, Those with Negative Impacts on Student Learning

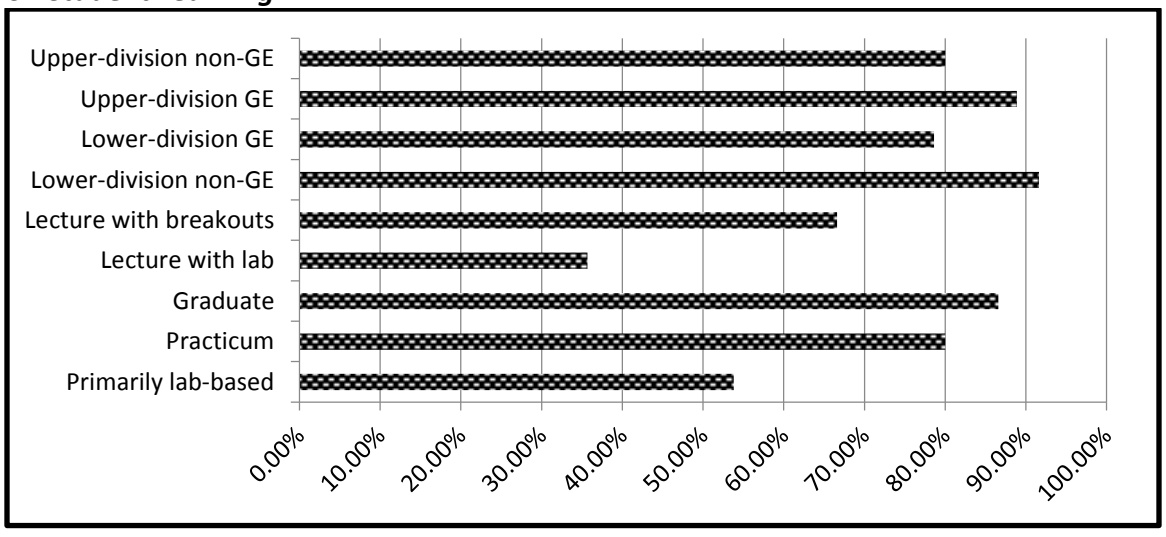


Table A7: Summary of Qualitative Comments about Impact of Increased Class Size on Student Learning

	Writing (n=65)	Upper Division not GE (n=73)	Upper Division GE (n=80)	GE Comp (N=48)	Lower Division GE (N=142)	Lower Division not GE (N=34)	Language (N=7)	Breakout Sessions (n=31)	Unergrad Lecture with Lab (N=22)	Lab (n=29)	Graduate n=110)	Studio (N=4)	Practicum (n=56)	Other (n=13)	Percent of all faculty responses mentioning this (n=611)	Total number of faculty making this comment (N=714)
Decreased writing ability	29%	34%	36%	29%	23%	21%	14%	26%	0%	10%	6%	0%	9%	8%	25%	152
Decreased effectiveness of class discussion	28%	25%	20%	21%	17%	26%	0%	23%	5%	0%	20%	0%	9%	23%	22%	133
Decreased student engagement	22%	18%	28%	15%	15%	24%	0%	16%	23%	7%	14%	0%	9%	23%	20%	121
Students who require support fall behind	14%	11%	15%	27%	8%	26%	0%	3%	14%	31%	15%	0%	38%	23%	19%	116
Decreased mastery of content	15%	11%	16%	15%	8%	26%	14%	16%	27%	34%	14%	25%	20%	31%	18%	111
Decreased critical thinking skills	25%	19%	23%	21%	13%	24%	0%	16%	5%	7%	7%	0%	9%	8%	17%	106
Decreased oral communication skills	5%	16%	13%	10%	6%	0%	29%	10%	5%	3%	5%	0%	4%	8%	9%	54
Decreased ability to conduct research	14%	10%	15%	8%	4%	3%	0%	13%	5%	3%	2%	25%	0%	0%	8%	48

Table A8: Summary of Qualitative Responses about Changes Made to Assignments or Assessment Tools to Accommodate Larger Class Sizes

	Writing (n=57)	Upper division, not GE (n=72)	Upper division GE(n=72)	GE Comp (n=49)	Lower division GE (n=71)	Lower division, not GE (n=29)	Language (n=10)	Breakout Sessions (n=26)	Undergrad lecture with labs (n=20)	Lab (n=28)	Graduate (n=88)	Studio (n=4)	Practicum (n=58)	Other course types (n=12)	As a percentage of all faculty responses (596)	Total comments
Fewer assignments	51%	38%	42%	54%	39%	31%	30%	29%	35%	29%	32%	25%	27%	50%	38%	226
Standardization of assignments and assessment	26%	33%	25%	18%	42%	31%	20%	50%	55%	11%	14%	0%	9%	17%	26%	153
Shorter assignments	34%	21%	46%	18%	27%	24%	0%	19%	10%	4%	33%	35%	5%	16%	24%	145
Less feedback	12%	11%	11%	18%	1%	7%	0%	4%	5%	14%	8%	50%	16%	8%	10%	60
Decrease in content covered	14%	7%	14%	6%	7%	10%	20%	4%	15%	11%	7%	25%	5%	17%	9%	55
More group work	9%	3%	3%	8%	3%	0%	20%	0%	5%	14%	14%	0%	7%	17%	8%	40
Less one-on-one, supervision	14%	3%	1%	12%	3%	0%	0%	0%	5%	7%	1%	0%	16%	0%	5%	32
Less classroom discussion	2%	6%	4%	2%	10%	7%	20%	4%	0%	0%	3%	0%	5%	0%	5%	27
Less reading	5%	4%	10%	4%	1%	0%	10%	0%	0%	0%	2%	0%	2%	0%	3%	20
Other	7%	8%	10%	12%	13%	17%	0%	8%	0%	21%	6%	0%	19%	8%	10%	62

Table A9: Summary of Faculty Qualitative Comments about Changes to the Feedback They Provide

	Writing (n=59)	Upper division not GE (n=31)	Upper division GE (n=59)	GE Comp (n=45)	Lower division GE (n=98)	Lower division not GE (n=31)	Language (n=10)	Breakout sessions (n=27)	Undergrad lecture with lab (n=21)	Lab (n=28)	Graduate (n=105)	Studio (n=4)	Practicum (n=58)	Other (n=8)	Percent of all (n=626)	Total faculty making this claim
Percent saying they have reduced feedback	76%	67%	66%	83%	71%	65%	57%	63%	58%	79%	89%	83%	51%	53%	72%	552
Less feedback, fewer comments	55%	42%	59%	60%	40%	42%	60%	63%	33%	14%	20%	0%	5%	76%	44%	243
Less specific feedback	47%	13%	24%	42%	15%	13%	0%	26%	29%	4%	18%	0%	3%	13%	23%	129
Reduce or eliminated revisions	20%	13%	20%	9%	8%	13%	10%	11%	10%	0%	18%	0%	7%	0%	13%	72
Less one-on-one time to give feedback	17%	6%	8%	13%	5%	6%	0%	4%	0%	0%	1%	0%	2%	13%	7%	37
Limit number of assignments requiring feedback	5%	10%	7%	0%	8%	10%	0%	4%	14%	0%	4%	0%	2%	25%	6%	34
Use more online tools	7%	10%	3%	4%	5%	10%	20%	4%	10%	4%	4%	25%	3%	0%	6%	33

SDSU University Senate Class Size Task Force, Final Report (with modified budget estimates)
January 15, 2015

Task Force Members:
Doreen Mattingly, Women's Studies, Task Force Chair
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David Engstrom, Social Work
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INTRODUCTION

The general charge for this Task Force was to examine the potential policy implications of the Class Size report created in Spring 2014. . The Class Size report noted an across-the-board increase in class sizes between 2001 and 2013, with significant impacts on student learning. The Task Force considered whether the data presented in the Report suggested the need for some form of intervention.

The Task Force met weekly during the Fall semester, 2014. We agreed that our mission was not to consider across-the-board changes in class sizes, but rather to recommend targeted interventions that had the potential to make significant improvement in student learning. In our deliberations, we consulted research about class size and student learning and spoke with campus experts, including Janet Bowers (Professor of Math Education), Cathie Atkins, (Associate Dean, College of Sciences), and Jane Abbott (Director of Compact Scholars). Our recommendations are guided by three principles: *equity*, *impact*, and *assessment*. In terms of *equity*, we sought interventions that were evenly distributed among students (not departments or colleges). In terms of *impact*, we endeavored to recommend changes with maximum potential to influence student learning and success, so that any additional resources required might be used efficiently. Finally, all of our recommendations are designed to be rigorously *assessed*.

With these guidelines in mind, we narrowed our focus to two types of possible interventions: 1) reduction in the size of classes at the very beginning of a student's education, where foundations of learning are established; and 2) reduction in the size of classes at the very end of a student's education, where specific skills are mastered. While we agreed that small classes are important in both areas, we opted to prioritize the first because of the vital role of basic writing and quantitative skills in student persistence and overall learning. In this respect, our recommendations support the priorities of Academic Affairs and fit squarely into the list of "Opportunities for Improving Student Retention, Graduation, and Achievement" identified in the recent report from the Academic Planning and Policy (AP&P) Committee and the Undergraduate Council. Our recommendations also help the University to achieve a key goal in the SDSU strategic plan:

Student Success Goal: San Diego State University will continue to focus on Student Success by emphasizing high-impact practices that produce transformational educational experiences and by fostering an institutional culture that recognizes and rewards student achievement.

The Task Force recommendations therefore focus on two areas of the General Education Curriculum: Composition and Quantitative Reasoning. The basic recommendations are summarized below; the following pages include more detailed information, including the rationale and plans for assessment. Both recommendations have been discussed with appropriate deans (Paul Wong, Dean of the College of Arts and Letters, and Stanley Malloy, Dean of the College of Sciences) and with Academic Affairs; all have endorsed the recommendations in principle.

Summary of Task Force Recommendations

1. Reduce the size of classes fulfilling the Composition and Intermediate Composition and Critical Thinking General Education Foundations requirements (I.2 and I.3) from 30 to 18.
2. Reduce the size of recitation sections to a maximum of 30 and increase the contact time from one to two hours in lower-division mathematics and statistics courses for STEM majors.

We see the specific changes presented here as but the first steps in an ongoing process to ensure that decisions about class sizes will improve student learning. The end of the report contains our suggestions for future areas to be considered, including class reduction within capstone courses for each major.

DISCUSSION

Recommendation1:
We recommend that enrollment in first-year composition courses—which satisfy GE Communication and Critical Thinking 2 (Composition) and 3 (Intermediate Composition and Critical Thinking)—be decreased from 30 to 18.

If there is insufficient funding in first year to implement this recommendation, we suggest reducing all classes to 24, with provision of sections of 18 students for targeted groups of high-risk students (e.g., EOP, Compact Scholars, commuter students).(A complete list of these courses can be found in Appendix A.) Alternate methods of phasing in the changes may be determined to be more appropriate, although urge that the proposed class limit be realized when additional funding is secured.

Decreasing the size of GE writing classes would allow instructors to significantly enhance writing instruction through the following steps:

- Increase the number of both small and major writing assignments
- Provide more opportunities for editing and revising writing assignments
- Generate more feedback on writing assignments

- Return graded work more promptly, thus enabling students to apply suggestions for improvement to future assignments more effectively
- Schedule more conferencing appointments with students outside of class
- Maximize student participation in class discussions. A larger percentage of students will contribute in a smaller course
- Participate in robust assessment leading to meaningful "closing the loop" steps

Cost:
The estimated annual cost (based on 2014-15 data) of capping all classes at 18 is $1,197,192. This will pay for instructors to teach 179 additional sections. It is estimated that all but 15 of these sections will be taught by lecturers; most departments already employ all available TAs. (A table providing a detailed breakdown by class and semester can be found in Appendix B.)

The estimated annual cost of capping all classes at 24 is $374,796, which will pay for 57 additional sections.

Rationale:
For the following reasons, this reduction will be an important step in improving student success across the University:

- The professional standard for college writing courses dictates that "No more than 20 students should be permitted in any writing class. Ideally, classes should be limited to 15."[1]
- In studies assessing the impact of class size on student learning, 20 students is a critical threshold, beyond which student learning decreases. These findings are reflected in rankings of universities, which include measures of the number of classes under 20.
- Improving basic writing and critical thinking skills will decrease time to degree by strengthening student skills that will enhance their success in later classes.
- As the work of George Kuh and others demonstrates, writing-intensive classes are a high-impact practice that has been widely tested and shown to be beneficial for college students from many backgrounds.[2]
- These two areas of General Education (Composition and Intermediate Composition and Critical Thinking) affect the vast majority of San Diego State students; thus the intervention will be broadly distributed.

[1] "Statement of Principles and Standards for the Postsecondary Teaching of Writing," Conference on College Composition and Communication" (http://www.sandhills.edu/academic-departments/english/teaching/cccc-writing.html).

[2] Horning, Alice. "The Definitive Article on Class Size." *Writing Program Administration* 31.1-2 (2007): 11-34 (http://wpacouncil.org/archives/31n1-2/31n1-2horning.pdf).

Response to Faculty Survey

This recommendation responds to the 2013 survey of faculty about class size in the following ways:

- The greatest increases in class size occurred at the 100 and 200 level. Between 2001 and 2013, the number of lower-division courses smaller than 25 decreased from 1006 to 246.
- 25% of all faculty completing the survey and 35% of those teaching upper-division classes volunteered the insight (when asked about impact of class size increases on student learning in general) that student writing ability declined.
- Across the board, faculty reported that writing assignments have become shorter and less frequent as class size has increased. In particular, 86% of those teaching upper-division writing courses and 65% of those teaching upper-division courses (GE and non-GE) reported a decrease in the frequency and/or length of writing assignments. The reduction in opportunities to build writing skills in other classes increases the importance of first-year composition courses.
- 72% of all faculty completing the survey reported that they have reduced the feedback they give students. Smaller first-year writing classes will provide an opportunity for instructors to give students much-needed feedback.

Assessment

In 2012-13, the College of Arts and Letters created, tested, and finalized a rubric for assessing the four primary Communication and Critical Thinking goals essential to the Composition and Intermediate Composition and Critical Thinking courses offered by Africana Studies, American Indian Studies, Chicana and Chicano Studies, Linguistics, Philosophy, and Rhetoric and Writing Studies. The goals and the complete rubric are included in Appendix C of this report. In Spring 2014, student achievement in Composition and Intermediate Composition and Critical Thinking courses for 2013-14 within CAL was assessed using the rubric developed the previous year. The assessment included independent scoring of 224 randomly selected papers by two different reviewers.

Communication & Critical Thinking – Assessment scores

	100 level				200 level			
	Goal 1	Goal 2	Goal 3	Goal 4	Goal 1	Goal 2	Goal 3	Goal 4
Below	0	0	0	0	0	3%	0	0
Beginning	1%	3%	4%	5%	1%	2%	3%	6%
Developing	20%	33%	26%	28%	23%	25%	25%	28%
Proficient	55%	46%	48%	50%	47%	45%	40%	46%
Advanced	24%	18%	22%	17%	29%	25%	32%	20%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%

All involved departments are committed to using the same rubric and methodology to annually assess the changes in learning outcomes in smaller classes.

Targets for Improved Student Learning in Composition and Intermediate and Critical Thinking Courses:

- Intermediate Composition and Critical Thinking courses: In 2013-14, students exhibited a level of achievement in Intermediate Composition and Critical Thinking courses that too closely resembles student performance in the Composition courses that precede them in the curriculum. Thus, the target is to have at least 50% of Intermediate Composition and Critical Thinking students in the category of "advanced" and 40% in the category of "proficient" over the four goals, with no more than 10% "developing" or below.

Composition courses: The goal is to have at least 40% "advanced" and 40% "proficient" over the four goals in Composition courses, with no more than 20% at "developing" or lower. These levels of achievement, we believe, will help us reach the ambitious benchmarks we have set for student learning in Intermediate Composition and Critical Thinking courses.

Recommendation 2:

We recommend changes to the size and structure of teaching-assistant-led sections in selected Mathematics courses that satisfy the GE Foundations Quantitative Reasoning requirement.

To improve student learning in these courses, we propose an integrated set of changes that includes a new format for breakout sections and a reduction in their size. Lecture size will range between 90 and 150, roughly what it is now.

- Breakout sections will range from 20 to 30 students, compared to the current size of 40.
- Each breakout section will meet two hours per week, but will be classified C7 so that it counts as one unit.
- Breakout sections will employ problem-based active learning.
- Teaching assistants will be trained in active-learning pedagogy, and thoroughly supported and mentored during the semester.
- Teaching assistants will be responsible for two sections. Each teaching assistant will be responsible for a maximum of 50-80 students, compared to the current maximum of 160-240.
- Teaching assistants will also work for four hours per week in the Math Learning Center, which will meet the majority of its staffing needs.

The proposed changes would be made in a series of phases. They are being piloted in Precalculus (Math 105 and Math 141) in Spring 2015, and *Phase 1* of the changes will be the complete implementation for Precalculus in Fall 2015. *Phase 2* will address the freshman calculus sequence Math 150, Math 151. These classes are the top priority because they have high DFW rates and are prerequisites for advanced courses in most Sciences and Engineering departments. *Phase 3* will address advanced Math and Statistics service courses: Math 252, Math 245, Math 254, and Statistics 250. The results of the first and second phase will be evaluated to determine the most cost-effective way to include breakout sessions with active learning in these classes. *Phase 4* will develop strategies for service courses addressed to a broader student population: Statistics 119, Math 118, and Math 120. (See Appendix A for course titles.)

For maximum impact, these changes to class size and structure will be supported by several other ongoing and proposed innovations:

- In Spring 2015, the Mathematics and Statistics Department will bring experts in pedagogical innovation and 0TA training to campus to help redesign the calculus sequence and improve placement testing.
- Coordination of the calculus sequence will be significantly improved. This includes coordination of the sequence as a continuum as well as coordination of a particular course over time and diverse instructors, teaching assistants, and tutors.
- A Math Learning Center is being formed, whose director will be a member of the Mathematics and Statistics Department and will work closely with coordinators of lower division Math courses.
- Tutors at the Math Learning Center will receive similar training and guidance as the teaching assistants.
- Additional resources will be allocated to ensure coordination of the Calculus curriculum and training of teaching assistants and tutors.

Cost

The additional cost for Teaching Assistant for the *Phase 1* is $97,695, the cost for the *Phase 2* is an additional $191,633, and the cost for the *Phase 3* is an additional $139,028. The total increased cost for the three phases is $428,355. Because of the time lag before the implementation of the *Phase 4*, the data are not included in this proposal. (A detailed breakdown is in Appendix D.)

Rationale

Student persistence in the STEM disciplines is a national problem. The Higher Educational Research Institution at UCLA found that it is not uncommon for 40-60% of students initially intending to major in a STEM discipline to switch to a non-STEM major.[3] Research shows that a primary reason students leave STEM fields is poor instructional experiences in first-year Mathematics courses. This is particularly true for under-represented populations. Targeted changes to first-year Mathematics courses have the potential to dramatically impact the number of students persisting in STEM fields.

Redesigning instruction in first-year Mathematics courses has the potential to significantly improve SDSU's 4-year and 6-year graduation rates. Among students entering as freshman in 2008, 29.5% graduated in four years and 66.6% graduated in six years. The very high DFW rates in Calculus courses and the subsequent courses that build on them contribute to these low numbers. In Fall 2013, for example, 27% of students in Math 150 and 42% of students in Math 151 did not pass (DFW). Courses requiring Math 151 also have high DFW rates, including EE 210 (41% in Fall 2013) and AE 210 (40% in Fall 2013).[4] From informal conversations with instructors teaching courses that require knowledge of Calculus, it seems that the lack of comprehension of the fundamentals of Calculus adds to the DFW rate.

[3] Hurtado, S., Eagan, K., & Chang, M. (2010). Degrees of success: Bachelor's degree completion rates among initial stem majors. *Higher Education Research Institute at UCLA, January*.

[4] These are from notes on failure rates presented at an AP&P meeting.

Studies of best practices in Calculus instruction, such as Characteristics of Successful Programs in College Calculus,[5] have found that institutions with more successful Calculus programs make greater use of active learning instructional approaches. Implementing active learning, particularly for those new to the method, requires smaller class sizes and support. Research in other STEM disciplines also points to the necessity of smaller class sizes if instructors are to implement research-based, interactive instructional approaches. The proposed smaller, 20-30 student, two-hour TA-led sections will make use of active learning, problem solving, and group work. The new TA training will focus on the requisite pedagogical skills and beliefs about learning and teaching that are necessary for successful implementation of active learning. The proposed TA training sequence will also improve training and career success for graduate students, especially those who go on to teach at the high school or college level. At SDSU, the Department of Rhetoric and Writing Studies and the School of Communication have developed model TA training programs that have improved instruction and employment of master's-level students. The proposed TA training in Mathematics will make use of lessons learned from these programs, as well as the lessons learned about the TA training programs studied as part of the Characteristics of Successful Programs in College Calculus project.

Response to Faculty Survey

This recommendation responds to the 2013 survey of faculty about class size in the following ways:

- The greatest increases in class size occurred at the 100 and 200 level. Between 2001 and 2013, the mean section size for lower-division classes increased from 36 to 64, and the median student experience (defined as the 50th percentile section based on the total number of seats filled) increased from 41 to 118.
- Math instructors were particularly concerned about the impact of larger classes on student learning. The survey included complete data from instructors teaching 13 lower-division Mathematics/Statistics courses, seven of which had breakout sections. Among instructors of the 13 sections, all said that the size of their classes had increased, 10 (77%) said that student learning had decreased due to larger classes, 12 (92%) said they had decreased the number of assignments they give, and 12 (92%) reported that there was less student participation.

Assessment

The impact of the proposed changes will be assessed in two ways.

First, the Math/Stat Department has already initiated work with Analytical Studies and Institutional Research to obtain and analyze student demographic and course performance data. The data will be mined for features related to student success and persistence. It will provide a baseline picture and allow for future analysis of the impact of changes on student behavior and grades.

[5] For more information on this project see http://www.maa.org/programs/faculty-and-departments/curriculum-development-resources/characteristics-of-successful-programs-in-college-calculus

Second, because the proposed changes are to be implemented in phases, each phase will include formative evaluation. Experience in each phase will lead to refinement of the TA training and adaptation of the training to the different types of courses in each of the four phases of implementation. Students in the Mathematics and Science Education doctoral program will have opportunities to assist with the evaluation, potentially writing dissertations that focus on successful models of educational transformation. Such evidence-based pedagogical innovation could bring national recognition to SDSU.

FUTURE DIRECTIONS

The Task Force is very aware that the changes proposed here are only the first steps. We hope that the Senate and other campus leaders will continue to scrutinize the results of the faculty survey, student leaning outcomes, and other measures of student success in order to recommend and implement targeted changes to class size. Specifically, we recommend that two areas be considered for future reductions as resources permit.

Statistics courses that satisfy the GE Foundations Quantitative Reasoning requirement, many of which are taught outside of the Mathematics and Statistics Department.

In addition to the courses offered by the Mathematics and Statistics Department, there are several statistics courses that satisfy the Mathematics/Quantitative reasoning requirement. (See complete list in Appendix A.) Included in this list are several that focus on elementary statistics: ARPE 210, Biology 215, Economics 201, Political Science 201, Psychology 280, Sociology 201, Statistics 119 and Statistics 250. In each of the past two semesters, there were at least 14 such sections with a total enrollment of over 2,000 students. Class sizes ranged from 15 to 250 students per section.

Introductory Statistics classes across the University have some common elements, even though they emphasize different methods and often require different texts. Surprisingly, different sections in the same department can cover different topics and use different textbooks (based on syllabi at the Library's repository). Despite these differences, nearly all courses covered statistical graphics, descriptive statistics (mean, standard deviation, etc.), confidence intervals, t-tests, and linear regression. Clearly, there is a core of material that is taught in all these classes.

A careful look at these courses may reveal ways that the classes can be structured to maximize student interaction with graduate students and faculty in small classes without increasing demand on faculty and budgets. For example, it might be advantageous to have a shared set of core modules (lecture, problems, activities) in an online portion of each class. These would contain the same core set of quantitative topics, but the examples could easily be customized for each course. By pooling resources to cover these shared topics, each department or instructor would have more time to teach students about the specific applications in their discipline. It is even possible that pooling resources would allow more small discussion and activity recitation sections without incurring additional cost. There are significant challenges to a coordinated approach, but it is worth further investigation.

Courses within departments that provide high-impact learning practices

Each department or program has a need for small classes for advanced undergraduate students that focus on high-impact practices such as community-based service learning, research methods, and writing within the discipline. A mechanism could be created for supporting and assessing small sections of these classes. Such a mechanism must be flexible, given the great diversity of academic departments and student learning outcomes at SDSU.

CONCLUSIONS

This report recommends phased-in changes in class sizes that are distributed to provide the greatest potential impact on student learning across the University and for practically all SDSU undergraduates at a critical point in their academic career. Our recommendations are in keeping with the goals of the SDSU Strategic Plan, whose Student Success Goal calls for the University to "continue to focus on Student Success by emphasizing high-impact practices that produce transformational educational experiences," as well as to "create Writing and Math Centers [the Writing Center has already been created and is in operation] by investing in faculty, graduate assistants and support staff resources," and to "invest funds to increase the four-year graduation rates of all students and eliminate the achievement gaps of under-represented students."

We believe that the steps suggested in this report advance the University toward the achievement of this goal.

Appendix A: Selected General Education Requirements from SDSU Catalog

I. COMMUNICATION AND CRITICAL THINKING

2. Composition

Africana Studies 120. Composition (3)
American Indian Studies 120. Written Communication (3)
Chicana and Chicano Studies 111B. Written Communication (3)
English 100. Rhetoric of Written Argument (3) [Same course as Rhetoric and Writing Studies 100.]
Linguistics 100. English Composition for International Students (3)
Rhetoric and Writing Studies 100. Rhetoric of Written Argument (3) [Same course as English 100.]
Rhetoric and Writing Studies 101. Rhetoric of Written Argument (3)

3. Intermediate Composition and Critical Thinking

Africana Studies 200. Intermediate Expository Writing and Research Fundamentals (3)
Chicana and Chicano Studies 200. Intermediate Expository Research and Writing (3)
English 200. Rhetoric of Written Arguments in Context (3) [Same course as Rhetoric and Writing Studies 200.]
Linguistics 200. Advanced English for International Students (3)
Philosophy 110. Critical Thinking and Composition (3)
Rhetoric and Writing Studies 200. Rhetoric of Written Arguments in Context (3) [Same course as English 200.]

II. FOUNDATIONS OF LEARNING

4. Mathematics/Quantitative Reasoning

Administration, Rehabilitation and Postsecondary Education 201. Introductory Statistics and Research Design for Education (3)
Biology 215. Biostatistics (3)
Computer Science 100. Computational Thinking (3)
Economics 201. Statistical Methods (3)
Geography 104. Geographic Information Science and Spatial Reasoning (3)
Mathematics 105. College Algebra (3)
Mathematics 118. Topics in Mathematics (3)
Mathematics 120. Calculus for Business Analysis (3)
Mathematics 122. Calculus for the Life Sciences II (3)
Mathematics 124. Calculus for the Life Sciences (4)
Mathematics 141. Precalculus (3)
Mathematics 150. Calculus I (4)
Mathematics 151. Calculus II (4)
Mathematics 210. Number Systems in Elementary Mathematics (3)
Mathematics 211. Geometry in Elementary Mathematics (3)
Mathematics 245. Discrete Mathematics (3)
Mathematics 252. Calculus III (4)
Mathematics 254. Introduction to Linear Algebra (3)
Philosophy 120. Introduction to Logic (3)
Political Science 201. Elementary Statistics for Political Science (3)
Psychology 280. Statistical Methods in Psychology (4)
Sociology 201. Elementary Social Statistics (3)
Statistics 119. Elementary Statistics for Business (3)
Statistics 250. Statistical Principles and Practices (3)

APPENDIX B: Estimated cost of increasing caps in classes meeting Communications and Critical Thinking GE requirement to 18 and 24. For each class we list the number of additional sections.

Decrease to **18** students	Fall	Spring	Total AY
Ling 100	2	5	7
Ling 200	4	1	5
CCS 111B	2	0	2
CCS 200	2	1	3
AMIND 120	1	0	1
AFRAS 120	2	0	2
AFRAS 200	1	1	2
Phil 110[6]	8	7	15
RWS 100, 101/ENGL 100	68	2	70
RWS 200	26	47	73
Total additional sections[7]	115	64	180
Additional lecturer expenses[8]	$ 489,739	$ 260,889	$ 755,205
Additional TA expenses[9]	$ 18,400	$ 16,100	$ 34,500
Benefits (51.6 %)			$ 407,438
Total increase	$ 508,139	$ 276,989	**$ 1,197,192**

Decrease to **24** students	Fall	Spring	Total AY
Ling 100	0	2	2
Ling 200	1	0	1
CCS 111B	1	0	1
CCS 200	1	1	2
AFRAS 120	1	0	1
AFRAS 200	0	0	0
Phil 110*	3	3	6
RWS 100, 101/ENGL 100	20	1	21
RWS 200	9	14	23
Total additional sections	36	21	57
Additional lecturer expenses	$ 151,041	$ 82,386	$ 233,427
Additional TA expenses	$ 6,900	$ 6,900	$ 13,800
Benefits (51.6 %)			$ 127,569
Total increase	$ 157,941	$ 89,286	**$ 374,796**

[6] Philosophy 110 classes will be taught by TAs, all other classes will be taught by lecturers.
[7] Based on an estimated 98% fill rate.
[8] Based on an average lecturer cost of $4,577 per class. This number is the actual average per class cost in the RWS Department in Spring 2015.
[9] Based on an average TA cost of $2,300 per class.

Appendix C: Rubric used in assessment of Composition and Critical Thinking courses.

	GOAL 1	GOAL 2	GOAL 3	GOAL 4
	Craft well-reasoned arguments for specific audiences. (Although arguments may contain characteristics of content, structure, evidence, audience awareness, and language representing more than one level of proficiency, classification should be based on the preponderance of the characteristics.)	**Analyze a variety of texts commonly encountered in the academic setting.**	**Situate discourse within social, generic, cultural, and historical contexts.**	**Assess the relative strengths and weaknesses of arguments and supporting evidence.**
Beginning (1)	Content: **Provides** a basic or largely incoherent case, focused on a single issue or no discernible issues. Structure: **Organizes** argument in a rudimentary or confusing fashion. Evidence: **Marshals** minimal support, with few quotations and specific examples from appropriate texts. Audience: **Demonstrates** a lack of awareness of audience. Language: **Communicates** in an inappropriate register or with frequent errors or distractions that obscure meaning.	**Attempts** rudimentary analysis and **mentions** rhetorical concepts, but primarily summarizes and paraphrases.	**Begins to explore** the relationship between texts (and the arguments they make) and contexts (whether social, generic, cultural, historical, or issue- or controversy-based).	**Mentions** arguments and evidence, but not to a clear or useful purpose.
Developing (2)	Content: **Provides** an elementary or minimal case, perhaps with significant inconsistencies, that is narrowly or over generally focused. Structure: **Organizes** argument in a mechanical and/or occasionally unclear fashion. Evidence: **Marshals** incomplete support, providing insufficient and/or mismanaged quotations and examples. Audience: **Addresses** a general audience or misconstrues the specific audience. Language: **Communicates** with frequent errors and distractions.	**Applies** concepts and models in order to support analytic passages, but relies more heavily on summary, paraphrase, and perhaps repetition.	**Locates** texts (and the arguments they make) within specific contexts, minimally addressing ways texts are shaped by and shape other variables.	**Marshals** relevant evidence, but without careful assessment or consideration of multiple positions. Careful attention to audience is absent.
Proficient (3)	Content: **Presents** a coherent case addressing multiple issues Structure: **Organizes** argument clearly and appropriately. Evidence: **Marshals** sufficient support, integrating specific quotations and examples from appropriate texts into analysis of their own making. Audience: **Demonstrates** an awareness of the audience's specific expectations and values. Language: **Communicates** *competently*, with minimal significant errors or distractions.	*Competently* **analyzes** arguments, applying concepts and models to answer relevant "how" and "why" questions.	**Locates** texts (and the arguments they make) within a variety of specific contexts, demonstrating significant ways texts are shaped by and shape other variables.	**Assesses** the relationships among multiple positions (including strengths and weakness) with respect to audience, but may weigh some evidence incompletely or unpersuasively.
Advanced (4)	Content: **Presents** a solid case addressing a range of relevant issues and considerations. Structure: **Organizes** argument to meet the specific needs of the content. Evidence: **Marshals** ample support, successfully integrating specific quotations and examples from appropriate texts into analysis of their own making. Audience: **Accommodates** multiple expectations and premises of the audience. Language: **Communicates** *effectively*, with relatively few errors or distractions.	*Successfully* **analyzes** arguments, applying specific concepts and models in order to produce significant insights,	*Successfully* **locates** texts (and the arguments they make) within a variety of contexts, demonstrating complex ways texts are shaped by and shape other variables.	*Successfully* **assesses** the relationships among multiple positions (including strengths and weakness), with respect to audience, avoiding simplistic judgments and demonstrating, where appropriate, how the preponderance of the evidence supports specific positions over others.

Appendix D: Estimated costs for additional Teaching Assistants (TAs) for core Mathematics and Statistics courses in Phases 1-3.

	Course	**# of Students**	Current TAs	Proposed TAs	Change in TAs	Additional cost for TAs
Phase 1	Math 105/141 Fa	620	4	12	8	$60,120
	Math 105/141 Sp	369	3	8	5	$37,575
	Total Phase 1	989	7	20	13	$97,695
Phase 2	Math 150 Fa	535	2	10	8	$60,120
	Math 150 Sp	434	3	8	5	$37,575
	Math 151 Fa	590	2.5	10	7.5	$56,363
	Math 151 Sp	447	3	8	5	$37,575
	Total Phase 2	2006	10.5	36	25.5	$191,633
Phase 3	Math 252 Fa	393	1.5	6	4.5	$33,818
	Math 252 Sp	245	1	4	3	$22,545
	Math 245 Fa	169	0	4	4	$30,060
	Math 245 Sp	131	1	2	1	$7,515
	Math 254 Fa	142	1	2	1	$7,515
	Math 254 Sp	165	1	4	3	$22,545
	Stat 250 Fa	228	2	3	1	$7,515
	Stat 250 Sp	217	2	3	1	$7,515
	Total Phase 3	1690	9.5	28	18.5	$139,028
Total Phase 1-3		**7680**	34	140	106	$428,355

Memo

SDSU

To: Marilee Bresciani

From: Suzanne Bordelon

CC: Glen McClish, Doreen Mattingly, Madhavi McCall, Richard Levine

Date: Jan 7, 2016

Re: WPA Question

This message is in response to your Dec. 15, 2015, email message. You had written the following query: " In constructing the study design [class-size study], it has become apparent that it is important for us to understand the details of how the WPA has changed, particularly with regard to any scoring calibration that has taken place since 2007."

What follows is my attempt to address your question. I have been the WPA Coordinator since Fall 2007; however, a WPA Coordinator replacement was appointed in Fall 2009, Fall 2012, and Spring 2014 when I was on sabbatical, acting co-chair of RWS, and interim chair of the Writing Center, respectively. First, there have been many revisions to the WPA in the last eight years. Since we view the WPA scoring rubric as an iterative document, each academic year the WPA Committee reviews and revises the rubric and discusses strategies to improve reader consistency and our understanding of the rubric. In this message, I will try to highlight only the major changes. Second, it's important to note that the most significant revisions to the exam were made in consultation with the Department of Rhetoric and Writing Studies since the department plays a key role in administering the exam. Before going into the changes, I will provide a brief overview of the WPA.

The CSU has a system-wide Graduation Writing Assessment Requirement (GWAR) for all undergraduate students. At SDSU, the GWAR is addressed through the WPA, a two-hour reading and writing placement exam that is administered to all SDSU students. Continuing SDSU students take the WPA during the semester in which they are completing 60 units or the semester immediately following. Transfer students are eligible to take the WPA once they receive an offer of admission from the University. Transfer students must take the WPA by the end of their first semester in residence at SDSU. Students are allowed to attempt the WPA twice within the time frame described above. Students who achieve a score of 10 on the WPA satisfy the statewide GWAR and do not have to take an upper division writing course unless such a course is required by their majors. Students who achieve a score of 8 or 9 are required to satisfy the GWAR by completing an approved upper division writing course (such as RWS 305W, RWS 500W, RWS 503W, and RWS 508W) with a grade of C or higher. Students who earn a score of 7 or lower are required to complete RWS 280 (or Rhetoric and Writing

Studies 281 or Linguistics 281 if English is the student's second language) with a grade of C or higher before enrolling in one of the approved upper division writing courses.

A seven-member committee assists me in training readers and in reading exams. In 2015, the committee oversaw the evaluation of 8,071 student exams, with each essay being read at least twice by two WPA readers. During the 2015 calendar year, 27 readers were involved in evaluating WPA exams, with 22 or 82% being members of the RWS Department. The WPA Committee appears to be doing a solid job of placing students. Validity studies completed in 2009 and 2015 found that surveyed instructors felt that more than 80 percent of their students had been appropriately placed in their writing classes. (The previous director of Testing Services developed the validity study design in collaboration with the Department of Rhetoric and Writing Studies.) In addition, although there has been some variance, reader reliability data from 2007 to 2015 suggests that score consistency (first and second reader score identical) tends to be at about 80 percent. Below are some of the most significant revisions to the exam.

Significant WPA Revisions/Recalibrations

2006: Made the WPA requirement more rigorous by including a reading component and greater emphasis on rhetorical analysis. The revision was aimed at better integrating the WPA with the RWS curriculum and General Education requirements.

Spring 2009: Lengthened the exam time from 90 to 120 minutes. This revision was designed to lessen the anxiety students might feel concerning a timed-writing situation and to provide additional time so that students did not feel they had to rush to complete the exam.

Spring 2010: Changed the exam name from the Writing Proficiency Assessment to the Writing Placement Assessment. The name revision was made to reflect the exam's purpose as a placement tool.

Spring 2011: Recalibrated the WPA scoring criteria for 3 and 4. (At this time, each essay was read by at least two readers who assigned the exam a score of 1-6.) Between 2007 and 2010, the WPA Committee noted an increase in the number of students needing two classes (see table next page). The WPA Committee discussed various potential factors related to the increase such as an influx of transfer students and an increase in class size from budget cuts, leading to less writing in the sophomore and junior years. The Committee also considered that WPA readers had gradually become more rigorous in scoring exams. The Committee recalibrated and re-emphasized that a score of 6 (both readers score the exam as a 3) was reserved for those students who could specifically benefit from RWS 280 or 281, or LING 281.

	2007 Summary Pass Rates	2008 Summary Pass Rates	2009 Summary Pass Rates	2010 Summary Pass Rates
Need 2 classes	33.8% (2,965)	36.0% (3,292)	42.8% (3,341)	40.9 (2,633)
Need 1 class	52.6% (4,611)	48.9% (4,467)	46.0% (3,592)	47.1% (3,035)
GWAR Satisfied	13.6% (1,188)	15.1% (1,381)	11.2% (871)	12.0% (771)

Spring 2012: Revised the scoring rubric for the WPA from 1-6 scale to a 1-5 scale. The WPA Committee felt that it wasn't necessary to distinguish between a 5 and a 6 score since both scores satisfied the GWAR.

Spring 2013: Recalibrated scoring criteria for 3 and 4. The Committee again considered various factors leading to the higher percentage of students needing two classes. The Committee recalibrated, similarly emphasizing that a score of 6 (both readers score the exam as a 3) was reserved for those students who could specifically benefit from RWS 280 or 281, or LING 281. We continue this emphasis through the present readings.

	2011 Summary Pass Rates	2012 Summary Pass Rates	2013 Summary Pass Rates	2014 Summary Pass Rates
Need 2 classes	36.6% (3,196)	45.1% (3,475)	26.7% (2,071)	29.4% (2,158)
Need 1 class	47.5% (4,158)	46.4% (3,578)	58.5% (4,540)	59.7% (4,385)
Satisfies GWAR	15.0% (1,388)	8.5% (656)	14.8% (1,148)	11.0% (808)

Spring 2013: Implemented the practice of reviewing a previous range-finder set during each range-finder meeting. This revision was aimed at improving consistency between exams.

Summer 2015: Revised the WPA prompt to address four instead of five questions. (Previously students were asked to "describe the overall structure of the reading selection and explain whether it furthers the aims of the author's argument.") The goal of the revision was to simplify the prompt by allowing students to focus on fewer questions. The WPA prompt is the same for each exam, but the reading is different (see new prompt next page).

New Prompt:
Identify and provide a brief explanation of the author's argument; identify two persuasive strategies that the author uses to support his or her argument and analyze how those strategies might persuade the reader to support the claim; discuss the assumption(s) on which the argument is based; and evaluate the extent to which the reader would find the argument convincing.

Be sure to follow these directions carefully, rather than simply agreeing or disagreeing or writing an extensive summary of the article.

Summer 2015: Increased the opportunity for new or infrequent readers to participate in readings prior to the large November reading. (In November 2015, WPA readers read 2,036 essays over two days.) All readers had participated in at least one reading prior to the November readings.

Fall 2015: Implemented the practice of not only calibrating WPA readers prior to the reading but also of renorming after lunch during our all-day reading sessions.

WPA EXAMINEES - JANUARY 2004 - APRIL 2016

NUMBER OF TIMES TESTED ON WPA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	82517	89.9	89.9	89.9
	2	9107	9.9	9.9	99.8
	3	141	.2	.2	100.0
	4	21	.0	.0	100.0
	5	2	.0	.0	100.0
	6	2	.0	.0	100.0
	8	1	.0	.0	100.0
	Total	91791	100.0	100.0	

Beyond the CSU: Data on Writing Class Sizes at 409 Institutions of Higher Education

Self-reported data for 409 institutions collected through the Writing Program Administrators Listserv in 2016 and 2017. Complied by Professor Holly Hassel, University of Wisconsin. The full data traces average class size across a ranges of institutional types and regions and can be seen in this publically available spreadsheet:
https://docs.google.com/spreadsheets/d/16anb0URuLuux0ePk5EZ2fRcfQA1TwbsV2RFZW0-aANk/edit#gid=0

Institution Name	State	type of instituiton (2 year or 4-year)	Basic Writing or equivalent course cap	First semester/101 or equivalent coures cap	Second Semester or equivalent course (102) cap	ELL Writing courses or equivalent, if applicable course cap
Ancilla College	Indiana	2-year	15	24	24	
Andrews University	Michigan			20	18	
Angelo State University	Texas		15	26	26	
Aquinas Colege	Mi	4 year	16	18	na	na
Arizona State University	Arizona	4-year	19	19		
Arizona Western College	Arizona		20	24	24	N/A
Atlanta Christian College	Georgia		12	24		
Auburn U Montgomery	Alabama	4-year	15	20	20	NA
Bakersfield College	California	4 year	28	25		
Ball State University	Indiana	4-year	18	25		
Barry University	Florida	4-year	17	23		

Baruch College, CUNY	New York			25	27	
Baylor University	Texas	4-year		19	15	
Bellevue College	Washington	2 year	22	26	26	
Bellingham Technical College	Washington	2 year	26	24/26	24/26	
Belmont University	Tennessee			22		
Beloit University	Wisconsin	4-year		16		
Bergen Community College	New Jersey		22 (15 for lowest level)	22	22	
Big Bend Community College	Washington		20	25	25	
Black Hills State University	South Dakota	4-year		20		
Bloomsburg University of Pennsylvania	Pennsylvania	4-year	20	25	25	
Boise State University	Idaho	4-year		25		
Boston College	Massachusetts	4-year		15		
Boston University	Massachusetts	4 year		15		
Brandeis University	Massachusetts	4-year	10	17		
Bridgewater State University	Massachusetts	4-year	20	20		
Brigham Young University	Utah	4-year		20		

Bristol Community College	Massachusetts	2 year	22	22	22	
Broward College	Florida		25	25	25	
Butler University	Indiana	4-year	12	18		
Cal Poly Pomona	California	4 year	25	25	25	25
Caldwell College	New Jersey		15	19		
California State Univ., Chico	California			30		25
California State University Fresno	California	4-year	25	25		
California State University Hayward	California	4-year	15	24	20	
California State University--Monterey Bay	California	4-year	22	22	26	
California State University--Northridge	California	4-year	19			
California State University--Sacramento	California	4-year	16			
California State University--San Bernadino	California	4-year	20	24		

California State University--Stanislaus	California	4-year	21	25		
California University of Pennsylvania	Pennsylvania	4-year		30		
Calvin College	Michigan	4-year		22		
Capital University	Ohio	4-year	15	20		
Cascadia College	Washington		15	24	24	
Case Western University	Ohio	4-year		17		12
Castleton State College	Vermont	4-year		18	15	
Centenary College	Louisiana	4-year		18		
Centenary University	New Jersey		17	17	17	
Central Michigan University	Michigan	4-year		25		
Central Oregon Community College	Oregon	2 year	26	26	26	NA
Centralia College	Washington	2 year	?	26	26	
Chapman University	California	4-year	19	19		
Christopher Newport University	Virginia	4-year		22		
City Colleges of Chicago	Illinois	2-year		25		

Clark College	Washington	2 year	20	27	27	
Clark University	Massachusetts	4-year		16	20	
Clarkson College	Nebraska			20	20	
Clover Park Technical College	Washington	2 year	20/25	25	25	
Clovis Community College	California	2 year	30	30	30	
College of Charleston	South Carolina			20		
College of Coastal Georgia	Georgia	4-year		30		
College of DuPage	Illinois		20	22	22	20
College of Lake County	Illinois		20	22	22	20
College of New Jersey	New Jersey	4-year	8 (studio)	15		
College of Southern Idaho	Idaho		21	24	24	15
College of St. Rose	New York	4-year		19		
College of the Holy Cross	Massachusetts	4-year		18	15	
College of the Redwoods	California		24 or 28	28	28	28
College of Western Idaho (community college)	Idaho			26	26	24

Collin County Community College	Texas	2-year	15	24		
Columbia Basin College	Washington	2-year	27	27	27	
Community College of Denver	Colordao	2-year	22			
Cornell University	New York	4-year	12	17		
CUNY-New York City College of Technology	New York		24	24	28	24
Dakota State University	South Dakota	4-year		30		
Davidson College	north Carolina	4-year		14		
De Anza College	California		25	30	30	25
DePaul University	Illinois	4-year	23	23		
DeSales University (formerly Allentown College)	Pennsylvannia		15	22		
Dickinson College	Pennsylvania	4-year		16		
Dordt College	Iowa	4-year	15	23		
Drew University	New JErsey	4-year	12	14	15	
Drexel University	Pennsylvania	4-year		19	22	
Duke University	North Carolina	4-year		12		
Duquesne University	Pennsylvania	4-year		22		

East Carolina university	North Carolina	4-year		25		
East Central College	Missouri		20	24	24	
Eastern Illinois University	Illinois	4-year	12	23	23	
Eastern Kentucky University	Kentucky	4-year		22	22	
Eastern Mennonite University	Virginia	4 year	16	16	N/A	16
Eastern Michigan University	Michigan	4-year		23		
Eastern Oregon University	Oregon	4 year	20	25	25	20
Eastern Washington University	Washington	4-year	20	25	25	
Eckerd College	Florida			18	18	
Edmonds Community College	Washington	2 year	25	25	25	
El Camino Community College	California	2 year	35	30		
Elon University	North Carolina	4-year	15	20	N/A	N/A
Emerson College	Massachusetts	4 year		18		
Emory University	Georgia	4-year		16		12
Emporia State College	Kansas	4 year	16	21		16

Eureka College		4 year		20	15	
Everett Community College	Washington	2 year	15/25	25/27	25/27	
Evergreen valley College	California	2-year	30	30	30	
Fairfield University	Connecticut	4-year		20		
Fairleigh Dickinson University (Madison)	New Jersey	4 year	15	18	18	N/A
Ferris State University	Michigan	4-year	18	23		
Fisk University	Tennessee	4-year (HBCU)		30		
Flagler College	Florida	4-year	15	18		
Fontbonne University	Missouri	4-year	15	18		
Fort Valley State University	Georgia	4-year		25		
Framingham State College	Massachusetts	4-year	18	20		
Francis Marion University	South Carolina	4-year		15	15	
Gannon University	Pennsylvania	4-year		25		
George Mason University	Virginia	4-year		19		
George Washington University	Washington DC	4-year		17		
Georgia Court University	New Jersey	4-year	15 or 16	18	18	

Georgia Gwinnett College	Georgia	4-year	16	22	22	16
Georgia Southern University	Georgia	4-year		24	24	
Gonzaga University	Washington	4-year		20		
Goucher College	Maryland	4-year		19		
Governor's State University	New York	4-year		15	15	
Grays Harbor College	Washington	2-year	25	25	25	
Green River College	Washington	2-year	20	22	22	
Hamilton College	New York	4-year	16			
Hawkeye Community College	Iowa	2-year	20	20	20	
Hannibal-LaGrange College	Missouri	4-year	15	20	20	
Harry S. Truman College	Illinois	2 year		25		
Harvard University	Massachusetts	4-year	10	12		
Haverford college	Pennsylvania	4-year		15		
Heartland Community College	Illinois	2 year	11 in 099, 20 in 098 read/write combo	22	22	
Henry Ford College	Michigan	2 year	25	25	25	25
Highline College	Washington		25	25	25	
Hofstra University	New york	4-year		18	23	
Hunter College	New york	4-year		22		

Huston-Tillitson College	Texas	4-year	15	20		
Illinois State University	Illinois	4-year	18	23		
Indiana University of Pennsylvania	Pennsylvania	4 Year	20	25		
Indiana University Pursude U Fort Wayne	Indiana	4 year	18	22		15
Indiana University Southeast	Indiana	4-year		20	23	
Indiana University South Bend	Indiana	4-year		20		
Indiana University Purdue University Indianapolis	Indiana	4-year				
Ithaca College	New York	4-year		18	15	
Ivy Tech Community College (Southern Indiana)	Indiana	2 year	24	24	24	15
J. Sargent Reynolds Community College	Virginia	2-year	22	27		
James Madison Harrisburg	Pennsylvania	4-year		20		

Jefferson College	Missouri	2-year	10	25	25	10
Johns Hopkins University	Maryland	4-year	10	15		
Kansas State University	Kansas	4-year		22		
Kean University	New Jersey	4-year		22		
Kettering University	Michigan	4-year		22		
Kingsborough Community College	New York	2 year		28	28	
Kirkwood CC	Iowa	2 year	25	25	25	
Lake Superior State University	Michigan	4-year	20	25		
Lake Washington Institute of Technology	Washington		25	25	25	
Lakeland Community College	Ohio	2 year	18	25	25	
Lane Community College	Oregon	2 year	21	26	26	NA
Le Moyne University	New York	4-year	12	20		
Lincoln Univeristy	Pennsylvannia	4 year	15	20	20	
Lipscomb University	Tennesee	4-year		19	19	
Lone Star College System	Texas	2 year	24	27	27	27

Longwood University	Virginia		18	18		
Loras College	Iowa			20		
Lord Fairfax Comm.Coll.	Virginia	2 year	20	24	24	18
Louisiana State University	Louisiana	4-year		20		
Lower Columbia College	Washington	2 year	22	24/25	24/25	
Loyola College	Maryland	4-year		22	22	
Lynchburg College	Virginia	4-year		22		
Mainland Community College	Texas	2-year		22		
Manhattan College	New York	4-year	18	18		
Marist College	New York	4-year		17		
Marymount College	California	4-year	20	20		
Marywood University	Pennsylvania	4-year		20	15	
Mercer County College	New Jersey	2-year	25	30		
Merrimack College	Massachusetts	4-year		15		
Mesa Community College	Arizona	2 year	20	24	24	20
Metropolitan Community College	Nebraska	2 year	18 for 095 (IRW) 20 fundamentals 20 for ALP	25	25	

Middlesex County College	New Jersey	2-year	18	22		
Midlands Technical College	South Carolina	2 year	18 for 032 / 22 for 100	22	22	
Millsaps College	Michigan	4-year		16		
Miami University	Ohio	4-year		22		
Mississippi College	Mississippi	4-year		24	20	
Missouri University of Science and Technology	Missouri	4-year		20	22	
Missouri Western State University	Missouri	4-year	22	25	25	
Monmouth University	New Jersey	4-year	15	20		
Montana State University	Montana	4-year		25		
Montclair State University	New Jersey	4-year				
Montgomery College	Maryland	2-year		24		
Montgomery College at Germantown	Maryland	2-year		25		
Montgomery College Rockville	Maryland	2-year	20	22		

Montgomery College Takoma Park	Maryland	2-year		20		
Moravian College	Pennsylvania	4-year	8	18		
New Mexico State University Carlsbad	New Mexico	2-year	15	20		
New York University	New York	4-year		15		
Newbury College	Massachusetts	4-year		20		
Niagara University	New York	4-year		17		
Nicholls State University	Louisiana	4-year		32		
North Carolin A and T State University	North Carolina	4-year		26		
North Carolina State University	North Carolina	4-year		18		
North Central Texas College	Texas	2-year	20	25	25	
Northeastern University	Massachusetts	4-year		19	19	
North Seattle College	Washington		28	28	28	
Northern Arizona University	Arizona	4-year	24	24		
Northern Illinois University	Illinois	4-year	16	25		

Northern Kentucky University	Kentucky	4-year				
Northern Virginia Community College	Virginia	2-year	25	25	25	
Northern Virginia Community College, Annandale Campus	Virginia	2-year	20	25	25	25
Northwestern College	Iowa	4-year	24			
Norwalk Community College	Connecticut	2 year				
Nova Southeastern University	Florida	4-year	15	15	20	
Oakland Community College	Michigan	2 year	20	25	25	20
Occidental College	California	4-year	15	15	20	
Ocean County College	New Jersey	2-year	20	22		
Ohio State University	Ohio	4-year	15	24		
Ohio University	Ohio	4-year		20		
Oklahoma State University	Oklahoma	4-year	15	25		
Old Dominion	Virginia	4-year	15	19	19	

Orange Coast Community College	California	2-year		32		
Olympic College	Washington	2 year	25	25	25	
Parkland College	Illinois	2-year	18	24	22	
Passaic County College	New Jersey	2-year	22	25		
Peninsula College	Washington	2 year	20	23	23	
Pierce College Fort Steilacoom	Washington	2 year	24	24	24	
Pierce College Puyallup	Washington	4-year	24	24	24	
Portland State University	Washington	4-year		25		
Prairie State College	Illinois	2-year	24	24	24	
Princeton University	New Jersey	4-year		12		
Purdue University West Lafayette	Indiana	4-year		20		15
Ramapo College	New Jersey	4-year	25	25		
Raritan Valley CC	New Jersey	2-year	17	23		
Renton Technical College	Washington	2 year	25	25	25	
Rice University	Texas	four-year	16	22		

Rivier University	New Hampshire	4-year		18		
Rochester Institute of Technology	New York	4-year	15	19	N/A	
Rockford University	Illinois	4-year		20	20	
Rowan University	New Jersey	4-year	20	22		
Sacred Heart University	Connecticut	4-year		20		
Saint Edwards University	Texas	4-year	20	22		
Saint Joseph's University	Pennsylvania	4-year		20	20	
Salem Community College	New Jersey	2-year	20	25		
Salem College	North Carolina	4-year	16	16		
Salt Lake Community College	Utah	2-year	25	25	25	25
San Diego Mesa College (cc)	California	2 year	25	25	25	
San Diego State University	California	4-year	30	30	30	
San Jose State University	California	4-year	25	25		
San Juan College	New Mexico	2-year	15	20		

Santa Clara University	California	4-year	15	19	25	
Scripps College	California	4-year		16		
Seattle Central College	Washington	4-year	25	25	25	
Seattle Pacific University	Washington	4-year	NA	20	20	
Seattle University	Washington	4-year	NA	19	19	
Seton Hall	NEw Jersey	4-year		16		
Shawnee State University	Ohio	4-year	20	20		
Shoreline Community College	Washington	2 year	25	27	27	
Sinclair Community College	Ohio	2 year	18	27	27	18
Skagit Valley College	Washington	2 year	27	27	27	
Skidmore College	New York	4-year		15		
Soka U of America	California	4-year		15		
South Puget Sound Community College	Washington	2 year	20	28	28	
South Seattle College	Washington	2 year	25	27	27	
South Texas College	Texas	2-year		24	24	

Southeastern Louisiana University	Louisiana	4-year	10	26	25	
Southern Connecticut State University	Connecticut	4-year	12	20		
Southern Illinois University	Illinois	4-year		20	20	
Southwestern Illinois College	Illinois	2 year	20	20	20	NA
Southern Illinois University Carbondale	Illionis	4-year		21		
Spelman University	Georgia	4-year		20		
Spokane Falls CC	Washington	2 year	20	28	28	
St. Cloud State University	Minnesota	4-year		25		
St. Louis Community College at Meremac	Missouri	2-year	22	25		
Stanford University	California	4-year		15		
SUNY Sullivan CC	New York	2 year	18	22	22	
SUNY-Albany	New York	4-year		19		19
SUNY Binghamton	New York	4-year		16		
SUNY COurtland	New York	4-year		22		

SUNY Morrisville	New York	4-year		35		
SUNY Stony Brook	New York	4-year		25		
Stetson University	Florida	4-year		18		
Stephen F. Austin State University	Texas	4-year		22		
Suffolk University	Massachusetts	4-year		25		
Syracuse University	New York	4-year		20		
Tacoma Community College	Washington	2 year	25	25	25	
Tarleton State University	Texas	4-year		25		
Taylor University	Indiana	4-year		24		
Texas A&M (College Station)	Texas	4-year		25		
Texas A and M University Commerce	Texas	4-year	22	25		
Texas A&M University-Corpus Christi	Texas	4-year	18	25		
Texas Christian University	Texas	4-year		20		

Texas State University San Marcos	Texas	4-year		21		
Texas Tech University	Texas	4-year		40		
Texas Wesleyan University	Texas	4-year		20		
Texas Women's University	Texas	4-year	20	25		
Trinity College	Connecticut	4-year		15		
Triton College	Illinois	4-year	20	25	25	
Truman University	Illinois	4-year		25		
Tuskegee University	Alabama	4-year	30	30		
U of Texas at El Paso	Texas	4-year	25	24	24	
U.Illinois-Chicago	Illinois	4-year	18	24	24	15
Unity College	Maine	4-year		18	18	
University of North Carolina-Asheville	North Carolina	4-year		18		
University of Akron	Ohio	4-year		24	25	
University of Alabama	Alabama	4-year	15	24		
University of Alaska Anchorage	Alaska	4 year	20	25	-	18
University of Alberta	Canada	4-year				

University of Arizona	Arizona	4 year	19	25	25	23
University of British Columbia	Canada	4-year		35		
University of California Davis	California	4-year		25		
University of California Irvine	California	4-year		19		19
University of California Los Angeles	California	4-year	20	20		
University of California Riverside	California	4-year	21	23		16
University of California San diego, Muir College	California	4-year		15		
University of California San Diego, Warren College	California	4-year		14		
University of California Santa Barbara	California	4-year		25		
University of California Santa Cruz	California	4-year	22	25		

University of Central Florida Orlando	California	4-year		25		
University of Cincinnati Blue Ash College	Ohio	2 year	15	20		
University of Cincinnati Clermont College	Ohio	4-year	15	20		
University of Cincinnati Main Campus	Ohio	4-year		23	-	
University of Colorado-Boulder	Colorado	4-year		18		
University of Colorado at Denver	Colorado	4-year		24	24	
University of Connecticut	Connecticut	4-year	10	20		
University of Dayton	Ohio	4-year	18	20		
University of Delaware	Delaware	4-year		22		
University of Georgia	Georgia	4-year		22		15
University of Hawaii	Hawaii	4-year		20		
University of Houston-Clear Lake	Texas	4-year		25		
University of Idaho	Idaho	4-year		26		

University of Illinois	Illinois	4-year		22		
University of Kansas	Kansas	4-year		22		
University of Louisville	Kentucky	4-year		26		
University of Louisiana-Lafayette	Louisiana	4-year		27		
University of Maine	Maine	4-year		16		
University of Maryland University College	Maryland	4-year	24	24	-	-
University of Maryland, Baltimore County	Maryland	4-year		22		20
University of Massachusetts	Massachusetts	4-year	20	24		
University of Miami	Florida	4-year	12	23		
University of Michigan Flint	Michigan	4-year	16	24		
University of Minnesota	Minnesota	4-year	18	21		
University of Missouri	Missouri	4-year	18	23		
University of Montana Wstern	Montana	4-year	17			

University of Nebraska - Omaha	Nebraska	4-year		18	20	15
University of Nevada	Nevada	4-year		22		
University of New England	Maine	4-year	15	20	-	-
University of New Mexico - Gallup	New Mexico	2-year extension	23	23	23	n/a
University of New Orleans	Louisiana	4-year		25	25	
University of North Carolina- Chapel Hill	North Carolina	4-year		19	19	
University of North Carolina Charlotte	North Carolina	4-year		22	22	
University of North Carolina Wilmington	North Carolina	4-year		20	20	
University of North Georgia	Georgia	4-year		24	24	
University of Notre Dame	Indiana	4-year		15		
University of Oklahoma	Oklahoma	4-year	15	19		
University of Pennsylvania	Pennsylvania	4-year	12	16		12
University of Rhode Island	Rhode Island	4-year		22		

University of Rio Grande	Texas	4-year		22		
University of San Francisco	California	4-year	18	20		
University of Scranton	Pennsylvania	4-year	18	18		
University of South Alabama	Alabama	4-year	25	25		
University of South Carolina	South Carolina	4-year		25	25	
University of South Carolina Beaufort	South Carolina	4-year		22	22	
University of South Florida St. Petersburg	Florida	4-year		25	25	
University of St. Rose	New York	4-year		19		
University of Tampa	Florida	4-year	15	22		15
University of Texas at Austin	Texas	4-year		25		
University of Toledo	Ohio	4-year	18	23		
University of Virginia	Virginia	4-year	15	18		
University of Washington	Washington	4-year	18	22	22	
Upper Iowa University	Iowa	4-year	15	17	17	15

University of South Carolina Aiken	South Carolina	4-year		20		15
University of Wisconsin Colleges	Wisconsin	2 year	22	24	24	22
University of Wisconsin Oshkosh	Wisconsin	4 year	20	25		
University of wisconsin Green Bay	Wisconsin	4 year	20	25	25	
University of Wisconsin La Crosse	Wisconsin	4 year	15	22		
University of Wisconsin Stevens Point	Wisconsin	4-year		23		
University of Wisconsin Superior	Wisconsin	4-year	18	22	22	
University of Wisconsin Milwaukee	Wisconsin	4-year	15	24	24	15
Utah State University	Utah	4-year	15	23		
Valdosta State University	Georgia	4-year		25	25	15

Valencia Community College	Florida	2-year		25		
Ventura College	California	2-year	27	27	27	
Walla Walla Community College	Washington	2 year	25	24	24	
Walsh University	Ohio	4-year	15	20		
Wayne State University	Michigan	4-year	22	24		
Washington State University	Washington	4-year	20	25		18
Webster University	Missouri	4-year	15			
Wellesley College	Massachusetts	4-year		15		
Wenatchee Valley College	Washington	2-year	24	22	22	
West Chester University	Pennsylvania	4-year		25	25	
West Virginia University	West Virginia	4-year	12	22		
Western Illinois University	Illinois	4-year		22		
	New York	2 year	24	27	27	
Western Washington University	Washington	4-year	15	24	24	
Wheaton College	Massachusetts	4-year		16		
Whatcom Comm. College	Washington	2 year	25	25	25	19

Whitworth University		4-year		18	18	
Wright State University	Ohio	4-year	16	24		
Xavier University	Louisiana	4-year		25		
Yakima Valley Community College	Washington	2 year	25	25	25	
Yale University				16		
Yeshiva University				17		
Youngstown State University	Ohio	4-year		25		

		CSU CLASS CAPS 2016					
			Class Type				
	Institution	**Source of Data**	**Developmental**	**"Stretch" 1st sem**	**"Stretch" 2nd sem**	**Lower Div FYC**	**Upper Div**
1	SF State	Tara Lockhart		18	18	20	25
2	Sacramento	David Toise		22	22	25	30
3	SJSU	Cindy Baer		25	25	25	25
4	Sonoma State	Catherine Kroll		25	25	27	25
5	Cal Poly Pomona	Liliane M. Fucaloro		25	25	25	28
6	Channel Islands	Brad Monsma		20	20	20	20
7	CSU San Marcos	Catherine Cucinella				20	25
8	Humboldt State	Nicolette Amann		21	21	25	
9	SJSU	Richard McNabb		25	25	25	25
10	San Bernardino	Brenda Glascott		22	23	26	26
11	Monterey Bay	Ernest Stromberg				22	26
12	Dominguez Hills	Timothy Chin	20	20	20	23	27
13	CSU Longbeach	Gary Griswold	18			22	25
14	SDSU	Chris Werry	25			30	30
15	CSULA	Chris Harris		22	22	25	25
16	Fresno	Lisa Weston				25	25
17	Bakersfield	Kim Flachmann		25	25	25	25
18	Monterey Bay	Nelson Graff	22	22	22	22	22
19	Stanislaus	Scott C. Davis	15-20	21	21	25	25
20	Northridge	Irene Clark		20	22	24	
21	East Bay	Margaret Rustick	21			25	30
22	Chico	Kim Jaxon				30	30
23	San Luis Obispo	Kathryn Rummell		20	20	22	25

Class Caps in Composition

	Developmental		Fresh Comp		GWAR		
Campus	**2009**	**2011**	**2009**	**2011**	**2009**	**2011**	**Contact**
Bakersfield	30	30	30	30		30	Kim Flachmann
Channel Islands	20	20	20	20		20	Bob Mayberry
Chico			30	30/90			Kim Jaxon
Dominguez Hills	23-27	27	27	27		27	Ed Zoerner
East Bay	20	25-30		25	30	30	Margaret Rustick
Fresno				25			Jenny Crisco
Fullerton							
Humboldt	20	18	25	25			Nicolette Aman
Long Beach	18-22		25	25			Boak Ferris
Los Angeles	19	15/18		20/25		28	Christopher Harris
Maritime Academy	25	25	25	25	25	25	Julianne Chisholm
Monterey	23	22	24	22	26		Becky Rosebberg
Northridge	19		24	24 (20 stretch)		27	Ian Barnard
Pomona	23		27				
Sacramento	21		25	25 (20 stretch)	30		Amy Heckathorn
San Bernardino	22-24		26	22/23/26	28	26	Brenda Glascott
San Diego	30	32	32	32			Alida Allison
San Francisco	18		25	20 (18 stretch)		25	Elise Wormuth
San Jose	20	20	25	25	25	25	Stefan Frazier, Cathy Gabor
SLO	16		24	22 (20 stretch)		25	Brenda Helmbrecht
San Marcos			20	20			C Cucinella, M Stoddard-Holmes
Sonoma	21		27	27 (25 stretch)			
Stanislaus	15-18	17	25	27 (20 stretch)		25	Scott Davis
Community Colleges							
Cerro Coso		30		30			Gary Enns
Chaffey College	32		32				Michael Dinielli
Diablo Valley	25		30				Tom Hurley
Evergreen Valley	35	35/30	30	30			Sterling Warner

CSU Class Caps in Composition: Fall 2009