

**ACADEMIC SENATE
OF
THE CALIFORNIA STATE UNIVERSITY**

AS-3286-17/AA (Rev)
January 26-27, 2017

**ACTIONS TO SUPPORT GRADUATE EDUCATION IN THE CALIFORNIA STATE
UNIVERSITY**

RESOLVED: That the Academic Senate of the California State University (ASCSU) acknowledge that the CSU Masters' Degree Program Quantitative Characteristics report (April 2016) helps to underscore the important need to address prior ASCSU recommendations on graduate education in the CSU contained in:

- (a) *Reaffirming the Importance of Graduate, Post Baccalaureate, and Credential Programs and Access to Those Programs* ([AS-3122-13/AA \[Rev\]](#));
- (b) *Graduate Education Development in the California State University* ([AS-2790-07/AA \[Rev\]](#));
- (c) *The Place of Graduate Education in the CSU* (2006 report of the CSU Academic Council Report);
- (d) *Recommendation on the Report from the Task Force on Graduate and Post-Baccalaureate Education in the California State University* ([AS-2652-04/EX](#));
- (e) [*Rethinking Graduate Education in the CSU: Meeting the Needs of the People of California for Graduate Education in the 21st Century*](#) (2004 Report of the Task Force on Graduate and Post-baccalaureate Education in the CSU);
- (f) *New Study of Post-Baccalaureate Programs in the CSU* ([AS-2534-01/AA](#))

; and be it further

RESOLVED: That the ASCSU urge that an ASCSU/CSU Task Force or work group with a focus on Graduate Education in the CSU be formed to ensure that prior recommendations and continuing concerns are collectively addressed, strategically prioritized, and support mechanisms put in place with attention to, but not limited to, the following:

- (a) exploring how the Graduation Initiative 2025 supports advising and transitioning of undergraduate students into graduate programs in a timely and streamlined manner;
- (b) enhancing undergraduate student education through teamwork with graduate students in mentoring, peer advising and research efforts;
- (c) enhancing student learning opportunities and student success outcomes through collaboration with faculty on grants, research, scholarship and creative works;
- (d) identifying active learning and high impact practices that may improve attainment of graduate student learning outcomes, enrich career opportunities, and increase labor force participation;

- (e) reviewing how differential funding from the state and proposed tuition increases for graduate education may impact both graduate program and student success in the CSU;
- (f) conducting a cost-benefit analysis of CSU systemwide tuition waiver supports for graduate students in order to provide them with teaching and research assistance opportunities;
- (g) examining high demand graduate degree programs regionally, nationally, and internationally, and exploring innovative ways to develop programs that prepare CSU graduates for fast growing careers as well as research opportunities;
- (h) studying how professional graduate degree programs (e.g. Professional Science Master's, Doctor of Education, Doctor of Nursing Practice, Doctor of Physical Therapy) will help to address the growing needs of the diverse communities they serve; and be it further

RESOLVED: That the ASCSU distribute this resolution to the CSU Board of Trustees, CSU Chancellor, CSU Campus Presidents, CSU Academic Council, Deans of Graduate Education, Campus Graduate Program Coordinators, Campus Senate Chairs, California Faculty Association (CFA), and the California State Student Association (CSSA).

***RATIONALE:** As stated in the CSU Masters' Degree Program Quantitative Characteristics Report (April 2016; see Appendix A), this examination of graduate programs may have created an excellent opportunity to study the current state of programs. Programs may have "morphed" from their original forms and it may be time to review them for current best practice both within their campus culture and also within their disciplines across campuses. Across the system, there are examples of discipline programs that offer at least 70% of their required units at the graduate level and other similar programs in degree name and degree code that offer programs with less than 70% of the required units offered at the graduate level. It would be very useful for the Chancellor's Office to facilitate discussions in discipline councils between these programs to investigate the options available to potentially increase the required percent of graduate units required to at least 70%. After reviewing the CSU Masters' Degree Program Quantitative Characteristics report, the Academic Affairs (AA) Committee discussed "degree creep," that is undergraduate work seeping into graduate programs; the impact any changes in the proportion of undergraduate vs. graduate courses would have on small programs; ways to maintain graduate-level expectations in programs that rely heavily on undergraduate or dual listed courses; and the importance of campus culture as a factor in the nature of graduate programs.*

The Academic Senate CSU recognize that further study be undertaken before implementing the recommendations offered to campuses such as:

- *The feasibility and process of intra-university graduate programs based on social need and effective demand prior to implementing such programs;*
- *the effect of additional fees on the CSU mission of providing accessible education; and*
- *the quality of high service/high-price programs, the professional orientations for graduate degree programs in the liberal arts and sciences, and the Professional Science Masters (PSM) programs.*

ASCSU documents show that [AS-2534-01/AA](#), “New Study of Post-Baccalaureate Programs in the CSU”, cited the importance of graduate programs in the CSU: “The need for increased attention to the graduate level, including research, has been advanced as an area of growing concern not only within institutions of higher education but externally as well. Business and industry leaders in biotechnology, engineering, computer science, and other fields have expressed concern about the availability of graduate students and the linkages between research--be it pure or applied--and the needs of the State. . .”

The CSU Academic Council (composed of CSU provosts) developed a paper titled “The Place of Graduate Education in the CSU” in December, 2006. In this paper, the CSU Academic Council makes the case for enhancing graduate education in the CSU and clearly reinforced prior ASCSU recommendations contained in [AS-2534-01/AA](#), “New Study of Post-Baccalaureate Programs in the CSU”; [AS-2652-04/EX](#), “Recommendation on the Report from the Task Force on Graduate and Post baccalaureate Education in the California State University”; and “*Rethinking Graduate Education in the CSU: Meeting the Needs of the People of California for Graduate Education in the 21st Century*”. This CSU Academic Council paper also suggested several possible new areas for graduate study.

Furthermore, [AS-2790-07/AA \(Rev\)](#), “Graduate Education Development in the CSU”, recognized that further study which address state and campus issues is needed on the recommendations. In addition, [AS-3122-13/AA \(Rev\)](#), “Reaffirming the Importance of Graduate, Post Baccalaureate, and Credential Programs and Access to Those Programs”, conveyed the importance of graduate, post-baccalaureate, and credential programs to the CSU system, to the public good and to the economy of the State of California itself; and urged the campus Presidents or their designees to explore increasing access to CSU graduate, post-baccalaureate, and credential programs by, for example, waiving fees for graduate, post-baccalaureate and credential students of limited financial means or those who are employed as research assistants or teaching assistants. It also urged the Chancellor’s Office to establish a task force including representatives selected by the ASCSU to review recently-enacted policies and to explore fellowships, grants, and other forms of financial aid to be made available in order to attract the best students to graduate, post-baccalaureate and credential programs in the CSU.

Executive Order No. 611 (<http://www.calstate.edu/EO/EO-611.pdf>) is the Delegation of Authority to Approve Fee Waivers for Graduate Students Employed as Graduate Assistants or Teaching Associates. This Executive Order, along with other policies governing the awarding of various forms of financial aid as well as State University Grants should be reviewed by a task force that includes faculty. The task force can then evaluate the impact of these policies and make recommendations as appropriate. .

Approved Unanimously - March 16-17, 2017

CSU MASTERS' DEGREE PROGRAM QUANTITATIVE CHARACTERISTICS

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I. Executive Summary

A set of quantitative analyses were conducted to examine some of the descriptive and predictive relationships among variables related to the proportion of graduate and undergraduate units taken by students in graduate masters' programs in the CSU. A total of 1,140 (47,558 students) masters' programs, primarily MA and MS programs, were included in the analyses. All CSU campuses reported at least one masters' program. The results of the study can be summarized in two words: tremendous variability. The unique characteristics of programs embedded within distinctly different campus cultures are important factors in understanding graduate education from the perspective of graduate/undergraduate unit distribution in masters' degree programs.

Title 5 requires at least 50% of the programs units to be designed for graduate students. Although there are different ways to interpret this requirement, this paper simply uses the proportion of units at the graduate-only level. Using that metric, 45 (3.9%) programs require fewer than 50% of the total units at the graduate level. A sizable number of programs 446 (39%) require 90-100% of units at the graduate level. There appear to be no systematic differences between programs offering fewer than 50% at the graduate level and other programs that offer a great percentage. Of some potential concern, are terminal degree programs such as the MFA in which fewer than 90% of the units are at the graduate level. The only terminal degree program examined systematically was the MFA, with 24 (73%) offering less than 90% of the units at the graduate level, with 7(21%) offering less than 70% at the graduate level. Given the MFA is a terminal degree, further examination may be warranted.

The major "take home" messages are:

1. The proportion of graduate units in masters' programs varies enormously, and non-systematically across campuses. Any examination of graduate programs should take the context of the campus into consideration.
2. The vast majority of programs (95%) meet the Title 5 requirement for at least 50% of program units at the graduate level.
3. Only 27% (9) of MFA programs, a terminal degree, require at least 90% of the program units at the graduate level.

II. Goals of Report

There were several goals of this overall analysis of graduate programs in the CSU. The first goal was descriptive: How many programs? What kind of degrees are offered? There were also various questions about units, unit distribution, and enrollment. A second goal was a broad examination of graduate education using this data. The data available were primarily quantitative variables (see Table 1 for a list of the quantitative variables used). Therefore, the analyses looked primarily at some of the questions that could be answered with quantitative, high level data.

Several constituencies in the CSU have been discussing Title 5 with regard to the percent of coursework required at the graduate-only level. Currently 50% of course work is required to be designed for graduate students. Some of the conversations have centered on the effects of changing the 50% to a higher percentage. An interesting challenge is that there are multiple ways to interpret the Title 5 language. This study takes a fundamental approach and looks primarily at an important key variable of interest; the percent of units required at the graduate level relative to total units.

These analyses provide one view of graduate education. Clearly there are other critical indicators of graduate education in addition to percent of units required at the graduate level and other quantitative measures but these data help to answer some of the fundamental questions. This set of analysis should be viewed as first global step to allow for conversations among faculty and administrators in graduate programs to discuss the nature of graduate education.

This paper is structured in four sections. The first section is descriptive and examines overall questions about masters' programs in the CSU. The second section contains a set of analyses that address several common questions that arise when changing the 50% graduate level coursework to a higher proportion is discussed. The third section discusses the limitations of this study and the final section offers some concluding thoughts, including best practices and future directions.

III. Basic Descriptive Information about CSU Master's Program

The Data

The data used in this study were gathered from personnel within the Academic Affairs offices on each campus. Deans of Graduate Study and/or Associate Provosts of Academic Programs completed a briefly survey that asked basic descriptive questions about the masters' programs on their campuses. The data gathered were primarily quantitative. In addition to the quantitative variables, information regarding CSU degree code, degree designation, and degree title were collected. Table 1 provides mean, median, standard deviation, range and the intraclass correlation coefficient for the quantitative variables employed in this study. Simply looking at the ranges (min/max value column) of these variables the remarkable variability across the system is strikingly apparent. Indeed this variability in almost every conceivable aspect is a strong theme throughout this paper. We will refer back to this table as needed

throughout the paper, right now, the table is provided simply to get a sense of the data collected and average responses and range of the responses.

Table 1. The quantitative variables used in this report

Across all campuses	Mean/Median	Standard Deviation	Min/Max values	Percent of variance explained by campus
Proportion of graduate only units required	0.78/0.80	0.20	0/1	20.91%
Unit Variables				
<i>Semester Campuses</i>				
Units required	36.24/30.00	11.02	30/96	12.25%
Units required in graduate-only courses	29.53/27.00	13.52	6/96	12.90%
Units required in courses that blend undergraduates and graduates	4.02/0.00	10.11	0/69	21.13%
<i>Quarter Campuses</i>				
Units required	53.00/46.00	14.84	45/123	1.46%
Units required in graduate-only courses	40.93/36.00	18.79	0/112	13.31%
Units required in courses that blend undergraduates and graduates	7.29/0.00	9.00	0/45	32.45%
Total number of undergraduate courses required	1.71/0.00	4.04	0/27	15.70%
Number of majors in program	44.00/22.00	75.99	0/901	8.86%

How Many Masters' Programs are there in the CSU?

There are approximately 1140 masters' programs in the CSU with approximately 47,558 students enrolled. This includes both separate programs and programs with options within the program, for example some programs have both a thesis and a comprehensive exam option. Some of these programs seem to be in flux and may not be currently accepting students. Indeed two programs were included

but listed with no other information except that these programs were no longer accepting students. Therefore, the effective number of program/program options in 1138.

Table 2 lists the number of programs at each campus. All campuses offer at least one master's program and the number of programs offered ranges from 1 to 135. The average number of programs per campus is 50 and the median number programs is 44. The median is perhaps a better measure of central tendency given the skewed distribution. SDSU and CSULA have substantially more masters' programs than the other campuses so this distorts the mean somewhat, the median gives the point at which 50% of the programs have more and 50% have fewer programs.

Table 2. Distribution of masters programs at across campuses

	Number of Programs	Percent of Total in CSU
Bakersfield	22	1.9
Channel Islands	9	.8
Chico	44	3.9
Dominguez Hills	32	2.8
East Bay	34	3.0
Fresno	62	5.4
Fullerton	51	4.5
Humboldt	22	1.9
Long Beach	65	5.7
Los Angeles	135	11.8
Maritime	1	.1
Monterey Bay	12	1.1
Northridge	74	6.5
Pomona	47	4.1
Sacramento	65	5.7
San Bernardino	59	5.2
San Diego	133	11.7

Table 2 (Cont.)		
San Francisco	92	8.1
San Jose	90	7.9
San Luis Obispo	31	2.7
San Marcos	15	1.3
Sonoma	22	1.9
Stanislaus	23	2.0
Total	1140	100.0

There are indeed a variety of types of masters' degrees are awarded in the CSU. The majority of degrees (83.9%) are masters of arts and masters of science; however approximately 30 different degree designations are awarded in the CSU. Table 3 lists the most frequent degrees earned.

Table 3. The Most Frequently Awarded Degrees in the CSU

Degree Type	Frequency of degree	Percent across CSU
MS	492	43.2
MA	464	40.7
MBA	46	4.0
MFA	33	2.9
MM	20	1.8
MPA	18	1.6
MSW	17	1.5
All other single degrees combined	30	2.6
Combination degrees (e.g. MA/MS)	20	1.8
Total	1140	100.0

Enrollment

Enrollment ranges from 0 to 901 across these 1140 masters' programs. There is an important caveat here. Some programs reported the combined enrollment across all options and others the enrollment for each option. Therefore, it seems reasonable to suggest that there are more small programs and some of the larger sizes are overstated. The largest program (enrollment = 901) is at San Jose in MS in Software Engineering. Several programs report zero enrollment.

Enormous variability across campuses Campus Culture matters, a lot.

It seems obvious to state that campuses across the CSU differ dramatically, they do, statistically, in the all the variables used in this study. The intraclass correlation coefficient measures the proportion of variability in a variable that is explained by a grouping variable. So, here, clearly the campus is the grouping variable and the intraclass correlation coefficient can be calculated for each unit, course, and enrollment variable used in this study. These intraclass correlation coefficients are listed in the last column, labeled "Percent of variance explained by campus" in Table 1. These proportions range from 1.46% to 32.48% and most would be considered quite large. This means, for example, that 20.91% of the variability seen in the proportion of graduate-only units across graduate programs is explained by the different campus, and so perhaps the different campus cultures. This underscores the notion that individual campus cultures contribute enormously to differences in masters programs in the CSU. The analyses that follow take these intraclass correlations into account. However, as future discussion occurs the critical role of campus culture should be central in the conversations.

IV. A closer look at the relationships among these variables

A general question addressed in this report is what would be the consequences of a shift from a minimum of 50% of coursework designed for graduate students to higher percentage? The set of analyses that probe this general question, of course, assumes that the programs changed nothing else but the number of units required at the graduate level. This section is structured as a set of questions than we've heard commonly asked over the past year(s) as various groups have discussed changing the minimum required units in a graduate program to a higher proportion.

The percent of graduate units required as a function of total units was calculated with the following formula, $\frac{\text{Number of units graduate only}}{\text{Total number of units required}}$. A grouped, six level, quasi decile, variable was then created for the analyses (less than 50%, 50-59%, 60-69%, 70-79%, 80-89%, 90-100%). To give a sense of the distribution of programs grouped by percent required of graduate only units programs see Table 4 below. Two programs were not included as although they were listed with name and degree, no other information was provided and the campus indicated that no students were currently enrolled in the programs.

Table 4. Number of programs in each decile grouping representing percent of units required at graduate level

Percent of graduate units required as a function of total units	Number of programs	Percent of total CSU programs
less than 50%	45	3.9
50-59%	144	12.6
60-69%	154	13.5
70-79%	212	18.6
80-89%	137	12.0
90-100%	446	39.1
Total	1138	99.8*
<i>*2 programs not included</i>		

Less than 50% of required units at graduate level

Approximately 4% (45 programs on 7 campuses) require fewer than 50% of the required units at the graduate levels. See Table 5. These programs are housed in a range of disciplines and degree designations and are housed in both small and large campuses throughout the state. Enrollment ranges from 0 to 77 in these programs. Approximately 987 students are enrolled in these programs. The Natural Resource programs at Humboldt seems unique in the system; however the other degree programs seem to have similar programs with a higher percent of units at the graduate level at other campuses.

Table 5. Programs with fewer than 50% of the total units as graduate-only course units

Campus	Degree Program
Bakersfield	Spanish
Humboldt	Biology
	Natural Resources: Env. & NR Sciences
	Natural Resources: Fisheries
	Natural Resources: Forest, Watershed
	Natural Resources: Wildlife
Los Angeles	Anthropology (Archaeology Option) (Comp Exam)
	Anthropology (Archaeology Option) (Thesis)
	Anthropology (General)
	Art (Art History)
	Chemistry (Comprehensive Exam Option)
	Civil Engineering
	Education (Early Childhood/Primary Education)
	Education (Educational Technology and Leadership)
	Education (Mathematics Education)
	Education (New Media Design and Production)
	Environmental Science (Environmental Biology)
	Environmental Science (Environmental Engineering Science)
	Environmental Science (Environmental Hydrology)
	Geography
	Geological Sciences (Environmental Hydrogeology)
Industrial and Technical Studies	

Campus	Degree Program (continued)
	Music
	Philosophy
	Psychology
	Sociology
	Special Education (Multicultural/Multilingual Special Education)
Pomona	Kinesiology (Exercise Physiology emphasis)
San Diego	Linguistics - Track one
	Medical Physics
	Physics
	Studio Arts
	Total
San Jose	Biological Science
	Biological Science (Organismal Biology, Conservation & Ecology)
	Biological Science (Physiology)
	Geography
	Kinesiology
	Marine Science
	Statistics
San Luis Obispo	Agricultural Education
	Agriculture w/specialization (10)
	Biomedical Engineering
	Civil & Environmental
	Forestry Science
	Mechanical Engineering

Between 50% and 70% of required units at graduate level

Approximately 26% of masters programs (298 programs at 20 campuses) currently require between 50% and 70% of required units at the graduate level. This group of programs is especially interesting in that many conversations surrounding Title 5 changes have involved increasing the required minimum graduate units to 70%. Indeed, the only campuses that do not have some programs in this range are Channel Islands, Maritime, and Monterey Bay. Looking across type of degree program, degree offered, enrollment there seem to be no systematic characteristics of these programs versus programs that offer at least 70% of required units at the graduate level. Note, this data, an approximately 27 page table is not included in this report but is available upon request. Approximately 9113 students are enrolled in these programs. The enrollment ranges from approximately 0 to 423 students.

A set of analyses examined how programs differed from 90% to 100%.

1. Is campus size related or location related to a lower proportion of required graduate-only units? No, with the exception of the Natural Resources programs at Humboldt.

Large and small campuses up and down the state have a range of on all of the variables examined. All 23 campuses have at least one program with 90% to 100% required graduate level units and, 17 of these campuses also have programs with 50-59% of required graduate level units. The six campuses what have 90-100% programs and no programs in the 50-59% range of units are diverse (Channel Islands, Maritime, Monterey Bay, Northridge, Sacramento, and San Bernardino).

2. Are certain degree types related to a reduced percent of required graduate units? No.

Table 6 descriptively examines type of degree as related to percent of graduate only units. The percentages reflect the percent of degrees offered within the groups of percentages of required graduate units (< 50%, 50%-60%, etc.), the columns of the table. It appears that each degree type is represented in roughly the same proportion within all percentage ranges.

Table 6. Degree designation within each graduate-only unit decile

Degree Type		< 50%	50-59%	60-69%	70-79%	80-89%	90-100%	Total
MA	Count	22	67	63	99	62	150	463
	% of total unit percent grouping	48.9%	46.5%	40.9%	46.7%	45.3%	33.6%	40.7%
MS	Count	22	64	69	85	59	192	491
	% of total unit percent grouping	48.9%	44.4%	44.8%	40.1%	43.1%	43.0%	43.1%
MFA	Count	0	3	4	7	10	9	33
	% of total unit percent grouping	0.0%	2.1%	2.6%	3.3%	7.3%	2.0%	2.9%
MM	Count	0	3	7	3	1	6	20
	% of total unit percent grouping	0.0%	2.1%	4.5%	1.4%	.7%	1.3%	1.8%
MPA	Count	0	1	2	2	1	12	18
	% of total unit percent grouping	0.0%	.7%	1.3%	.9%	.7%	2.7%	1.6%
MBA	Count	0	1	3	0	3	39	46
	% of total unit percent grouping	0.0%	.7%	1.9%	0.0%	2.2%	8.7%	4.0%
MSW	Count	0	0	0	1	0	16	17
	% of total unit percent grouping	0.0%	0.0%	0.0%	.5%	0.0%	3.6%	1.5%

Degree Type		< 50%	50-59%	60-69%	70-79%	80-89%	90-100%	Total
Combination (e.g. MA/MS)	Count	0	2	3	7	0	8	20
	% of total unit percent grouping	0.0%	1.4%	1.9%	3.3%	0.0%	1.8%	1.8%
Other single	Count	1	3	3	8	1	14	30
	% of total unit percent grouping	2.2%	2.1%	1.9%	3.8%	.7%	3.1%	2.6%
Total	Count	45	144	154	212	137	446	1138
	% of total unit percent grouping	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

2a. Are there terminal degrees that require fewer than 90- 100% units at the graduate level? Yes.

It is noteworthy that the MFA, a terminal degree, is awarded from 24 (73%) programs with fewer than 90% of required units at the graduate level.

Now, delving further into questions related to graduate level coursework: Questions 3 through 6

When Title 5 is discussed with reference to graduate units, a number of additional questions are often raised. For example, are differences in total units, number of required undergraduate courses, or number of required courses that blend undergraduate and graduate students, or enrollment related to difference in the proportion of units required at the graduate level?

Statistical Analyses plan. Only the merest of statistical detail is presented in the following discussion. More full statistical information will be provided upon request.

To answer these questions a series of regression analyses was conducted taking into account the intraclass correlations. Of primary interest were questions about differences between the graduate unit decile groups. And if there were difference, what were they? Where there were differences, comparisons were conducted comparing each decile (50-59%, 60-69%, 70-79%, 80-89%) to the group programs in the 90-100% category. For this set of analyses, the programs with fewer than 50% of the units at the graduate level were not included.

The analyses that examined differences in units were conducted separately for the quarter and the semester campuses. Given a separate analysis was done for each dependent variable (total units, number of required undergraduate courses, number of required courses that blend undergraduate and graduate students, and enrollment), there was concern about a statistical issue of overlapping variance.

However, perhaps somewhat surprisingly, after removing the variance explained by each campus the only significant correlation among the variables for the quarter campuses was between number of majors and the total number of required units, $r(273) = .22, p < .01$. The greater the number of total units required, the greater the number of majors, (note this is a correlational not a causal association). And, there were no significant associations among the variables for the semester campuses. Given these results, it seems reasonable to interpret following results independent of one another.

All of the means and standard deviations are given in Table 7 for quarter campuses and Table 8 for semester campuses. Follow-up comparisons were conducted to examine differences between the 90%-100% category compared with each of the other categories. The means in bold indicate significant differences ($p < .05$), read down the columns. Below are the results in almost "sound bite" form. More detailed information is happily available upon request. Please note that there is enormous variability even within each of the quasi-decile categories, this large "within-groups" variability makes an enormous difference in the size of the difference required to state that there is a significant difference. These analyses once again underscore the variability across programs in the CSU.

3. Are the differences in total units required related to the differences in the percent of required units at the graduate level? Yes.

Quarter campuses: Yes, but only between programs with 50%-59% percent required graduate units and the 90-100% required graduate unit group (46.62 total units versus 56.82 total units). The programs in the 50-59% range require fewer total units than those programs in the 90-100% range.

Semester campuses: Yes, but only between,

1. Programs with 50%-59% percent required graduate units and the 90-100% required graduate unit group (31.79 total units versus 39.91 total units) and,
2. Programs with 60%-69% percent required graduate units and the 90-100% required graduate unit group (31.63 total units versus 39.91 total units). The programs in the 50-59% and 60-69% range require fewer total units than those programs in the 90-100% range.

4. Do differences in the proportions of required graduate units differ in the number of students enrolled? Yes.

Quarter campuses: Yes, but only between programs with 50%-59% percent required graduate units and the 90-100% required graduate unit group (20.83 average majors versus 45.15 average majors). There is tremendous variability within these groups as seen in the standard deviations.

Semester campuses: Yes, similarly between programs with 50%-59% percent required graduate units and the 90-100% required graduate unit group (36.20 average majors versus 64.28 average majors). Again, tremendous variability within these groups as seen in the standard deviations.

5. Do the programs that require fewer graduate only units perhaps compensate by requiring more units in courses that blend graduate and undergraduates? Yes and No.

Quarter campuses: Yes, but only between,

1. Programs with 50%-59% percent required graduate units and the 90-100% required graduate unit group (13.02 average units versus .28 average units) and,
2. Programs with 60%-69% percent required graduate units and the 90-100% required graduate unit group (9.25 average units versus .28 average units).

Semester campuses: No, the opposite pattern,

1. Programs with 60%-69% percent required graduate units and the 90-100% required graduate unit group (3.61 average units versus 4.91 average units) and,
2. Programs with 70%-79% percent required graduate units and the 90-100% required graduate unit group (3.85 average units versus 4.91 average units).

6. Does the number of undergraduate courses required differ as a result of different proportions of units required at graduate level? Yes

Quarter campuses: Yes, but only between programs with 70%-79% percent required graduate units and the 90-100% required graduate unit group (3.41 average courses versus .33 average courses).

Semester campuses: Yes, but only between,

1. Programs with 50%-59% percent required graduate units and the 90-100% required graduate unit group (2.12 average courses versus .14 average courses) and,
2. Programs with 60%-69% percent required graduate units and the 90-100% required graduate unit group (3.40 average courses versus .14 average courses).

Table 7. Means and Standard deviations for variables used on quarter campus analyses.

Percent of units required graduate only grouped into deciles above 50%		Total number of units required	Total number of undergrad courses required	Total number of units required in courses that blend undergrads/grads	Number of majors in the program
50-59%	Mean	46.62	2.16	13.02	20.83
	<i>Standard Deviation</i>	6.26	5.22	9.69	25.56
60-69%	Mean	51.25	3.23	9.25	31.71
	<i>Standard Deviation</i>	13.36	5.91	8.14	61.16
70-79%	Mean	54.12	3.41	6.46	25.12
	<i>Standard Deviation</i>	17.62	7.30	6.00	25.32
80-89%	Mean	53.59	1.56	5.41	35.17
	<i>Standard Deviation</i>	12.73	2.68	3.90	39.60
90-100%	Mean	56.83	0.33	0.28	45.15
	<i>Standard Deviation</i>	16.81	1.25	1.04	63.22

Table 8. Means and Standard deviations for variables used on semester campus analyses.

Percent of units required graduate only grouped into deciles above 50%		Total number of units required	Total number of undergrad courses required	Total number of units required in courses that blend undergrads/grads	Number of majors in the program
50-59%	Mean	31.79	2.12	3.89	36.20
	<i>Std. Deviation</i>	5.80	4.07	7.06	51.82
60-69%	Mean	31.63	3.40	3.61	35.73
	<i>Std. Deviation</i>	4.93	5.12	7.16	54.43
70-79%	Mean	34.30	1.63	3.85	38.89
	<i>Std. Deviation</i>	9.86	3.03	6.60	68.07
80-89%	Mean	33.10	2.14	3.09	42.99
	<i>Std. Deviation</i>	7.06	2.86	8.29	58.32
90-100%	Mean	39.91	0.14	4.91	64.28
	<i>Std. Deviation</i>	13.08	0.87	13.53	108.39

Summary of this set of analyses. From this set of analyses conducted separately for semester and quarter campuses it seems that, there is not a statistical difference in the programs that require between 80 – 100% of the units in graduate-only units. There are small differences between the 70-79% graduate only units and the higher two deciles (80% - 100%). Differences tend to emerge when comparing the 50-59% and 60-69% graduate only to the 90-100%. This seems reasonable. The large variability within many of these deciles is noteworthy and underscores the large ranges of responses within each decile on these variables. It might be helpful, and seems logical, to begin conversations with the programs in 50-59% and 60-69% categories to examine their programs.

V. Limitations

There are a number of limitations to this study; however, none are so large as to compromise the results presented but should be kept in mind as the results are considered.

Despite a seemingly simple data request, gathering the data was not a straightforward. There are different ways to consider programs including thesis or comprehensive exam options, and complex coursework options depending on sub-area. This seems to have led to some confusions and discrepancies in how to report on the units and courses survey questions. Additionally, the number of students in programs may also be skewed slightly high as some campuses combined all the students into one option of a program although they reported several programs.

Ranges for units or courses were given at 17 of the campuses where a single value was requested. Most of these discrepancies were simply differences in options within a program for example a thesis or exam option. Some were different concentrations within a program for example general experimental psychology and counseling psychology. Although these 17 campuses reported ranges it may be reasonable to think that the other campuses also have these ranges and simply reported the lower number of units or courses. Two campuses with large numbers of masters programs did not respond to multiple requests for information. For these campuses the lower number of units or courses was used for all analyses.

All of these analyses are univariate, meaning the effect of one variable was examined on a single outcome. It may be the case that a complex set of variables could identify unique programs that would be disadvantaged by a move to a requirement for a higher percent of units offered at the graduate level. Therefore, it's important to engage the campuses and the faculty in these programs to discuss undetected issues with potentially increasing the required percent of units offered at the graduate level.

This study was an important first examination of graduate education. Other variables for future studies to get a more complete picture of graduate education in the CSU are needed. These variables might include goals and objectives of the program, number tenure track faculty qualified and able to teach in programs, program resources and the balance with undergraduate programs within the discipline and the campus, graduate rates, and placement in Ph.D or career position measures.

VI. Conclusions, Best Practice Suggestions, and Next Steps

The variability in degrees offered, programs, size of programs and unit structure within programs is striking. As is clear, from the analyses presented, there is virtually nothing systematic in the quantitative differences in units required across programs. The only differences that seem to emerge are differences, across both campuses and disciplines among programs that offer fewer graduate only units relative to programs that require 90% or more of the units at a graduate level.

From the data available, there appears to be no obvious systematic reasons for requiring a lower percentage of graduate-only units in the vast majority of programs. From this global analysis it appears that with the exception of one program with several options at Humboldt, there are no campuses or disciplines that would be uniquely disadvantaged by increasing the proportion of units required. However, campus culture does matter, a lot. Much of the tremendous variability and range of responses observed in this study could be explained simply by differences in campus cultures. It seems that if conversations about increasing the proportion of required units begin, they should begin at the campus level with the goal of understanding the unique factors of the program within each campus perhaps relative to highly similar programs at other campuses.

Gentle Suggestions for Next Steps and Best Practices

This examination of graduate programs may have created an excellent opportunity to examine the current state of programs. Programs may have “morphed” from their original forms and it may be time to review them for current best practice both within their campus culture and also within their disciplines across campuses. Across the system, there are examples of discipline programs that offer at least 70% of their required units at the graduate level and other similar programs in degree name and degree code that offer programs with less than 70% of the required units offered at the graduate level. It would be very useful for the Chancellor’s office to facilitate discussions in discipline councils between these programs to investigate the options available to potentially increase the required percent of graduate units required to at least 70%.

On the surface it is concerning that some terminal degree programs such as the MFA have programs that offer fewer than at 90% of the units at a graduate-only level. Perhaps faculty in these programs can review terminal degrees such as the MFA that currently require less than 100% of required units at graduate level with the goal of increasing the percent of units at graduate level to 100%. There were no MFA discipline programs across the CSU that systematically offered fewer than graduate only units than others so the lower proportion of units for some programs doesn’t appear to be discipline based.

Programs that currently that require less than 50% of required units at the graduate level are problematic as they appear to be out of compliance with Title 5. Faculty in these programs should clarify why indeed the program is active offering less than 50% of units at the graduate level and what steps can be taken to increase this percentage or otherwise indicate how Title 5 language is being met in their program.

Information requests for data on units in graduate programs should have been quite straightforward. In a majority of cases it wasn’t. This ambiguity limits the confidence in some of the results. It appears that over time a variety of options have been created within masters’ programs so that basic questions like “how many units . . . ?” often led to complicated answers about a variety of options available such as thesis or comprehensive exam or even different related content areas. This may be a good time to “clean this up”. Meaning develop a consistent method of reporting units. In some cases, it may be the case that the different options are indeed now different programs, in other cases it would be helpful to consistently report, thesis and comprehensive exam options.

Review programs that report zero enrollment. These may be confusions in data reporting or maybe programs or options with no students in which case the program may want to evaluate its viability. Combine this report (or a version of it) with campus program reviews. In this way some of the key campus specific variables mentioned in the limitation section could be incorporated in further analyses.

There is tremendous synergy across the CSU. As new masters' programs are proposed, perhaps the CO can introduce proposers to similar existing programs, in a mentorship model. It was absolutely striking that degrees and specific disciplines were widely dispersed over all of the variables examined. This suggests room for the development of a flexible, campus-centric set of best practices.