



UC Berkeley – Office
of Planning & Analysis

Enrollment Trends in Capped Majors – Issues for Consideration in the Establishment, Review and Enforcement of Caps in Letters & Science Majors

Introduction

Enrollment growth and pressure on oversubscribed programs has been an issue the College has grappled with for more than 30 years. A difficult balancing act has been required – one that protects the student’s right of access to academic programs of their choice while it also responds to the realities of accommodating demand which exceeds capacity. At both the lower and upper division levels, enrollment pressures have been challenging. For example, the Common Good Initiative recently addressed the issue of stress at the lower division level by improving student access to “feeder” courses necessary for timely declaration of major. At the upper division level, the use of enrollment caps on certain majors has been the strategy employed to equitably control growth. As will be demonstrated in this paper, however, despite the use of caps, impacted programs and small groups of related majors continue to grow, indicating that the effectiveness of current capping strategies may be in need of review.

Early Review of Requests to Cap Majors

The Executive Committee evaluated one of the earliest requests for an enrollment cap in 1980 when the Computer Science major requested that they be allowed to raise the 2.8 GPA cut-off in prerequisite lower-division mathematics and science courses to a 3.0 or 3.2 GPA cut-off for admission to the major. As the committee outlined the guidelines for capping the Computer Science major, it directed the Department not to deny admission to “qualified” students and to ensure that students would be excluded only if they were “judged unlikely to be able to complete successfully the requirements for the major”. The Department was asked to be as “unrestrictive and equitable as possible”, to be “as explicit as possible, so that students know where they stand” and to understand that limitations “would be subject to reasonable frequent review to ensure that they remain necessary and appropriate”.

In subsequent discussions of capping majors, the Executive Committee discussed a range of options for controlling growth – including random selection, increasing pre-requisites, unit restrictions, and the possibility of adding minor programs, although these were rejected for a variety of reasons including general unfairness, their potential for placing additional burden on already overburdened lower division feeder courses and, their impact on a student’s ability to plan ahead. Ultimately, the committee viewed the most equitable way of restricting access to impacted programs as “GPA in prerequisites for the major” as students would know their chances of admission based on performance in relevant courses.

Capped Majors Increase – Guiding Principals 2001

In the last two decades, the College has experienced unprecedented enrollment growth (Tidal Waves I and II) and as state funding declined, enrollment restrictions became a necessary tool for controlling access to impacted programs unable to accommodate large influxes of undergraduates. The number of capped majors expanded and GPA requirements have ranged from modest (minimum 2.7 GPA) to restrictive (3.2 and 3.3 GPAs) and the range of strategies for capping was expanded to include a quota based approach. In an effort to carefully define and apply capping standards, the Executive Committee endorsed the following principals in 2001.

- 1) The current Social Welfare model (quota; first come, first served) is acceptable.
- 2) Overall GPA should **not** be used in selection for admission to capped majors.
- 3) Minimum GPA requirements do not guarantee admission to the major; the minimum GPA may be required as a minimum for consideration for admission to the major.
- 4) Establish a unit cut off to declaring a capped major, so that students do not persist for too long in trying to gain admission to the major. A central College entity will oversee exception to this, which will be rarely granted.

In addition, the Committee was to consider a range of related issues including

- 5) determining GPA levels for capped majors in prerequisite courses (as opposed to the less well defined term “courses relevant to the major”
- 6) establish cutoff points for declaration of capped majors
- 7) authorize a process for consideration of exceptions to GPA requirements and unit cut-offs (by a central College entity)
- 8) encourage departments to offer application periods each semester to ensure that Junior transfer students have timely opportunities to apply
- 9) consider requiring departments to collect data on turn-away rates each semester
- 10) initiate a process for regular review of caps
- 11) require departments to review pre-requisite course patterns to ensure there are adequate course offerings to accommodate timely declaration of major.

Departmental requests for caps were to be evaluated by the L&S Committee based on information provided by the department which would include five years of data on enrolled majors, faculty FTE, student credit hours and undergraduate degrees awarded. In addition, the Committee asks that departments report on issues which contribute to the need for a cap, such as special curricular needs (classes requiring auditions or highly specialized pre-requisites, and lab or studio classes), classroom space problems, scarcity of GSIs, lack of faculty advisers, etc. In addition, the Committee requested that Deans “investigate the possibility of additional resources to accommodate more students before drafting a new cap proposal”. Departments were asked to determine enrollment limits on which the cap would be based, and were clear about the mechanism they would use to maintain the cap (first come, first served, minimum GPA, competitive GPA, etc.)

It is not clear if the Committee put into place all of the objectives stated above (for example, formal reviews of all capped majors has not been initiated since 2003 and it is not clear how exceptions to capping limits are handled), however the caps have been altered over the years (caps have been removed in Computer Science, Cognitive Science and Political Economy of Industrial Societies and new caps have been initiated in Art Practice, Environmental Economics and Policy, Operational Research and Management, and Public Health); the Committee has entertained a range of requests for caps over the years, some of which have been denied.

Caps Currently in Place – 2012

Currently, eight L&S majors are capped: Art Practice, Economics, Environmental Economics and Policy, Media Studies, Operations Research and Management Science, Psychology, and Social Welfare.

As provided below, the majority of programs with caps in place involve GPA restrictions although, as mentioned previously, the severity of individual restrictions varies. For example, the cap on Social Welfare provides access to students with a 2.0 GPA on a first-come, first-served basis. This acts to control growth more like a spigot than a hard shut-off valve. Majors with the highest GPA restrictions include Art Practice (3.3), Operations Research (3.2), Media Studies (3.2) and Psychology (3.2).

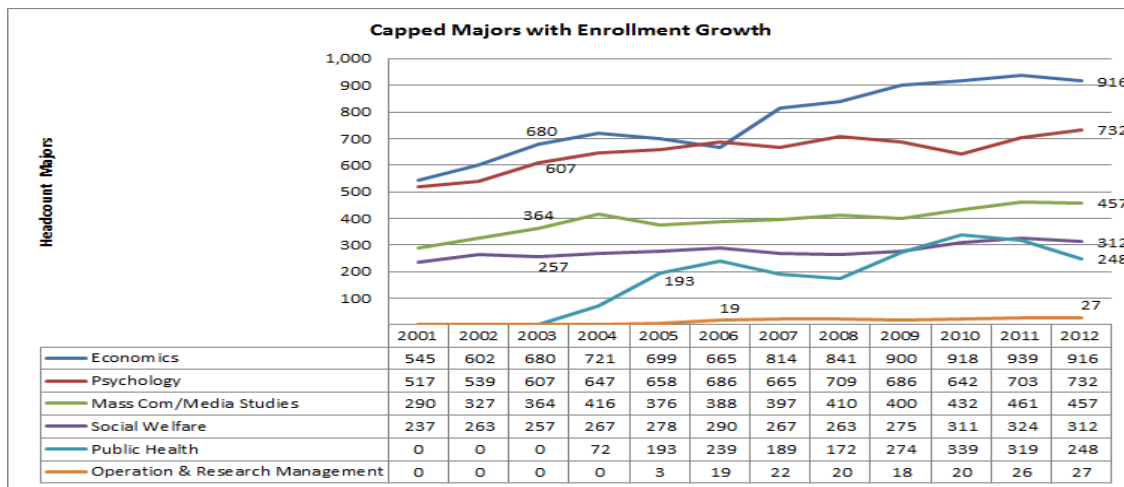
Department	Cap Initiated	Cap Reviewed	Target Capacity	Current Enrollments	Capping Strategy
Art Practice	2011		100	76	3.3 GPA in Art 8, Art 12 and one lower-division History of Art course, in addition to the faculty review of students' portfolio
Environmental Economics and Policy	2010		40-50	85	2.7 GPA requirement in five core courses: Math 1A or 16A; Math 1B or 16B; Statistics 20, 21, 25 or upper-division Statistics; Economics 1, 2 or 3; and Econ 100A or 100B (EEP 100 suitable substitution).
Operations Research and Management Science	2006		25	27	Minimum 3.2 GPA in Math 53 and 54; Econ 1, 2 or 3; and UGBA 10. Admitted on a first-come, first-served basis. All remaining students placed on waiting list.
Public Health	2005		200	248	Students need B- minimum in Biology 1B for admission to the major.
Economics	1987	1999, 2003	630	916	3.0 GPA in prerequisite courses
Media Studies	1996	2003	not determined	457	3.2 GPA in courses applicable to the major
Psychology	1995	2003	800	732	Automatic admission for students with 3.2 GPA in prerequisite courses.
Social Welfare	1996	2003	260	312	Students are admitted on a first-come, first-served basis. Only GPA stipulation is C letter grade in each course.

Despite these explicitly stated caps and attempts to carefully define and adhere to capacity restrictions, enrollments in the majority of these majors continues to grow, in some cases significantly. For example, the Economics major has become severely impacted and capacity has been exceeded in the Public Health and Social Welfare majors. A more detailed overview of enrollment and demographic changes in capped majors is provided below.

Enrollment Trends in Capped Majors

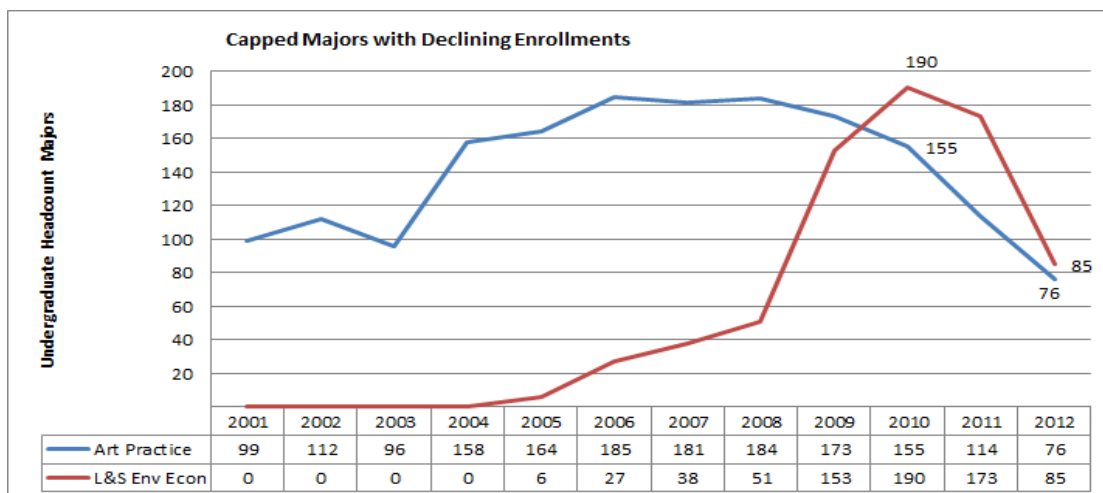
Of the eight currently capped majors, six have had significant to moderate enrollment growth. Economics, Psychology and Media Studies have had the most significant increases, for example, majors in Economics have nearly doubled in the last decade despite the cap. Many of the caps currently in place were reviewed in 2003 (and their limits are still in place); the cap in Public Health was placed in 2005 (to limit the major to 200) and in ORM in 2006 (to limit the major to 25). All of these majors, except Psychology and ORM, have exceeded their capacity limits in recent years.

Figure 1: Capped Majors with Enrollment Growth



There have been declining enrollments in two majors with recently initiated caps, Art Practice (cap initiated in 2010 to limit the major to 100 students) and L&S Environmental Economics (cap initiated in 2010 to limit major to 40-50 students). With caps in place, both majors experienced considerable declines in headcount majors and majors in Art Practice dipped below the enrollment objective (to 85 in 2012, 15 below capacity).

Figure 2: Capped Majors with Declining Enrollments



Demographics of capped majors

There have been some demographic shifts in capped majors over time. The percentage of international students has increased significantly in Economics, Operations Research and Management, and Environmental Economics. Social Welfare has had large percentages of underrepresented majors (46%) and the percentage of underrepresented majors in Media Studies has increased significantly in the last three years (to 43%). Five of these majors are predominantly female (Psychology, Media Studies, Social Welfare, Public Health and Art Practice) and three have more male majors (Economics, Operations Research and Management and Environmental Economics).

Student Demographics - Capped Majors

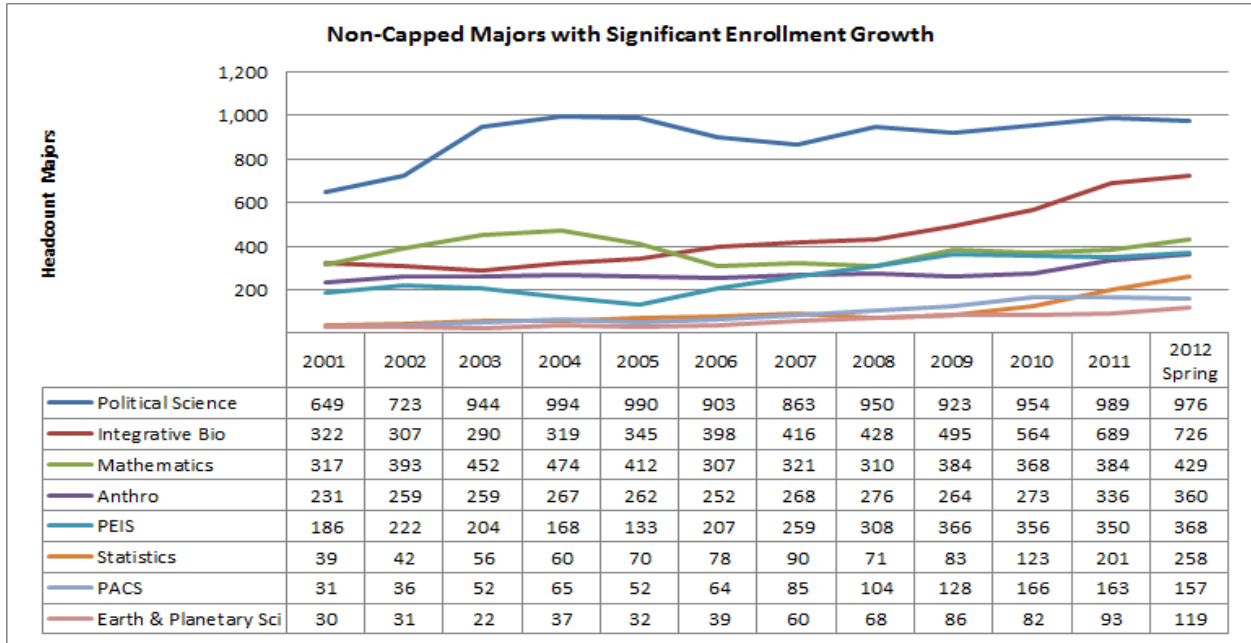
Econ	2001	Trend	2012	Public Health	2005	Trend	2012
% Female	46%		41%	% Female	76%		81%
% International	8%		25%	% International	0%		2%
% Urep	5%		4%	% Urep	15%		10%
% Asian	59%		49%	% Asian	56%		58%
Psychology				OperationsRM	2006		
% Female	73%		71%	% Female	16%		48%
% International	2%		4%	% International	11%		33%
% Urep	17%		19%	% Urep	5%		7%
% Asian	38%		36%	% Asian	11%		11%
Media Studies				Art Practice	2001		
% Female	73%		84%	% Female	74%		83%
% International	5%		0%	% International	4%		1%
% Urep	13%		43%	% Urep	17%		20%
% Asian	37%		28%	% Asian	32%		43%
Social Welfare				Environ. Economics	2005		
% Female	82%		82%	% Female	50%		45%
% International	0%		4%	% International	0%		16%
% Urep	41%		46%	% Urep	0%		12%
% Asian	31%		29%	% Asian	50%		55%

Source: Cal Answers

Enrollment Growth – Non Capped Majors

As provided below, there were also eight non-capped majors that also experienced significant growth in the last decade. These are Political Science, Integrative Biology, Political Economy, Peace and Conflict Studies, Mathematics, Anthropology, Statistics, and Earth & Planetary Science. For example, enrollments in four majors (Integrative Biology, Political Economy, Peace and Conflict Studies and Earth and Planetary Science) more than doubled in the last decade.

Figure 3: Enrollment Patterns in Non-Capped Majors



Demographics of non-capped majors

As seen below, non-capped majors with significant enrollment growth have also had shifts in student demographics. Statistics and Mathematics have had increases in international students and there are more underrepresented majors in Earth & Planetary Science. Political Science, Anthropology and Peace and Conflict Studies have also had sizeable percentages of underrepresented majors.

Student Demographics - Non-Capped Majors

	2001	Trend	2012		2001	Trend	2012
Poli Sci				Mathematics			
% Female	52%		50%	% Female	36%		29%
% International	2%		6%	% International	8%		23%
% Urep	24%		25%	% Urep	24%		18%
% Asian	26%		26%	% Asian	36%		33%
Statistics				Earth & Planetary Science			
% Female	44%		45%	% Female	30%		31%
% International	15%		38%	% International	7%		5%
% Urep	3%		2%	% Urep	7%		16%
% Asian	51%		45%	% Asian	10%		19%
Int Bio				Peace and Conflict Studies			
% Female	66%		68%	% Female	81%		73%
% International	2%		2%	% International	3%		4%
% Urep	10%		10%	% Urep	16%		24%
% Asian	42%		59%	% Asian	19%		21%
Anthro				PEIS (PE)			
% Female	75%		75%	% Female	64%		57%
% International	2%		2%	% International	3%		9%
% Urep	21%		24%	% Urep	12%		16%
% Asian	16%		18%	% Asian	49%		36%

Top Major Choices International and Underrepresented Students (Spring 2012)

These patterns are also evident when one considers the top major choices of international and underrepresented students in spring 2012. Of the top choices for international students, four majors are capped (Economics, Media Studies, Environmental Economics and Policy, and Psychology) and five have been growing (Statistics, Applied Mathematics, Mathematics, Political Science, and Political Economy). The top majors for underrepresented students include three capped majors (Social Welfare, Psychology, and Media Studies) and three programs that have been growing (Political Science, Anthropology and Integrative Biology). Also, Business¹ and Engineering programs were popular non L&S choices for both groups of students.

Spring 2012

Top 10 L&S Majors - International Students

Economics	232
Statistics	99
Applied Mathematics	76
Political Science	55
Media Studies	39
Political Economy	33
Environmental Economics and Policy	30
Psychology	29
Physics	24
Mathematics	23

Top 10 L&S Majors - Underrepresented Students

Political Science	244
Sociology	194
Social Welfare	144
English	143
Psychology	138
History	93
American Studies	91
Anthropology	86
Media Studies	86
Integrative Biology	74

Top 5 Non-L&S Majors - International Students

Electrical Engineering and Computer Sciences	131
Business Administration	88
Chemical Engineering	61
Mechanical Engineering	59
Architecture	45

Top 5 Non-L&S Majors - Underrepresented Students

Architecture	99
Business Administration	46
Mechanical Engineering	55
Civil Engineering	32
Electrical Engineering and Computer Sciences	29

Source: Cal Answers

Patterns of Enrollment Demand

Demand for capped and non-capped majors appears to be concentrated in several areas. It has been especially pronounced in majors viewed as pre-professional (Business and Economics) or biological/health science related (Integrative Biology, Public Health), as well as in the areas of behavioral and social

¹ The Business major has a fully developed application process for upper division students, not a GPA cap. Business increased their majors from 550 to 700 in 2003. Although this is an increase of 27%, it is a smaller overall increase than all the L&S capped and non-capped (growing) majors experienced in the last decade.

science (Psychology, Anthropology, Political Science). Interdisciplinary majors related to internationalism and globalization (IAS- Political Economy and Peace and Conflict Studies) have also seen considerable growth (as is also evident in the rapid increase of Global Poverty Minors – which is now the largest minor on Campus). Physical Science majors also increased (Mathematics, Statistics and Earth & Planetary Science). These trends have been strong and consistent over time and could become more pronounced as the international and out of state populations increase.

Pre-requisite Links – Predictable Growth Patterns

As provided below, the network of pre-requisites for impacted majors may be affecting enrollment patterns. As provided below, the prerequisite requirements for five impacted majors (Economics, Media Studies, Psychology, Social Welfare and Public Health) are similar to prerequisite requirements for related majors which have also experienced enrollment growth (Political Economy, PACS, Anthropology, Political Science and Integrative Biology). In addition, there are few variations in requirements for the physical science majors which have also experienced recent growth. These patterns follow impacted “chains” and indicate that an adjustment to the cap in one major will undoubtedly affect enrollment patterns in majors with related pre-requisites. Students needing to redirect when denied from an impacted major must apply the prerequisites for that major to another and, as a result, small groups of majors with linked pre-requisites are affected. As provided below, these majors have been responsible for the majority of growth in each of the L&S Divisions.

Pre-requisite "chains"

Pre-professional and Interdisciplinary, International	(Business - non-L&S but cap affects L&S programs)	*Economics	Political Economy	Peace and Conflict Studies	*Media Studies
	Math 1A-1B or 16A-B Stat 20, 21 or 25 Econ 1 BA 10	Math 1A-1B or 16A-B Stat 20, 21, 25, 101, 102, 131A or 134 Econ 1 or 2 Econ 100A-B or 101A-B	Econ 1, 2, or C3 IAS 45	(PACS 10 and any two from following list) PACS 10 Econ1, 2 IAS 45 BA 10	Poli Sci 1 History (7B or 124A-B, 131B) Econ 1, Psych 1 or 2, Soc 1, 3 or Anthro 3 Media Studies 10
Social Science	*Psychology	*Social Welfare	Anthropology	Political Science	
	Psych 1 Stat 2, 20, 21 or Math 54, 55 MCB: 31, 32, 50, 61, 64; Bio 1A, 1B, 11; IB 31 Anthro 3 or 3AC, Soc 3 or 3AC; Ling 5; Poli Sci 1, 2, 4 MCB 41 or 41X; Anthro 1; IB 35AC	Psych 1 Stat 2 Soc 3 Anthro 3, Econ 1 or Poli Sci 1	Anthro 1, 2 or 2AC or 3 or 3AC	2 US History Poli Sci 1, 2, 3	
Biological/Health Science	MCB	IB	*Public Health		
	Math 1A-1B Chem 1A (1B) (or 4A (4B)), 3A/AL-3B/BL Bio 1A/1AL-1B Phys 8A-8B (or 7A-B)	Math 1A or 16A Chem 1A, 3A, 3AL, 3B, 3BL Bio 1A, 1AL, 1B Phys 8A, 8B	Math 32, 16A, 16B or H16B, 1A, 1B, H1B Bio 1A-1B (2 from) MCB 11, 32, 41, 50, 55 or 61 Nutritional Sci 10 Public Health 14 (3 from) Psych 1 or 2; Soc 1, 3, 3AC, or 5; Econ 1, 2, or 3; Anthro 3, 3AC, or 12AC; Poli Sci 2 or 4		
Physical Science	Math	Stat	EPS		
	Math 1A-1B, 53, 54, and 55	Math 1A-1B and 53-54 Rec: Stat 20, 21, 25 or 131A	Math 1A-1B, 53-54 Physics 7A-B-C Chem 1A EPS 50		

Enrollment Trends by L&S Division

The following table provides an overview of the relationship between growth in the capped and non-capped majors mentioned above and overall enrollment growth at the Divisional level. As provided below, a small number of majors were responsible for the majority of growth in each Division. For example,

- In the **Biological Sciences Division**, Integrative Biology accounted for all of the growth in the Division (enrollments in the MCB major actually declined during this time).
- In the **L&S Administered Programs**, the capped majors, Social Welfare, Public Health and Operation & Research Management accounted for 90% of the total growth in these programs.
- In the **Mathematical and Physics Sciences Division**, Mathematics, Statistics and Earth & Planetary Science majors accounted for 98% of the growth in the Division.
- In the **Social Sciences Division**, two capped majors, Economics and Psychology accounted for 44% of the growth in the Division and two non-capped majors, Political Science and Anthropology accounted for 35% of the growth in the Division; combined, these four majors accounted for 80% of the growth in the Division.
- In the **Undergraduate Division**, two majors, Media Studies and IAS Teaching Programs-Political Economy and Peace and Conflict Studies accounted for all of the growth in the division (enrollments in other UGIS programs did not increase during this time).
- There was only modest growth in the Arts & Humanities Division which was more evenly dispersed across programs.

Enrollment Increases by L&S Division

		2001	Trend	2012	difference	% of total increase
	Biological Sciences	1,204		1,469	265	
not capped	Integrative Bio	322		726	404	152%
	L&S Administered Programs	763		1,154	391	
capped	Social Welfare	237		312	75	19%
capped	Public Health	0		248	248	63%
capped	Operation & Research Mana	0		27	27	7%
					350	90%

		2001	Trend	2012	difference	% of total increase
	Math and Physical Sciences	548		975	427	
not capped	Mathematics	317		429	112	26%
not capped	Statistics	39		258	219	51%
not capped	Earth & Planetary Sci	30		119	89	21%
					420	98%
	Social Science Div.	2,912		4,218	1,306	
capped	Economics	545		916	371	28%
capped	Psychology	517		732	215	16%
not capped	Political Science	649		976	327	25%
not capped	Anthro	231		360	129	10%
					1,042	80%
	Undergraduate Div	1,419		1,700	281	
capped	Mass Com/Media Studies	290		457	167	59%
	IAS Teaching Programs	329		623	294	
not capped	Political Economy	186		368	182	
not capped	Peace and Conflict Studies	31		157	126	
					308	105%

Source: Cal Profiles

Accommodating Growth

Given the significant numbers of additional majors in some programs, it seemed worth examining how Departments have accommodated more majors. In general, enrollment growth can be accommodated by offering more courses or increasing class size. Teaching activity may also shift as departments sometimes expand use of lecturers and visitors to teach undergraduate courses when faculty FTE remains constant. As provided below, each of the capped and non-capped majors used a combination of these strategies to accommodate increasing numbers of undergraduate enrollments.

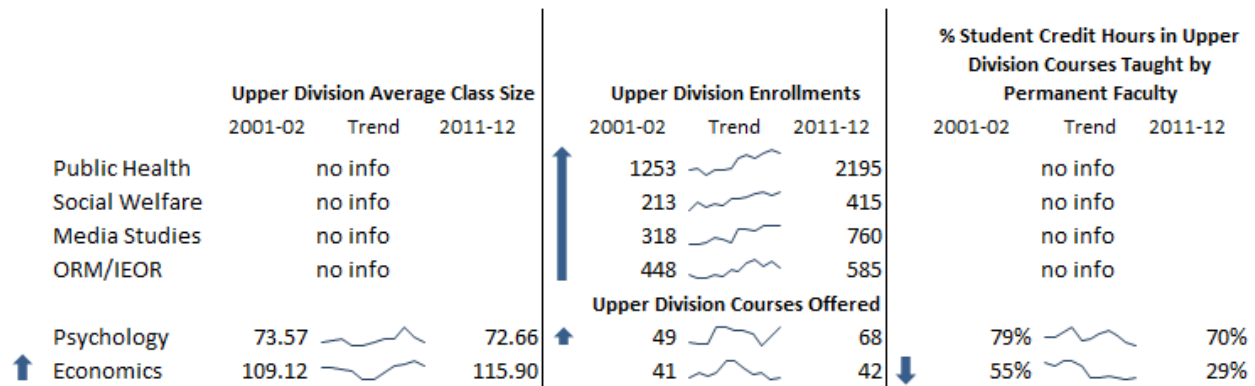
Capped Majors

As provided below, data for interdisciplinary majors that lack permanent faculty FTE² whose course requirements are dispersed across several programs is not available through central sources and as a result it is difficult to evaluate how growth was accommodated in these programs through indicators like average class size. As an alternative, enrollments in courses distinctly offered through these programs (but not all course used for the major) were considered and as provided below, each of these four majors had increased enrollments in distinct courses.

² These include the L&S Administered programs jointly offered with other Schools and Colleges – Public Health (School of Public Health), Operations Research Management (Engineering) and Social Welfare (School of Social Welfare) and the major in Media Studies offered through the Undergraduate Division.

Growth was accommodated differently in the two large capped majors, Psychology and Economics. The upper division class size in Psychology remained relatively stable as the Department expanded course offerings. Class size in Economics increased as the Department did not expand course offerings in response to growth. The upper division average class size in Economics in recent years has exceeded 100 and is significantly above the Campus average of 35. Also, teaching by permanent faculty in upper division courses in Economics declined as the major used more visitors and lecturers to teach undergraduate courses.

Capped Majors – Upper Division Average Class Size, Upper Division Enrollments, % SCH Taught by Permanent Faculty in Upper Division Courses



Source: Cal Profiles

Non-Capped Majors

In non-capped majors, three major experienced increases in the upper division class size (Integrative Biology, Mathematics and Statistics) and the number of upper division courses offered increased in three majors (Integrative Biology, Statistics and Political Science). All majors (except Anthropology and Earth and Planetary Science) used one or both of these strategies to accommodate growth. Increased enrollments in Earth and Planetary Science appear to have “right sized” this previously small major and it is unclear how growth in the Anthropology major was accommodated (upper division class sizes remained stable and the number of upper division courses offered declined). Teaching by permanent faculty in upper division courses remained relatively constant except in two majors which had increased SCH taught by permanent faculty (Political Science and Mathematics) and one major with declining SCH taught by permanent faculty (Statistics).

Non-Capped Majors – Upper Division Average Class Size, Upper Division Enrollments, % SCH Taught by Permanent Faculty in Upper Division Courses

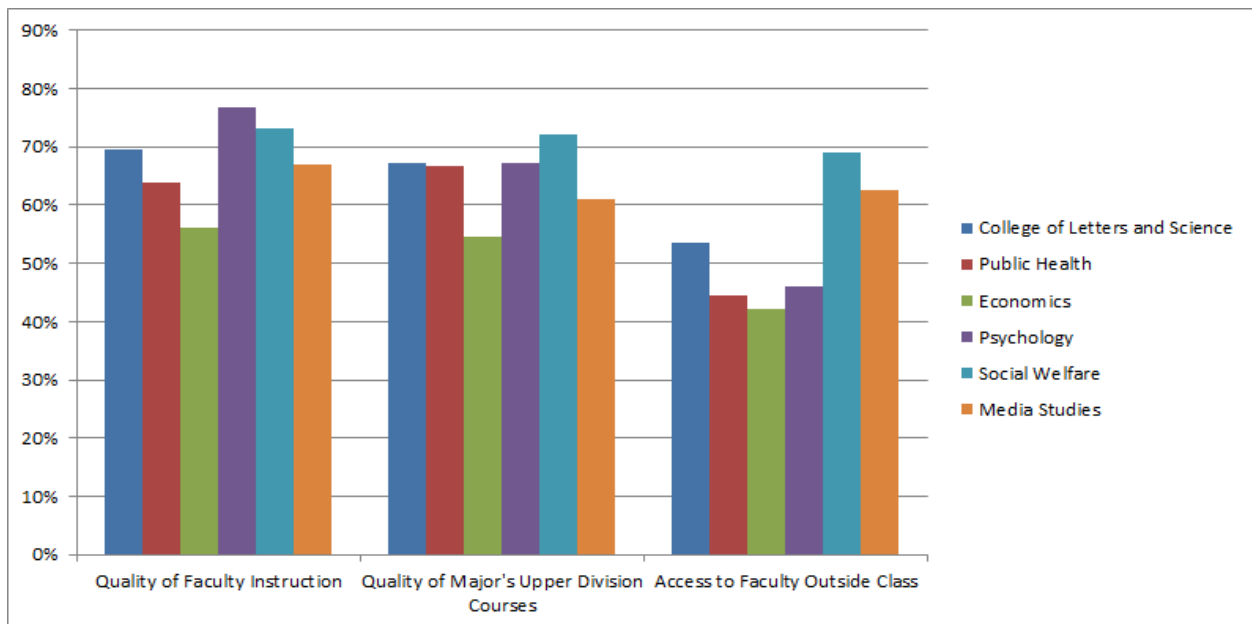
	Upper Division Average Class Size			Upper Division Courses Offered			% Student Credit Hours in Upper Division Courses Taught by Permanent Faculty		
	2001-02	Trend	2011-12	2001-02	Trend	2011-12	2001-02	Trend	2011-12
BERKELEY CAMPUS	35.46		35.02	2,847		3,471	63%		61%
↑ INTEGRATIVE BIOLOGY	34.64		47.84	↑ 88		98	68%		79%
EARTH & PLANETARY SCIENCE	17.71		21.32	21		22	97%		96%
↑ MATHEMATICS	29.93		38.31	76		71	49%		66%
↑ STATISTICS	38.05		58.42	↑ 20		31	68%		46%
ANTHROPOLOGY	39.28		40.13	↓ 76		64	72%		77%
↓ POLITICAL SCIENCE	82.65		61.65	↑ 63		74	↑ 61%		75%

Source: Cal Profiles

UCUES – Advising and Teaching Quality in Impacted Programs

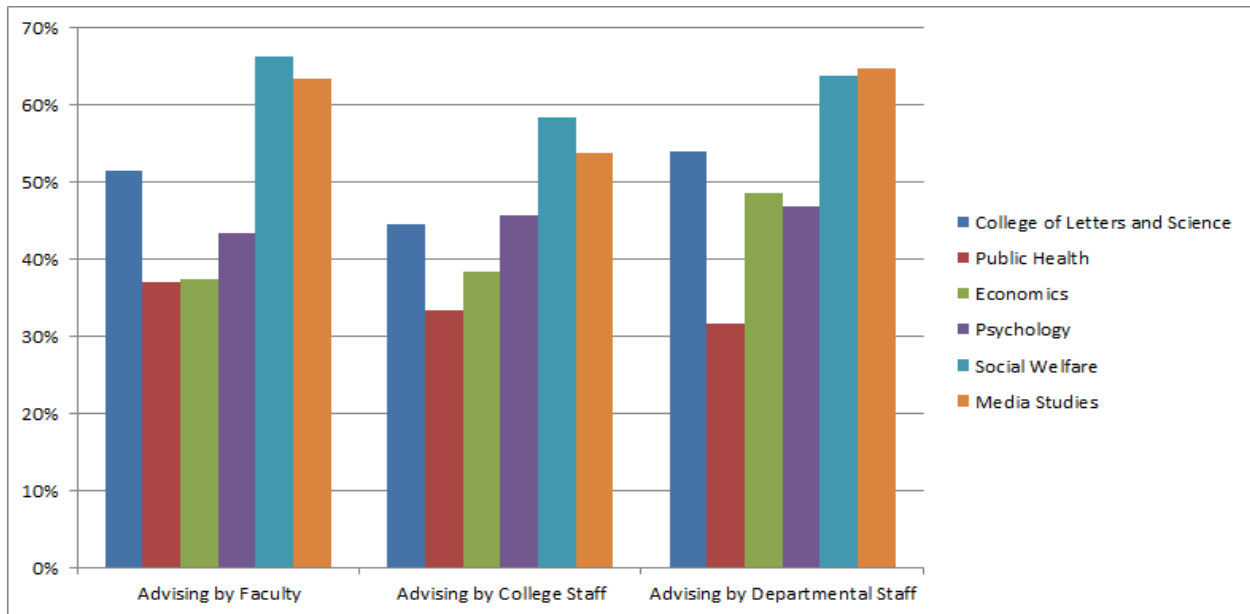
The 2012 UCUES satisfaction results (% satisfied, very satisfied) for capped majors (excluding Art Practice which had recent declines in majors and Operations Research which has small numbers of actual majors) are provided below on teaching, course quality and access to faculty. As seen here, satisfaction ratings were below the College average on “quality of faculty instruction” and “quality of the major’s upper division courses” and “access to faculty outside of class” for two of the most impacted majors; Public Health and Economics. Satisfaction ratings were higher in Psychology (which has not exceeded capacity) and in Social Welfare and Media Studies (growth in the Social Welfare major has been modest and teaching in Media Studies core courses is primarily handled by regular lecturers).

Figure 4: 2012 UCUES Satisfaction Ratings (Capped Majors) – Teaching, Course Quality, Access to Faculty



As related to satisfaction with advising by faculty, college staff and departmental staff, satisfaction ratings were lower in Public Health and Economics and slightly lower for Psychology in the area of advising by faculty and departmental staff. Satisfaction ratings were above the College average in Social Welfare and Media Studies. It should be noted that advisor to student ratios vary in these majors (from 2:900 in Economics to 1:300 in Social Welfare)

Figure 5: 2012 UCUES Satisfaction Ratings (Capped Majors) – Advising Satisfaction



These results indicate that impaction does not necessarily affect the quality of the educational experience, although the results for majors that have experienced rapid growth like Economics and Public Health, have had lower satisfaction ratings in key areas over time indicating that teaching and advising capacity is stressed in these units.

Summary

Despite the use of caps to control enrollment, many capped and related majors have continued to experience significant increases in headcount majors. Prerequisite patterns indicate that demand is somewhat predictable and has been directed toward a small group of majors over time. International and underrepresented students appear to have concentrated interest in many of the capped and related majors and issues of accessibility for these and other sub-populations of students may become an important consideration when evaluating and applying capping strategies in the future. Departments have accommodated growth in different ways, some have increased class size and some have increased course offerings, or both, although class size and teaching activity may have been negatively impacted in some programs (i.e., class size in Economics and percentage of permanent faculty teaching undergraduate courses). Rational and equitable means of determining departmental capacity may be needed in capped and related programs to proactively manage demand over time. A full range of

measures including workload and survey data may be needed to periodically monitor the educational quality and student satisfaction in impacted programs.

Management of Capped Majors

The following issues are identified for the Executive Committee's consideration for the management of caps in the future.

Capping Limits

In response to enrollment growth, Departments are likely to request additionally restrictive GPA caps. The College may need to consider what level of competition is acceptable since approval of very restrictive caps (3.2 and above) will begin to affect many students capable of succeeding in a major and may adversely affect certain subpopulations of students. In addition, using more severe caps may relieve pressure on a single major but will undoubtedly disperse students to other increasingly overloaded majors, creating additional problems in the long run.

Improving Evaluations of Demand and Capacity

A complex assessment of demand **and** capacity would most effectively evaluate the need for a cap over time. Demand should be evaluated using a variety of (trend based) measures including headcount majors, turn-away rates, upper division average class size, and enrollments in upper and lower division courses. Detailed information on turn-away rates and the demographic characteristics of turned away students is critical to demand assessments. This would provide a very clear picture of demand and could provide information on the impact of the cap on certain student subpopulations. Effective assessments of capacity should include (trend based) faculty FTE, GSI availability (incoming Ph.D. class sizes), advisor-to-student ratios and faculty-to-student ratios, average teaching loads, and SCH taught by permanent faculty. Also important to capacity evaluations will be information on lab and or studio or other facilities and equipment capacities. Similar standards for determining demand and capacity should be applied to all capped majors. In addition, capacities are not fixed since resources shift (for example, the availability of GSIs can change over time or interest in a major may change) and caps may need to be routinely reviewed.

It is also important to mention that the current growth in some capped majors might be the result of ineffective enforcement of caps. If majors with GPA cut-offs are allowing many students below the cut-off into the major (based on an appeals process possibly or a kind hearted advisor unable to turn students away), this should also be known to the Executive Committee. Turn-away rates would effectively pick up ineffectual application of the caps currently in use and would potentially provide a guide to determining effective GPA limits. For example, if all Econ students admitted are at the 3.0 level, and the turn-away rate is low, a higher GPA cap may be needed. However, if there is no turn-away rate and most students are being admitted regardless of GPA, the cap has been essentially moot.

Evaluating Impact of Caps on Student Sub-Populations

It is not clear whether international and out-of-state (net-payer) populations will be as flexible in their major choices as other student populations. Inability to access first and even second choice majors may impact retention, persistence or completion rates if students unable to meet the GPA restrictions of a capped major are unwilling to shift to alternate majors. Given the concentrations of international and underrepresented majors in capped and related majors, any evaluation of caps should factor in an assessment of impact to certain special sub-populations of students as a factor in decision making. The demographic composition of capped majors should also be monitored over time.

Modeling Enrollment Growth – Predicting Demand – Long Range Curriculum Planning

Given the predictable impact of growth in majors with linked pre-requisite patterns, some method of modeling curricular relationships and growth patterns may be useful for long range curriculum planning. If these were better understood, more proactive planning at a global as opposed to a local level may help to guide resource distribution in the future. Given the impact of growth in small numbers of majors on entire Divisions, the involvement of Divisional Deans in review of capping requests may be needed to fully evaluate impact to a Division if demand is diverted and to evaluate resource considerations across related majors.

Innovation – Alternatives to Caps for Additional Consideration

There are several creative options to the capping strategy which would address enrollment demands and resource constraints although they are based on long-term institutional investments in curricular planning which transcend local decision making practices. In each of the strategies below, a greater level of coordination of resources would be needed among and between Departments and the central administration however, each offers long term solutions to the current method of local caps.

- **Hybrid majors** – Given the patterns of student interest (Business/Economics; Biological/Health Science; Interdisciplinary/Global/International; and Applied Physical Science) a possible response to demand in these areas would be the development of “hybrid” majors which are designed around shared curriculums. This would allow better sharing of teaching resources through coordinated curriculum planning with the goal that hybrid contributors offer fewer total courses to a major (for example, if a hybrid Business/Economics major were created – and each unit contributed 4-5 courses, the total course burden on each unit would be reduced). Hybrid majors could save resources in the long run while serving large numbers of students. This strategy could also involve tiered access whereby students performing at exceptional levels in the major could add to their program additional electives, thesis or other advanced options. In other words there would be levels of restricted access (based on performance in upper division, not lower division courses), but these would be more nuanced and used to funnel students appropriately to opportunities – not an outright restriction of access. Advanced students would have advanced access. This option would require significantly more curriculum planning but the resource savings may also be significant. Double majors have been popular and interdisciplinary

programs have grown, indicating that students might welcome well-crafted hybrid choices. Students might also favor hybrid choices with tiered access as opposed to strict caps which cut off access to some students altogether.

- **Cohort major programs** – A cohort option might be created which guarantees access to impacted majors as long as students follow a structured curriculum and proceed through major requirements in cohorts. This makes curricular planning more stable and if the range of curricular options is paced and scaled appropriately – more students may be served. The ability to guarantee admission to more students in this option is exchanged for reduced variety in elective course areas.
- **Revised Resource Structures**- Given the levels of consistent and predictable demand in capped and related majors, a plan to additionally resource these programs at the upper division level (similar to the Common Good Initiative) could be considered to adequately support impacted programs over time. Formulas for realistically determining demand, capacity and the resources needed to address these would, of course, be critical to this strategy.