

Demonstration Academic Unit 2015 Enrollment Survey

Background and Instructions

Goal: To understand and assess the impact of recently observed significant increases in undergraduate computer science majors (often referred to as the enrollment boom).

We are limiting our survey to "units" (programs, departments, divisions, schools, colleges) responsible for providing (allocating, administering) instructional, classroom, laboratory, and other resources to serve bachelor-level majors in computer science (curricula, courses, certificate, degrees).

We recommend that the Unit/Department Head/Chair (or equivalent) complete the survey or oversee the completion of the enrollment survey.

- Sections B, C, D, and E can quite likely be completed by a person overseeing the undergraduate program.
- The questions in Section F address how the unit handles increased enrollments, manages and requests resources, and deals with secondary impacts of high enrollment. To make the results of the survey most useful to your unit and our community, these question should be answered by a primary decision maker.
- Section I, Data Use Permission, should also be answered by a primary decision maker.
- The data requested in Section G may require assistance from an institutional data person. We piloted this survey with several units and were told that the data is not difficult to generate, but not always available in the department. Since this data is vital to truly understand the depth of our community's enrollment changes and diversity trends, we hope you will take the steps needed to answer Section G. If you are not able to, please do complete the rest of the survey.

The enrollment survey represents a unique opportunity to measure, assess, and better understand enrollment trends and their impact in our field. The survey is being sent to units in Ph.D. granting and non Ph.D. granting institutions which will allow additional novel comparisons. We greatly appreciate your effort and time and thank you for your participation.

Note: This pdf includes all the questions that are in the online survey, but some options are clearer in the online format, particularly where choices are in a drop-down menu, or where some questions are displayed or not depending on the responses to previous questions. If what's being asked isn't clear on the pdf, look at the online survey. If it still isn't clear, check with Betsy Bizot, bizot@cra.org

Demonstration Academic Unit 2015 Enrollment Survey

A. Preliminary Questions

1. Does your academic unit grant bachelor's degrees in computer science?

Computer Science bachelor's degree?	<input checked="" type="radio"/> Yes <input type="radio"/> No
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If you answered that you DO NOT offer a Computer Science bachelor's degree, you are done! Please save this page, return to the survey menu, and mark the survey DONE in the status area at the top of the menu.

2. Overall, to what extent are increasing undergraduate enrollments impacting your unit (i.e., the unit responsible for administering undergraduate computer science degrees)?

	Choose One	If Other, please explain
Increased Enrollment Impact to your unit	Beginning to impact unit	

Response choices in question 2 are :

Having big impact with significant challenges to unit

Beginning to impact unit

Have seen increase, but have managed so far

No noticeable increase

Other

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Choices are:
College/School of Computing (or similar)
College/School of Engineering (or similar)

B. Unit Context: Degrees / Programs Offered, and Resource Allocation

College of Science (or similar)
College of Arts and Sciences (or similar)
Institution is one unit (no colleges/schools)
Other

1. What college/school does your unit report to?

		If Other, please explain
Please choose the closest structure that applies:		

2. List the computing bachelor degrees offered by your unit, including joint degrees. Omit degrees that are not computing, e.g. EE-only degrees in an EECS department. You do not need to list tracks or specializations available under an umbrella degree.

	Degree Type	Please Specify If Other	Title of Degree	Degree added since 2010?	Enrollment is
a.	<input type="radio"/> B.A. <input type="radio"/> B.S. <input type="radio"/> B.Eng. <input type="radio"/> Other			<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Decreasing
b.	<input type="radio"/> B.A. <input type="radio"/> B.S. <input type="radio"/> B.Eng. <input type="radio"/> Other			<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Decreasing
c.	<input type="radio"/> B.A. <input type="radio"/> B.S. <input type="radio"/> B.Eng. <input type="radio"/> Other			<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Decreasing
d.	<input type="radio"/> B.A. <input type="radio"/> B.S. <input type="radio"/> B.Eng. <input type="radio"/> Other			<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Decreasing
e.	<input type="radio"/> B.A. <input type="radio"/> B.S. <input type="radio"/> B.Eng. <input type="radio"/> Other			<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Decreasing
f.	<input type="radio"/> B.A. <input type="radio"/> B.S. <input type="radio"/> B.Eng. <input type="radio"/> Other			<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Increasing <input type="radio"/> Stable <input type="radio"/> Decreasing

3. Support for other academic units

a. Are there computing bachelor's degrees offered by other units at your institution?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't Know
b. If yes, does your unit offer one or more courses that satisfy requirements for any of these degrees?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Don't Know

4. Does your unit administer graduate degrees in computing (i.e., computer science or related)?

	Yes	No
a. Master's		
b. PhD		

5. Does your unit administer minors or certificates in computing (i.e., computer science or related)?

a. In computer science	<input type="radio"/> Yes <input type="radio"/> No	
b. In other computing area(s), please specify to right	<input type="radio"/> Yes <input type="radio"/> No	

6. Resource Allocation and Enrollment Changes

Consider the way resources are allocated at your institution. Does this process address significant changes in enrollment?

Process addresses significant changes?	<input type="radio"/> Yes, resource allocation process adequately addresses changes in enrollment. <input type="radio"/> Resource allocation process partially addresses changes in enrollment. <input type="radio"/> No, resource allocation process inadequately addresses changes in enrollment.
Please elaborate on this issue.	

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C. Declaration or Admission to Computer Science Major

1. When do students declare admission to a computer science major?

	Check all that apply	How much control does your unit have over the declaration or admission to your computer science major?
a. First-year students	No	
b. Internal transfer students from other majors or from undeclared	No	
c. Pre-majors* transitioning to major	No	Choices: Unit controls declaration/admission Unit influences declaration/admission
d. External transfer students with articulation agreements	No	Unit has no control Not applicable
e. Other external transfer students	No	

* A pre-major is someone who has declared intention of majoring in CS, but there are internal requirements that exist before the student can become a CS major officially.

2. If your unit has control (or influence) over declaration/admission to the major, what are the criteria?

For "Other criteria," please specify how the criteria are used in the declaration/admission decision, and then add text below to explain the other criteria.

For each category of student, the questions about admission criteria are only displayed if you have said in question 1 that students are admitted at that stage, and that your unit controls or influences the admission criteria.

	Definitely used in decision	Sometimes used in decision	Not used in decision	Not applicable
First-year students				
a. High School GPA (overall or in specific classes)				
b. CS AP course taken				
c. Prior Computing Experiences				
d. Essay, Letters				
e. Other criteria (specify below)				
Internal transfer students from other majors or from undeclared				
f. College GPA overall				
g. College GPA in specific courses (e.g., CS, math)				
h. Prior Computing Experiences				
i. Essay, Letters				
j. Other criteria (specify below)				
Pre-majors* transitioning to major				
k. College GPA overall				
l. College GPA in specific courses (e.g., CS, math)				
m. Prior Computing Experiences				
n. Essay, Letters				
o. Other criteria (specify below)				
External transfer students with articulation agreements				
p. College GPA overall				
q. College GPA in specific courses (e.g., CS, math)				
r. Courses taken				
t. Other criteria (specify below)				
Other external transfer students				
u. College GPA overall				
v. College GPA in specific courses (e.g., CS, math)				
w. Courses taken				
x. Other criteria (specify below)				

3. Please specify other admission criteria or make any other comments on declaration/admission of majors.

Other admission criteria or other comments on declaration/admission of major.	
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Demonstration Academic Unit

2015 Enrollment Survey

D. Computing Courses for Non-Majors

1. Does your institution require a computing course for any non-computing major?

Your options are:

- a. All non-computing majors require a computing course
- b. Some (not all) non-computing majors require a computing course
- c. Computing course is not required, but is one of a short list of options to meet a requirement for some or all non-computing majors (e.g. a technology or a math/science requirement)
- d. Both b. and c. are true
- e. We have no such requirement

Require computing course for any non-computing major?	
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If you answered above that you have no such requirement, you have completed this section and may hit a Save button below and move on.

2. Does your unit offer one or more courses that satisfy such a requirement?

Your unit offers course(s)?	<input type="radio"/> Yes, for all such requirements <input type="radio"/> Yes, for some but not all such requirements <input type="radio"/> No
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3. For those requirements for which your unit offers a course, is your unit the only one whose courses satisfy those requirements?

Is your unit the only one for one or more required course?	<input type="radio"/> Yes, for all such requirements <input type="radio"/> Yes, for some but not all such requirements <input type="radio"/> No
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Demonstration Academic Unit 2015 Enrollment Survey

E. Changes in Demand

1. What is the demand on your unit's courses from your unit's undergraduate and graduate computer science majors?

	Significantly Increasing Demand	Somewhat Increasing Demand	Stable Demand	Somewhat Decreasing Demand	Significantly Decreasing Demand	Don't know or N/A
a. Intro-level courses that are required for the computer science degree						
b. Mid/next-level undergraduate computer science courses (prerequisite: completion of intro-level)						
c. Upper-level undergraduate computer science courses						
d. Computer science graduate courses						

2. What is the demand on your unit's courses from other majors (including computer science minors if you have any)?

	Significantly Increasing Demand	Somewhat Increasing Demand	Stable Demand	Somewhat Decreasing Demand	Significantly Decreasing Demand	Don't know or N/A
a. Intro-level courses that are required for the computer science degree						
b. Other intro-level computing courses						
c. Mid/next-level undergraduate computer science courses (prerequisite: completion of intro-level)						
d. Upper-level undergraduate computer science courses						
e. Computer science graduate courses						

3. If you offer a minor, have you seen a change in the number of CS minors in recent years?

	Significantly increased	Increased	Unchanged	Decreased	Significantly decreased	Don't know	Numbers too small to determine	We don't have CS minors
Change in CS minors?								

4. For high-demand computer science courses, how does your unit determine which students are allowed to enroll?

	Check All That Apply	
a. Computer science majors are given priority	No	
b. Computer science minors (or pre-majors) are given priority	No	
c. First come first serve through registration process	No	
d. Faculty discretion for enrolling students (once max course size reached at registration)	No	
e. Unit tries to accommodate students wanting the course	No	
f. Other, please specify to right	No	

g. Provide any additional comments on high-demand CS courses as desired:	
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F. Impact of Demand Increases

1. Below are areas that some institutions report as problems or concerns of increasing enrollments. Does your unit see any of these problems?

	Significantly Increasing problem	Somewhat increasing problem	Level	Somewhat Decreasing problem	Significantly Decreasing problem	Don't know/ NA
a. Demand for classroom space (large enough rooms or enough rooms)						
b. Demand for laboratory space						
c. Demand for faculty and/or graduate student office space						
d. Faculty workload						
e. Sufficient faculty/instructors (relative to need)						
f. Sufficient TAs (relative to need)						
g. Sufficient advising or administrative support						
h. CS majors having trouble getting access to required CS courses						
i. CS majors having trouble getting access to CS courses of interest (e.g., elective requirement)						
j. Non-CS majors having trouble getting access to courses required for CS majors						
k. Non-CS majors having trouble getting access to courses of interest not required for CS majors						
l. Time for faculty research/scholarship						
m. Student performance and/or student learning declining due to increased enrollments						

2. Below are changes in student recruitment and retention that some institutions report as problems or concerns of increasing enrollments. Does your unit see any of these changes?

	Ratio is significantly lower	Ratio is somewhat lower	Level	Ratio is somewhat higher	Ratio is significantly higher	Numbers too small to determine	Don't know or N/A
a. Computer science majors retained in the CS degree program							
b. Ratio of female majors entering CS degree program							
c. Ratio of underrepresented minority majors entering CS degree program							
d. Female majors being retained in CS degree program							
e. Underrepresented minority majors being retained in CS degree program							

3. Some institutions have reported taking some of the actions listed below in response to increasing enrollment. Has your unit taken or considered taking any of the following actions?

Note: There are rows a-y in the table below. Use the scroll bar to the right of the frame to see additional rows.

	Done this	Considering this or Planning this	Would like to, but can not	Considered and rejected as undesirable	Haven't thought of doing this	Don't know/ NA
Restrict declaration/admission to major or enrollment in courses						
a. Tighten requirements for declaration/admission to the major						
b. Restrict upper level courses to majors only or to majors and minors						
c. Restrict entry to upper level courses via some other criteria (specify below)						
d. Limit enrollments in high demand classes						
e. Advise less successful students to consider other majors						
Changes to course offerings						
f. Significantly increase class sizes						
g. Increase number of course sections offered during academic year						
h. Increase number of courses offered during summer						
i. Reduce course offerings for non-majors						
j. Reduce number of small enrollment courses						
k. Increase online offerings						
l. Increase "blended" offerings (online plus in-class)						
m. Raise bar for doing well in a course (so fewer students move forward in program)						
n. Spin off service courses to other units						

Changes to teaching resources: faculty and instructors						
o. Increase teaching load						
p. Increase teaching release buyout cost or reduce number of buyouts						
q. Increase tenure-track/tenured faculty						
r. Increase teaching faculty on continuing appointments						
s. Increase adjuncts or visitors (non-regular, full or part-time instructional staff) teaching courses						
t. Employ advanced graduate students (your own or a neighboring institution) to teach courses						
u. Bring back retired faculty or phase retirements						
v. Use faculty/grad students from other departments						
Changes to teaching resources: TAs						
w. Increase number of graduate TAs						
x. Increase use of existing undergraduate TA/peer tutor/ similar program						
y. Begin a new undergraduate TA/peer tutor/ similar program						

Please provide any comments about possible responses to increasing enrollments or describe other steps your unit has taken due to enrollment pressure.

z. Comments	
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4. Below are ways some units are compensating/protecting faculty/instructors/etc. from an increased workload related to increases in enrollment. Does your unit use any of these?

	Done this	Considering this or Planning this	Would like to, but can not	Considered and rejected as undesirable	Haven't thought of doing this	Don't know/ NA
a. Consider course enrollment when giving credit for teaching load (e.g., courses with high enrollment count for more than one course)						
b. Provide additional compensation for faculty teaching large enrollment courses (e.g., salary supplement, travel funds)						
c. Excuse faculty teaching large classes from other departmental service (e.g., committee work)						
d. Limit the use of junior faculty as instructors of large enrollment courses						
e. Reduce faculty advising load (e.g., hire professional advising staff).						
f. Accept that the increased load is a fact of life and should be shared equally.						
g. Train faculty in scalable class management						
h. Increase the percentage of teaching in the annual performance evaluation for faculty teaching large classes						

Describe other ways your unit is compensating/protecting faculty from an increased workload or provide other comments about the impact of increased enrollments on faculty.

i. Comments	
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5. Below are valuable activities that some units have had to eliminate or reduce due to increased enrollment and resource pressures. Has your unit eliminated or reduced any of these activities in the past few years?

	No Impact/ Unchanged	Have Seen a Reduction	Plan to Reduce	Don't know/ NA
a. Number of electives offered (because faculty needed for required courses)				
b. Offering low enrollment courses (e.g., research-oriented or project-based courses)				
c. Faculty involvement in student activities and student groups				
d. Faculty involvement in UG research or honors programs				
e. Student project opportunities outside of classes				
f. Faculty contribute to courses outside the unit, e.g. college core requirements or first year across-the-curriculum programs				
g. Faculty investing time in K-12 outreach activities				
h. Faculty involvement in campus and/or unit "service" activities				

Do you have any other comments on reducing/eliminating other activities due to enrollment pressure?

i. Comments	
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6. Some units have expressed a concern that actions they take to deal with increasing enrollments may reduce the participation of underrepresented undergraduates (women and minorities). To what extent has a concern for diversity affected your unit's choices?

	Check All That Apply	
a. Diversity impacts are explicitly considered when discussing possible actions		
b. There are actions we considered but chose not to take because of concerns about their potential impact on diversity (specify to right)		
c. We have chosen some actions specifically to reduce potential impact on underrepresented groups (specify to right)		
d. Our unit has existing diversity initiatives and we believe they will compensate for any concerns related to increasing enrollments.		
e. We are monitoring diversity more closely at one or more transition points because of concerns related to enrollment increases (what points)		
f. Our unit is small or has very few women, so it is difficult to tell the impact of increasing enrollments on the participation of underrepresented undergraduates		
g. Our unit has other concerns (specify to right)		

7. Research shows that actions to deal with increasing enrollments can have secondary effects on the representation of women and minorities. What secondary effects are you seeing, if any, and have you evaluated their impact on diversity?

DK=Don't Know, NA=Not Applicable

	Traditionally true of your unit?	Changed recently?	If there are changes, do you see a disproportionate effect on underrepresented students?
a. Intro courses act as "weed out" courses	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DK <input type="radio"/> NA	<input type="radio"/> Less True <input type="radio"/> Unchanged <input type="radio"/> More True	<input type="radio"/> Yes <input type="radio"/> Monitoring for one but not seen <input type="radio"/> Not monitoring <input type="radio"/> Don't know / NA
b. Faculty actively encourage students to continue in the major after taking the intro course.	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DK <input type="radio"/> NA	<input type="radio"/> Less True <input type="radio"/> Unchanged <input type="radio"/> More True	<input type="radio"/> Yes <input type="radio"/> Monitoring for one but not seen <input type="radio"/> Not monitoring <input type="radio"/> Don't know / NA
c. Admission to the major is competitive	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DK <input type="radio"/> NA	<input type="radio"/> Less True <input type="radio"/> Unchanged <input type="radio"/> More True	<input type="radio"/> Yes <input type="radio"/> Monitoring for one but not seen <input type="radio"/> Not monitoring <input type="radio"/> Don't know / NA
d. Students in intro courses have opportunities to engage with full-time faculty	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DK <input type="radio"/> NA	<input type="radio"/> Less True <input type="radio"/> Unchanged <input type="radio"/> More True	<input type="radio"/> Yes <input type="radio"/> Monitoring for one but not seen <input type="radio"/> Not monitoring <input type="radio"/> Don't know / NA
e. Students have opportunities for collaborative projects	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> DK <input type="radio"/> NA	<input type="radio"/> Less True <input type="radio"/> Unchanged <input type="radio"/> More True	<input type="radio"/> Yes <input type="radio"/> Monitoring for one but not seen <input type="radio"/> Not monitoring <input type="radio"/> Don't know / NA

For each row, the second and third column will only be displayed if they are applicable, based on the answers to the previous columns in that row.

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G. Data on Enrollment Changes in Computer Science Courses

We would like to gather some historical data on enrollments and impacts. We realize that answering this question is not as easy as the previous questions (e.g., maybe requires assistance from your university's institutional data office); we hope, however, that you understand how valuable this data is for us to understand the depth of our community's increasing enrollment challenges. Please consider four courses offered by your unit:

- Intro-level course for (mainly) non-majors
- Intro-level course for (mainly) CS majors
- Mid/next-level CS course (that has the intro-level course as a pre-req)
- Upper-level CS course.

As possible:

- Choose courses that have been offered by your unit at least 5 years and preferably 10 years (i.e., a course that has had similar goals the last 5-10 years).
- For underrepresented minority status in computing, please aggregate the following classifications: Black/African American, American Indian/Alaska Native, and Hispanic/Latino.
- If your unit is not able to provide all data requested in the questions that follow, please provide whatever data you are able to provide.

If your unit is not willing (or your institution is unable) to obtain this data, please check here and save this page.	
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1. What are the current IDs and names of these four courses?

	Course ID	Course Name
a. Intro-level course for (mainly) non-majors:		
b. Intro-level course for (mainly) CS majors:		
c. Mid/Next-level course:		
d. Upper-level course:		

2. In the most recent offering (e.g., Spring 2015 or Fall 2015), how many students are/were enrolled in these four courses?

	Number of students enrolled	Number of CS majors enrolled	Number of females enrolled (both domestic and international)	Number of underrepresented minorities enrolled	Number of international students
a. Intro-level course for (mainly) non-majors					
b. Intro-level course for (mainly) CS majors					
c. Mid/Next-level course					
d. Upper-level course					

3. In 2010 (Fall or Spring), how many students were enrolled in these four courses? Only complete a row if you were able to choose a course where the main goals of the course did not change between 2010 and 2015.

	Number of students enrolled	Number of CS majors enrolled	Number of females enrolled	Number of underrepresented minorities enrolled	Number of international students
a. Intro-level course for (mainly) non-majors					
b. Intro-level course for (mainly) CS majors					
c. Mid/Next-level course					
d. Upper-level course					

4. In 2005 (Fall or Spring), how many students were enrolled in these four courses? Only complete a row if you were able to choose a course where the main goals of the course did not change between 2005 and 2015.

	Number of students enrolled	Number of CS majors enrolled	Number of females enrolled	Number of underrepresented minorities enrolled	Number of international students
a. Intro-level course for (mainly) non-majors					
b. Intro-level course for (mainly) CS majors					
c. Mid/Next-level course					
d. Upper-level course					

5. If the data provided in G 1-4 needs to be explained, please do so here

Explanation of this section's data	
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H. Unit Data/Reports

1. Has your institution or unit collected any data or produced a report on your own about the recent enrollment growth being seen?

Collected or reported recent enrollment growth?	<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> In progress
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2. If yes, please summarize the key findings in your report. Or, if you prefer, you can send a copy of the report or relevant pages to Betsy Bizot, bizot@cra.org

Summary	
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Demonstration Academic Unit

2015 Enrollment Survey

I. Data Use Permission

Responding to this survey means that you allow your individual unit responses to be analyzed by CRA staff and reported in aggregate. Your responses to open-ended items may be quoted in reports about this survey, and the list of responding institutions will be published, but no responses of individuals or specific institutions will be identified in any reports.

We also have two cases where people other than CRA staff would like to see your raw data with unit identification removed. You can allow or decline permission for these additional uses.

Permission 1 (for access by CRA Committee Members): The survey contains a number of open-ended items, and summarizing/analyzing these responses is time consuming. Some members of the enrollments committee would like to work directly with the open-ended responses. If you approve, they will see only the text of the open-ended responses, without identifying unit information.

I allow the CRA enrollments committee members to see the raw data for my open-ended responses in this survey, without any unit identifying information attached.

Permission 1 - CRA	<input type="radio"/> Yes <input type="radio"/> No
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Permission 2 (for a separate study): I allow the members, staff, and consultants of the National Academy of Sciences Committee on Growth of Computer Science Undergraduate Enrollments to have access to the raw data for my institution except for unit identifying information, if they so request. My organization's response (with unit identifying information removed) may be cited or quoted in the Committee's report and included in the Committee's public access file to support the Committee's findings and conclusions.

Permission 2 - NAS	<input type="radio"/> Yes <input type="radio"/> No
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Demonstration Academic Unit 2015 Enrollment Survey

J. Final Comments

1. What didn't we ask that is important in understanding this issue?

Final Comments	
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