How Do We Know?

Identifying UG Graduate School Outcomes
From National Student Clearinghouse Data

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Overview

- Importance of measuring graduate school outcomes

- Available data sources on graduate school outcomes

- Data limitations

- Graduate school enrollment

- Graduate degree attainment

Importance of Graduate School Outcomes

- Key measure of institutional success for research institutions

- Measure of academic preparation

- Adds context to employment outcomes
  - Differentiate post-BA earnings trajectories

- Use survey data determine if students are meeting, their educational goals

Possible Sources

- Survey data
  - Plans of current students (frequent, but accuracy unclear)
  - Alumni surveys (costly, infrequent)

- National Student Clearinghouse data
  - Largely comprehensive coverage
  - Can track annually
  - Can track retroactively to prior graduation cohorts
  - Degree verify data more comprehensive and consistent, but requires additional fees

National Student Clearinghouse (NSC)

- Initially, called the National Student Loan Clearinghouse, worked with the nation's colleges and universities to simplify and automate student record verifications (primarily for loan deferment).

- Became a network of more than 3,600 colleges and universities (98% of students)

- Created the StudentTracker® , the only nationwide source of college enrollment and degree data.

NSC Sources of Error

Dynarski, Hemelt, & Hyman(2015) *The Missing Manual: Using National Student Clearinghouse Data to Track Postsecondary Outcomes*

- *Enrollment and Degree Coverage*

- *Matching Errors*

- *Suppressed Student-Level Information (FERPA blocking; schools and students)*

Coverage estimates for 4-year; 99% and 2-year; 96%, but only 48% for private for-profit sector.

Colleges that are 100% FERPA Blocked

Babson College

College of Alameda

Columbia University

Cooper Union

Duke University

Johns Hopkins University

Laney College

Merritt College

Midwestern University

Midwestern University Arizona

Minnesota West Comm & Tech

New York Medical College

Palmer College Of Chiropractic - Florida

Porterville College

Roberts Wesleyan College

Rutgers University

Salus University

The Commonwealth Medical College

Thomas Jefferson School Of Law

Toccoa Falls College

University Of The Pacific

Yeshiva U- Albert Einstein College Of Medicine

Full list of schools with greater than 10% block rates

NSC Graduate Enrollment Related Fields

| Column	NSC Column Name	Information	Values	% Populated
G	Record Found	Report contains student record or does not contain student record	Y=Yes/N=No	100%
V	2-year/4-year	Type of College the student attended	4=Four Year or higher Institution 2=Two year Insituiton L=Less than two year institution	100%*
I	College Code/Branch	OPE/FICE Code of college that student attended	All	100%*
Q	Class Level	The class level associated with the student as provided by the reporting college	F, S, J, R,N,B = (Undergraduate) M=Masters (Graduate) D=Doctoral (Graduate) P=Postdoctorate (Graduate) L=First Professional (Graduate) G=Unspecified (Graduate/Professional)	18.6%*
P	Enrollment Status	The last enrollment status reported for the student	F=Full-time Q=Three-quarter Time H=Half-time L=Less than Half-time A=Leave of Absence W=Withdrawn D=Deceased	62.4%*
L	Graduated?	Graduation Status information available from the reporting college	Y=Yes/N=No	100%
H	Search Date	Search date provided in the NSC submission	After Graduation Date	100%
N	Enrollment Begin	Beginning Date for the student's period of attendance	Any after Search date	100%*
O	Enrollment End	End date for student's period of attendance	Any after Search date	100%*

*Where Record Found=Y and Graduated =N

Other data transformations

- Created a counter for each record, sorted enrollment record (then graduation records) by ID and Enrollment Begin Date; Countseq=1,2,3,4, etc.

- Used IPEDS and OPE-ID to identify schools that grant Masters' or higher; AttendGrd_SchlLvl=1

- Used IPEDS and OPE-ID to identify UC undergraduate campuses; UC=1

Graduate Enrollment Definitions
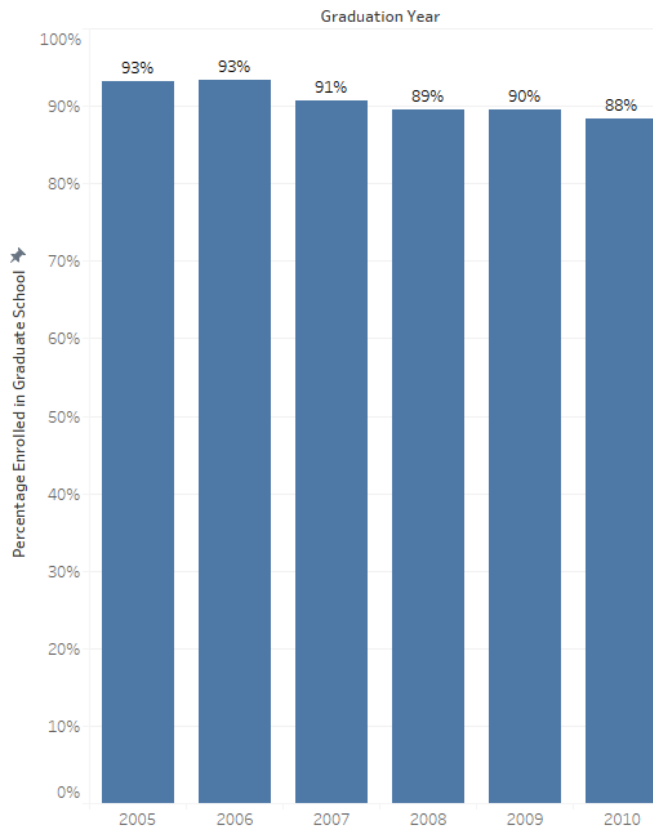
Graduating Cohorts, 2005-2010
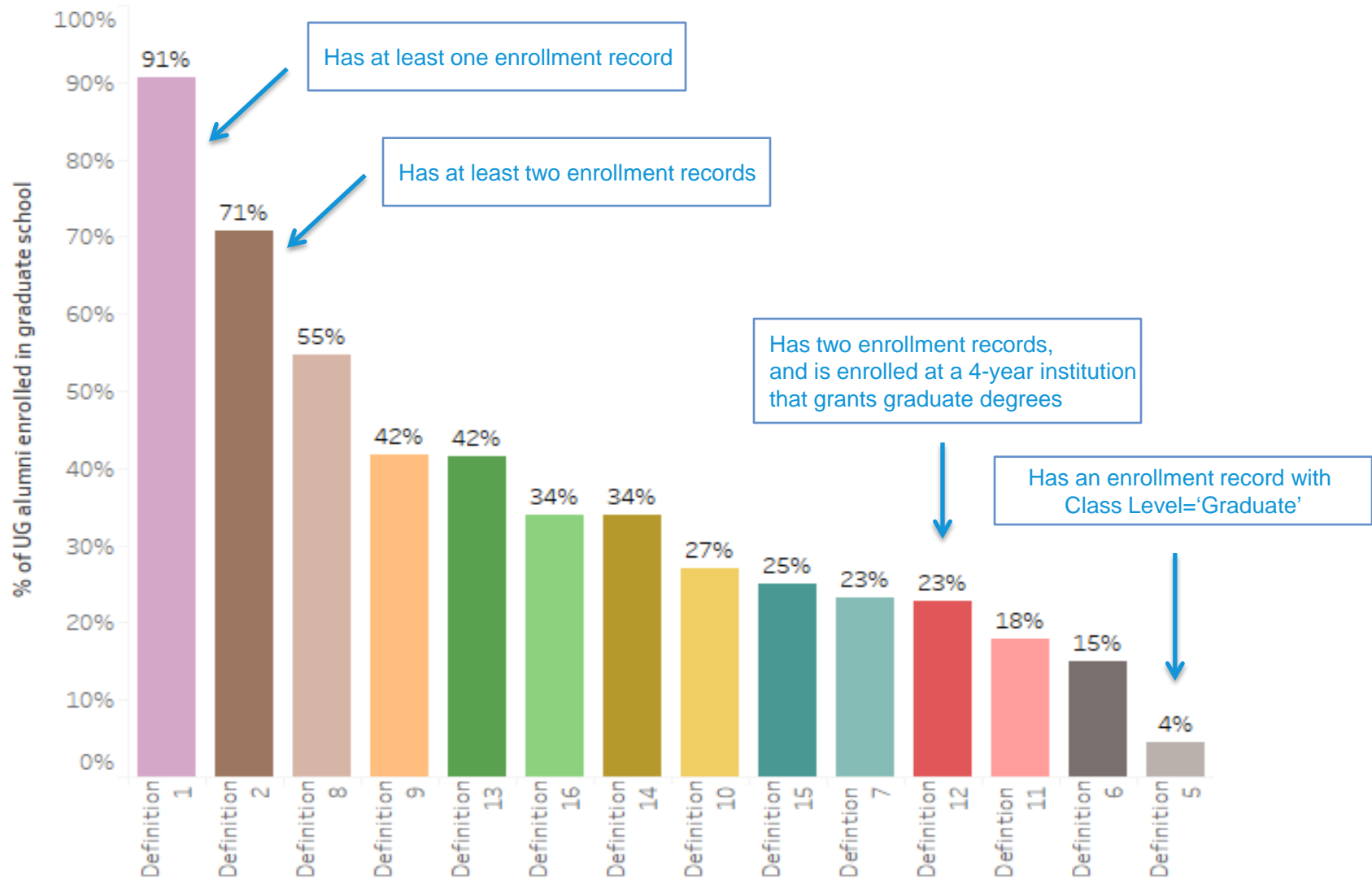
Definition 1: Has an enrollment record

22% of the enrollment records are at a community college

Most enrollment records are at the undergraduate institution

Definition 1
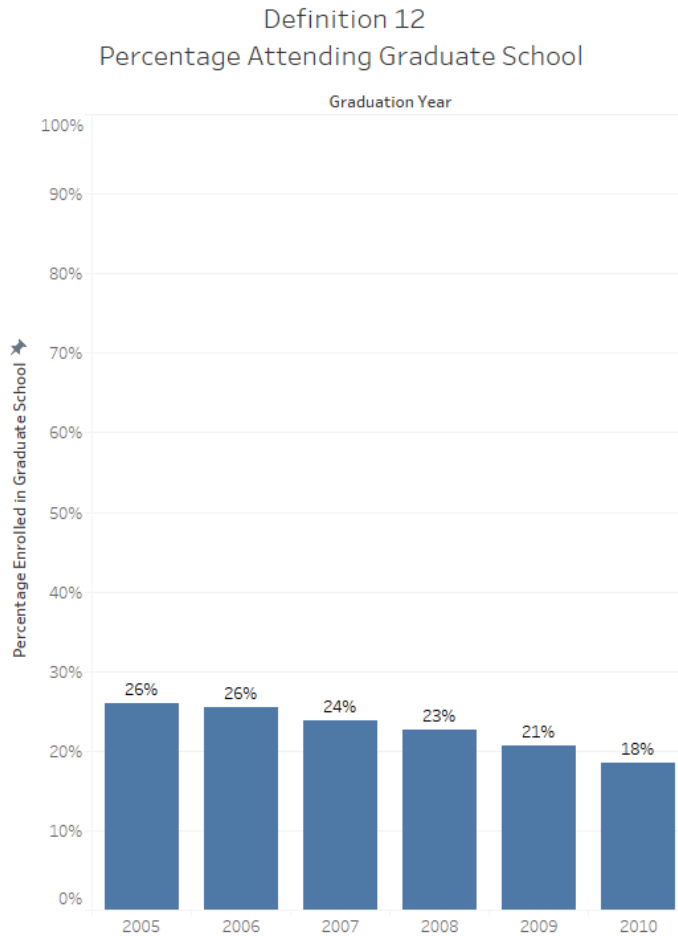### Percentage Attending Graduate School

Graduation Year

Year	Percentage
2005	93%
2006	93%
2007	91%
2008	89%
2009	90%
2010	88%

Percentage Enrolled in Graduate School

School Type Percentage

4-yr institution	78%
2-yr institution	22%
Less than 2-yr	0%

Definition 1
List of Graduate Schools Attended

Nsc En..	School List	
4	UNIVERSITY OF CALIFORNIA-LOS ANGELES	25,109
	UNIVERSITY OF CALIFORNIA-DAVIS	19,899
	UNIVERSITY OF CALIFORNIA - IRVINE	18,059
	UNIVERSITY OF CALIFORNIA-SAN DIEGO	17,210
	UNIVERSITY OF CALIFORNIA-SANTA BARBARA	15,617
	UNIVERSITY OF CALIFORNIA - RIVERSIDE	10,388
	UNIVERSITY OF CALIFORNIA-SANTA CRUZ	9,556
	UNIVERSITY OF CALIFORNIA - BERKELEY	8,637
	UNIVERSITY OF CALIFORNIA-EXTENSION	3,503
	UNIVERSITY OF SOUTHERN CALIFORNIA	2,518
	SAN FRANCISCO STATE UNIVERSITY	2,226
	CALIFORNIA STATE UNIVERSITY - LONG BEACH	1,500
	CALIFORNIA STATE UNIVERSITY - FULLERTON	1,452
	SAN JOSE STATE UNIVERSITY	1,440
	SAN DIEGO STATE UNIVERSITY	1,224
	CALIFORNIA STATE UNIVERSITY- NORTHRIDGE	1,130
	NATIONAL UNIVERSITY	1,007
	UNIVERSITY OF CALIFORNIA-SAN FRANCISCO	867
	CALIFORNIA STATE UNIVERSITY - EAST BAY	853
	CALIFORNIA STATE UNIVERSITY - LOS ANGELE	811
	CALIFORNIA STATE UNIVERSITY - SACRAMENTO	807
	SANTA CLARA UNIVERSITY	708

Definition 12: Starting with the second record, the student has an enrollment at a school that grants graduate degrees

Definition 12
Percentage Attending Graduate School

Graduation Year

Year	Percentage
2005	26%
2006	26%
2007	24%
2008	23%
2009	21%
2010	18%

School Type Percentage

4-yr institution — 100%

Definition 12
List of Graduate Schools Attended

Nsc En..	School List	
4	SAN FRANCISCO STATE UNIVERSITY	3,321
	CALIFORNIA STATE UNIVERSITY - LONG BEACH	2,613
	UNIVERSITY OF SOUTHERN CALIFORNIA	2,575
	CALIFORNIA STATE UNIVERSITY - FULLERTON	2,236
	SAN DIEGO STATE UNIVERSITY	2,069
	NATIONAL UNIVERSITY	2,001
	SAN JOSE STATE UNIVERSITY	1,836
	UNIVERSITY OF CALIFORNIA-SAN FRANCISCO	1,717
	CALIFORNIA STATE UNIVERSITY- NORTHRIDGE	1,518
	SANTA CLARA UNIVERSITY	1,251
	UNIVERSITY OF CALIFORNIA-DAVIS	1,231
	UNIVERSITY OF CALIFORNIA - IRVINE	1,226
	CALIFORNIA STATE UNIVERSITY - SACRAMENTO	1,115
	CALIFORNIA STATE UNIVERSITY - EAST BAY	1,051
	CALIFORNIA STATE UNIVERSITY - LOS ANGELE	1,046
	UNIVERSITY OF CALIFORNIA - BERKELEY	1,036
	UNIVERSITY OF CALIFORNIA-LOS ANGELES	804
	SOUTHWESTERN U SCHOOL OF LAW	712
	CALIFORNIA STATE UNIVERSITY - DOMINGUEZ	696
	AZUSA PACIFIC UNIVERSITY- UNDERGRADUATE	667
	LOYOLA MARYMOUNT UNIVERSITY	653
	NEW YORK UNIVERSITY	647

Special Cases#1: Some graduate degree granting institutions have a less than 2-yr or 2-yr institution designation in the NSC data

For Example:

NSC_SCHOOL NAME	NSC INST. TYPE
DICKINSON SCHOOL OF LAW	Less than 2-yr Institution
RED ROCKS COMMUNITY COLLEGE	2-yr Institution

Has abbreviated LLM and JD programs

Has a Masters Program

395 Institutions with 4-yr institution designations, but do not grant graduate degrees

Graduate degree granting institutions can be identified using IPEDS and the OPE-ID

Special Cases #2: Non-consecutive enrollments in graduate school

Example #1

ID	RECORD_FOUND	NSC_ENR_BEGDATE	NSC_ENR_ENDDATE	INST_TYPE	NSC_SCHOOL	NSC_SECTOR	NSC_STATE	NSC_DEGREE
19328	Y	15-Jan-04	28-May-04	2	MERRITT COLLEGE	Public	CA	
19328	Y	17-Aug-05	15-Sep-05	2	MERRITT COLLEGE	Public	CA	
19328	Y	17-Aug-06	17-Dec-06	2	DIABLO VALLEY COLLEGE	Public	CA	
19328	Y	5-Feb-07	22-May-07	2	DIABLO VALLEY COLLEGE	Public	CA	
19328	Y	27-May-08	7-Aug-08	4	JOHN F KENNEDY UNIVERSITY LAW	Private	CA	
19328	Y	3-Oct-11	18-Oct-11	4	JOHN F KENNEDY UNIVERSITY	Private	CA	
19328	Y	12-Jan-13	24-May-13	2	DIABLO VALLEY COLLEGE	Public	CA	
19328	Y	30-Sep-13	14-Dec-13	4	JOHN F KENNEDY UNIVERSITY	Private	CA	
19328	Y			4	JOHN F KENNEDY UNIVERSITY	Private	CA	JURIS DOCTOR

Example #2

ID	RECORD_FOUND	NSC_ENR_BEGDATE	NSC_ENR_ENDDATE	INST_TYPE	NSC_SCHOOL	NSC_SECTOR	NSC_STATE	NSC_DEGREE
21844	Y	26-Sep-05	16-Dec-05	2	FOOTHILL COLLEGE	Public	CA	
21844	Y	9-Jan-06	31-Mar-06	2	FOOTHILL COLLEGE	Public	CA	
21844	Y	10-Apr-06	1-May-06	2	FOOTHILL COLLEGE	Public	CA	
21844	Y	25-Sep-06	15-Dec-06	2	FOOTHILL COLLEGE	Public	CA	
21844	Y	29-Aug-07	21-Dec-07	4	CALIFORNIA STATE UNIVERSITY - SACRAMENTO	Public	CA	
21844	Y	4-Sep-07	14-Dec-07	4	CALIFORNIA STATE UNIVERSITY - SACRAMENTO	Public	CA	
21844	Y	28-Jan-08	23-May-08	4	CALIFORNIA STATE UNIVERSITY - SACRAMENTO	Public	CA	
21844	Y	6-Apr-09	26-Jun-09	2	FOOTHILL COLLEGE	Public	CA	
21844	Y	23-Aug-14	18-Dec-14	2	AMERICAN RIVER COLLEGE LOS RIOS CC DISTR	Public	CA	
21844	Y	5-Jan-15	6-Feb-15	2	FOOTHILL COLLEGE	Public	CA	
21844	Y	16-Jan-16	18-May-16	2	AMERICAN RIVER COLLEGE LOS RIOS CC DISTR	Public	CA	
21844	Y	1-Jan-00	1-Apr-00	4	UNIVERSITY OF DENVER - COLORADO	Private	CO	MASTER OF ACCOUNTANCY

Special Cases #3: Graduation records with no prior graduate level enrollment records

Example #1

ID	RECORD_FOUND	OPE_ID	NSC_ENR_BEGDATE	NSC_ENR_ENDDATE	INST_TYPE	NSC_DEGREE_FLAG	NSC_SCHOOL	NSC_SECTOR	NSC_STATE	NSC_DEGREE
90597	Y	001191-00	17-Jan-01	25-May-01		2 Not Graduated	DIABLO VALLEY COLLEGE	Public	CA	
90597	Y	001191-00	14-Jan-02	24-May-02		2 Not Graduated	DIABLO VALLEY COLLEGE	Public	CA	
90597	Y	001191-00	19-Aug-02	16-Dec-02		2 Not Graduated	DIABLO VALLEY COLLEGE	Public	CA	
90597	Y	001191-00	13-Jan-03	23-May-03		2 Not Graduated	DIABLO VALLEY COLLEGE	Public	CA	
90597	Y	003010-00				4 Graduated	ANTIOCH UNIVERSITY	Private	OH	MASTER OF ARTS

Example #2

ID	RECORD_FOUND	OPE_ID	NSC_ENR_BEGDATE	NSC_ENR_ENDDATE	INST_TYPE	NSC_DEGREE_FLAG	NSC_SCHOOL	NSC_SECTOR	NSC_STATE	NSC_DEGREE
79222	Y	003213-00	31-Mar-03	14-Jun-03		2 Not Graduated	PORTLAND COMMUNITY COLLEGE	Public	OR	
79222	Y	003213-00	22-Sep-03	13-Dec-03		2 Not Graduated	PORTLAND COMMUNITY COLLEGE	Public	OR	
79222	Y	001083-00				4 Graduated	UNIVERSITY OF ARIZONA	Public	AZ	MASTER OF BUSINESS ADMIN

Example #3

ID	RECORD_FOUND	OPE_ID	NSC_ENR_BEGDATE	NSC_ENR_ENDDATE	INST_TYPE	NSC_DEGREE_FLAG	NSC_SCHOOL	NSC_SECTOR	NSC_STATE	NSC_DEGREE
380412	Y	007692-00	25-Aug-08	19-Dec-08		2 Not Graduated	MORAINE VALLEY COMMUNITY COLLEGE	Public	IL	
380412	Y	007692-00	12-Jan-09	15-May-09		2 Not Graduated	MORAINE VALLEY COMMUNITY COLLEGE	Public	IL	
380412	Y	007692-00	19-Jan-10	21-May-10		2 Not Graduated	MORAINE VALLEY COMMUNITY COLLEGE	Public	IL	
380412	Y	001775-00				4 Graduated	UNIVERSITY OF ILLINOIS @ URBANA	Public	IL	DOCTOR OF VETERINARY MEDICINE

Definition 13: Starting with the second enrollment record, has an enrollment at a graduate degree granting institution OR has graduated with a graduate degree


Definition 13
Percentage Attending Graduate School

Graduation Year

Year	Percentage
2005	46%
2006	46%
2007	43%
2008	42%
2009	39%
2010	34%
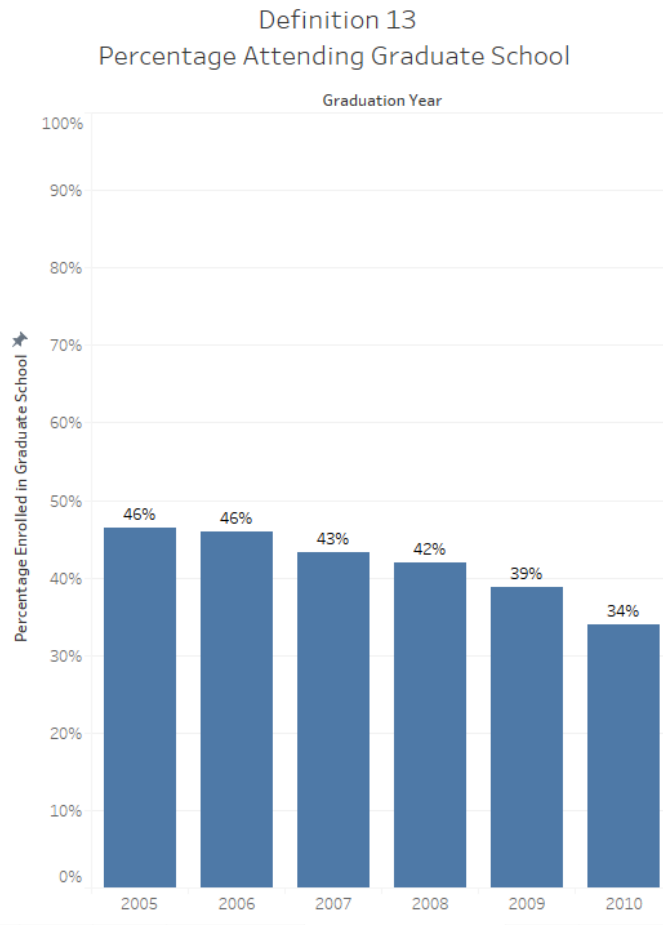
School Type Percentage

4-yr institution — 100%

Definition 13
List of Graduate Schools Attended

Nsc En..	School List	
4	UNIVERSITY OF SOUTHERN CALIFORNIA	6,527
	UNIVERSITY OF CALIFORNIA-LOS ANGELES	6,232
	UNIVERSITY OF CALIFORNIA-DAVIS	3,650
	SAN FRANCISCO STATE UNIVERSITY	3,343
	UNIVERSITY OF CALIFORNIA - IRVINE	3,272
	UNIVERSITY OF CALIFORNIA-SAN DIEGO	3,123
	CALIFORNIA STATE UNIVERSITY - LONG BEACH	2,616
	UNIVERSITY OF CALIFORNIA - BERKELEY	2,511
	SAN JOSE STATE UNIVERSITY	2,397
	CALIFORNIA STATE UNIVERSITY - FULLERTON	2,337
	NATIONAL UNIVERSITY	2,248
	SAN DIEGO STATE UNIVERSITY	2,071
	WESTERN UNIVERSITY OF HEALTH SCIENCES	1,888
	CALIFORNIA STATE UNIVERSITY- NORTHRIDGE	1,779
	UNIVERSITY OF CALIFORNIA-SAN FRANCISCO	1,719
	LOYOLA MARYMOUNT UNIVERSITY	1,663
	NEW YORK UNIVERSITY	1,570
	CALIFORNIA STATE UNIVERSITY - EAST BAY	1,417
	UNIVERSITY OF CALIFORNIA-SANTA BARBARA	1,414
	CALIFORNIA STATE UNIVERSITY - SACRAMENTO	1,412
	CALIFORNIA STATE UNIVERSITY - LOS ANGELE	1,337
	PEPPERDINE UNIVERSITY	1,222

A reasonable estimate of graduate school enrollment is one that is greater than the graduate completion rate
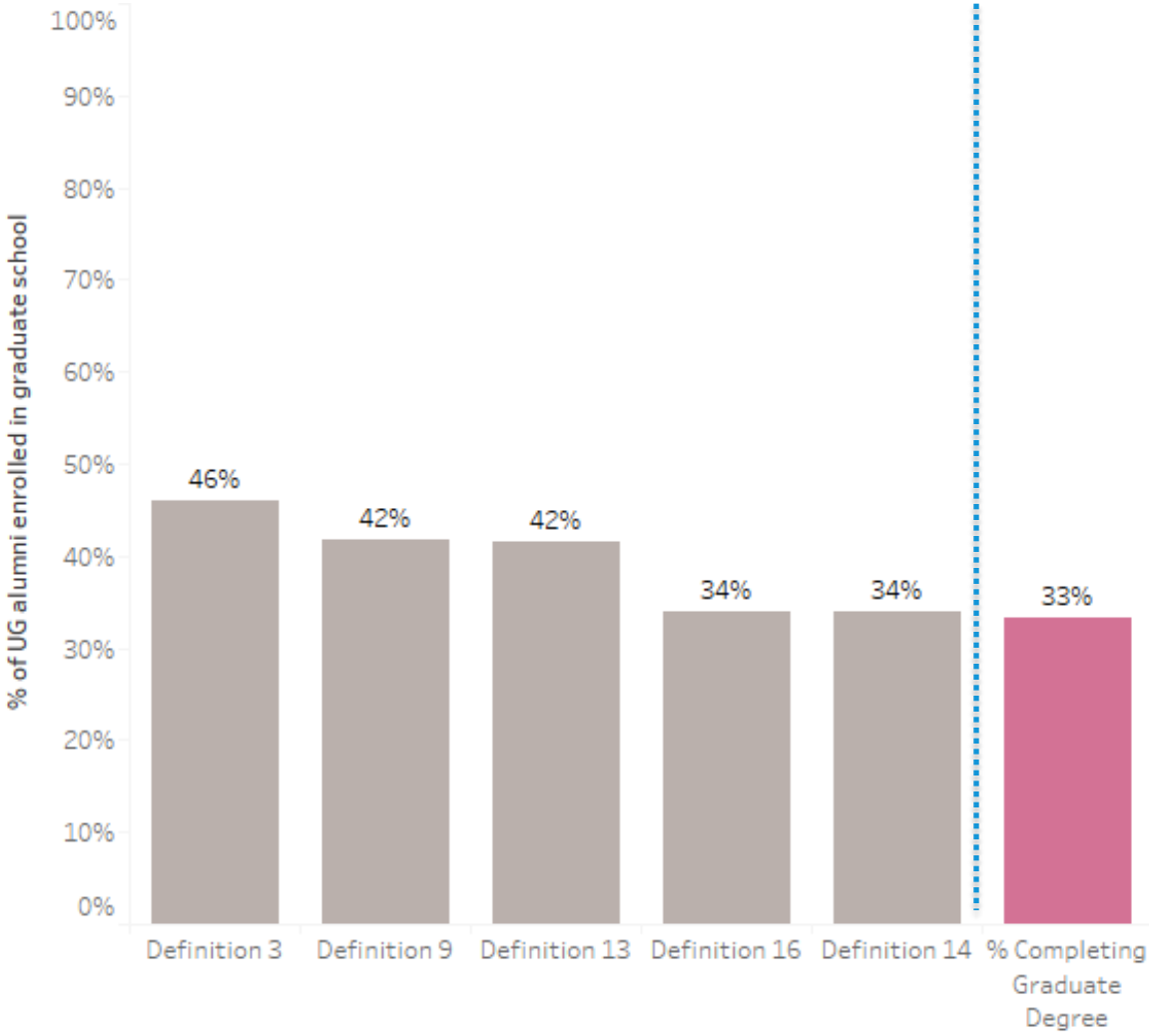
Recommendations: Graduate Enrollment

- Start with the second enrollment record (record_found='Y', Graduated?='N'), or an enrollment record that occurs after a specified time (e.g. 6 months) – depending on search date.

- Include the record if the enrollment is at an institution that grants masters or higher degrees (use IPEDS and OPE-ID to identify, NSC might have '2' or 'L' designation)

Augment these records with:

- Students who have no enrollment records at an institution that grants masters degree or higher, but have a graduation record from these institutions with a graduate degree (record_found='Y', Graduated?='Y'),

NSC Degree Overview

Desired Graduate Degree Types

No Degree	517,110	72.8%
Academic Masters	65,851	9.3%
JD Law	22,742	3.2%
Masters Education/Teaching	19,620	2.8%
MBA Business	17,820	2.5%
Health Science Prof.	16,362	2.3%
Doctoral	15,071	2.1%
MD Medicine	12,000	1.7%
MSW Social Work	5,143	0.7%
Associates Degree	4,632	0.7%
Other Degrees	4,460	0.6%
MPH Public Health	3,380	0.5%
MPP Public Policy	3,364	0.5%
MFA Fine Art	2,805	0.4%
Grand Total	710,360	100.0%

- Sent NSC all BA/BS recipients from 1999 to 2015

- Grouped text degree titles into reporting categories

- Calculated degree completion rates by discipline and student demographics

- Compared results to student survey responses on graduate school plans

Degree Methodology

NSC Graduate Degree Completion Related Fields

Column	NSC Column Name	Information	Importance	Challenges
L	Graduated?	Y/N (Use Y only)	Essential	May be Y with no degree title (< 1%)
V	2-year/4-year	2 Yr, 4 Yr	Essential	None - matches degree type
W	Graduation Date	Date degree received	Optional - time to degree	None - always populated
X	Degree Title	Full degree name	Essential	Text Only, many abbreviations
Y	Degree Major 1	Primary discipline	Optional - for classifying degrees by discipline	Often complete, CIP reliable
Z	Degree CIP 1			
AA	Degree Major 2	Second discipline	Generally not used	Usually blank
AB	Degree CIP 2			
AC	Degree Major 3	Third discipline	Generally not used	Usually blank
AD	Degree CIP 3			
AE	Degree Major 4	Fourth discipline	Generally not used	Usually blank
AF	Degree CIP 4			

Degree Methodology – 1st Pass

- All records with graduation status='Y' and institution type of '4 Year'

- Exclude non-graduate degrees

  - Bachelors, associates, credentials, certificates

  - Not like %BACHELOR%, %BA%, %BS%, %CRED%

- Include graduate degrees through first pass where statements

  - like %JD%, %Juris Doctor%, %J.D.%

  - substring in ('PhD', 'PHD', 'PH D', 'PH.D', 'EDD', 'DPH', 'PH. D.')

Degree Methodology – 2ⁿᵈ Pass

- Manual coding of degree title to identify degree names not captured in first pass

- Disciplinary classification
  - CIP codes work for ~90% of cases
  - Large concentrations of 'Masters Degrees' with CIP in professional fields
  - 'Masters Degree' with CIP 52 --> MBA
  - 'Masters Degree' with CIP 13 --> MEd

Degree Methodology – 2nd Pass

Masters Degrees Reclassified on CIP Code

Graduate Degree Type	NSC_DEGREE	CIP	Degrees
	MASTER OF ARTS	13	5,242
	MASTER OF EDUCATION	13	4,573
	MASTER OF SCIENCE	13	1,125
	MASTER OF ARTS IN TEACHING IN ELEMENTARY AND SECONDARY EDUCATION	13	882
Masters Education/Teaching	MASTER OF ARTS IN TEACHING	13	839
	MAED/TED-S	13	236
	MASTER OF ARTS IN EDUCATION	13	211
	MAED/TED-E	13	187
	MA	13	178
	MASTER OF SCIENCE IN EDUCATION	13	156
	MS	13	73
			13,702
	MASTER OF BUSINESS ADMINISTRATION	52	4,709
	MASTER OF BUSINESS ADMIN	52	3,132
	MASTER OF SCIENCE	52	1,099
	MBA	52	793
	MASTER OF BUSINESS ADMIN.	52	566
MBA Business	MASTER BUS ADMIN	52	364
	MASTER BUSINESS ADMINISTRATION	52	362
	MASTER OF BUS ADMIN	52	207
	MASTER OF ARTS	52	178
	MASTER OF BUSINESS ADMINISTRAT	52	134
	MA	52	68
	MASTER'S	52	54
			11,666

Degree Methodology – 3rd Pass

- Highest degree awarded hierarchy
  - Doctorate
  - MD
  - JD Law
  - MBA
  - Nursing (Masters or Doctorate)
  - MD Medicine
  - Professional Masters (MPH, MPP, MFA , MSW)
  - Academic Masters (MA/MS) – since many earn prior to PhD

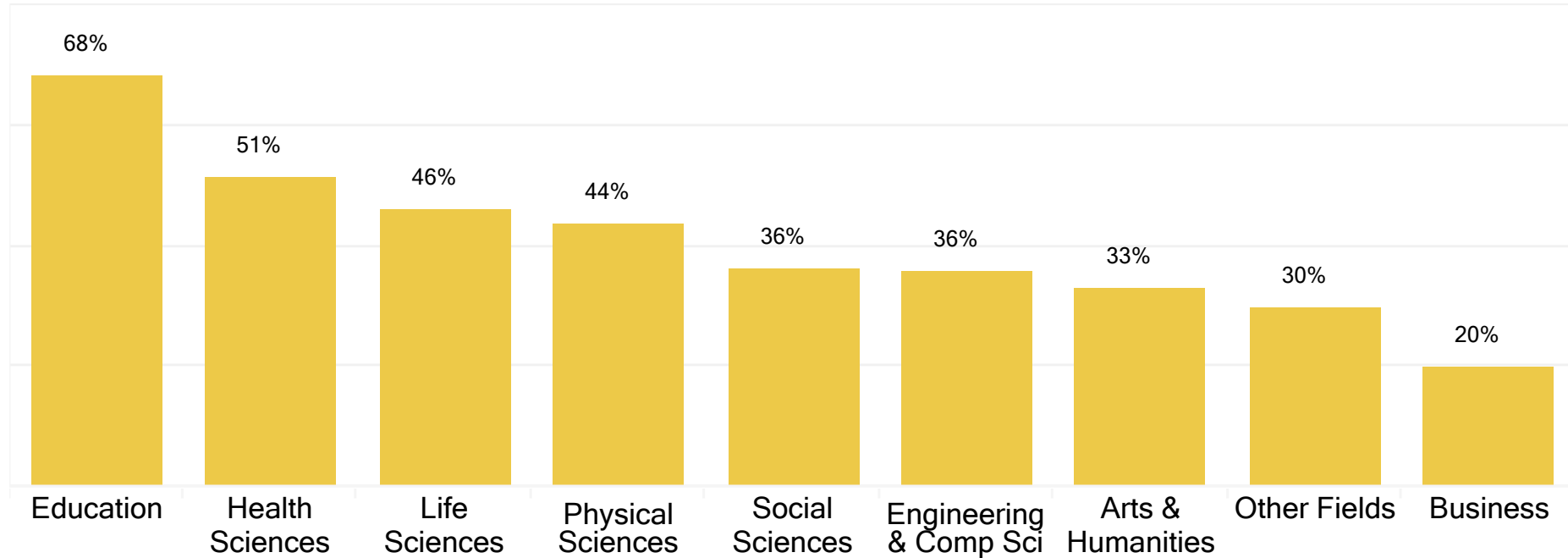- Most recent degree earned

How Many Earn Degrees?

Percent Ever Receiving Graduate Degree, 2000-2010 Cohorts
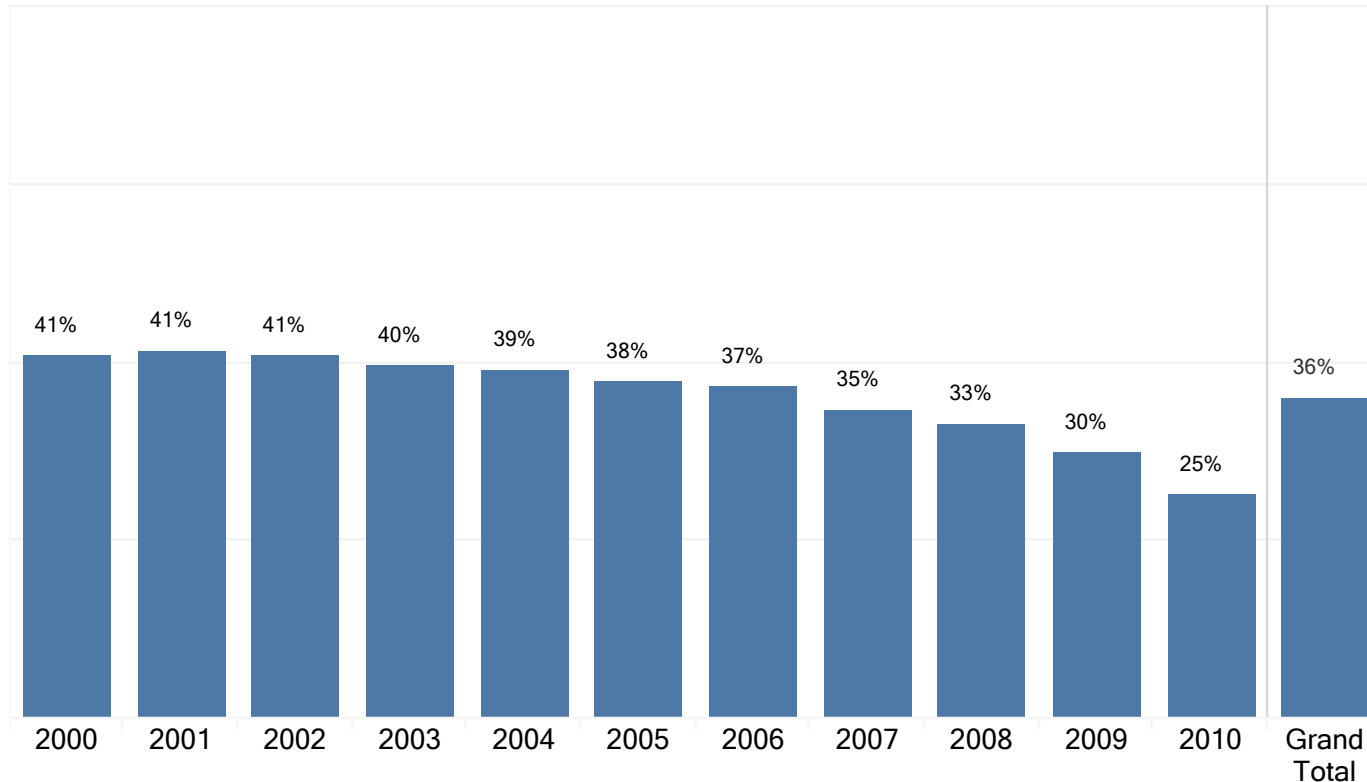
- About 35 to 40 percent of UC graduates go on to earn a graduate degree

- Consistent with UG survey responses on post-graduate plans to enroll in graduate school

UG Major Variation

Graduate Degree Completion by UG Major

- Education and health sciences have highest graduate degree completion, business the lowest

- Completion rates uniform in other disciplines

What Degrees Do They Earn?

Graduate Degrees Received by UG Major, 2000-2010 Cohorts

Legend:
- Health Science Prof
- MBA Business
- JD Law
- Doctoral
- Masters

Major	Masters	Doctoral	JD Law	MBA Business	Health Science Prof
Arts & Humanities	66%		18%		
Business	29%		15%	51%	
Education	76%				17%
Engineering & Comp Sci	63%	14%		14%	
Health Sciences	37%				56%
Life Sciences	29%	11%			54%
Other Fields	53%		19%	14%	9%
Physical Sciences	51%	27%		7%	13%
Social Sciences	56%		19%	11%	8%
Grand Total	51%	9%	13%	10%	17%
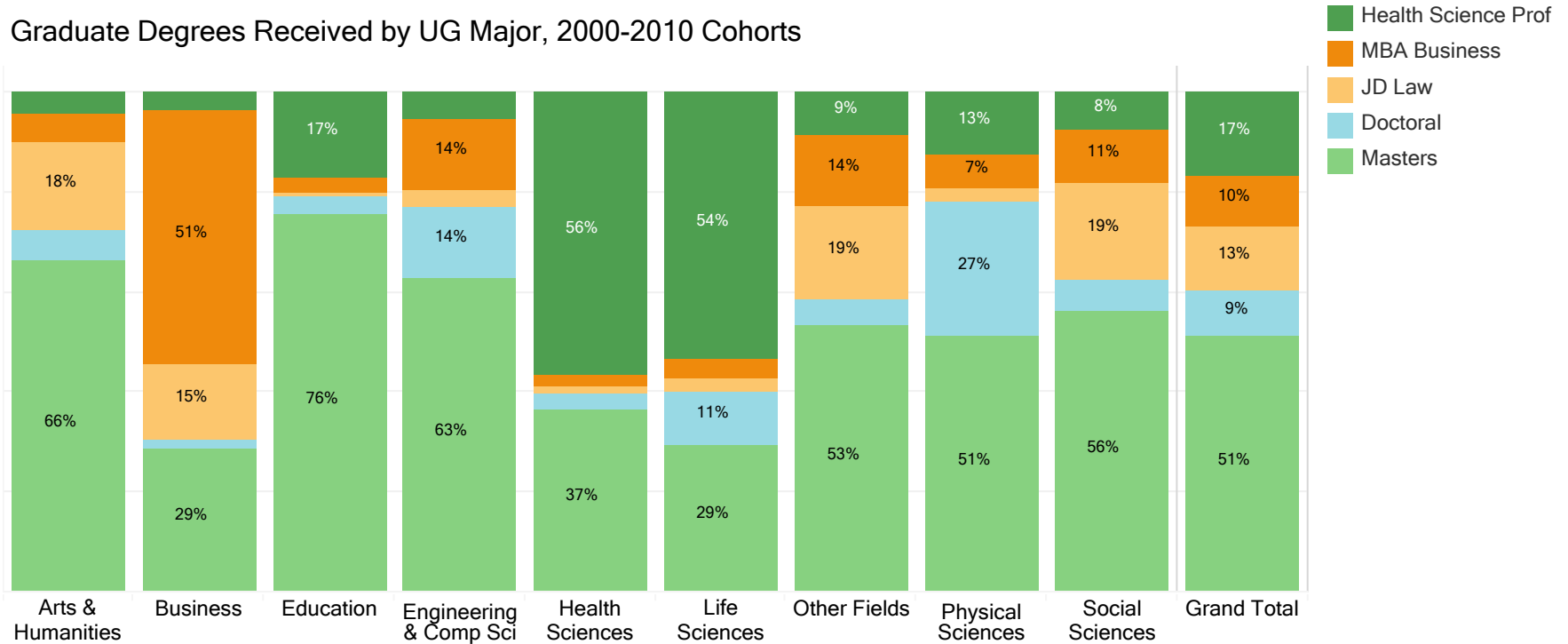
- STEM graduates twice as likely to earn doctorate than non-STEM (14% vs 6%)

- Social sciences and humanities graduates most likely to earn law degrees

- Business graduates least likely to earn graduate degree, but most likely to earn MBA

When Do They Earn Graduate Degrees?

Graduate Degree Attainment by Years After UC Graduation , 2000-2010 Cohorts
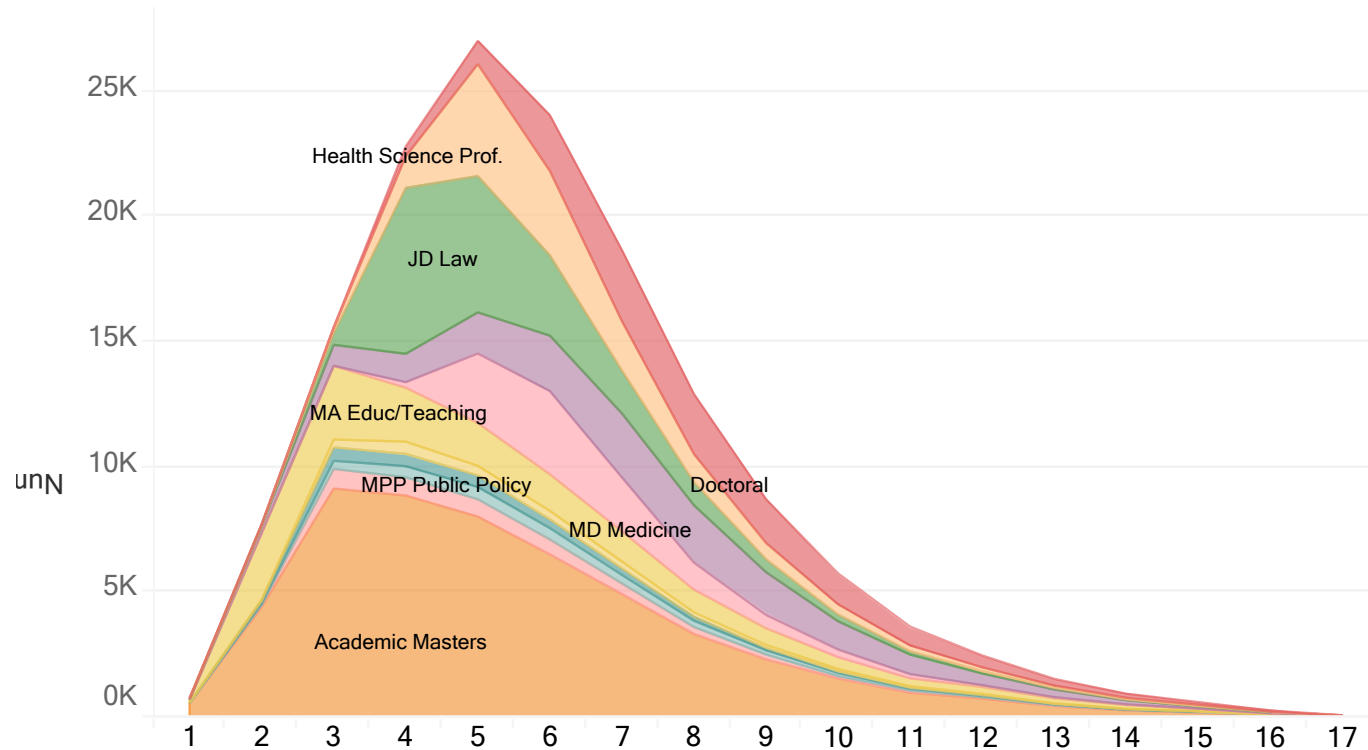
- Most degrees earned by 5 years after UC graduation

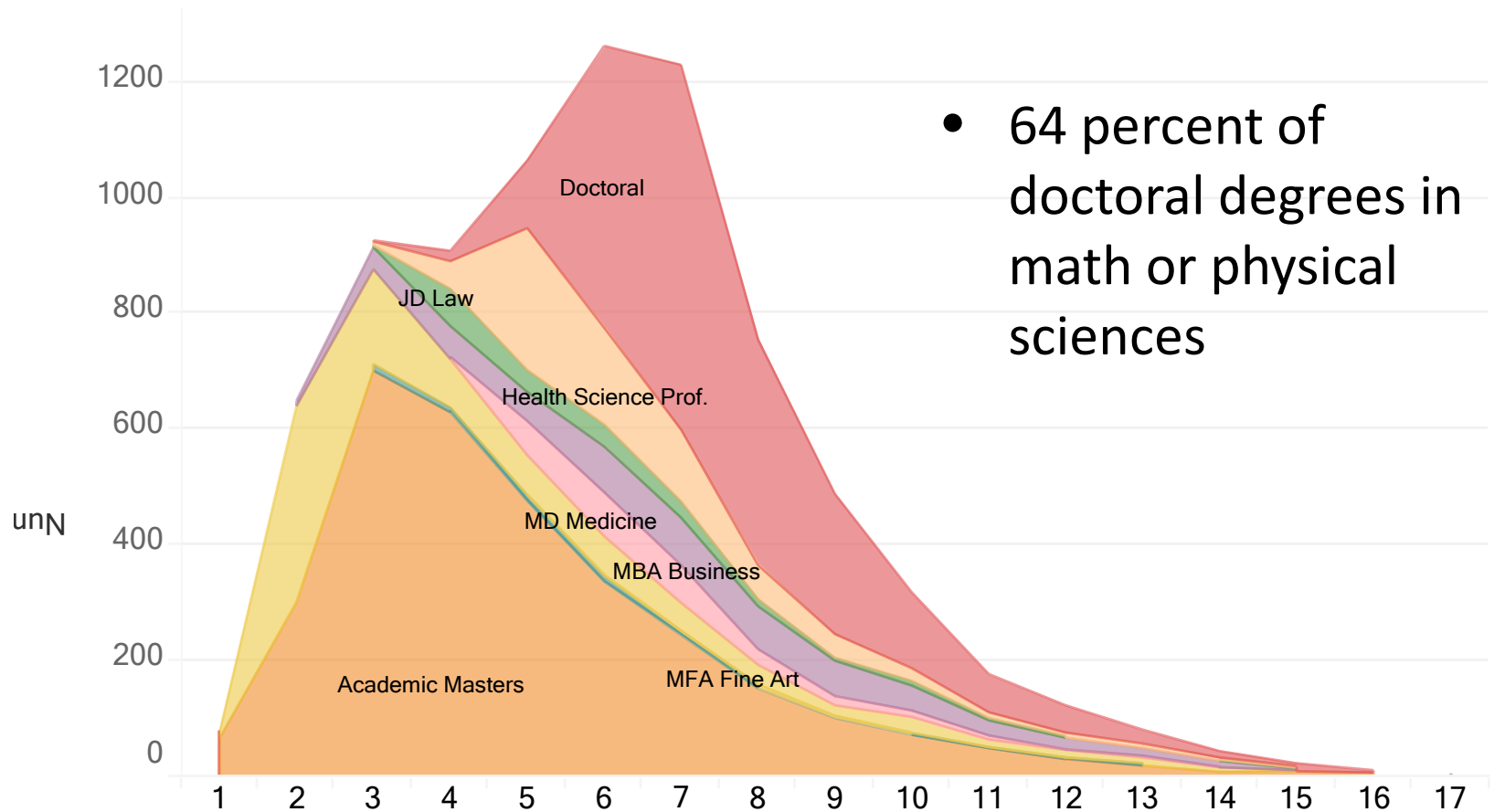- Doctorates and MBAs earned about the same time (7-8 years out) after UC graduation

All Business

Graduate Degree Attainment by Business Majors, by Years After UC Graduation
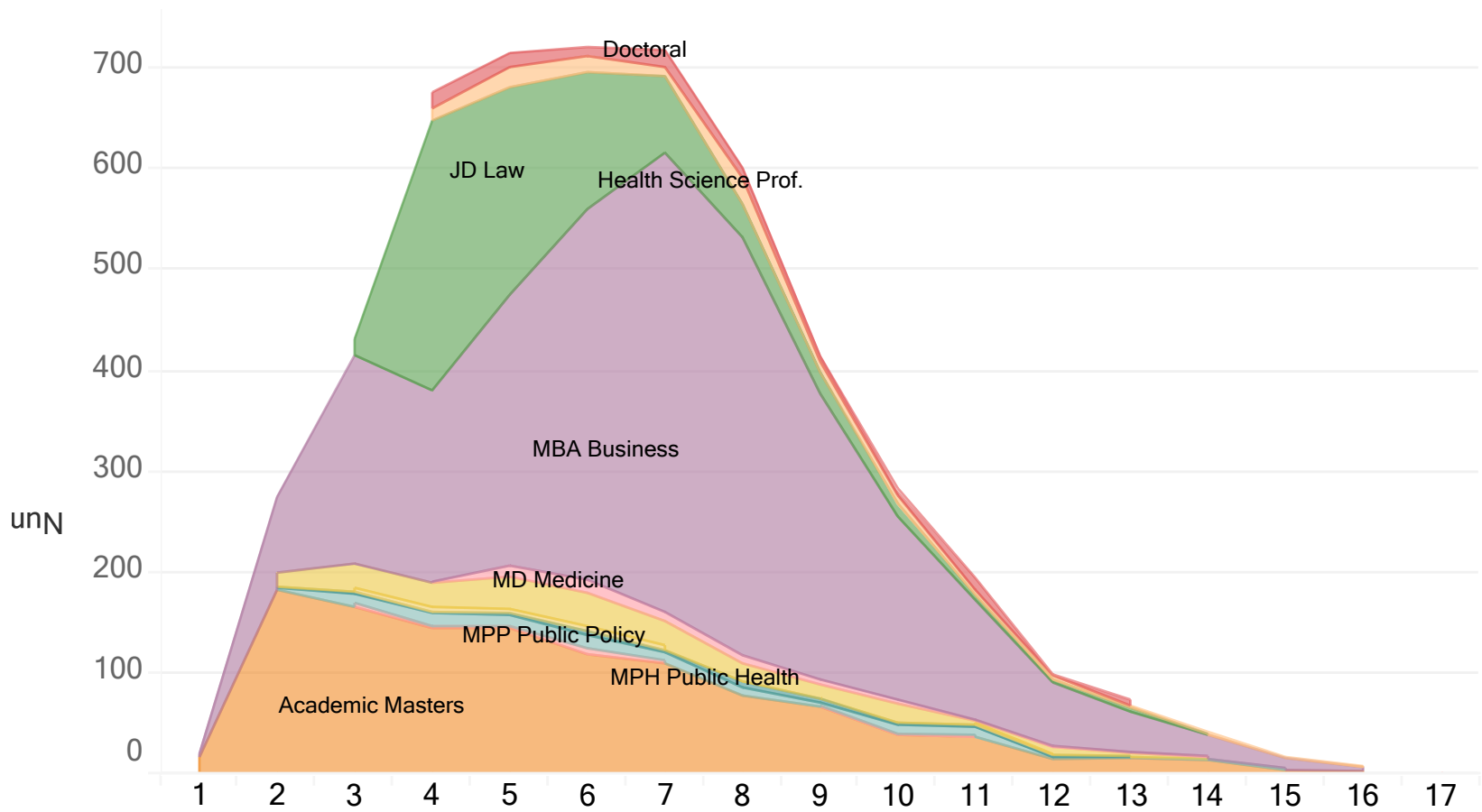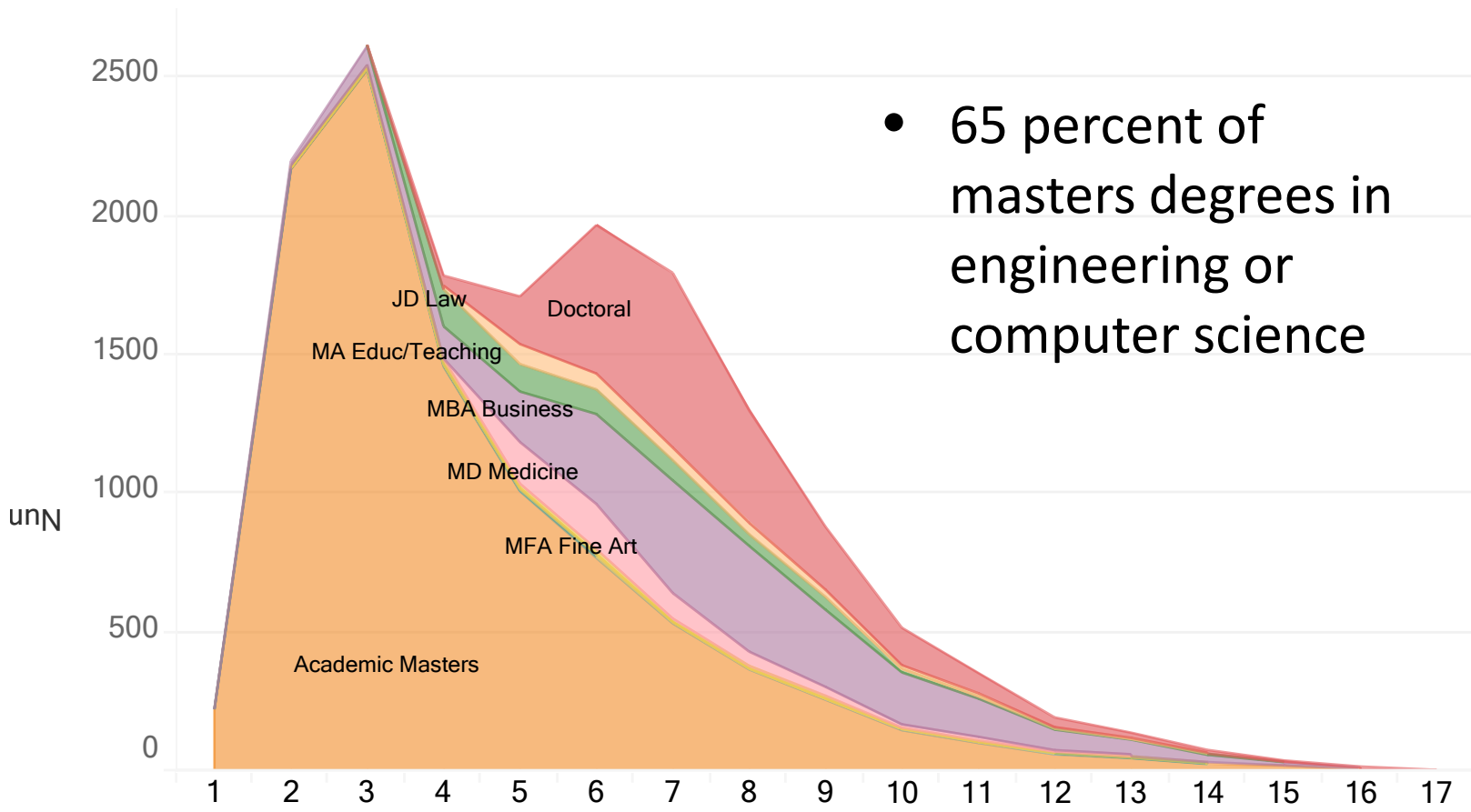
Physical Science Majors → PhD

Graduate Degree Attainment by Physical Science Majors, by Years After UC Graduation

- 64 percent of doctoral degrees in math or physical sciences

Engineering Majors → Masters

Graduate Degree Attainment by Engineering/CS Majors, by Years After UC Graduation

- 65 percent of masters degrees in engineering or computer science

Where Do They Earn Graduate Degrees?

Graduate Degrees Received by Institution Type, 2000-2010 Cohorts
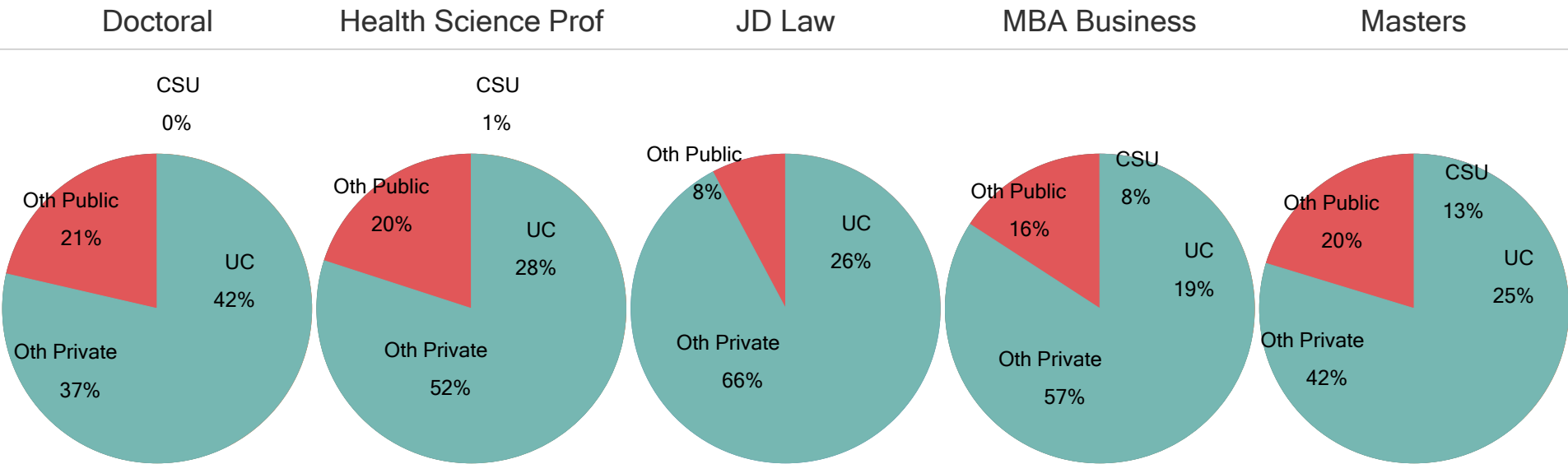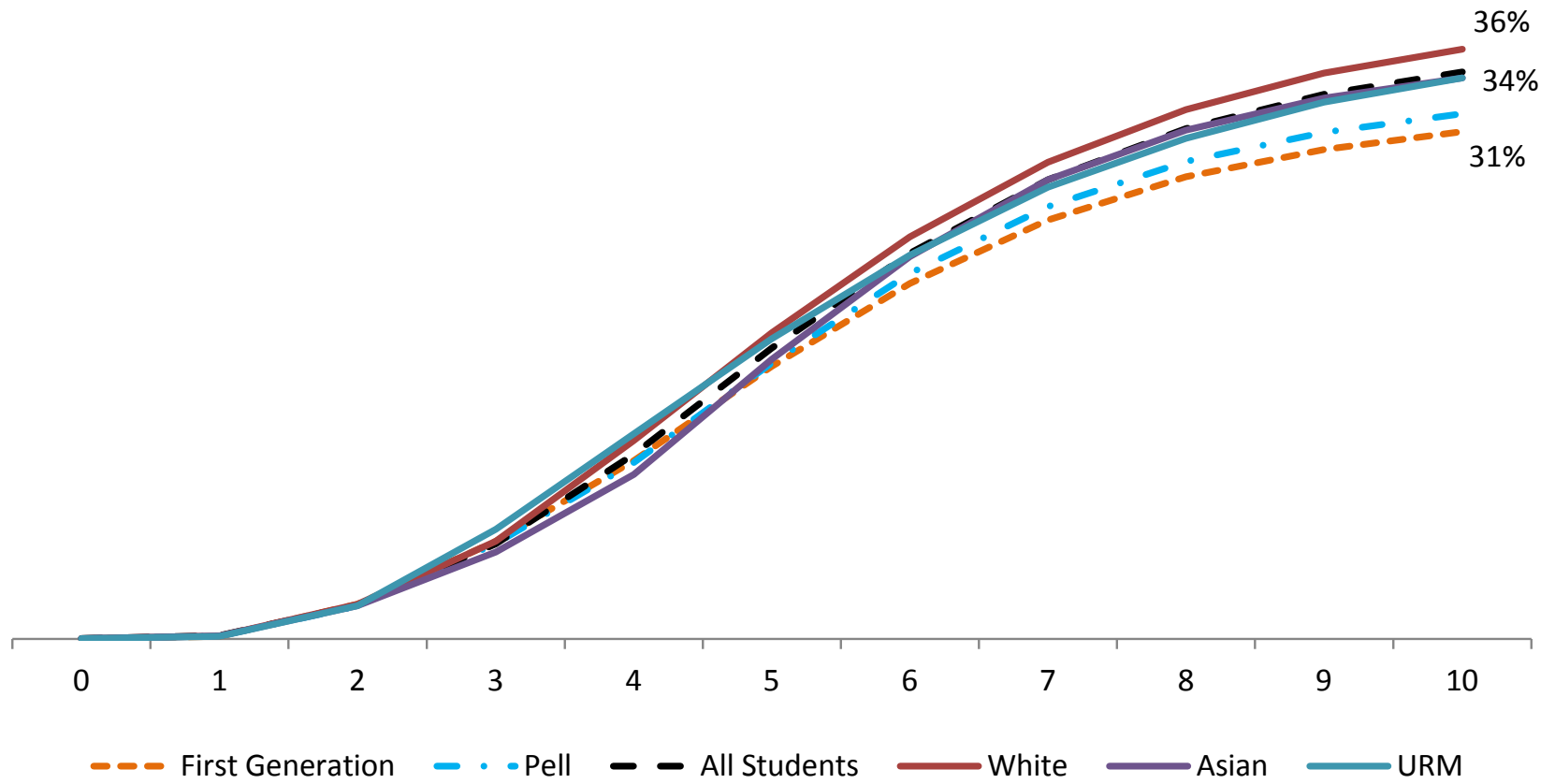

- Over 40 percent of doctorates are earned at UC

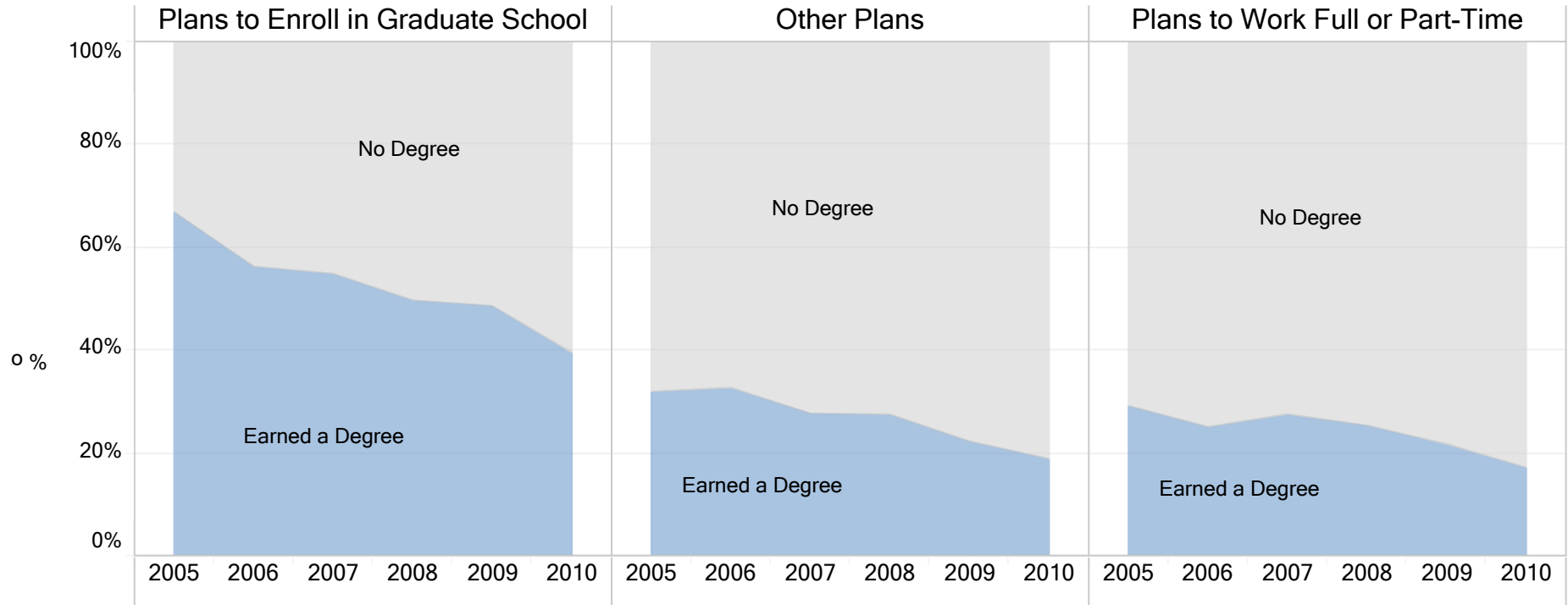- Majority of law and MBA degrees are earned at private institutions

UNIVERSITY
OF
CALIFORNIA

Group Differences

**Graduate Degree Completion by 10 Years After UC
Graduation, 2000-2010 Cohorts**

The Best Laid Plans
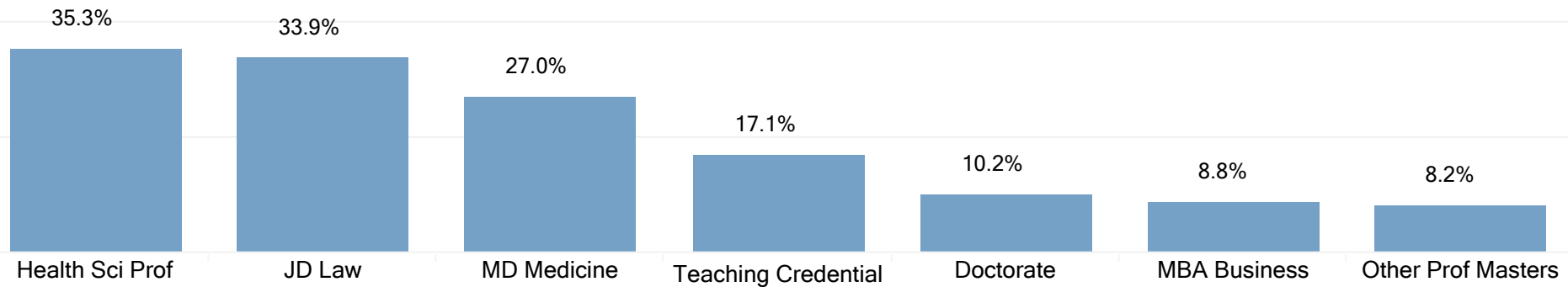
Graduate Degree Completion Rates

- Majority (40 to 65 percent) of students with graduate school plans complete a degree

- Students with plans to work are least likely to compete graduate degree

Aim High

Percent Earning Desired Degree, 2005-2010 Cohorts

Health Sci Prof	JD Law	MD Medicine	Teaching Credential	Doctorate	MBA Business	Other Prof Masters
35.3%	33.9%	27.0%	17.1%	10.2%	8.8%	8.2%

- Students indicating plans to earn law and health science professional degrees most likely to do so

Next Steps

- Craft additional logic to help identify graduate school enrollments

- Validation of NSC records through graduate degrees conferred at UC

- Link to earnings outcome data to graduate degree completers