

Is starting as an undeclared major a bad thing?

A look at first-year undeclared students' characteristics,
major declaration patterns and their influence on
retention and graduation rates

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Overview

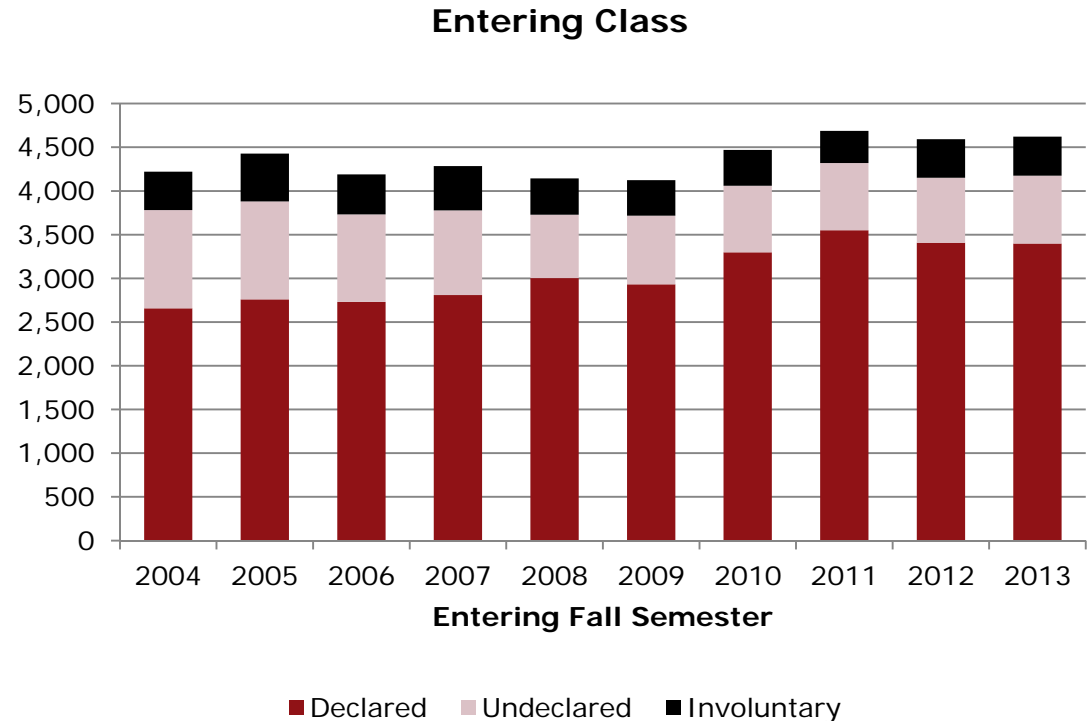
- Overview of UMass Amherst
- Collaboration with Undergraduate Advising
- Longitudinal Student Database and National Student Clearinghouse
- The Entering Class (size and characteristics)
 - Impact of admissions characteristics on outcomes
 - Impact of OASIS course on outcomes
- Effects of majors changes
- Optimal time to declare a major
- Conclusion/Wrap-up

UMass Amherst Facts

- The flagship campus of the UMass system, the only public Carnegie very high research university in the state
- Enrollment: over 28,500 students (Fall 2013)
 - 78% undergraduate, 22% graduate students
 - Entering class of 4,620 students
- Over 50 academic departments
 - Over 100 undergraduate majors
- Research and development expenditures close to \$195 million (FY 2012)

The First-Year Entering Class

- Size has increased in last 10 years
- 3 categories:
 - Declared majors
 - Undeclared majors (student choice)
 - Undeclared majors (university choice – i.e. involuntary)



Collaboration with Undergraduate Advising

- Undergraduate Advising (UA) is primarily responsible for Undeclared students
 - Provide advising for undeclared students:
 - ✓ Assistance in choosing a major, developing an academic plan
 - ✓ Empower students with reliable, accurate information and referrals
 - ✓ Provide welcoming and supportive environment
 - Academic Dean has authority to make decisions concerning academic discipline
 - Track specific students at risk (returning from suspension, reinstated from academic discipline, still undeclared after 45 credits)

Collaboration with Undergraduate Advising (cont.)

- Working with UA leadership (including Dean)
 - Initially looking for information on involuntary undeclared students and their progress
 - Provided tables with admissions statistics, retention and graduation rates
 - Broader needs:
 - Admissions characteristics, major status, course enrollment (in particular: "OASIS")
 - Interested in both summary and student-level data for each entering cohort, as well as student outcomes
 - Assembling data manually
- ➡ Dashboard would be ideal medium

FTFY Undeclared Students

Admit Term:
 Involuntary?:
 Applied Major:

Undeclared students by applied major

Applied Major	Applied Major Program	Enrolled Count
ARCHT	Architecture	21
B MUS	Music BMus	4
BFADAN	Dance BFA	1
CA S	University, Undeclared	731
CMPSCI	Computer Science	34
COMM	Communication	9
ECON	Economics	2
ENGIN	Engineering	138
NURSE	Nursing	3
Other	Other	44
SOM	School of Management	210
SPTMGT	Sport Management	25
Grand Total		1,222

Mean Cumulative GPA

Mean Cumulative GPA	0.34
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Distribution of algebra placement score

Some students may not have a placement score.

Test Id	Test Component	Numeric Score	Enrolled Count
		20+ (Math 127)	820
FMATO	ALGBF	16-19 (Math 104)	204
		12-15 (Math 101)	122
		11 or less (non-math)	69
Grand Total			1,203

Current enrolled plan

Primary Academic Plan Desc	Student Count
Biology(BS)	2
English(BA)	2
Food Science(BS)	1
History(BA)	1
Music(BMus)	1
Natural Res Conservation(BS)	1
Philosophy(BA)	1
Political Science(BA)	3
Psychology(BA)	2
Psychology(BS)	2
Sociology(BA)	2
Undeclared	1,201
Grand Total	1,219

Current plan declare date (for no-longer-undeclared students)

Some students may have declared multiple plans. (excludes withdrawn students)

Declare Date (Year/Month)	Student Count
201309	2
201310	12
201311	4
Grand Total	18

Honors Students

Honors Count	80
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Students withdrawn from the university

Note that some students may have multiple withdraw records in the same or different semesters. The total shows the count of distinct students who withdrew.

Withdrawn Term	Withdrawn Count
Fall 2013	5
Grand Total	5

For the complete list of students, open one of the reports below to download.

- [Admissions characteristics](#)
- [Cumulative GPA](#)
- [Current enrolled plan](#)
- [Class Enrollment](#)
- [Withdrawn list](#)

FTFY Undeclared Students

Admit Term:
 Involuntary?:
 Applied Major:

Undeclared students by applied major

Applied Major	Applied Major Program	Enrolled Count
ARCHT	Architecture	21
B MUS	Music BMus	13
BFA	Studio Arts BFA	5
BFADAN	Dance BFA	2
CA S	University, Undeclared	683
CMPSCI	Computer Science	27
COMM	Communication	6
ECON	Economics	1
ENGIN	Engineering	111
JOURN	Journalism	7
NURSE	Nursing	9
Other	Other	62
SOM	School of Management	209
SPTMGT	Sport Management	29
Grand Total		1,185

Honors Students

Honors Count
134

Students withdrawn from the university

Note that some students may have multiple withdraw records in the same or different semesters. The total shows the count of distinct students who withdrew.

Withdrawn Term	Withdrawn Count
Fall 2012	35
Spring 2013	17
Summer 2013	100
Fall 2013	13
Grand Total	159

Mean Cumulative GPA

Mean Cumulative GPA
3.07

Distribution of algebra placement score

Some students may not have a placement score.

Test Id	Test Component	Numeric Score	Enrolled Count
		20+ (Math 127)	727
FMATO	ALGBF	16-19 (Math 104)	227
		12-15 (Math 101)	132
		11 or less (non-math)	94
Grand Total			1,173

Current enrolled plan

Primary Academic Plan Desc	Student Count
Accounting(BBA)	13
Animal Science(BS)	4
Anthropology(BA)	3
Architecture(BFA)	4
Art History(BA)	1
Art(BA)	1
Astronomy(BS)	1
Biochem. & Molecular Biol.(BS)	7
Biology(BS)	30
Building&ConstrTech.(BS)	12
Chemical Engineering(BS)	3
Chemistry(BS)	5
Chinese Language & Lit.(BA)	1
Classics(BA)	1
Communication Disorders(BS)	11
Communication(BA)	22
Comparative Literature(BA)	2
Computer Science(BS)	4
Dance(BA)	1
Dance(BFA)	1
Economics(BA)	23
Electrical Engineering(BS)	2
Engineering	44
English(BA)	21
Environmental Science(BS)	9
Finance (BBA)	12
Food Science(BS)	4
Geography(BA)	1
Geography(BS)	1
Geology(BS)	2
History(BA)	14
Hospitality & Tourism Mgmt(BS)	31
Individual Concentration(BA)	4
Individual Concentration(BS)	1
Industrial Engineering(BS)	1
Journalism(BA)	11
Kinesiology (BS)	37

Current plan declare date (for no-longer-undeclared students)

Some students may have declared multiple plans. (excludes withdrawn students)

Declare Date (Year/Month)	Student Count
201209	1
201210	10
201211	75
201212	16
201301	36
201302	6
201303	48
201304	128
201305	14
201306	64
201307	44
201308	4
201309	68
201310	87
201311	6
Grand Total	607

Enrollment in OASIS First-Year Seminar in Fall or Spring

Applied Major	Applied Major Program	Enrolled Count
ARCHT	Architecture	5
B MUS	Music BMus	2
BFA	Studio Arts BFA	3
BFADAN	Dance BFA	1
CA S	University, Undeclared	266
CMPSCI	Computer Science	10
COMM	Communication	2
ENGIN	Engineering	30
JOURN	Journalism	1
NURSE	Nursing	3
Other	Other	17
SOM	School of Management	83
SPTMGT	Sport Management	10
Grand Total		433

Longitudinal Student Database (LSDB)

- Tracks cohorts of students semester over semester
- Started with 1989 entering cohort
- Use student census file as base
 - Add data from admissions, academic standing, financial aid, end of term grades, degrees
 - Track certain data points for every semester (enrolled/graduation status, major, honors, STEM, GPA, credits taken)
 - Derive outcome variables
- Future plan is to get this in our Data Warehouse

National Student Clearinghouse (NSC)

- A commonly used source for student educational outcome data
- Captures enrollments from 94% of higher education institutions (representing 98% of students)
- Augments existing longitudinal data about students
- Primary uses:
 - Enrollment elsewhere after leaving UMass
 - Graduating from other institution

Tracking Major Changes

- Based on paper by Foraker* presented at AIR 2012
- Start with the first semester major of each student (declared (D), undeclared (U), involuntary (I))
- For each term, add a major indicator code:
 - no change (-)
 - major change (C)
 - undeclare major (U)
 - declare major (D)
- ➔
 - withdrawn or dismissed (W)
- Produces major indicator “sequence code”
 - Can analyze outcomes by code

* Foraker, M. (2012). *Does Changing Majors Really Affect the Time to Graduate? The Impact of Changing Majors on Student Retention, Graduation, and Time to Graduate*. <http://www.wku.edu/institres/publications.php>

Tracking Major Changes (cont.)

- Examples (all one year/two semester records):
 - D- Student had the same declared major
 - ID Involuntary undeclared student who declared major in 1st or 2nd semester
 - DU Declared student who became undeclared in 1st or 2nd semester
- Codes get more and more complicated with more semesters
- Analysis uses latest three Fall cohorts of first-time, full-time, first-year students (i.e. Fall 2004, 2005, and 2006)

Outcome Metrics

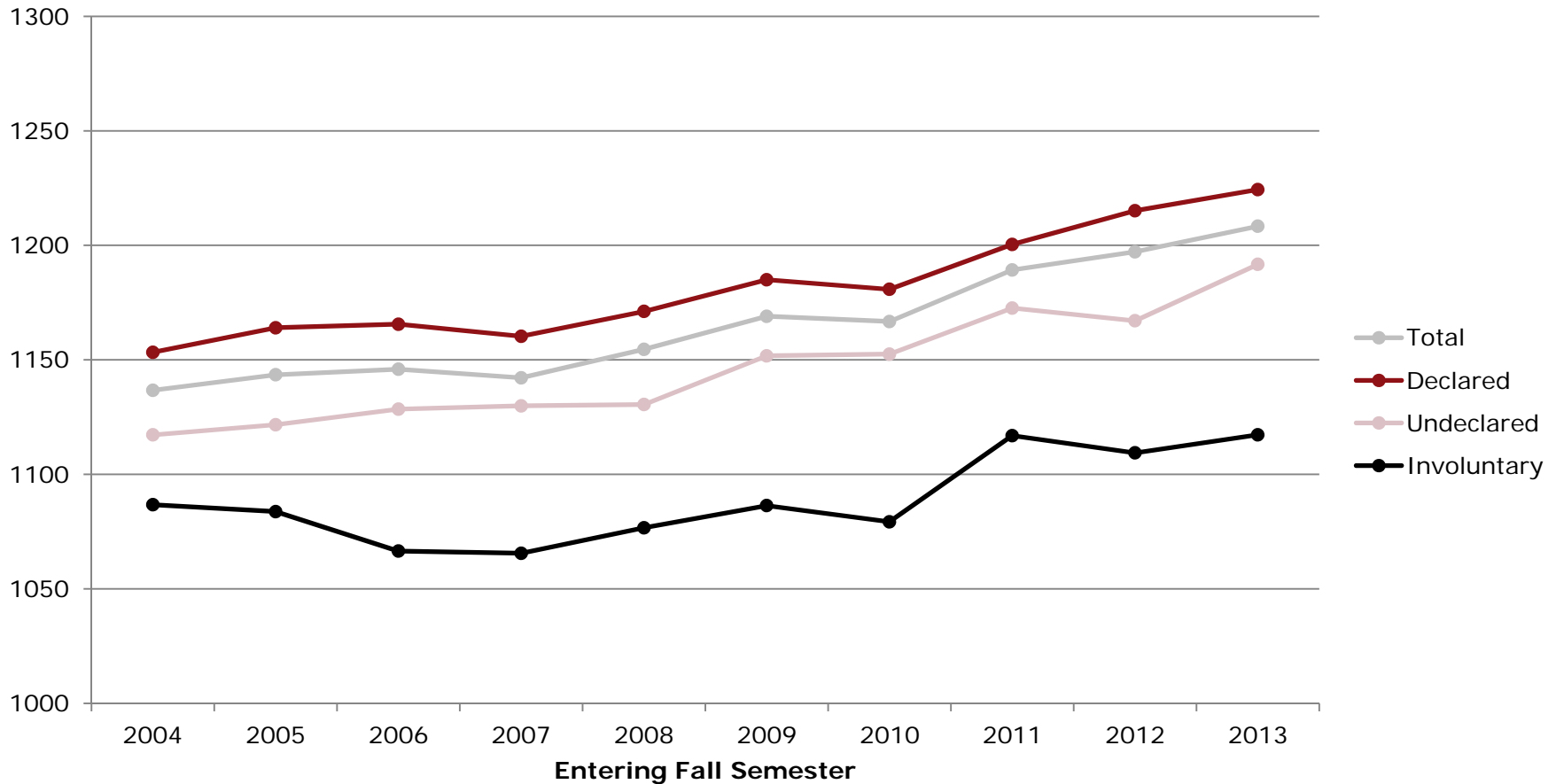
For each major change sequence, we measure:

- Mean SAT / HS GPA
- Cumulative GPA at end of semester
- 1-year retention rate
- Withdraw/dismiss rate in any subsequent semester
- 4-year graduation rate
- 6-year graduation rate
- 6-year graduation rate from any institution
- Time to degree (elapsed time)/ GPA at graduation

Students	Mean SAT	Mean HS GPA	1-year Ret. Rate	W/draw Rate	4-year Grad Rate	6-year Grad Rate	6-year Grad Rate +	Time To Grad	Grad GPA
12,752	1142	3.38	83%	29%	53%	69%	79%	4.17	3.21

Entering Class Characteristics

Average SAT Scores



Outcomes Based on Entry Characteristics

- By major:

Major	Students	Mean SAT	1-year Ret. Rate	W/draw Rate	4-year Grad Rate	6-year Grad Rate	6-year Grad Rate +	Time To Grad	Grad GPA
Declared	8,107	1161	85%	27%	55%	71%	80%	4.16	3.25
Involuntary	1,423	1080	78%	38%	43%	60%	71%	4.21	3.00
Undeclared	3,222	1122	82%	31%	51%	67%	79%	4.17	3.19
Total	12,752	1142	83%	29%	53%	69%	79%	4.17	3.21

Outcomes Based on Entry Characteristics (cont.)

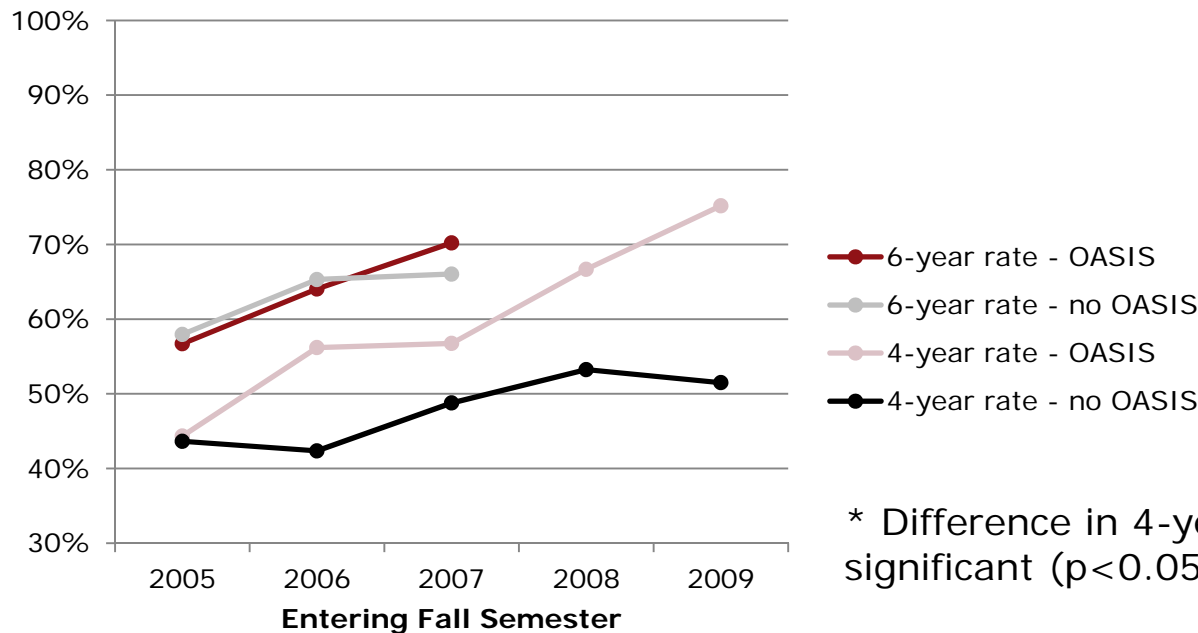
- By SAT range:

SAT range	Students	1-year Ret. Rate	W/draw Rate	4-year Grad Rate	6-year Grad Rate	6-year Grad Rate +	Time To Grad	Grad GPA
Missing	192							
<1000	1,668	79%	37%	43%	61%	73%	4.23	2.96
1000-1099	3,013	82%	32%	53%	67%	78%	4.14	3.13
1100-1199	3,576	83%	29%	54%	69%	79%	4.15	3.19
1200-1299	2,550	86%	25%	55%	73%	81%	4.19	3.30
1300+	1,753	88%	25%	56%	74%	82%	4.16	3.47
Total	12,752	83%	29%	53%	69%	79%	4.17	3.21

Effect of OASIS First-Year Seminar

- OASIS = Opportunities for Academic Success with Individualized Support
 - Essentially an advising course aimed at undeclared students

Involuntary Undeclared Graduation Rates



Involuntary students in OASIS also have significantly higher GPA at the end of their 1st and 2nd terms ($p < 0.01$)

Outcomes for Students After 1 Year (Declared)

Major	Students	Mean SAT	Mean GPA Sem1	Mean GPA Sem2	4-year Grad Rate	6-year Grad Rate	6-year Grad Rate +	Time To Grad	Grad GPA
D-	5,846	1166	3.12	3.12	65%	83%	86%	4.14	3.26
DC	785	1159	3.14	3.17	62%	84%	89%	4.14	3.31
DU	184	1152	2.59	2.67	51%	70%	78%	4.26	3.00
Other	46								
DW	1,246	1139	2.10	2.20	3%	8%	44%	4.88	3.05
D Total	8,107	1161	2.95	3.01	55%	71%	80%	4.16	3.25
<i>Total</i>	<i>12,752</i>	<i>1142</i>	<i>2.90</i>	<i>2.95</i>	<i>53%</i>	<i>69%</i>	<i>79%</i>	<i>4.17</i>	<i>3.21</i>

Outcomes for Students After 1 Year (Undeclared)

Major	Students	Mean SAT	Mean GPA Sem1	Mean GPA Sem2	4-year Grad Rate	6-year Grad Rate	6-year Grad Rate +	Time To Grad	Grad GPA
UD	718	1154	3.31	3.30	74%	87%	91%	4.05	3.37
U-	1,896	1115	2.92	2.93	57%	77%	83%	4.17	3.12
Other	25								
UW	583	1105	2.19	2.18	3%	10%	48%	5.01	3.00
U Total	3,222	1122	2.88	2.92	51%	67%	79%	4.17	3.19
Total	12,752	1142	2.90	2.95	53%	69%	79%	4.17	3.21

Outcomes for Students After 1 Year (Involuntary)

Major	Students	Mean SAT	Mean GPA Sem1	Mean GPA Sem2	4-year Grad Rate	6-year Grad Rate	6-year Grad Rate +	Time To Grad	Grad GPA
ID	288	1085	3.11	3.12	61%	81%	88%	4.18	3.17
I-	804	1077	2.73	2.74	52%	73%	78%	4.20	2.94
Other	7								
IW	324	1081	1.90	1.93	4%	10%	39%	4.58	2.79
I Total	1,423	1080	2.62	2.68	43%	60%	71%	4.21	3.00
<i>Total</i>	<i>12,752</i>	<i>1142</i>	<i>2.90</i>	<i>2.95</i>	<i>53%</i>	<i>69%</i>	<i>79%</i>	<i>4.17</i>	<i>3.21</i>

Outcomes for Students After 1 Year

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U-	1,896	1115	2.92	2.93	57%	77%	83%	4.17	3.12
Other	78								
DW	1,246	1139	2.10	2.20	3%	8%	44%	4.88	3.05
IW	324	1081	1.90	1.93	4%	10%	39%	4.58	2.79
UW	583	1105	2.19	2.18	3%	10%	48%	5.01	3.00
<i>Total</i>	<i>12,752</i>	<i>1142</i>	<i>2.90</i>	<i>2.95</i>	<i>53%</i>	<i>69%</i>	<i>79%</i>	<i>4.17</i>	<i>3.21</i>

Outcomes for Students After 2 Years

Major	Students	Mean SAT	Mean GPA Sem4	4-year Grad Rate	6-year Grad Rate	6-year Grad Rate +	Time To Grad	Grad GPA
No change	4,296	1173	3.17	73%	91%	91%	4.12	3.27
Delayed decl (U)	1,865	1128	3.12	74%	91%	92%	4.10	3.23
Delayed decl (I)	782	1076	2.94	68%	88%	90%	4.16	3.04
One change	1,693	1158	3.11	63%	87%	88%	4.18	3.25
Multiple changes	785	1137	3.00	56%	80%	82%	4.24	3.17
Still undecl (U)	264	1109	2.70	40%	72%	72%	4.39	2.89
Still undecl (I)	107	1091	2.57	35%	74%	75%	4.43	2.73
Withdrawn	2,960	1122	2.42	1%	4%	44%	5.25	2.96
<i>Total</i>	<i>12,752</i>	<i>1142</i>	<i>3.05</i>	<i>53%</i>	<i>69%</i>	<i>79%</i>	<i>4.17</i>	<i>3.21</i>

Ideal Time to Declare Major

- Outcomes after 1 year:

Major	Students	4-year Grad Rate	6-year Grad Rate	6-year Grad Rate +	Time To Grad	Grad GPA
Declared	5,846	65%	83%	86%	4.14	3.26
Delayed declared	1,006	70%	85%	90%	4.10	3.32
Undeclared	2,700	56%	76%	82%	4.18	3.07

- Outcomes after 2 years:

Major	Students	4-year Grad Rate	6-year Grad Rate	6-year Grad Rate +	Time To Grad	Grad GPA
Declared	4,296	73%	91%	91%	4.12	3.27
Delayed declared	2,647	72%	91%	92%	4.11	3.17
Undeclared	371	38%	72%	73%	4.40	2.84

Conclusion/Wrap-up

- Entering as an undeclared major is not a problem
 - Can be beneficial if major declared in a timely manner
 - Staying undeclared past the 2nd year is the issue
- Multiple major changes are not a problem in the first year, start to affect outcomes in 2nd year
- OASIS course is having positive effect on outcomes
- Indicators that students will withdraw/be dismissed: low SAT score/HS GPA combined with low 1st and 2nd semester GPA
- Plan to expand current Undergraduate Advising dashboard with outcomes data

Questions?

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