

Student Behaviors in Relation to Majors and the Impact on Graduation

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Sacramento State

Public Metropolitan University

- First-time Freshmen Cohort: 3,366
- New Transfer Cohort: 4,353
- Transfer Students: 46%
- Enrollment: 28,811
- Student FTE: 23,837.3
- Commuters (undergraduate): 93.6%
- Academic Programs: over 100 within 49 departments
- Faculty: 1,479
- Staff: 1,270

The California State University System:

- Among the top seven largest universities within the 23 campuses

* Fall 2013 Census files



Three Policy Issues Relating to Majors

Changing Majors

- Issue: Limit on the # of times and when students may change their majors
- Current policy: Unlimited times and no restriction

Declaring Majors

- Issue: Timely declaration of majors
- Current policy: Any time before reaching 61 units

Second Major/Minor

- Issue: Requirements for adding second major and/or minor
- Current policy: Anyone may do so if they choose

Research Goal and Study Samples

- **Research Goal:**

This study intends to examine the impact of student behaviors relating to college majors as they pertain to graduation in order to support policy making processes aimed at facilitating graduation.

- **Samples:**

- 2004-2006 native freshmen cohorts (N=7,516)
- 2006-2008 transfer cohorts (N=9,973)

- **Data Modeling:**

- Background and intervention data
- Tracking data by semester during 4 or 6 year period

Methodology

- **Comparison Groups:**

- Changed Major vs. Never Changed Major
- Declaring Majors Early vs. Declaring Majors Later
- Single Majors vs. Double Majors (and/or Minors)

All comparison groups were defined based on enrollment in each semester

- **Measurements:**

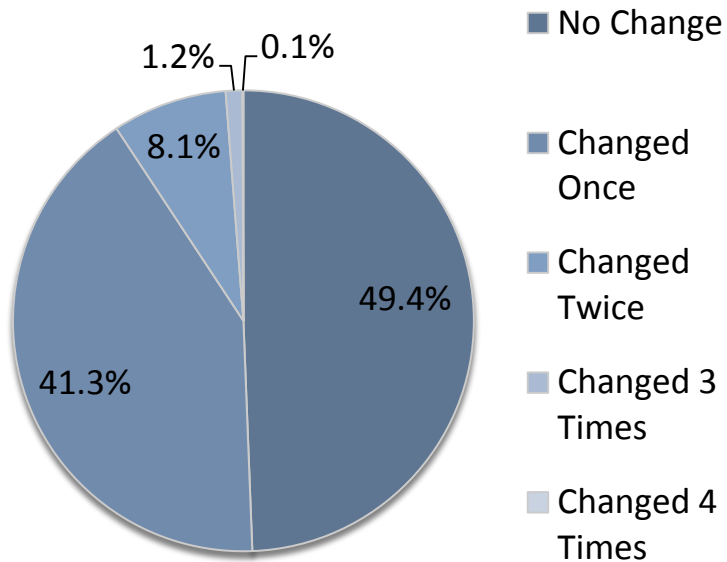
- Degree GPA (Bachelor's degree recipients only)
- Degree units and Sac State units (Bachelor's degree recipients only)
- 6-year graduation rate (All native freshmen)
- 4-year graduation rate (All transfers)

- **Statistical Analyses:**

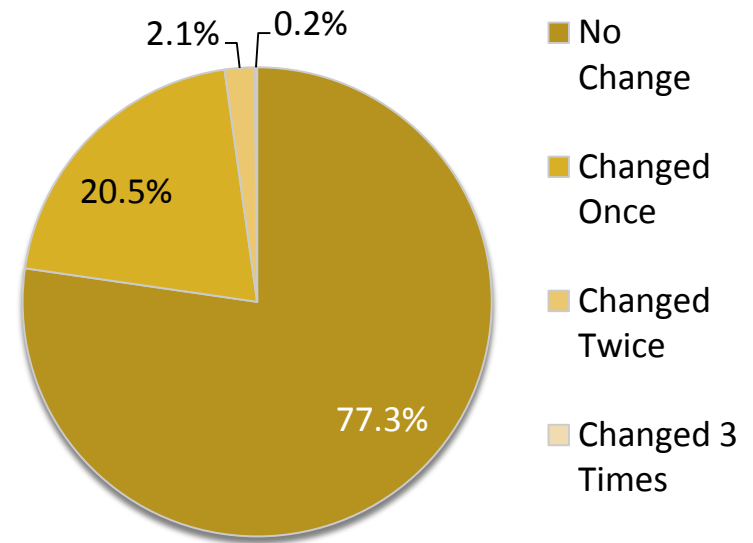
- T-Test
- Chi-Square Test
- Regression

Changing Majors: Bachelor's Degree Recipients

Changing Majors (Native Freshmen)



Changing Majors (Transfers)



Changing Majors: Comparison Analysis

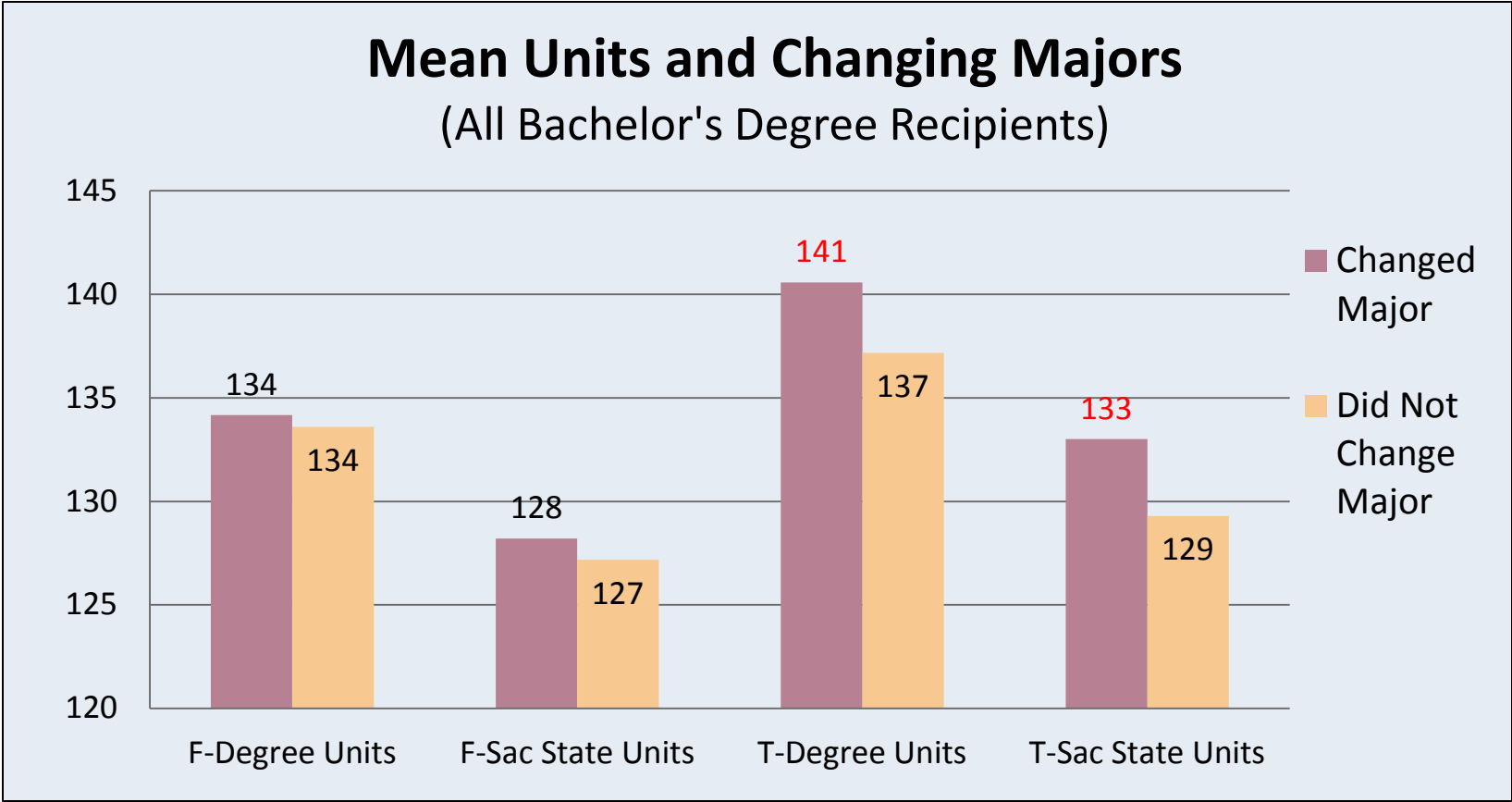
Table 1. Degree GPA and Units between Changing Major and No Change of Major

	Changed Major		Did Not Change Major		Gap	Statistical Significance
	Count	Mean	Count	Mean		
<i>Native Freshmen (Graduated within 6 Years)</i>						
Degree GPA	1,559	3.02	1,521	3.12	-0.10	Yes
Degree Units	1,559	134.2	1,521	133.6	0.6	No
Sac State Units	1,559	128.2	1,521	127.2	1.0	No
<i>Transfers (Graduated within 4 Years)</i>						
Degree GPA	1,338	3.07	4,553	3.13	-0.06	Yes
Degree Units	1,338	140.6	4,553	137.2	3.4	Yes
Sac State Units	1,338	133.0	4,553	129.3	3.7	Yes

*T-Test, $p < .001$, Higher value is highlighted in yellow.

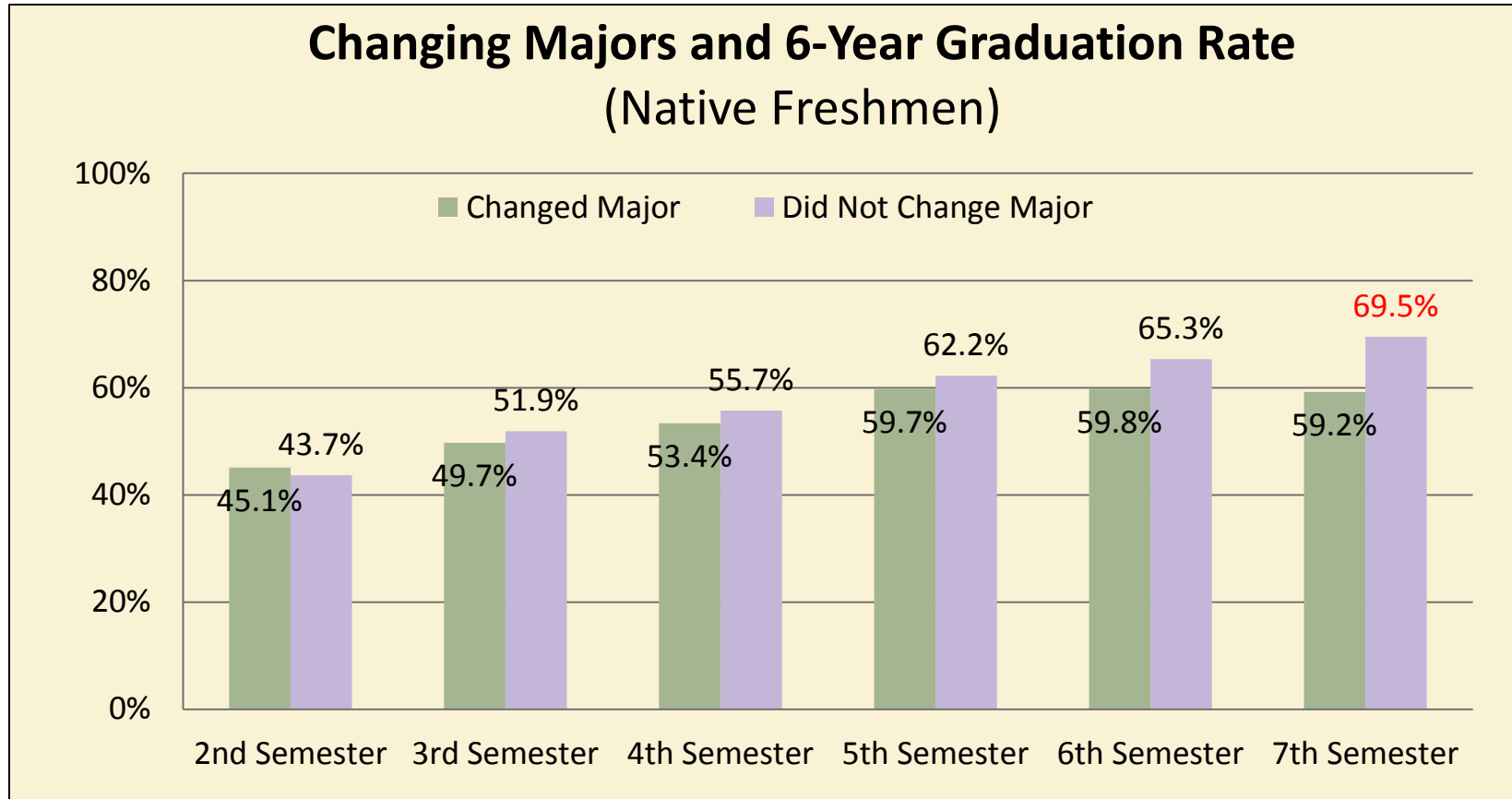
Note: For native freshmen, "Actual Units" refer to units that were completed at Sacramento State, regardless of whether they counted toward a degree. For transfers, "Actual Units" refer to units taken at Sacramento State plus transfer units (up to 70).

Changing Majors: Comparison



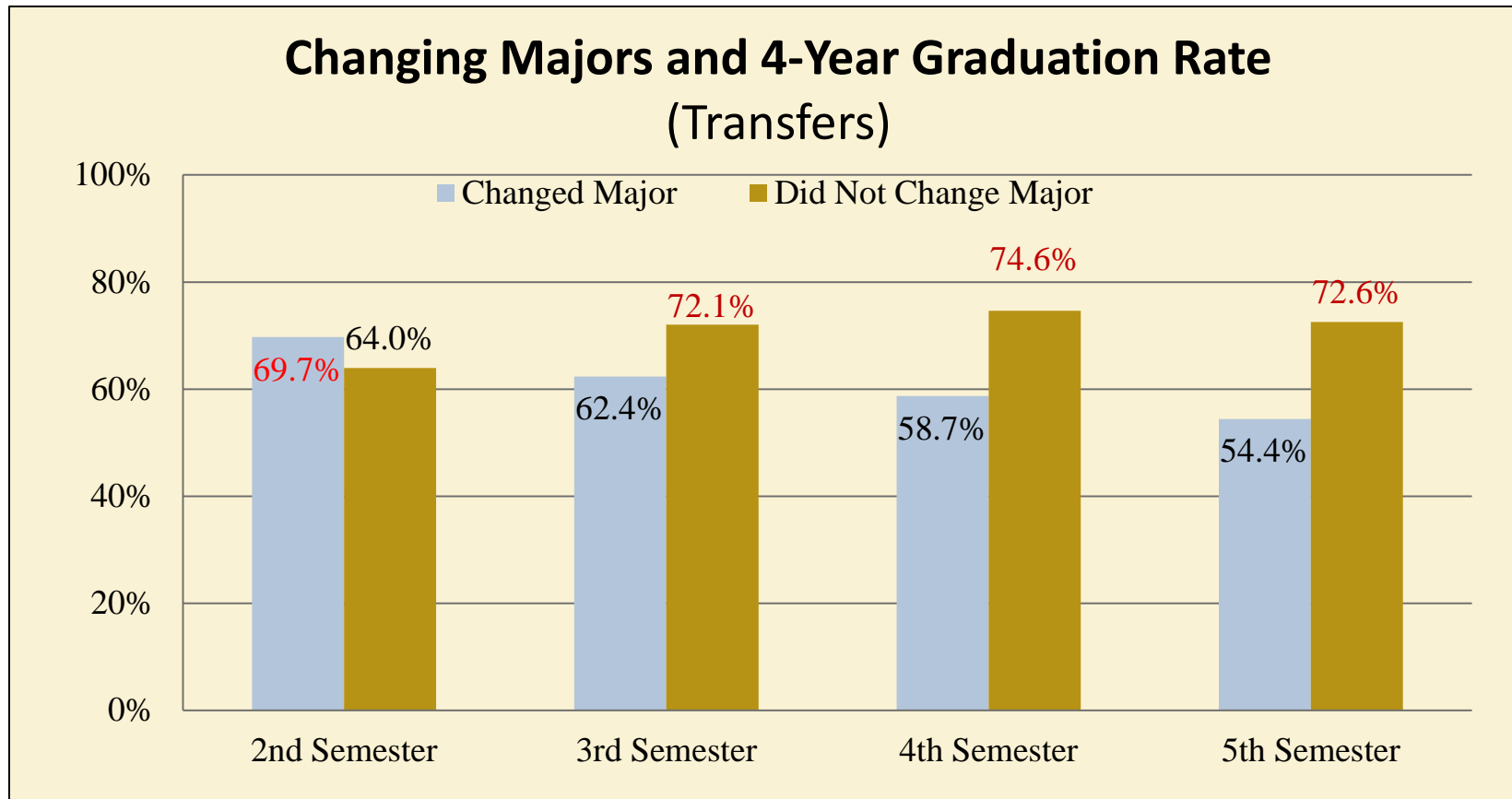
Note: Numbers in red reflect significant differences.

Changing Majors: Graduation Rates (Native Freshmen)



Note: Numbers in red reflect significant differences.

Changing Majors: Graduation Rates (Transfers)



Note: Numbers in red reflect significant differences.

Changing Majors: Findings and Summary

Native Freshmen Graduates

49% never changed majors

Higher Degree GPA

Transfer Graduates

77% never changed majors

Higher Degree GPA

Fewer Degree units

Comparisons

All Native Freshmen

Turning point: 7th semester.

*6-year graduation rate: 70% (no change)
vs. 59% (changed major after 3 years)*

All Transfers

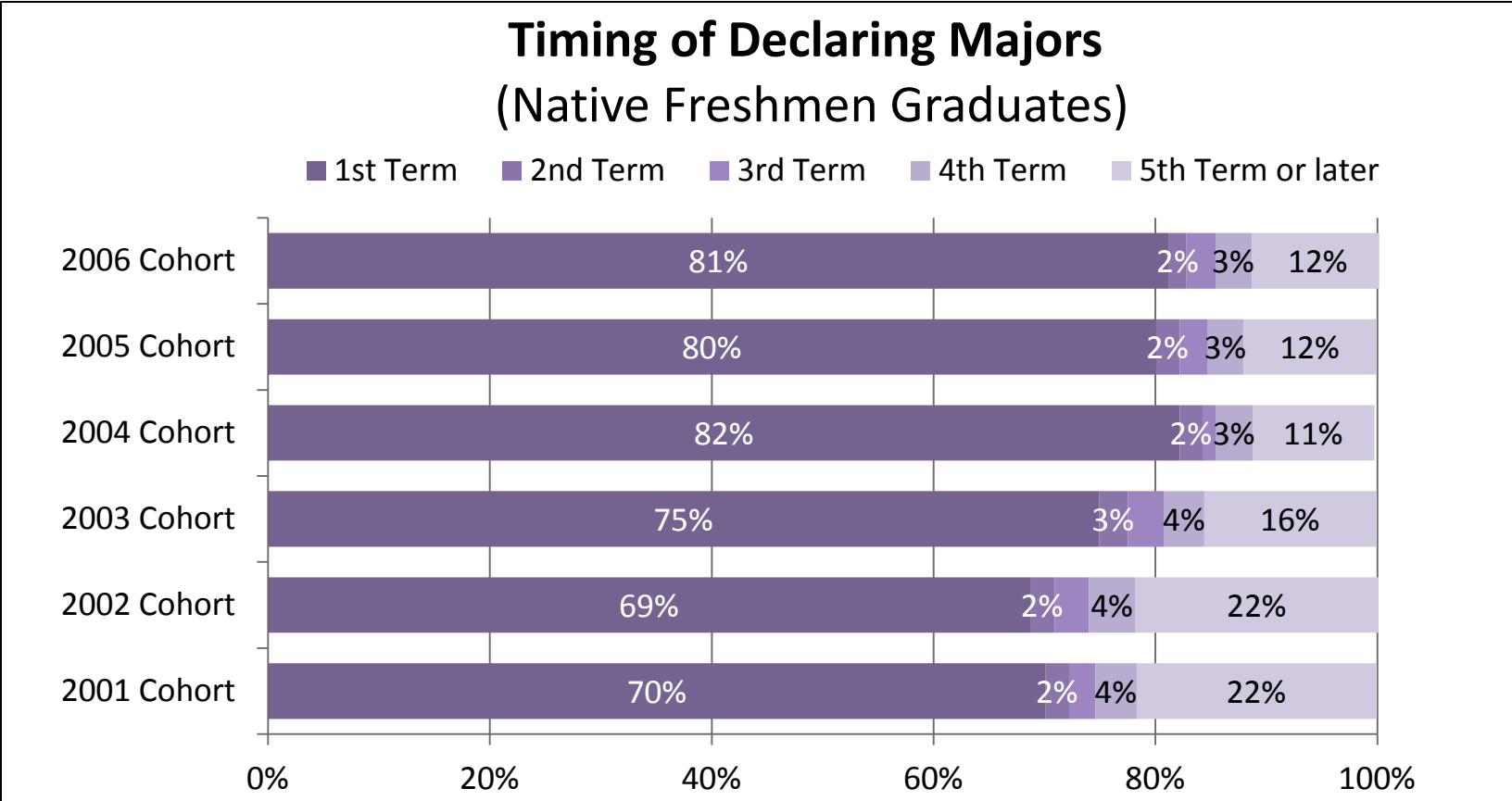
*Changing major at the 2nd term achieved
higher 4-year graduation rate*

Turning point: 3rd semester

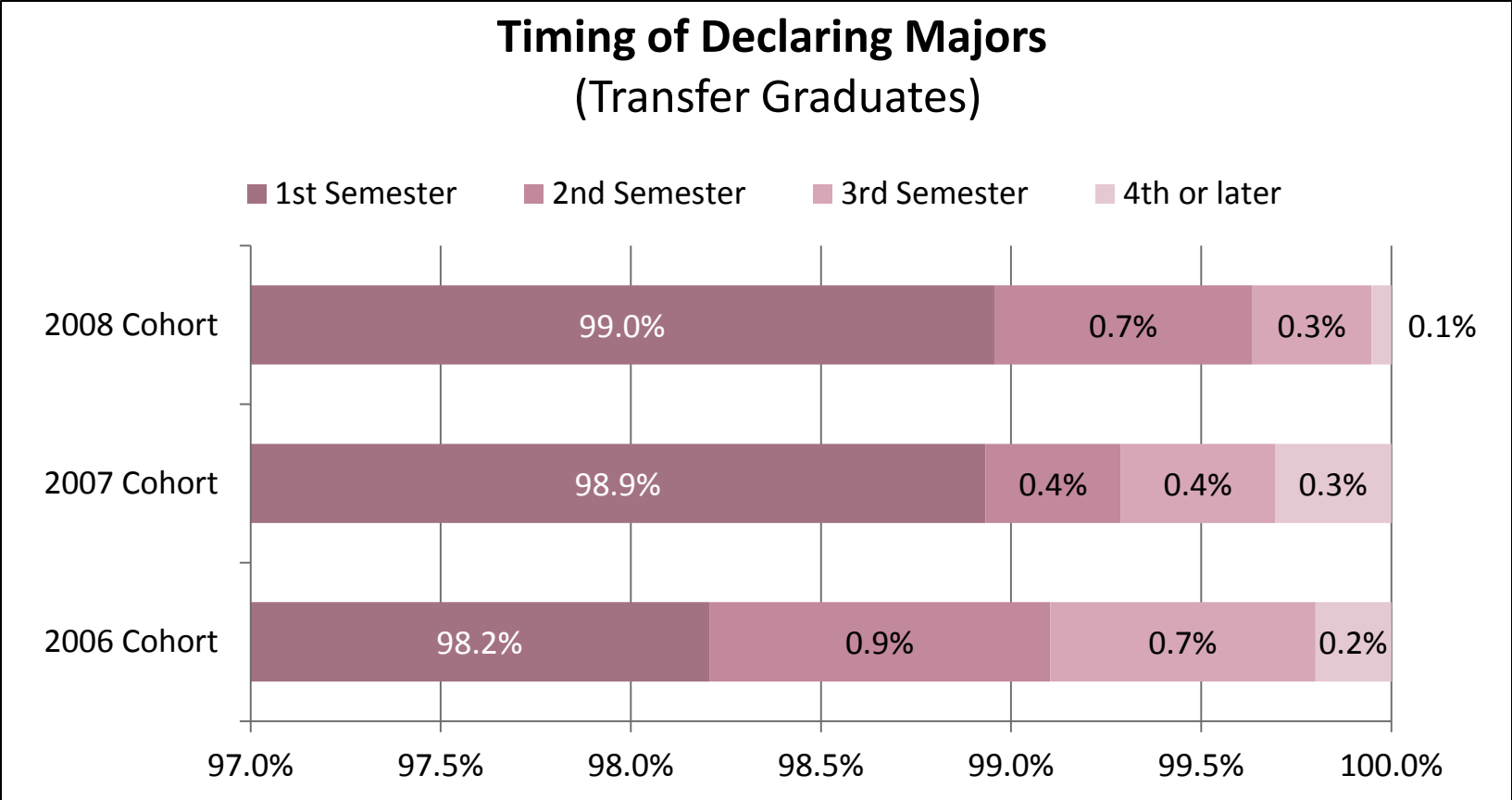
*4-year graduation rate: 72% (no change)
vs. 62% (changed majors after 1 year)*

Declaring Majors: Bachelor's Degree Recipients (Native Freshmen)

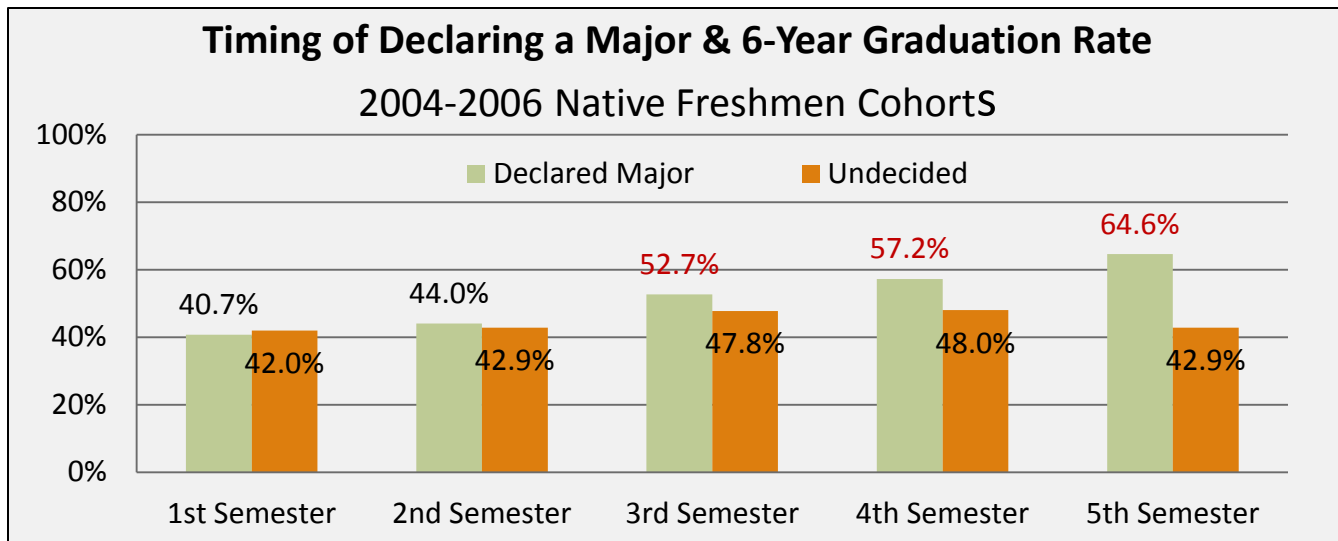
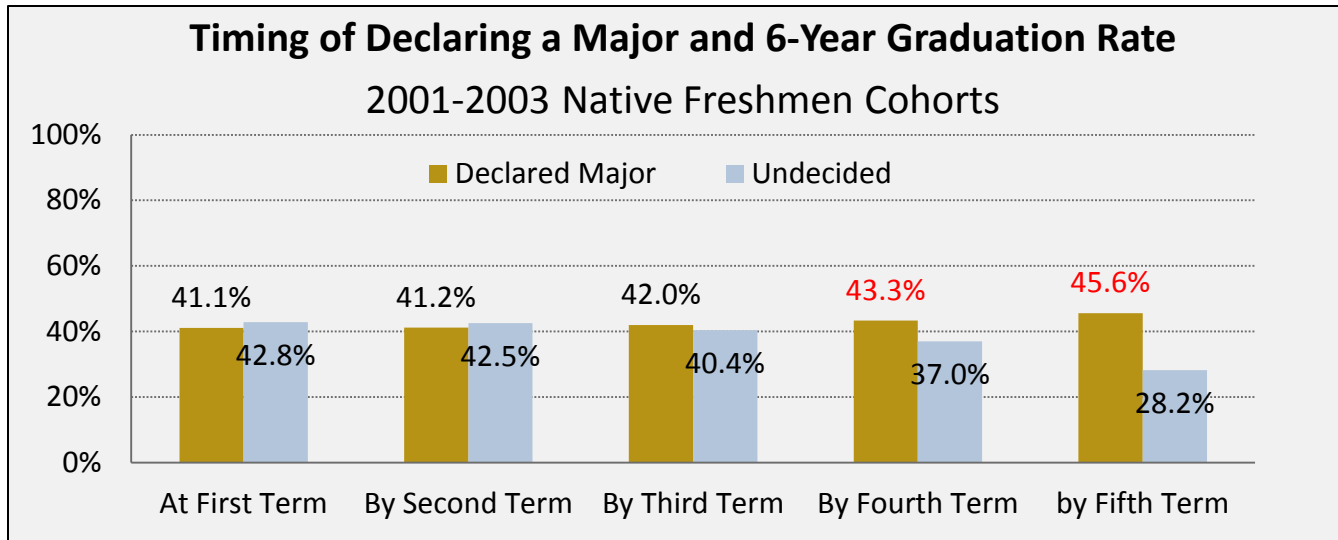
Timing of Declaring Majors (Native Freshmen Graduates)



Declaring Majors: Bachelor's Degree Recipients (Transfers)

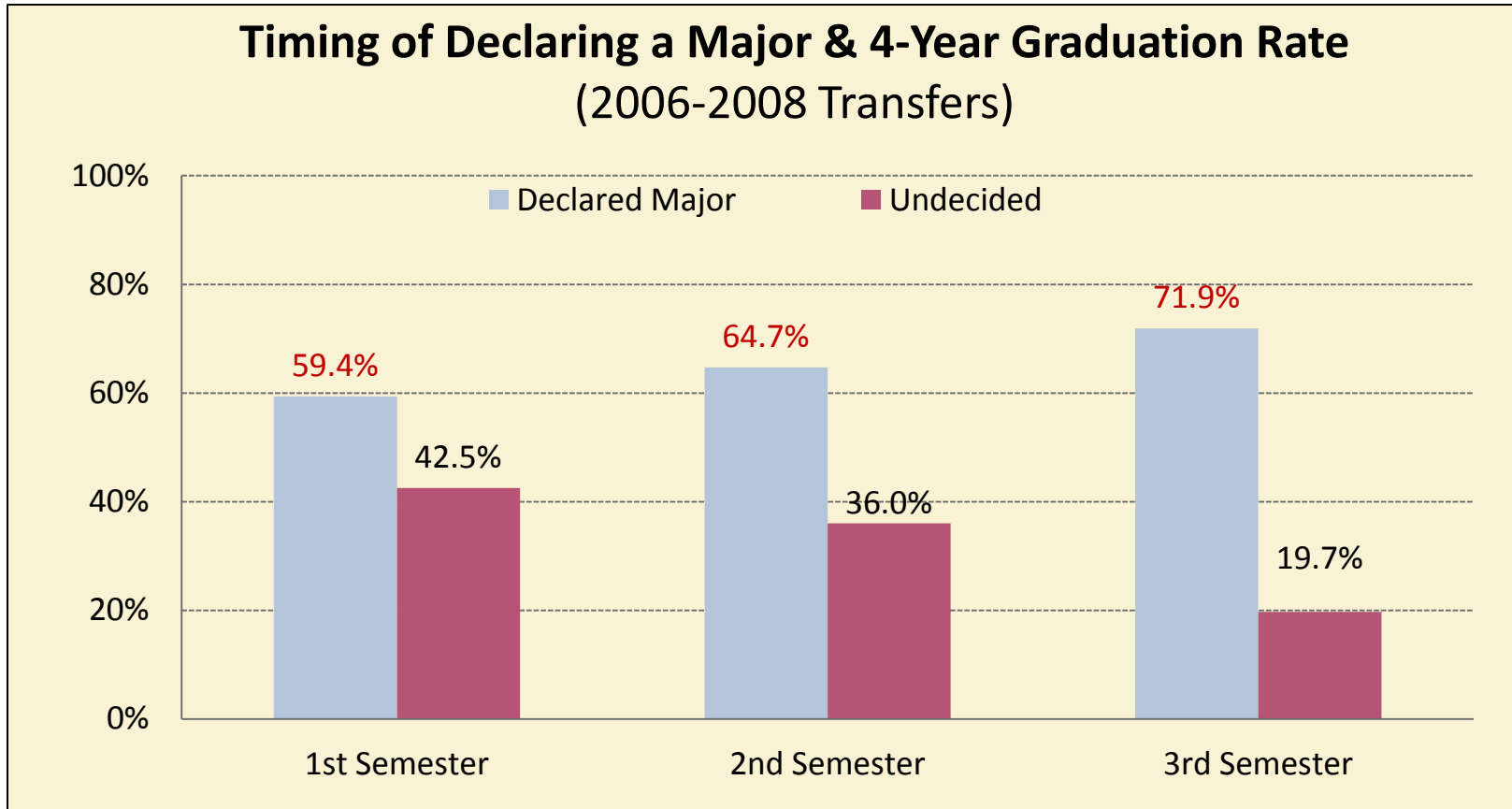


Declaring Majors: Graduation Rates (Native Freshmen)



Note: : Numbers in red reflect significant differences.

Declaring Majors: Graduation Rates (Transfers)



Note: Numbers in red reflect significant differences.

Declaring Majors: Findings and Summary

Native Freshmen

- Over 80% of those who graduated declared majors at the 1st term
- Turning Point: 3rd term
- 6-year graduation rates: 53% vs. 48% (enrollees of 3rd term)

Transfers

- 99% of those who graduated declared majors at the 1st term
- Turning point: 1st term
- 4-year graduation Rates: 59% vs. 43%

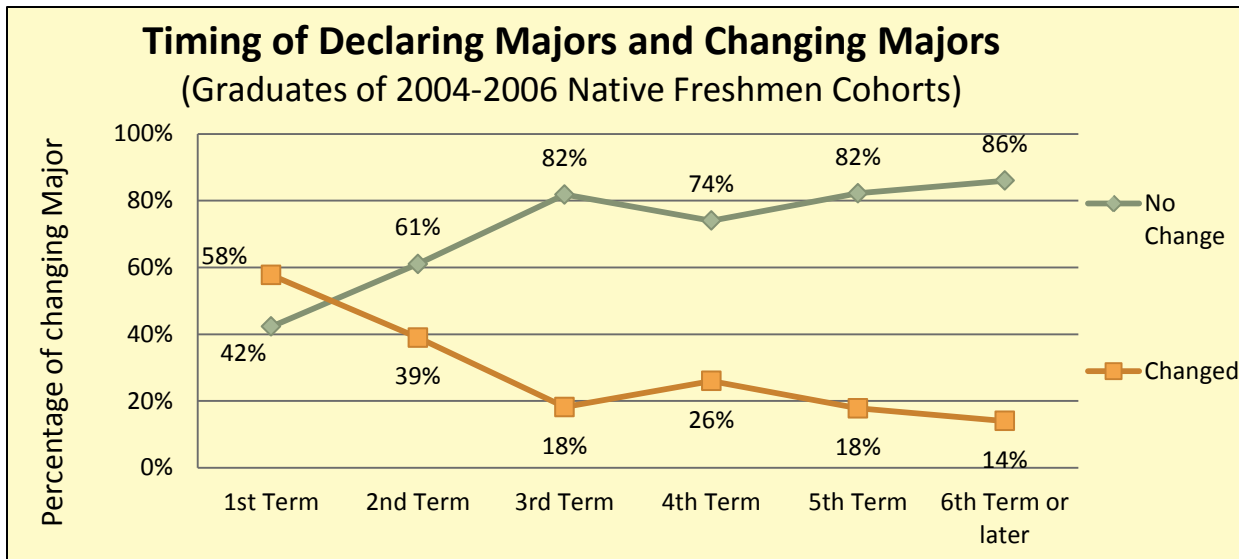
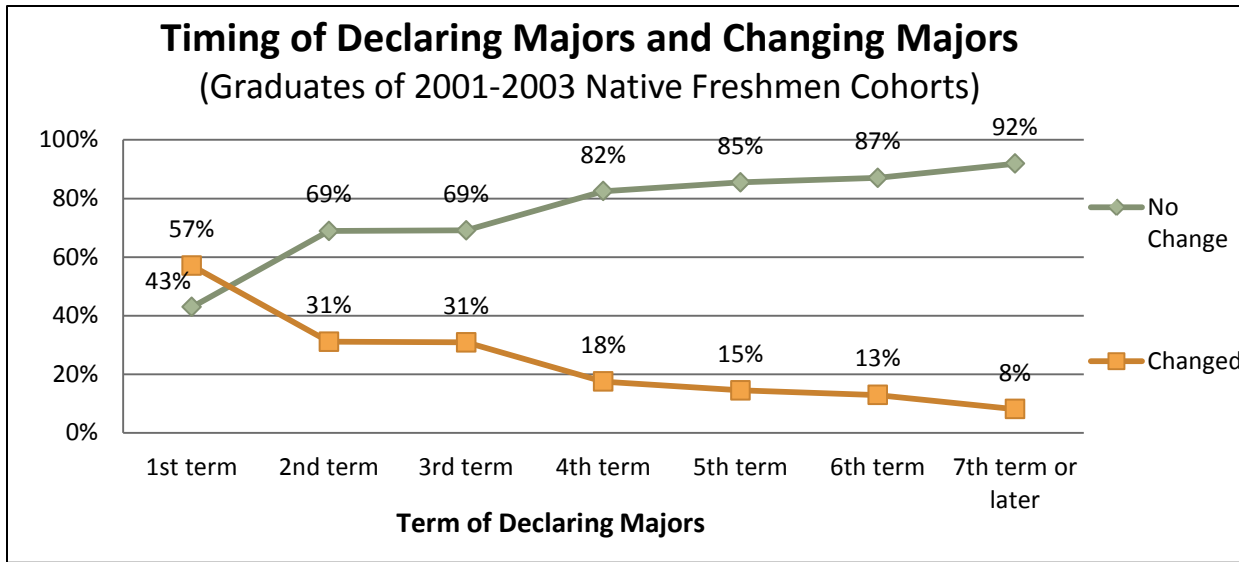
Declaring Majors and Changing Majors

Table 2. Changing and Declaring Major (Bachelor's Degree Recipients)

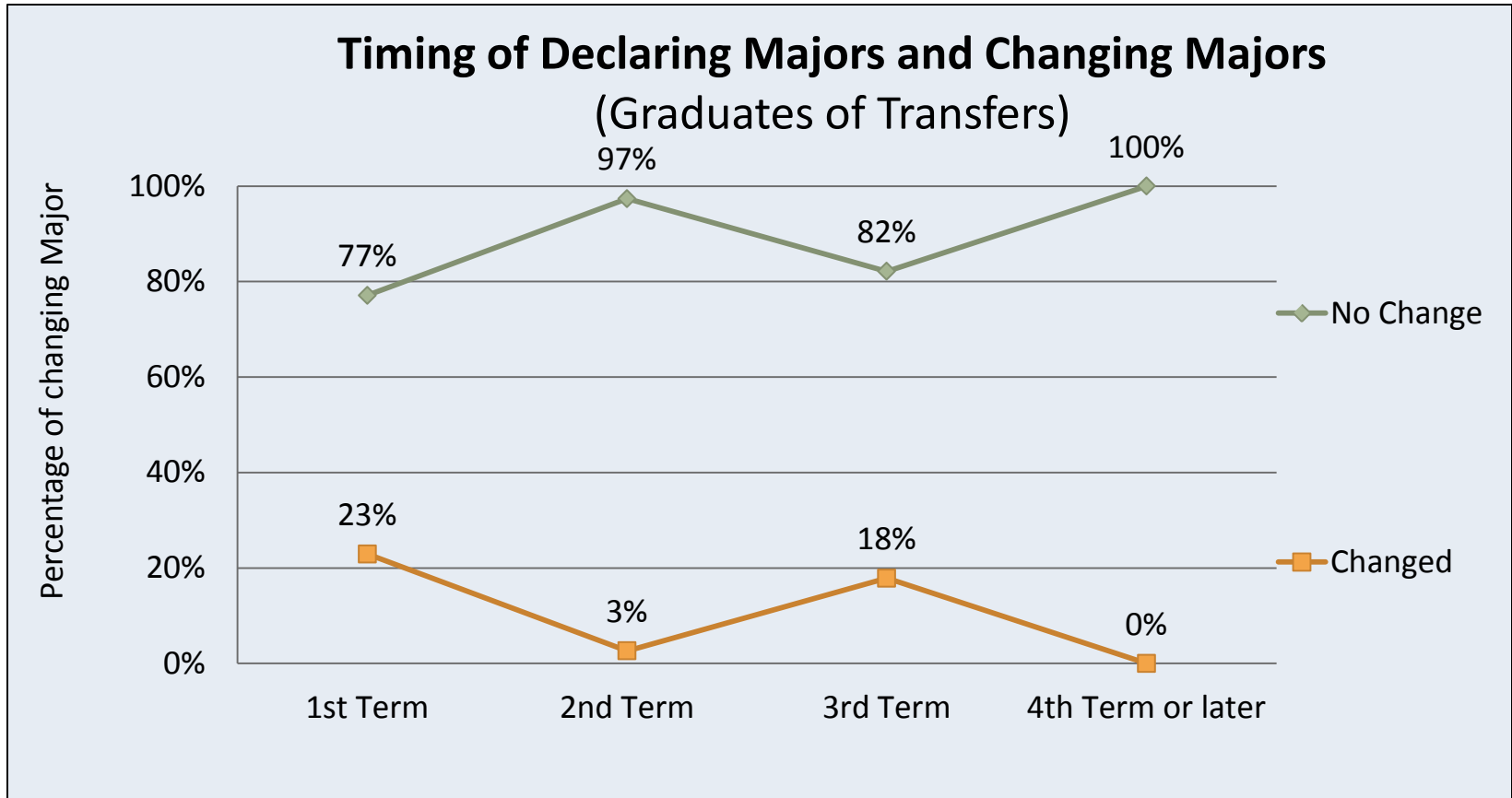
Declaring Majors	Never Changed	Changed Once	Changed Twice	Changed 3 times	Changed 4 times	Total
<i>Native Freshmen</i>						
Declared at 1st Term	1,057	1,171	239	30	2	2499
Declared at 2nd Term	36	18	3	2		59
Declared at 3rd Term	54	11	1			66
Declared at 4th Term	74	20	3	3		100
Declared at 5th Term	134	28	1			163
Declared at 6th or later	166	25	1	1		193
Total	1,521	1,273	248	36	2	3,080
<i>Transfers</i>						
Declared at 1st Term	4,482	1,201	122	9		5,814
Declared at 2nd Term	37	1	0	0		38
Declared at 3rd Term	23	5	0	0		28
Declared at 4th or later	11	0	0	0		11
Total	4,553	1,207	122	9		5,891

Note: Comparisons for each semester only include students who enrolled in the corresponding semester. Excluded those who dropped out or graduated prior to that semester.

Declaring Majors and Changing Majors (Native Freshmen)



Declaring Majors and Changing Majors (Transfers)



Declaring Majors and Changing Majors: Summary

Native Freshmen Graduates

58% of those who declared majors at the first term have since changed majors

61% of those who declared majors at the 2nd term never changed majors

This trend reversed after the 2nd term

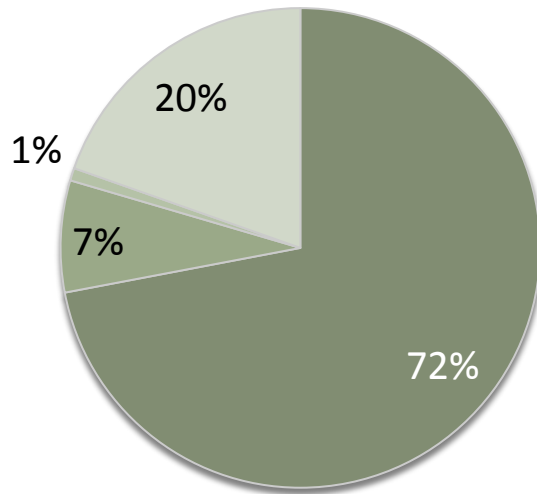
Transfer Graduates

58% of those who declared majors at the first term never changed majors

This trend showed that declaring majors earlier did not necessarily lead to changing majors

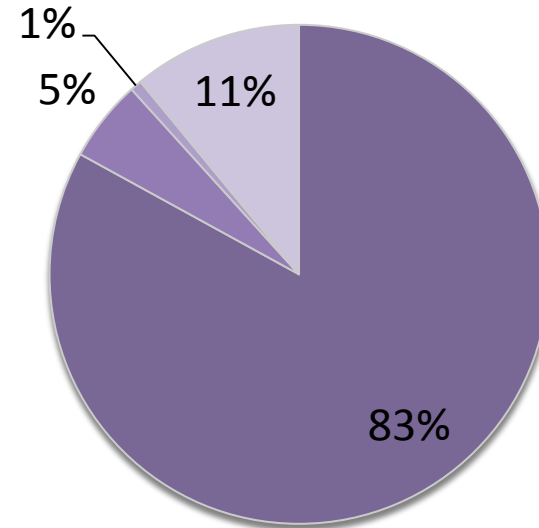
Single Major and Non-Single Major: Graduates

Major Type
(Native Freshmen Graduates)



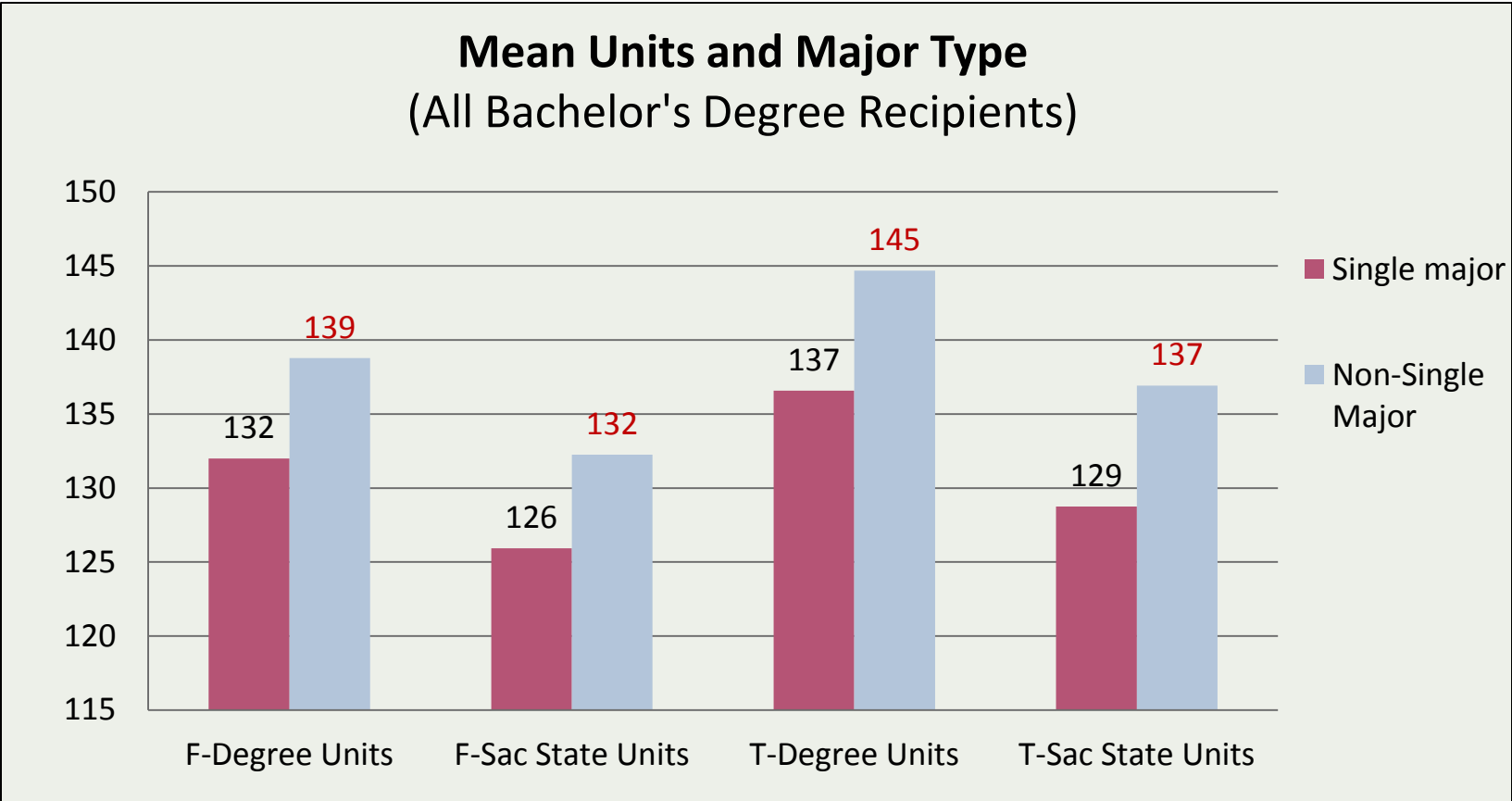
- Single Major
- Double Majors
- Double Majors + Minor
- Single Major + Minor

Major Type
(Transfer Graduates)



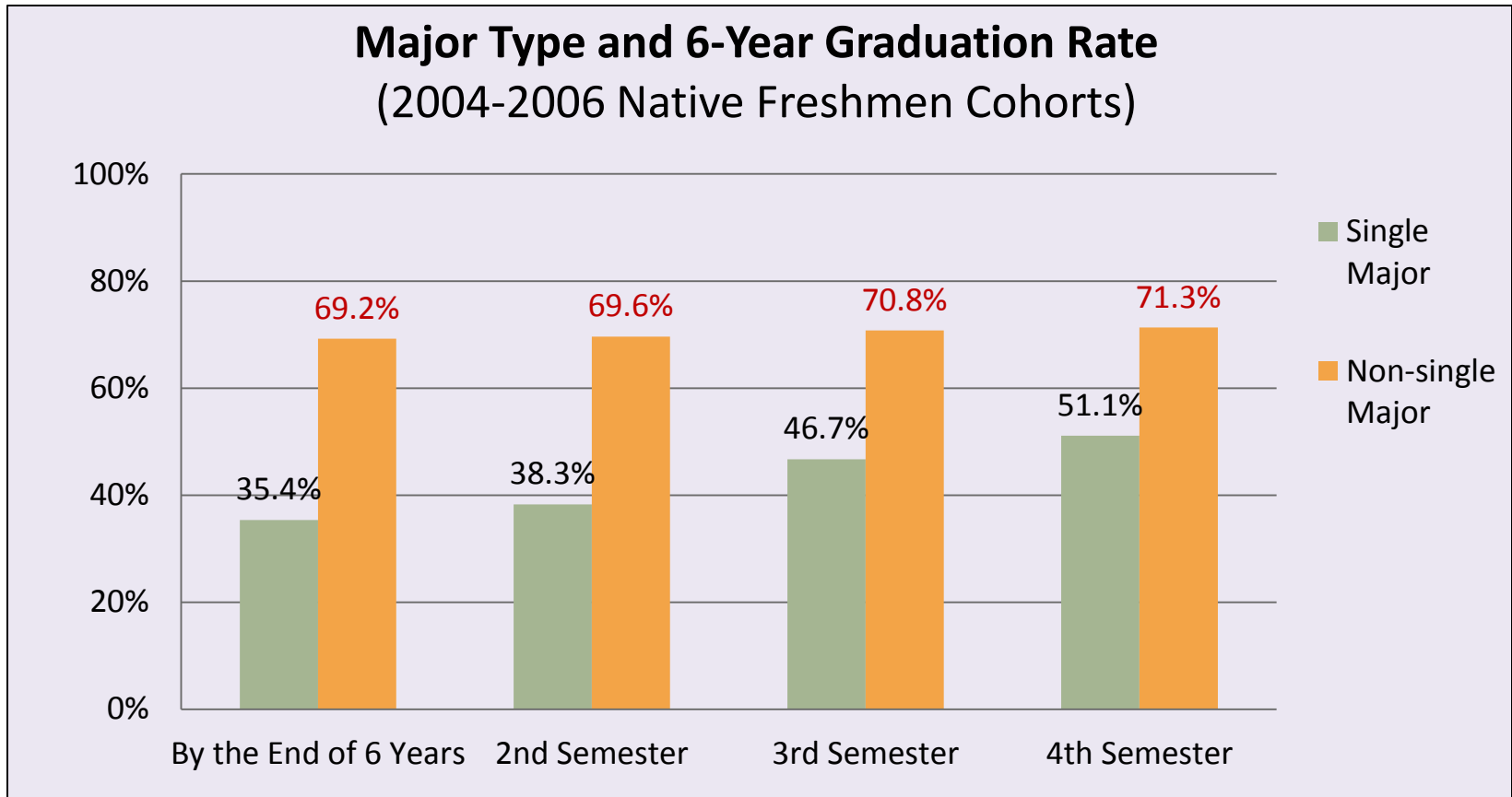
- Single Major
- Double Majors
- Double Majors + Minor
- Single Major + Minor

Single Major and Non-Single Majors: Degree Units



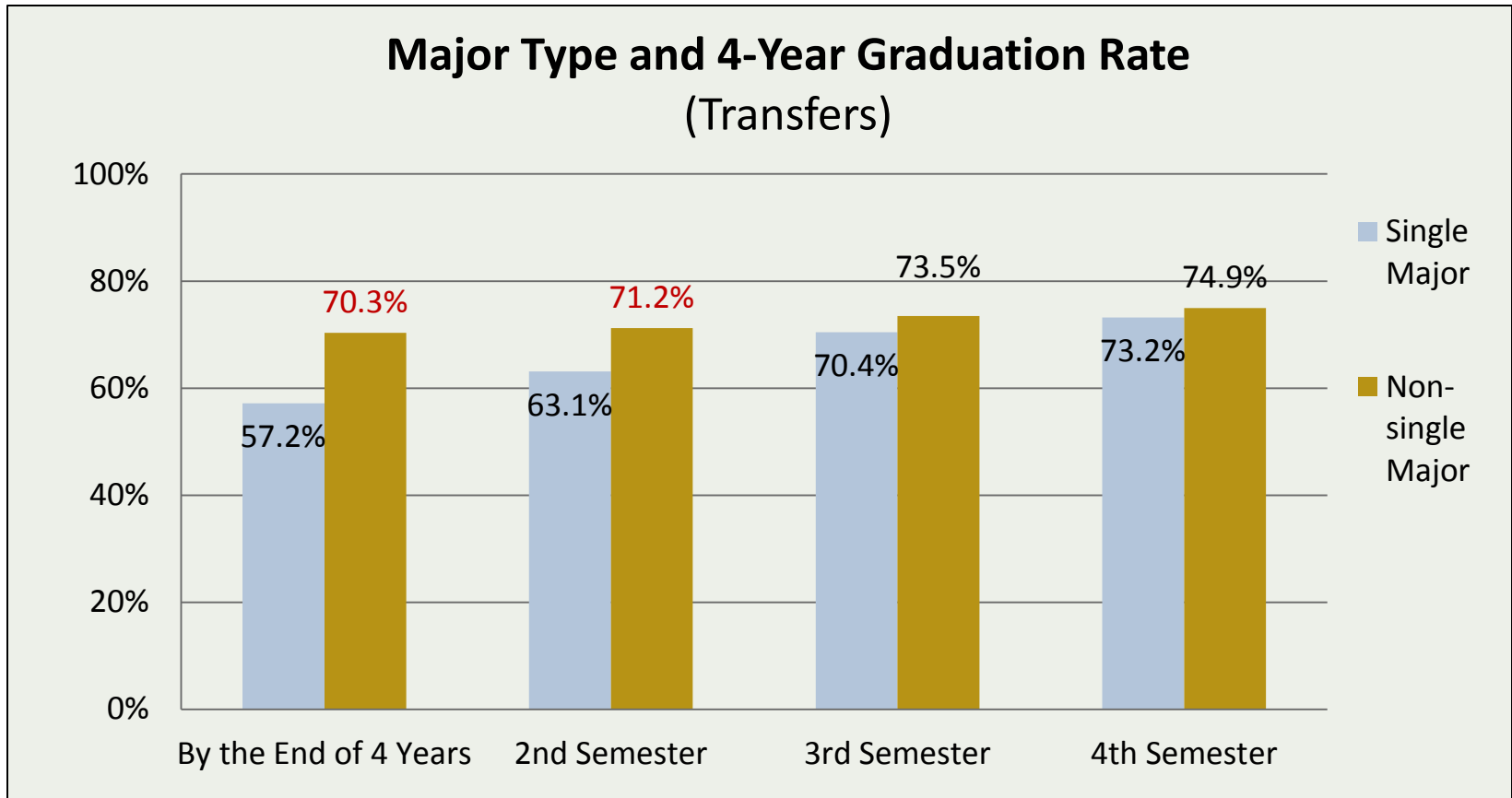
Note: Numbers in red reflect significant differences.

Single Major and Non-Single Major: Graduation Rate (Native Freshmen)



Note: Numbers in red reflect significant differences.

Single Major and Non-Single Major: Graduation Rate (Transfers)



Note: Numbers in red reflect significant differences.

Single Major vs. Non-single Major: Summary

Graduates with a single major

- 72% of native freshmen and 83% of transfers had a single major
- Fewer degree and actual units
- Lower degree GPA

All students with a single major

- Lower 6-year graduation rate for native freshmen (35% vs. 69% based on enrollees)
- Lower 4-year graduation rate for transfers (57% vs. 70% based on enrollees)

Background of all students with a single major

- Lower high school GPAs and SAT scores
- Lower transfer GPAs
- Higher % in need of remediation
- Higher % are part-time students

Regression Model: Native Freshmen

Table 3 Regression Model 1: 6-Year Graduation for Native Freshmen (2004-2006 Cohorts)

Predict Variables	B	S.E.	Wald	df	Sig.	Exp(B)	Odds Ratio	Rank
Gender(1)	-.248	.070	12.645	1	.000	.781	1.3	9
Commuter(1)	.161	.072	4.940	1	.026	1.174	1.2	10
Full-time at first term(1)	.730	.244	8.915	1	.003	2.074	2.1	2
High School GPA	.772	.080	92.028	1	.000	2.163	2.2	1
SAT Math Score	.001	.000	6.130	1	.013	1.001	1.0	
Athlete(1)	-.750	.173	18.704	1	.000	.472	2.1	2
Equity Programs(1)	.377	.090	17.485	1	.000	1.459	1.5	6
Learning Community(1)	-.205	.084	5.971	1	.015	.814	1.2	10
Major Type(1)	-.711	.082	75.395	1	.000	.491	2.0	4
Changed major(1)	-.343	.066	26.919	1	.000	.710	1.4	7
Declared majors by 3 rd term(1)	.352	.156	5.115	1	.024	1.422	1.4	7
Declared majors by 4 th term(1)	-.494	.161	9.470	1	.002	.610	1.6	5
Constant	-2.073	.442	21.963	1	.000	.126		
Model Indicators								
Baseline P*	41.0%		Chi-Square (df)			394.708(12)		
Model N	4,308		Pseudo R ²			.088-.117		
-2log L	5505.489		% Correctly predicted (Graduated)			91.2%		

* Refers to 6-year graduation rate.

Regression Model: Transfers

Table 4 Regression Model 2: 4-Year Graduation for Transfers (2006-2008 Cohorts)

Predict Variables	B	S.E.	Wald	df	Sig.	Exp(B)	Odds Ratio	Rank
Age	-.030	.005	41.892	1	.000	.971	1.0	
Gender	-.225	.053	18.110	1	.000	.798	1.3	5
Underrepresented Minority	.299	.062	23.110	1	.000	1.349	1.3	5
Full-time at first term	-.723	.061	141.107	1	.000	.485	2.1	2
Community College	-.164	.063	6.795	1	.009	.849	1.2	6
Admission type	-.626	.140	20.094	1	.000	.535	1.9	3
Transfer GPA	1.063	.061	307.323	1	.000	2.894	2.9	1
Transfer Units	.013	.001	101.473	1	.000	1.013	1.0	
Changed Major at 3 rd Term	.363	.070	26.996	1	.000	1.437	1.4	4
Constant	-2.668	.220	146.823	1	.000	.069		
Model Indicators								
Baseline P*	59.1%		Chi-Square (df)			817.618(9)		
Model N	8,011		Pseudo R ²			.097-.139		
-2log L	8824.338		% Correctly predicted (Graduated)			87.5%		

* Refers to 4-year graduation rate.

Policy Implications

Changing Majors

- *Restrict major changes for native freshmen after the end of the 3rd year*
- *Restrict major changes for transfers after the end of the 1st year*
- *Enhance advising: Combine Personal interests and capabilities*

Declaring Majors

- *Optimal for all: Declare a major at the 1st term*
- *All native freshmen should declare a major by the 3rd term*
- *All upper division transfers should declare a major at the 1st term*

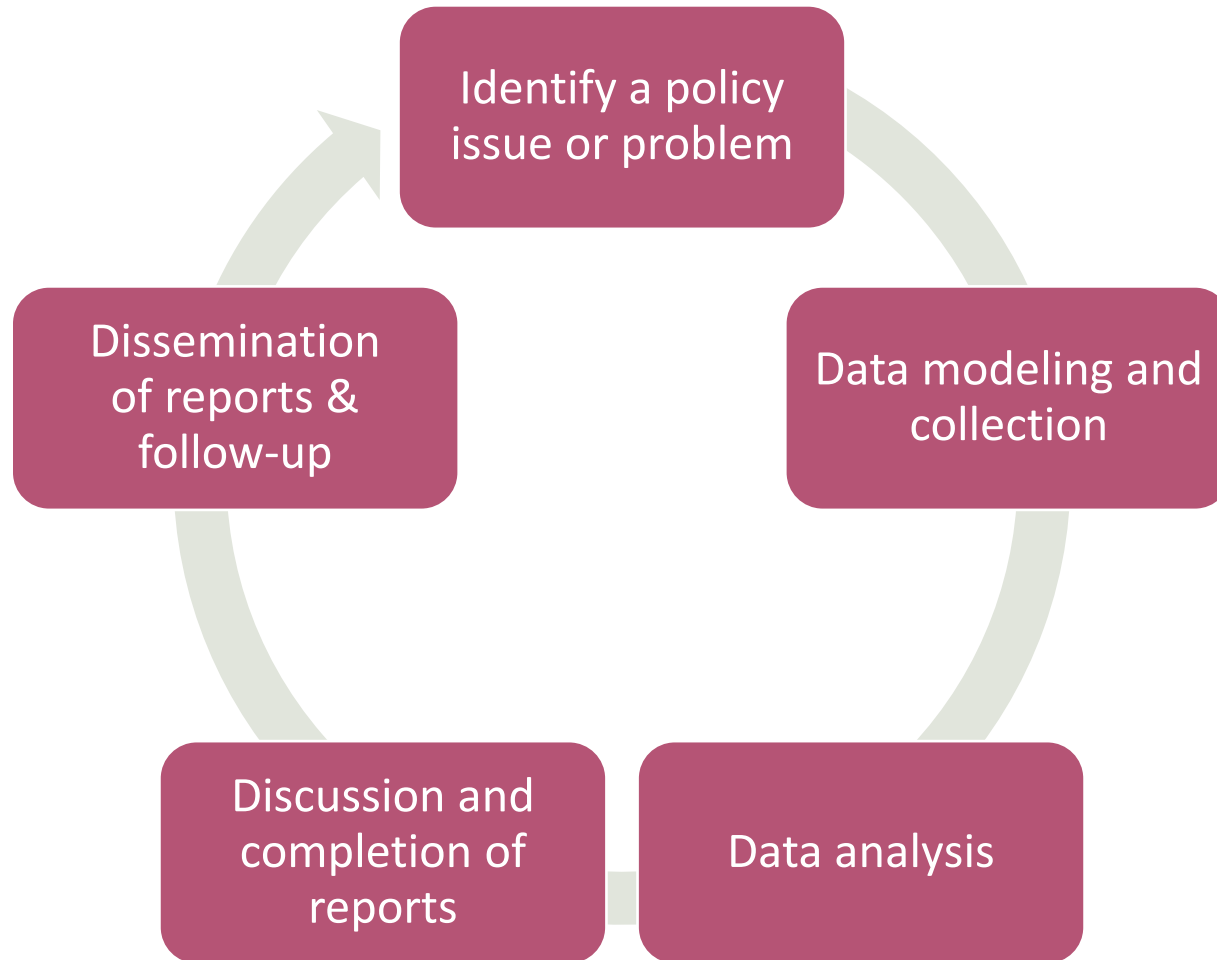
Double Major/Minors

- *Must meet specific academic standards:*
- *High school GPA*
- *SAT Scores*
- *Transfer GPA*
- *No need for remediation*
- *Full-time status*

Reporting and Policy Review Processes

- **Shared with Faculty Senate Committees**
 - Discussed with Student Retention and Graduation Sub-Committee
 - Discussed with Academic Policy Committee
 - Follow-up reports were requested by both committees:
 - ❖ Seniors who changed major during their senior year (fall 2012 to spring 2013)
 - ❖ Seniors who added a second major in spring 2013
- **Used by Senior Administrators:**
 - The AVP for Enrollment Management requested data on student unit completion by the end of 4th semester.
 - The Provost initiated policy discussion and used this report to support policy changes related to majors. The report was also shared with College Deans.
 - The President sent a memo to the Faculty Senate to review and change current policies regarding declaring majors. Faculty Senate will vote on this issue.

The Process of a Policy Study



Q and A

Questions?

Sacramento State OIR website:

<http://www.csus.edu/oir/>

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