THE RELATIONSHIP BETWEEN DATE OF REGISTRATION AND STUDENT PERFORMANCE
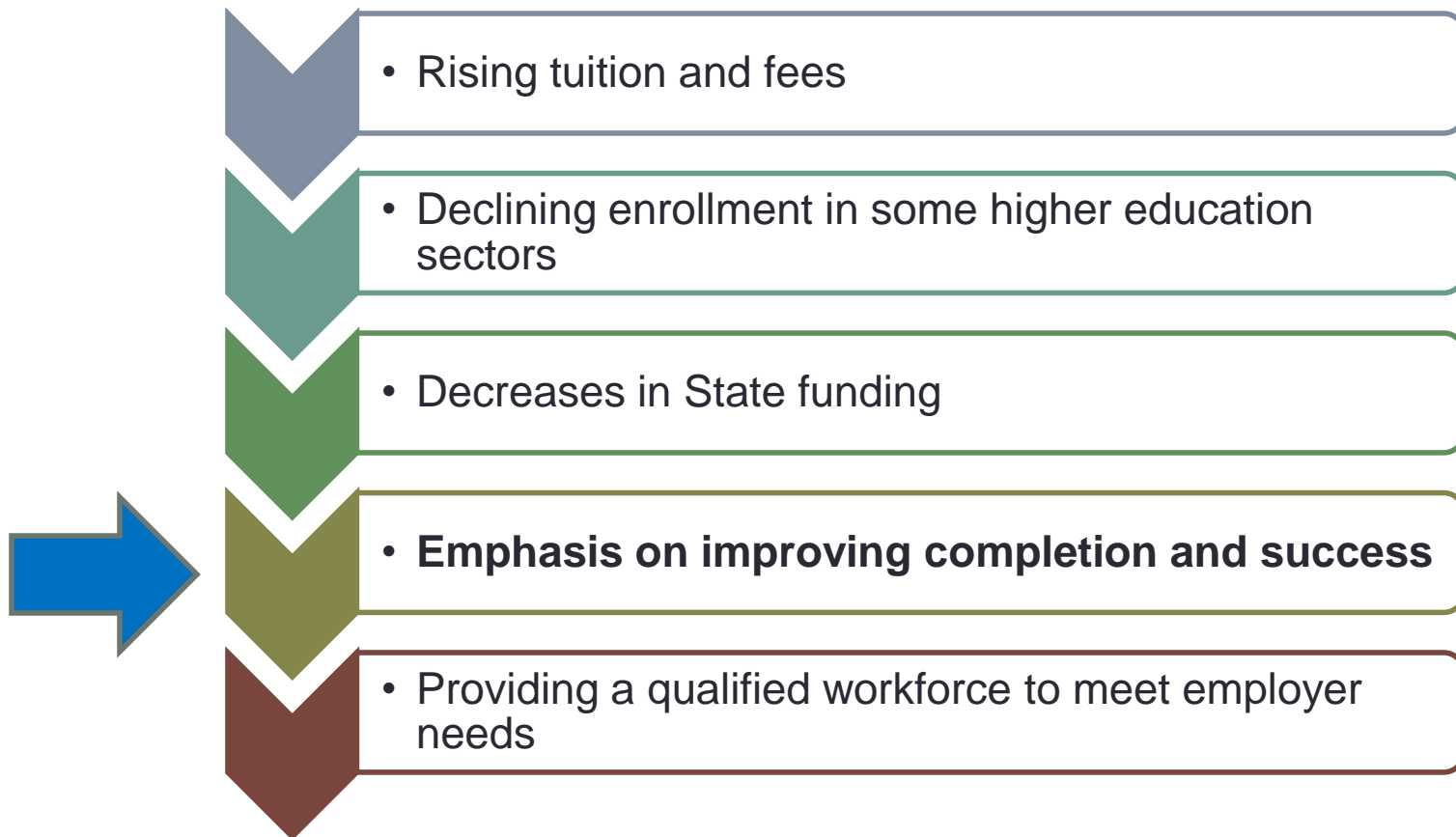
February 21, 2014

Paul Illich
McLennan Community College
pillich@mclennan.edu
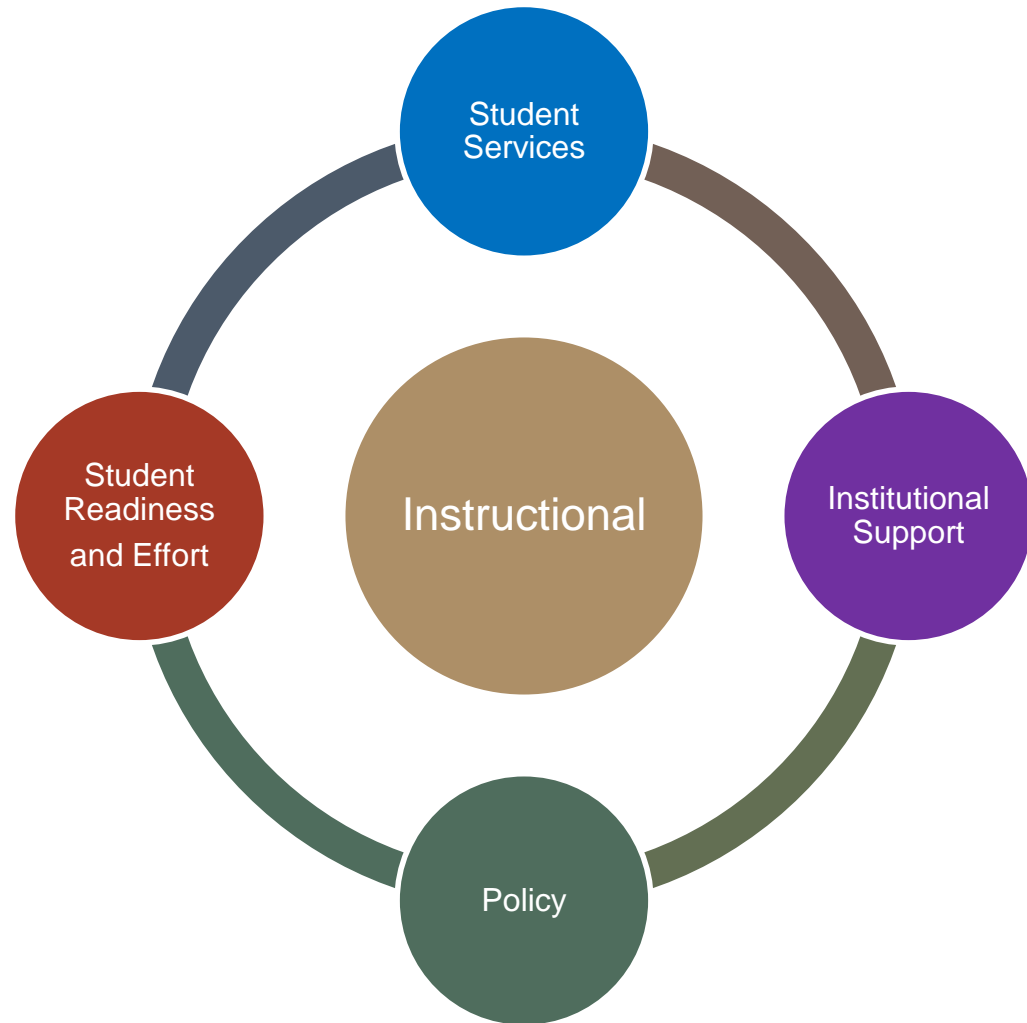
Laura Wichman
McLennan Community College

William Banks
McLennan Community College

Key Trends in Higher Education

- Rising tuition and fees

- Declining enrollment in some higher education sectors

- Decreases in State funding

- **Emphasis on improving completion and success**

- Providing a qualified workforce to meet employer needs

Potential Factors Associated with Completion and Success

Student Service Factors

- *Recruiting*
- *Registration*
- *Advising*
- *Placement Testing*
- *Counseling*
- *Retention Support*

Student Services

Student Readiness and Effort

Instructional

Institutional Support

Policy

Purpose of Study

| Overall Goal	Specific Objective
To provide decision support in relation to proposed changes to the registration process to improve student completion and success	To examine 1) the relationship between day of registration and course completion and student performance , and 2) potential factors associated with student registration behavior

Study Methodology

- Utilized registration data from three fall semesters at McLennan Community College (2011, 2012, 2013)

- Pulled duplicated file of all registration sessions for the entire registration cycle (typically from early April until the census date)

- Calculated latency of registration as the first day a student registered for one or more courses

- Unduplicated the registration data by aggregating on student ID and choosing the first registration session

- Utilized correlation, regression, and ANOVA procedures to examine the relationship between latency of registration and course completion and success
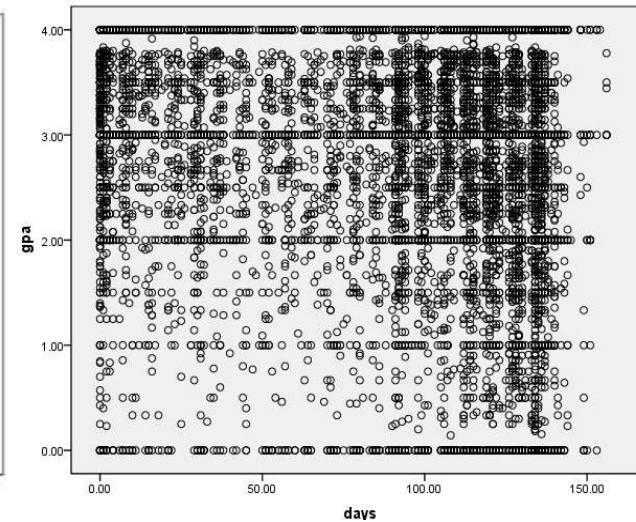
Relationship between GPA and Registration Latency
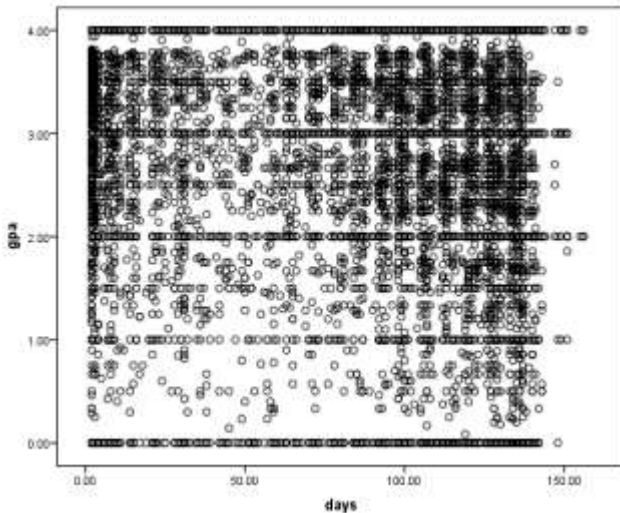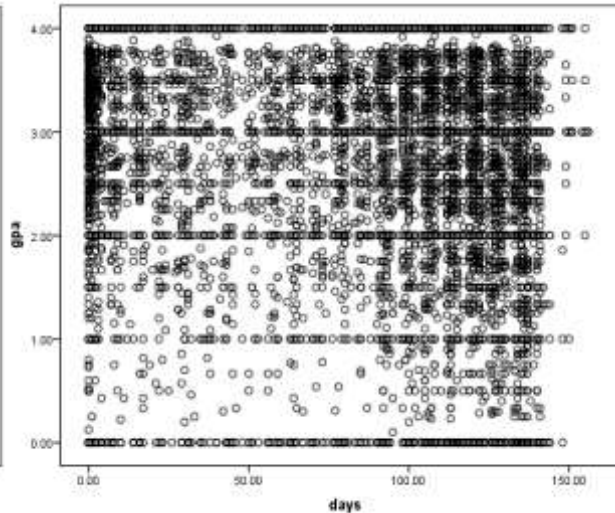
Fall 2011	Fall 2012	Fall 2013

Correlations (Fall 2011)

		days	gpa
days	Pearson Correlation	1	-.150[**]
	Sig. (2-tailed)		.000
	N	10180	9166
gpa	Pearson Correlation	-.150[**]	1
	Sig. (2-tailed)	.000	
	N	9166	9166

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations (Fall 2012)

|		days_first	gpa
days_first	Pearson Correlation	1	-.151[**]
	Sig. (2-tailed)		.000
	N	9301	8635
gpa	Pearson Correlation	-.151[**]	1
	Sig. (2-tailed)	.000	
	N	8635	8635

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations (Fall 2013)

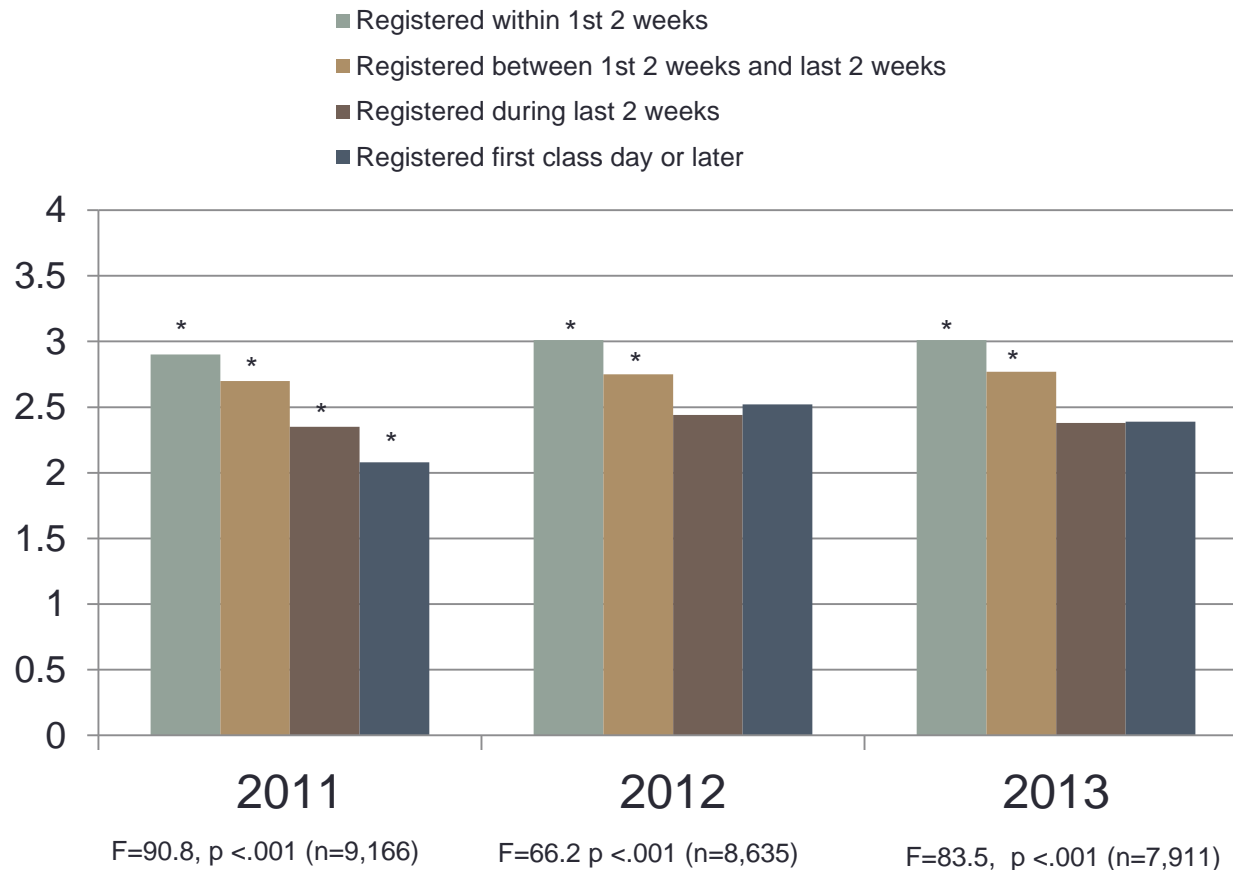|		gpa	days
gpa	Pearson Correlation	1	-.157[**]
	Sig. (2-tailed)		.000
	N	7912	7912
days	Pearson Correlation	-.157[**]	1
	Sig. (2-tailed)	.000	
	N	7912	8304

**. Correlation is significant at the 0.01 level (2-tailed).

Identifying Registration Latency Categories
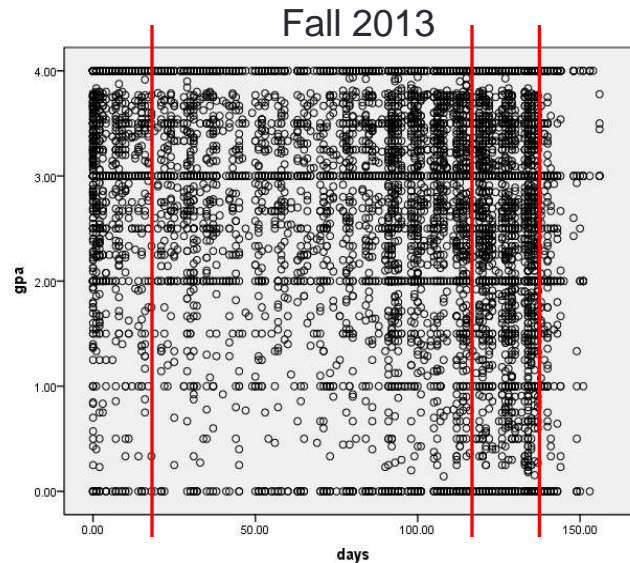
Fall 2013
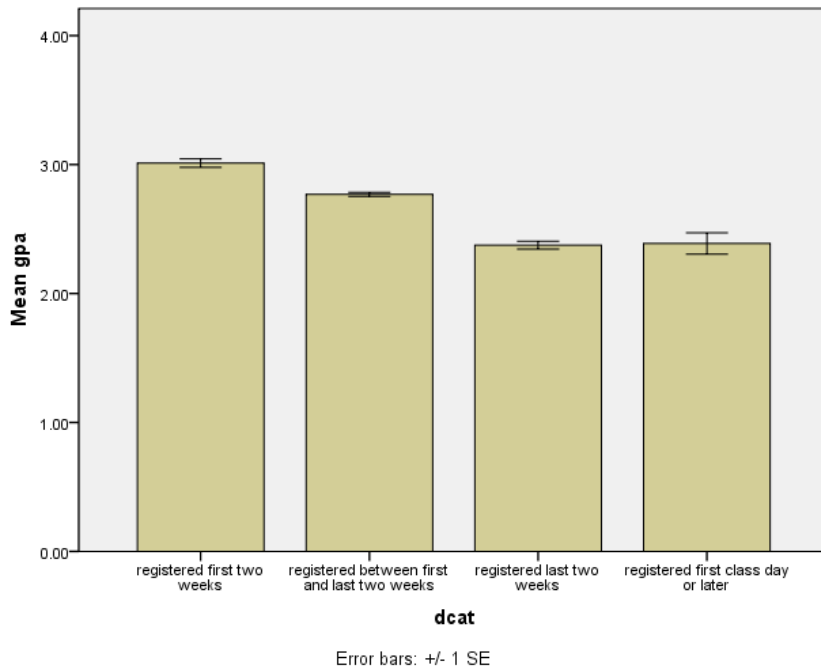

Category	Fall 2011	Fall 2012	Fall 2013
Registered within first two weeks	1321 (14%)	1239 (14%)	929 (12%)
Registered between first two weeks and last two weeks	5495 (60%)	5331 (62%)	4847 (61%)
Registered last two weeks	2074 (23%)	1760 (20%)	1871 (24%)
Registered first class day or later	276 (3%)	305 (4%)	265 (3%)

Average Term GPA by Registration Latency Category

Legend:
- Registered within 1st 2 weeks
- Registered between 1st 2 weeks and last 2 weeks
- Registered during last 2 weeks
- Registered first class day or later

2011 — F=90.8, p <.001 (n=9,166)

2012 — F=66.2 p <.001 (n=8,635)

2013 — F=83.5, p <.001 (n=7,911)

Fall 2013 – Average Term GPA by Registration Category

Mean gpa by dcat

Error bars: +/- 1 SE

ANOVA

gpa

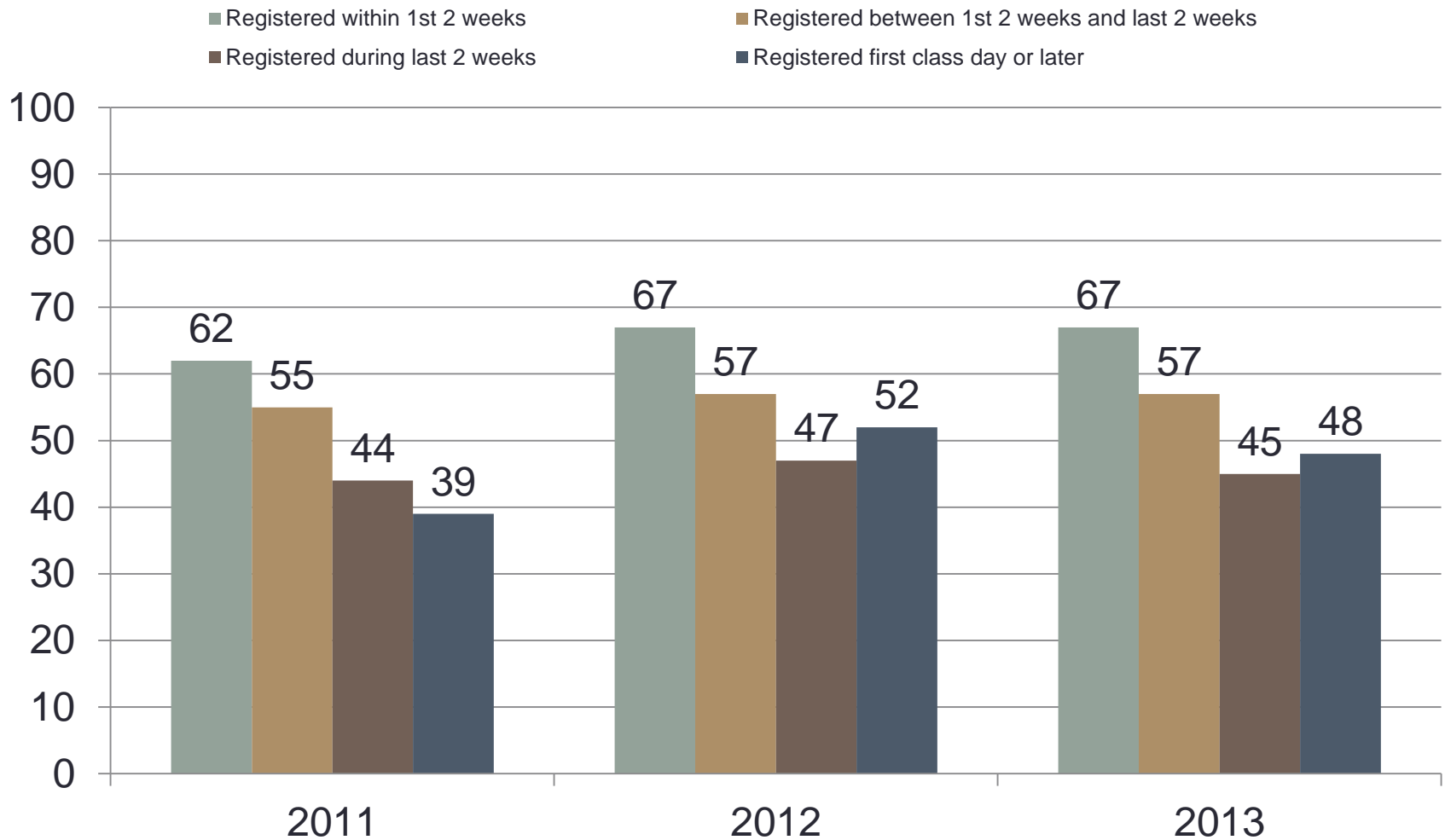|	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	335.734	3	111.911	83.552	.000
Within Groups	10592.111	7908	1.339		
Total	10927.846	7911			

Multiple Comparisons

gpa

Tukey HSD

(I) dcat	(J) dcat	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
registered first two weeks	registered between first and last two weeks	.24240*	.04145	.000	.1359	.3489
	registered last two weeks	.63619*	.04645	.000	.5168	.7556
	registered first class day or later	.62316*	.08060	.000	.4161	.8303
registered between first and last two weeks	registered first two weeks	-.24240*	.04145	.000	-.3489	-.1359
	registered last two weeks	.39380*	.03150	.000	.3129	.4747
	registered first class day or later	.38077*	.07301	.000	.1932	.5684
registered last two weeks	registered first two weeks	-.63619*	.04645	.000	-.7556	-.5168
	registered between first and last two weeks	-.39380*	.03150	.000	-.4747	-.3129
	registered first class day or later	-.01303	.07596	.998	-.2082	.1822
registered first class day or later	registered first two weeks	-.62316*	.08060	.000	-.8303	-.4161
	registered between first and last two weeks	-.38077*	.07301	.000	-.5684	-.1932
	registered last two weeks	.01303	.07596	.998	-.1822	.2082

*. The mean difference is significant at the 0.05 level.

Percent of Students Above 2.0 by Registration Latency Category

■ Registered within 1st 2 weeks ■ Registered between 1st 2 weeks and last 2 weeks
■ Registered during last 2 weeks ■ Registered first class day or later

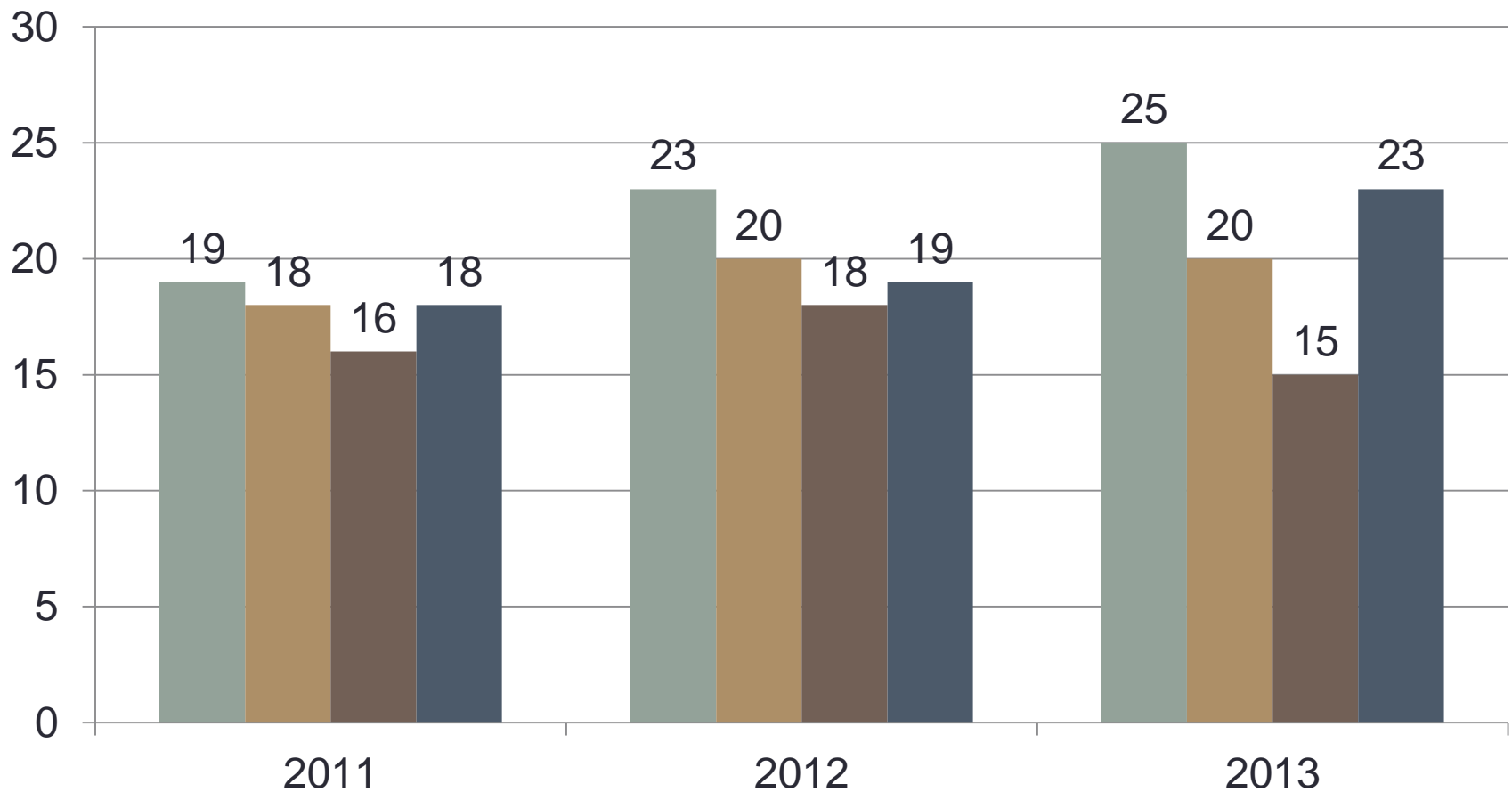| Year	Registered within 1st 2 weeks	Registered between 1st 2 weeks and last 2 weeks	Registered during last 2 weeks	Registered first class day or later
2011	86	80	69	62
2012	88	81	72	75
2013	88	82	69	72
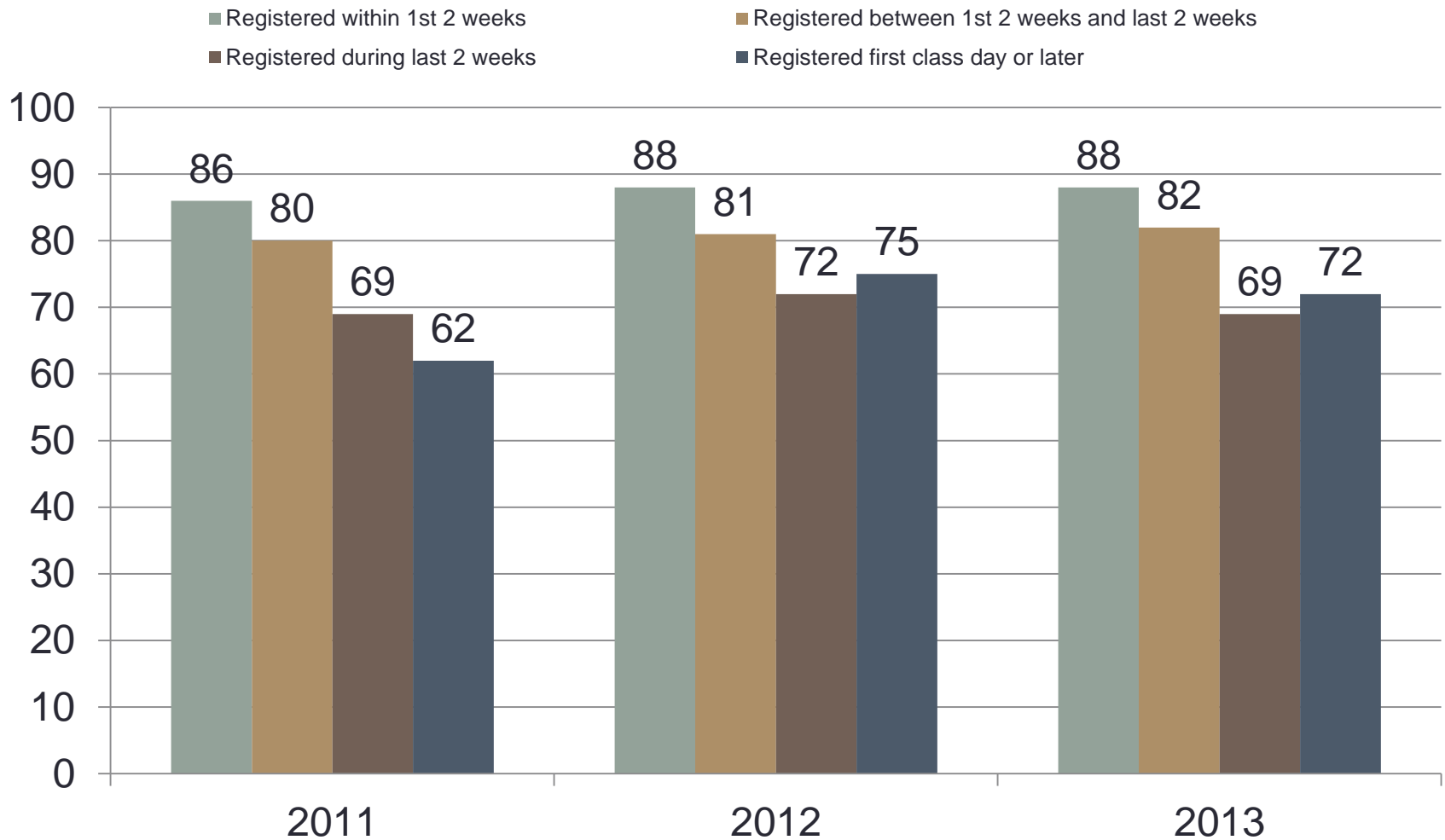
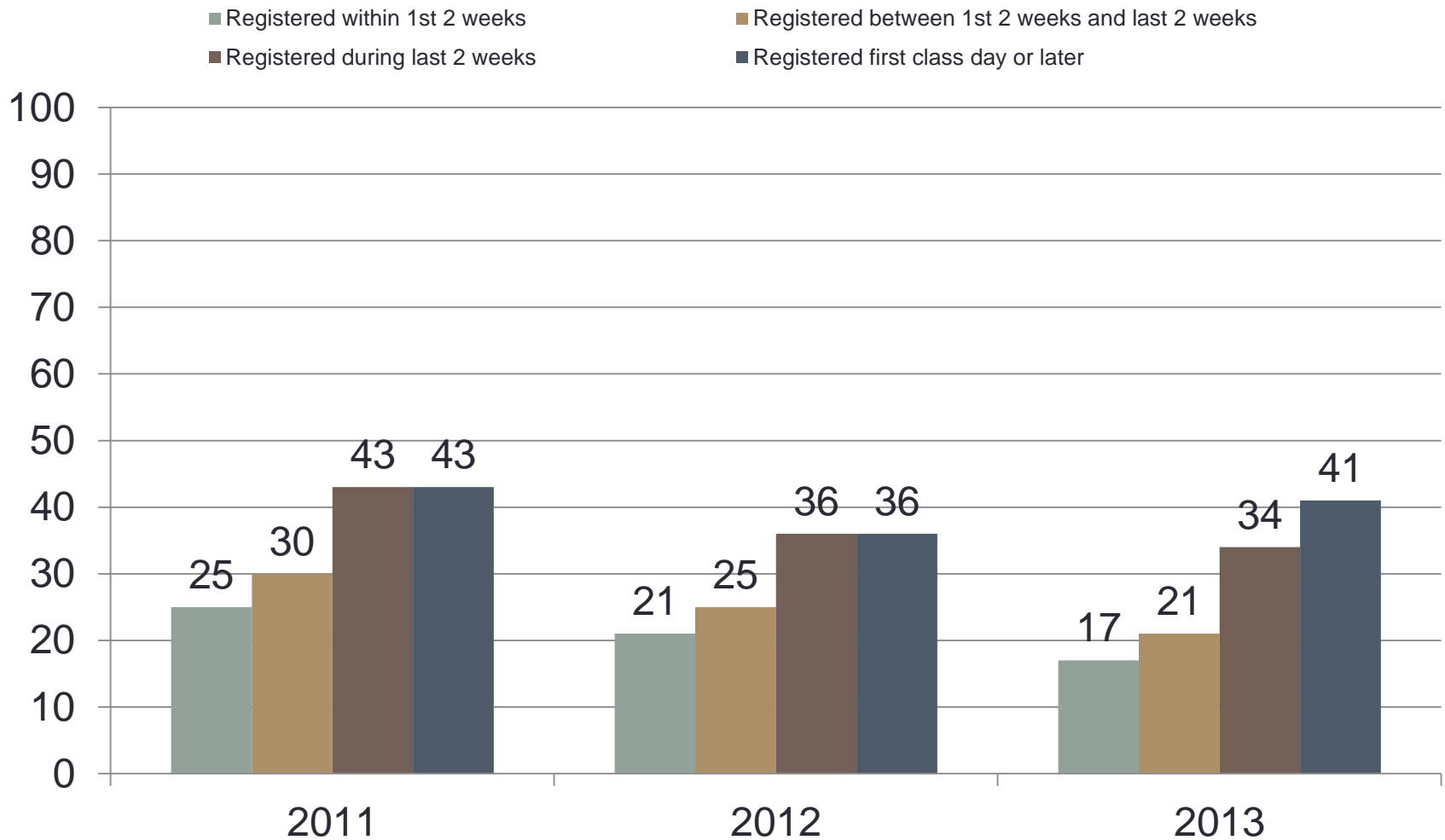# Percent of Students Above 3.0 by Registration Latency Category

Percent of Students Above 4.0 by Registration Latency Category

Legend:
- Registered within 1st 2 weeks
- Registered between 1st 2 weeks and last 2 weeks
- Registered during last 2 weeks
- Registered first class day or later

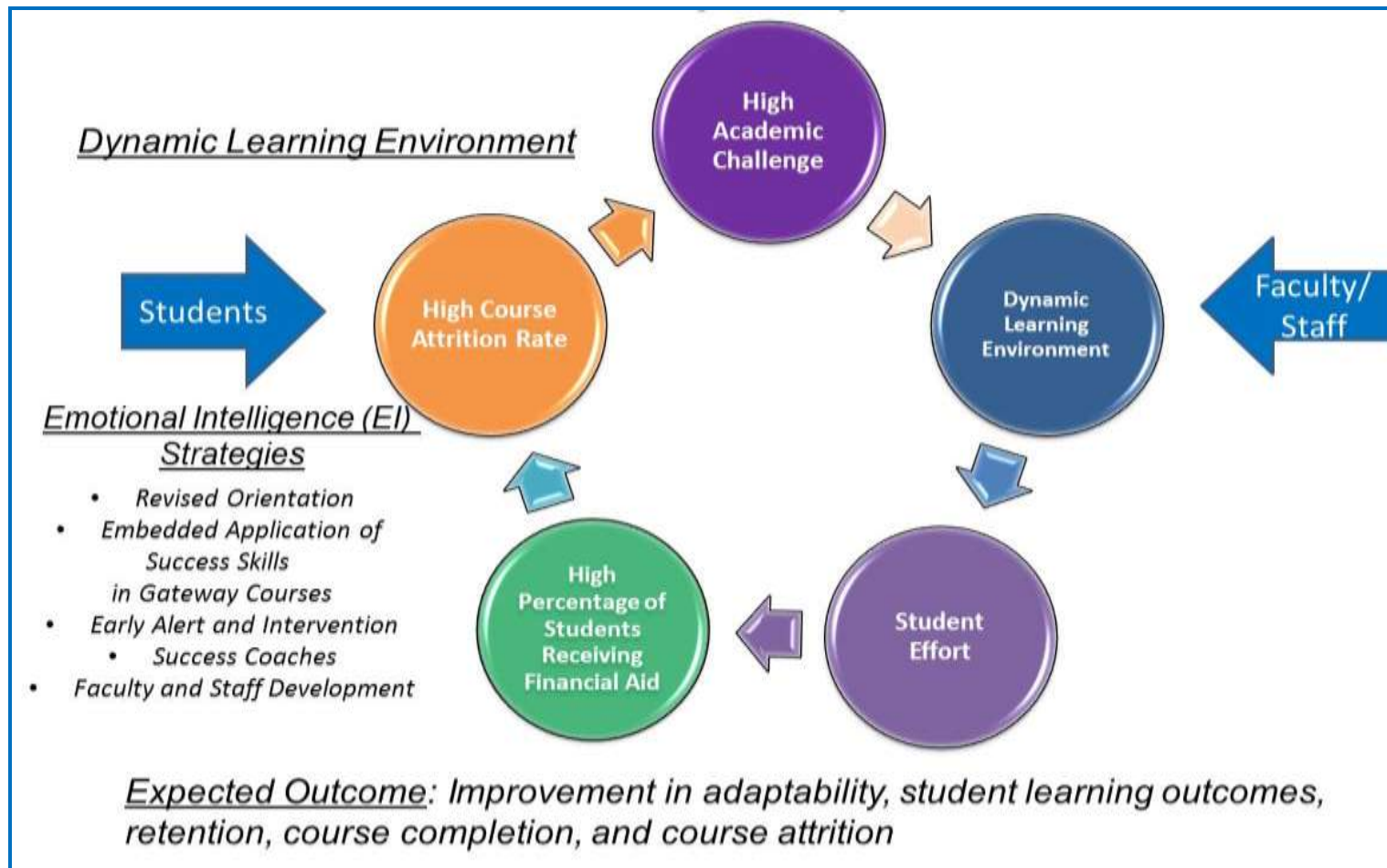| Year	Registered within 1st 2 weeks	Registered between 1st 2 weeks and last 2 weeks	Registered during last 2 weeks	Registered first class day or later
2011	19	18	16	18
2012	23	20	18	19
2013	25	20	15	23

Percent of Students Who Dropped One or More Courses by Registration Latency Category

Learning Environment Adaptability Project (LEAP)

Dynamic Learning Environment

High Academic Challenge

Students

High Course Attrition Rate

Dynamic Learning Environment

Faculty/ Staff

Emotional Intelligence (EI) Strategies

- Revised Orientation
- Embedded Application of Success Skills in Gateway Courses
- Early Alert and Intervention
- Success Coaches
- Faculty and Staff Development

High Percentage of Students Receiving Financial Aid

Student Effort

Expected Outcome: Improvement in adaptability, student learning outcomes, retention, course completion, and course attrition

LEAP Strategies

Revised and Ongoing Orientation	Redesigned Student Success Course	Infuse EI Skills into Gateway Courses	Early Alert & Intervention	Professional Development
• Developed an ongoing online orientation program for new and returning students • Provided weekly orientation activities with advisors	• Required among all entering students • Curriculum includes EI skills • Students are required to take an EI assessment at the beginning and end of the course.	• Identified Gateway Courses (Arts, Biology, English, History, Psychology, Math, Speech, etc.) • Restructured Gateway Courses by infusing EI skills	• Hired 4 success coaches to assist at-risk students • Implemented an early alert system that allows instructors and staff to direct students to success coaches and other academic support services	• Provided ongoing EI training for faculty & staff • Provided ongoing advisor training • Provided ongoing Early Alert Training • Published monthly newsletter for faculty and staff on EI progress

Emotional intelligence (EI) skills

ESAP EI Skills	
Competency	EI Skill
Interpersonal	Assertion – Ability to communicate thoughts in a clear and direct way to others.
	Anger Management – Ability to deal with anger in a constructive way that allows for effective communication with others.
	Anxiety Management – Ability to control one's fear to ensure effective communication with others.
Leadership	Comfort /Social Awareness – Ability to have a positive influence on others.
	Empathy – Ability to understand and respond effectively to the thoughts and feelings of others.
	Decision Making – Ability to resolve issues via problem-solving and conflict resolution strategies.
	Leadership – Ability to provide a positive direction for others to follow via positive self-directed behavior.
Self-Management	Drive Strength – Ability to create personal satisfaction by completing meaningful goals.
	Commitment Ethic – Ability to complete assigned tasks and responsibilities reliably and successfully.
	Time Management – Ability to organize tasks and use time effectively.
	Positive Change – Ability to assess current satisfaction with a behavior and implement an appropriate and effective change.
Intrapersonal	Self-Esteem – Ability to see oneself as positive, competent, and successful.
	Stress Management – Ability to engage in self-control in reaction to stress.

Average EI Scores by Registration Latency Category (Fall 2013)

	DEVELOP				STRENGTHEN			ENHANCE			
Assertion	9	12	15	18	21	24	27	30	33	36	
Comfort	5 7	9	11	13	15	17	19	21	23	24	
Empathy	6 8	10	12	14	16	18	20	22	24		
Decision Making	5	8	10	12	14	16	18	20	22	24	
Leadership	4	6	9	11	13	15	17	19	21	24	
Drive Strength	10 14	18	22	26	30	34	38	42	44	46	50
Time Management	5	8	10	12	14	16	18	20	22	24	
Commitment Ethic	8	10	12	14	16	18	20	22	24		
Self-Esteem	9 18	23	26	29	32	35	39	42	45	48	50
Stress Management	4	9	14	19	24	29	34	39	44	49	
	Low				Normal			High			
Aggression		2	4	6	8	11	15	19	24	28	35
Deference	2	4	6	10	14	18	22	26	30	32	36
Change Orientation	1	3	5	7	9	11	13	16	18	21	24

Legend:
— Registered First Two Weeks
— Registered Between First and Last Two Weeks
— Registered Last Two Weeks
— Registered First Class Day or Later

Time Management was the only significant factor

Role of Time Management and Registration Latency

Report

time_mean

dcat	Mean	N	Std. Deviation	Std. Error of Mean
registered first two weeks	18.3364	55	4.09839	.55263
registered between first and last two weeks	16.0369	1015	4.88092	.15320
registered last two weeks	15.8291	468	4.98055	.23023
registered first class day or later	15.5256	39	6.19948	.99271
Total	16.0428	1577	4.93806	.12435

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
time_mean * dcat	Between Groups	(Combined)	321.170	3	107.057	4.419	.004
	Within Groups		38108.691	1573	24.227		
	Total		38429.861	1576			

Measures of Association

	Eta	Eta Squared
time_mean * dcat	.091	.008

Role of Time Management and Registration Latency

Multiple Comparisons

time_mean

Tukey HSD

(I) dcat	(J) dcat	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
registered first two weeks	registered between first and last two weeks	2.29942*	.68144	.004	.5469	4.0519
	registered last two weeks	2.50730*	.70161	.002	.7029	4.3117
	registered first class day or later	2.81072*	1.03038	.033	.1608	5.4606
registered between first and last two weeks	registered first two weeks	-2.29942*	.68144	.004	-4.0519	-.5469
	registered last two weeks	.20789	.27502	.874	-.4994	.9152
	registered first class day or later	.51130	.80316	.920	-1.5542	2.5769
registered last two weeks	registered first two weeks	-2.50730*	.70161	.002	-4.3117	-.7029
	registered between first and last two weeks	-.20789	.27502	.874	-.9152	.4994
	registered first class day or later	.30342	.82034	.983	-1.8063	2.4132
registered first class day or later	registered first two weeks	-2.81072*	1.03038	.033	-5.4606	-.1608
	registered between first and last two weeks	-.51130	.80316	.920	-2.5769	1.5542
	registered last two weeks	-.30342	.82034	.983	-2.4132	1.8063

*. The mean difference is significant at the 0.05 level.

Relationship Between EI Skills and Registration Latency

Correlations

		days	gpa	commit_mean	drive_mean	time_mean
days	Pearson Correlation	1	-.157**	-.053*	.000	-.081**
	Sig. (2-tailed)		.000	.036	.988	.001
	N	8304	7912	1577	1577	1577
gpa	Pearson Correlation	-.157**	1	.128**	.047	.107**
	Sig. (2-tailed)	.000		.000	.067	.000
	N	7912	7912	1516	1516	1516
commit_mean	Pearson Correlation	-.053*	.128**	1	.751**	.696**
	Sig. (2-tailed)	.036	.000		.000	.000
	N	1577	1516	1577	1577	1577
drive_mean	Pearson Correlation	.000	.047	.751**	1	.701**
	Sig. (2-tailed)	.988	.067	.000		.000
	N	1577	1516	1577	1577	1577
time_mean	Pearson Correlation	-.081**	.107**	.696**	.701**	1
	Sig. (2-tailed)	.001	.000	.000	.000	
	N	1577	1516	1577	1577	1577

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Time Management Commitment Ethic as Predicators of Registration Latency

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.081[a]	.007	.005	33.61701

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11722.016	2	5861.008	5.186	.006[a]
	Residual	1778782.859	1574	1130.103		
	Total	1790504.875	1576			

a. Predictors: (Constant), time_mean, commit_mean

b. Dependent Variable: days

Coefficients[a]

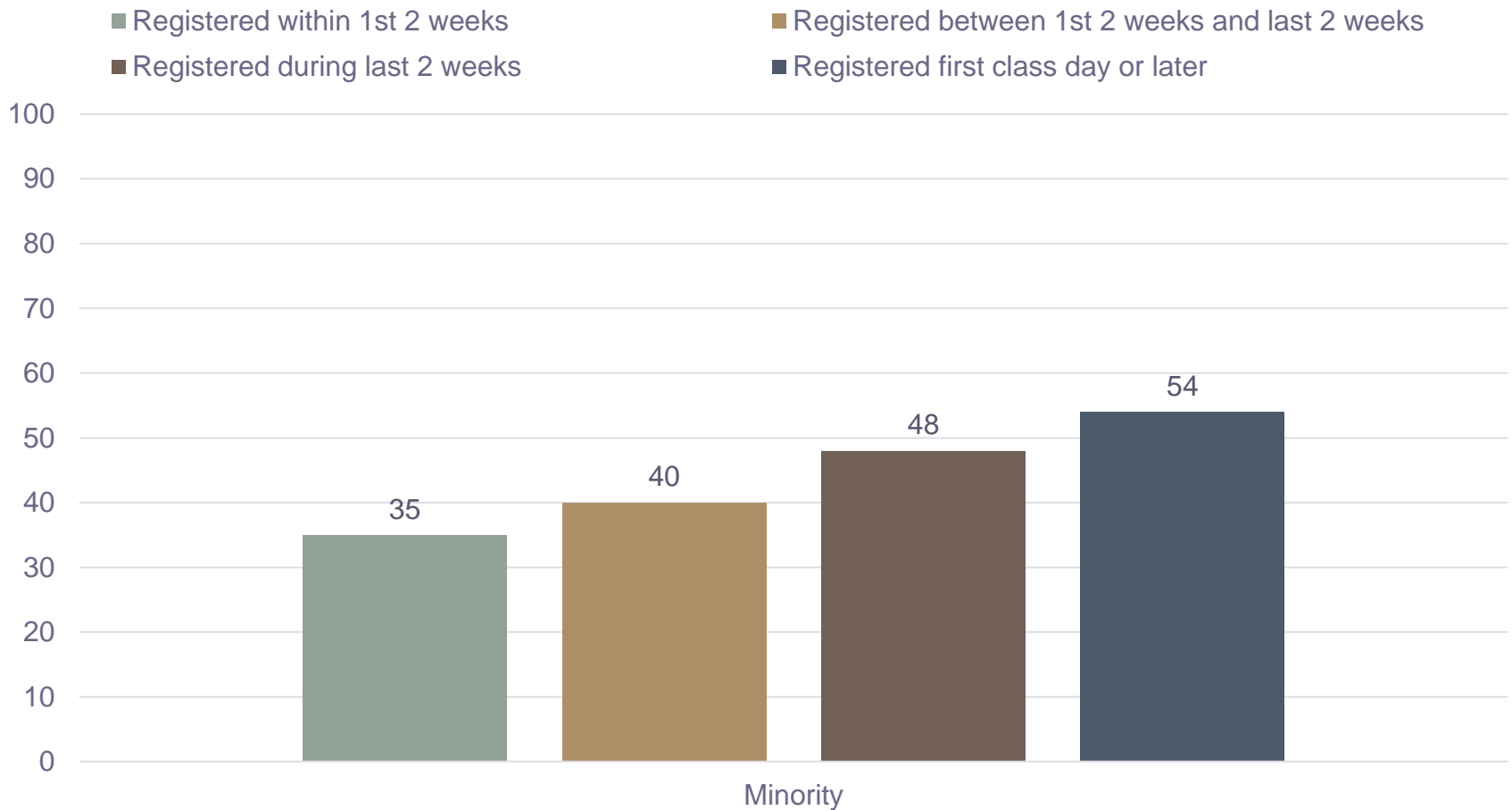| Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	111.640	4.037		27.657	.000
	commit_mean	.057	.300	.007	.189	.850
	time_mean	-.583	.239	-.085	-2.439	.015

a. Dependent Variable: days

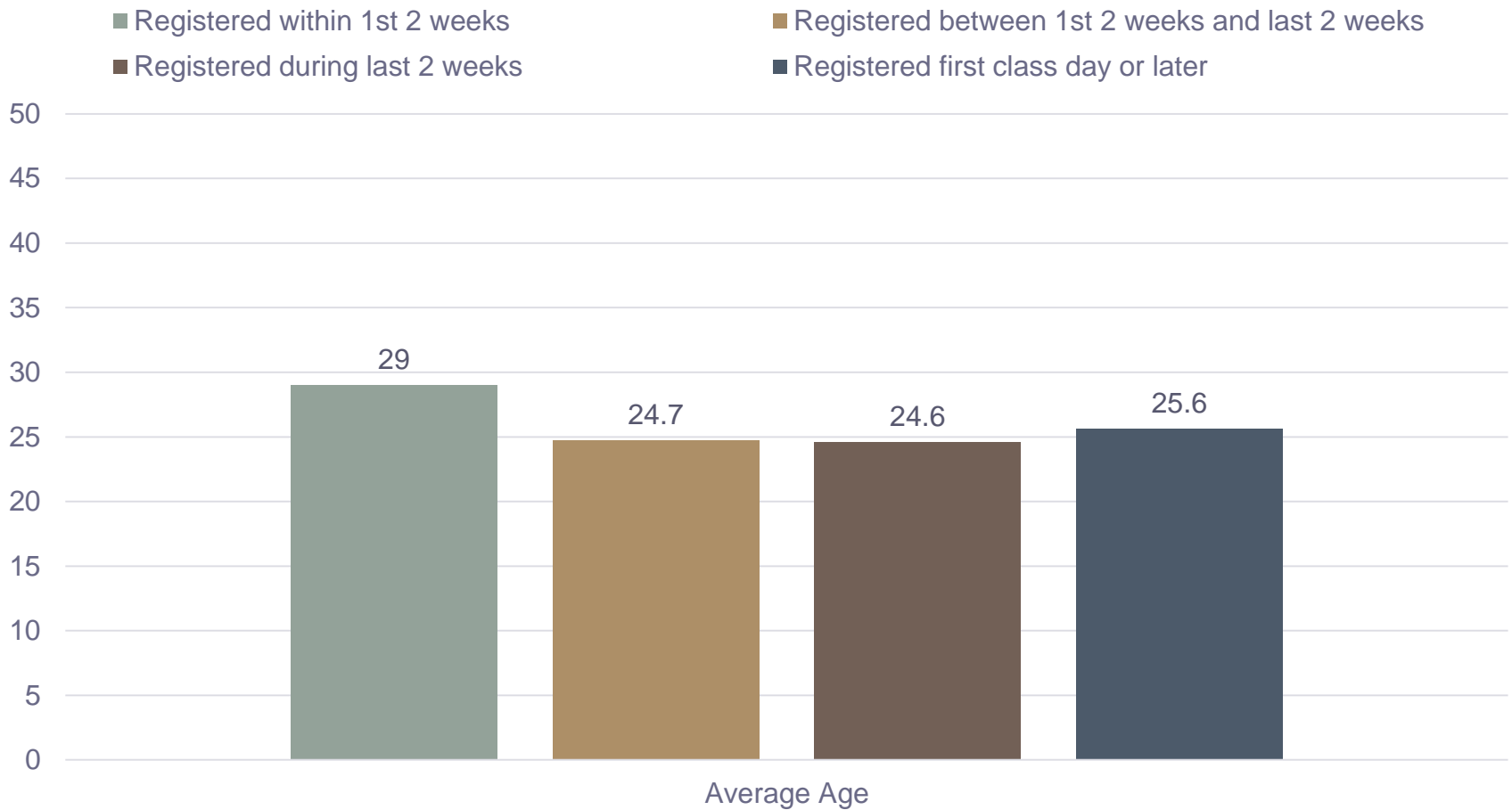# Gender as Predicators of Registration Latency

Fall 2013 Registration

Legend:
- Registered within 1st 2 weeks
- Registered between 1st 2 weeks and last 2 weeks
- Registered during last 2 weeks
- Registered first class day or later

Values (Female):
- 75
- 67
- 57
- 57
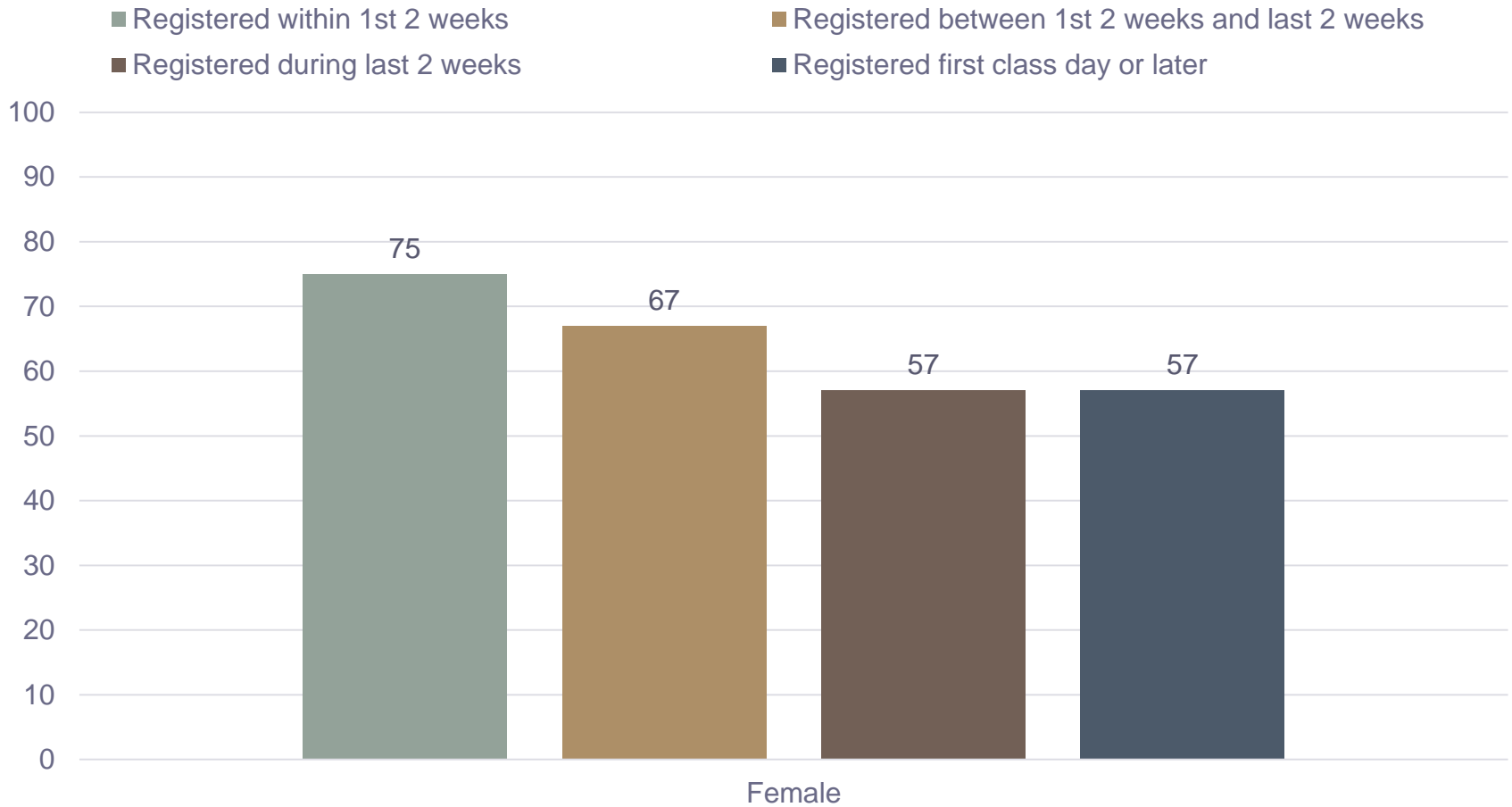
Minority Status as Predicators of Registration Latency

Fall 2013 Registration

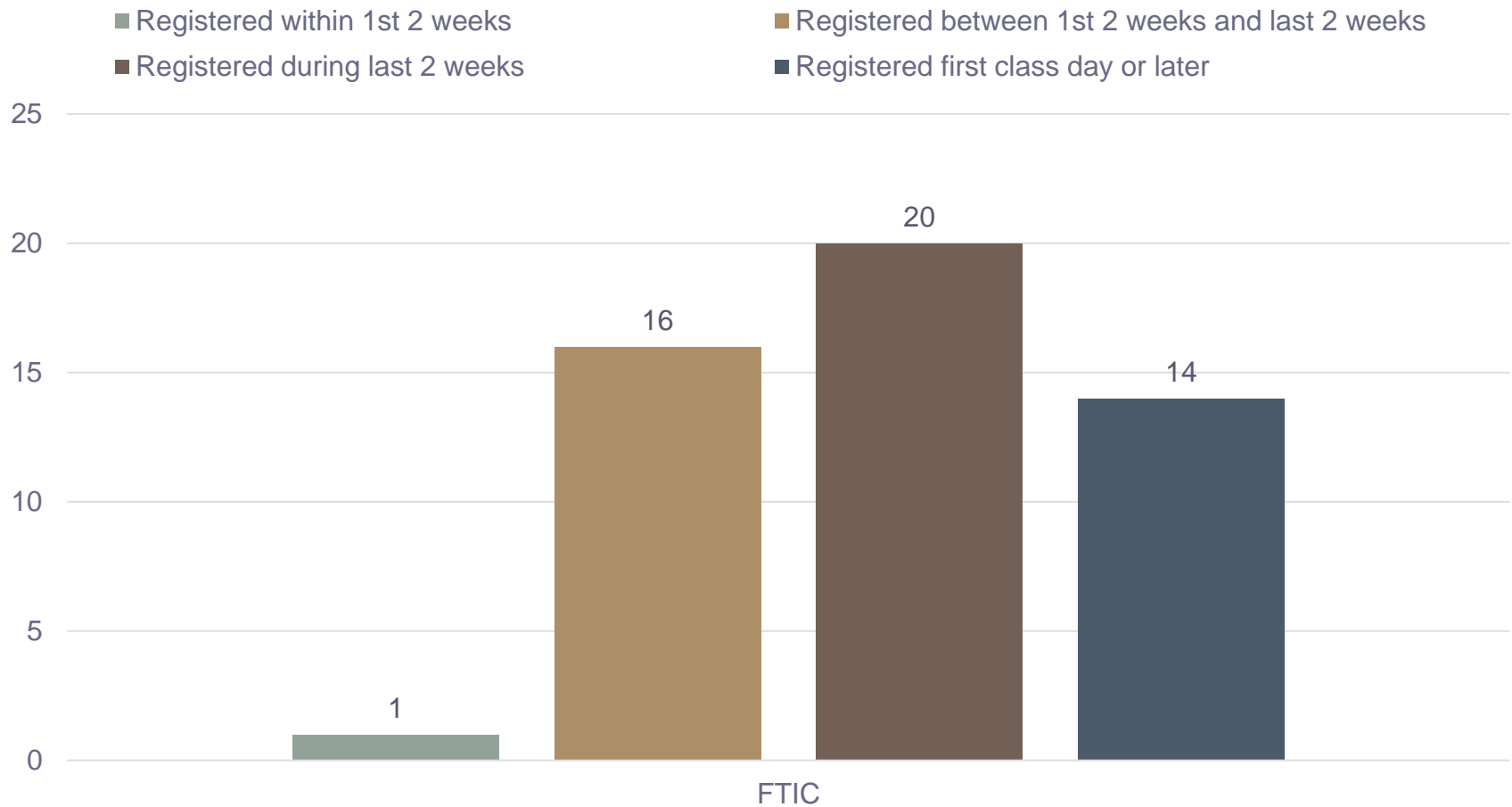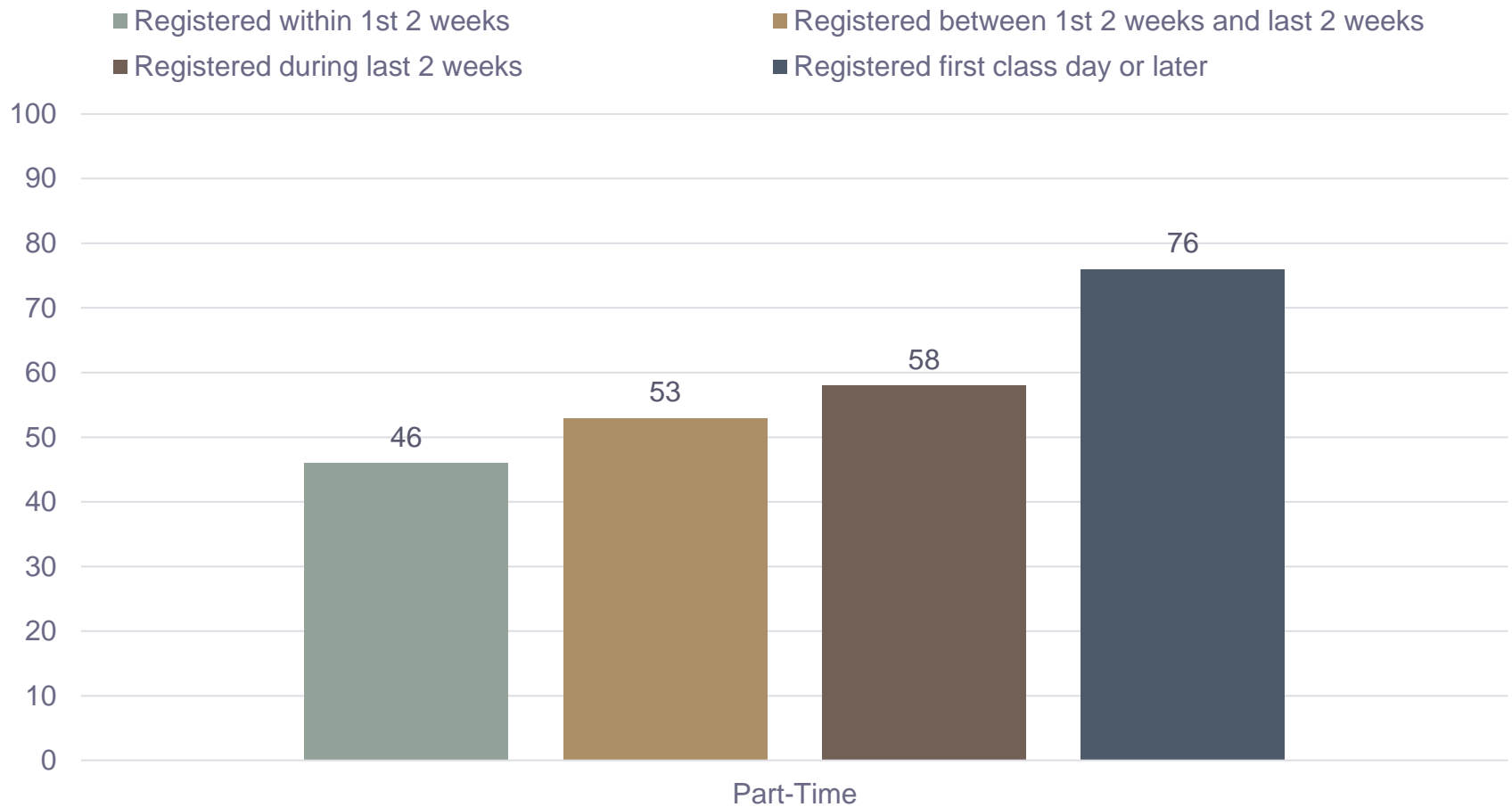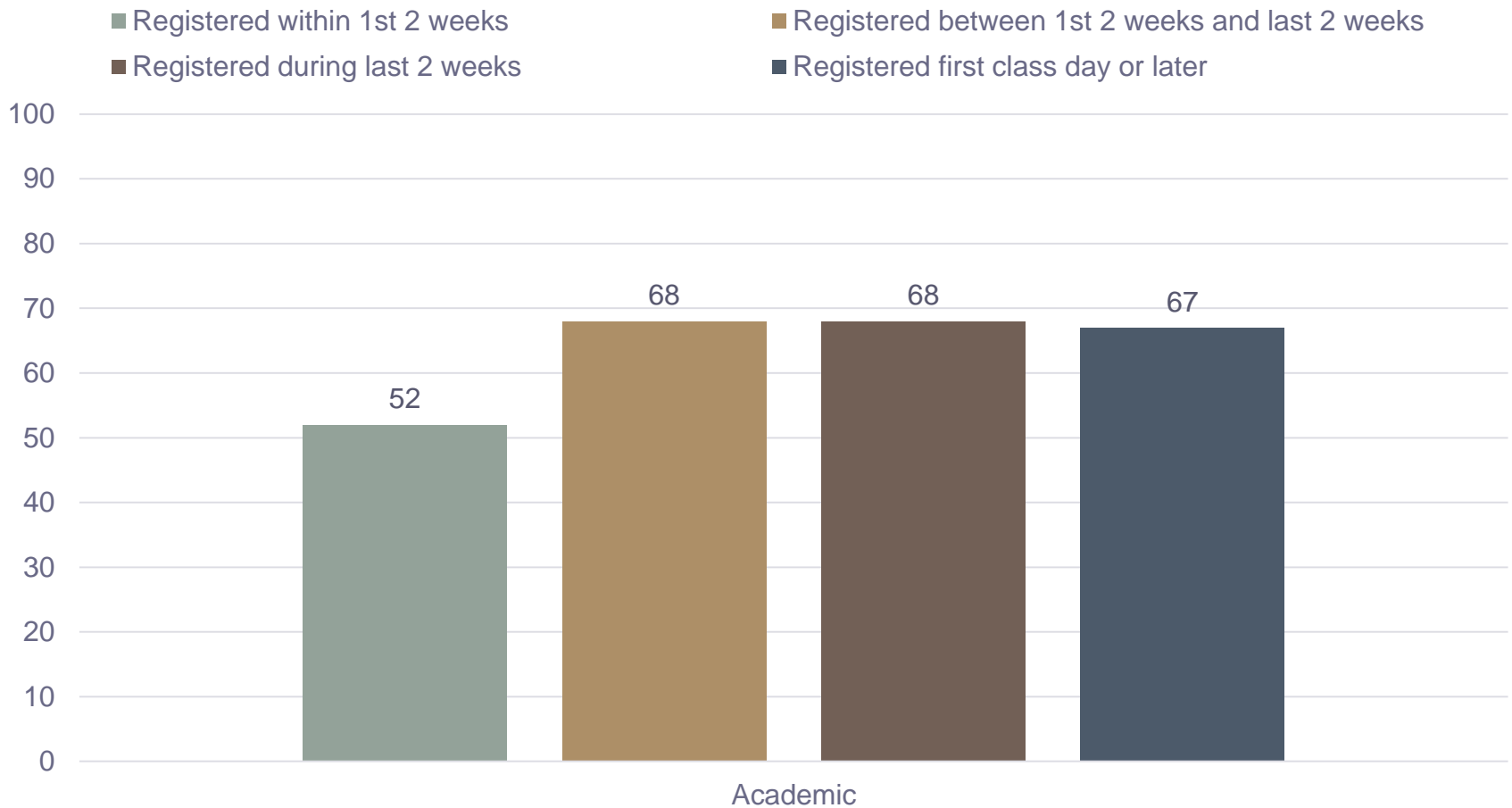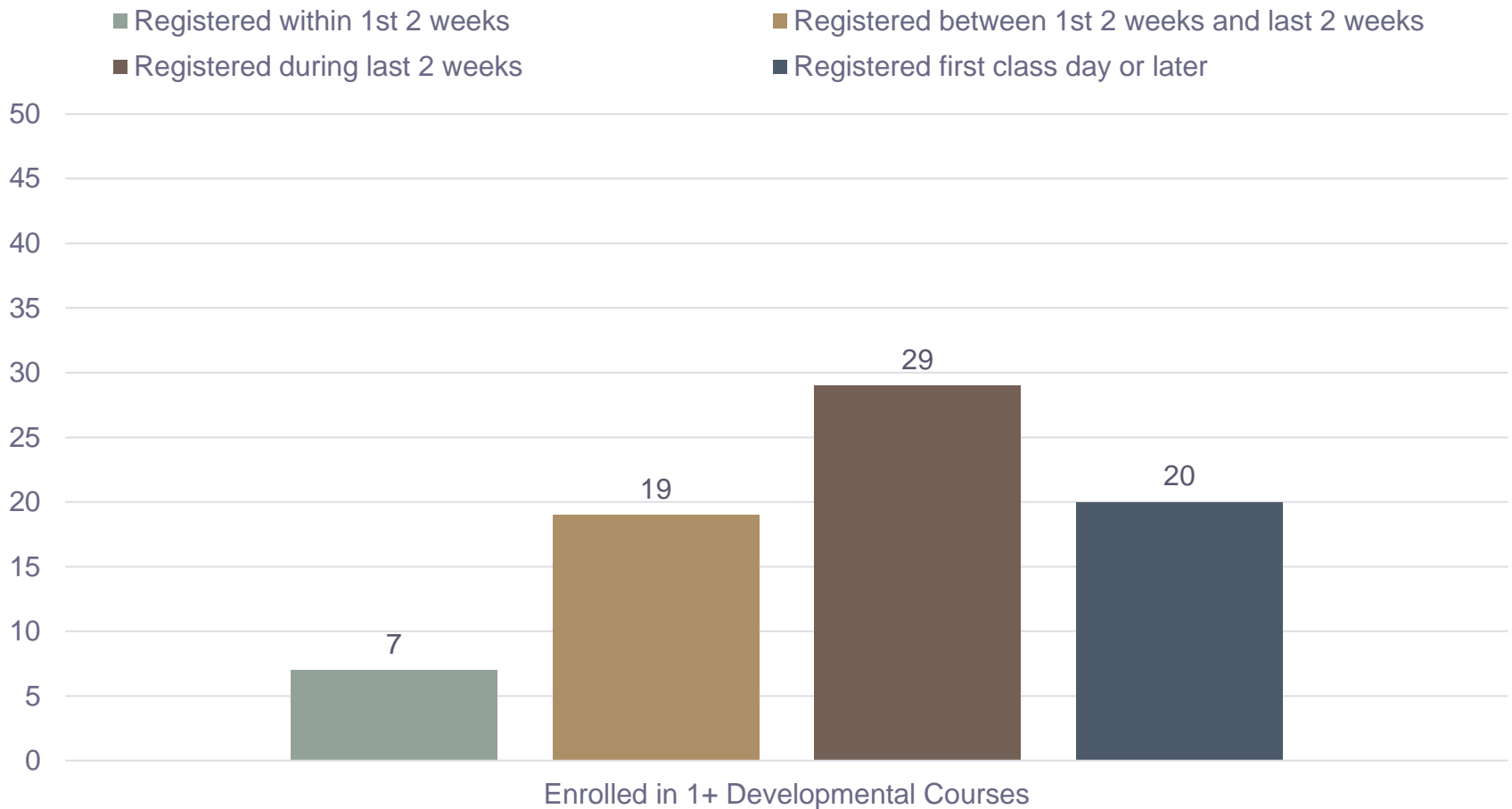# Average Age as Predicators of Registration Latency

Fall 2013 Registration

- Registered within 1st 2 weeks
- Registered between 1st 2 weeks and last 2 weeks
- Registered during last 2 weeks
- Registered first class day or later

Bar chart showing average age values: 29, 24.7, 24.6, 25.6 across the four registration categories. X-axis label: Average Age. Y-axis scale from 0 to 50.

First-Time-In-College Classification as Predicators of Registration Latency

Fall 2013 Registration

- Registered within 1st 2 weeks
- Registered between 1st 2 weeks and last 2 weeks
- Registered during last 2 weeks
- Registered first class day or later

Full-Time/Part-Time Status as Predicators of Registration Latency

Fall 2013 Registration

Major Type as Predicators of Registration Latency
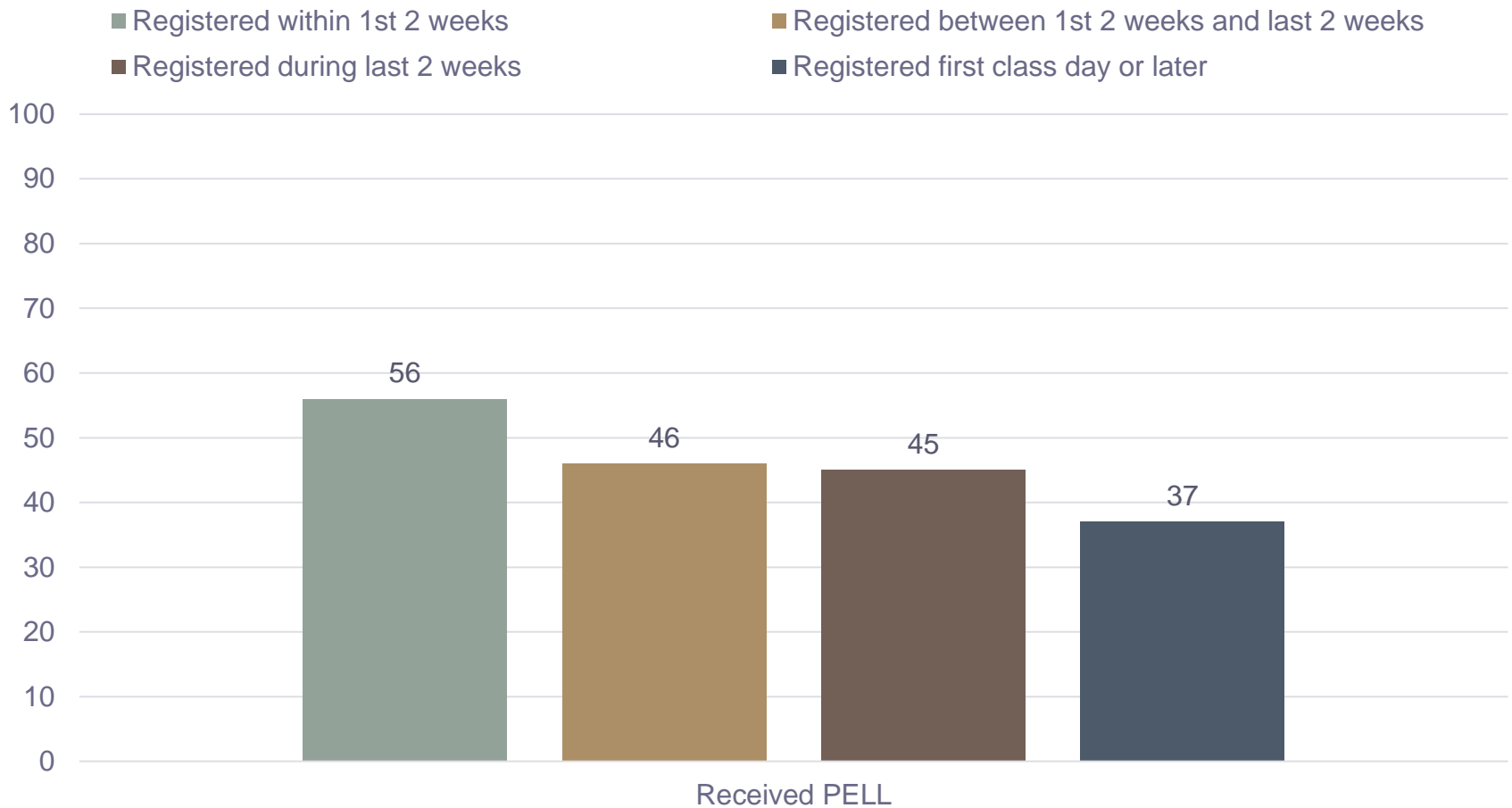

Fall 2013 Registration

Developmental Enrollment as Predicators of Registration Latency
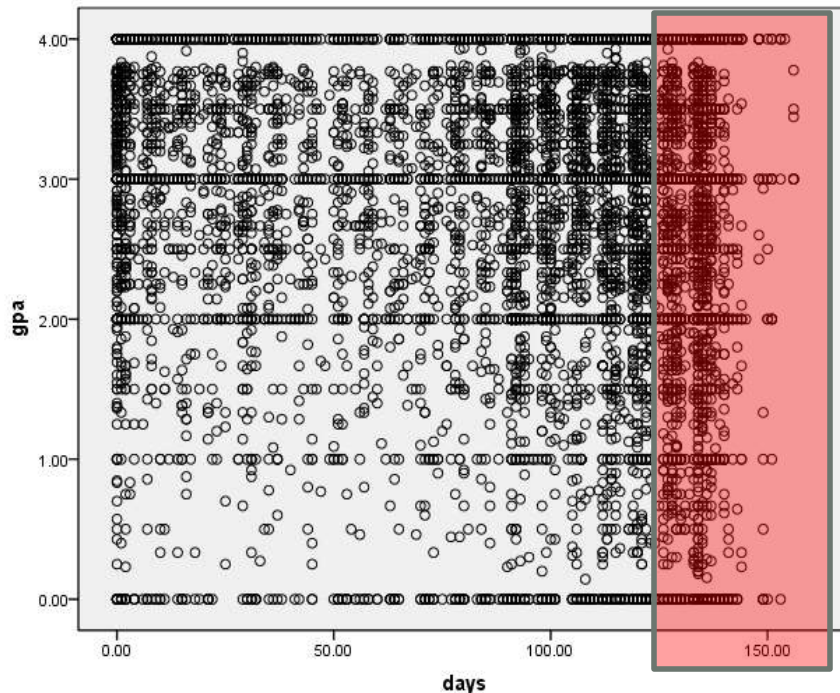
Fall 2013 Registration

PELL Grant as Predicators of Registration Latency

Fall 2013 Registration

- Registered within 1st 2 weeks
- Registered between 1st 2 weeks and last 2 weeks
- Registered during last 2 weeks
- Registered first class day or later

56 46 45 37

Received PELL

# Interpretation and Use of Results: Restriction Oriented Scenario

- Based on differences among registration latency categories, eliminate registration 2 weeks prior to first class day

- Potential Positive Outcomes:
  - Increase in GPA
  - Decrease in Percent of Drops
  - More time to prepare for 1st class day
  - Improved scheduling

- Potential Negative Outcomes:
  - Block 70% of students who would have been successful (2.0 GPA or higher)
  - Reduction in access
  - Reduction in enrollment
  - Reduction in tuition revenue

Interpretation and Use of Results: Reflective Oriented Scenario
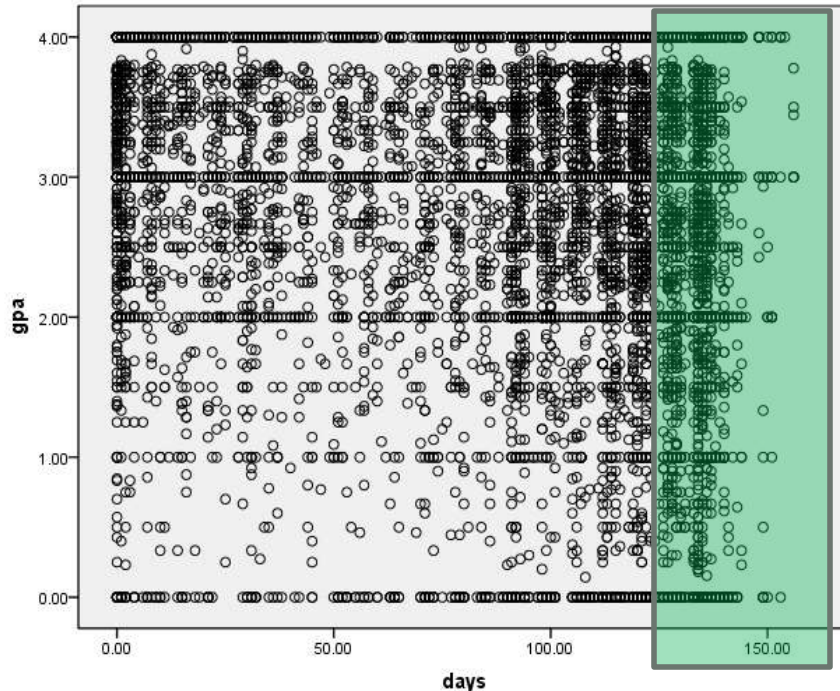
- Based on 1) weak correlation between GPA and registration latency and 2) the finding that approximately 70% of students registering during the last two weeks complete the semester with a 2.0 or higher, continue current registration process with enhancements for late registering students.

- Potential Positive Outcomes:
    - Maintains current level of access
    - Provides greater flexibility for students
    - Does not block the majority of late registering students who achieve a 2.0 or higher
    - Does not discourage students who may be less prepared academically

- Potential Negative Outcomes:
    - Lower overall GPA and course completion rates
    - Greater complexity for advisors and other admission staff

Impact of Late Registering Students
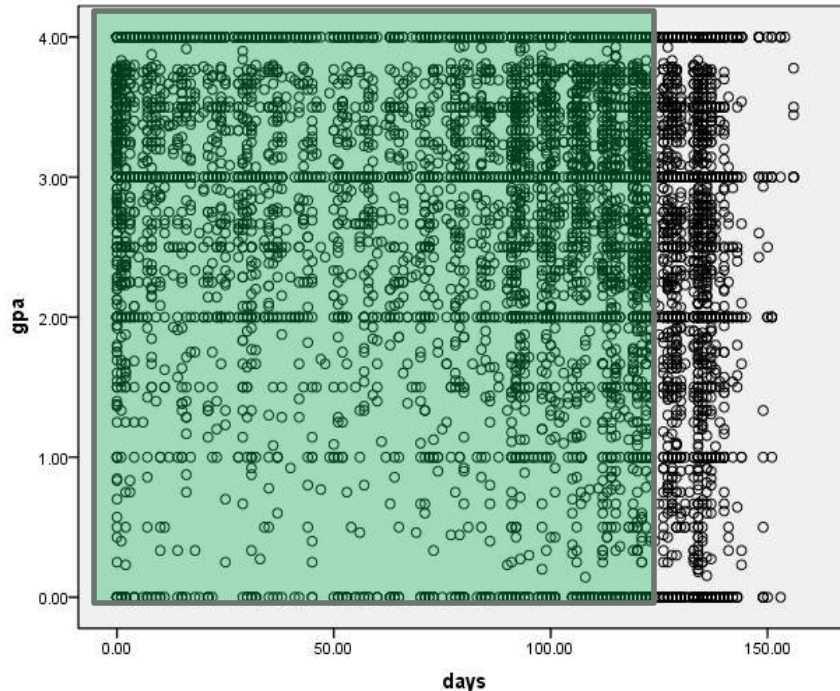
Removing late registering students from the data results in the following:

- Increase in mean GPA from 2.69 to 2.81

- Decrease in percent of drops from 25% to 20%

- Decrease in percent of males from 35% to 32%

- Decrease in percent part-time students from 55% to 52%

- Decrease in percent of developmental students from 20% to 17%

Key Considerations in Interpreting and Applying Results

- Statistically weak but significant findings can promote action oriented approaches

- A finding that reflects the minority of cases can lead to changes that affect the majority of cases

- Implementing a neutral approach to data interpretation can facilitate the development of alternative explanations for a given outcome

- In many scenarios, limited or no action may be the best strategy