

**UNIVERSITY OF ILLINOIS**  
AT URBANA-CHAMPAIGN

**We Know Where They Went,  
but Where Did They Come From?**  
**Analysis of Illinois High School Students, Feeder Schools,  
and Postsecondary Enrollment**

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Illinois Education Research Symposium  
June 11-12, 2012



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## Project STEP-UP

- Calls to increase entrance into and persistence in STEM (Science, Technology, Engineering, and Mathematics) fields at postsecondary level
- STEM Trends In Enrollment & Persistence for Underrepresented Populations (STEP-UP)
- Investigates trends such as factors that impact undergraduate students' access to and persistence in STEM fields
  - Gender
  - Race/Ethnicity
  - Socioeconomic Status
  - Type of STEM Field



## Purpose of Study

- Large, public, research universities are one avenue of access to postsecondary education and STEM fields
- Investigate characteristics of Illinois public high schools that are 'feeder schools' to large, public, research universities
  - Emphasis on high schools that result in entrance into/persistence in STEM
- Seek to inform recruitment efforts of universities and STEM programs



## Research Questions

- What are the characteristics of Illinois public high schools that are feeder schools to large, public, research universities?
- What are the characteristics of college students who attended Illinois public high schools, by feeder status?
- How does entrance into STEM majors in college differ by feeder school status for students who attended Illinois public high schools?
- What are the postsecondary outcomes by feeder school status ?



## Data

- Mellon Foundation's Public University Dataset
  - 8 large, public, research universities
  - First-time, full-time, domestic students
  - Fall 1999– Spring 2005
- Restricted to students that attended Illinois public high schools
  - Total number of students = 6,781
  - Total number of schools = 480
- Merged data with
  - ISBE Illinois Report Card (1999)
  - U.S. Department of Education's Common Core Data (1999)



## Methods

- Descriptive statistics and cross-tabulations
- Types of Feeder Schools
  - High Feeder (76-170 students)
  - Moderate Feeder (46-75 students)
  - Low Feeder (16-45 students)
  - Non-Feeder (0-15 students)
- STEM Majors
  - Physical Sciences, Computer Science, Math, Engineering, Biological Sciences, Agricultural Sciences, Health Sciences, and Psychology



# Student Demographics (n=6,781)

Variables	N	%
Gender		
Male	3,374	49.8%
Female	3,407	50.2%
Race and Ethnicity		
White, not Hispanic	5,161	76.1%
Asian or Pacific Islander	749	11.0%
Black, not Hispanic	446	6.6%
Latino/a	323	4.8%
Other Race/Ethnicity	102	1.5%
Major Category		
STEM	2,686	39.6%
Non-STEM	4,095	60.4%

*Source: Project STEP-UP Survey, 2012. Authors' Calculations*



# High School Characteristics

Feeder school level (n=480)

Non-Feeder	368	76.7%
Low Feeder	68	14.2%
Moderate Feeder	27	5.6%
High Feeder	17	3.5%

Location type (n=475)

Urban	79	16.6%
Suburban	165	34.7%
Town	91	19.2%
Rural	140	29.5%

Enrollment Level (n=480)

52 – 317	120	25.0%
318 – 719	120	25.0%
720 – 1524	120	25.0%
1525 – 4268	120	25.0%

Racial composition (n=480)

No majority	19	4.0%
Majority White	413	86.0%
Majority Black	38	7.9%
Majority Latino	10	2.1%





# High School Characteristics

Poverty Level (n=480)

1st quartile 0 – 25%	369	76.9%
2nd quartile 26% - 50%	64	13.3%
3rd quartile 51% - 75%	19	4.0%
4th quartile 75% – 100%	28	5.8%

Avg. ACT(n=480)

1st quartile [13.9–16.975]	31	6.5%
2nd quartile (16.98–20.05]	53	11.0%
3rd quartile [20.05–23.15]	348	72.5%
4th quartile (23.15–26.2]	48	10.0%

Graduation Rates (n=480)

Less than 51%	4	0.8%
51% to 67%	28	5.8%
68% to 83%	147	30.6%
More than 83%	301	62.7%



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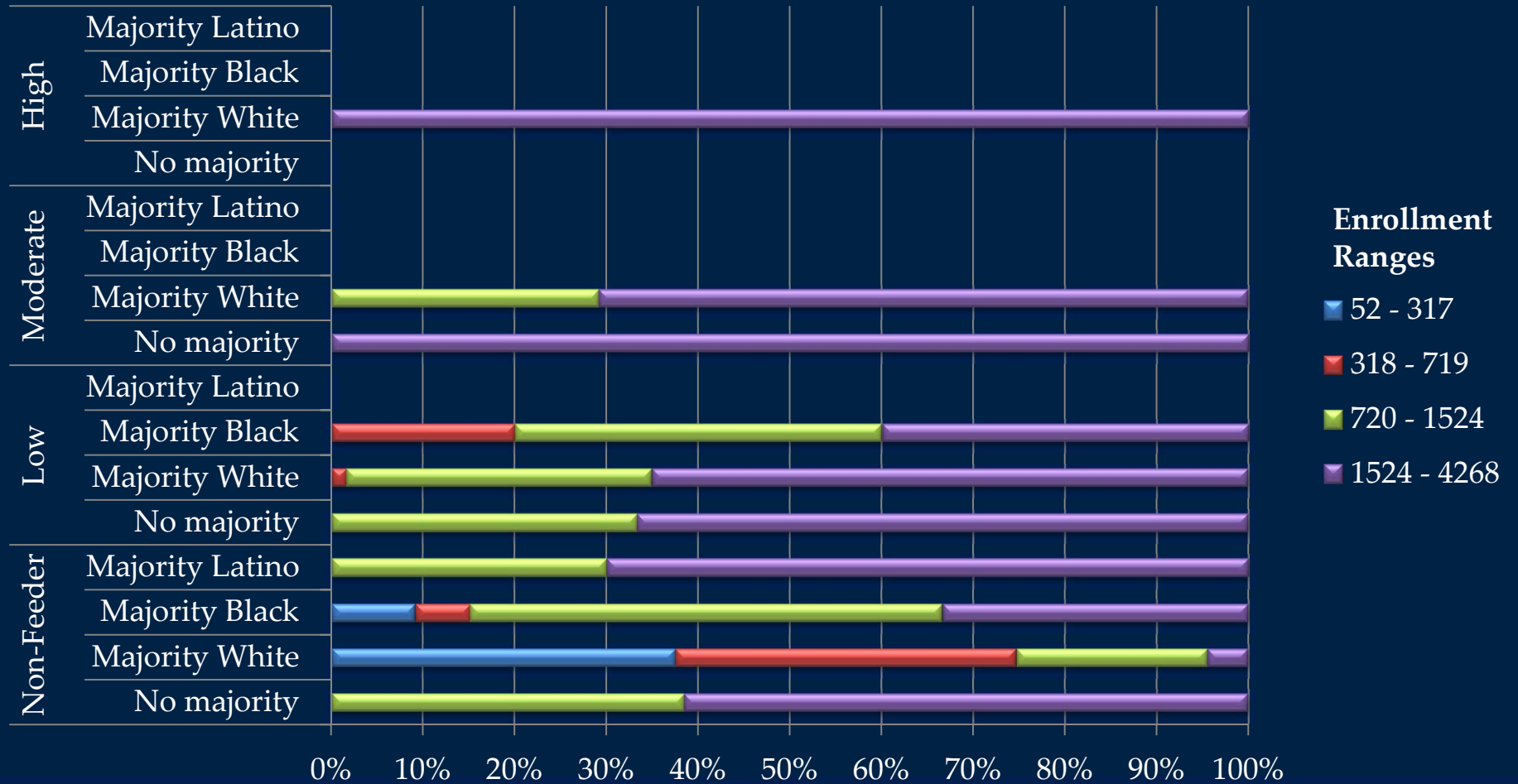
# School Characteristics by Feeder School

		Non-Feeder	Low Feeder	Moderate Feeder	High Feeder
Racial Composition (n=480)	No majority	3.5%	4.4%	11.1%	.0%
	Majority White	84.8%	88.2%	88.9%	100.0%
	Majority Black	9.0%	7.4%	.0%	.0%
	Majority Latino	2.7%	.0%	.0%	.0%
School Poverty Level (n=480)	1st quartile [0–25]	74.7%	79.4%	85.2%	100.0%
	2nd quartile (25–50]	13.6%	14.7%	14.8%	.0%
	3rd quartile (50–75]	4.3%	4.4%	.0%	.0%
	4th quartile (75–100]	7.3%	1.5%	.0%	.0%
Avg. School ACT (n=480)	1st quartile [13.9–16.975]	8.2%	1.5%	.0%	.0%
	2nd quartile (16.98–20.05]	13.0%	7.4%	.0%	.0%
	3rd quartile [20.05–23.125]	74.5%	76.5%	59.3%	35.3%
	4th quartile (23.125–26.2]	4.3%	14.7%	40.7%	64.7%
School Locale (n=475)	Urban	14.3%	29.4%	22.2%	5.9%
	Suburban	23.7%	64.7%	74.1%	88.2%
	Town	24.2%	4.4%	.0%	.0%
	Rural	37.7%	1.5%	3.7%	5.9%
Graduation Rate (n=480)	Less than 51%	1.1%	.0%	.0%	.0%
	51% to 67%	7.1%	2.9%	.0%	.0%
	68% to 83%	33.7%	32.4%	3.7%	.0%
	More than 83%	58.2%	64.7%	96.3%	100.0%
School Enrollment (n=480)	52 – 317	32.6%	.0%	.0%	.0%
	318 – 719	32.1%	2.9%	.0%	.0%
	720 – 1524	24.5%	33.8%	25.9%	.0%
	1525 – 4268	10.9%	63.2%	74.1%	100.0%



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## School Enrollment of Feeder Schools Categorized by School Racial Composition



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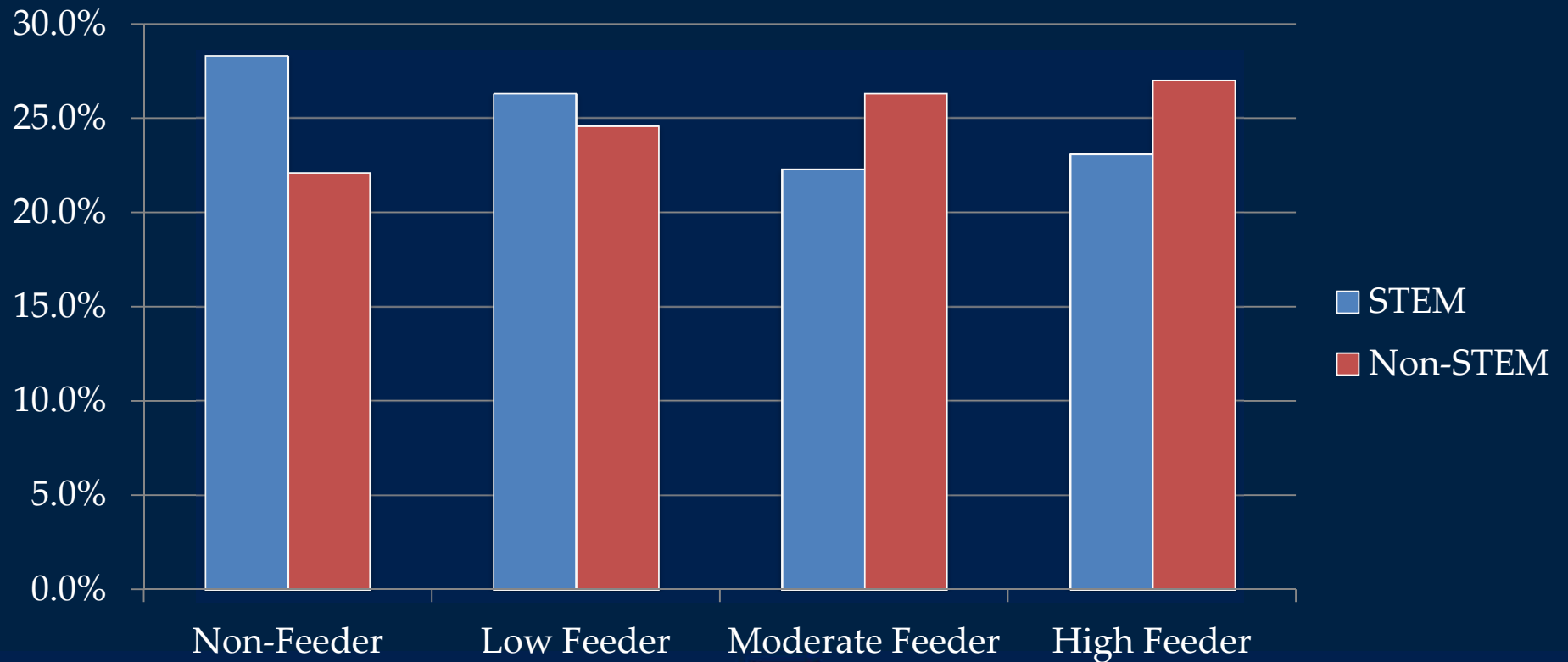
# Student Characteristics by Feeder School

		Non-Feeder	Low Feeder	Moderate Feeder	High Feeder
Gender (n=6,781)	Male (n=3374)	24.5%	25.1%	24.3%	26.1%
	Female (n=3,407)	24.7%	25.5%	25.1%	24.8%
Race/Ethnicity (n=6,781)	White (n=5,161)	24.8%	26.1%	23.8%	25.2%
	Black (n=446)	49.3%	20.9%	21.7%	8.1%
	Latino (n=323)	28.2%	30.7%	26.9%	14.2%
	Asian (n=749)	7.2%	19.9%	31.9%	41.0%
	Other (n=102)	21.6%	24.5%	20.6%	33.3%
FAFSA Filers (n=6,781)	Yes (n=4,894)	28.6%	26.2%	23.9%	21.3%
	No (n=1,887)	14.1%	23.1%	26.6%	36.2%
Pell Recipient (n=4,894)	Yes (n=884)	44.5%	23.0%	22.5%	10.1%
	No (n=4,010)	25.1%	26.9%	24.3%	23.8%
Father's Education (n=4,687)	High School or Less (n=1,602)	37.9%	25.6%	21.8%	14.7%
	Some college or more (n=3,085)	23.1%	26.8%	25.0%	25.1%
Mother's Education (n=4,778)	High School or Less (n=1,731)	34.6%	26.1%	22.8%	16.5%
	Some college or more (n=3,047)	25.1%	26.0%	24.6%	24.3%
Persistence	Graduated (n=5,482)	23.3%	25.0%	25.5%	26.2%
	Still enrolled (n=29)	41.4%	20.7%	20.7%	17.2%
	Other (n=1,270)	29.8%	26.6%	21.3%	22.4%



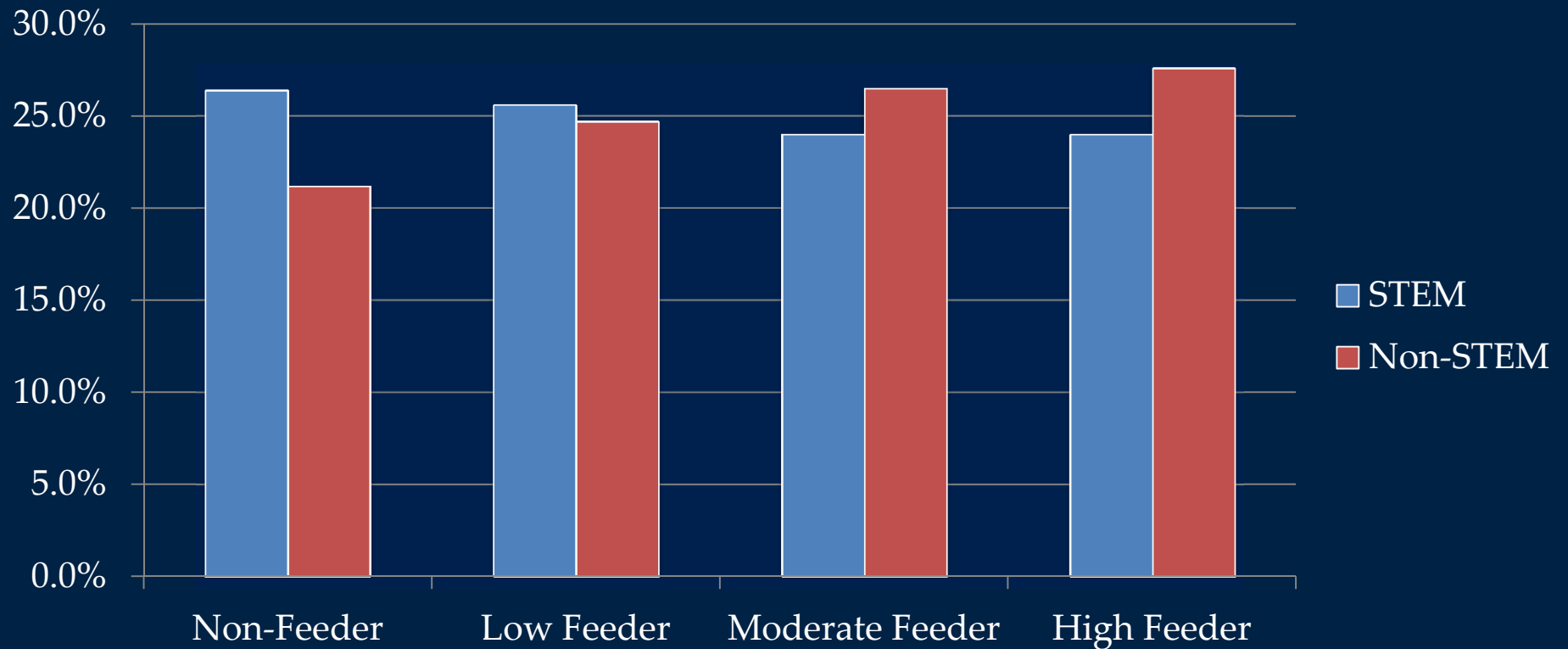
# Characteristics of STEM/Non-STEM Students

Student First Major by Feeder School  
(n=6,781)



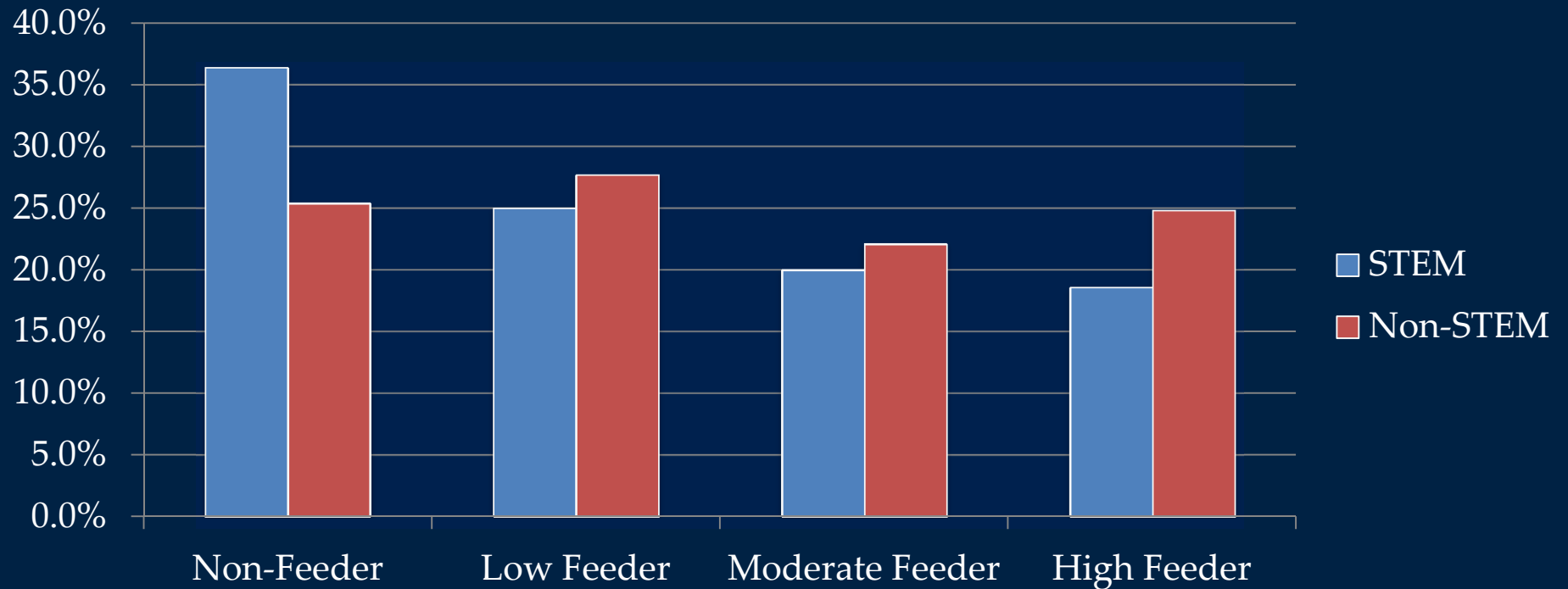
# Characteristics of STEM/Non-STEM Students

Student Last Major by Feeder School  
(n=5,482)



# Characteristics of STEM/Non-STEM Students

First Major of Student that Dropped Out/Stopped Out/Transferred Out by Feeder School  
(n=1270)



## Implications

- Useful for college administrators in targeted postsecondary and STEM recruitment programs, especially of Illinois students
  - Recruitment from lower feeder schools may be sought as a way to improve diversity efforts across large, public universities and the STEM fields, but need to help students graduate in timely manner
  - Aids in efforts to strengthen STEM education and workforce
  - Differing states' interests (IL, border states, other states)
- Possible intersection and interactions of SES, feeder school status, and choice of major





## Limitations

- Data is not current, and school-level factors such as L.E.P may have changed due to recent demographic shifts
- High school teacher information was not available
- IL Report Card data was missing for some schools
- No information on college applicants or admitted students who did not enroll in 8 universities
- Generalizability is limited to large, public, research universities
- Cannot distinguish between those who dropped out, stopped out or transferred out within Mellon dataset



## Future Research

- Further investigations of academic qualifications as measured by student's ACT score, student's ACT score in relation to average high school, college, and major ACT scores
- Incorporate comparisons to students who attended high schools in other states
- Disaggregate STEM fields to identify additional differences
- Re-run analysis with dichotomous feeder school variable



## Conclusion

- Exploratory findings confirm need to further investigate feeder schools as they relate to STEM entrance and persistence at large, public, research universities
- Institutions should review recruitment and enrollment management strategies, and potential reliance on feeder schools for admissions purposes
  - Maximize recruitment efforts into STEM
  - Students may not be where we expect to find them



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This material is based upon work supported by the National Science Foundation under Grant No. 0856309. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.



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