

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

Rethinking the STEM Fields: The
Importance of Definitions in
Examining Women's Participation and
Success in the Sciences

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Final Defense
Educational Policy Studies

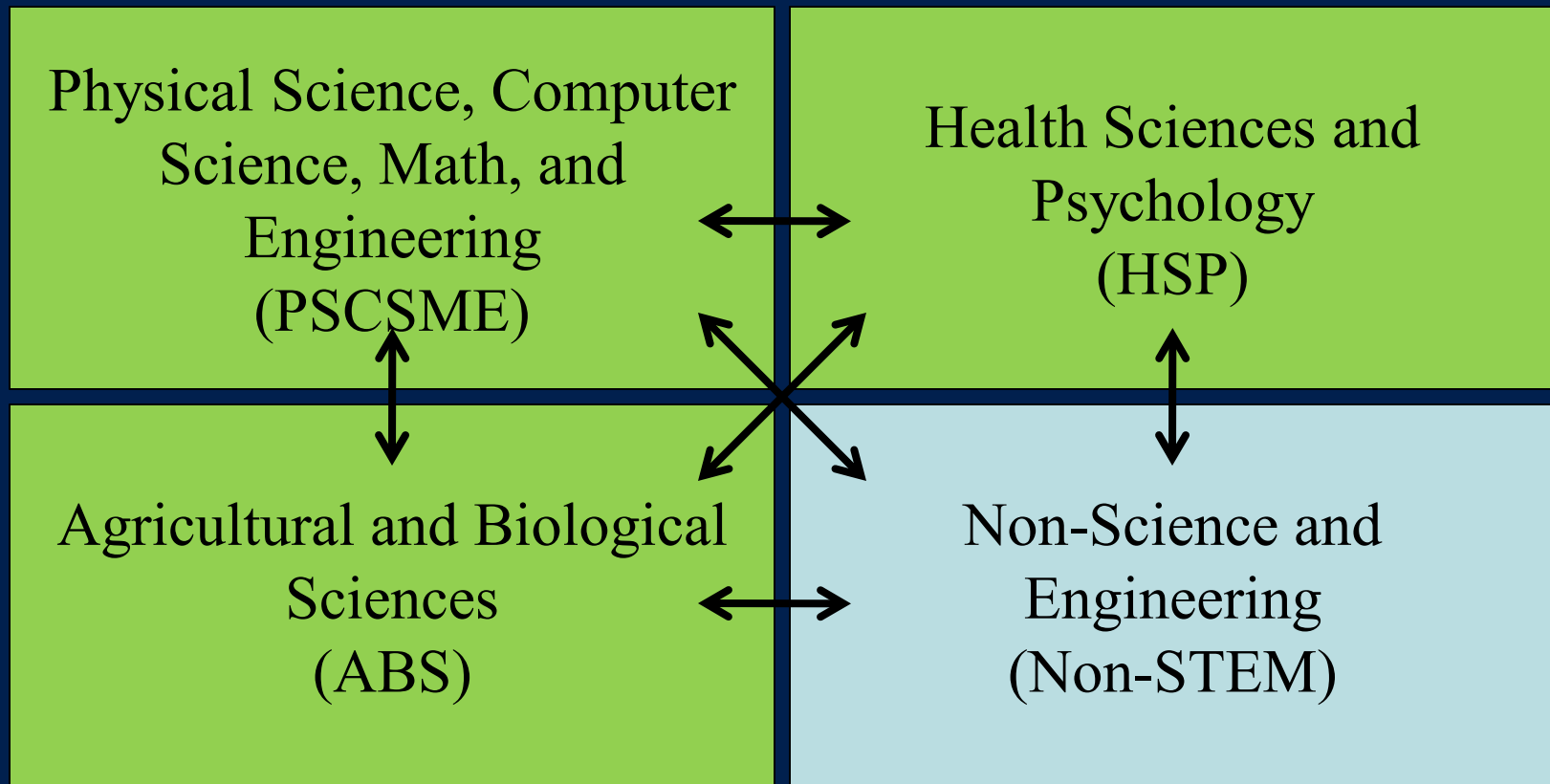


Purpose of the Study

- Connection between social stratification, higher education and major field of choice
- Research undergraduate students' choice of and persistence in majors to better understand participation in STEM
- Investigates women's participation in STEM fields at 5 public, land-grant universities



Major Field Categories



Research Questions & Methodology

Topic of Investigation	Methodology
1. Initial Major Choice	<ul style="list-style-type: none"> • Descriptive Statistics • Cross-Tabulations
2. Persistence in Majors	<ul style="list-style-type: none"> • Descriptive Statistics • Cross-Tabulations
3. Switching Majors -Where? -When? -Impact on GPA?	<ul style="list-style-type: none"> • Descriptive Statistics • Cross-Tabulations
4. Factors that Impact Persistence	<ul style="list-style-type: none"> • Binary Logistic Regression
5. Time-to-Degree	<ul style="list-style-type: none"> • Descriptive Statistics • Cross-Tabulations



Data

- Mellon Foundation's *Public University Database*
- 5 public, land-grant universities
- First-time, full-time, domestic freshman who began college in Fall 1999 and completed a bachelor's degree within 6 years (n=16,850)
- Information is examined on an academic year-basis
- Variables
 - Socio-demographic information
 - Academic preparation
 - College information
 - Financial Aid information (for FAFSA filers)

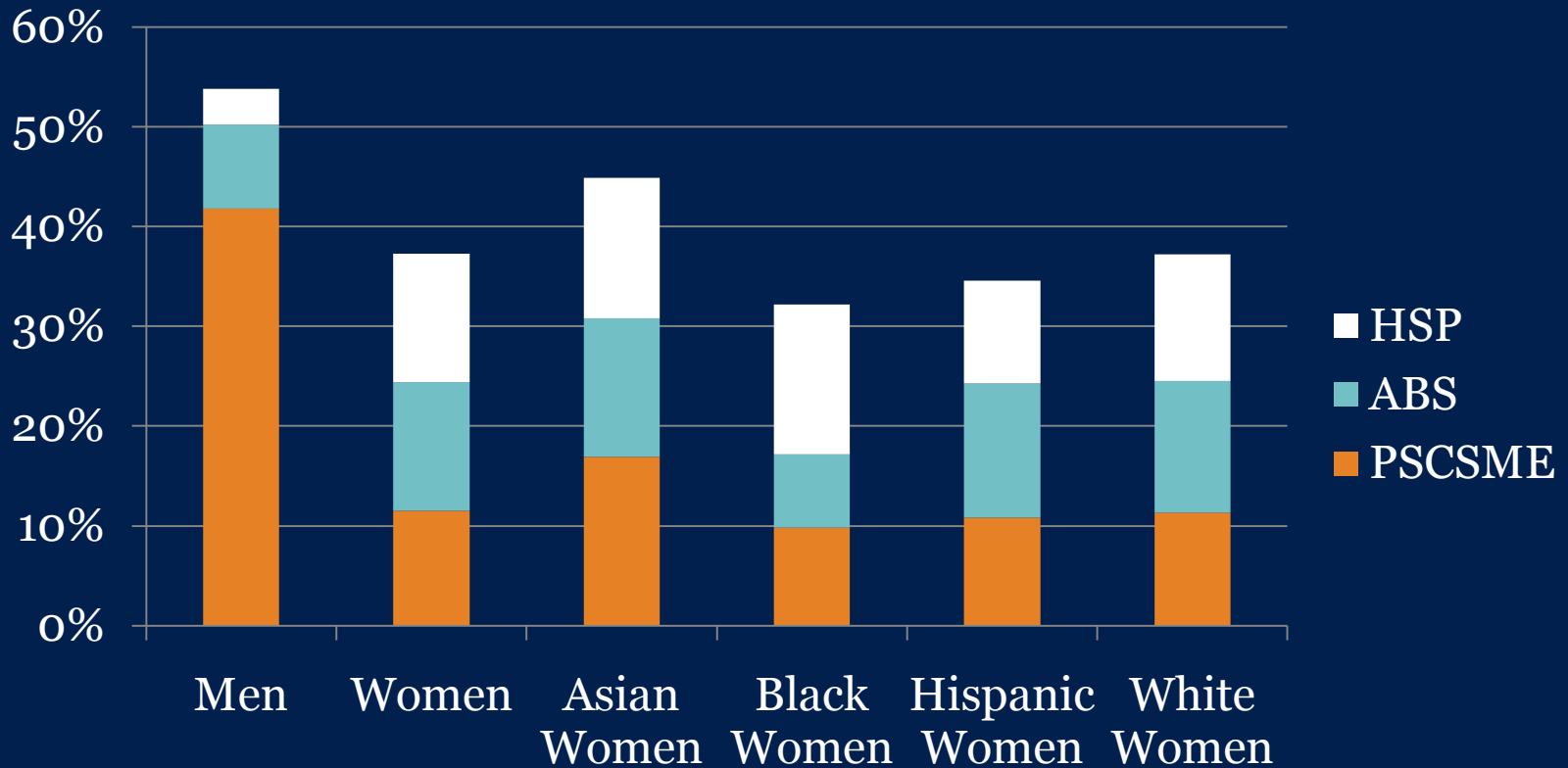


Profile of Undergraduates

Male	50.8%
Female	49.2%
Asian	5.9%
Black	4.1%
Hispanic	2.4%
Native American, Other, Unknown	1.5%
White	86%
Out-of-State	34.3%
In-State	65.7%
Average SAT Math	603
Average SAT Verbal	579
Average SAT Total	1181



Initial Major Choice

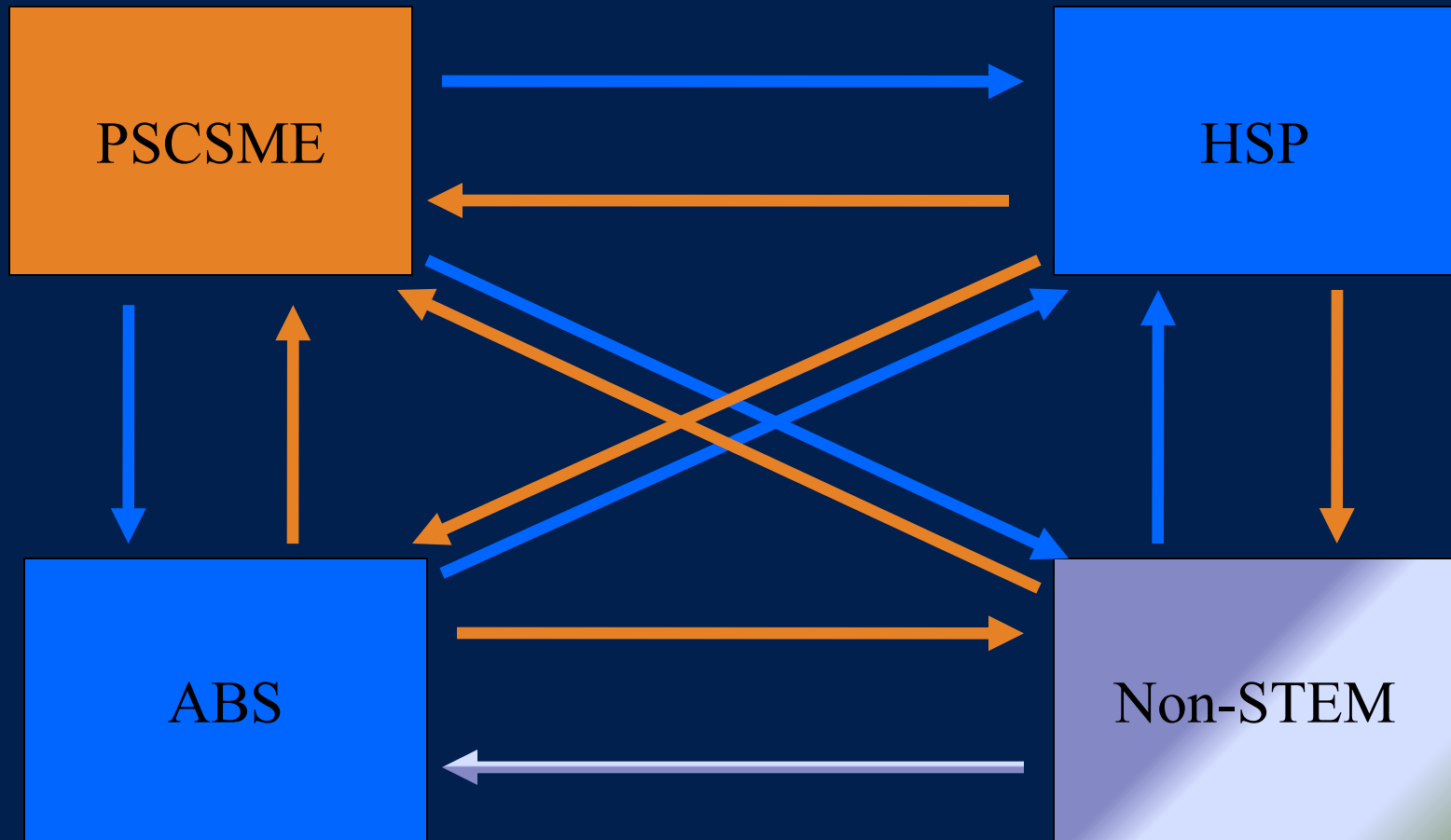


Persistence in Major

- PSCSME- Men out-persisted women
- ABS and HSP- Women out-persisted men
- Asian women persisted at higher rates in PSCSME
- Black women have lowest levels of persistence in PSCSME and ABS
- Hispanic women persisted at the same rate as white women in PSCSME and ABS, and a higher rates than Asian and Black women in ABS



Switching Majors



Switching Majors (con't)

- Most students switched majors in their 4th or 5th academic year
- Women tended to switch majors earlier than men
- Black women tended to switch majors later than Asian, Hispanic, and white women
- Students who persisted had higher cumulative GPAs than those who switched
- Women had higher cumulative GPAs except:
 - ABS to HSP
 - HSP to PSCSME
 - HSP to ABS



Factors that Impact Persistence

- Being female had a negative impact on persisting in PSCSME but a positive impact on HSP
- Context matters, particularly for female students
- Being an in-state resident had a negative impact on persisting in PSCSME
- Lower levels of parental income had a negative impact on persisting in HSP and Non-STEM
- Within women, race and ethnicity were non-significant (FAFSA: Hispanic had a positive impact on PSCSME)



Time-to-Degree

- Regardless of persistence status and last major category, women graduated faster than men
- Black and Hispanic women who persisted in the three STEM categories took longer to graduate, except for Hispanic women in HSP
- Importance of examining time-to-degree beyond 4 academic years
- Possible costs associated with “program shopping” do not appear to be burdensome



Limitations

- Data:
 - Secondary data
 - Limited generalizability
 - Selection bias
- Methodology
 - Inclusion criteria
 - First and last major
 - Movement between major fields



Future Research

- Larger research project
 - Investigate intervention programs on campuses
 - Survey current students
- Incorporate additional data
 - *Common Core Dataset*
 - *U.S. Office of Civil Rights Data*
 - *Baccalaureate and Beyond*
- Examine male students
- Examine switching within categories & by semester



Significance of the Study

- Use broad definition of STEM to better understand patterns of persistence and switching
- Examine persistence through degree completion
- Disaggregating by racial and ethnic groups revealed important differences within women's participation in STEM
- Offer alternative perspective on women's participation in STEM



Questions and Comments

