Course Repetition in College-level Mathematics Courses among Community College Transfer Students

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Introduction

- GOAL
  - To examine the course repetition patterns in college-level math courses among community college transfer students
- WHY and HOW this study matters
  - Taking additional credits is not good for students, institutions and the state.
    - Avoiding (or reducing) excess credits
  - Inform implementing state-level guided pathways
  - Developing institutional practices
    - Advising
    - Institutional research

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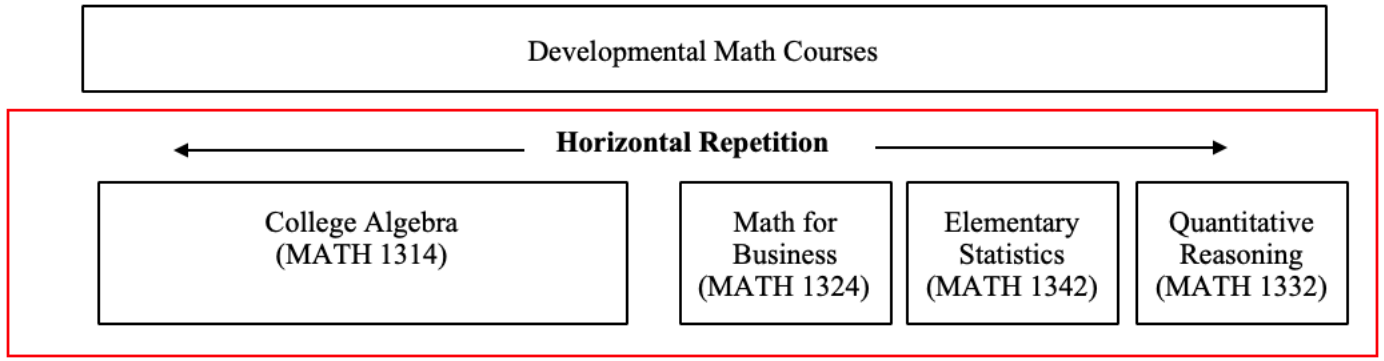
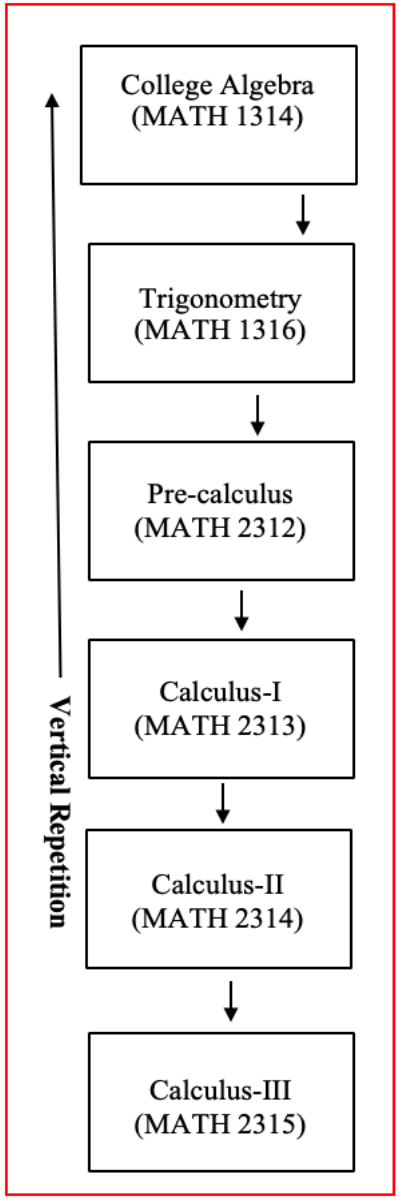
Types of Course Repetition





- Horizontal repetition (redundancy)
  - Taking additional gateway college-level math course even after already completing and passing another
  - For example, a students takes college algebra after completing and passing quantitative reasoning
- Vertical Repetition
  - Taking the same or lower level course after completing and passing
  - For example, a students takes college algebra after completing and passing trigonometry

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Research Questions

- How common is math course repetition among community college transfer students?
  - Horizontal and Vertical Repetition
- Where does the course repetition occur?
- Who experienced course repetition?
  - By students' backgrounds and students' college experiences
- Do college outcomes of students vary by students' course repetition status?
  - Cumulative GPA
  - Bachelor's degree attainment within six-years
  - Time to a degree among those who earned a bachelor's degree
  - Cumulative excess credits

Methodology

- DATA
  - The Texas Common Core Numbering System for math courses
  - ERC (Education Research Center)
  - Student-level transcript (course-taking) data from THECB
- SAMPLE
  - First-time community college starters (n=40, 885) in 2011-2012 and 2012-2013 in Texas
  - Those who transferred to a university within six-years of matriculation
  - Those who successfully *completed and passed* their first college-level math course at CC
- METHOD
  - Descriptive analysis

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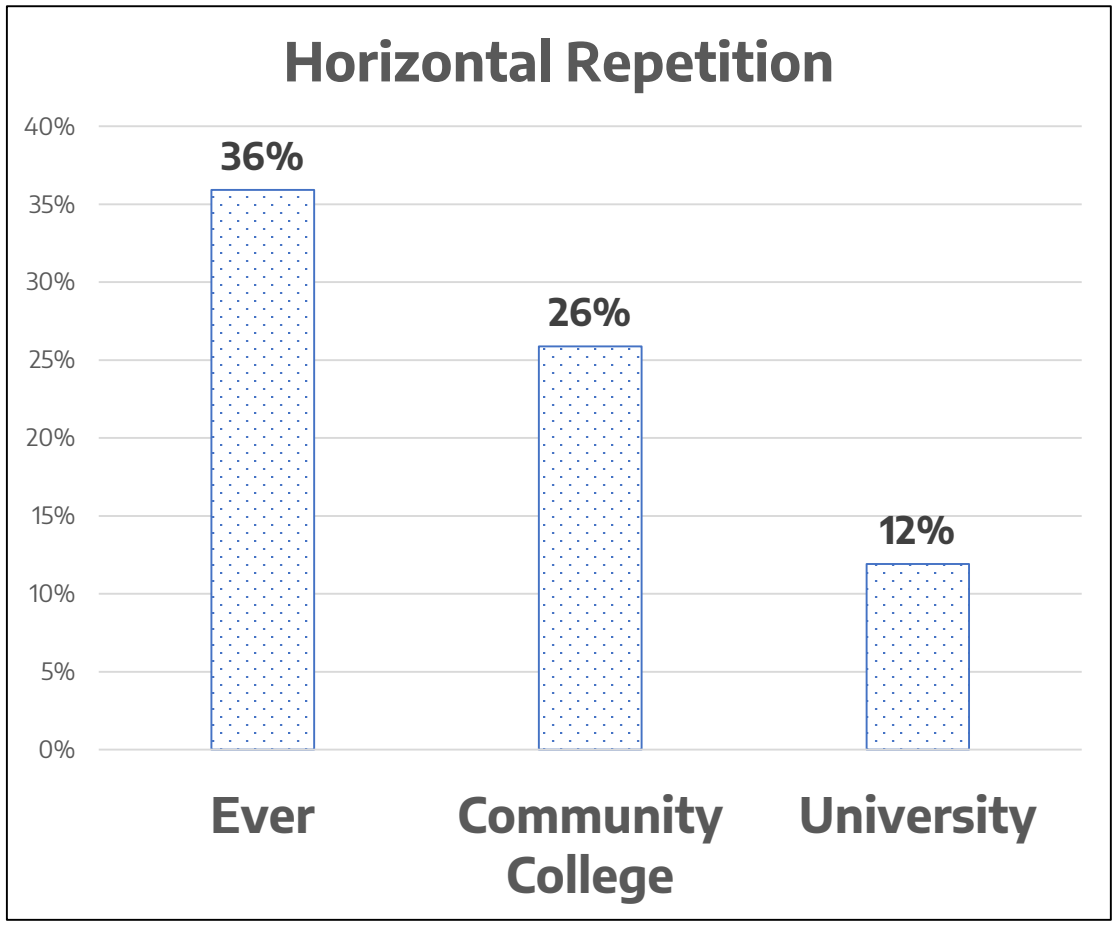
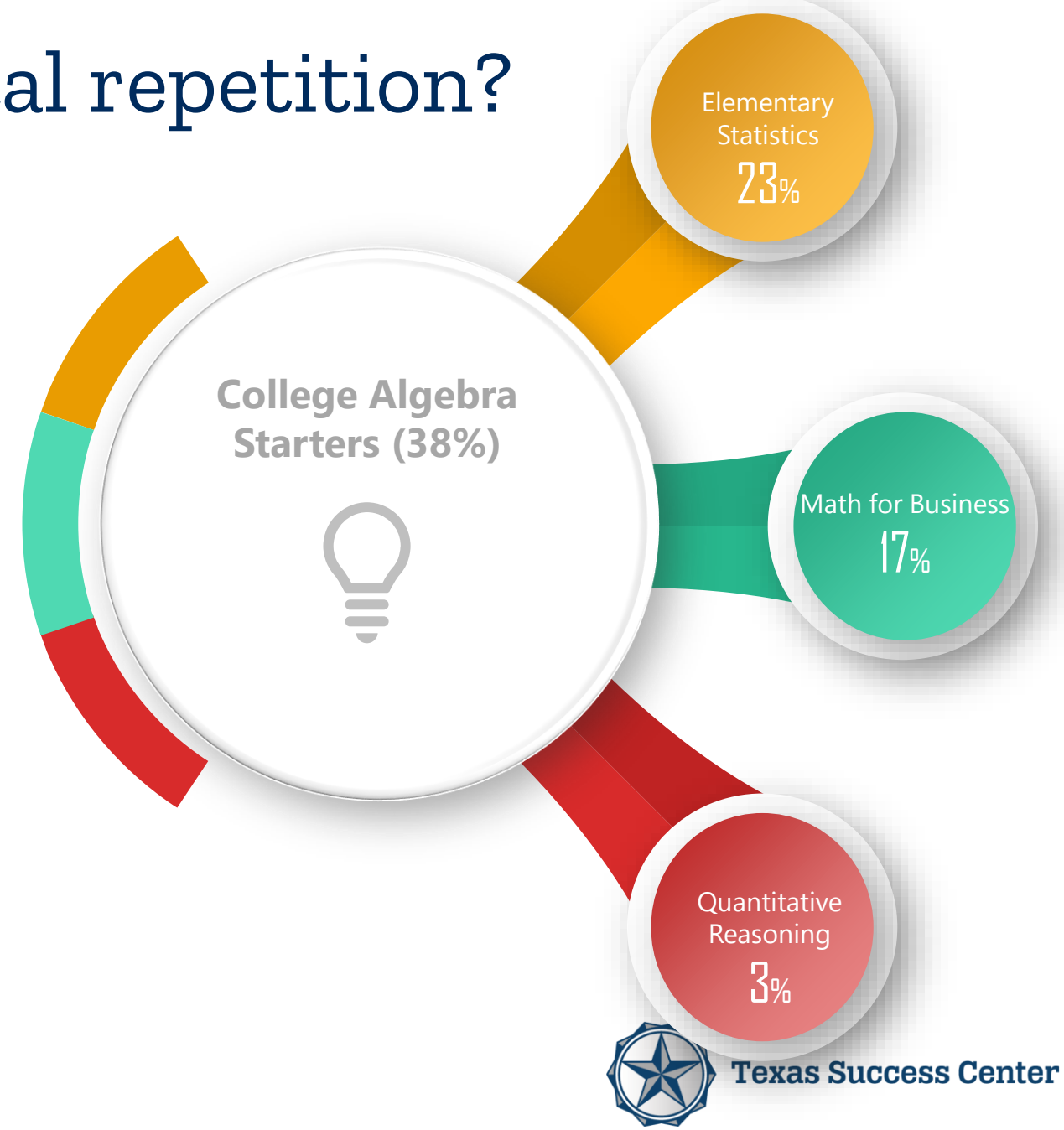
How common is horizontal repetition?





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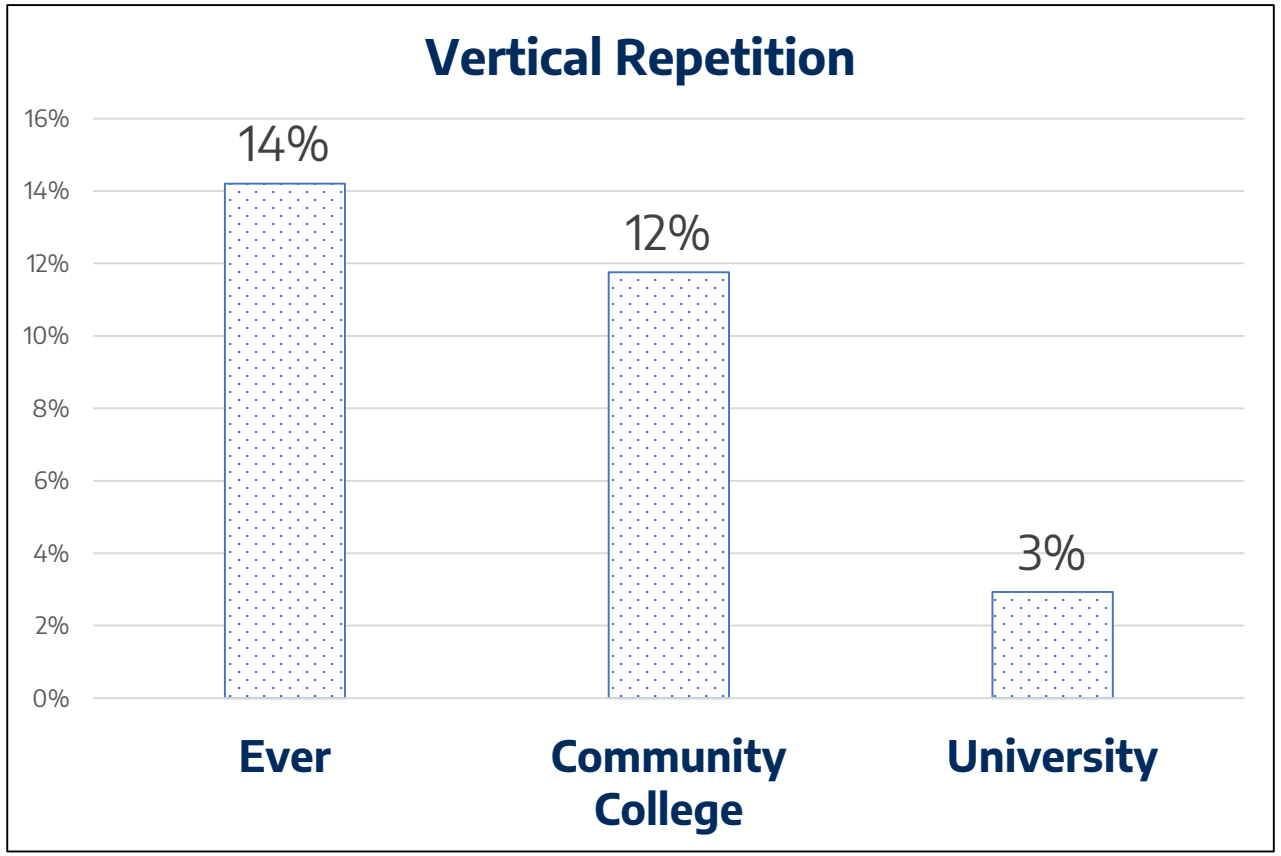
How common is vertical repetition?



- 14.2% of transfer students retook the same level or a lower-level course within the specific sequence.
- Vertical repetition also occurred more frequently at the community college level.
- Business calculus (49.49%), math for teachers-II (26.23%), trigonometry (23.48%), pre-calculus (20.31%), calculus-III (20.12%) were the most frequently repeated courses.
- Students who retook the same-level or lower-level course in a specific sequence accumulated 3.35 course credit hours (equivalent to one additional 3-credit hour courses)

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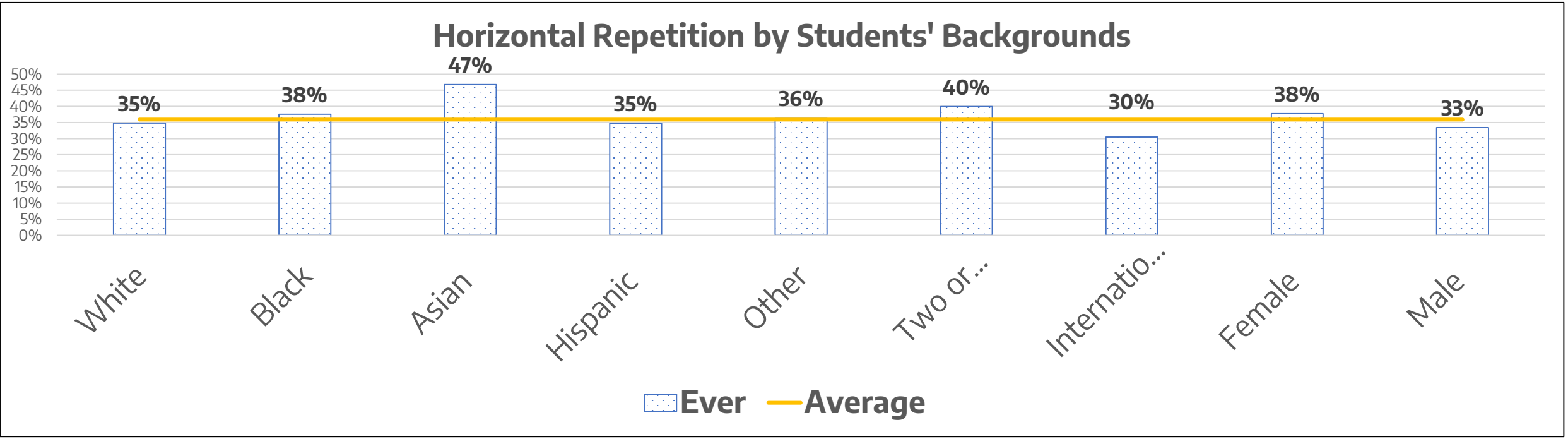
Who experienced horizontal course repetition?



- Asian -> the highest rate
- International students -> the lowest rate

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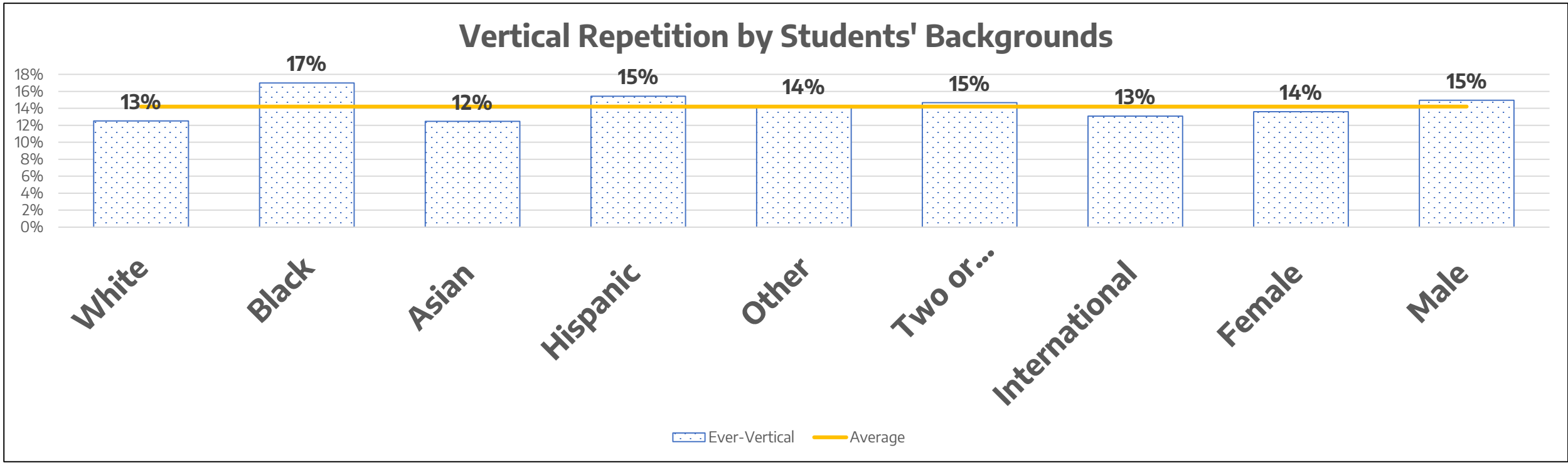
Who experienced vertical course repetition?



- Black -> the highest rate
- Asian-> the lowest rate

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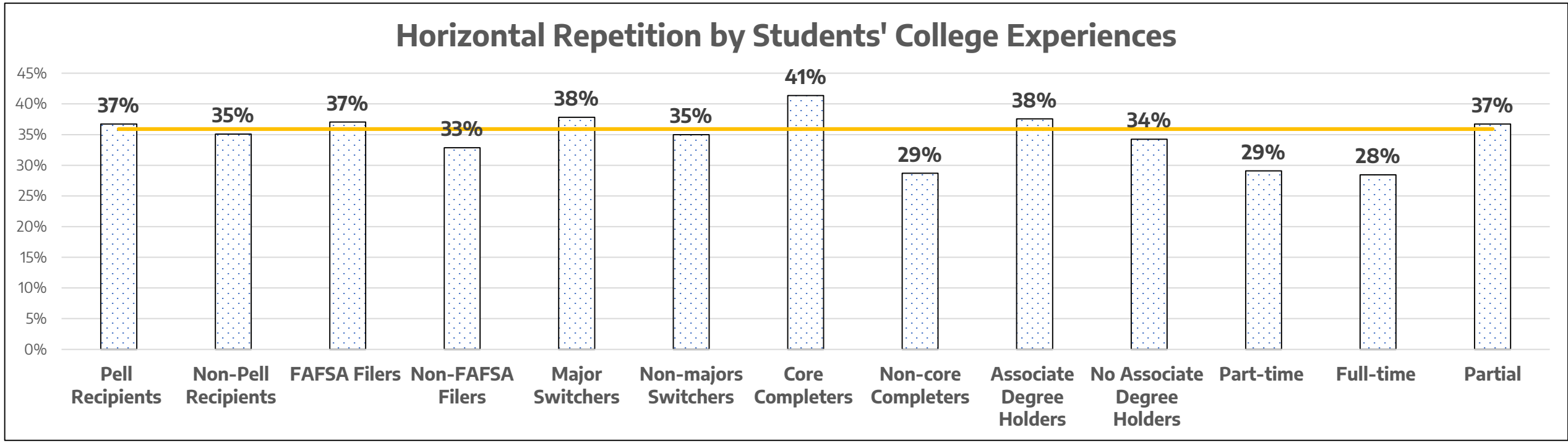
Who experienced horizontal course repetition?



- Difference between Core completers and non-core completers
- Difference between enrollment status

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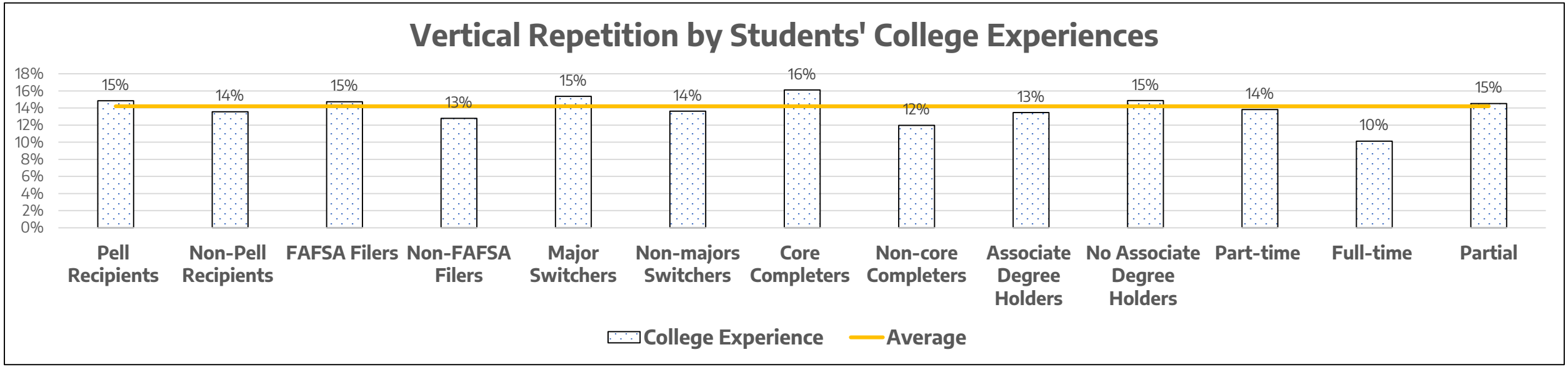
Who experienced vertical course repetition?



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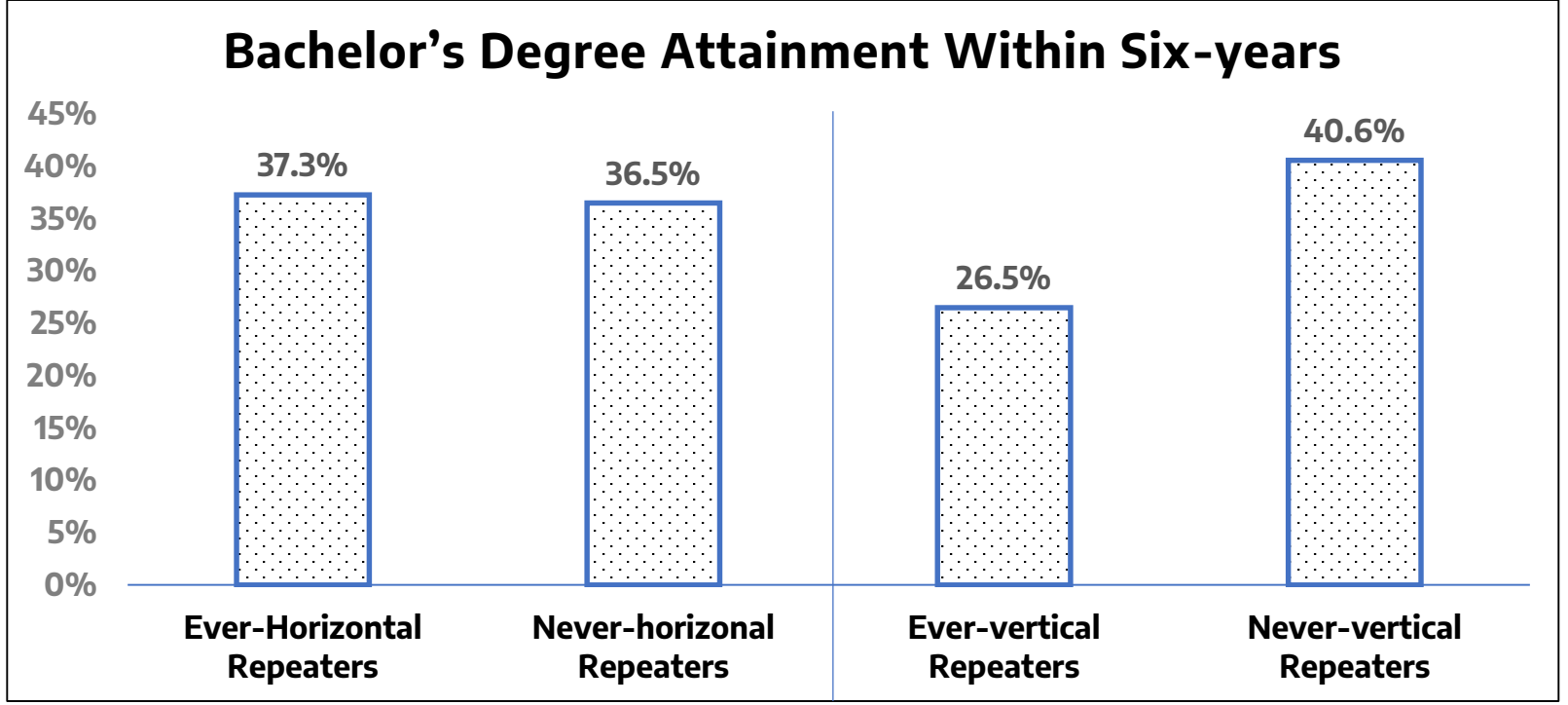

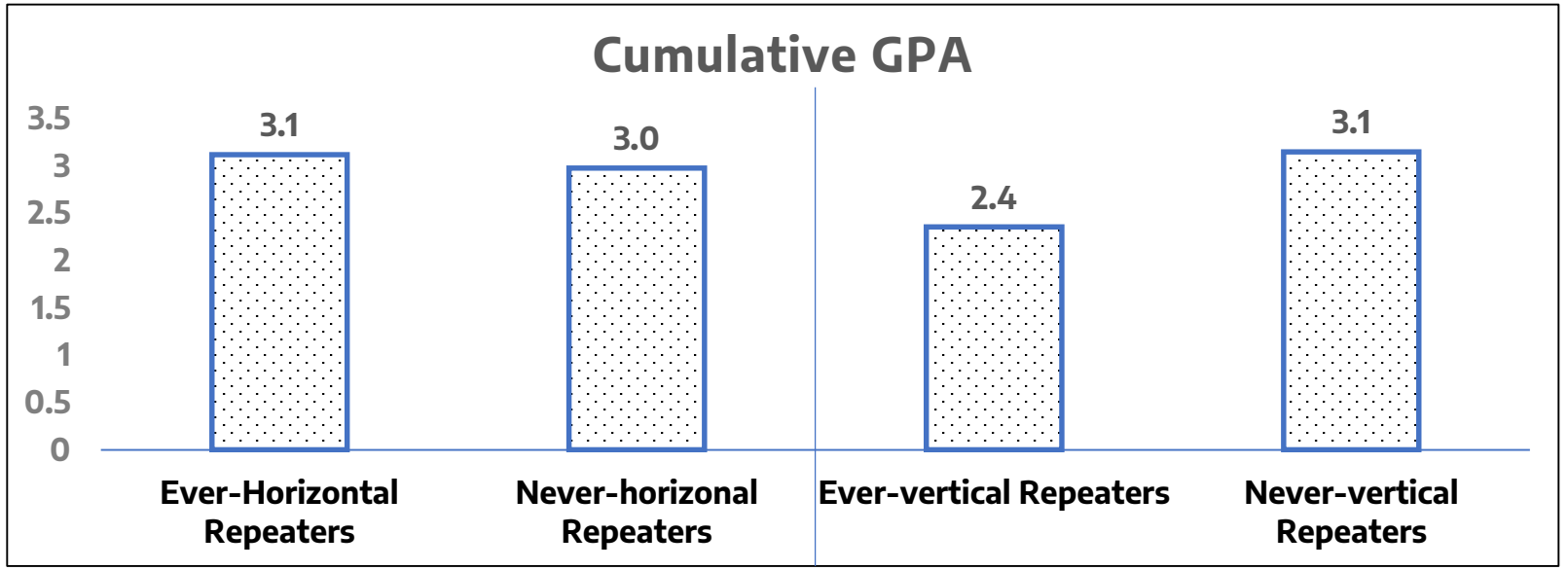

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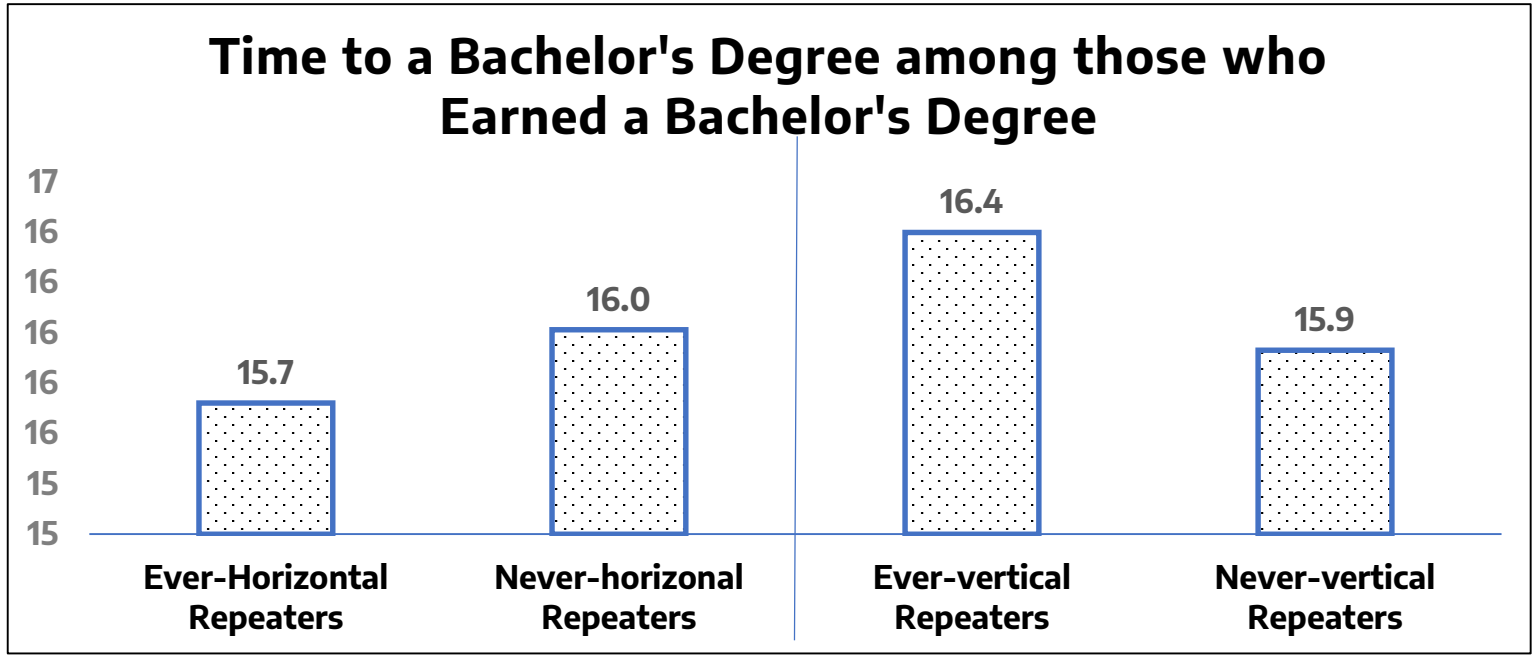

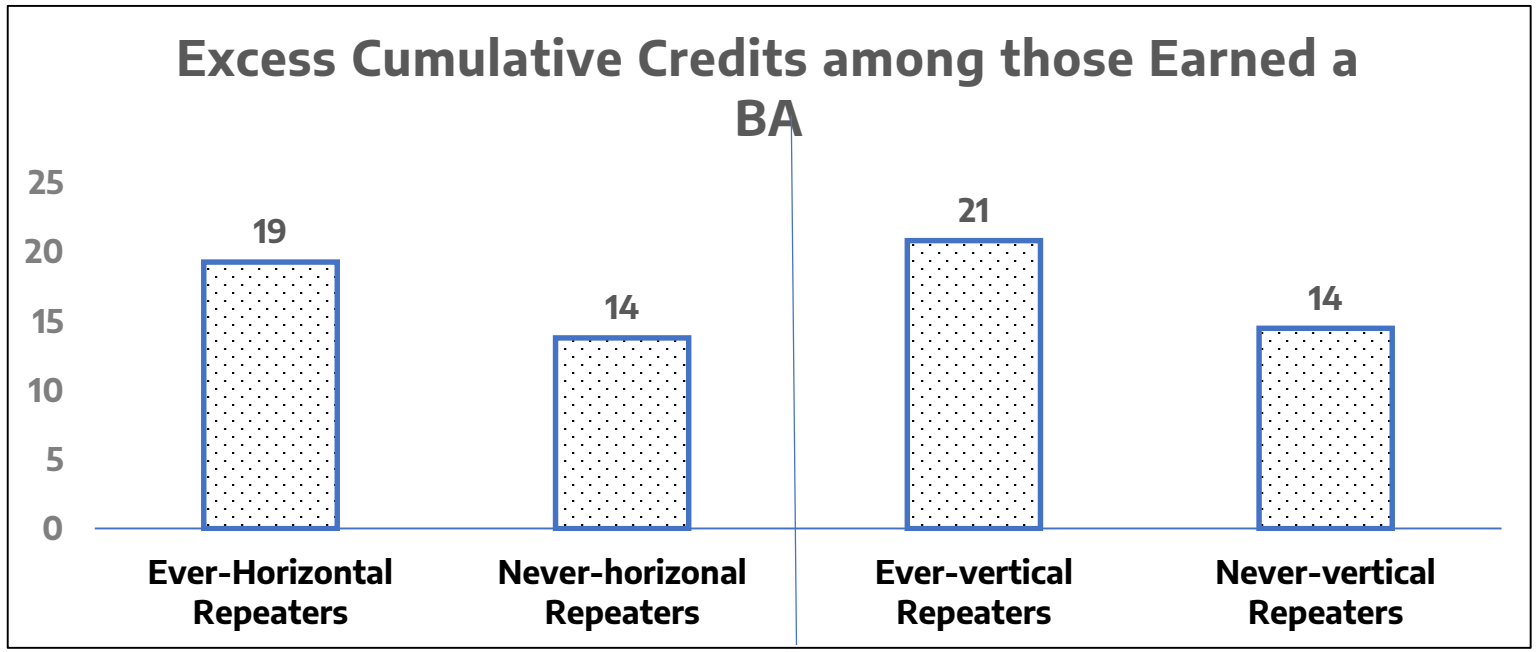

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Discussion and Implications

- Importance of aligning students' first college-level math course with meta majors
- Developing advising strategies
- Develop data analytics tools to identify course repetitions
  - Early warning system
  - Identify why certain courses are overrepresented (e.g., calculus for business)
- Use disaggregated data to examine course-taking patterns (e.g., race)

Next Steps

- Predict college outcomes (bachelor's degree attainment, time to a bachelor's degree, excess credits) by students' course repetition status
  - Logistic and OLS Regression