



## **Seeking Excellence and Diversity: How Stages in the Pipeline Affect the Composition of the New Teacher Corps**

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# Rationale

- There is a current focus on the composition of the teaching force, especially with regard to teachers' academic skills and racial/ethnic diversity.
  - Studies show that academically skilled teachers and racial/ethnic minority teachers can have positive effects on student outcomes (see, e.g., Dee, 2004; Hanushek, Kain, O'Brien, & Rivkin, 2005; Rockoff, Jacob, Kane, & Staiger 2011).
- Policy efforts aim to improve both the academic caliber and diversity of new teachers.
  - For example, the new standards for accreditation of teacher preparation programs adopted by the Council for Accreditation of Educator Preparation set average GPA and national exam (e.g., ACT, SAT, GRE) standards for entering cohorts and call for the recruitment of teacher candidates that reflect the diversity of U.S. students (CAEP, 2013).
- Concerns have been raised regarding states' and districts' ability to improve simultaneously the academic qualifications and diversity of teachers.
  - Prior efforts to improve the academic skills of the overall teaching force have been found to have a negative impact on teacher diversity (see, e.g., Gitomer, Latham, & Ziomek, 1999).

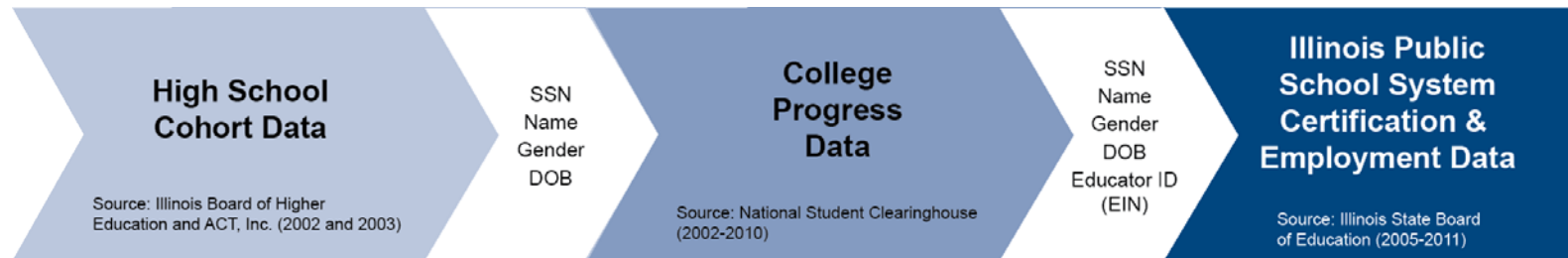
# Background

- Most existing teacher supply studies focus attention on one segment of the pipeline.
  - The majority start with college graduates and consider graduates' decisions to enter teaching (see, e.g., Bacolod, 2007; Podgursky, Monroe, & Watson, 2004).
  - A few studies have focused on earlier stages and found those to influence the composition of teacher supply as well (see, e.g., Hanushek & Pace, 1995; Reininger, 2006; Vegas, Murnane, & Willett, 2001).
- Much greater attention has been paid in this literature to prospective teachers' academic skills than to their race/ethnicity.
- In this study, we take a more comprehensive approach by examining how each stage in the pipeline from high school through college and initial teacher certification into teaching affects the racial/ethnic and academic composition of new entrants to the profession.

# Research Questions

1. What proportion of high school students eventually become teachers and how do the racial/ethnic and academic characteristics of teachers compare to the characteristics of the high school cohorts from which they came?
2. How does each stage in the new teacher pipeline affect our ability to attract an academically skilled, diverse teaching force? That is, as students advance from high school through college and teacher certification into teaching, how does their academic and racial/ethnic composition change?
3. What impact do early aspirations to teach have on students' progression and new teacher composition?

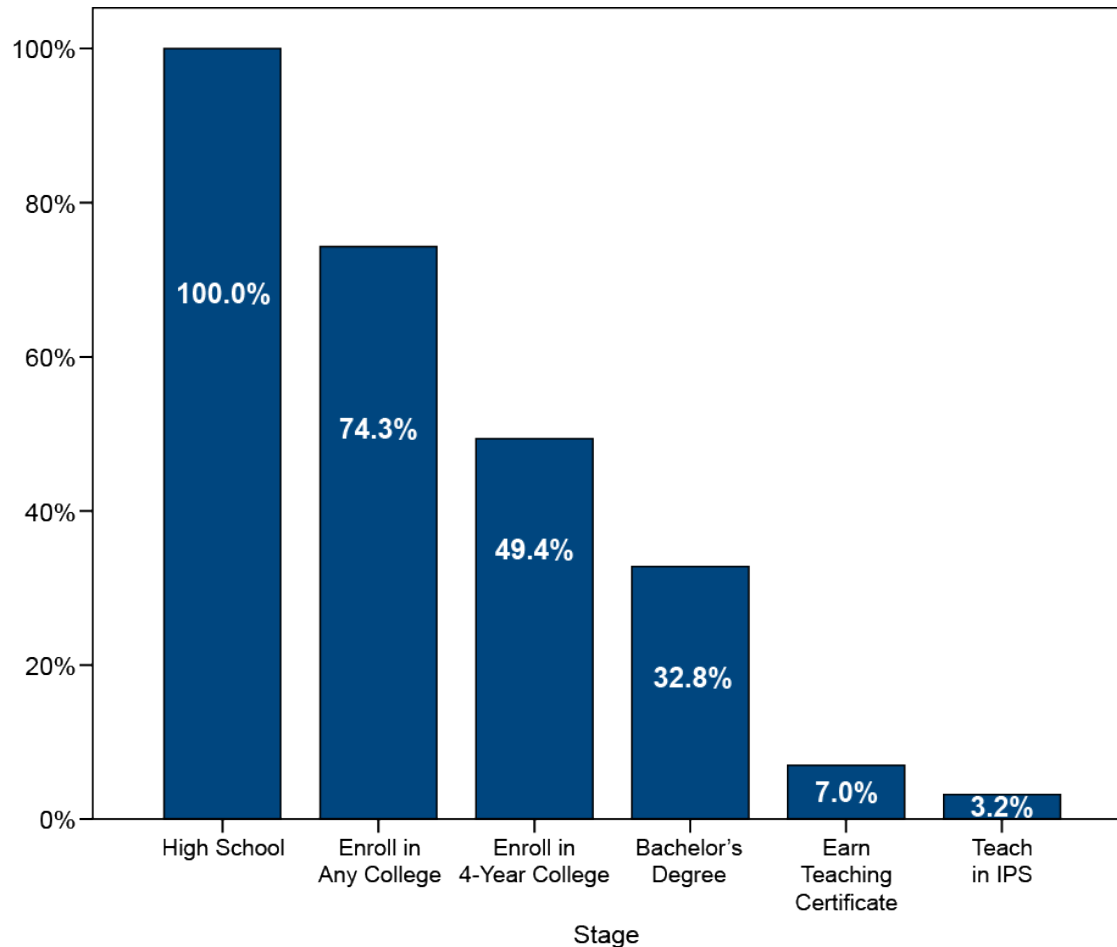
# Data and Methods



- Track the 2002 and 2003 cohorts of Illinois HS students (N=225,196) for about 10 years through the following stages:
  1. High school
  2. Enroll in *any* college
  3. Enroll in a *four-year* college
  4. Graduate with bachelor's degree (in any field)
  5. Earn teaching certificate
  6. Teach in a public school in Illinois

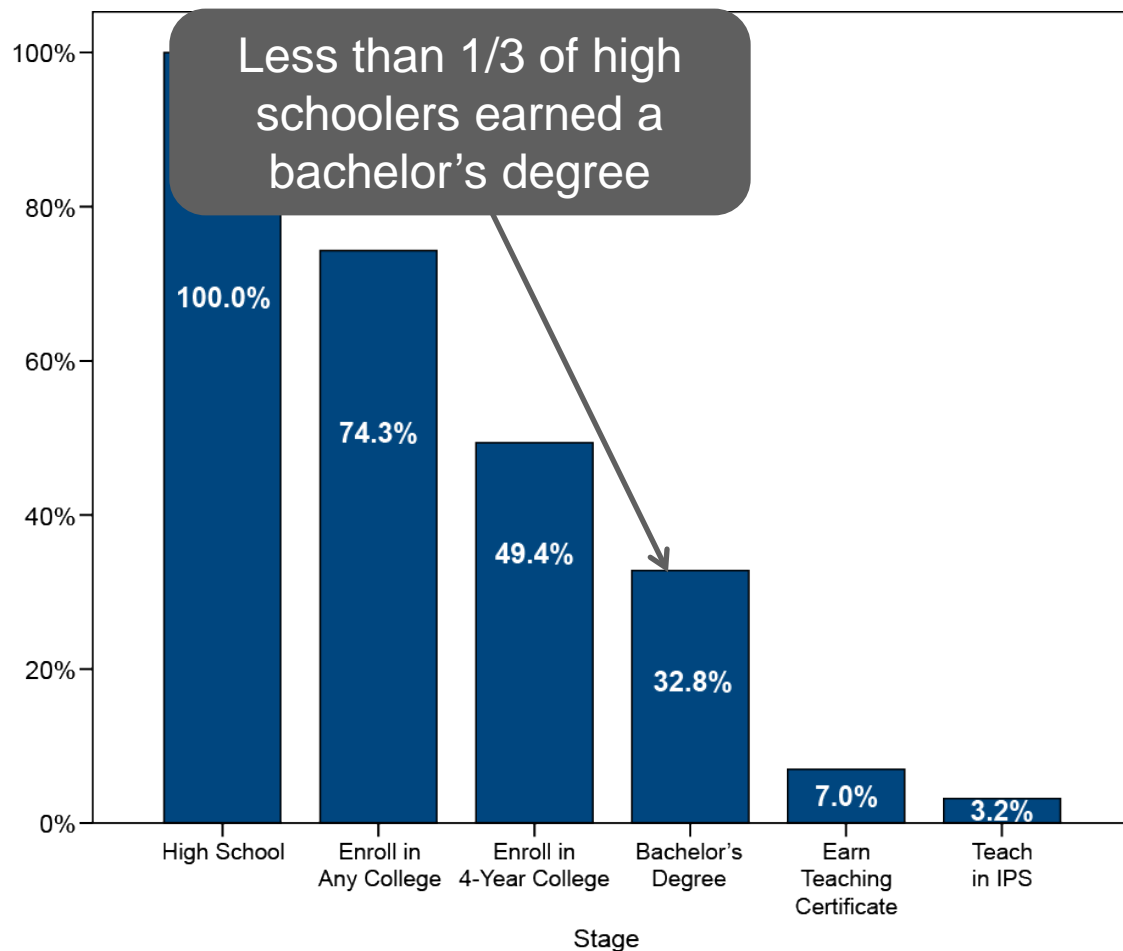
Use descriptive statistics and multivariate models to examine changes in the composition of the cohorts through the stages and conditional probabilities of completing each stage.

# What proportion of students progresses through each stage of the pipeline?



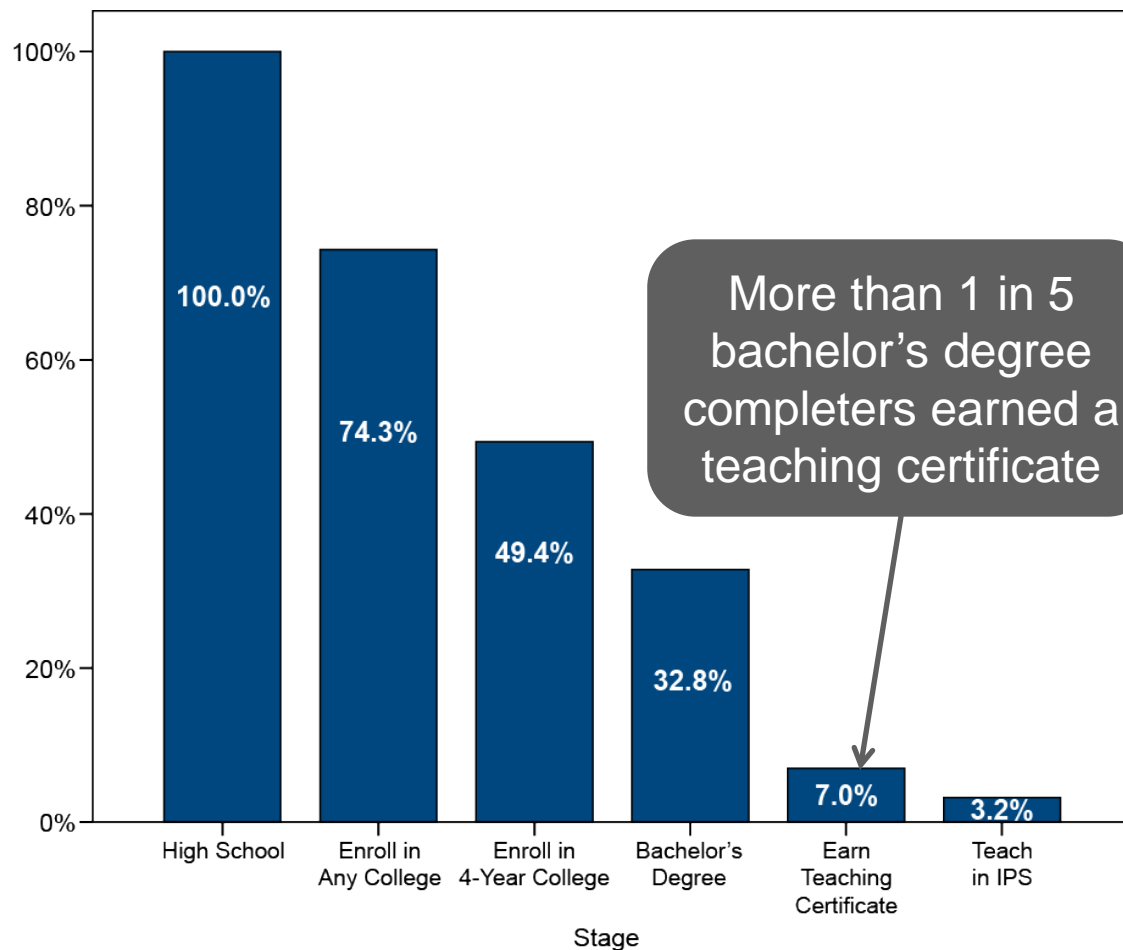
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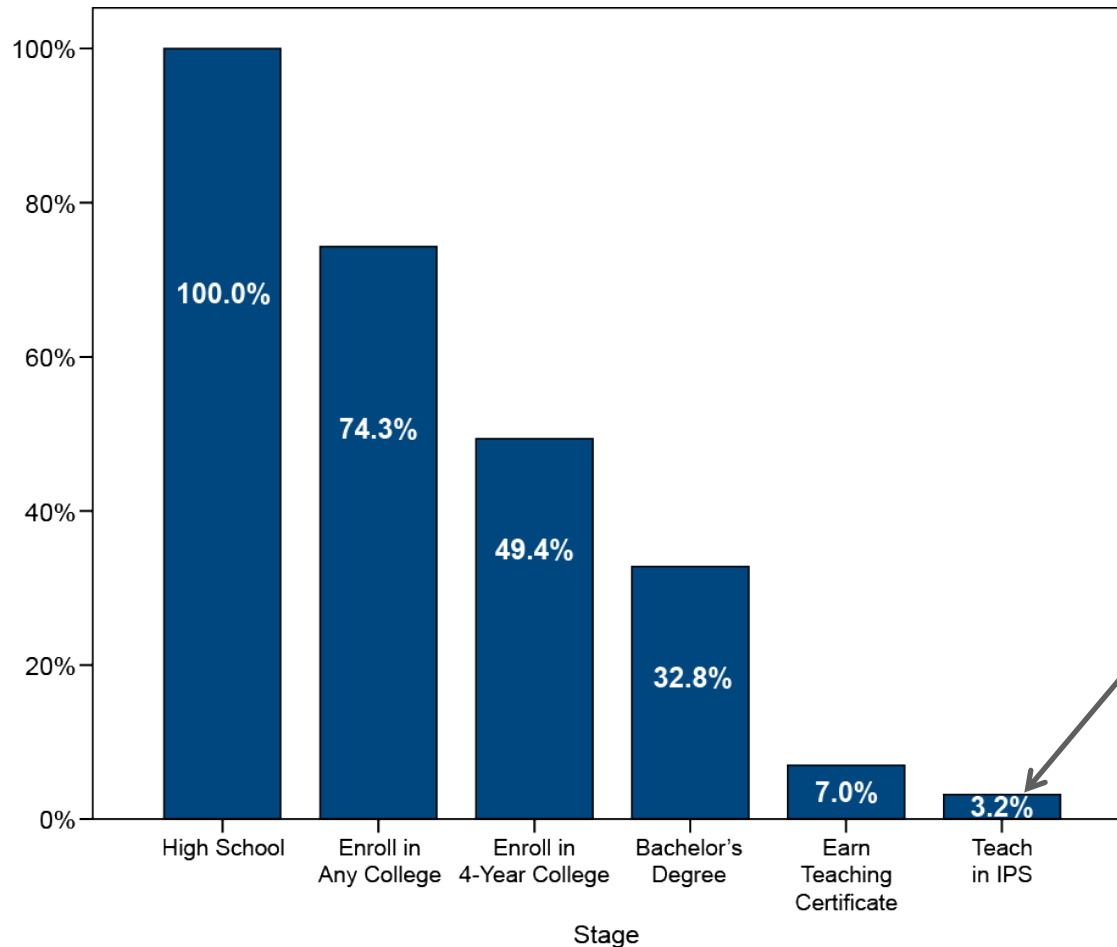
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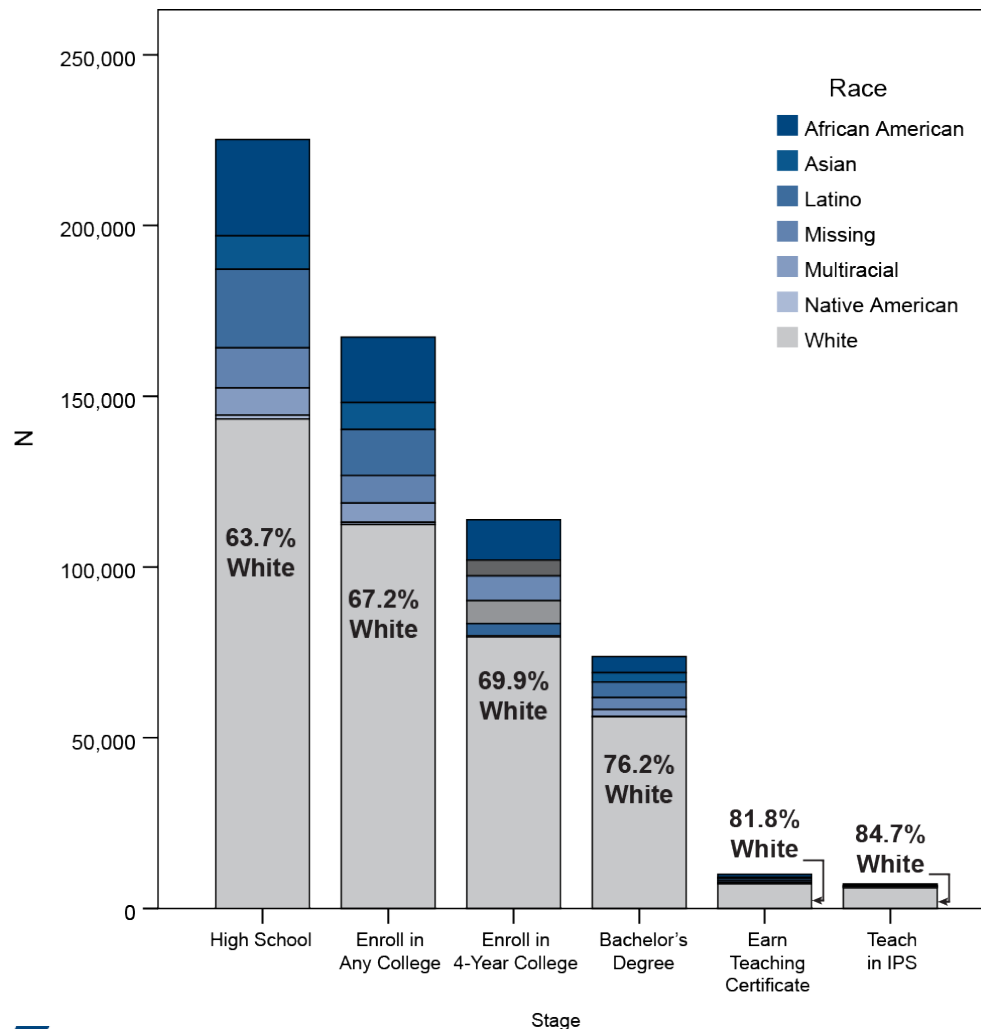
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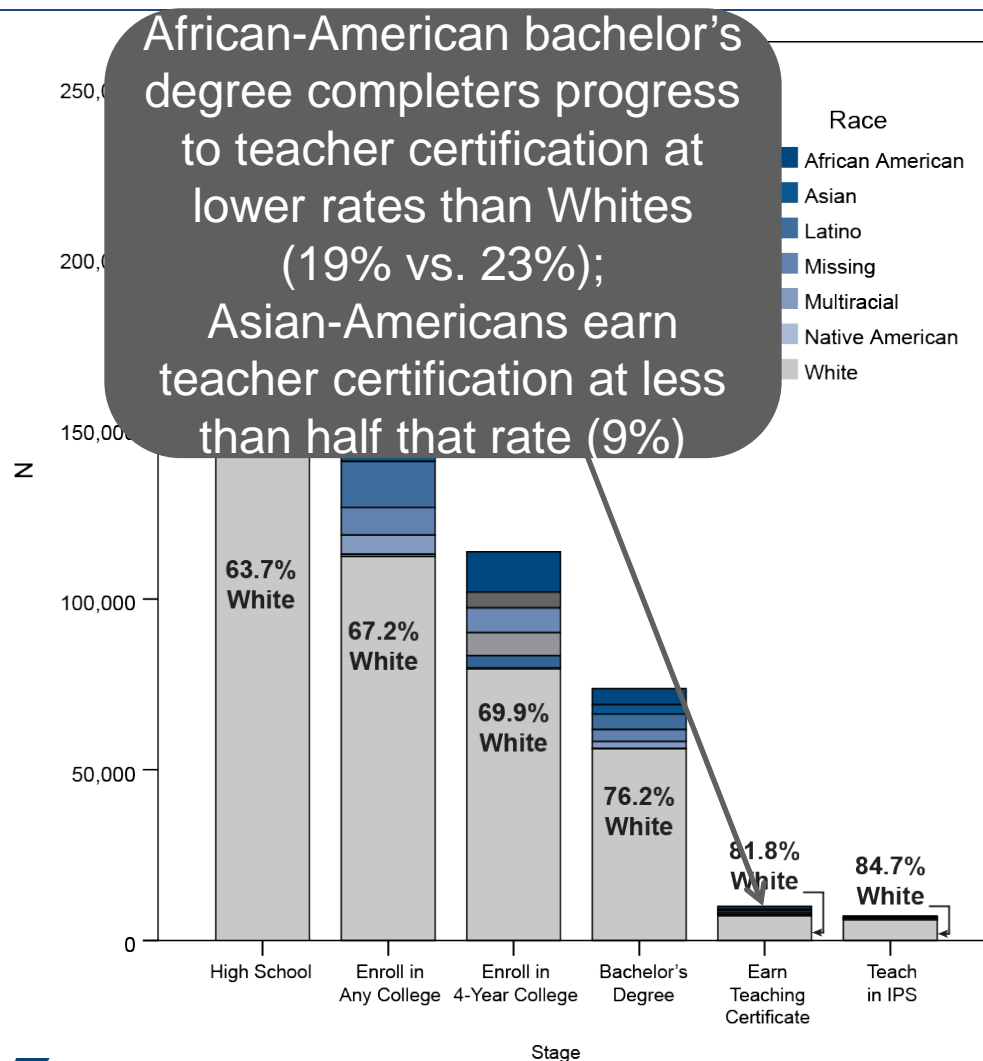
Less than half of certificants ended up teaching in Illinois public schools

# How does the racial/ethnic composition of the pipeline change at each stage?



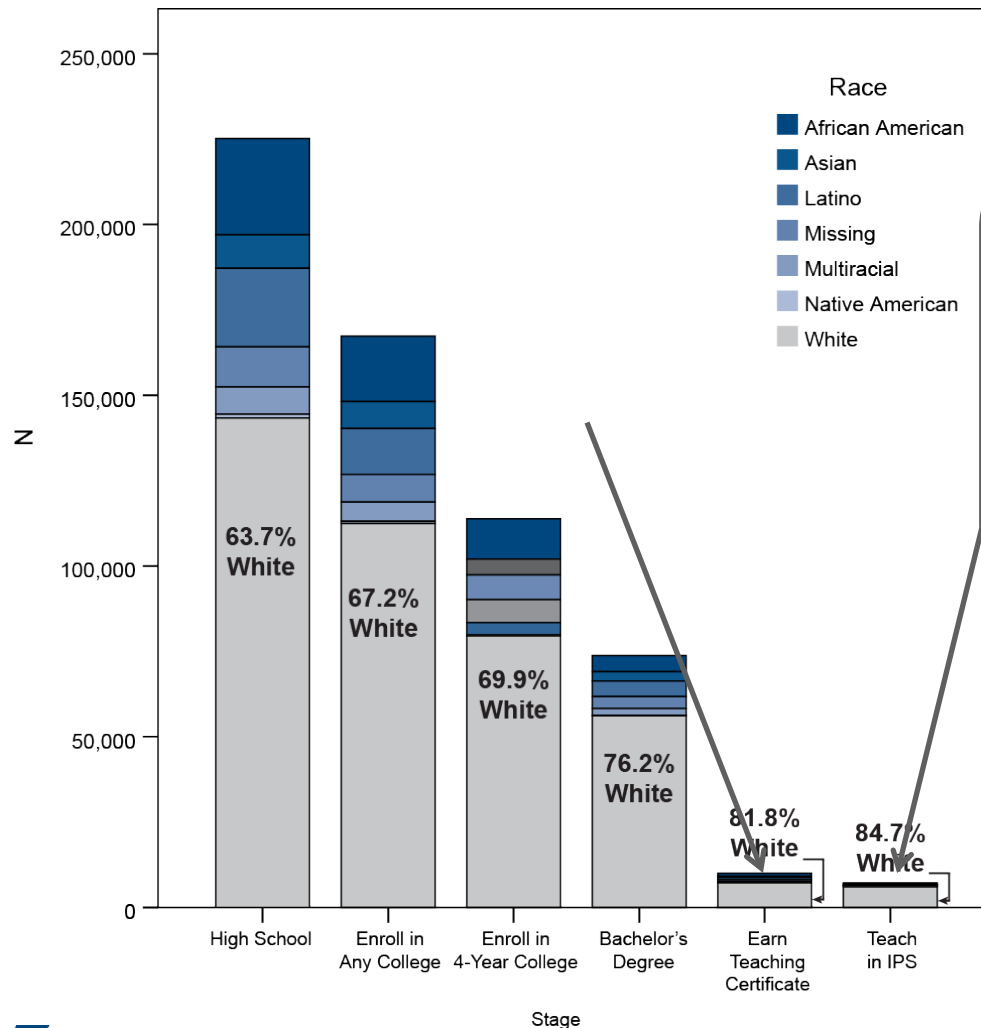
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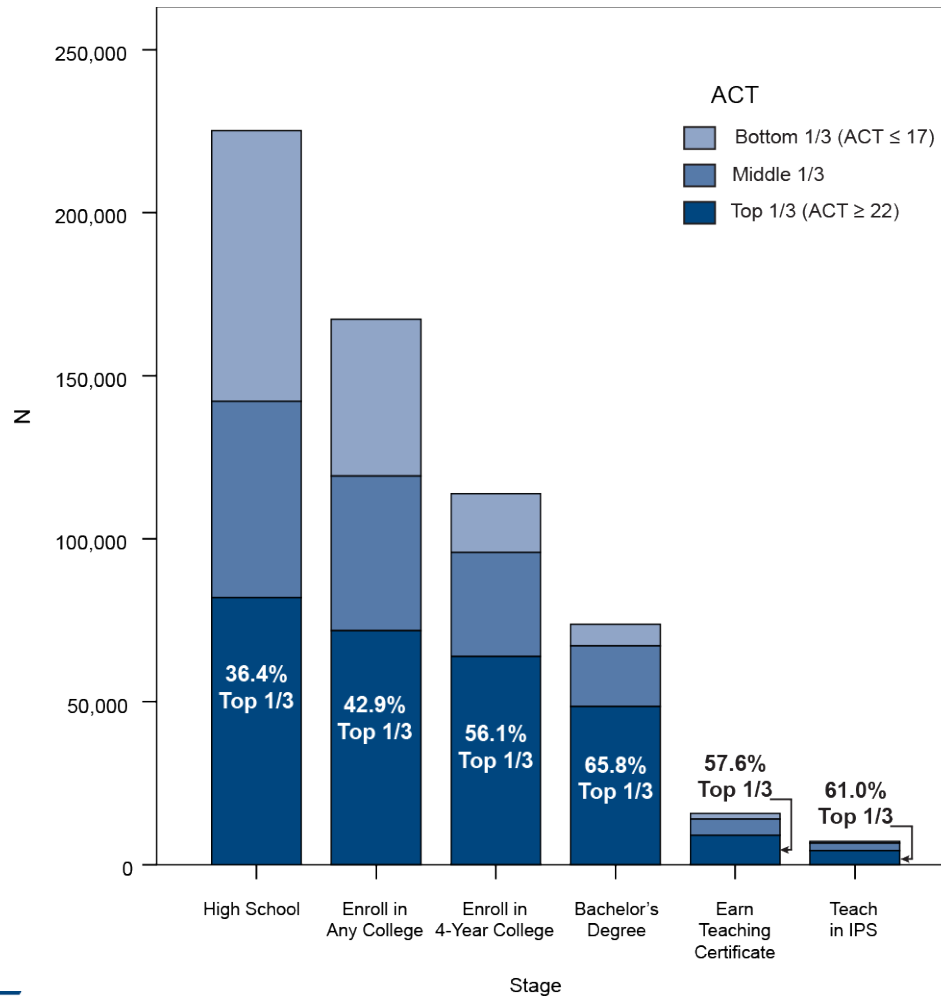


- White students make up increasingly larger

About half of White and Latino certificants become IPS teachers compared to ~40% or less of certificants from other racial/ethnic groups (e.g. 27% of African-Americans)

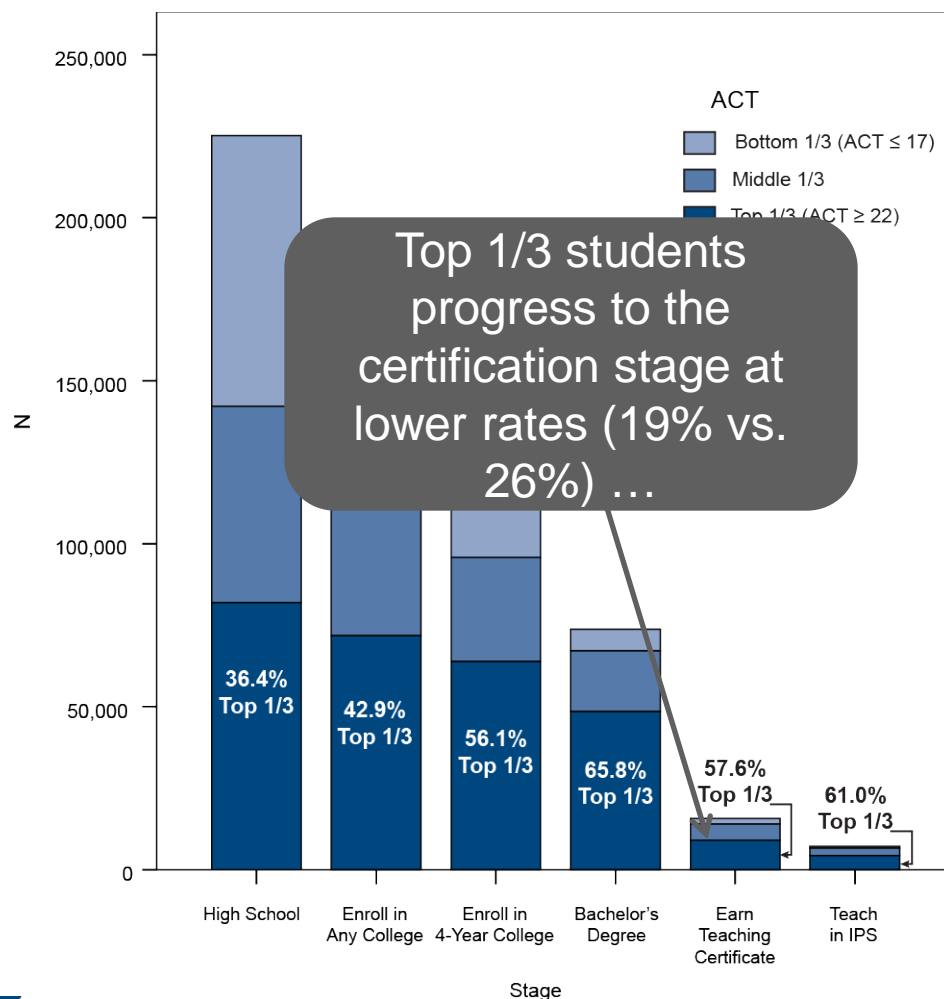
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# How does the academic composition of the pipeline change at each stage?



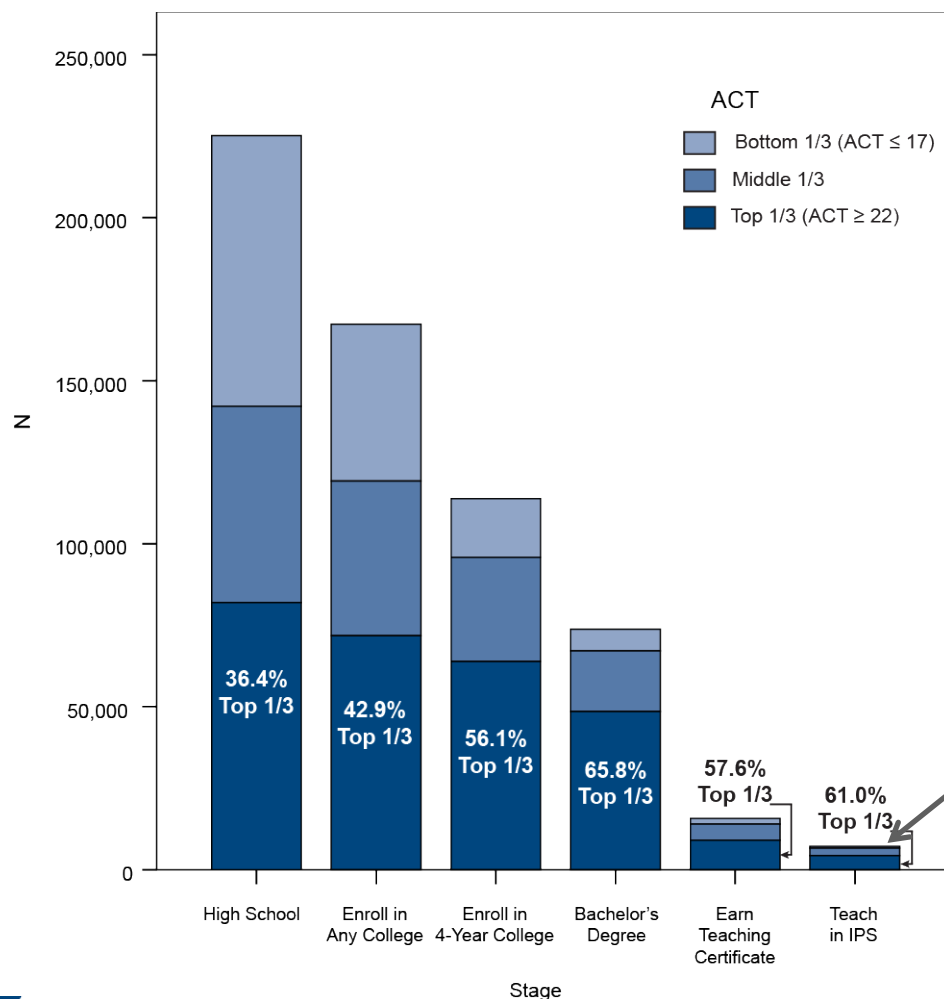
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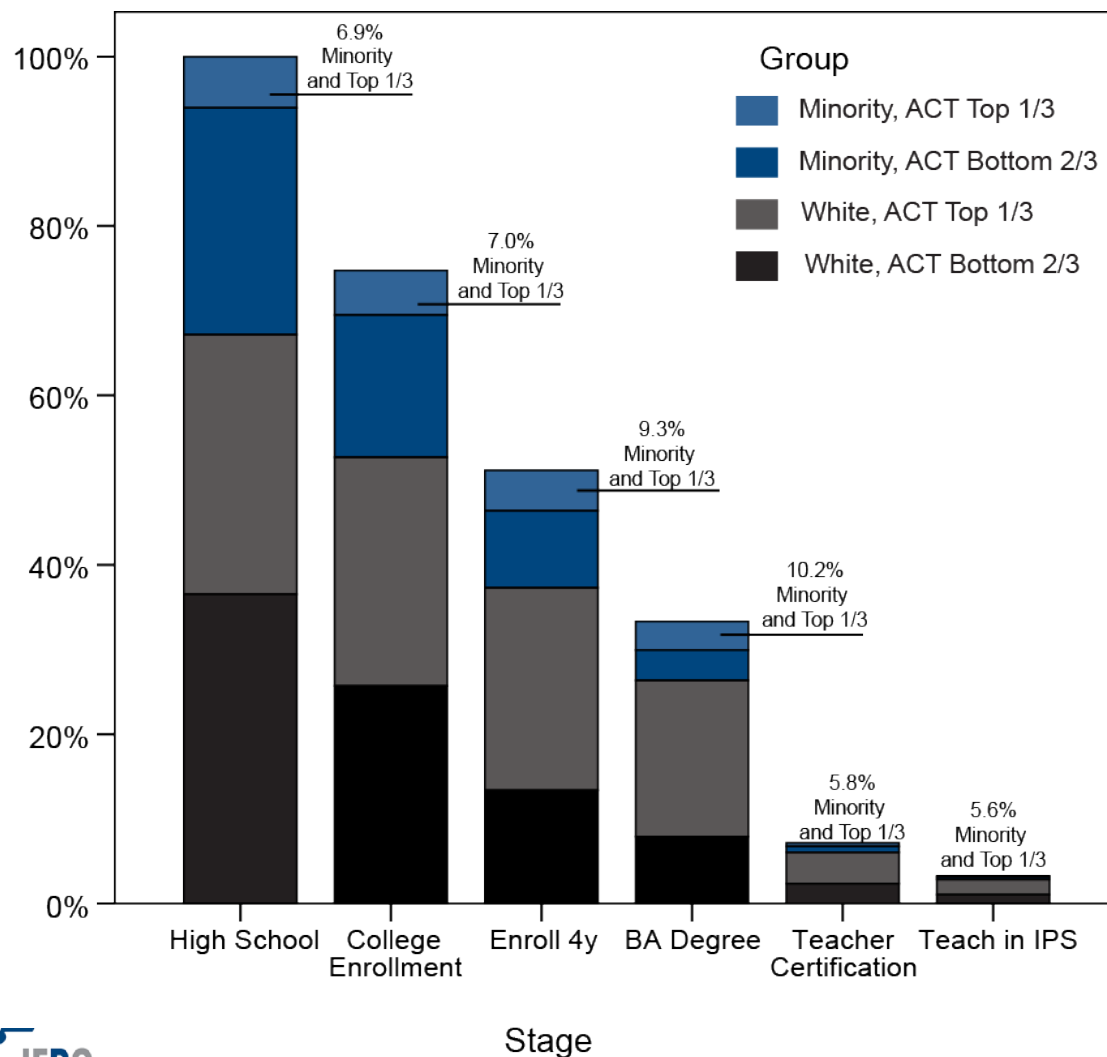
# How does the academic composition of the pipeline change at each stage?



- Students from the top 1/3 of the ACT distribution make up an increasingly larger share of the pipeline – until the certification stage

...but then transition to teaching at higher rates (>45% vs. 31% for bottom 1/3)

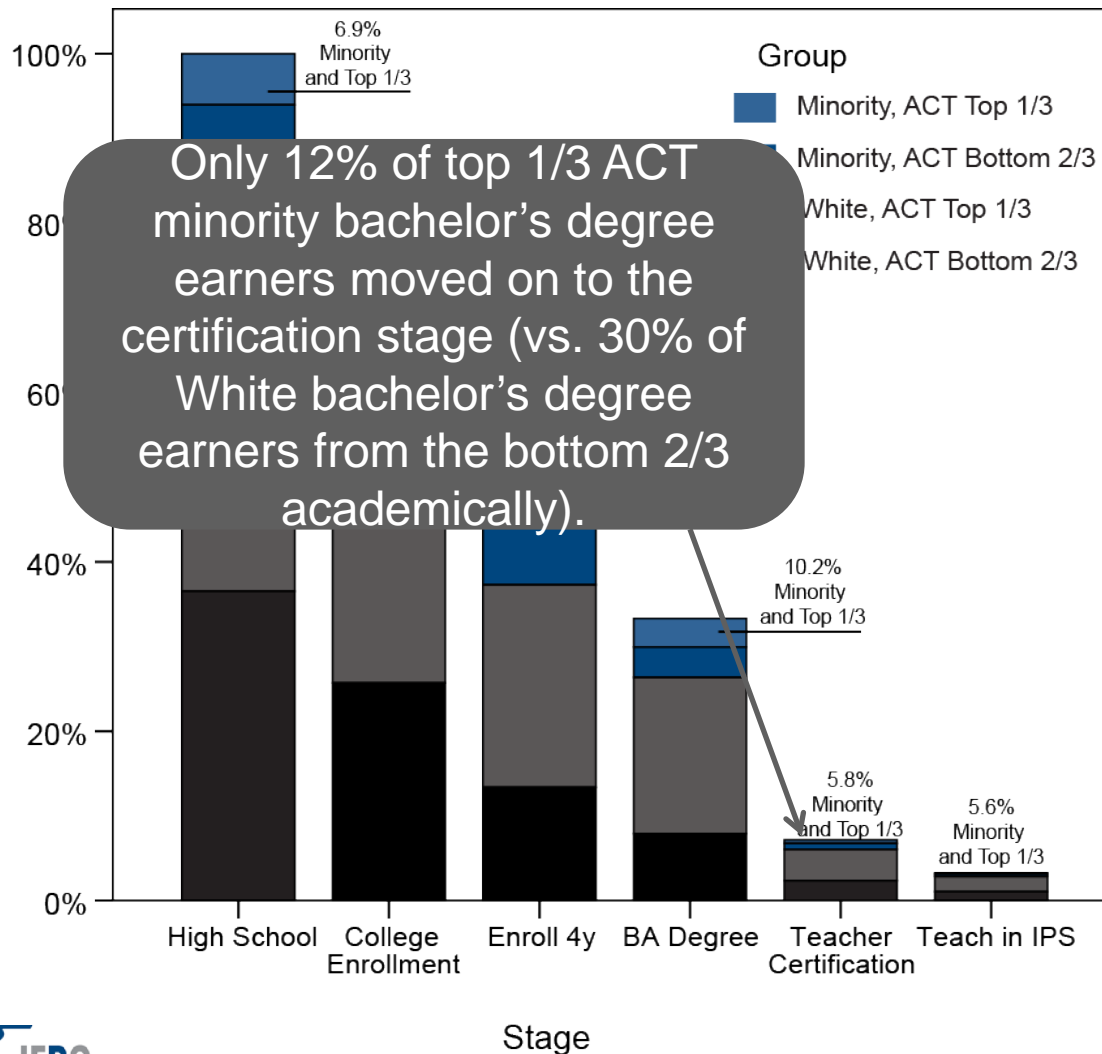
# How does the racial and academic composition of the pipeline change at each stage?



- The group of minority students from the top 1/3 of the ACT distribution is relatively small from the outset, but increases proportionally throughout the college pipeline...
- Before dropping nearly in half at the certification stage.

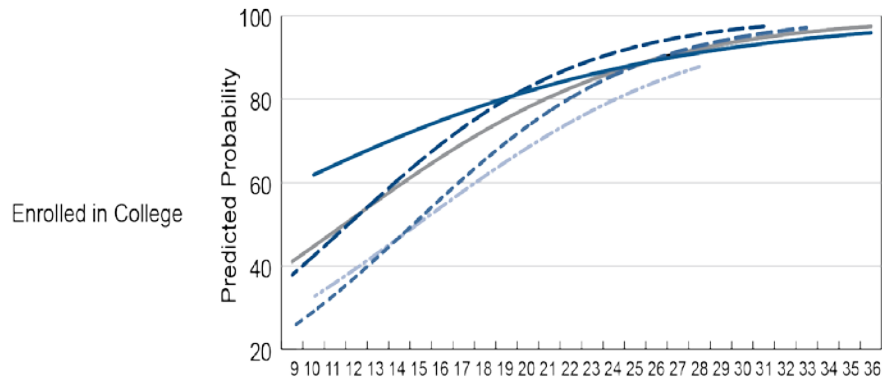


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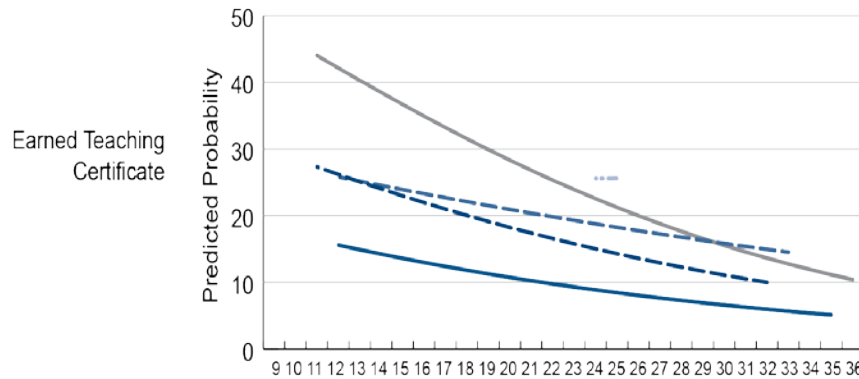
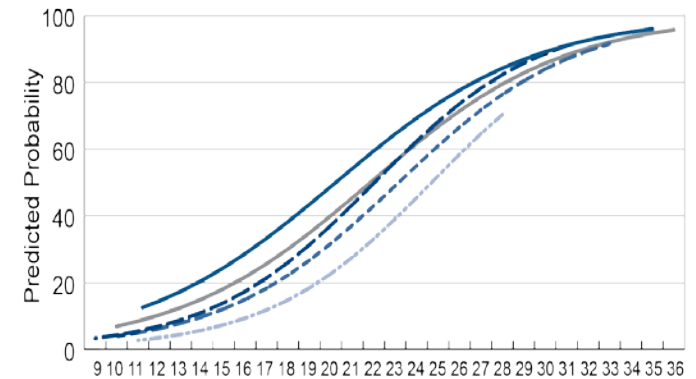


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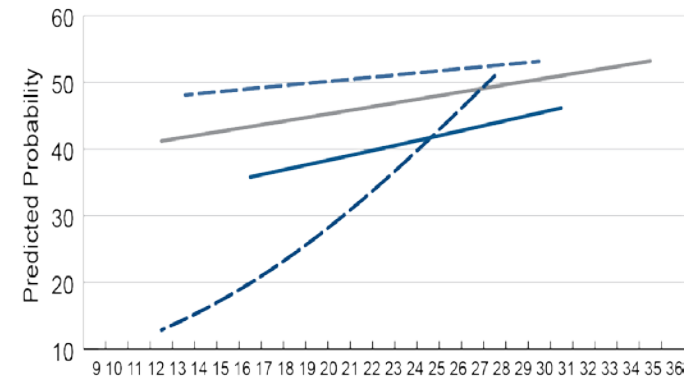
# Conditional Probabilities



Earned Bachelor's Degree



Became IPS Teacher



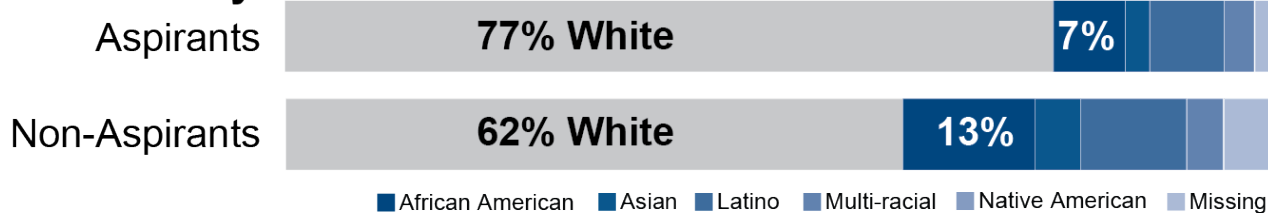
ACT Composite Score

— White    ··· Native American    - - - Latino    - - - African American    — Asian

- Controlling for ACT score, non-Asian minority students generally tended to be less likely than White students to progress through the pipeline, including bachelor's degree completion and earning teaching certification.
- African American students who became certified also were considerably less likely at all but the highest ACT scores to enter teaching.

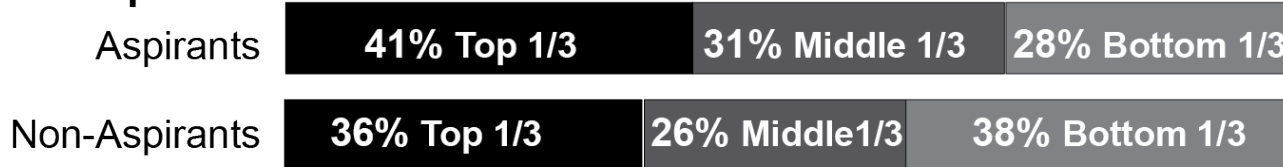
# Who is interested in teaching during high school?

## Race/Ethnicity



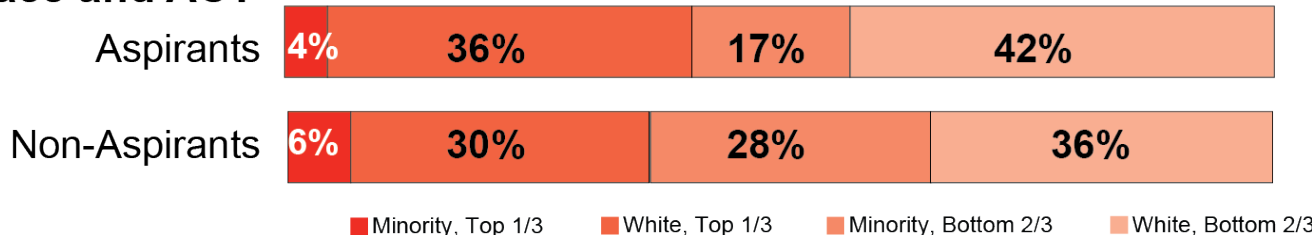
- Based on anticipated major or career from ACT questionnaire

## ACT Composite

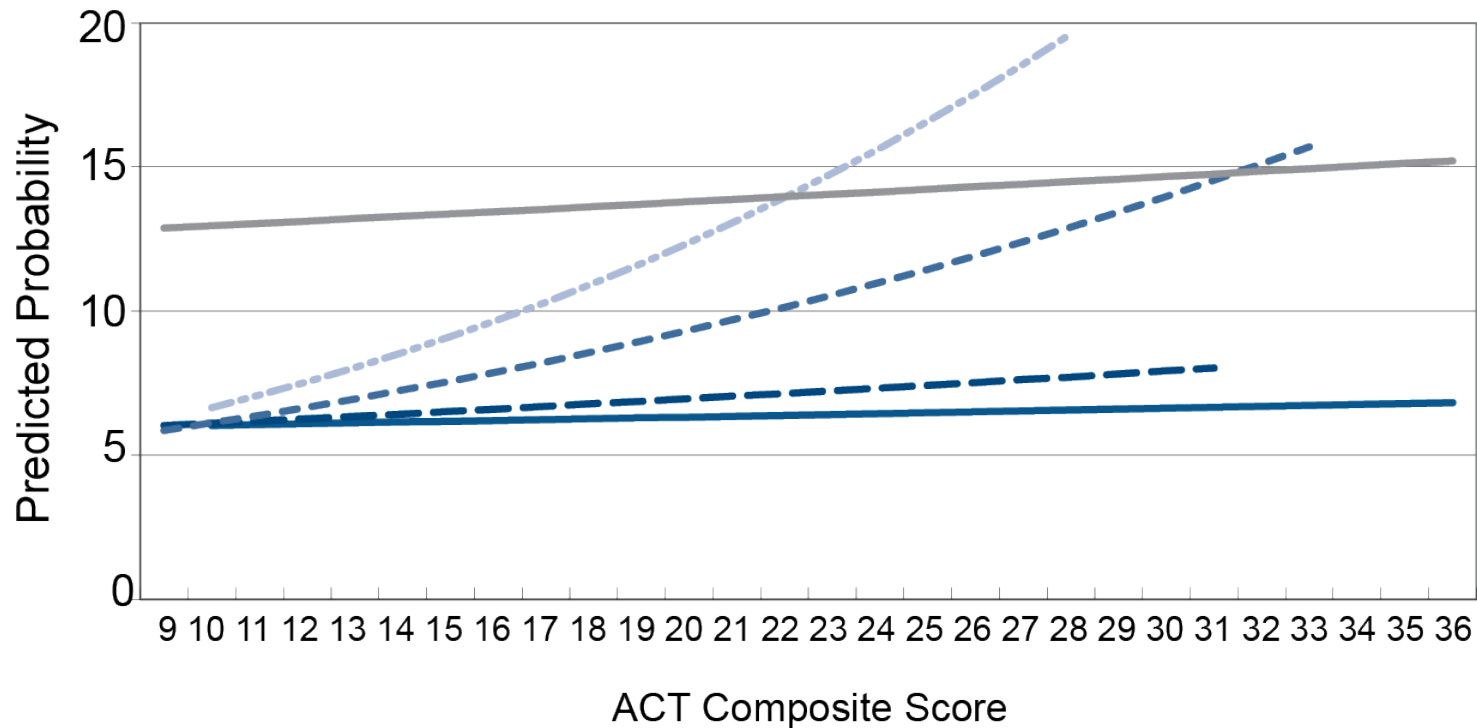


- Non-white students and students from the bottom 1/3 of the ACT distribution (and men) were underrepresented amongst aspirants

## Race and ACT

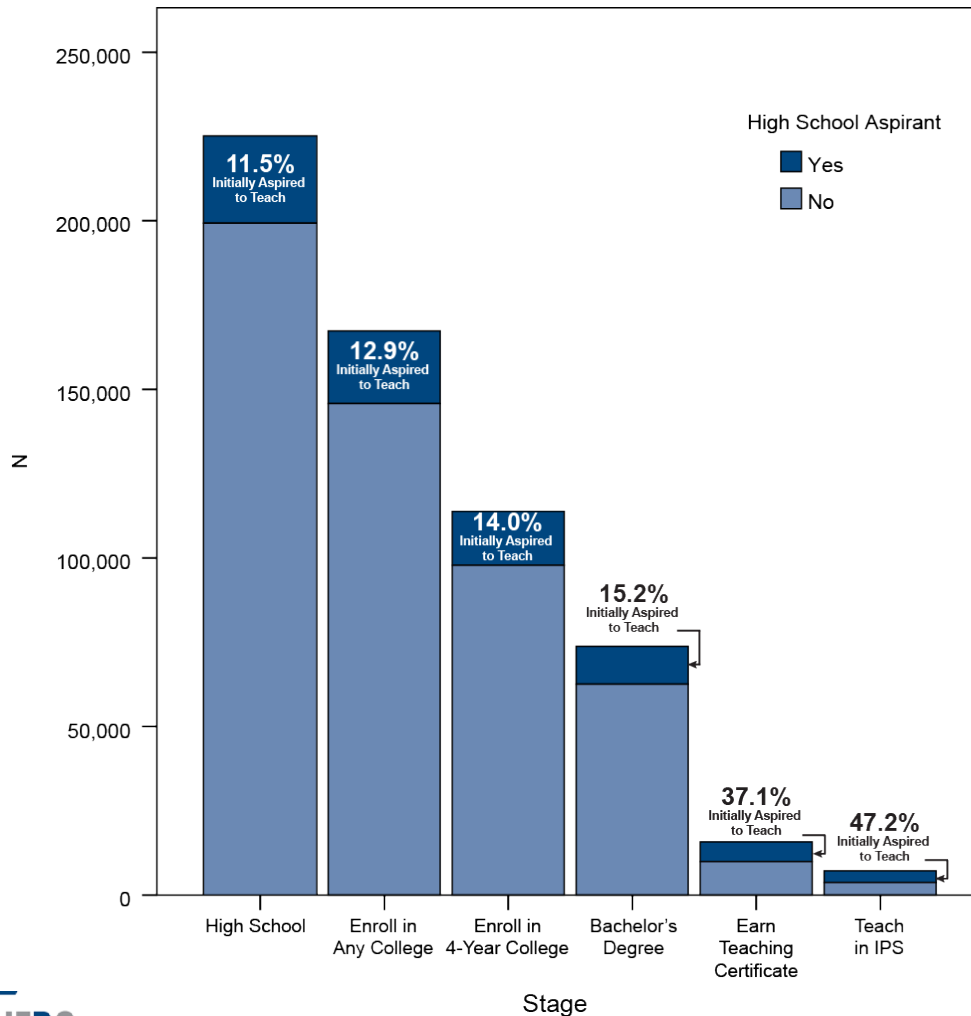


# Conditional Probabilities Associated with Aspiring to Teach



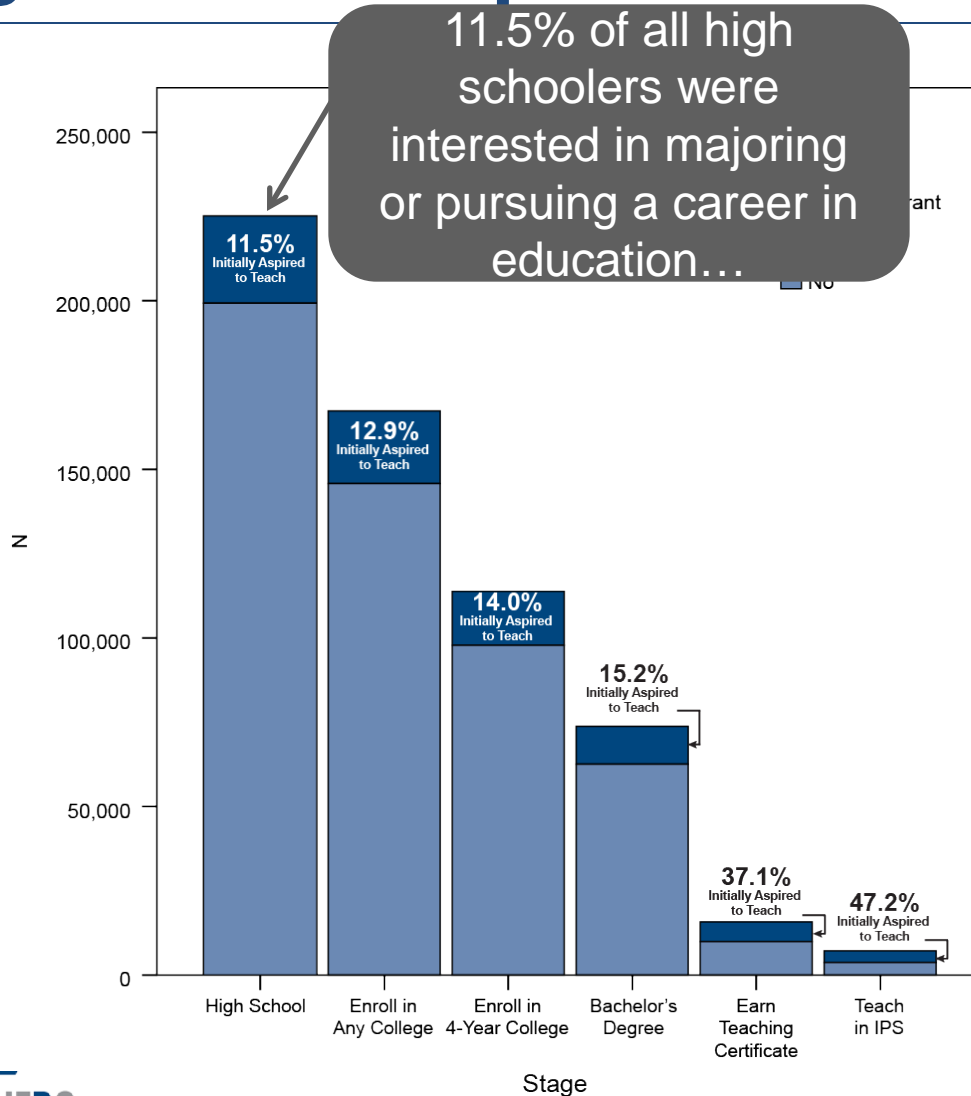
- The conditional probabilities of aspiring to teach while in high school were generally low and flat across the ACT score range, except for Native American and Latino students.
- White students were notably more likely than minority students to aspire to teach across nearly the entire ACT range.

# High school aspirations matter.



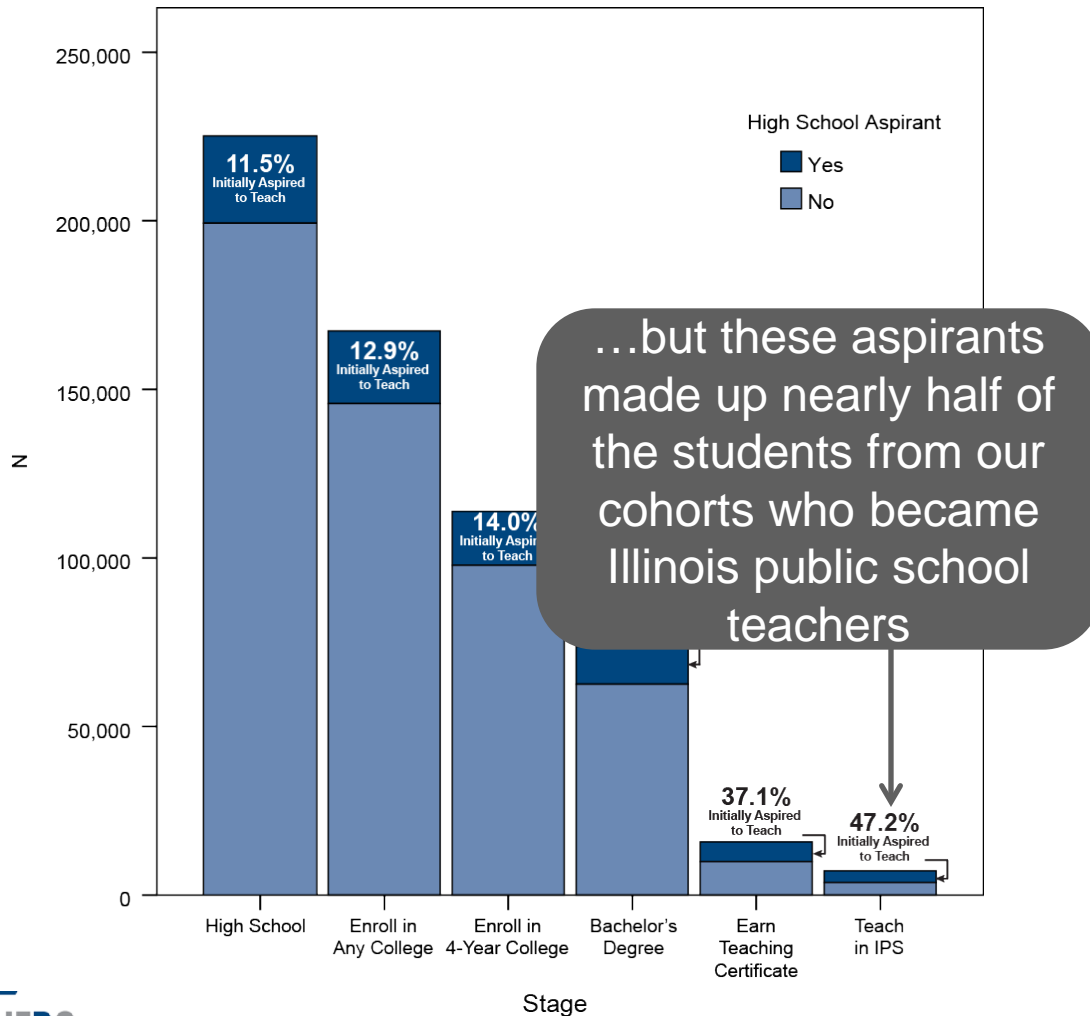
- Students who aspired to become teachers while in high school advanced to each successive stage in the teacher pipeline at higher rates than non-aspirants.

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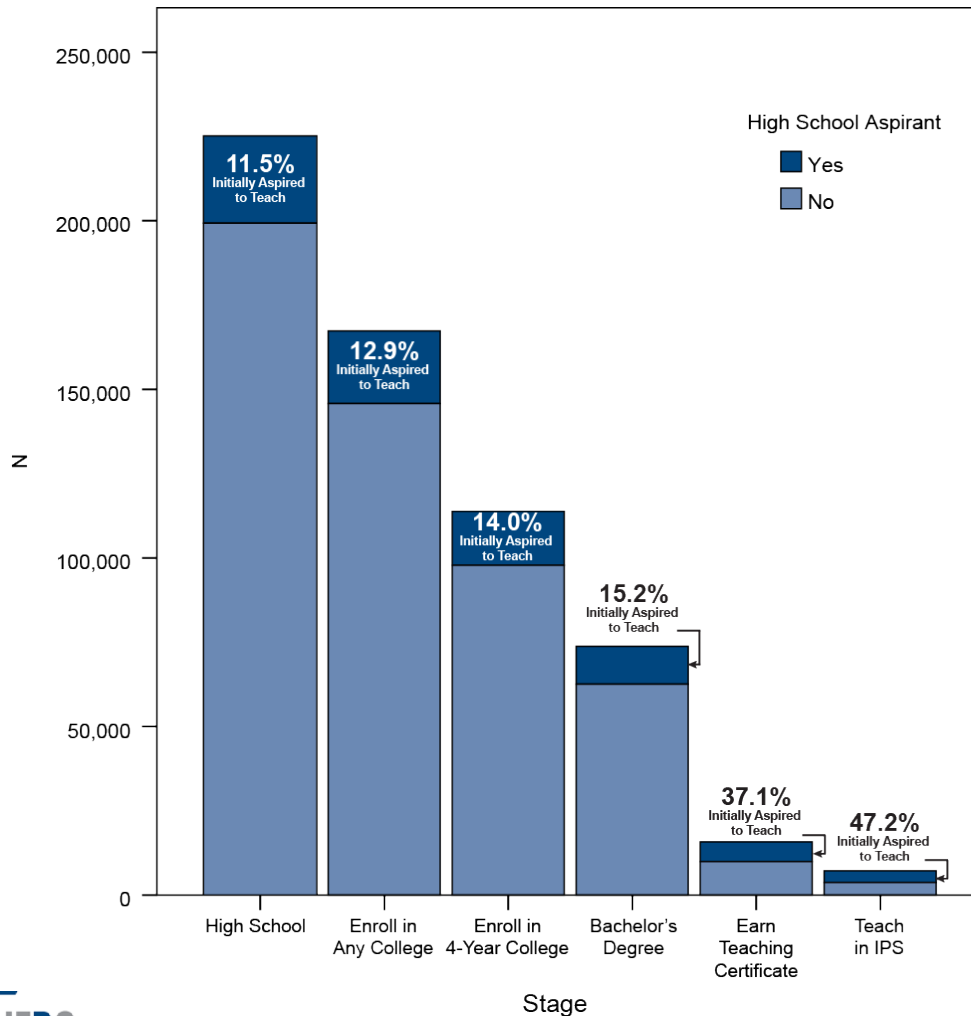
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- Students who aspired to become teachers while in high school advanced to each successive stage in the teacher pipeline at higher rates than non-aspirants.
- But still, only 13% of those who aspired to teach while in high school eventually became teachers, and more than half of the teachers from this study did not aspire to teach while in high school.



# Certification Pathways of Teachers, by Aspirant Group

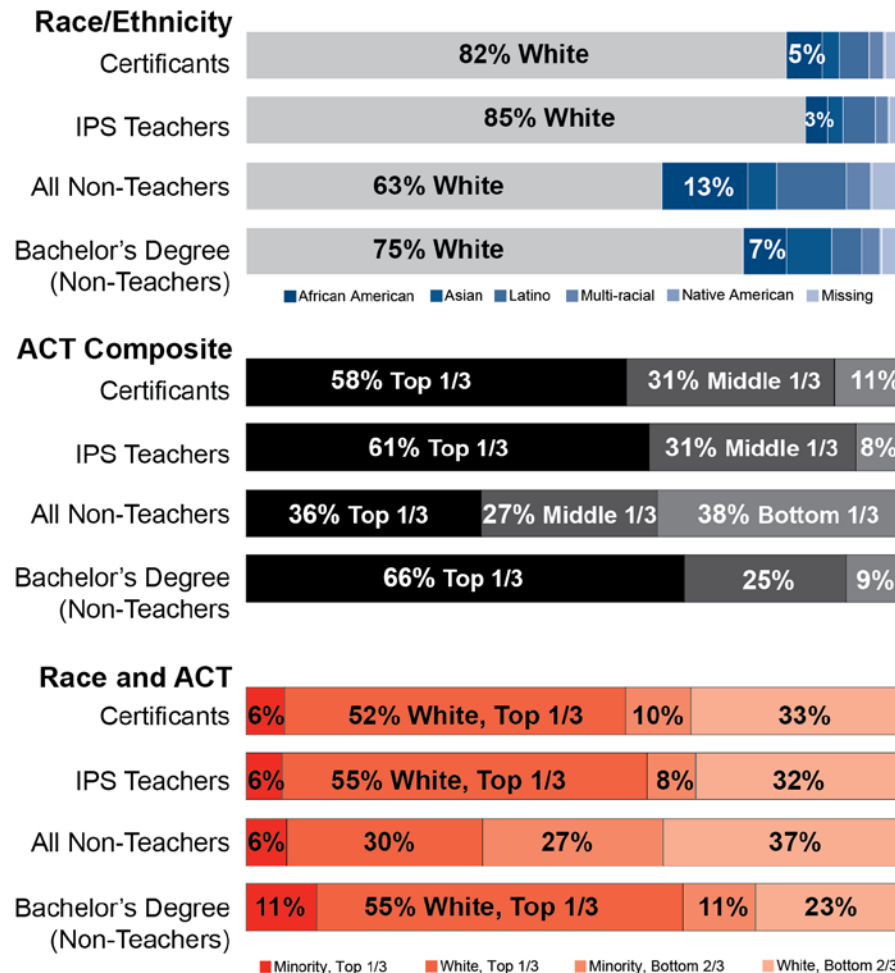
	Aspirants		Non-Aspirants	
	Regular	Alternative	Regular	Alternative
Race/ethnicity				
% African American	2.1	-	3.6	22.7
% Asian	2.2	-	2.5	-
% Latino	4.2	-	5.9	-
% Missing	1.6	-	3.5	-
% Multi-racial	2.1	-	1.4	-
% Native American	-	-	-	-
% White	87.8	-	82.9	56.7
ACT Composite Score				
Mean (SD)	22.9 (3.9)	24.3 (5.8)	22.7 (4.0)	25.7 (4.3)
% Bottom 1/3	6.5	-	8.5	-
% Middle 1/3	31.7	-	32.8	15.5
% Top 1/3	61.8	-	58.8	80.4
N	2851	12	2927	97
% of category	83.8	0.4	76.9	2.5

- Compared to teachers emerging from the regular certification pathway, alternative certificants were much more diverse and had a considerably higher ACT composite average

*Note: - indicates a cell or group of cells in which at least one cell has a sample size less than 10; provisional and substitute routes omitted from chart.*

# How do teachers differ from non-teachers?

It depends on your comparison group...

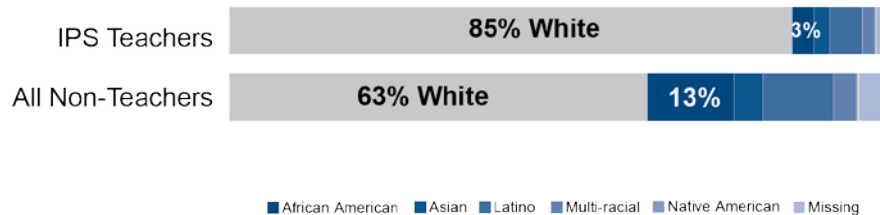


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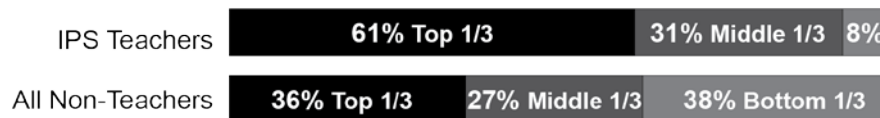
It depends on your comparison group...

- HS peers are more diverse, but much weaker academically

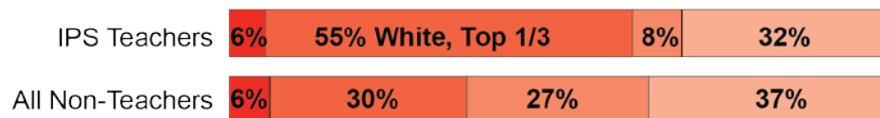
## Race/Ethnicity



## ACT Composite



## Race and ACT



# How do teachers differ from non-teachers?

It depends on your comparison group...

## Race/Ethnicity

Certificants

82% White

5%

Bachelor's Degree  
(Non-Teachers)

75% White

7%

African American Asian Latino Multi-racial Native American Missing

## ACT Composite

Certificants

58% Top 1/3

31% Middle 1/3

11%

Bachelor's Degree  
(Non-Teachers)

66% Top 1/3

25%

9%

## Race and ACT

Certificants

6%

52% White, Top 1/3

10%

33%

Bachelor's Degree  
(Non-Teachers)

11%

55% White, Top 1/3

11%

23%

Minority, Top 1/3 White, Top 1/3 Minority, Bottom 2/3 White, Bottom 2/3

- Other bachelor's degree earners are still more racially/ethnically diverse but academically similar

# How do teachers differ from non-teachers?

It depends on your comparison group...

## Race/Ethnicity

Certificants



Bachelor's Degree  
(Non-Teachers)



## ACT Composite

Certificants



Bachelor's Degree  
(Non-Teachers)



## Race and ACT

Certificants



Bachelor's Degree  
(Non-Teachers)



- Comparing certificants to other BA earners shows that certificants lag in both diversity and academics

# Summary

- **Compositional changes occur at each stage of the new teacher pipeline and a only a very small percentage of high school students become public school teachers.**
- **The transition from certification to employment in teaching is surprisingly one of the more critical stages in the pipeline, particularly for African American students.**
- **Academic preparation plays a role in progress through the pipeline, but other factors also have an impact on the racial/ethnic composition of new teachers.**
  - White students generally progressed through the college pipeline, aspired to teach, and transitioned to certification and teaching at greater rates than racial/ethnic minority students, even controlling for differences in academic preparation.

# Summary

- **Consistent with others' results (Boyd et al., 2006; Feistritzer, 2011; Kirby et al., 1999), we found that larger proportions of high achieving and minority candidates, relative to other students, chose to enter teaching via alternative certification pathways.**
  - But alternative certification by itself will not be sufficient to strengthen and diversify the teaching corps given the still very small proportion of recent college graduates who enter the profession via that route.
- **Teachers who emerged from these cohorts were notably less diverse but only somewhat less qualified academically (0.16 SD difference) than their peers who also completed bachelor's degrees.**
  - This academic gap between teacher and non-teacher college graduates is only about two-thirds the size of that reported by Podgursky et al. (2004) in their Missouri study.
  - The mean ACT score ( $M=22.9$ ) of teachers in this study exceeds that of new teacher cohorts in Illinois from earlier periods.

# Final Thoughts

- More research is needed to help us understand the factors that affect students' transitions (or lack thereof) from bachelor's degree completion to certification and from certification to employment in teaching, particularly for racial/ethnic minority students.
- It's important to remember that these cohorts are just one component of the teacher pipeline, and additional sources should not be neglected among broader efforts to strengthen and diversify the teaching corps.
- Getting diverse, academically talented teachers through the pipeline and into the classroom is only the first step – once there, efforts also are needed to keep high-quality educators in the profession (Ingersoll & May, 2011).





**Download the full report at:  
[www.siu.edu/ierc/](http://www.siu.edu/ierc/)**

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