



The Geography of the New Teacher Pipeline in Illinois

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Background

- **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** (e.g. CAEP, IL P-20, TFA, GYO, etc.)
- **Concerns have been raised regarding states' and districts' ability to improve simultaneously the academic qualifications and diversity of teachers.**
- **How do we design policies and practices to improve the supply of academically skilled and racially/ethnically diverse individuals into teaching?**

The IERC teacher supply pipeline study

- We track the 2002 and 2003 cohorts of Illinois high school students (N=225,196) for about 10 years through the new teacher supply pipeline

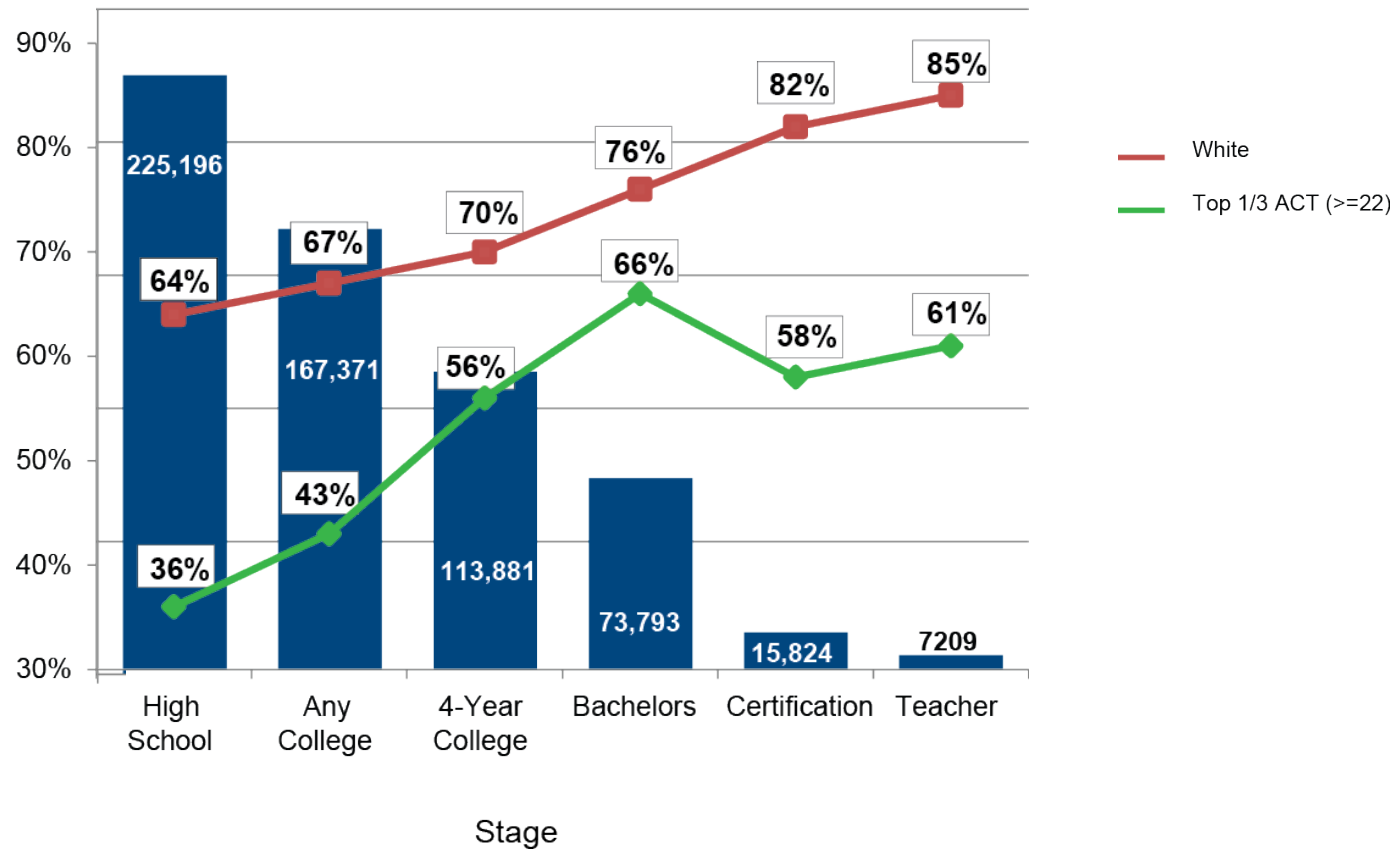
Figure 1.

Conceptual Model of Stages in the Teacher Pipeline



- We examine the composition of the pipeline at each stage to measure the extent to which transitions to each successive stage affect our ability to attract a diverse, academically skilled teaching force

Changing composition of the pipeline by race/ethnicity and academics



But we also know that geography plays a role in the new teacher supply pipeline...

- **Student characteristics and college access, enrollment, and completion patterns differ widely between regions in Illinois**
 - CPS students as a whole are more diverse and have lower ACT scores compared to the rest of the state
 - Students in southern IL are more likely to enroll in 2-year colleges and less likely to earn bachelor's degrees (all else being equal)
- **Teacher labor markets are considerably more constrained geographically than those of similarly-aged college graduates in non-teaching occupations** (*Boyd et al., 2005; Reininger, 2012*)
 - About 60% of first-year public school teachers work in schools within 15 miles of “home” (where they attended HS) and 85% work within 40 miles
 - Urban teachers, non-White teachers, and teachers with weaker academic qualifications tend to be even *less* mobile

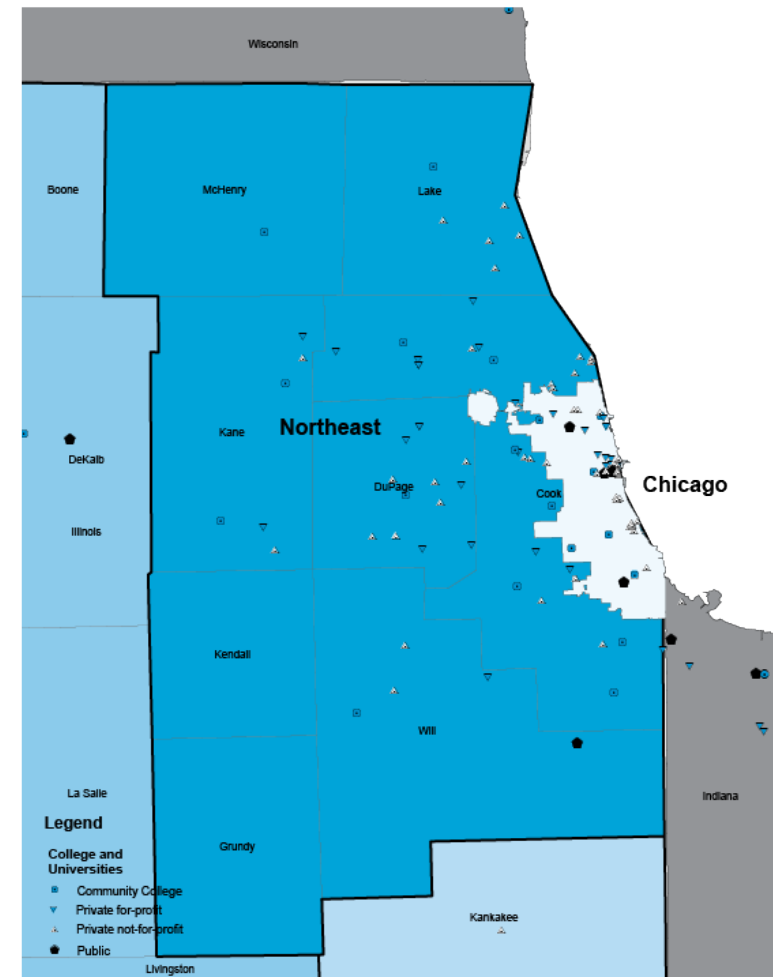
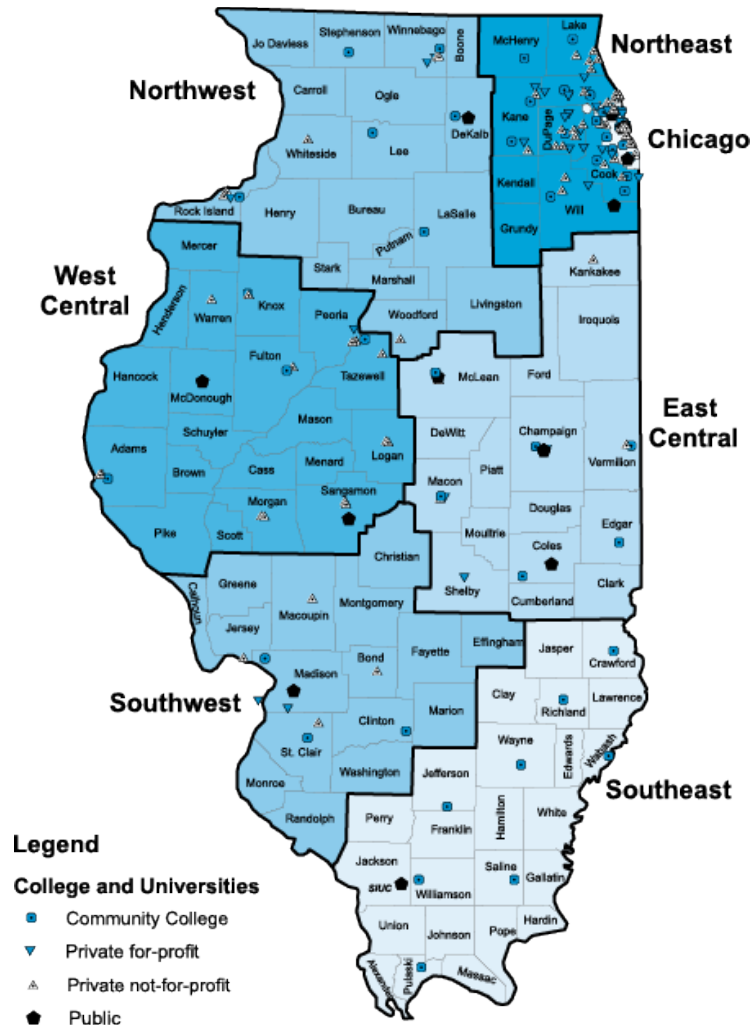
The other distribution problem

- Differences in the characteristics of teachers across schools is largely due to the initial match of teachers to schools in their first teaching jobs
 - New teachers tend to choose schools close to home
 - New teachers tend to choose schools with high proportions of students sharing their race and from similar socio-economic backgrounds (*Cannata, 2008*)
 - Younger teachers tend to have more geographic mobility than older workers, so initial sorting is likely to persist to some extent
- Teacher qualifications are distributed inequitably and the highest need students are typically the most shortchanged
 - This remains a big concern, as evidenced by U.S. Dept of Education's recent re-emphasis on Teacher Equity Plans

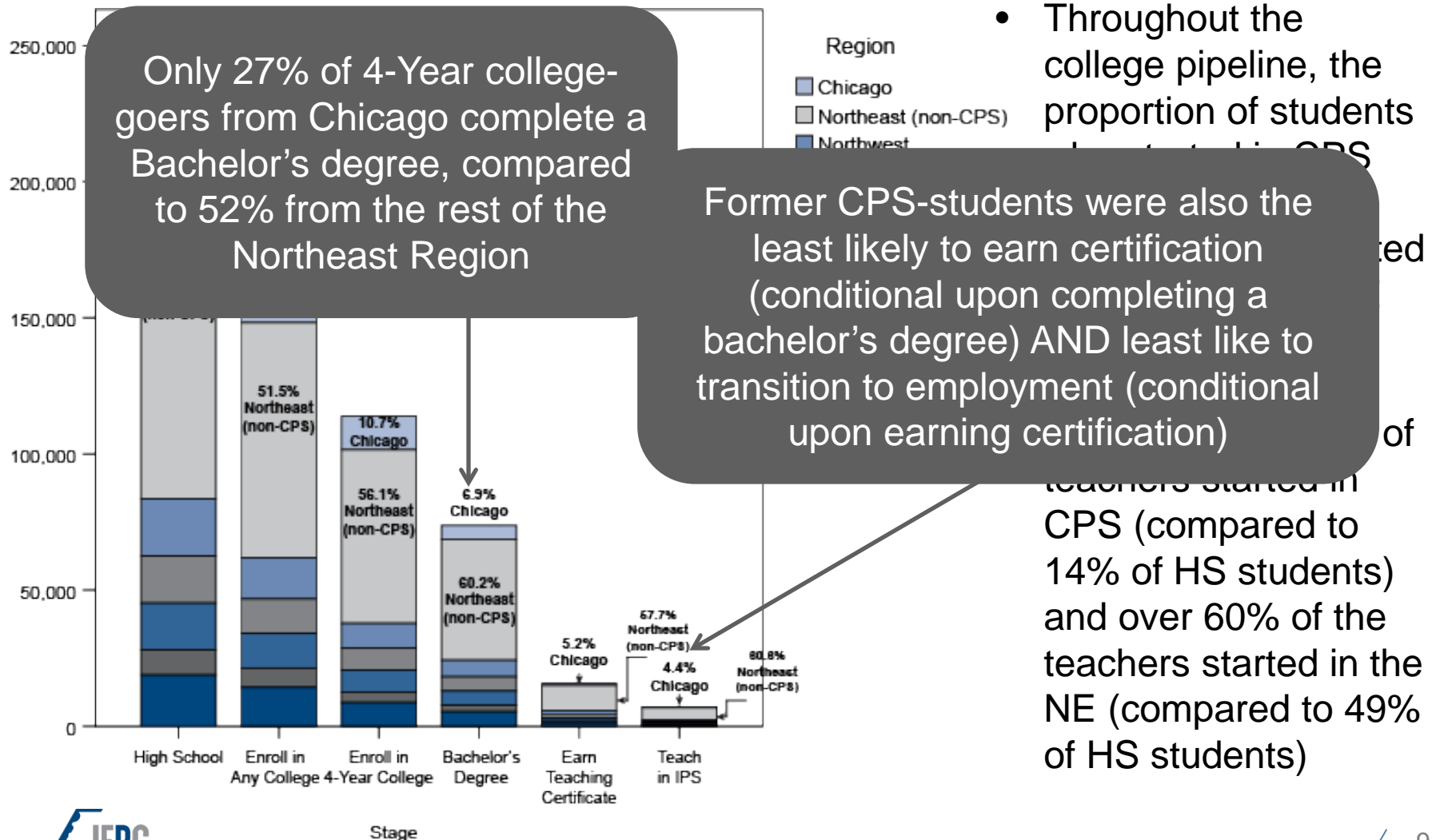
Questions

- To what extent does geography explain changes to the composition of Illinois' new teacher workforce?
- How do the race/ethnicity and academic characteristics of teachers who emerge from each region differ?
- How do the numbers of teachers produced in each region compare with the number of teachers needed in each region? Is there a geographic mismatch between the preferred teaching location (schools geographically and demographically similar to home) and location of available jobs?
 - Does this help explain why we lose 50% of certificants during the transition from certification to employment?
 - If there is a shortage, what types of teachers are “imported” to the region and where do they come from? If there is an excess, what types of teachers are “exported” from the region and where do they go?
- Is there a “vicious cycle” of underqualified teachers and low student achievement in some regions?

Defining Region



How does the geographic composition of the pipeline change at each stage?



Who emerges from the new teacher pipeline in each region?

| | CPS | NE | NW | WC | EC | SW | SE |
|---------------------------------|------|------|------|------|------|------|------|
| % White HS students | 8.3 | 63.9 | 82.8 | 84.1 | 85.6 | 89.0 | 81.9 |
| % White teachers produced | 16.3 | 84.3 | 92.6 | 94.6 | 93.2 | 93.9 | 98.2 |
| % Top 1/3 ACT students | 13.0 | 44.3 | 34.8 | 38.1 | 35.2 | 29.2 | 33.8 |
| % Top 1/3 ACT teachers produced | 36.1 | 66.0 | 55.2 | 53.5 | 60.6 | 56.4 | 50.3 |

- Proportion of Whites and Top 1/3 ACT increases considerably in each region, but substantial differences between regions remain

The geography of supply & demand

| | CPS | NE | NW | WC | EC | SW | SE |
|----------------------------|------|------|-----|-----|-----|-----|-----|
| % of All HS Students | 13.9 | 49.0 | 9.4 | 7.7 | 7.6 | 8.4 | 4.1 |
| % of All Teachers Produced | 4.4 | 60.6 | 9.4 | 7.5 | 6.9 | 7.2 | 3.9 |

- Chicago under-produces teachers (relative to the size of their student population), whereas the rest of the Northeast over-produces

| | CPS | NE | NW | WC | EC | SW | SE |
|--|------|------|------|------|------|------|------|
| % of certificants from this region who progressed to teaching in IPS | 38.4 | 47.8 | 46.6 | 43.4 | 41.9 | 40.2 | 40.1 |

- Yet, certificants from Chicago are the *least* likely (relative to all other regions) transition to public school teaching positions. So, where does CPS get their teachers?

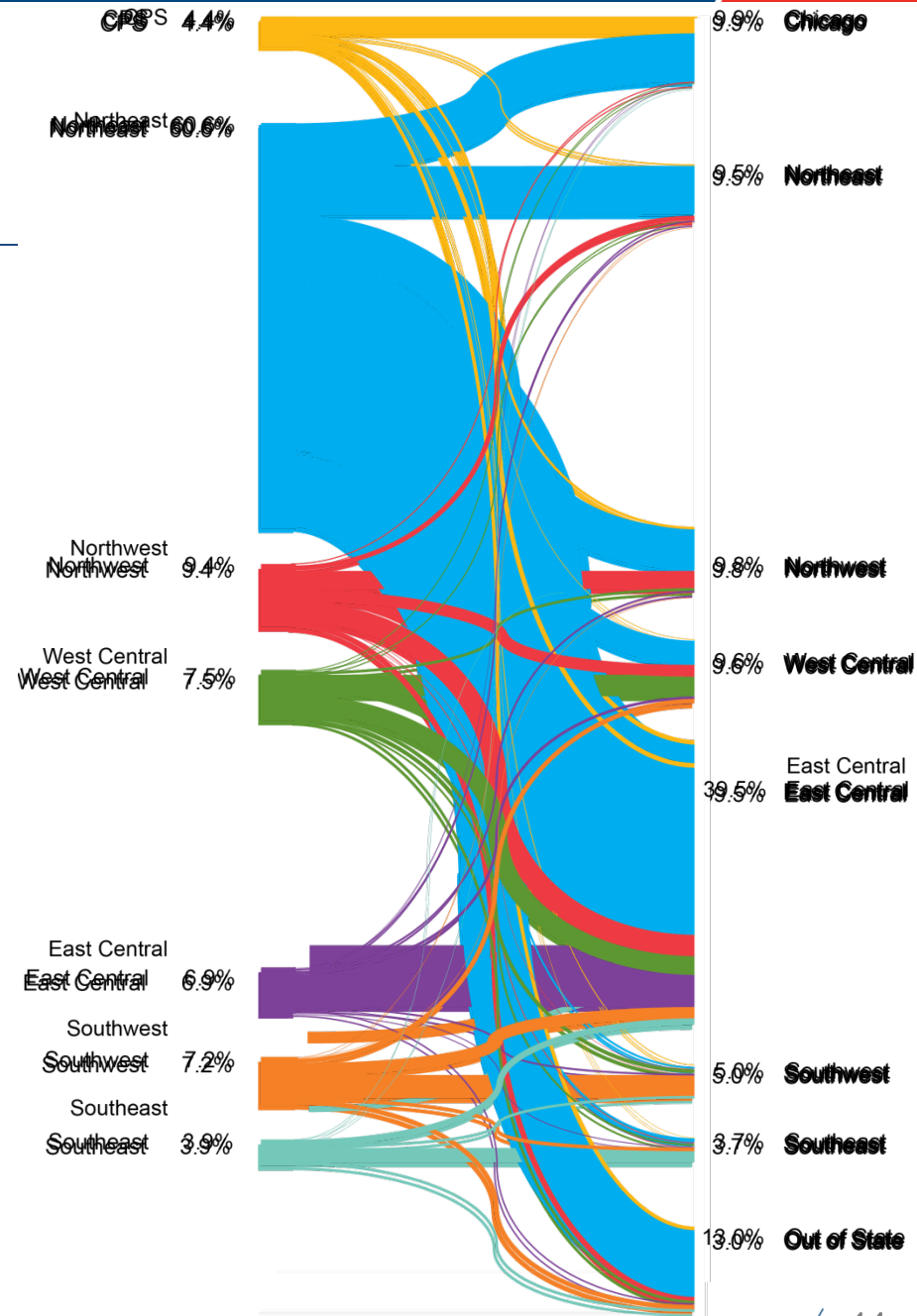
Where do these teachers begin teaching?

Methodology for Geography Study

- Using latitude and longitude coordinates we calculated distances between three key points in the new teacher pipeline:
 - Home area and college (BA granting institution)
 - College and first teaching assignment
 - Home area and first teaching assignment
- We also examined the differences between some of the characteristics associated with the three points:
 - How many new teachers obtain their first teaching job in a school or district with similar characteristics as where they graduated high school?
 - What is the flow of new teachers between those three points based on region?

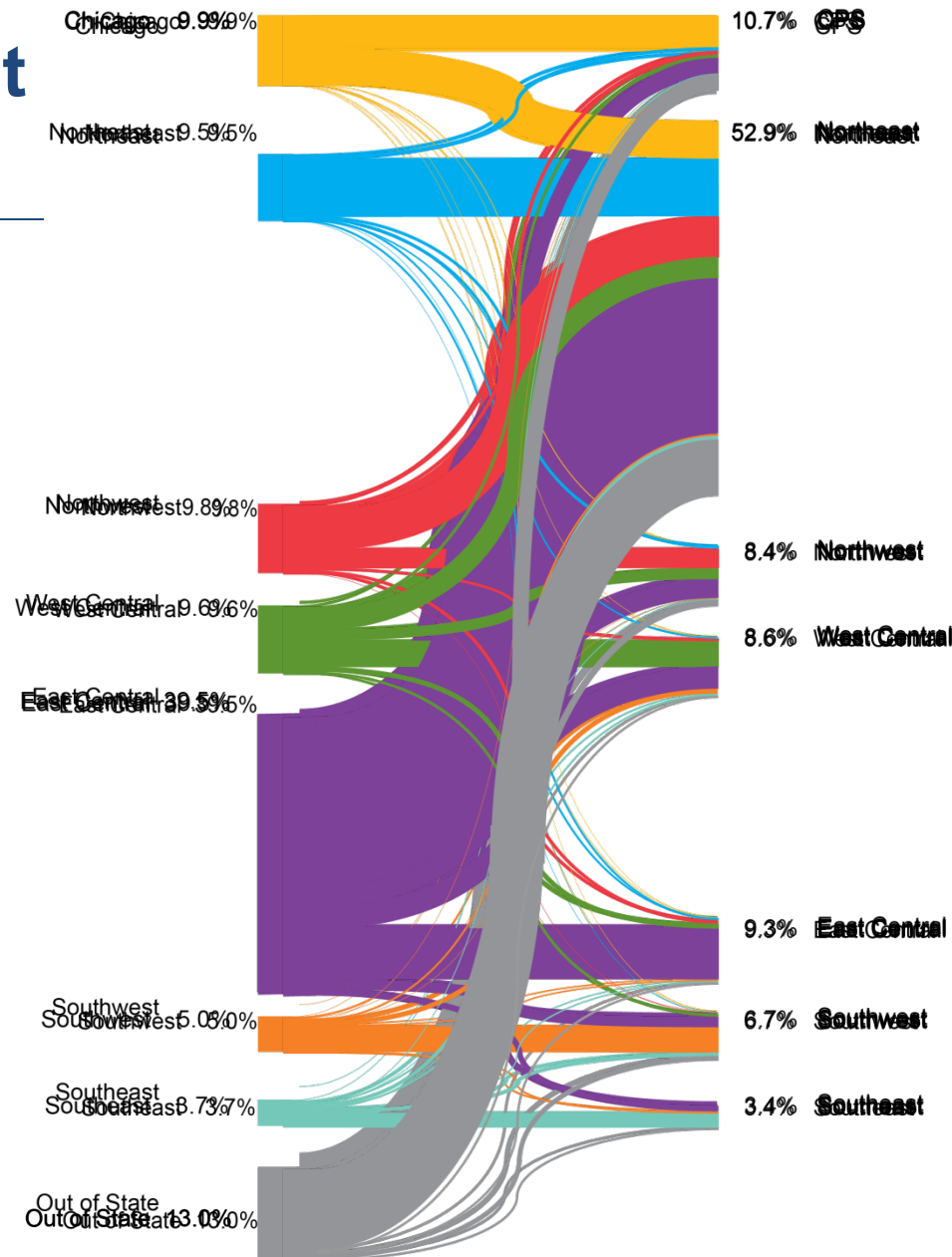
Flow from Home Area to College

- Sankey diagrams
- Depicts the flow or movement from one point to another.
- While most new teachers emanate from the Northeast region, the greatest number of new teachers earn their degree in the East Central Region.
- The second most popular “region” was out-of-state.
- Chicago colleges accounted for proportionally more of the new teachers than CPS high schools.



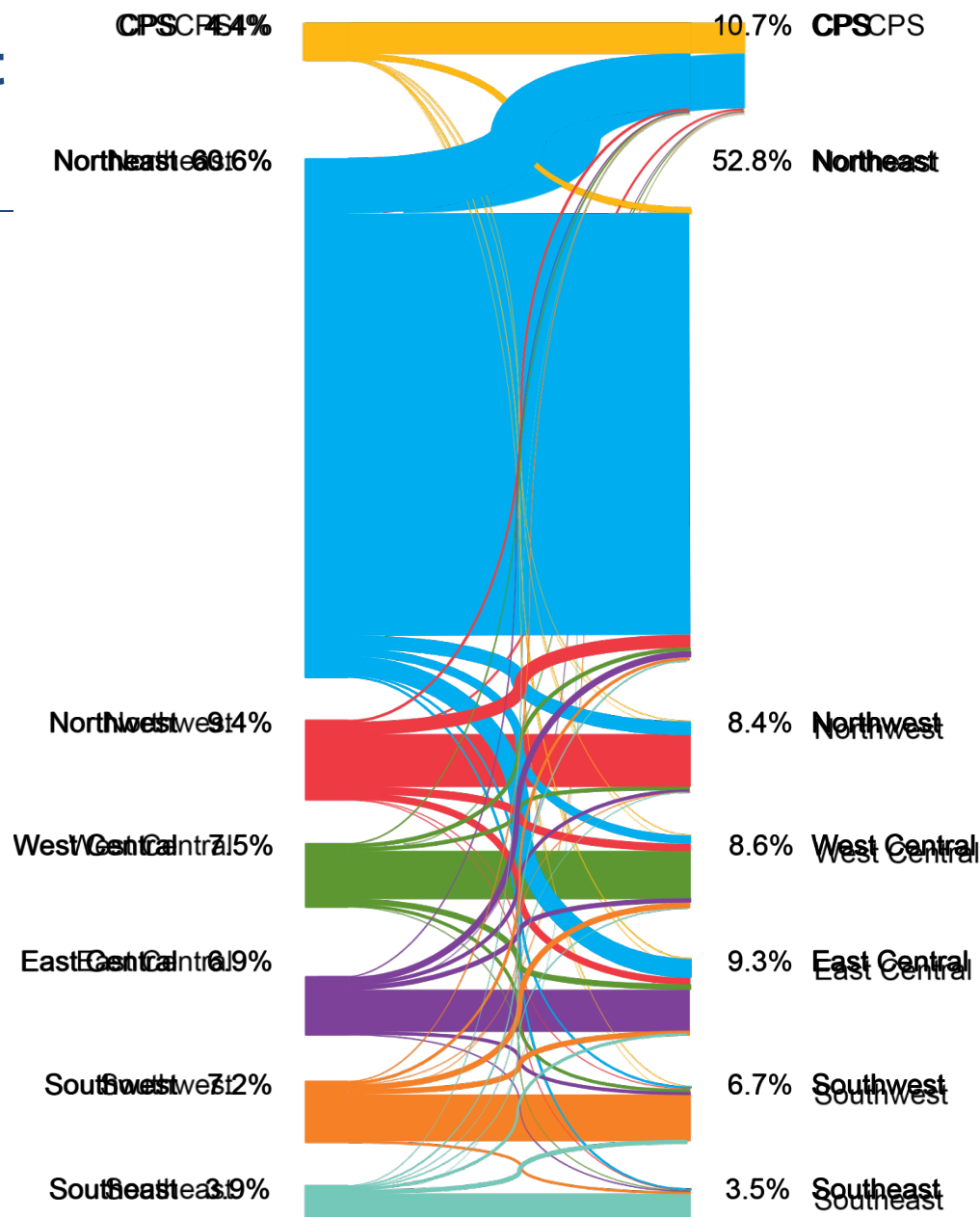
Flow from College to First Teaching Assignment

- Movement back towards the Northeast region and Chicago.
- New teachers from Chicago-based colleges either taught in Chicago or the Northeast Region, same with those from out-of-state colleges.
- Large movement out of the East Central region.
- Most of the new teachers from the EC region were from colleges in that region.



Flow from Home Area to First Teaching Assignment

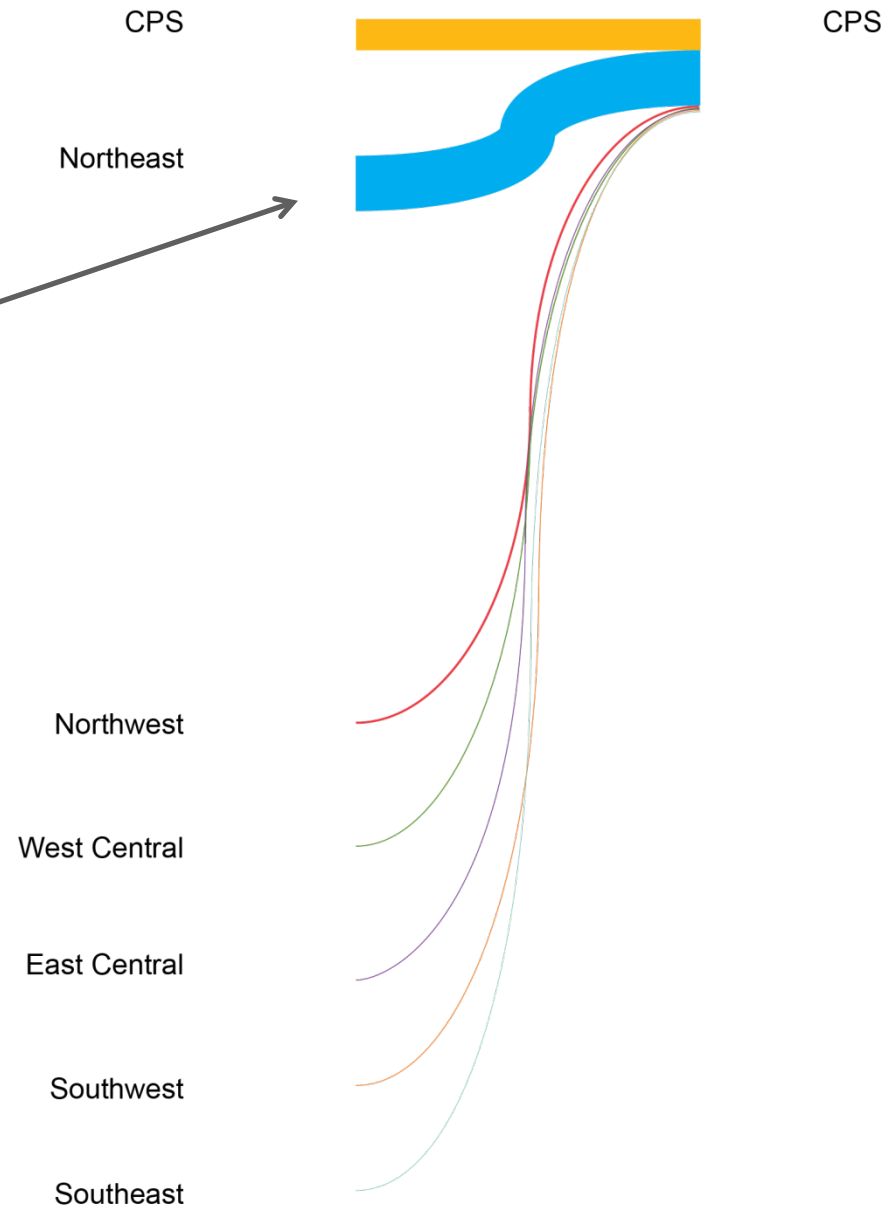
- Only a third of new CPS teachers emanate from CPS high schools.
- Nearly all of the new teachers in the Northeast region are from that region.
- Only a limited degree of movement into and out of the Southeast and Southwest regions.



Flow from Northeast to CPS

Who were these new teachers?

- Were they more or less diverse than their peers from the Northeast who taught in the Northeast?
- Were they more or less academically qualified than their peers from the Northeast who taught in the Northeast?



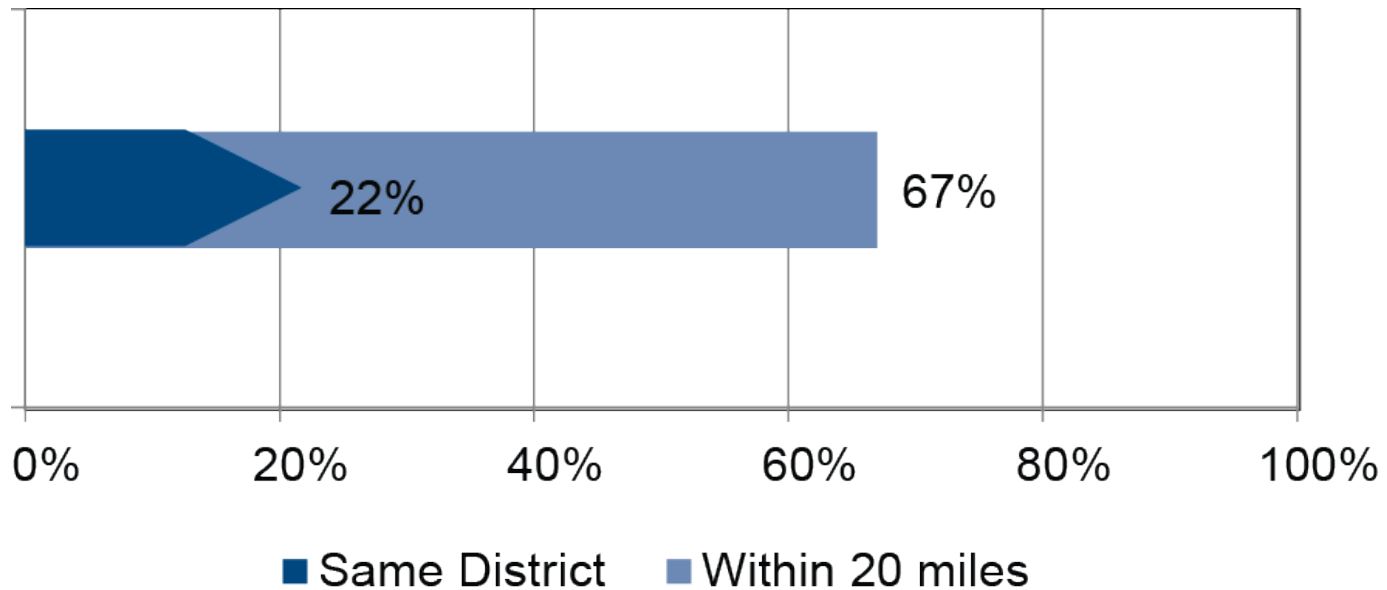
Flow from the Northeast to Chicago Public Schools

| | Northeast to Northeast | Northeast to CPS | CPS to CPS |
|-----------------|------------------------|------------------|------------|
| N | 3,547 | 463 | 261 |
| Bottom 1/3 ACT | 7.0 | 5.6 | 18.4 |
| Middle 1/3 ACT | 28.6 | 21.8 | 47.1 |
| Top 1/3 ACT | 64.4 | 72.6 | 34.5 |
| Mean ACT | 23.2 | 24.0 | 20.9 |
| Asian American | | | |
| Black | | | |
| Hispanic | | | |
| Missing | | | |
| Multi-Racial | 2.0 | 4.1 | 3.8 |
| Native American | — | — | — |
| White | 86.1 | 70.6 | 15.7 |

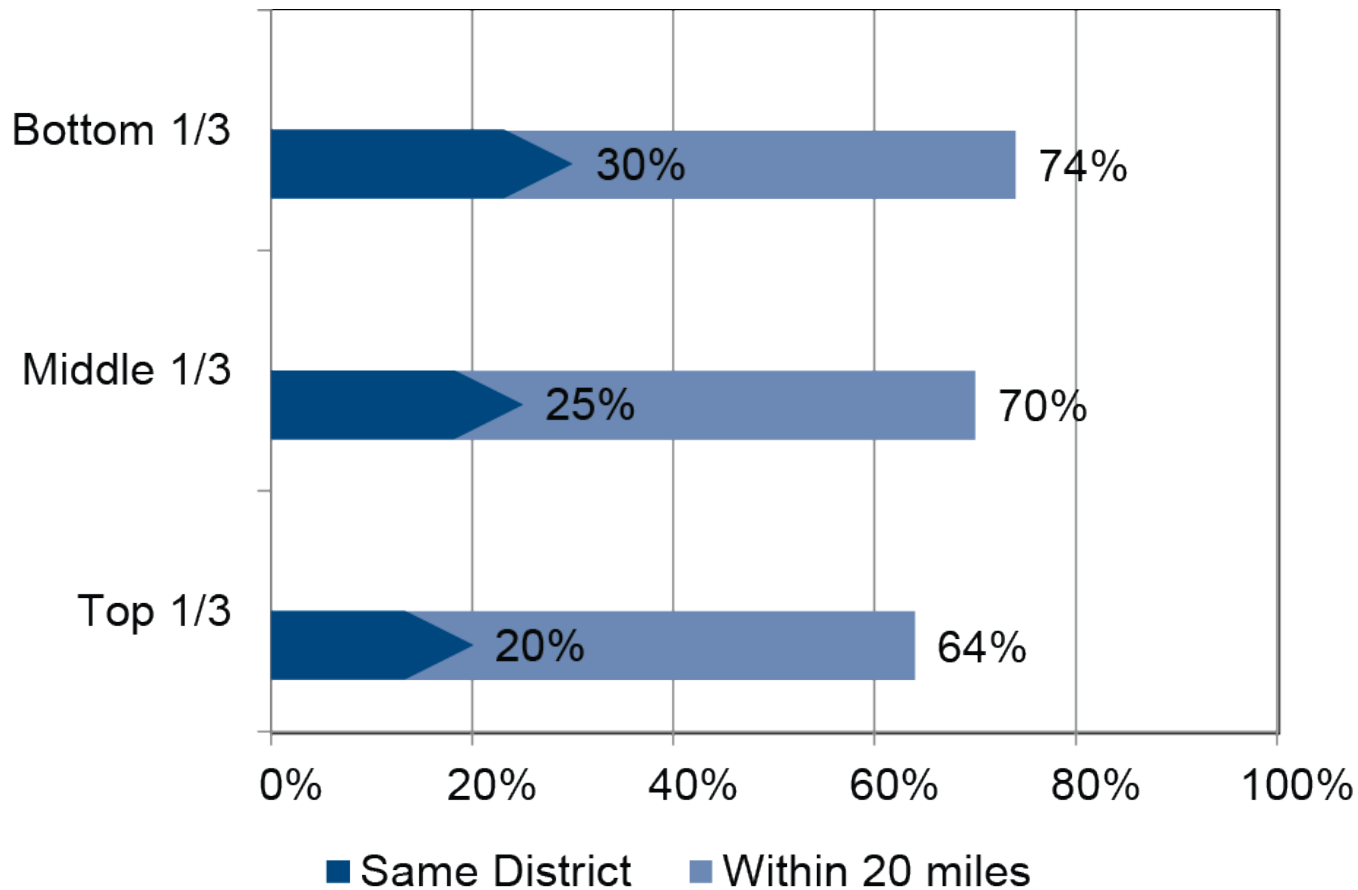
New CPS teachers from the Northeast Region had stronger academic qualifications than their counterparts who stayed in the Northeast Region.

New CPS teachers from the Northeast Region were more diverse than their peers who stayed in the Northeast Region.

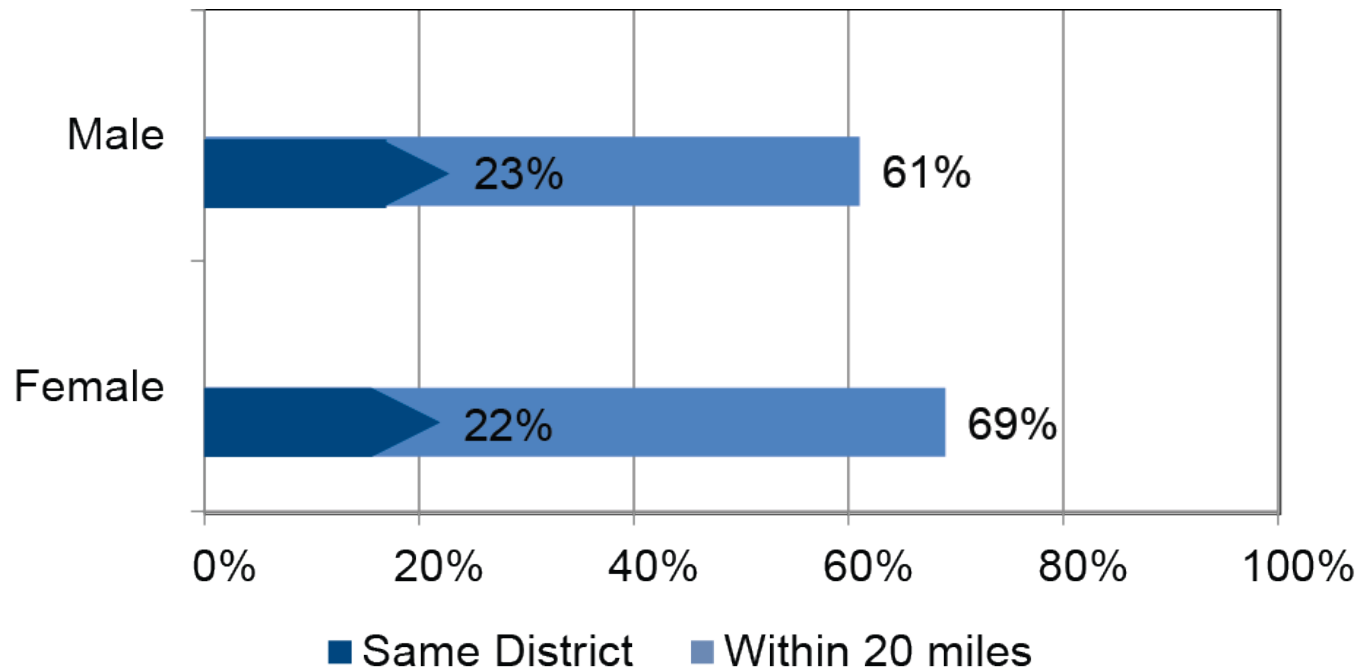
Home Area and First Teaching Assignment



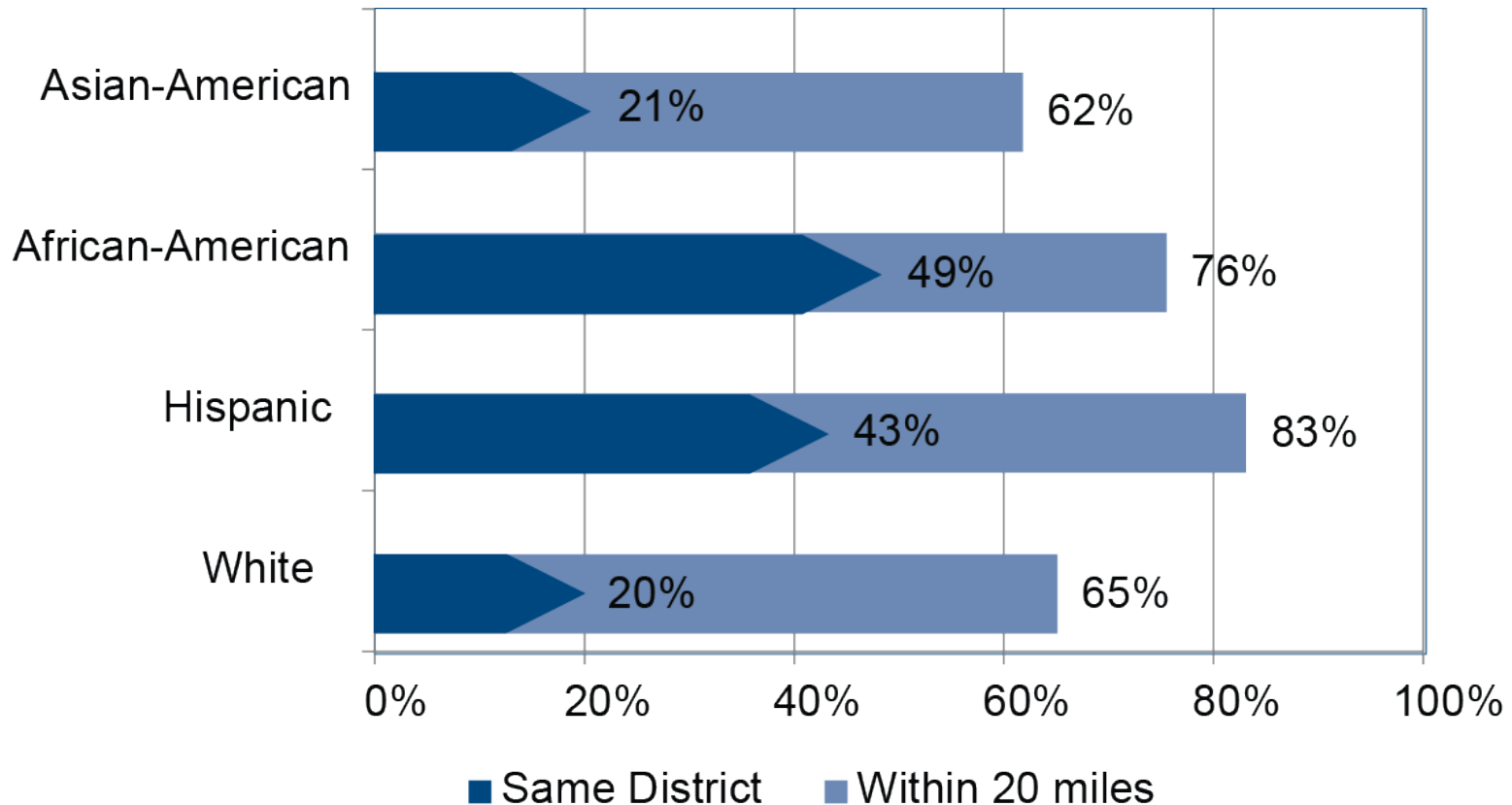
Home Area and First Teaching Assignment by ACT Thirds



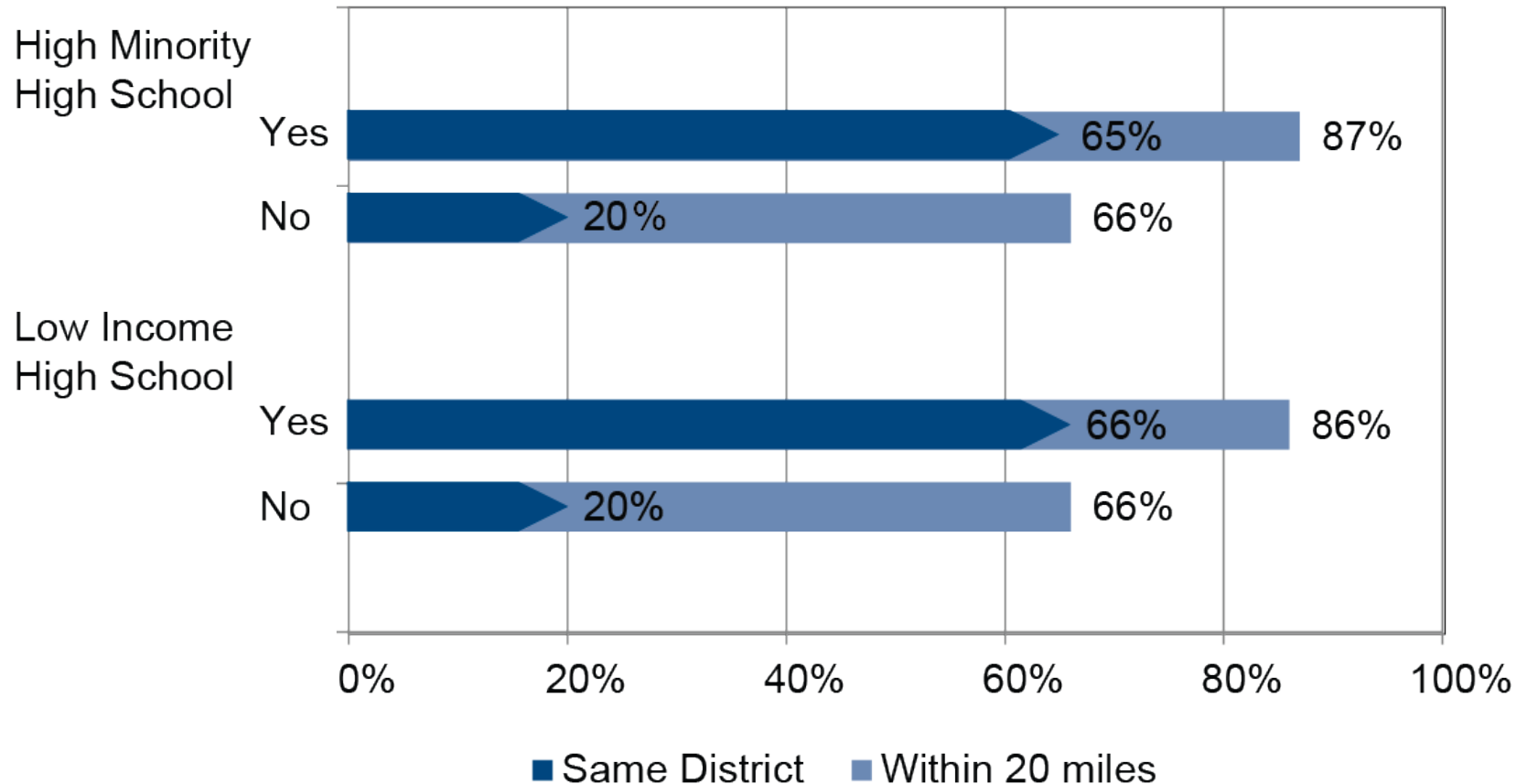
Home Area and First Teaching Assignment by Gender



Home Area and First Teaching Assignment by Race/Ethnicity



Home Area and First Teaching Assignment by Graduating HS Characteristics



Demographic Similarities

- Between teachers, their high schools, and the schools in which they begin their teaching careers

Race/Ethnicity and School Demographics of First Teaching Assignment

| Teacher Race/Ethnicity | Mean % White | Mean % Black | Mean % Hispanic | Mean % Asian |
|------------------------|--------------|--------------|-----------------|--------------|
| White | 63.5 | 13.5 | 16.1 | 4.0 |
| Black | 15.8 | 69.5 | 11.0 | 1.9 |
| Hispanic | 27.3 | 16.2 | 50.0 | 4.1 |
| Asian | 40.1 | 21.8 | 28.5 | 6.9 |

New teachers tend to begin their career in schools with higher proportions of same-race students.

Demographic Match

| Teacher Characteristics | | School Demographics of First Teaching Assignment | |
|--|------------|--|--------------|
| | | High Minority | High Poverty |
| ACT Composite | Top 1/3 | 19.4% | 34.6% |
| | Middle 1/3 | 22.3% | 43.1% |
| | Bottom 1/3 | 27.1% | 52.3% |
| Graduated from High Minority (50%+ Non-White) HS | No | 13.8% | 32.8% |
| | Yes | 37.1% | 51.9% |
| Graduated from a High Poverty (75% FRL) HS | No | 17.9% | 36.0% |
| | Yes | 69.9% | 81.6% |

- Teachers from the bottom of the ACT distribution or who themselves attended high minority/poverty high schools are most likely to begin teaching in high minority or high poverty high schools

Demographic Match by Teacher Characteristics (ACT)

| Teacher Characteristics | | First Teaching Assignment in High Poverty School |
|--|---------------|--|
| Graduated from a High Poverty (75% FRL) HS | ACT Composite | |
| No | Top 1/3 | 33.2% |
| | Middle 1/3 | 39.3% |
| | Bottom 1/3 | 46.4% |
| Yes | Top 1/3 | 74.0% |
| | Middle 1/3 | 83.9% |
| | Bottom 1/3 | 91.4% |

- Even among those who graduated from high poverty high schools, there is still sorting by ACT (and vice-versa)

Summary & Implications

- In Illinois, labor markets for new teachers are rather small, geographically, overall – and even smaller for non-White teachers and teachers with weaker academic backgrounds
- Teachers, on average, prefer to teach close to where they grew up or in schools similar to the ones they attended as students.
- HS demographics seem to be more closely linked (than ACT) to the type of school where teachers begin teaching.
- The sorting of new teachers is more closely linked to one's home area than to where one attended college, but there is some evidence that college location provides a secondary new teacher labor market.
- Teachers preference for schools that are demographically similar and in close geographic proximity to their own makes staffing difficult for schools in areas that need to import teachers, like Chicago.



**Download the full report at:
www.siu.edu/ierc/**

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