

Racial Equity & Academic Enrichment:

An Analysis of Urban Charter and Traditional Public Schools



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GOVT-496: Intro to Applied Political Data Science

Research Question

Are charter schools more or less equitable in the provision of education opportunities to students of color than traditional public schools in urban settings?

Rationale

- Public debate surrounding charters
 - NAACP and BLM calls for moratorium
 - Teacher Requirements
 - General concerns surrounding racial equity in the U.S. public education system
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Existing Research

- Racial Tracking
 - Racially imbalanced schools affect distribution of college-prep tracks across racial groups
 - Southworth & Mickelson (2007)
 - “Entrepreneurial” recruitment practices in some charter schools
 - May have higher rates of students of color, but lower rates of otherwise disadvantaged students (socioeconomic status, ELL, SPED)
 - Roch & Ertas (2012)
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The Process

Data

- National Center for Education Statistics (NCES)
 - Common Core of Data (CCD)
- United States Department of Education, Office of Civil Rights
 - Civil Rights Data Collection (CRDC)
- Accessed through the Urban Institute

How do school-wide racial demographics shape Advanced Placement enrollment students of color in charter and traditional public schools?

Methodology: School Selection



- Selected States
 - Focused on states that fund charter schools using the same funding formula used for public schools
- Urban Schools
 - Significantly larger charter population in urban settings
 - Questions of suburban v. urban equity
 - Urban Centric Locale filter to determine large cities
 - Determined by the National Center for Education Statistics' Common Core of Data (NCES CCD)

Methodology: AP Enrollment

Advanced Placement (AP)

- Advantages
 - Standardized indicator of educational enrichment
 - Content standardized across country
 - Indicates college preparation
 - Limitations
 - Not all AP classes are taught at the same level
 - Scores/College Credit likely vary
 - Only available at high school level
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The Process

- Used Urban Institute's educationdata package to access data
 - `get_education_data()`
 - [Urban Institute documentation](#)
 - Data Access Process
 - Challenge of data in different locations with few common variables
 - Filtering with NCES ID numbers
 - Challenges with filter methods in package
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The Process

Not Tidy

```
> head(crdc_enrollment)
# A tibble: 6 x 11
  X1 crdc_id year fips ncessch leaid race sex disability lep enrollment_crdc
<dbl> <chr> <dbl> <dbl> <chr> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
1 1 100068000082 2015 10 100068000082 1000680 5 2 99 99 2
2 2 100068000082 2015 10 100068000082 1000680 5 1 99 99 2
3 3 100068000082 2015 10 100068000082 1000680 5 99 99 99 4
4 4 100068000082 2015 10 100068000082 1000680 4 2 99 99 2
5 5 100068000082 2015 10 100068000082 1000680 4 1 99 99 5
6 6 100068000082 2015 10 100068000082 1000680 4 99 99 99 7
```

Tidy

```
> head(crdc_tidy_data)
# A tibble: 6 x 72
  X1 crdc_id year fips school_name ncessch leaid charter white black hispanic asian amindian_alnati...
<dbl> <chr> <dbl> <dbl> <chr> <chr> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
1 1 370472... 2015 37 Wake Young... 370472... 3.70e6 0 74 101 35 29 2
2 2 481623... 2015 48 EMMETT J C... 481623... 4.82e6 0 22 217 673 250 2
3 3 260022... 2015 26 Voyageur C... 260022... 2.60e6 1 13 361 43 0 0
4 4 370472... 2015 37 Longview 370472... 3.70e6 0 70 214 76 4 2
5 5 261200... 2015 26 Medicine a... 261200... 2.61e6 0 7 394 4 2 0
6 6 062805... 2015 6 Fremont Hi... 062805... 6.28e5 0 16 202 475 43 0
```

- Data Wrangling

- Used filter join to match schools in CRDC data to the sample from CCD data
- Used filter(), spread(), and rename() to tidy
- Used inner_join() to add variables of interest from the AP enrollment data

- Data Visualization

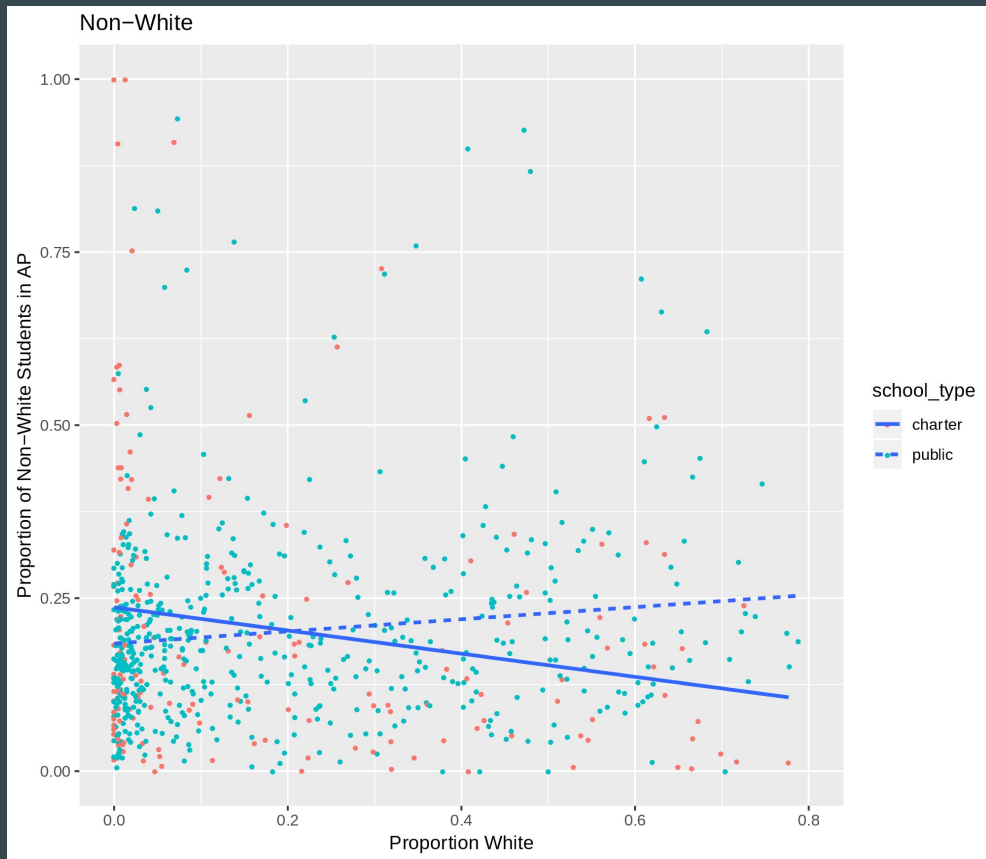
- Used ggplot2 to build scatterplots with linear regressions

- Linear Modeling

- Used R's built-in linear modeling function to identify R^2 , coefficient, and p-values
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Findings

Student Body Proportion White vs. Proportion of Students of Color Enrolled in an AP



Charter

Coefficient: $-.17417$

R^2 : 0.04026

P-Value: **.01095**

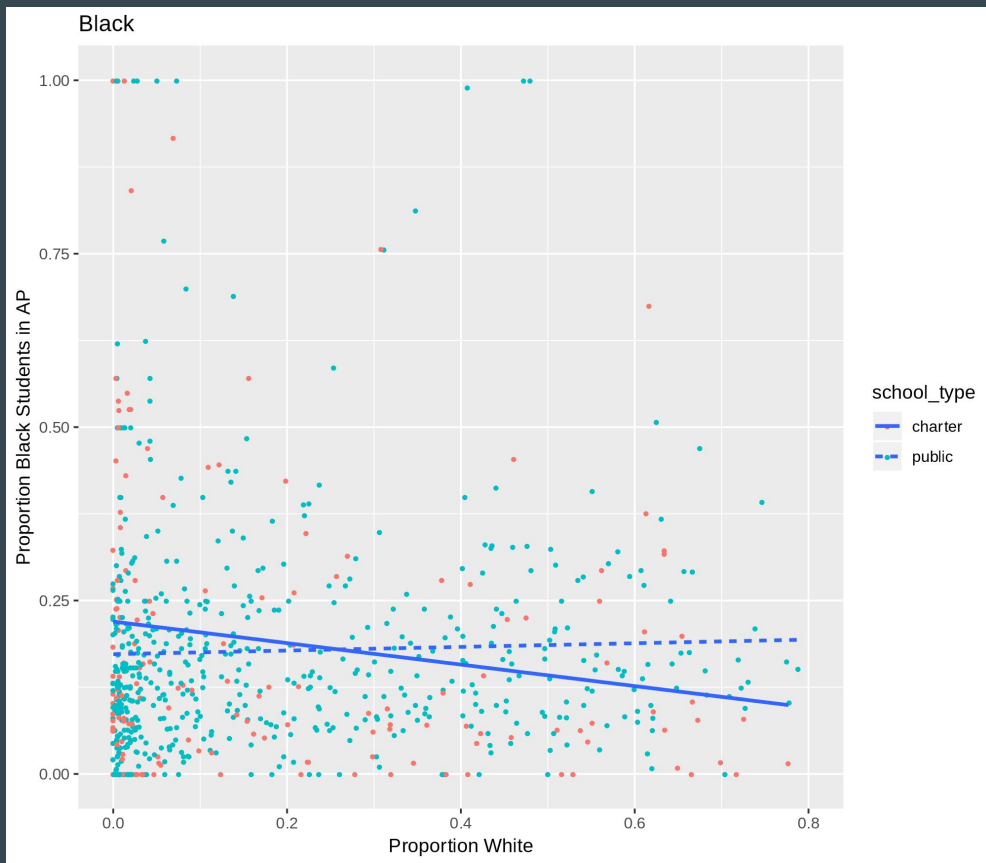
Traditional Public

Coefficient: 0.087663

R^2 : 0.0149

P-Value: **0.002517**

Student Body Proportion White vs. Proportion of Black Students Enrolled in an AP



Charter

Coefficient: -0.16026

R^2 : 0.02426

P-Value: 0.02826

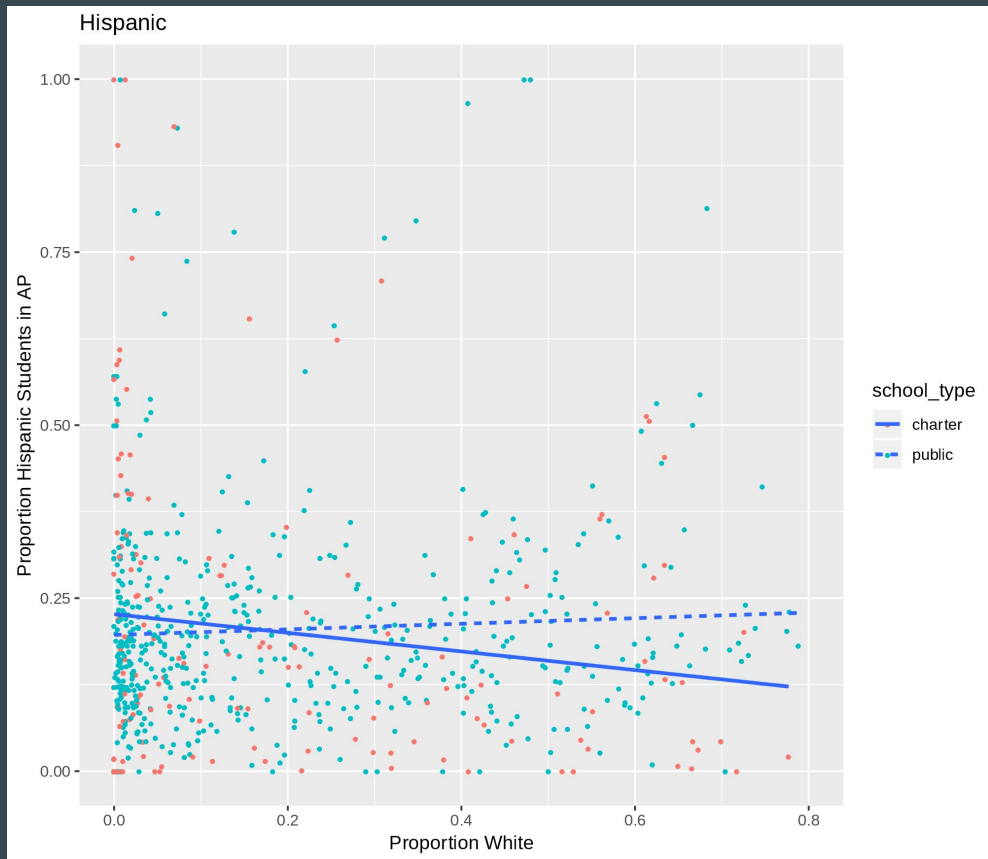
Traditional Public

Coefficient: 0.026323

R^2 : 0.001068

P-Value: 0.4472

Student Body Proportion White vs. Proportion of Hispanic Students Enrolled in an AP



Charter

Coefficient: -0.14265

R^2 : 0.01751

P-Value: 0.05368

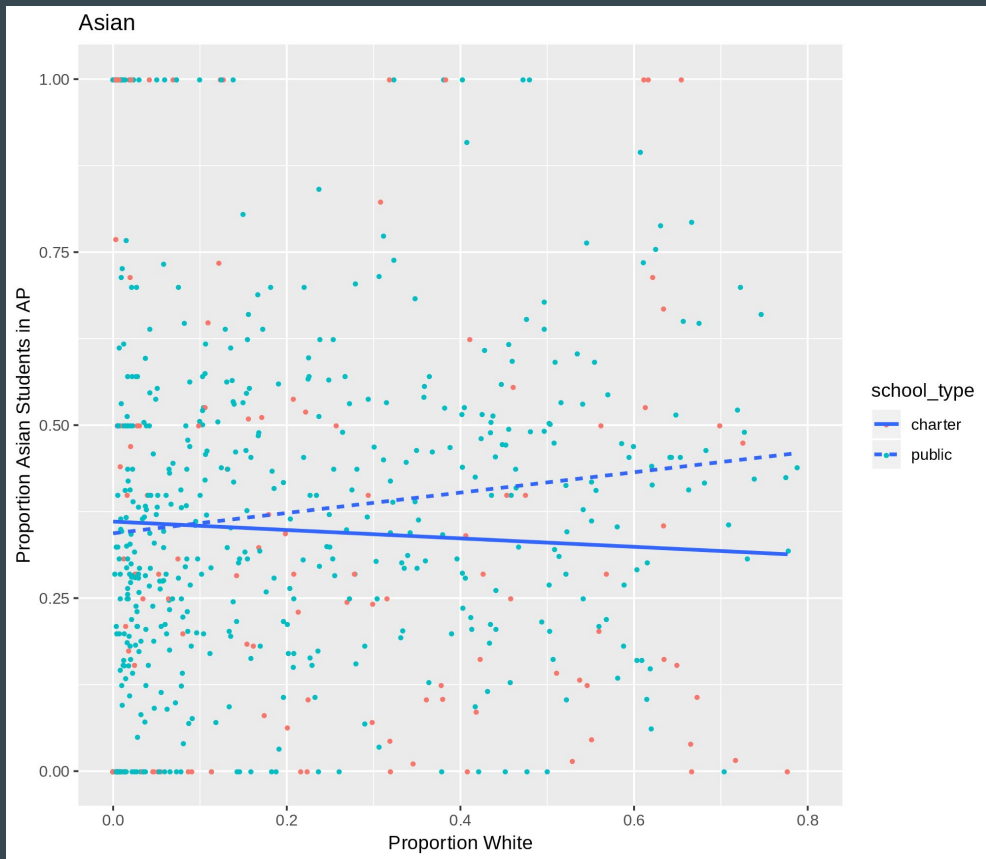
Traditional Public

Coefficient: 0.040377

R^2 : 0.001185

P-Value: 0.2014

Student Body Proportion White vs. Proportion of Asian Students Enrolled in an AP



Charter

Coefficient: -0.08527

R^2 : 0.003601

P-Value: 0.496

Traditional Public

Coefficient: 0.14713

R^2 :XXX 0.01482

P-Value: 0.006109

Key Takeaway

There is a statistically significant negative relationship between increased proportions of white students in urban charter schools and the proportion of students of color enrolled in AP programs.

There is not a similar statistically significant relationship in urban traditional public schools.

Implications

- Charter schools may be less internally equitable than traditional public schools
 - In schools that are <20% white, black and hispanic students are likely to be better served in a charter school
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Limitations

- Only considering AP Enrollment
 - Scores
 - IB, G&T, Honors
 - Extracurriculars
 - Lack of Controls
 - Socioeconomic status
 - Region
 - Special Education
 - English Language Learners
 - Limited Data
 - Single Year: 2015
 - Limited Number of States
 - Only High Schools
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Recommendations for Future Research

- Improve education data package
 - Look into other subjects covered in Urban Institute data
 - AP Scores
 - Absenteeism
 - Discipline
 - Harassment & Bullying
 - Find/Analyze Other Data
 - Socioeconomic Status
 - Regional Differences
 - Charter Networks
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Questions?