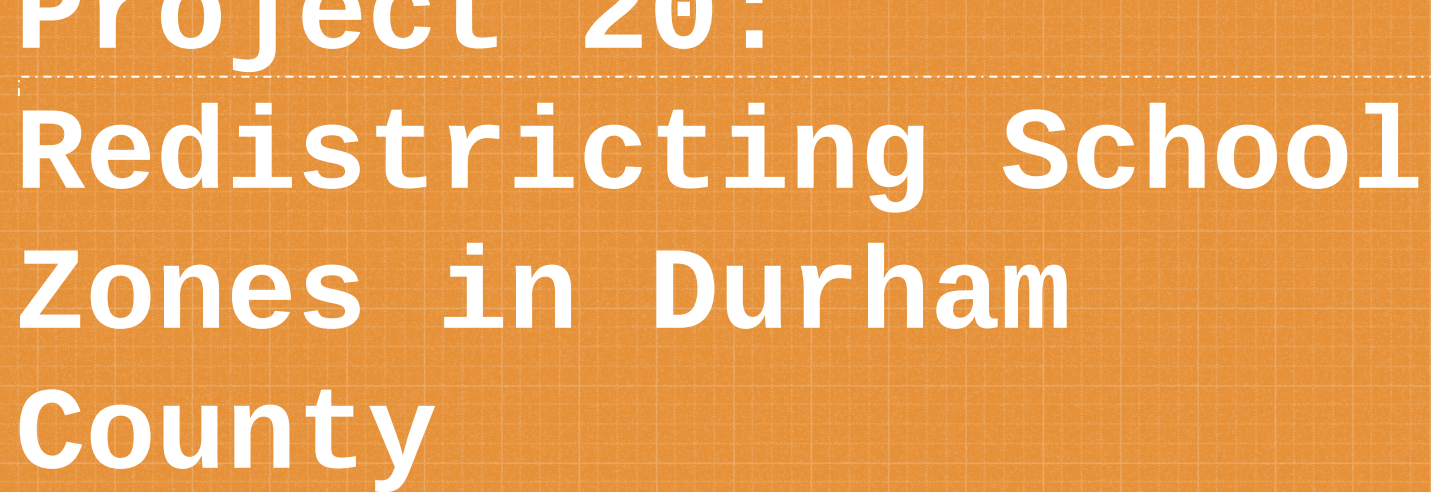


Project 20: Redistricting School Zones in Durham County

The title is enclosed in a dashed rectangular border. A dashed arrow in the top right corner points from the right side of the box towards the top right. A dashed arrow in the bottom left corner points from the bottom left of the box towards the bottom left. A dashed arrow on the right side points from the top of the box towards the bottom.

Introducing the Team



Kassie Hamilton



Michelle Mojekwu



Zineb Jadi



Bernard Coles IV
Project Manager



Gregory Herschlag
Project Lead



1

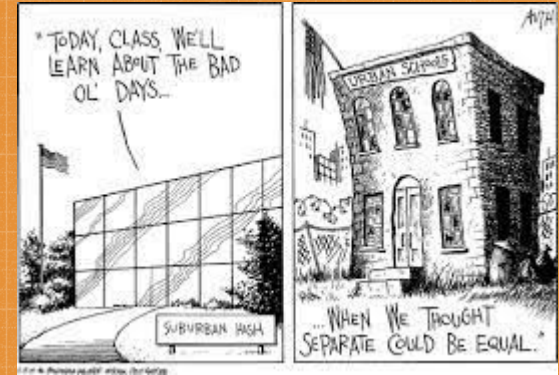
BACKGROUND REFRESHER



on Durham county and its history
regarding school districts

Durham's History With Segregation

- Racial segregation and housing discrimination currently not eradicated
- Durham had two public school districts
- Formally desegregated in 1970
 - Triggered white flight
 - Eventually merged districts
- In 2007, number of charter schools increased
 - No guidelines to ensure they mirror Durham racial demographics
 - Concentrated students of color and poorer students in district schools



Original Project Goal

1. A comprehensive integration plan
2. To create districts influenced by the following criteria:
 1. Socioeconomic status
 2. Race (integration)
 3. Walkability
 4. One school per district

Durham Country is redistricting this Fall!





2

Data



Racial Data Distribution

Black or African
American Population,
2019

COUNTY

35.9%

or

111,903

people

White Population, 2019

COUNTY

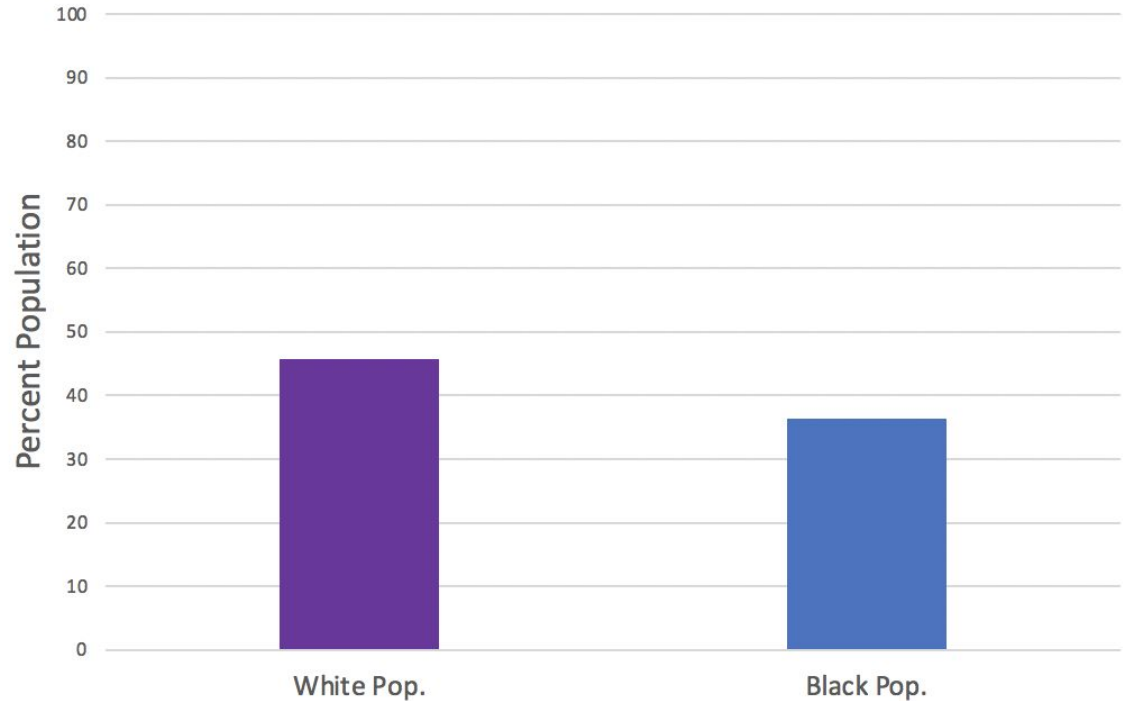
42.5%

or

132,449

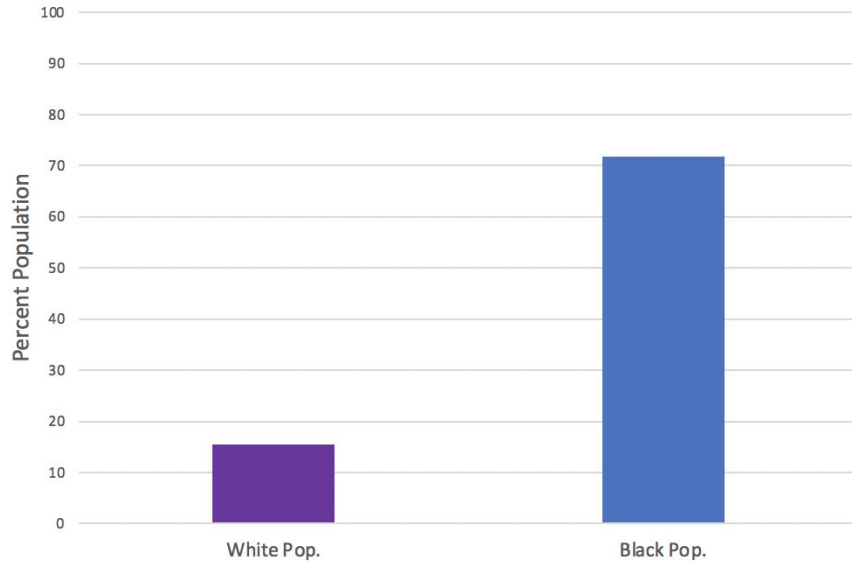
people

Block 2031, Block Group 2, Census Tract 16.01, Durham County



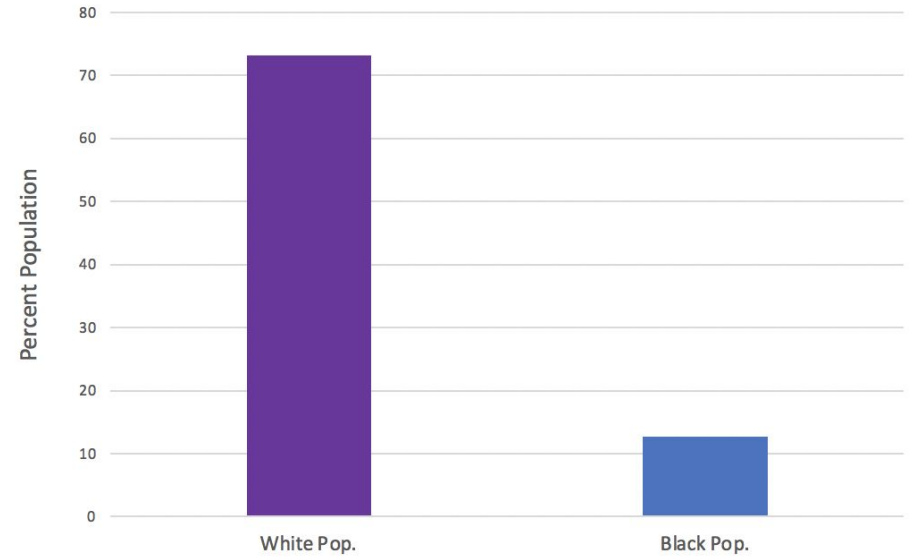
Racial Data Distribution

Block 2000, Block Group 2, Census Tract 1.01, Durham County



Majority Black Population

Block 1006, Block Group 1, Census Tract 4.01, Durham County



Majority White Population

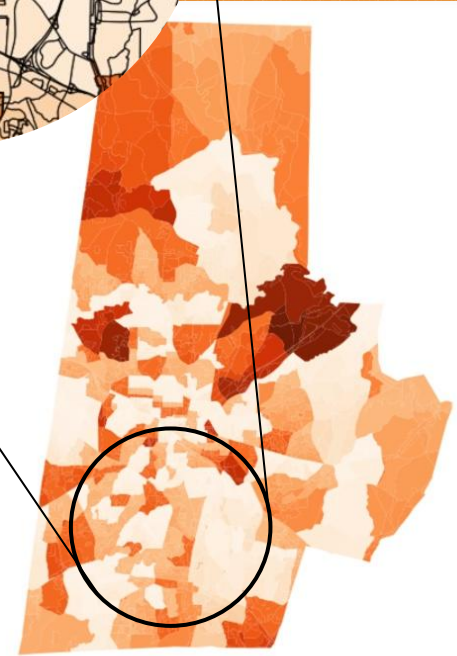
Next Steps With The Racial Data

- To generate districts that are representative of the county's racial population.
- Generate/ evaluate r values
 - Dictionary Output: (node, (black r value, white r value))
 - Ex: (1, (.7465899767399301, 0.03262300685604284))



Income Data

- Motivation:
 - Evaluating by income allows us to determine if districts are truly integrated
 - Allows for us to fully assess racial integration
- Methods:
 - Acquire income data
 - Map income to Geo ID (on block level)
 - For each district, account for population in each block
 - Find average income for each district
 - Calculate r values for each plan



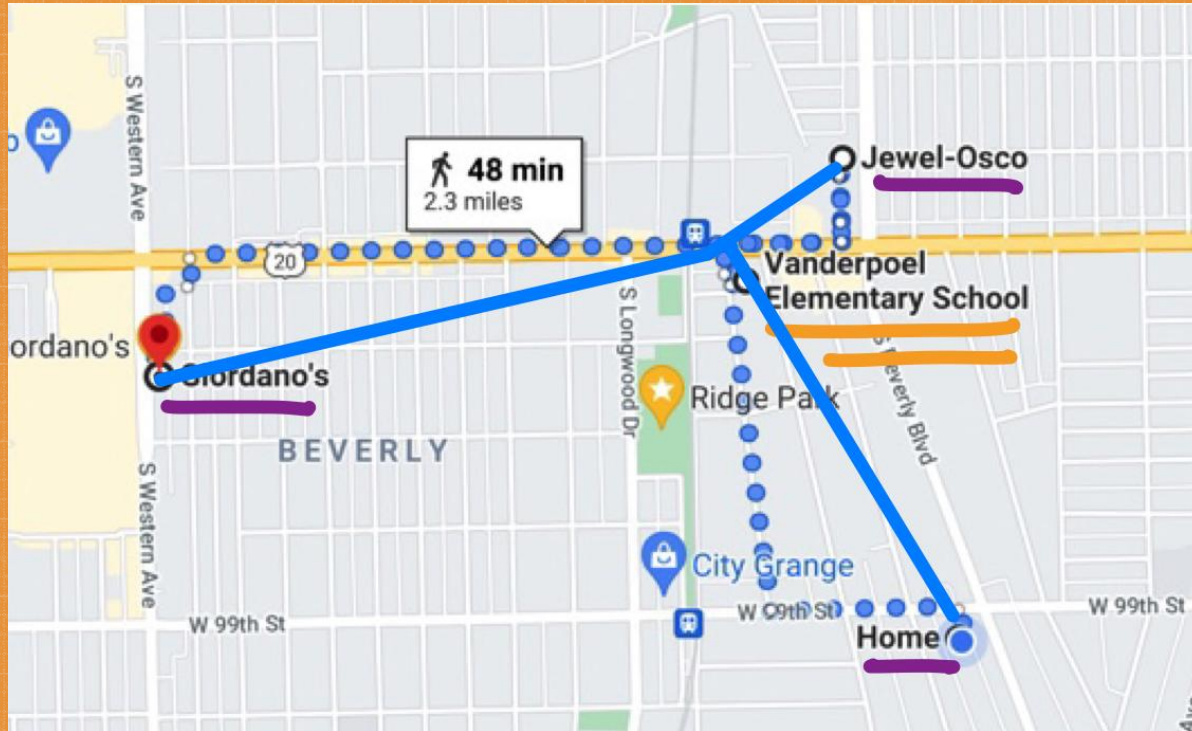
Walkability

To assess the walkability score for each zone and each plan we must:

- distance from the centroids of districts to the school for that zone
- sum the population over each census block then multiply it by the distance from the school to the census block
- divide that by the total number of students. (weighted average = walkability score of a zone)
- average all zone walkability to get the walkability of the plan



Walkability Example



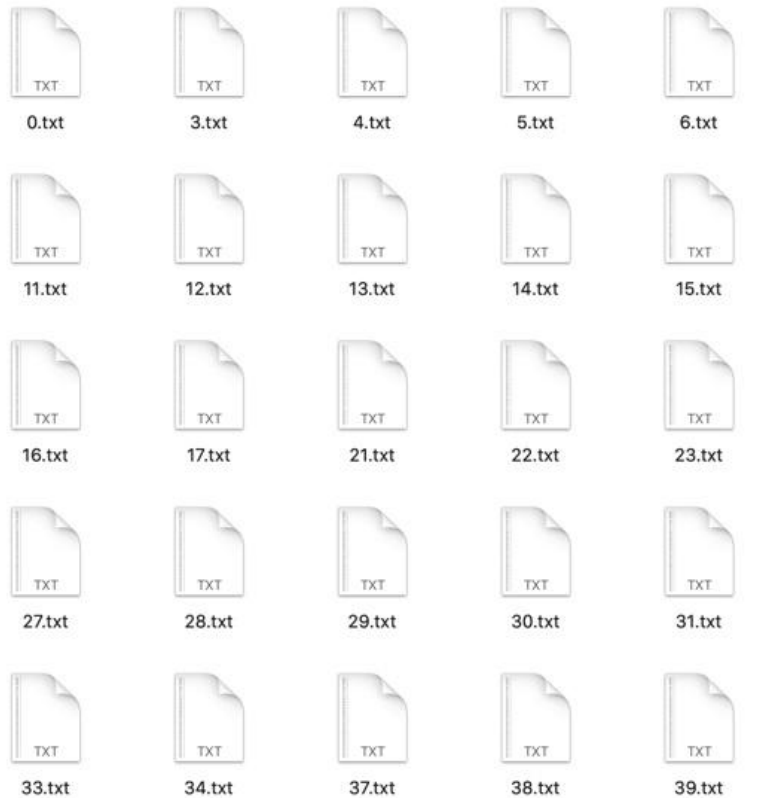


2

Results

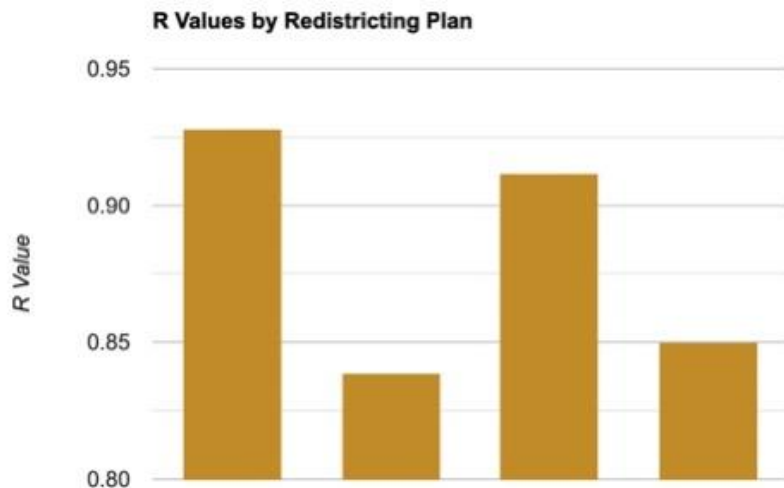


Data Analysis



```

1 17 0.9508135489429457 0.8738369298934722 0.9124899759805553
2 14 0.948754684530068 0.8714897425874001 0.91624899759805553
3 15 0.9485893049134148 0.874020701144 0.412548997598055530148
4 13 0.9448563266494834 0.872071484301 0.951248997598055533617
5 12 0.9421056766902423 0.875871415705 0.9154424839975980555378
6 11 0.9410056375407114 0.873634292353 0.91248997598055531443
7 16 0.9375149176912888 0.865929510841 0.912248997598055539509
8 6 0.9357435716940692 0.875345284387553 0.91248997598055531 0.
9 5 0.9337017763294233 0.866831103439308 0.95248997598055534 0.
10 78 0.9334763772107946 0.818075848151 0.91248997598055539
11 73 0.9313006503666039 0.821647551690 0.91248997598055536 0.
12 70 0.9303831757245552 0.820223527410 0.91248997598055538 0.
13 75 0.9297103150507028 0.809160320141 0.91248997598055534 0.
14 77 0.9295003658561855 0.808885703768 0.91248997598055537 0.
0.9124899759805553
15 76 0.929252691438768 0.8088877483164872 0.9124899759805553
16 74 0.9275403091464501 0.810170862355 0.91248997598055539105
17 21 0.926484191024399 0.8328070908385022 0.9124899759805553
18 68 0.9238847778422931 0.816514855624 0.91248997598055531737
    
```



Redistricting will not solve all of our problems.

However, we believe redistricting can lay the groundwork to create a more equitable system.

Thanks!

ANY QUESTIONS?