Visualizing Durham Public Schools

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Methods

- **Data Collection**: Collect data using data mining and web scraping.
- **Visualize Spatial Data**: Display spatial data as markers on map using the Leaflet R Package.
- **Visualize School Stats**: Present school statistics as graphs using the GGPlot R Package.
- **Design Homepage**: Design an eye-catching introductory homepage using the Shiny R Package.
- **Deploy App**: Deploy app for public use using a Shiny Server.

Spatial Data

GeoJson files obtained from Durham Open Data are used to display the shapes of the school zones on the interactive map.

Latitudinal and longitudinal data obtained from various sources like Durham Open Data and Google Maps are used to display specific variables as markers on the interactive map.

Unique icons are given to each marker to enhance the readability of the map. Icon clustering is enabled to preserve the readability of selections with many markers.

School Statistics

School statistics were collected from sources including Durham Compass, NC School Report Card, the NCDPI website, and more. Users can select a measurement using a drop-down menu. If applicable, the Durham County average is provided.

Context & Resources

Context and resources are provided to give users more insight into particular variables. When a user chooses a variable, additional information about the data is given, as well as definitions, quick links, and social implications.

Background

Our work continues upon the progress made by a Bass Connections team between Duke and NCCU focused on understanding the community school model, a way of approaching schools as the center of the community. We are looking at how Durham universities can equitably partner with the school system.

Objectives

The goal of our project is to provide a comprehensive resource about the Durham Public School system aimed at those entering the schools as preservice teachers, volunteers, etc. To do this, we created an interactive R Shiny dashboard to display school statistical data and geospatial mapped data.

Future of the Dashboard

- Assess approaches to learning in the classroom with an asset-based approach
- Increase inter-relationships with Duke students, NCCU students, and the Durham community
- Extend dashboard to include all DPS schools, and eventually to a state/nation-wide tool
- Influence a reformed curriculum for Duke and NCCU students regarding new approaches for Durham schools

Context & Resources

- Students of color are more susceptible to harsher punishments in schools. Black students are subject to higher disciplinary actions compared to their white peers. A reason for this is racial bias leading to the over-policing of Black students, fueling the school-to-prison pipeline.¹

¹ school-to-prison pipeline: the over-disproportionate policing of minority students, often from low-income households, that leads to higher punishments including 1) suspension, 2) juvenile detention, etc.