

Seattle kids: changing demographics and the implications for public schools

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Explosive population growth and expensive real estate

Urban Centers and Villages development plan

Debates over children and families in urban environments

Background

What role does density play in the distribution of children in Seattle's Urban Centers and Villages?

What role do Urban Centers and Villages play in changing enrollments in Seattle Public Schools?

Problem statement

Can we model enrollment using current population data alone?



Census data aggregated by UCV and by region

Source: City of Seattle

Format: CSV files

Data Collection



Enrollment data by individual school

Source: Seattle Public Schools

Format: pdf reports



Geographical correspondence

Source: Created by comparing maps from city and schools

Format: Excel file

Data Dashboards

• Click me (I'm not sketchy at all!)

Exploratory Data Analysis: Key Findings



Centrally located UCVs are experiencing the steepest rise in child population

Very urban, essentially no single-family housing



Inconsistencies in UCV boundaries leads to interesting density trends

Downtown, SLU, Cap Hill, Uptown have low density

Highest density: Othello



UCVs split to balance school enrollments

Othello split between 6 elementary schools

Schools do not serve them as a whole



Challenges

01

Reworked school boundaries with UCVs split across schools

02

Different reporting frequencies

03

Aggregated by age: Over/Under 18 only

Challenges

Feasible approach: Model total enrollment using interpolated population data

01

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Forecast: can the population data help?

Simple Linear Regression

- Total and grade level enrollment
- Population data

Multiple Linear Regression

- Total and grade level enrollment
- Population data
- Time lagged population data

Null Model

Enrollment average

Results: how much variation can our model(s) explain?



Metric: R2 score



Best total enrollment model: total enrollment population and 5-year lag

Training: 99%
Testing: 91.3%



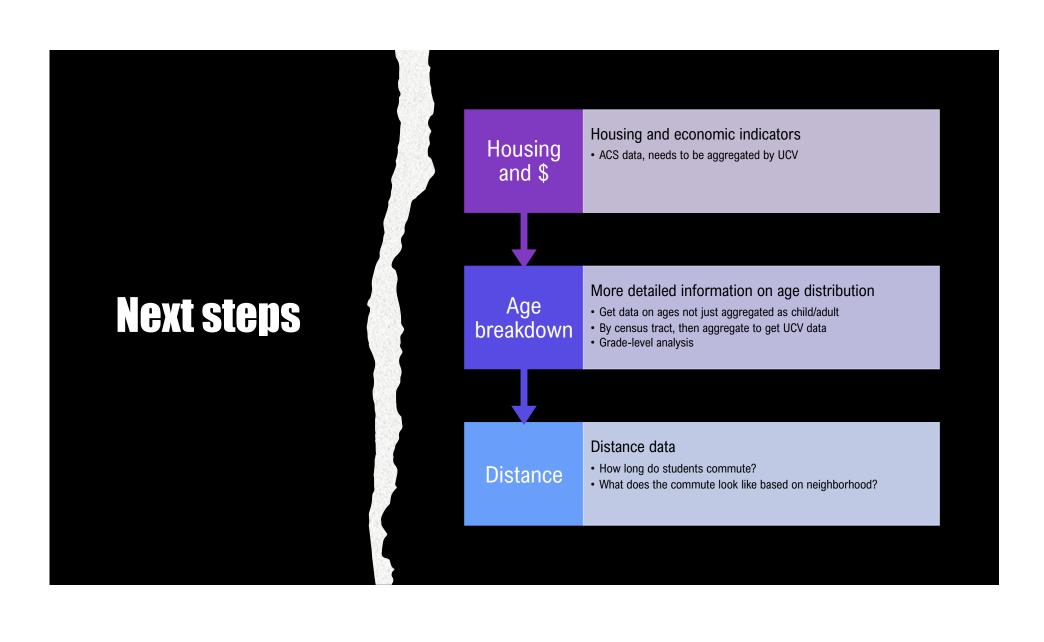
Best grade level model: middle school enrollment population and 10-year lag

Training: 99%

Testing: 98.5%

Recommendations

- Re-examine how we define school districts in relation to urban centers and villages, particularly Othello and Lake City
- Consider the rising population of children in urban centers and villages when determining how to manage facilities



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Acknowledgments