

Improving Access to Out-of-School Resources Using Data Science

Kellie MacPhee, Joseph Abbate, Jose Hernandez, Sreekanth Krishnaiah, Karen Lavi, Andrew Taylor, Sivan Tuchman, and Haowen Zheng

CASCADIA URBAN ANALYTICS COOPERATIVE



Introduction

During summer vacation, students lose on average 1 month of knowledge – the **Summer Slide**.

Summer programs (e.g. arts, sports) help **reduce** this slide.

Socioeconomically disadvantaged students attend fewer summer programs, which contributes to an **achievement gap**.

ReSchool Colorado, a Denver-based non-profit, works to solve this problem. Their goal is to ensure students have access to opportunities for out-of-school learning, growth, and enjoyment.

ReSchool's new **Blueprint4Summer** website allows parents to search through summer programs offered in Denver based on type, location, cost, age range, and other characteristics.

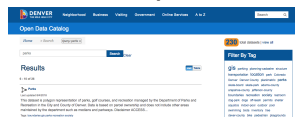
We partnered with ReSchool to help them better understand **the distribution of programs in Denver** and assess **whether all Denver students have equal access to out-of-school resources**.

Data Sources

Blueprint4Summer



Denver Open Data



Census Demographics

Median household income, race/ethnicity, education levels, age breakdowns, language besides English spoken at home

Denver Public Schools

Student demographics

- Race/ethnicity
- Disability status
- English language learners

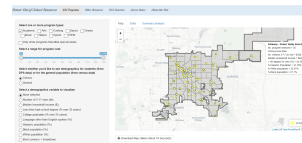
• *Approximate student locations:* nearest census block group

Insights

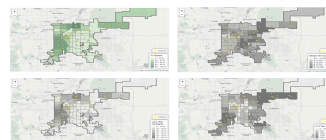
What program categories do people search for the most?



How are programs distributed in Denver?

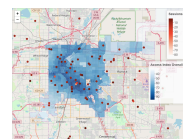


Overlaying demographics

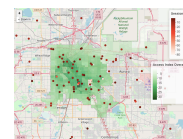


Measuring access to summer programs

$$A_{type}^{transit\ mode} = \frac{1}{\sum_{programs\ of\ type} f(F_{transit\ mode}^{back\ to\ program})}$$



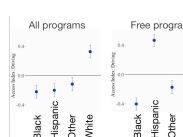
All programs (driving)



All programs (transit)

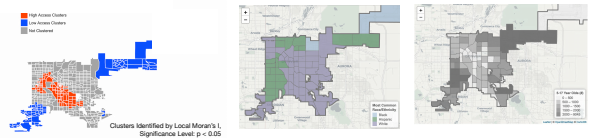


Free programs (driving)

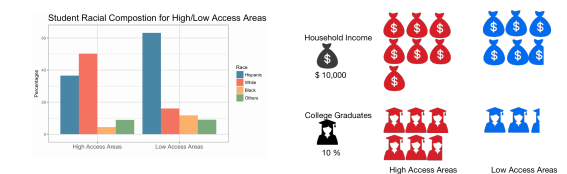


Insights, continued

Which areas have high/low access?



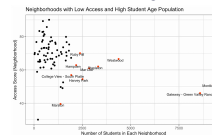
Who is more likely to have high access?



How does access vary by program type?

	All	Nature	Sports	Art	Academic	Free
Hispanic	63	64	54	68	67	56
White	68	70	63	70	68	50
Black	59	61	54	61	60	45
Other Races	62	64	57	65	64	49

Which neighborhoods have many students but low access?



Acknowledgements

This work was done in partnership with the Center on Reinventing Public Education.



https://github.com/CRPE-UWB/osr_dssg2018

