

Out of School Resources





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Student Fellows





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Data Scientists





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REINVENTING
PUBLIC EDUCATION



Summer Slide is a Big Problem



HOME / CIVIC / EDUCATION NEWS

Is Summer Breaking America's Schools?

How the prolonged summer break is dividing students and costing educators.



By Seth Cline, Staff Writer June 7, 2018, at 12:55 p.m.



RECOMMENDED

WORLD
U.N.: Reports Say China
Imprisons Uighurs



BEST STATES
The States Tackle Health
Care



NATIONAL NEWS
Mystery of Jupiter's Bands
Solved



BEST COUNTRIES



Summer Programs May Help Reduce Summer Slide

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- Free programs in the City of Baltimore reduced summer slide¹

¹ Baltimore City Public Schools, 2016 Summer Learning Evaluation

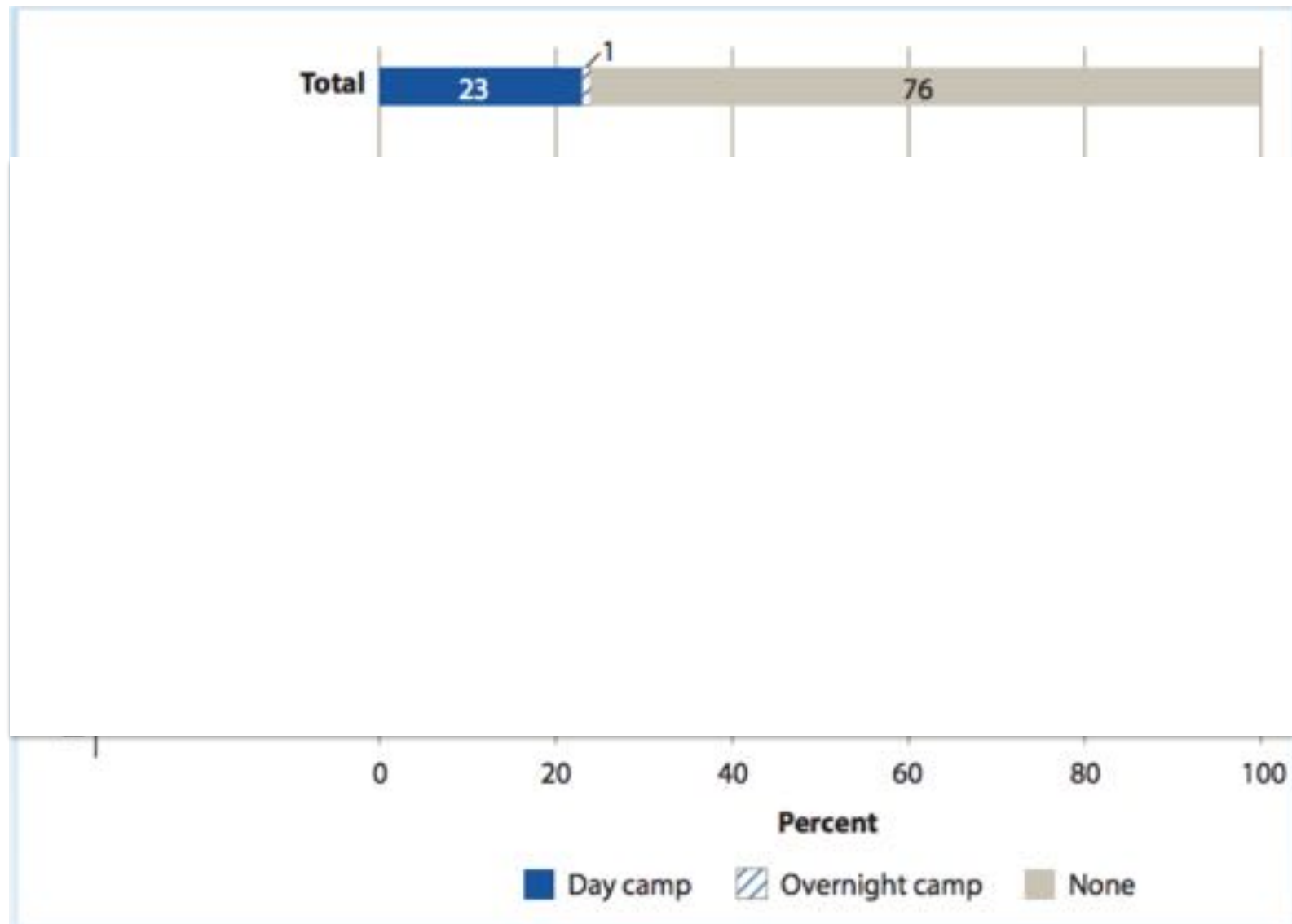
Summer Programs May Help Reduce Summer Slide

- Free programs in the City of Baltimore reduced summer slide¹
- Benefits from all types of summer programs persist throughout school year²

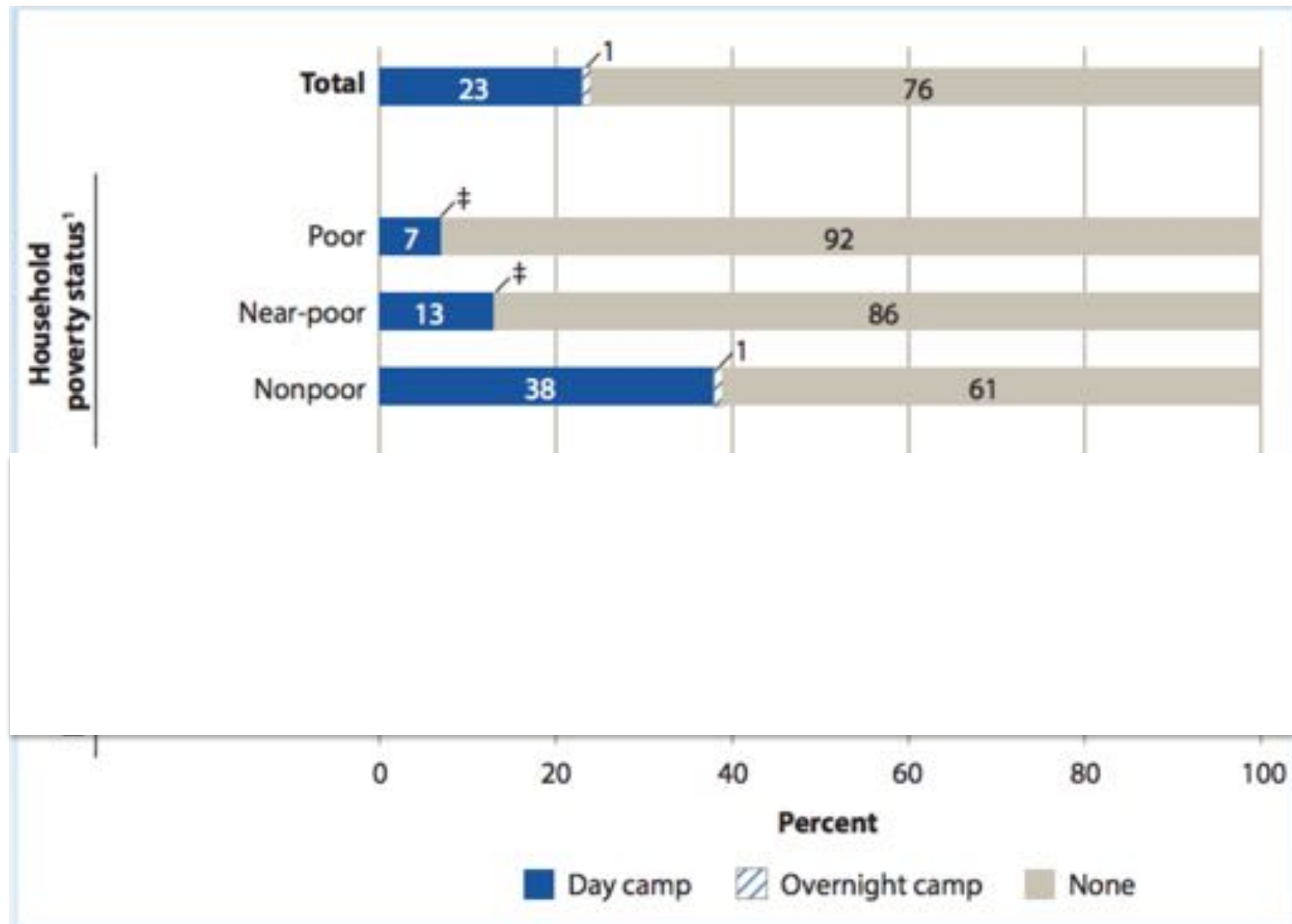
¹ Baltimore City Public Schools, 2016 Summer Learning Evaluation

² RAND Corporation, 2017, *Making Summer Last*

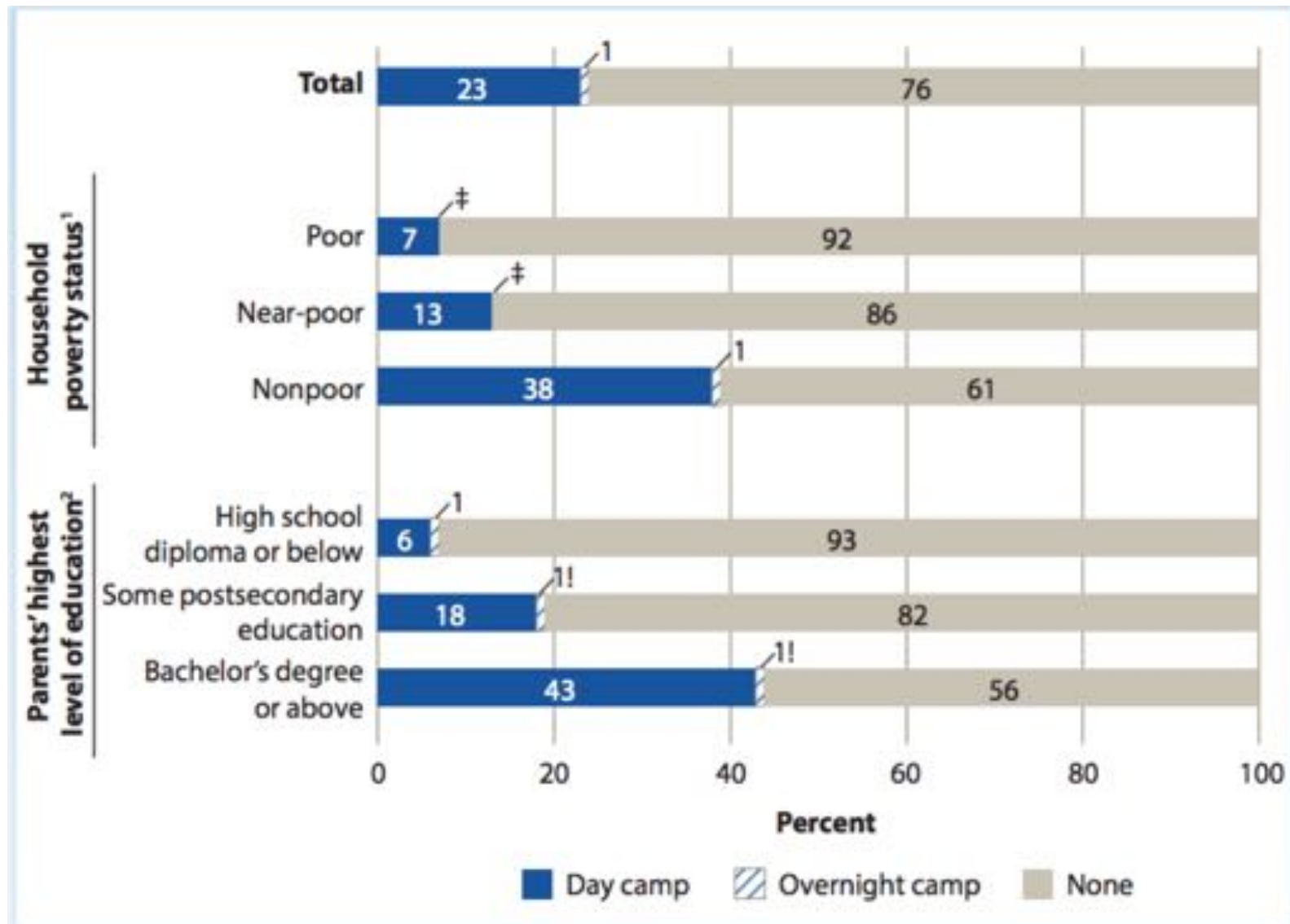
Economically Disadvantaged Students Attend Fewer Summer Programs



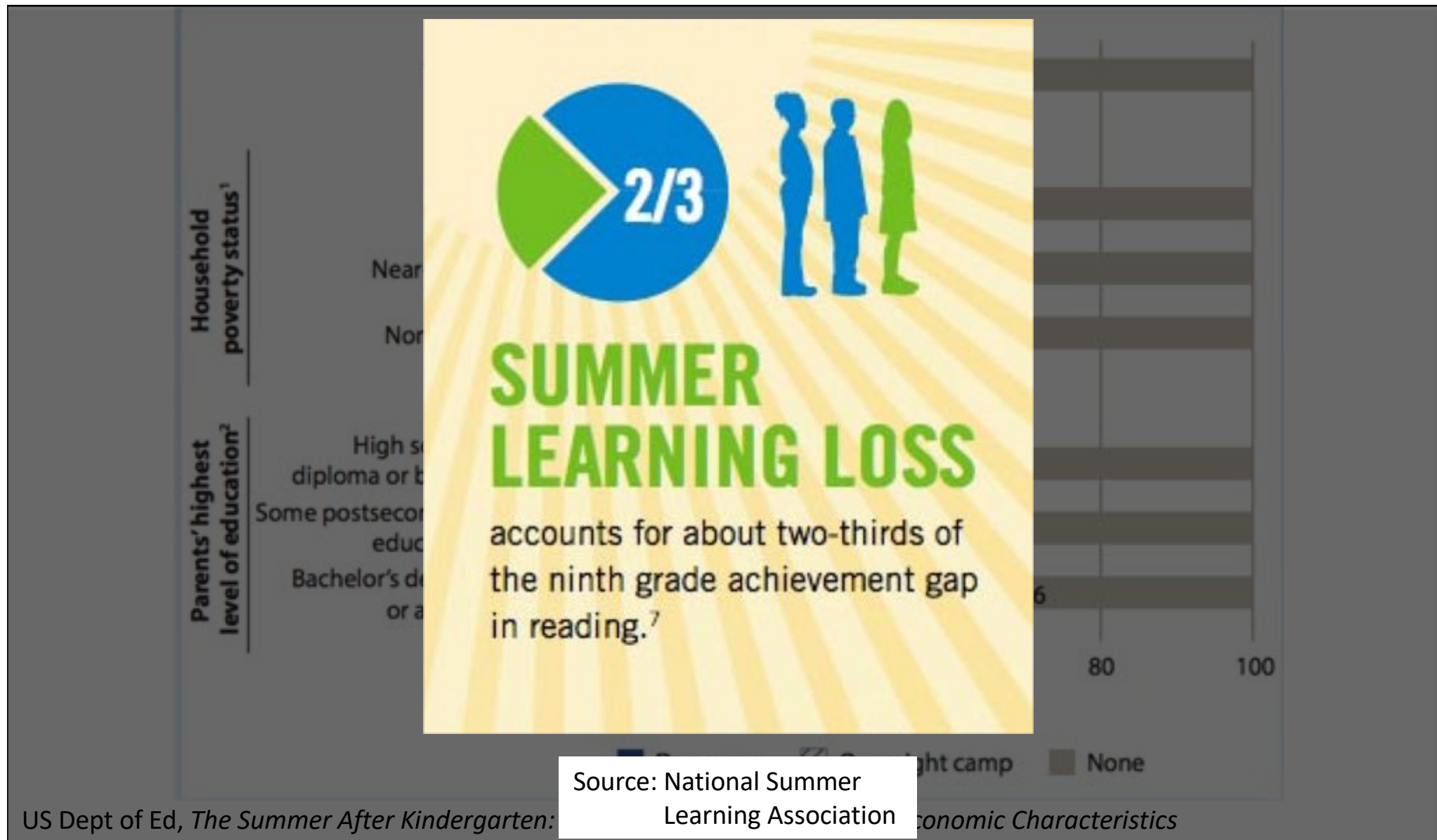
Economically Disadvantaged Students Attend Fewer Summer Programs



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Creating a New Education System



BLUEPRINT 4Summer CO

Powered By ReSchool Colorado

where2plan**4**FUN!



Our Driving Question:

Do All Denver Students Have
Equal Access to a Variety of
Summer (Out of School)
Resources?

Data Source 1: Blueprint4Summer

KEYWORDS

Painting, robotics, soccer, etc. Use double quotes to search for a specific phrase.

CATEGORIES



academic



arts



cooking



dance



drama



music



nature



sports



stem

ATTRIBUTES

☐ ♿ Special Needs Student

☐ ♀ Gifted Students

☐ ⌚ Offers Before/After Care

☐ 💰 Scholarships Available

TIME

☐ Morning

☐ Afternoon

☐ Evening

☐ Day

☐ Overnight

LOCATION WITHIN

20

miles of

Zip code or address.

DATES BETWEEN

Select date range...

COST BETWEEN

\$

and \$

GENDER RESTRICTIONS



AGES BETWEEN

to

Program Data + Search Data

Data Source 2: Denver Open Data

The screenshot displays the Denver Open Data Catalog interface. At the top, a blue navigation bar contains the Denver logo and links for Neighborhood, Business, Visiting, Government, Online Services, and A to Z. A search bar is located on the right. Below the navigation bar, the page title "Open Data Catalog" is visible. The main content area shows a search for "parks" with a "Search" button and a "Clear" link. The results section, titled "Results", shows "8 - 10 of 28" items. A result for "Parks" is highlighted, with a description: "This dataset is polygon representation of parks, golf courses, and recreation managed by the Department of Parks and Recreation in the City and County of Denver. Data is based on parcel ownership and does not include other areas maintained by the department such as medians and parkways. Disclaimer ACCESS..." and tags: "boundaries gis parks recreation society". On the right side, a "Filter By Tag" section shows "230 total datasets | view all" and a list of tags including "gis", "parking", "planning-cadastre", "structure", "transportation", "location", "park", "Colorado", "Denver", "Denver County", "planimetric", "parks", "skate-board", "skate-park", "adams-county", "arapahoe-county", "jefferson-county", "boundaries", "recreation", "society", "restroom", "dog-park", "dogs", "off-leash", "permits", "shelter", "equities", "indoor-pool", "outdoor pool", "swimming", "boats", "inventory", "tree", "denver-county", "bike", "pedestrian", and "playgrounds".

Other resources: parks, libraries, playgrounds, rec centers, athletic fields (and we added museums)

Data Source 3: Census Demographics

- Median Household Income
- Race / Ethnicity
- Education Levels
- Age Breakdowns
- Language Besides English Spoken at Home

At block group level (American Fact Finder)

At neighborhood level (Denver Open Data)

Data Source 4: Denver Public Schools



- Student demographics (race/ethnicity, disabilities, English language learners)
- Approximate student locations (nearest census block group)

Building a Tool for Visualizing and Investigating the Data

R Shiny Dashboard

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[Denver Out-of-School Resources](#) [B4S Programs](#) [Other Resources](#) [B4S Searches](#) [Access Index](#) [About this Tool](#)

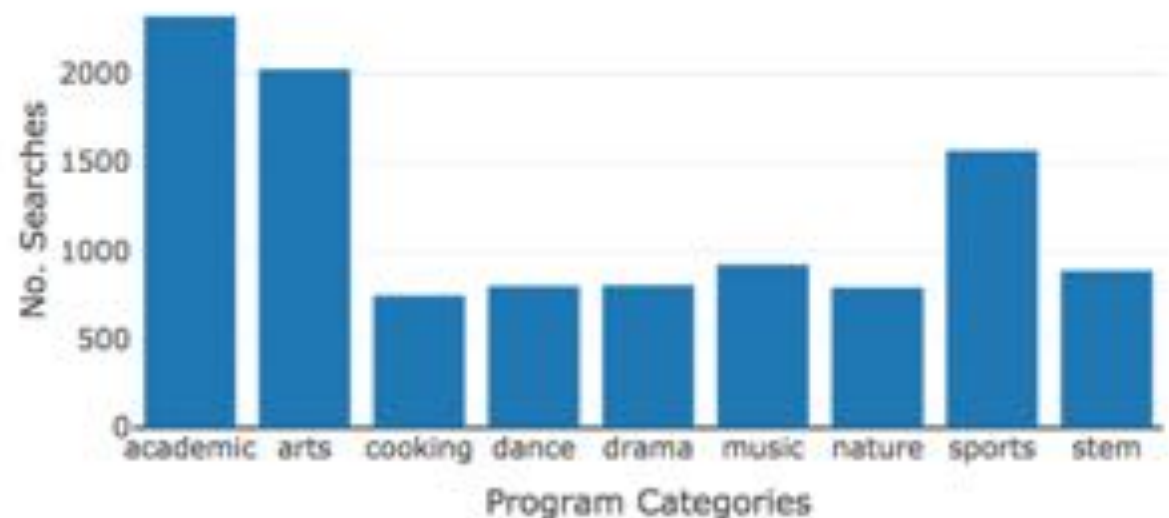
Choose a question about the Blueprint4Summer Search Data to investigate:

- ☒ What program categories do people search for the most?
- ☐ What distances and session times do people search for, and how do they sort their results?
- ☐ What locations are people searching for?
- ☐ What locations are people searching for? - spatial analysis

Summary

Visualization

Searches by Program Category



Prevalence of Searches vs. Programs, by Category

R Shiny Dashboard

[Denver Out-of-School Resources](#) [B4S Programs](#) [Other Resources](#) [B4S Searches](#) [Access Index](#) [About this Tool](#)

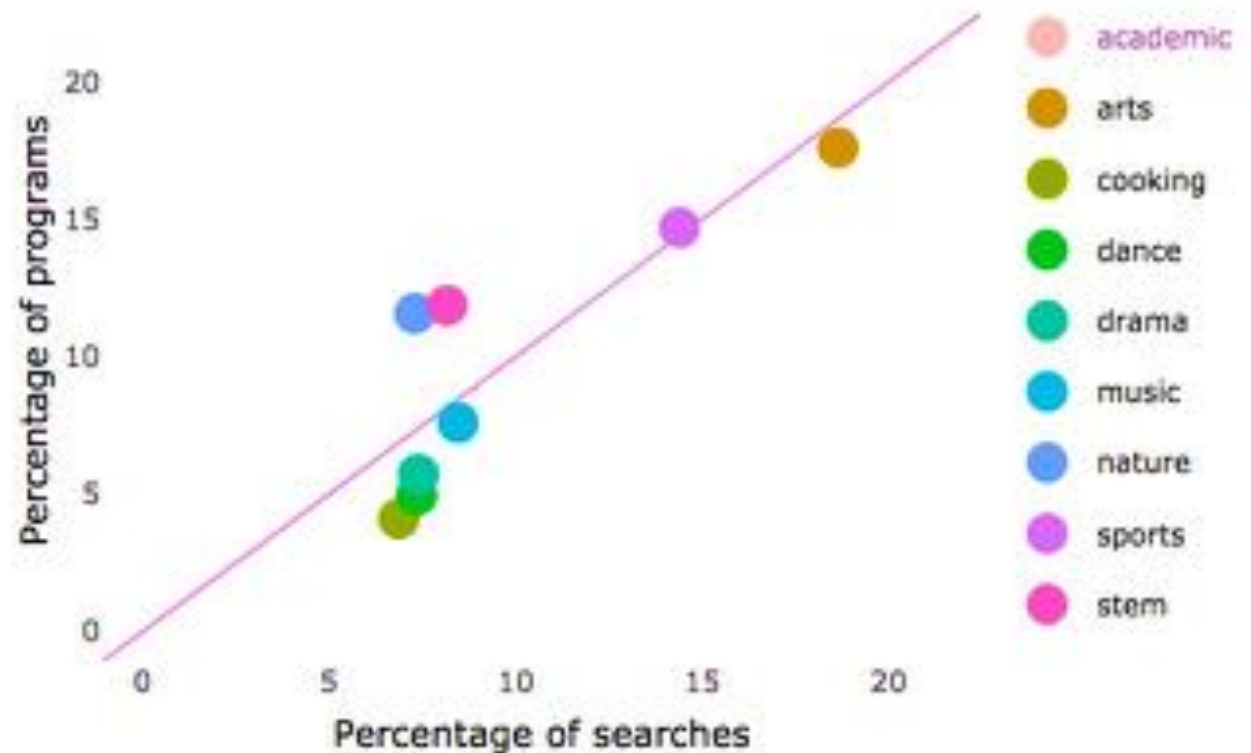
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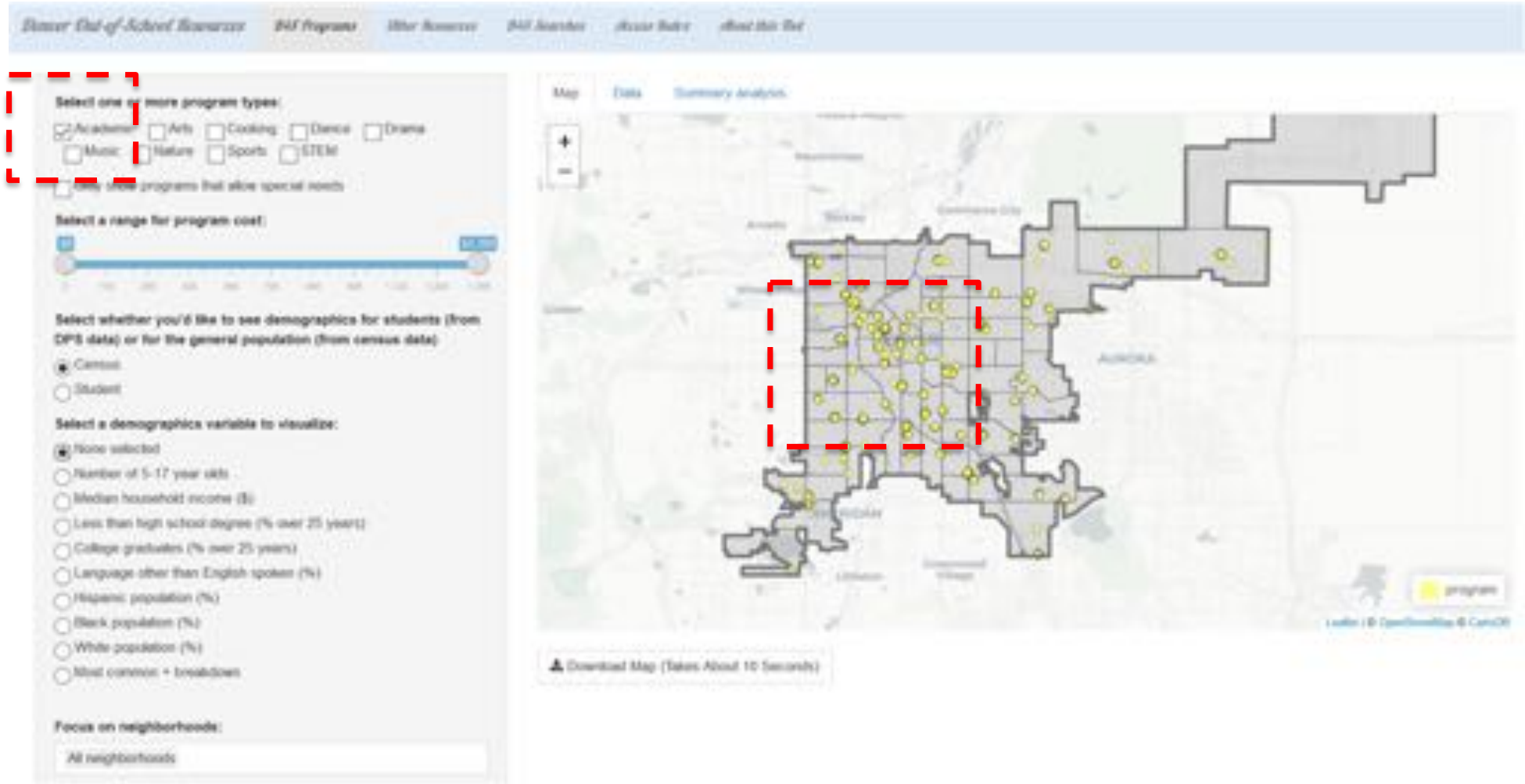
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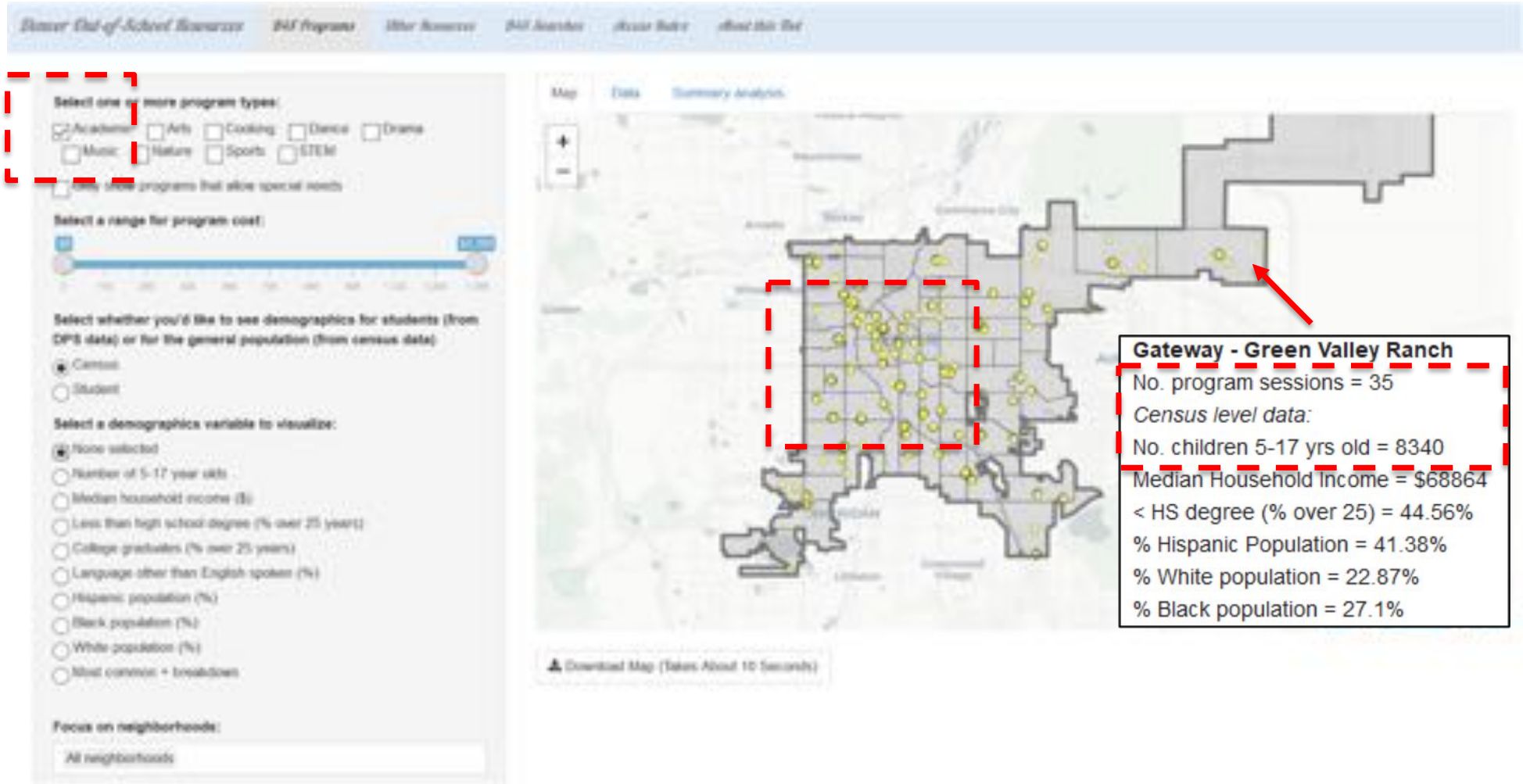
Prevalence of Searches vs. Programs, by Category



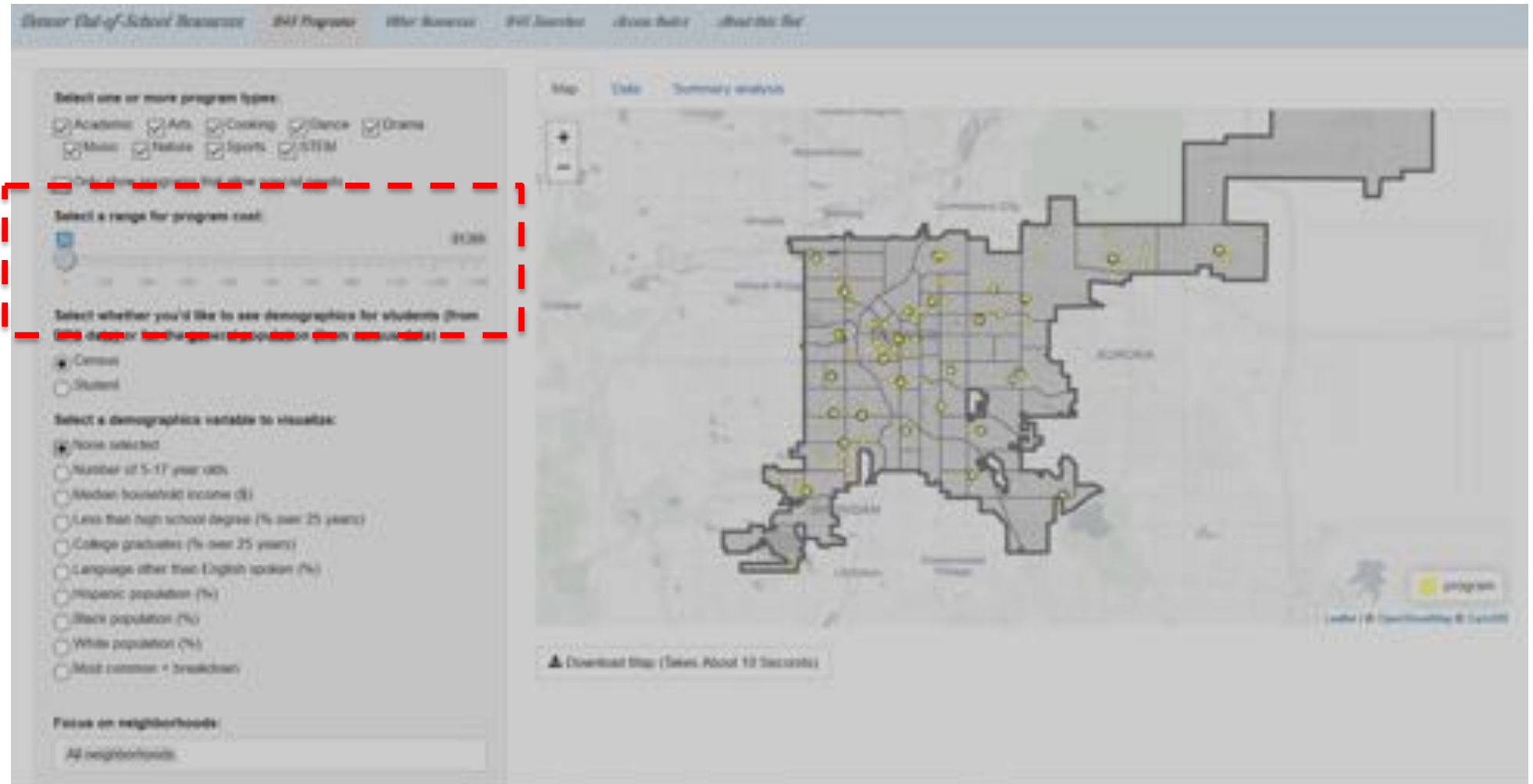
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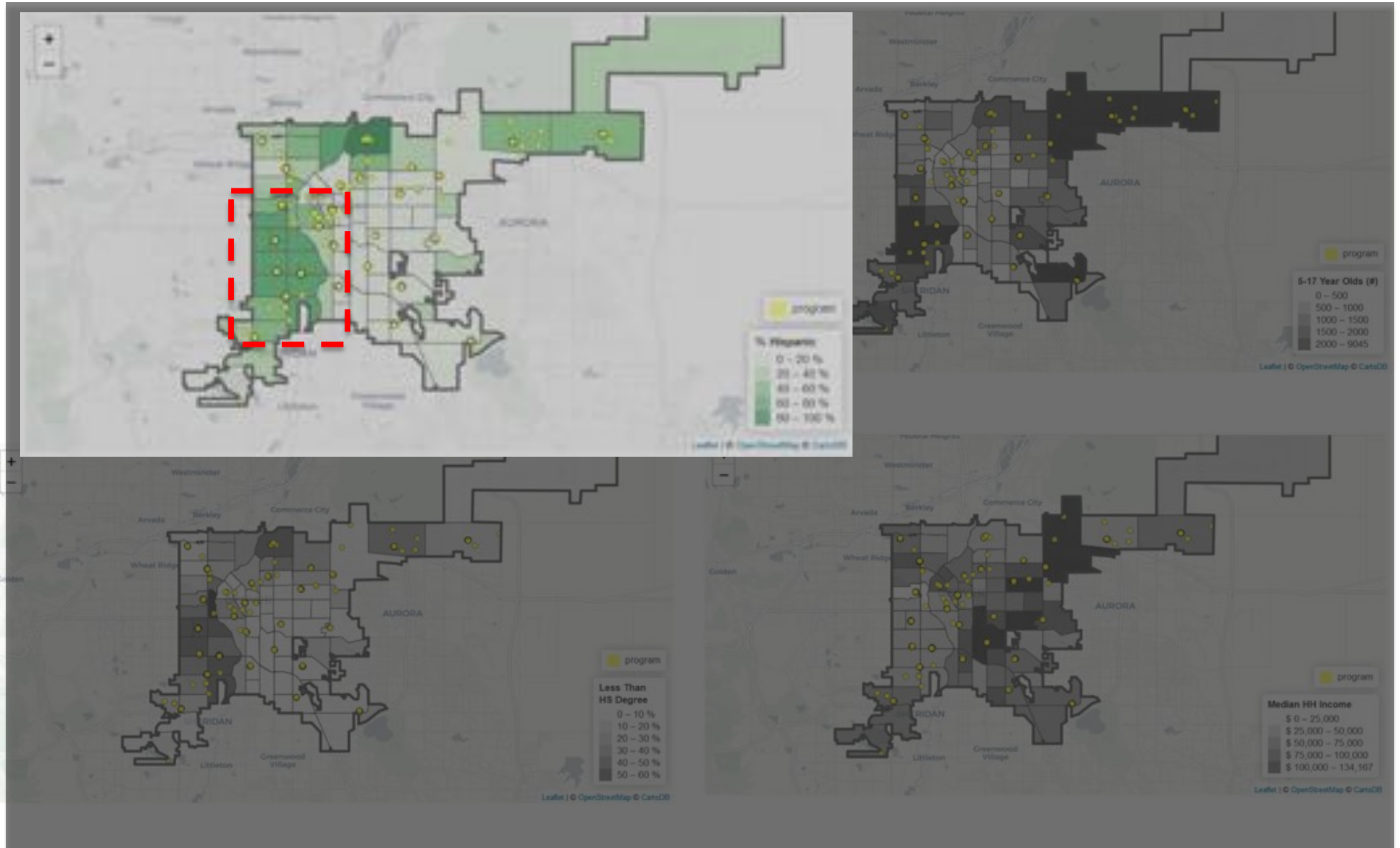
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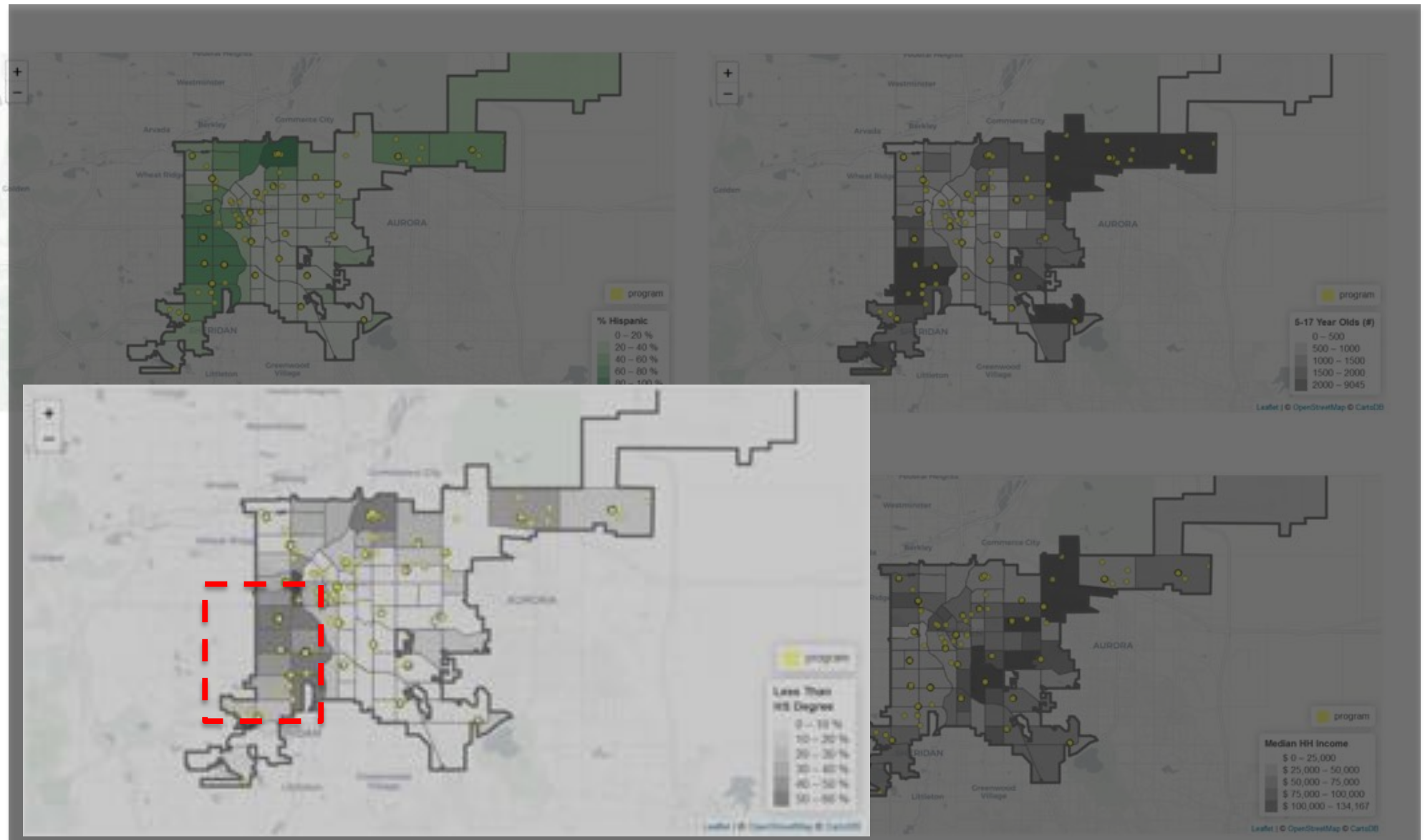
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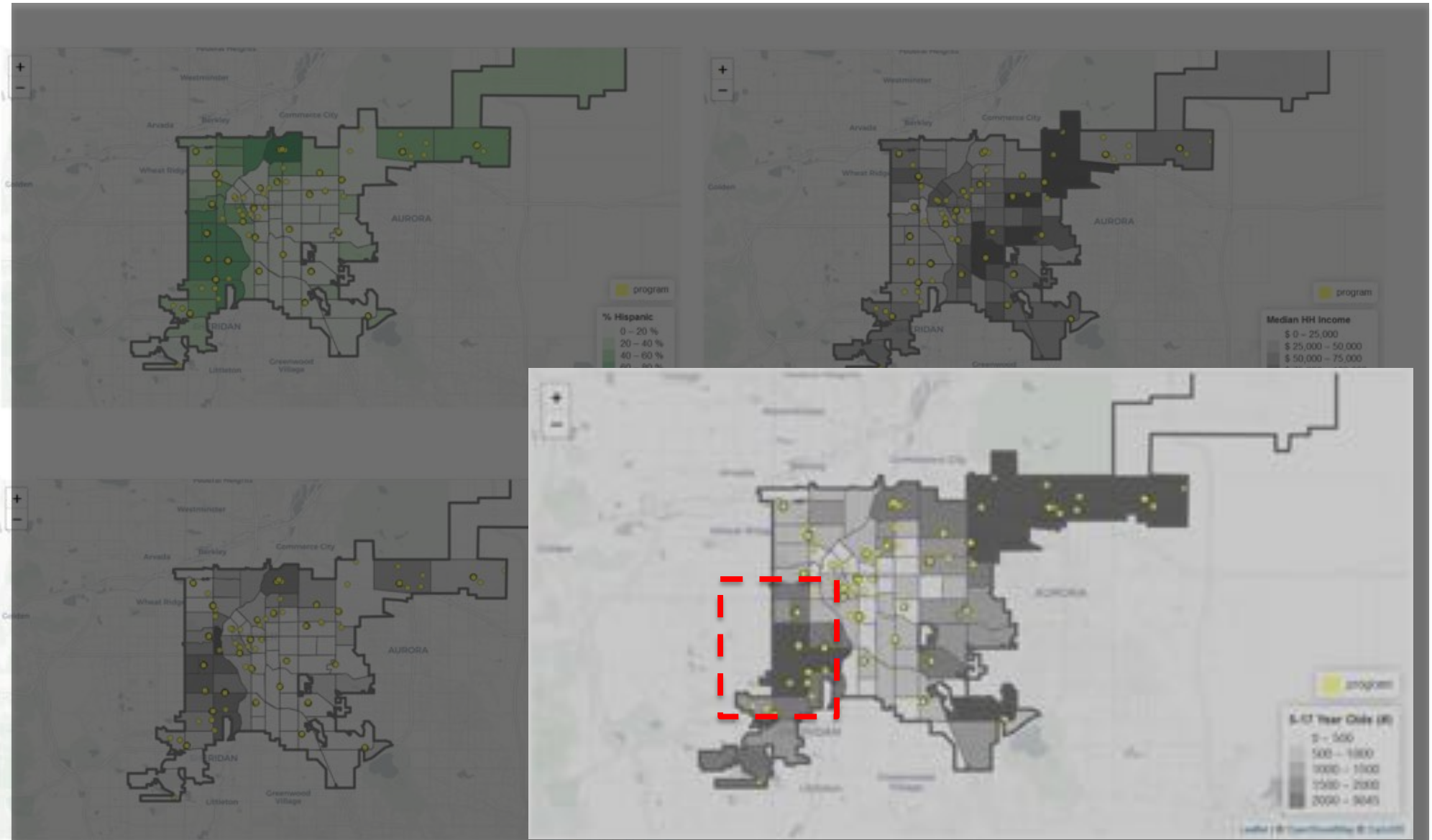
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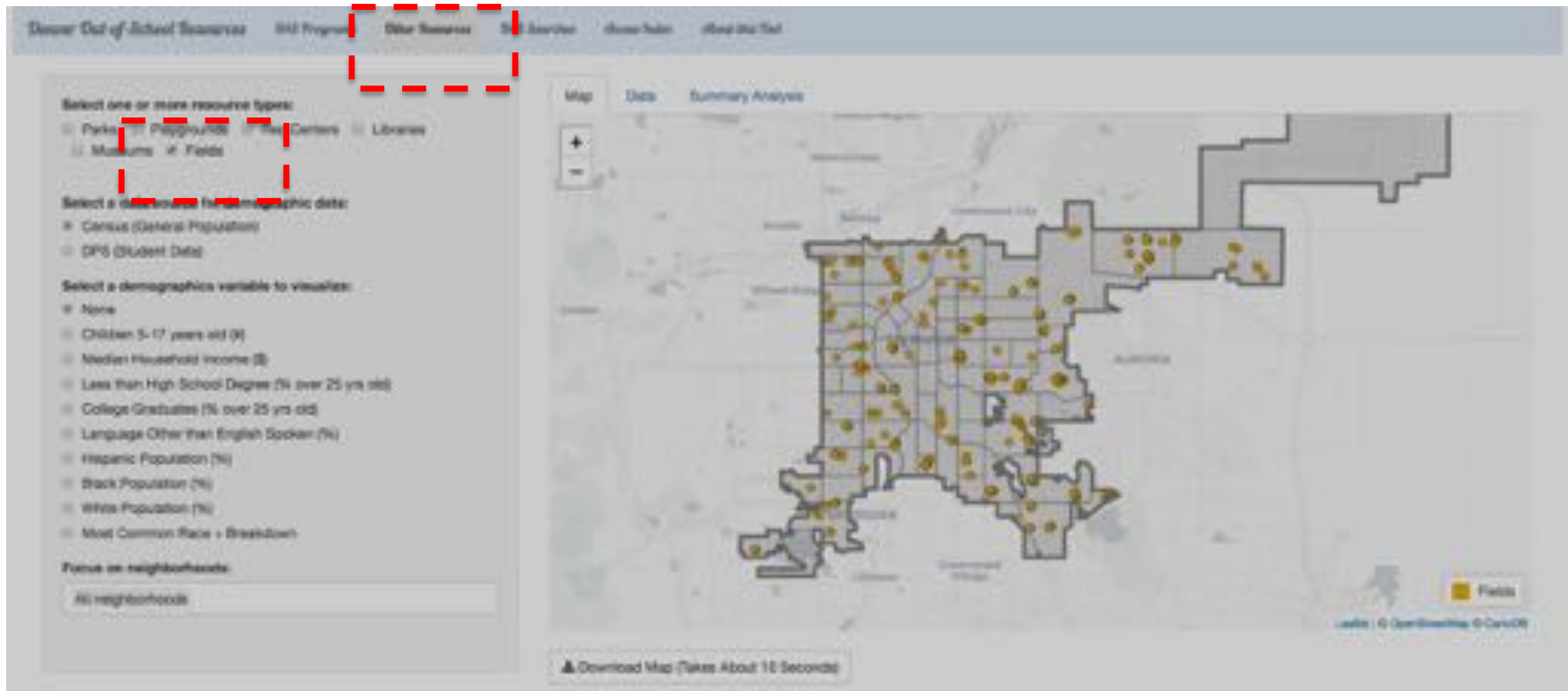
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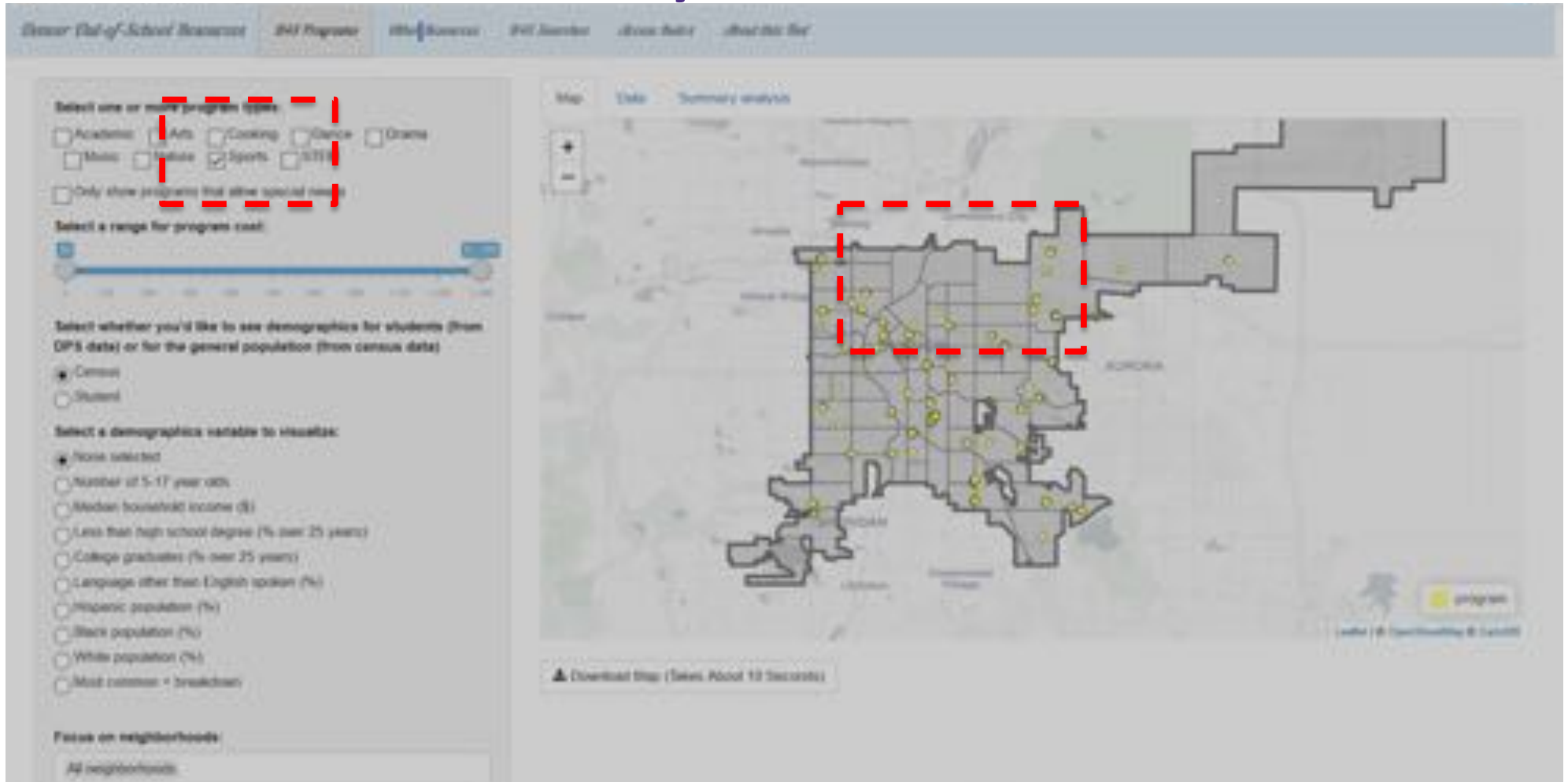
R Shiny Dashboard



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Access Index:
Measuring Access to Summer
Programs in Denver

Access Index

Access Index

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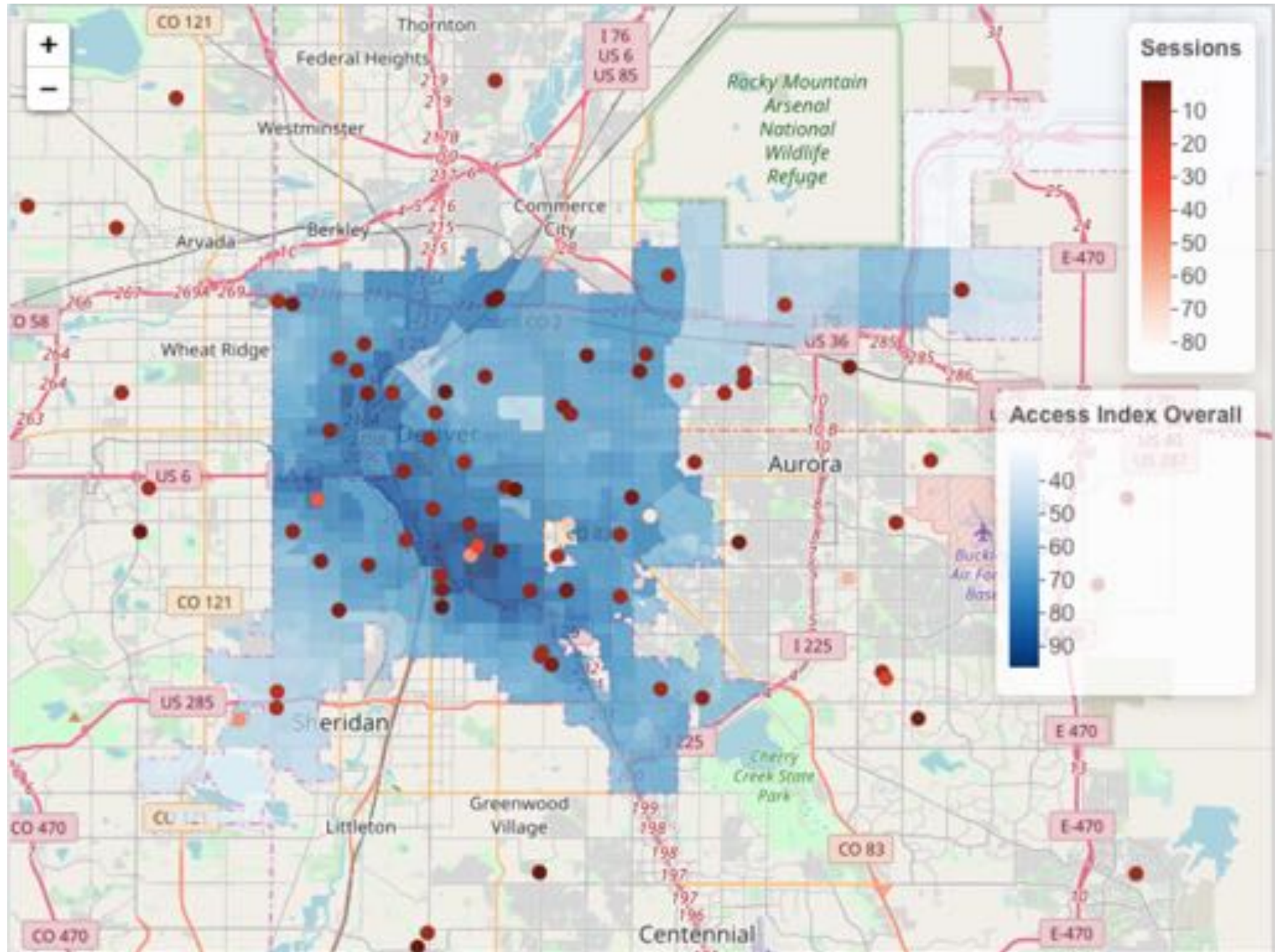
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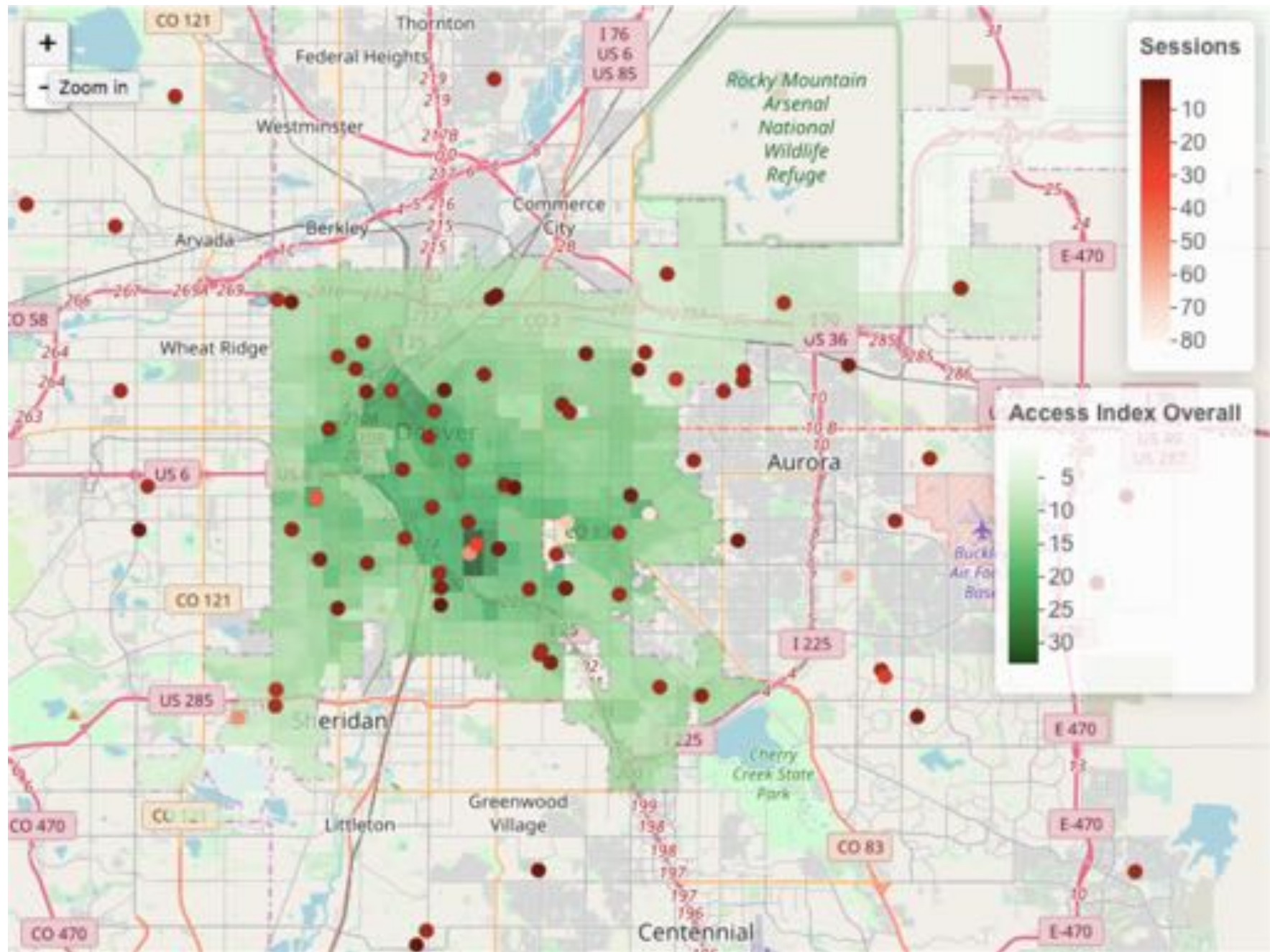
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- Access Index is a 0-100 measure, for each block group, of the *total* access to programs
 - Flexible by type of program, e.g. restrict to free programs and/or academic programs

$$A_{\text{block}}^{\text{type}}(\text{transit mode}) = \frac{1}{n_{\text{programs of type}}} \sum_{\text{programs of type}} f(T_{\text{block to program}}^{\text{transit mode}})$$

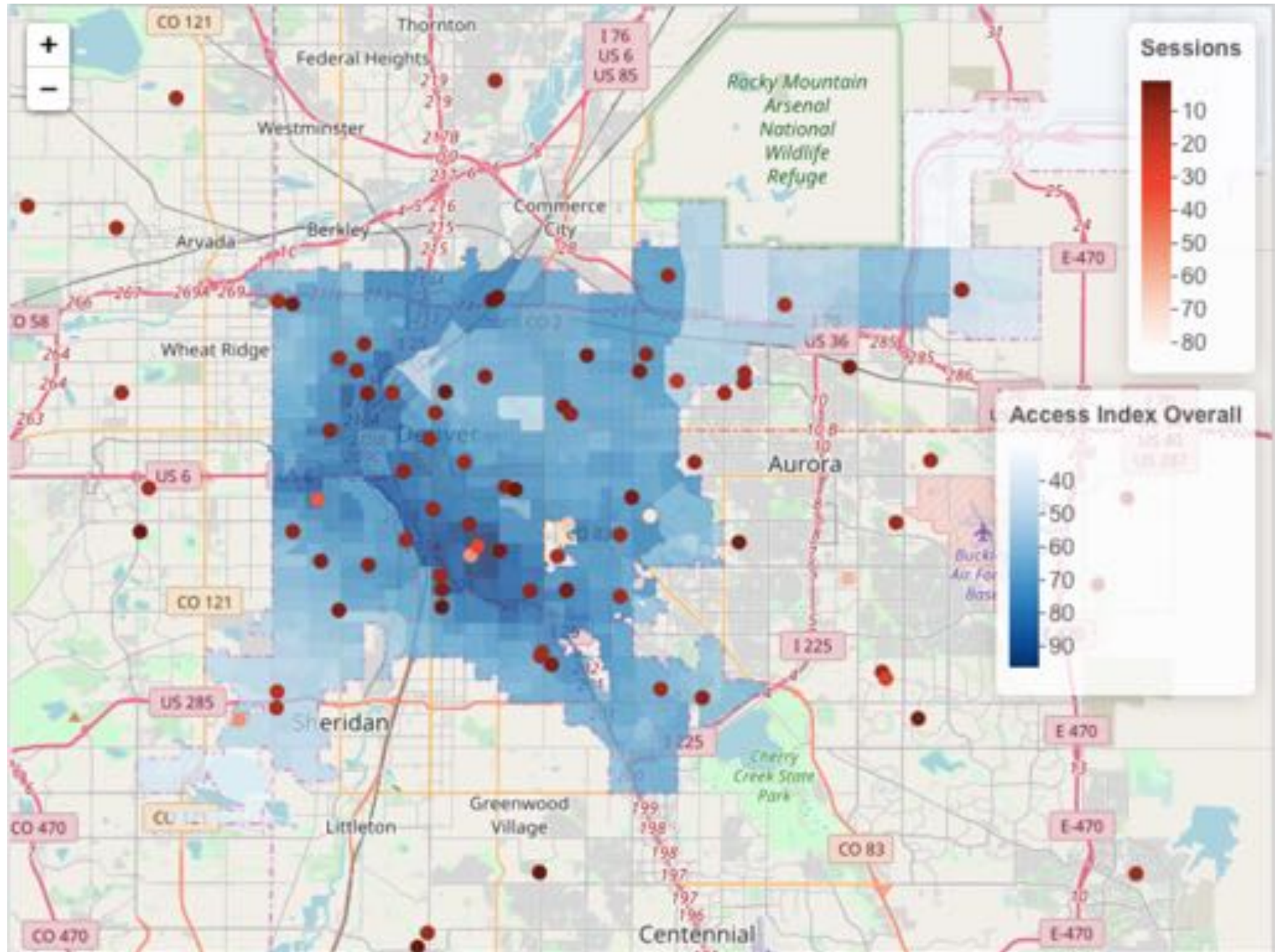
Access Index: All Programs, Driving



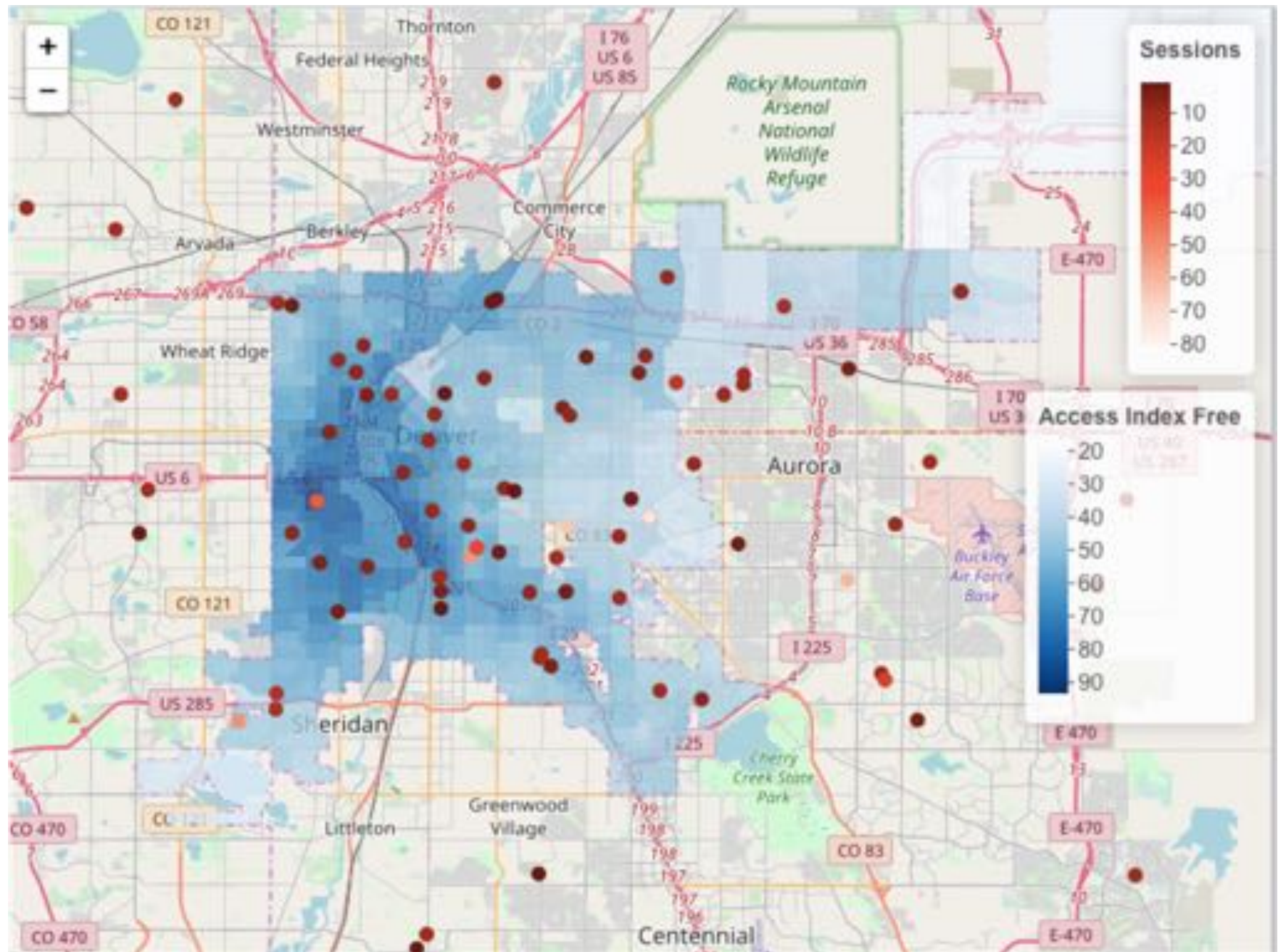
Access Index: All Programs, Transit



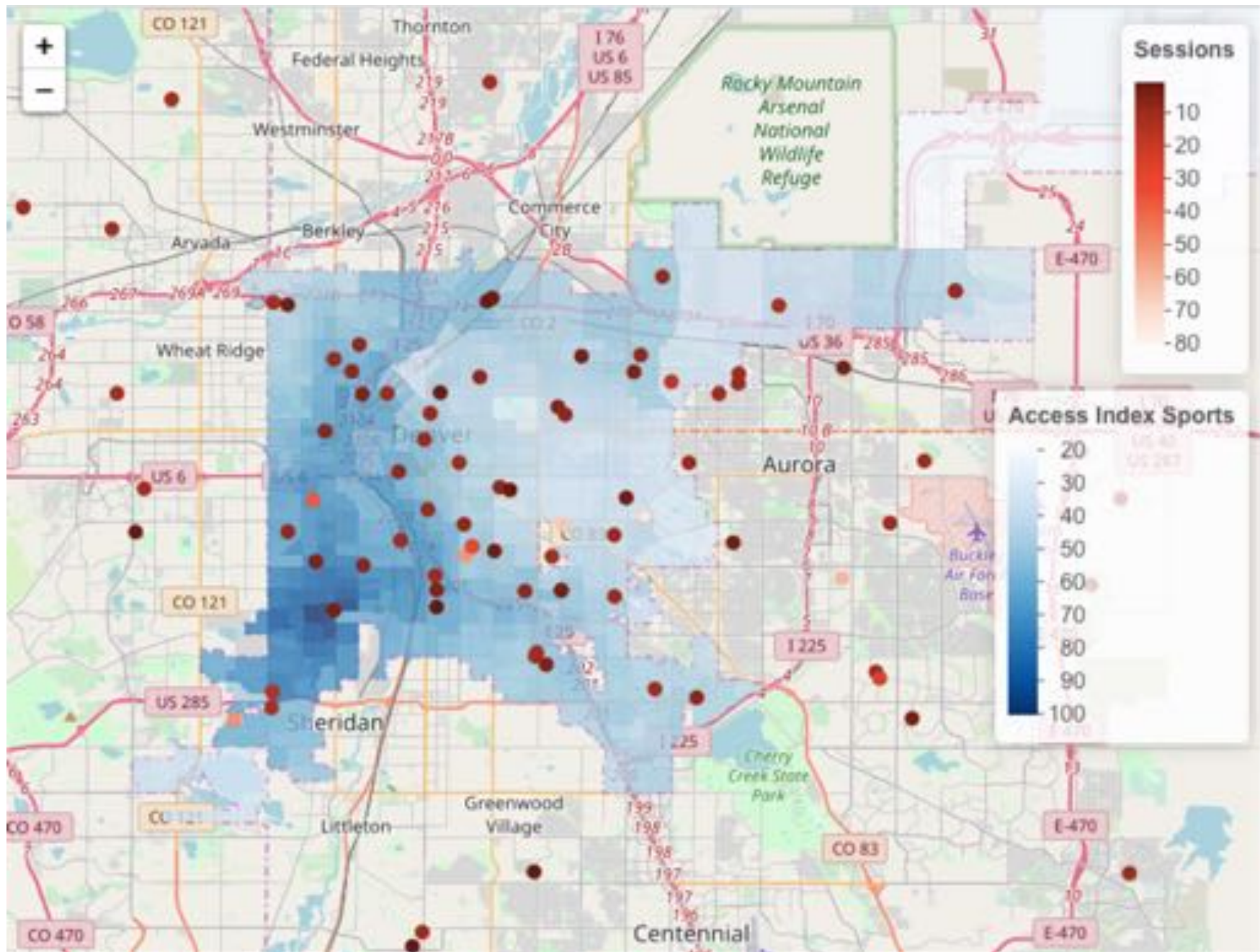
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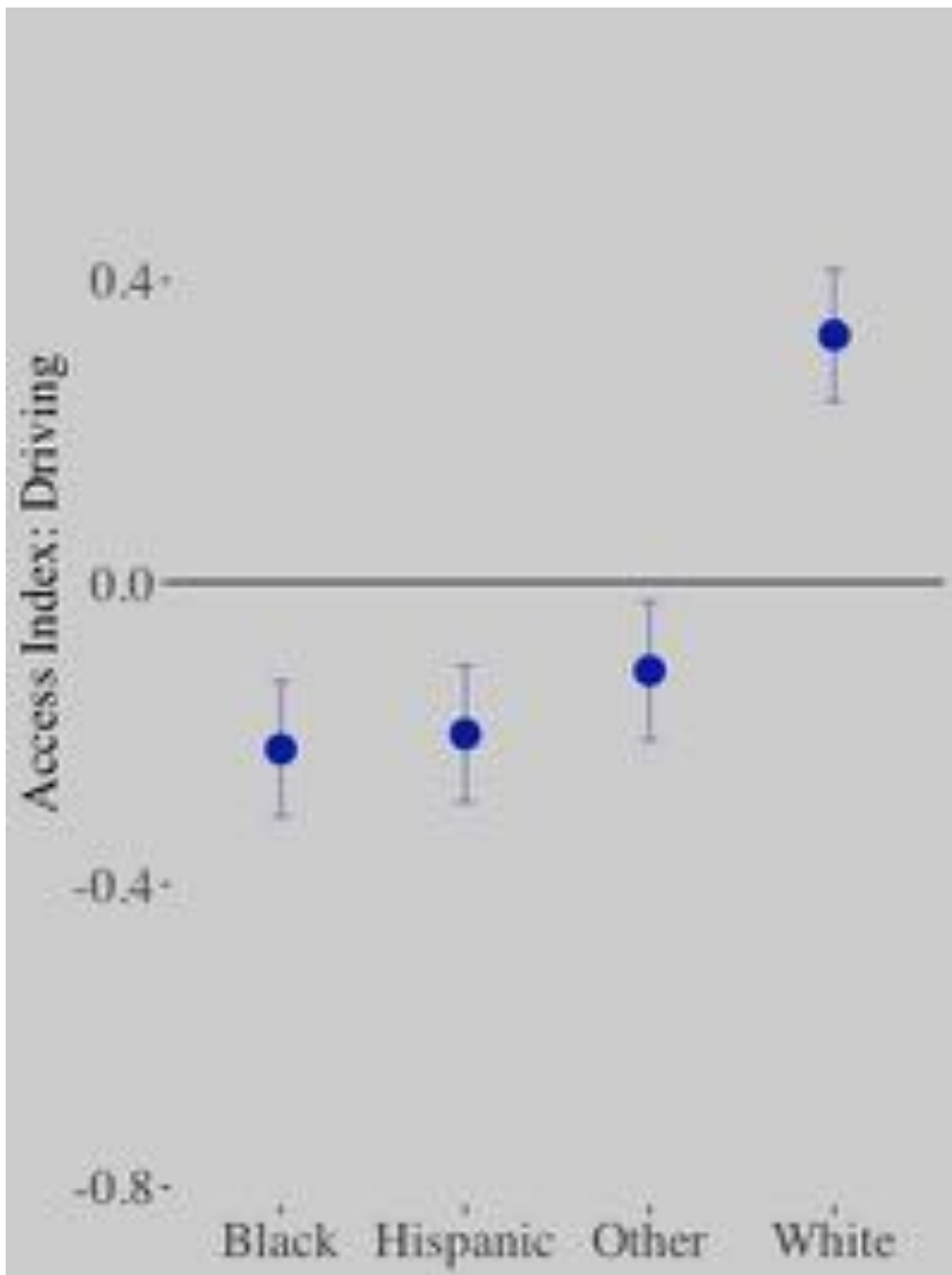
Access Index: Free Programs, Driving



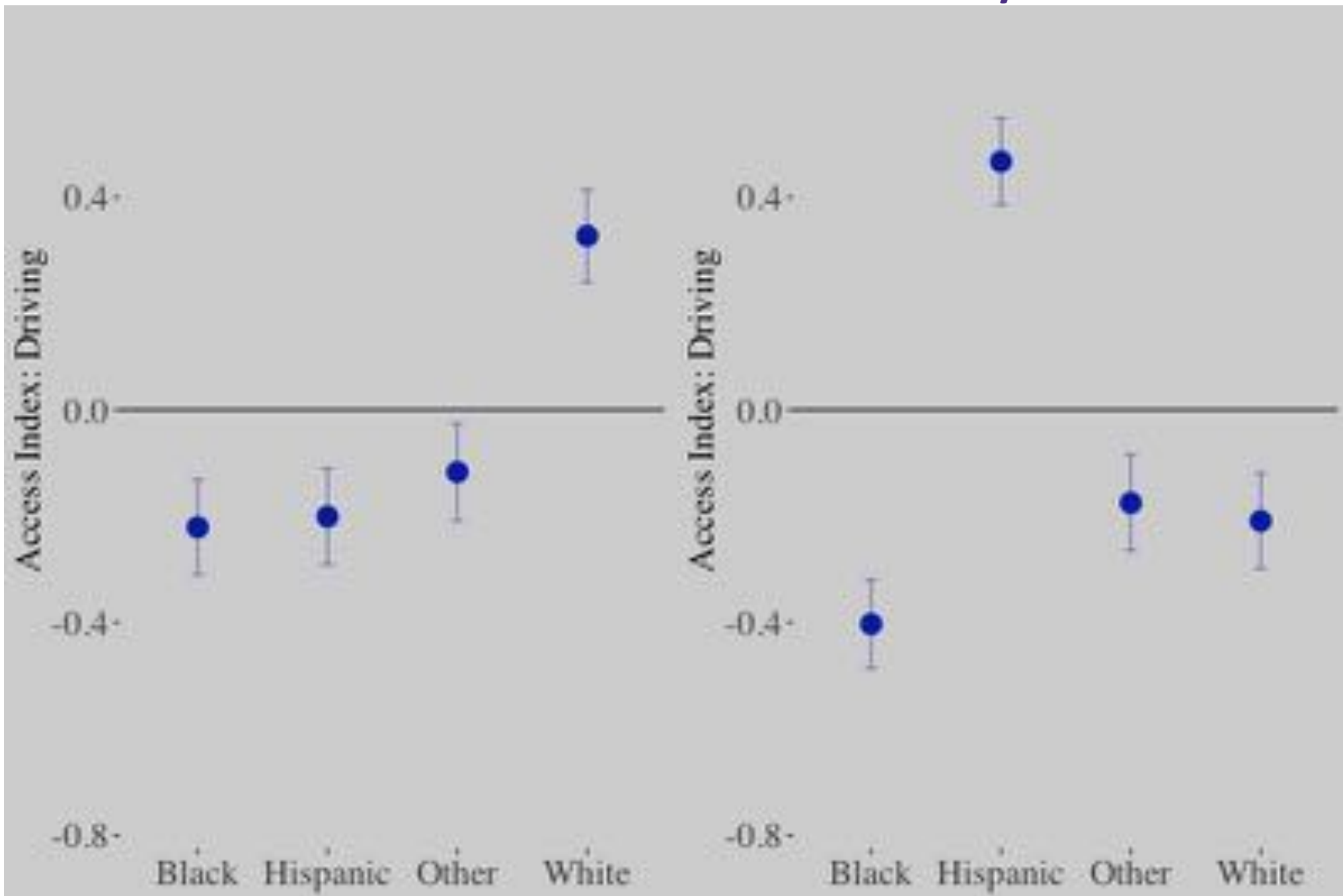
Access Index: Free Sports Programs, Driving



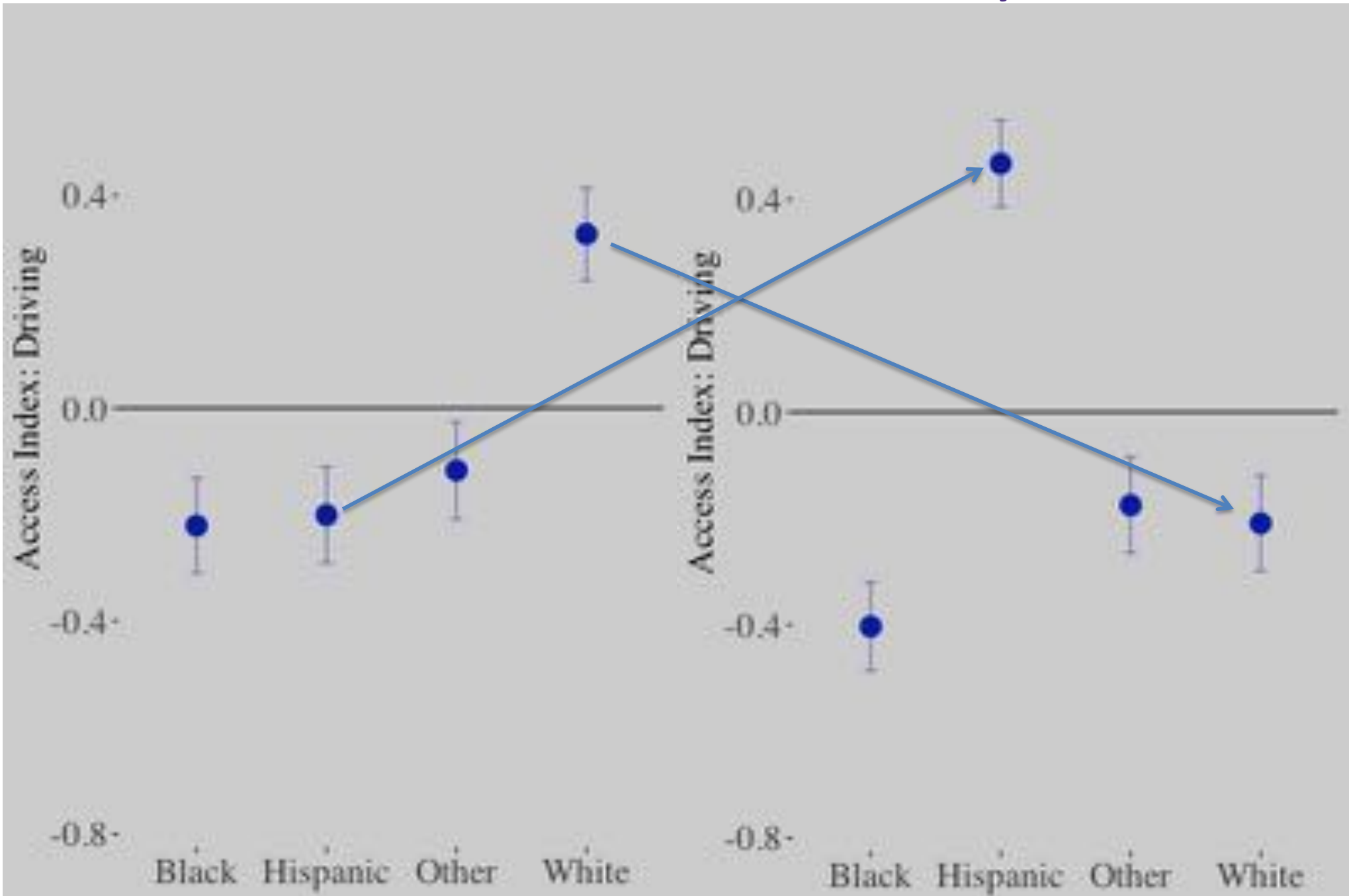
Overall vs. Free Access Index by Race



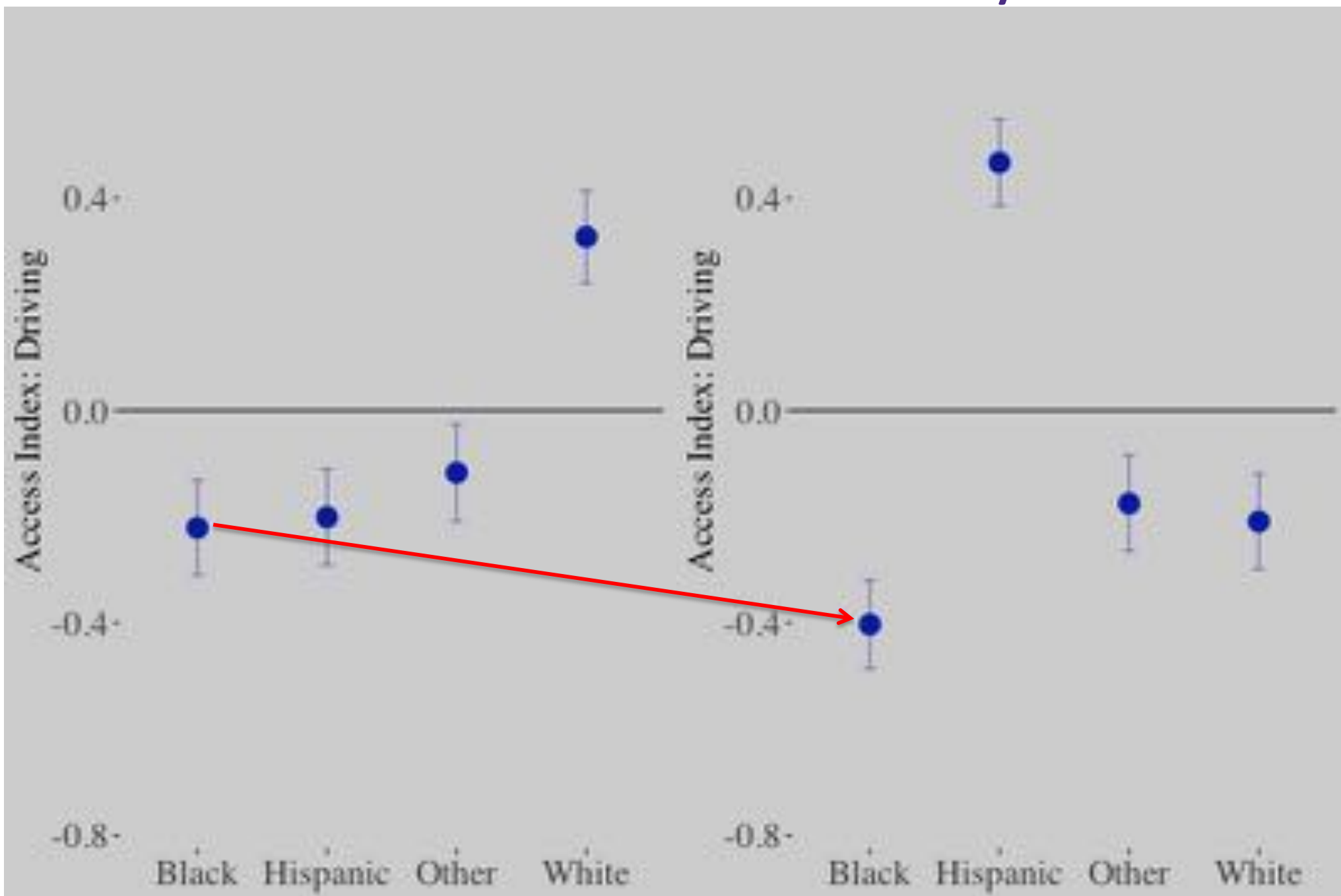
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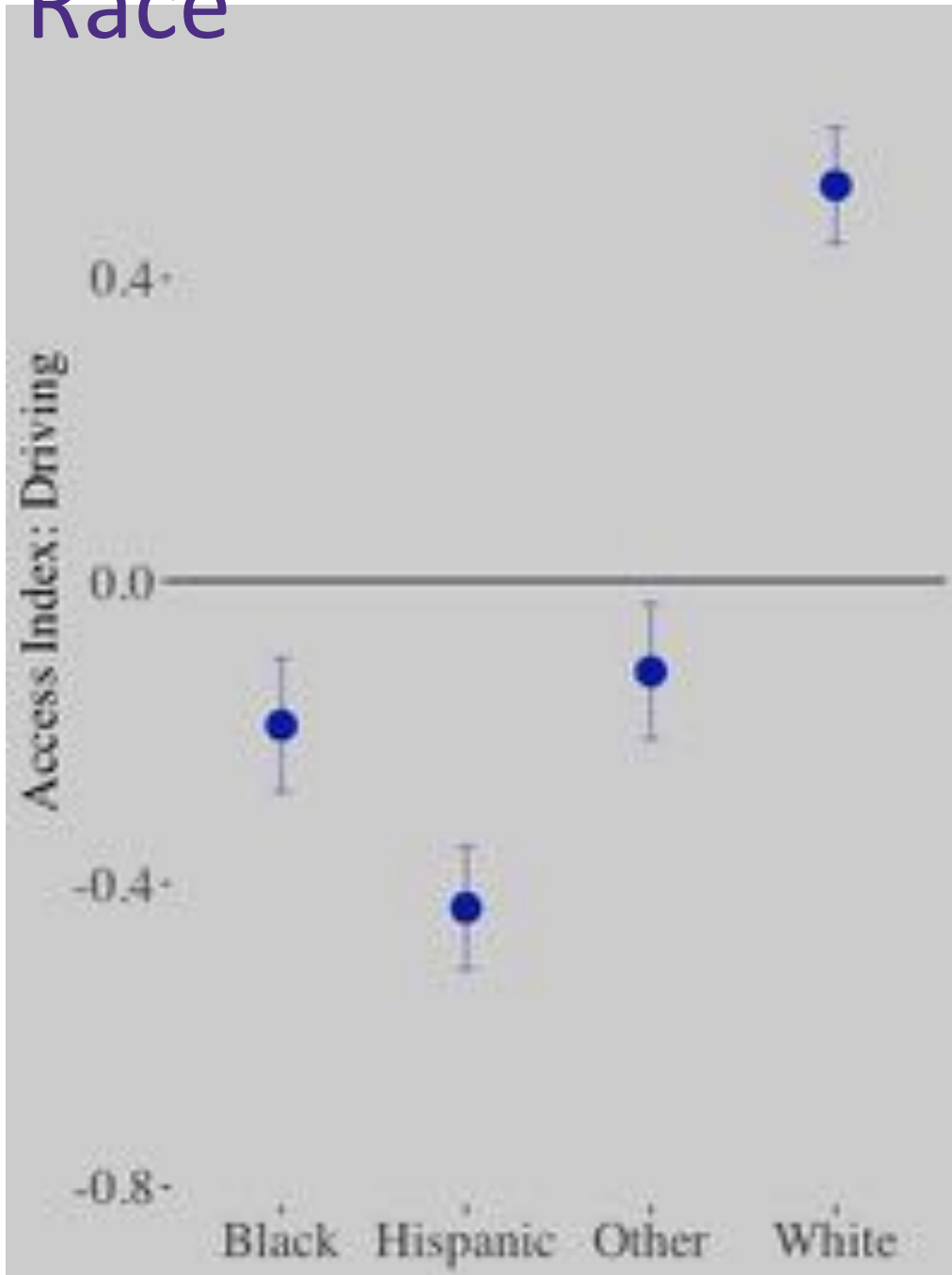
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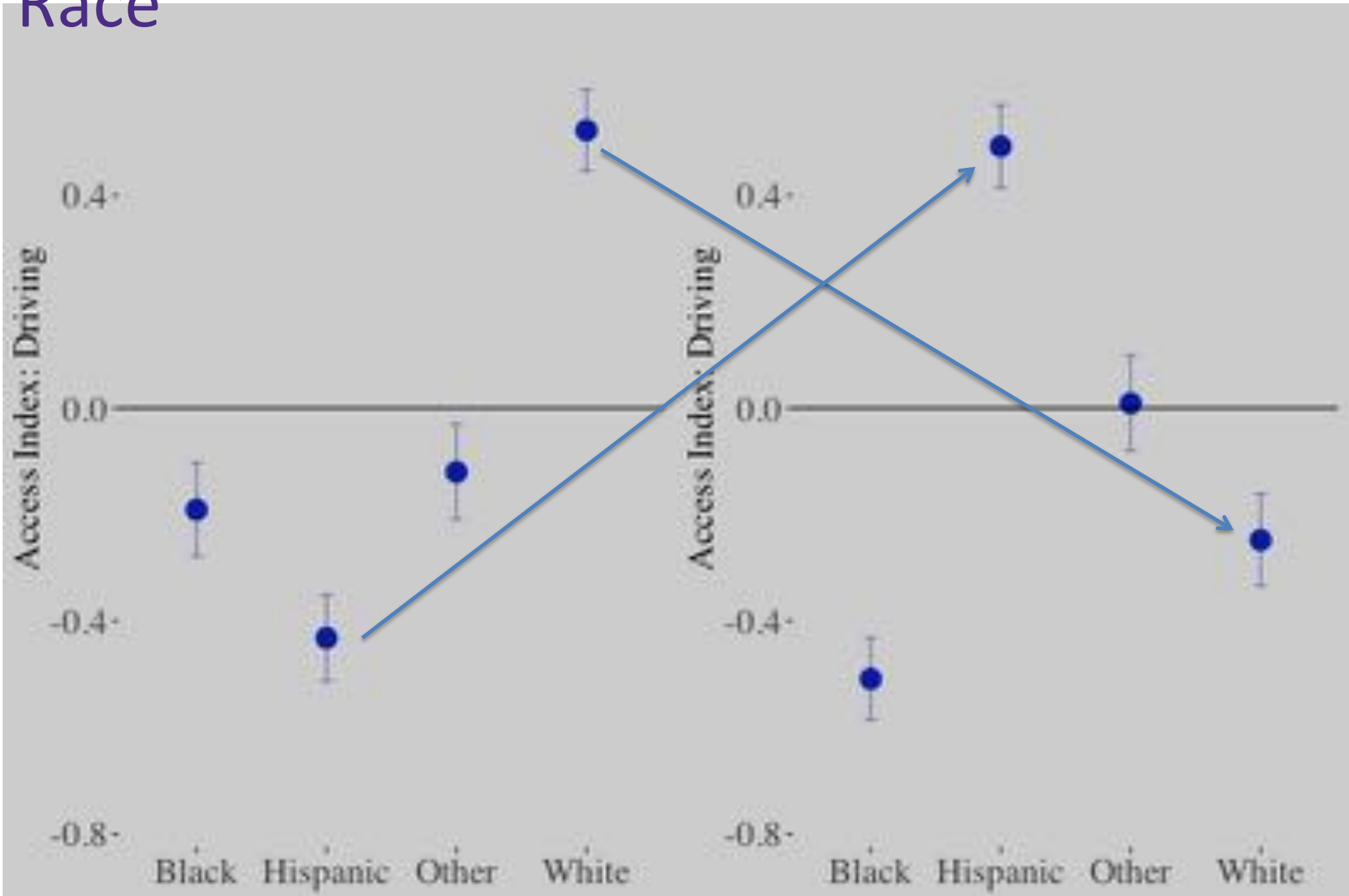
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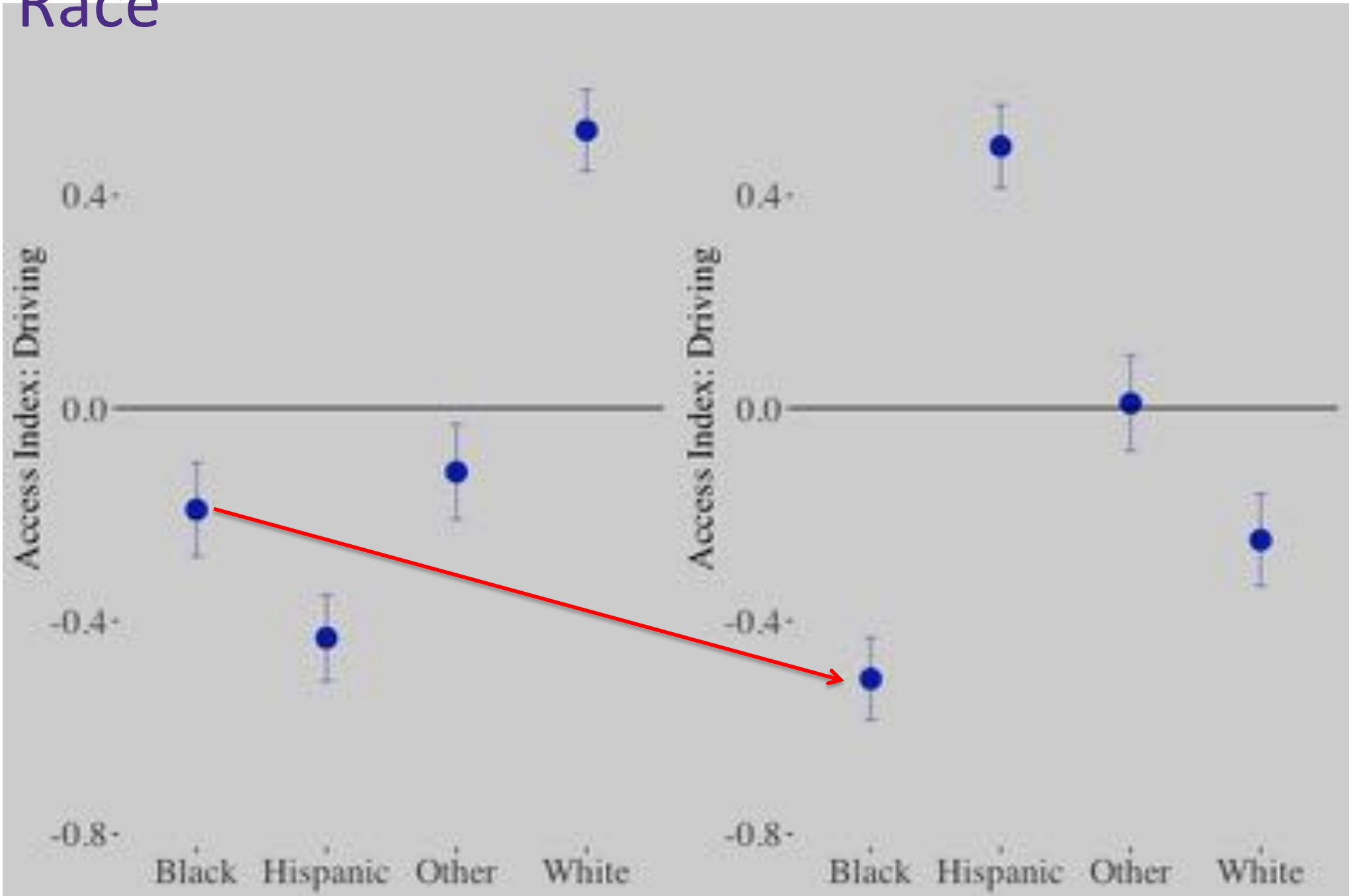
Sports Overall vs. Free Access Index by Race



Sports Overall vs. Free Access Index by Race



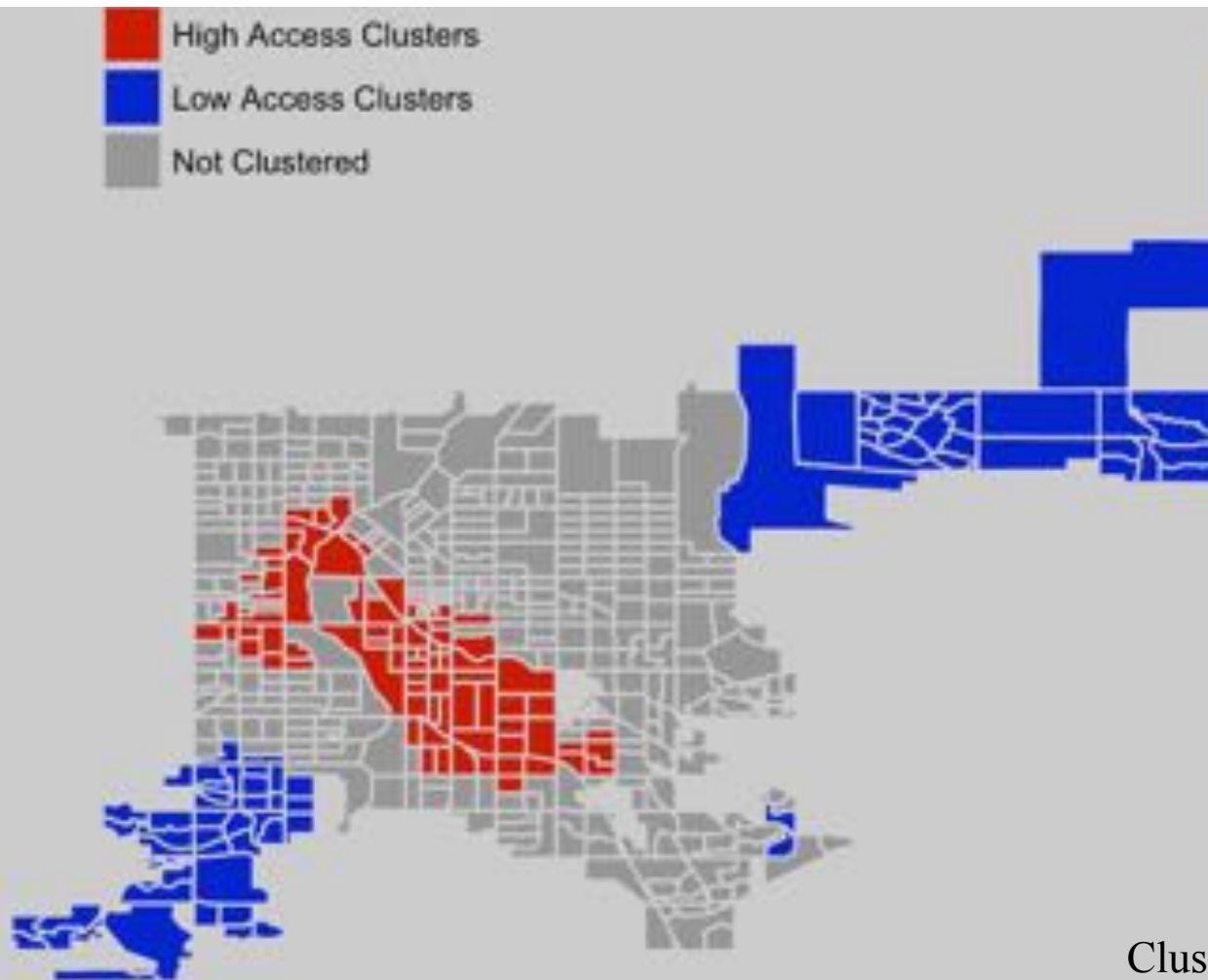
Sports Overall vs. Free Access Index by Race



Returning to Our Question:

Do All Denver Students Have
Equal Access to a Variety of
Summer (Out of School)
Resources?

Which areas have high/low access generally?

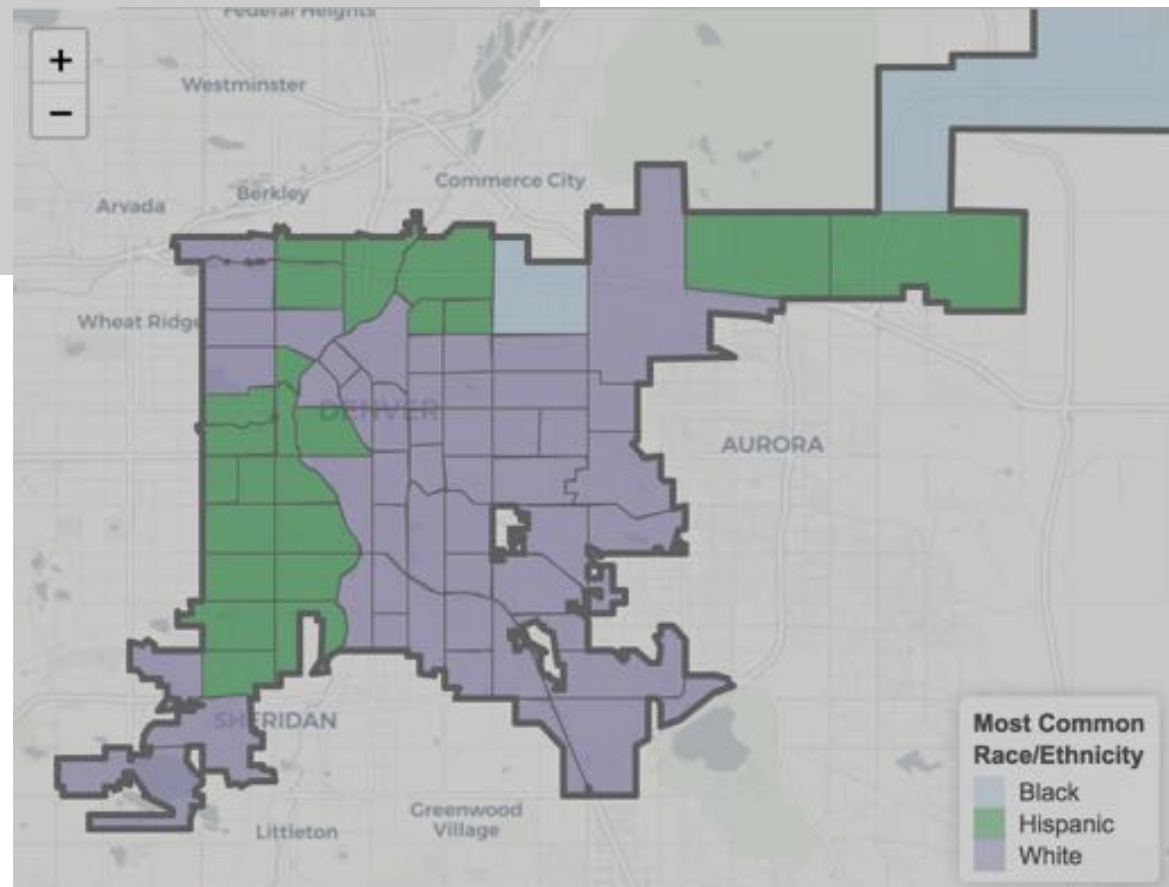
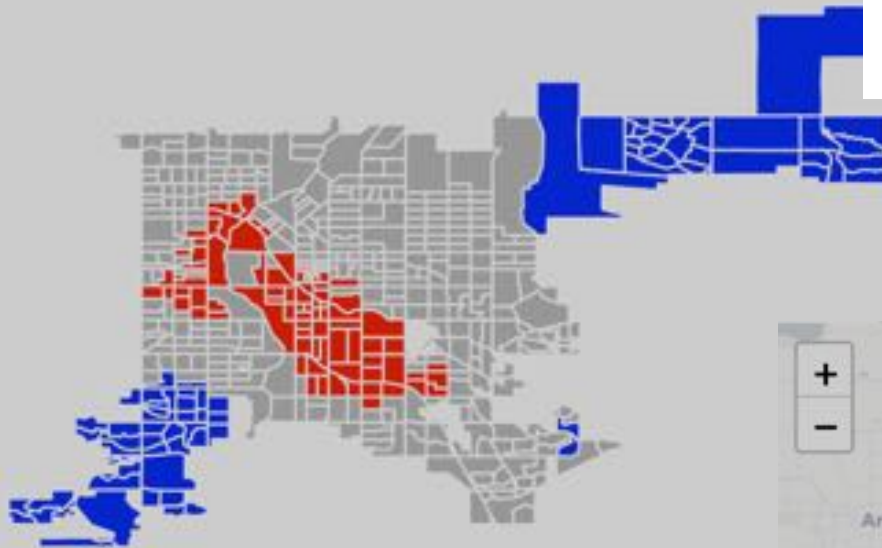


Clusters Identified by Local Moran's I,
Significance Level: $p < 0.05$

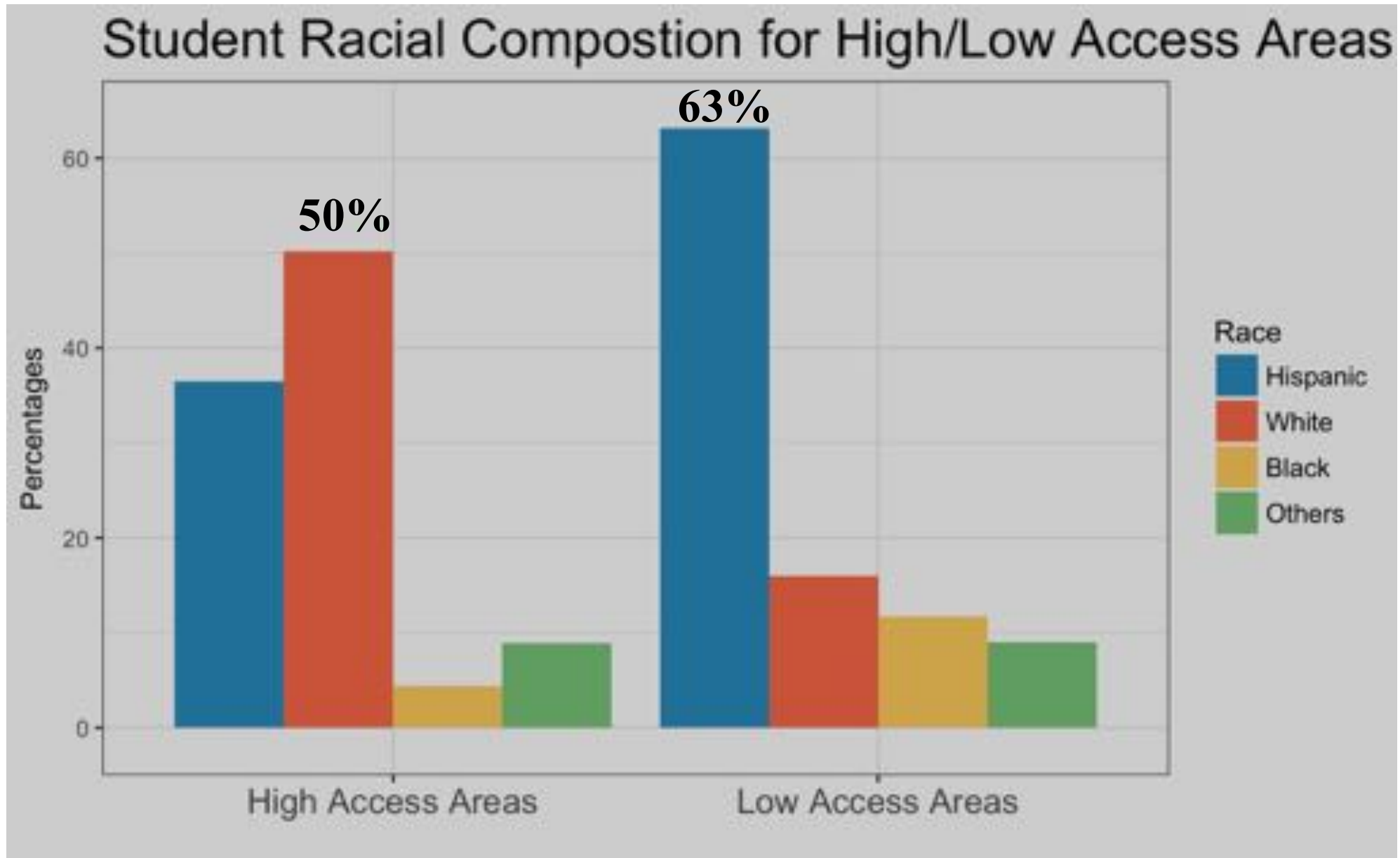
High and Low Access Areas Identified by Local Moran's I

Significance Level: $p < 0.05$

- High Access Clusters
- Low Access Clusters
- Not Clustered



Who is more likely to have high access?



Access Index by Student Race and Program Types

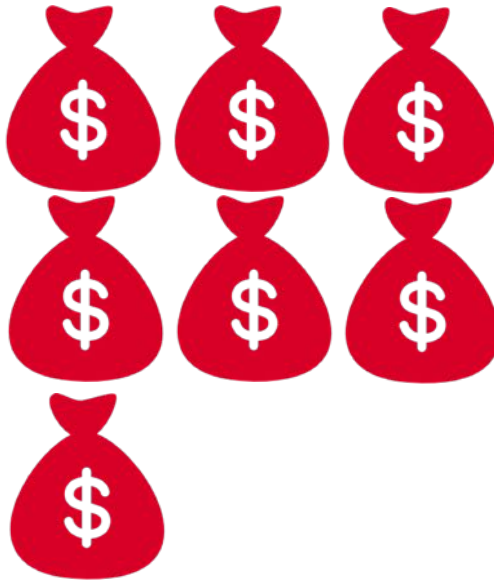
	All	Nature	Sports	Art	Academic	Free
Hispanic	63	64	54	68	67	56
White	68	70	63	70	68	50
Black	59	61	54	61	60	45
Other Races	62	64	57	65	64	49

Who is more likely to have high access?

Household Income



\$ 10,000



College Graduates



10 %



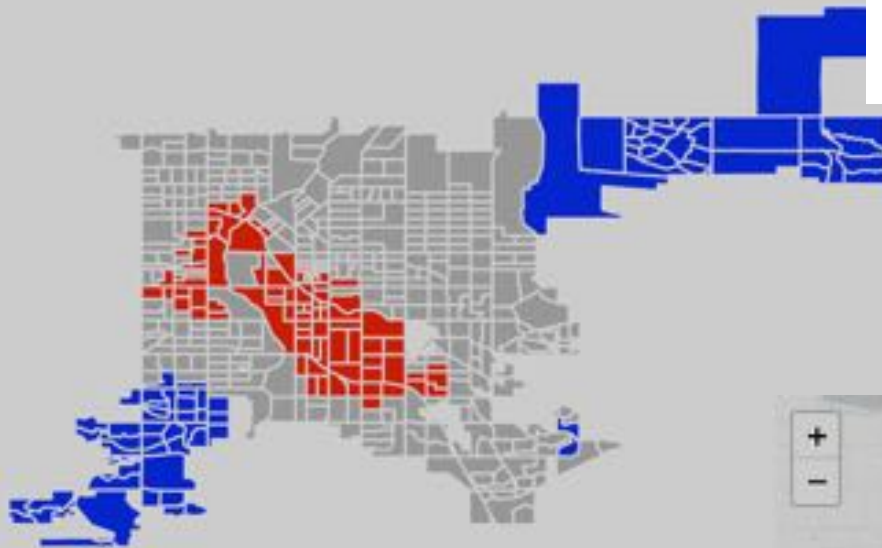
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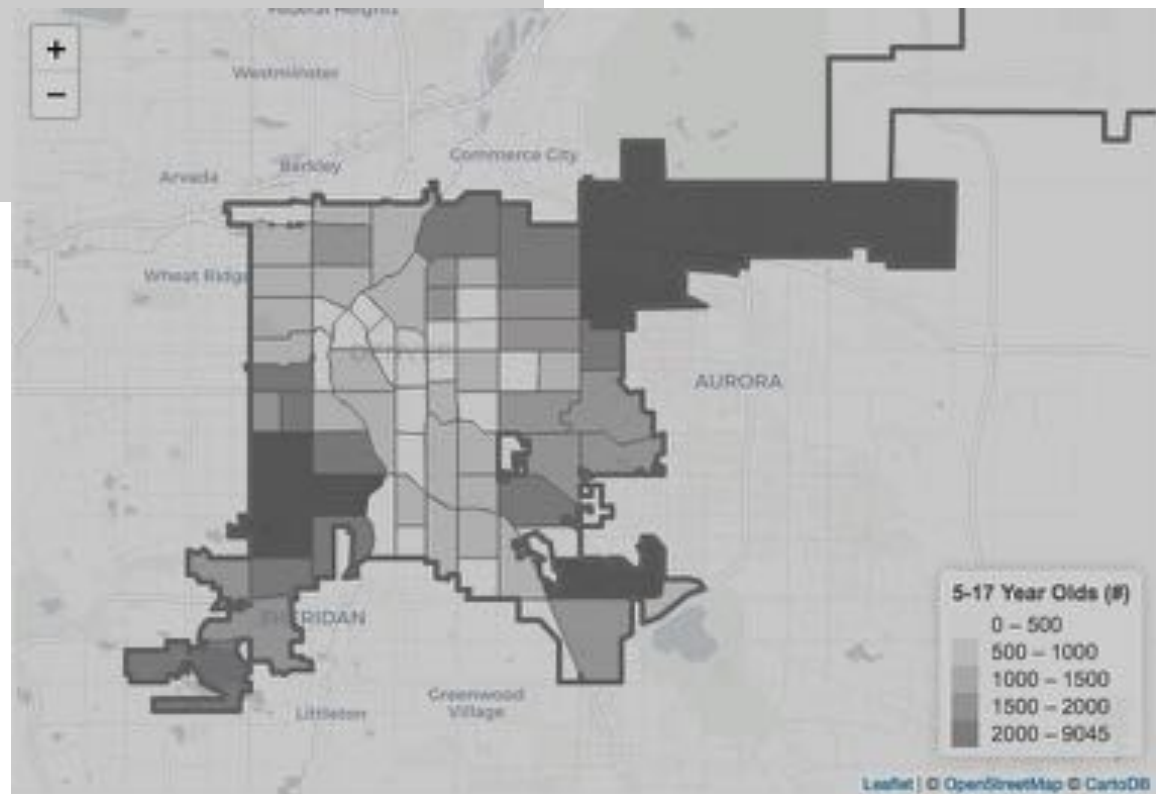
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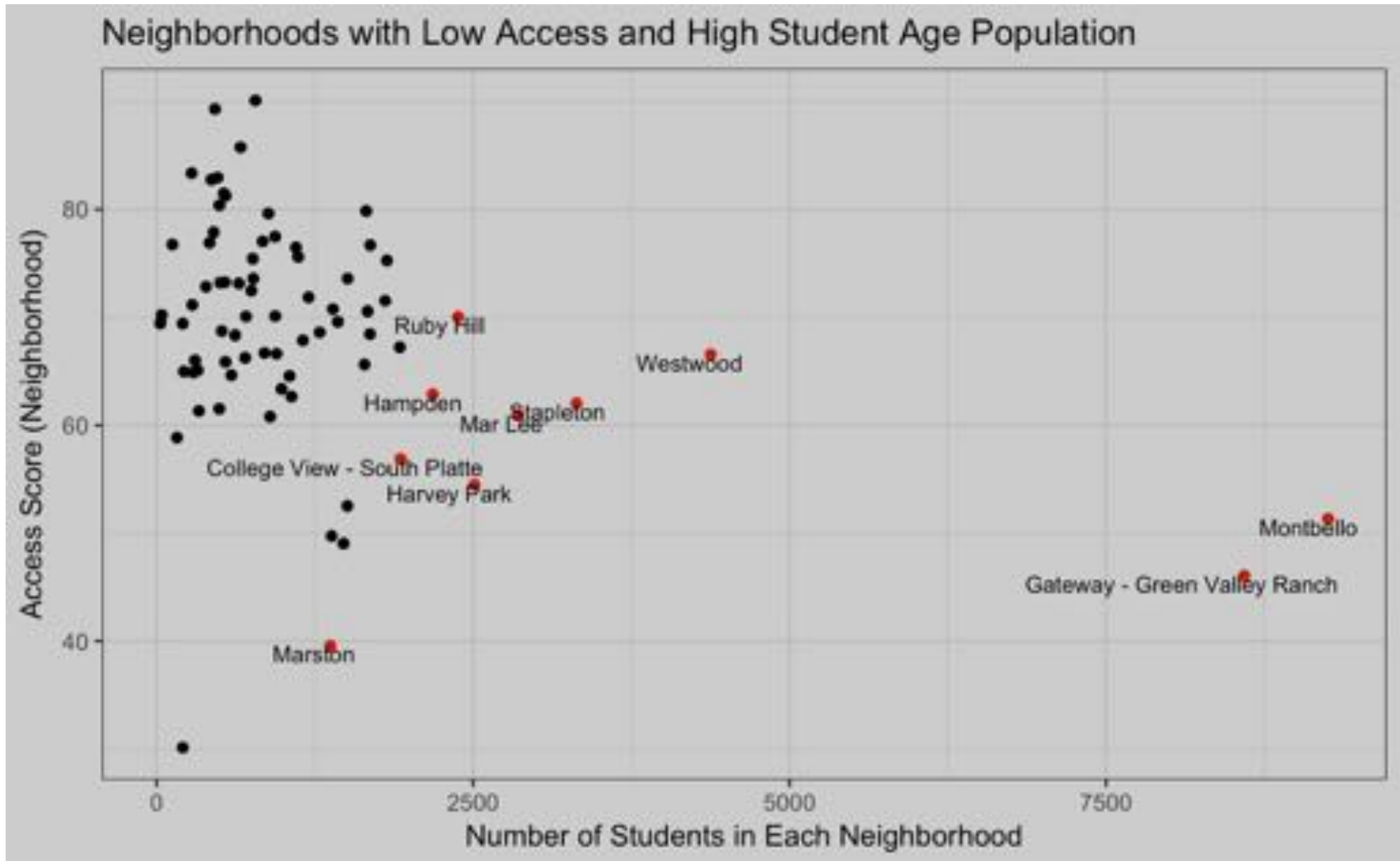
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Student-Age Population Map



Equity of Access



Concluding Remarks

- Identified key areas of the city and demographic groups with high/low access

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- Information can help address “summer slide” achievement gaps
- Interactive dashboard allows ReSchool and other orgs. to identify additional gaps and trends
 - Updates as Denver programs change!

Lessons Learned

- Sustainability / Reproducibility
 - Data updating pipeline, tailored to most volatile data sources
 - We hope that this can be a model for other cities! https://github.com/CRPE-UWB/osr_dssg2018

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 - Data updating pipeline, tailored to most volatile data sources
 - We hope that this can be a model for other cities! https://github.com/CRPE-UWB/osr_dssg2018
- Collaboration
 - Leveraged diverse skill sets and backgrounds (within and outside our team) to make this happen!

GORDON AND BETTY
MOORE
FOUNDATION



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



UNIVERSITY of WASHINGTON
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**CASCADIA URBAN
ANALYTICS COOPERATIVE**