



The Educational Opportunity Project  
at Stanford University



# Introduction to the Stanford Education Data Archive (SEDA)

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We're measuring educational opportunity  
in every community in America.

# About Us



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EDUCATION SCIENCES

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Family  
Foundation

spencer

# Workshop Overview

|   |        |
|---|--------|
| Introduction to SEDA                      | Sean   |
| Getting Started with SEDA                 | Erin   |
| Where Do SEDA Achievement Data Come From? | Andrew |
| Working with Pooled Data                  | Ben    |
| Working with Long Form Data               | Ben    |
| Uses of SEDA                              | Erin   |
| Questions                                 | All    |



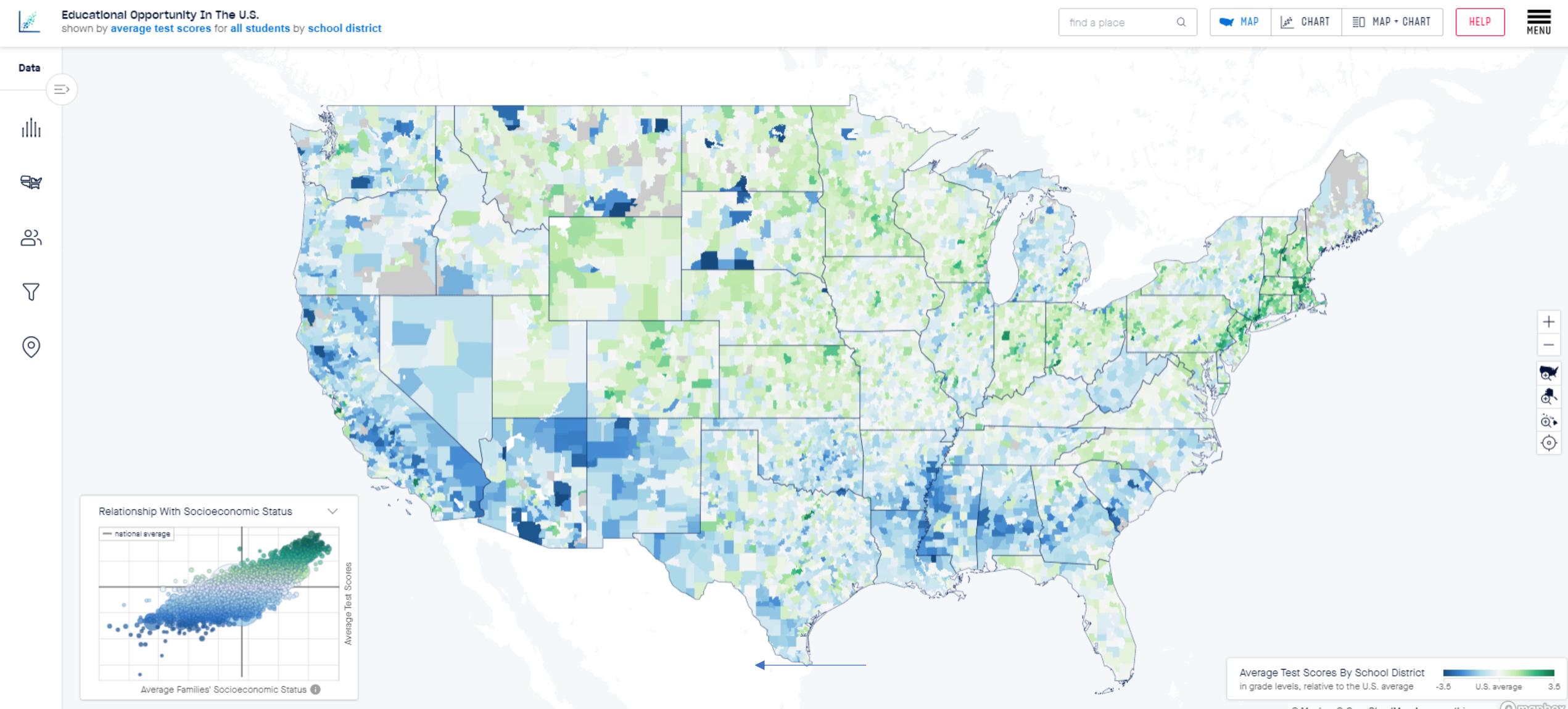


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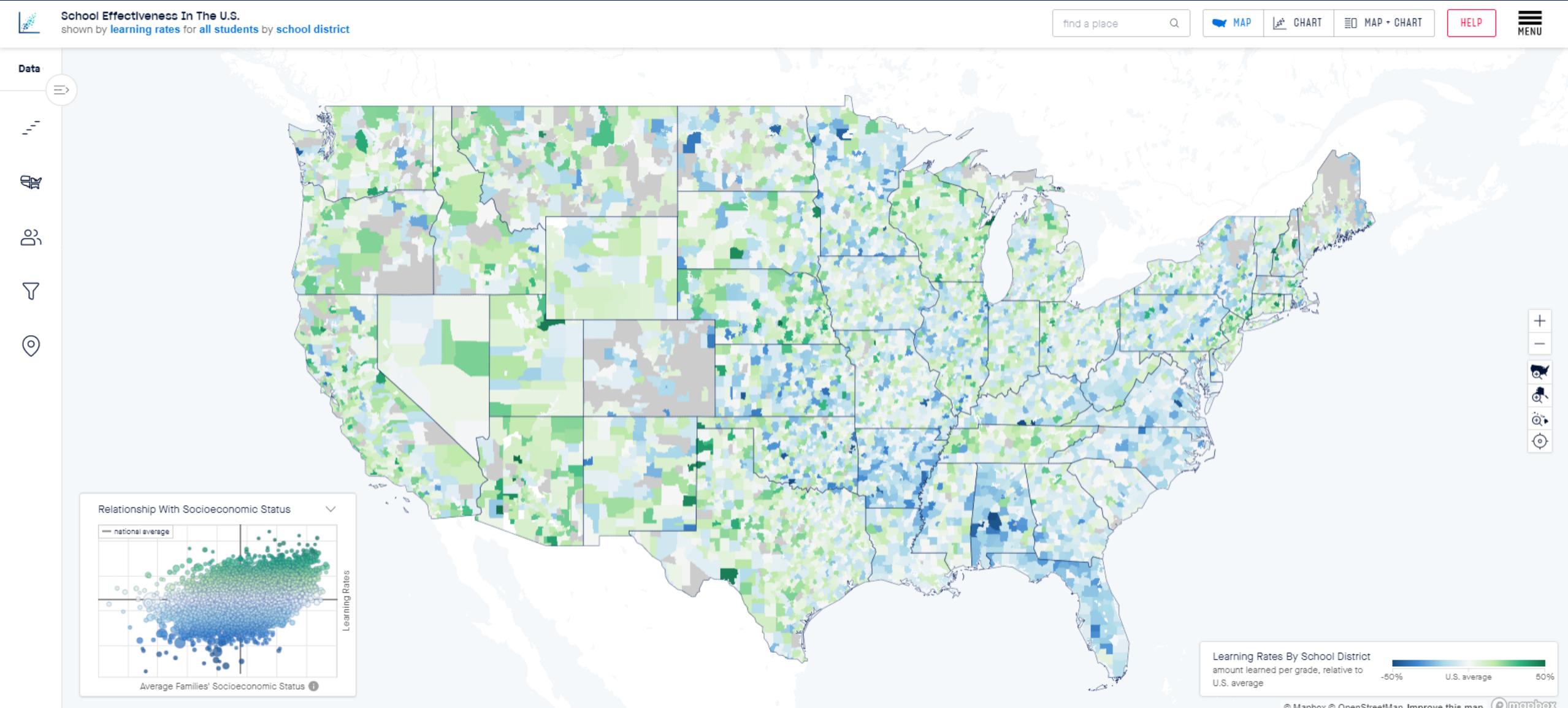
# Introduction to SEDA

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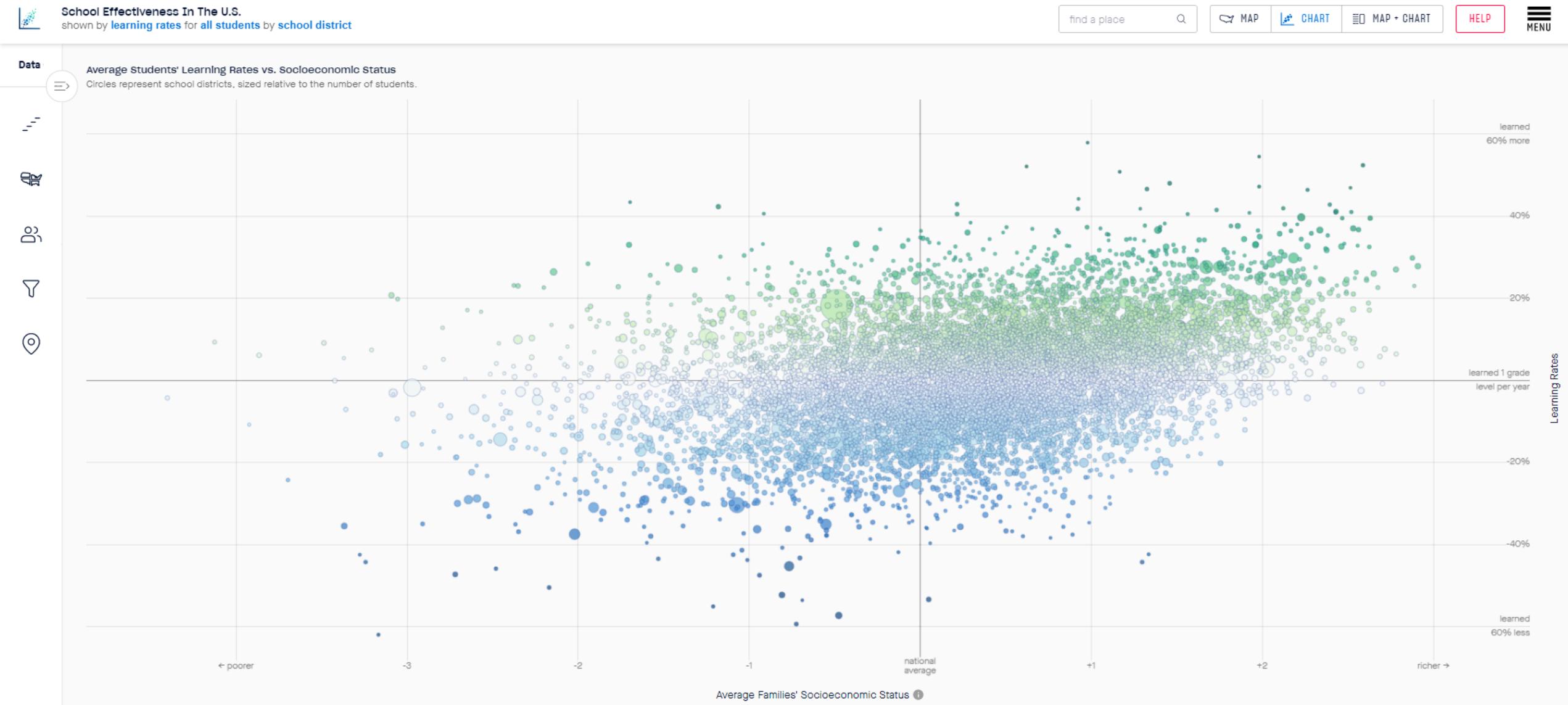
# Nationally comparable data on achievement...



# ...and learning...



...that enable inferences about educational opportunity



# Overview of SEDA Contents

## SEDA 4.0 (released February 8, 2021)

- 10 years of data
- 430 million standardized test scores
- 57 million students
- 13,000+ school districts
- 70,000+ elementary schools
- All scores placed on a common scale

## Upcoming Additions

- Test score data for Native American students and BIE Schools
- 2018-19 data
- Math test score data for Puerto Rico





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# Getting Started with SEDA

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# SEDA Data Use Agreement

## Sign the SEDA DUA:

- Go to <https://edopportunity.org>
- In the Menu (upper right corner), click “Get the Data”
- Read the agreement
- Enter your email address in the box at the bottom on the page
- Click the red “Get the Data” button

### Data Use Agreement

You agree not to use the data sets for commercial advantage, or in the course of for-profit activities. Commercial entities wishing to use this Service should contact Stanford University's Office of Technology Licensing ([info@otlmail.stanford.edu](mailto:info@otlmail.stanford.edu)).

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You agree that this Agreement and any dispute arising under it is governed by the laws of the State of California of the United States of America, applicable to agreements negotiated, executed, and performed within California.

You agree to acknowledge the Stanford Education Data Archive as the source of these data. In publications, please cite the data as:

Reardon, S. F., Ho, A. D., Shear, B. R., Fahle, E. M., Kalogrides, D., Jang, H., & Chavez, B. (2021). Stanford Education Data Archive (Version 4.0). Retrieved from <http://purl.stanford.edu/db586ns4974>.

Subject to your compliance with the terms and conditions set forth in this Agreement, Stanford grants you a revocable, non-exclusive, non-transferable right to access and make use of the Data Sets.

Enter your email to access the data. By doing so, you accept the terms of our [Data Use Agreement](#) above, and you will be subscribed to our newsletter and receive notifications of data updates.



Enter your email here

GET THE DATA



# SEDA Data Downloads

Publicly available data files, technical documentation and data codebooks

VERSION 1.0

VERSION 1.1

VERSION 2.0

VERSION 2.1

VERSION 3.0

VERSION 4.0



The Stanford Education Data Archive (SEDA) includes a number of publicly available data files, the technical documentation and data codebooks, listed on the following page. Data files are available in Stata (v13) and .csv formats.

In publications, please cite the data as:

Reardon, S. F., Ho, A. D., Shear, B. R., Fahle, E. M., Kalogrides, D., Jang, H., & Chavez, B. (2021). Stanford Education Data Archive (Version 4.0). Retrieved from <http://purl.stanford.edu/db586ns4974>.

If you have questions or note errors in the data, please contact us at [sedasupport@stanford.edu](mailto:sedasupport@stanford.edu)

## Version 4.0 Notes

The currently available data include district and county level average achievement (for all students and by race/ethnicity and gender), district and county level racial/ethnic and gender achievement gaps, and district level demographic/socioeconomic data. The most recent release (currently, Version 4.0) should always be used for reporting and analysis. Previous versions of the data are still available to facilitate research replication. Please review the technical documentation and codebooks that accompany the data sets. These documents review the data construction process and describes the contents of each file.

# Technical Documentation and Codebooks

- Documentation (SEDA\_documentation\_4.0) provides an overview of the data construction
- Codebooks provide details on variables in the achievement, covariate, and crosswalk data files
  - File Naming Convention: **seda\_document\_unit\_version**
    - **document** = codebook (achievement), codebook\_cov (covariate), or codebook\_crosswalk
    - **unit** = school, geodist (district), county, metro (metropolitan statistical area), commzone (commuting zone), or state
    - **version** = 4.0

| Technical Documentation and Codebooks |                       |
|---------------------------------------|-----------------------|
| File Name                             | Download              |
| SEDA_documentation_4.0                | <a href="#">PDF</a>   |
| seda_codebook_school_4.0              | <a href="#">Excel</a> |
| seda_codebook_geodist_4.0             | <a href="#">Excel</a> |
| seda_codebook_county_4.0              | <a href="#">Excel</a> |
| seda_codebook_commzone_4.0            | <a href="#">Excel</a> |
| seda_codebook_metro_4.0               | <a href="#">Excel</a> |
| seda_codebook_state_4.0               | <a href="#">Excel</a> |
| seda_codebook_cov_school_4.0          | <a href="#">Excel</a> |
| seda_codebook_cov_geodist_4.0         | <a href="#">Excel</a> |
| seda_codebook_cov_county_4.0          | <a href="#">Excel</a> |
| seda_codebook_cov_metro_4.0           | <a href="#">Excel</a> |
| seda_codebook_cov_state_4.0           | <a href="#">Excel</a> |
| seda_codebook_crosswalk_4.0           | <a href="#">Excel</a> |



# SEDA Achievement Data

- File Naming Convention: **sed<sub>a</sub>\_unit\_form\_metric\_version**
  - **unit** = school, geodist (district), county, metro (metropolitan statistical area), commzone (commuting zone), or state
  - **form** = long (unit-grade-subject-year), poolsub (unit-subject), or pool (unit)
  - **metric** = CS or GCS
  - **version** = 4.0



| File Name                                 | Form   | Metric | Unit   |                     |        |       |      |        |      |       |         | Disaggregated by |   |   | Subgroups |   |   |   |                       |                       | Download            |  |
|---|--------|--------|--------|---------------------|--------|-------|------|--------|------|-------|---------|------------------|---|---|-----------|---|---|---|-----------------------|-----------------------|---------------------|--|
|   |        |        | School | Geographic District | County | Metro | CZ   | State  | Year | Grade | Subject | Means            |   |   | Gaps      |   |   |   |                       |                       |                     |  |
|   |        |        | All    | Race                | Gender | ECD   | Race | Gender | ECD  |       |         |                  |   |   |           |   |   |   |                       |                       |                     |  |
| sed <sub>a</sub> _school_pool_CS_4.0      | Pooled | CS     | X      |                     |        |       |      |        |      |       |         | X                |   |   |           |   |   |   |                       | <a href="#">Stata</a> | <a href="#">CSV</a> |  |
| sed <sub>a</sub> _school_pool_GCS_4.0     | Pooled | GCS    | X      |                     |        |       |      |        |      |       |         | X                |   |   |           |   |   |   |                       | <a href="#">Stata</a> | <a href="#">CSV</a> |  |
| sed <sub>a</sub> _geodist_long_CS_4.0     | Long   | CS     |        | X                   |        |       |      |        |      | X     | X       | X                | X | X | X         | X | X | X | <a href="#">Stata</a> | <a href="#">CSV</a>   |                     |  |
| sed <sub>a</sub> _geodist_long_GCS_4.0    | Long   | GCS    |        | X                   |        |       |      |        |      | X     | X       | X                | X | X | X         | X | X | X | <a href="#">Stata</a> | <a href="#">CSV</a>   |                     |  |
| sed <sub>a</sub> _geodist_poolsub_CS_4.0  | Pooled | CS     |        | X                   |        |       |      |        |      |       |         | X                | X | X | X         | X | X | X | X                     | <a href="#">Stata</a> | <a href="#">CSV</a> |  |
| sed <sub>a</sub> _geodist_poolsub_GCS_4.0 | Pooled | GCS    |        | X                   |        |       |      |        |      |       |         | X                | X | X | X         | X | X | X | X                     | <a href="#">Stata</a> | <a href="#">CSV</a> |  |
| sed <sub>a</sub> _geodist_pool_GCS_4.0    | Pooled | GCS    |        | X                   |        |       |      |        |      |       |         | X                | X | X | X         | X | X | X | X                     | <a href="#">Stata</a> | <a href="#">CSV</a> |  |
| sed <sub>a</sub> _geodist_pool_CS_4.0     | Pooled | CS     |        | X                   |        |       |      |        |      |       |         | X                | X | X | X         | X | X | X | X                     | <a href="#">Stata</a> | <a href="#">CSV</a> |  |
| sed <sub>a</sub> _county_long_CS_4.0      | Long   | CS     |        |                     | X      |       |      |        |      | X     | X       | X                | X | X | X         | X | X | X | <a href="#">Stata</a> | <a href="#">CSV</a>   |                     |  |
| sed <sub>a</sub> _county_long_GCS_4.0     | Long   | GCS    |        |                     | X      |       |      |        |      | X     | X       | X                | X | X | X         | X | X | X | <a href="#">Stata</a> | <a href="#">CSV</a>   |                     |  |
| sed <sub>a</sub> _county_poolsub_CS_4.0   | Pooled | CS     |        |                     | X      |       |      |        |      |       |         | X                | X | X | X         | X | X | X | X                     | <a href="#">Stata</a> | <a href="#">CSV</a> |  |
| sed <sub>a</sub> _county_poolsub_GCS_4.0  | Pooled | GCS    |        |                     | X      |       |      |        |      |       |         | X                | X | X | X         | X | X | X | X                     | <a href="#">Stata</a> | <a href="#">CSV</a> |  |



# SEDA Covariate Data

- Covariate data come from:
  - The Common Core of Data
  - The American Community Survey
  - The Civil Rights Data Collection
- File Naming Convention:  
**seda\_cov\_unit\_form\_version**
  - **unit** = school, geodist (district), county, metro (metropolitan statistical area), or state
  - **form** = long (unit-grade-subject-year), poolyr (unit-year), or pool (unit)
  - **version** = 4.0

| Covariate Data              |        |                  |      |       |   |
|-----------------------------|--------|------------------|------|-------|---|
| File Name                   | Form   | Disaggregated by |      |       | Download                                  |
|                             |        | Unit             | Year | Grade |   |
| seda_cov_school_pool_4.0    | Pooled | X                |      |       | <a href="#">Stata</a> <a href="#">CSV</a> |
| seda_cov_school_poolyr_4.0  | Pooled | X                | X    |       | <a href="#">Stata</a> <a href="#">CSV</a> |
| seda_cov_geodist_pool_4.0   | Pooled | X                |      |       | <a href="#">Stata</a> <a href="#">CSV</a> |
| seda_cov_geodist_poolyr_4.0 | Pooled | X                | X    |       | <a href="#">Stata</a> <a href="#">CSV</a> |
| seda_cov_geodist_long_4.0   | Long   | X                | X    | X     | <a href="#">Stata</a> <a href="#">CSV</a> |
| seda_cov_county_pool_4.0    | Pooled | X                |      |       | <a href="#">Stata</a> <a href="#">CSV</a> |
| seda_cov_county_poolyr_4.0  | Pooled | X                | X    |       | <a href="#">Stata</a> <a href="#">CSV</a> |
| seda_cov_county_long_4.0    | Long   | X                | X    | X     | <a href="#">Stata</a> <a href="#">CSV</a> |
| seda_cov_metro_pool_4.0     | Pooled | X                |      |       | <a href="#">Stata</a> <a href="#">CSV</a> |
| seda_cov_metro_poolyr_4.0   | Pooled | X                | X    |       | <a href="#">Stata</a> <a href="#">CSV</a> |
| seda_cov_metro_long_4.0     | Long   | X                | X    | X     | <a href="#">Stata</a> <a href="#">CSV</a> |
| seda_cov_state_pool_4.0     | Pooled | X                |      |       | <a href="#">Stata</a> <a href="#">CSV</a> |
| seda_cov_state_poolyr_4.0   | Pooled | X                | X    |       | <a href="#">Stata</a> <a href="#">CSV</a> |
| seda_cov_state_long_4.0     | Long   | X                | X    | X     | <a href="#">Stata</a> <a href="#">CSV</a> |



# SEDA Ancillary Data

- Crosswalk 4.0:
  - Provides the mapping of NCES School IDs (ncessch) by year to stable SEDA School IDs (sedasch)
  - Provides the mapping of SEDA School IDs to SEDA districts, counties, metropolitan areas, commuting zones, and states
- 2019 District Shapefiles:
  - Provide the geographic boundaries used to define districts in SEDA

| Ancillary Data            |                  |          |      |          |   |
|---------------------------|------------------|----------|------|----------|---|
| File Name                 | Disaggregated by |          |      | Download |   |
|                           | School           | District | Year |          |   |
| SEDA_crosswalk_4.0        | X                |          |      | X        | <a href="#">Stata</a> <a href="#">CSV</a> |
| sedas_shapefiles_2019_4.0 |                  | X        |      |          | <a href="#">ZIP</a>                       |





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# Where do SEDA achievement data come from?

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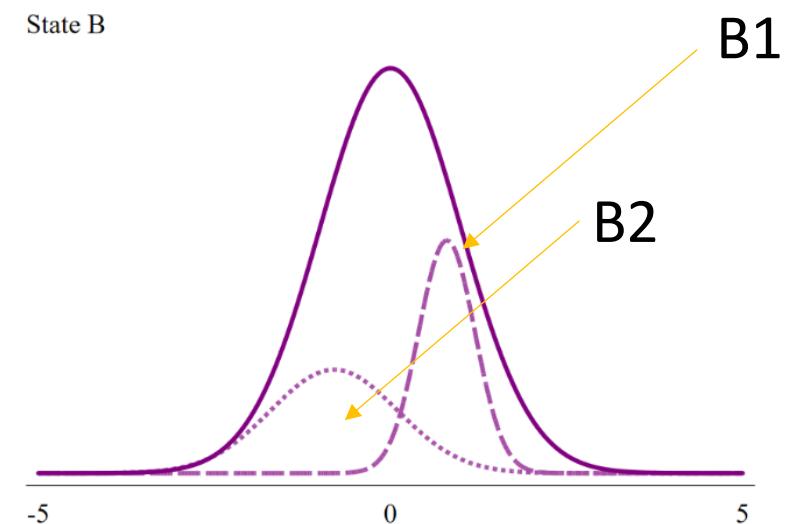
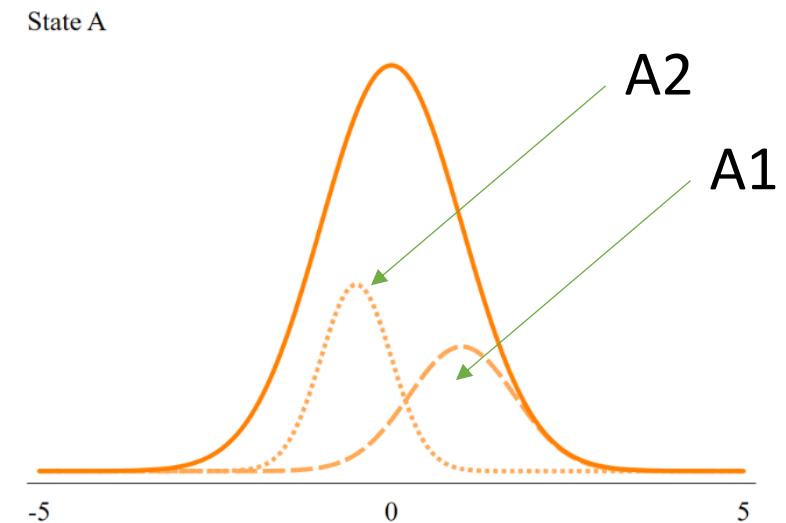
# Where do SEDA achievement data come from?

- *EDFacts* (State Accountability Test Data)
  - School-level student proficiency counts for all subgroups in the U.S.
  - Grades: 3 through 8
  - Subjects: Reading/English Language Arts and Mathematics
  - Academic Years Ending: 2009-2018 (2019 data forthcoming)
- National Assessment of Educational Progress (NAEP)
  - State-level score distributions on a common scale over time
  - Grades: 4 and 8
  - Subjects: Reading and Mathematics
  - Odd Years: 2007, 2009, 2011, 2013, 2015, 2017, 2019

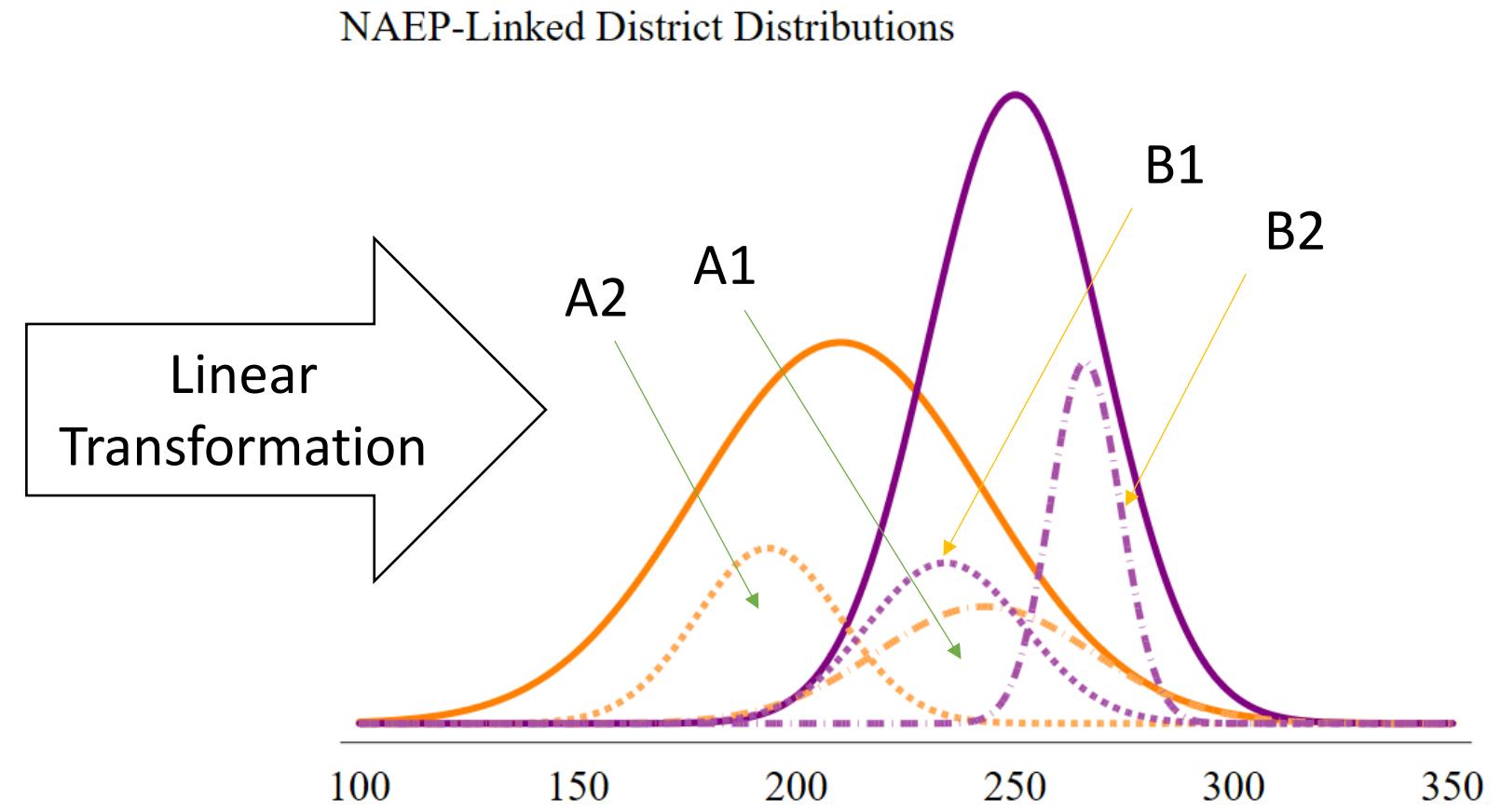
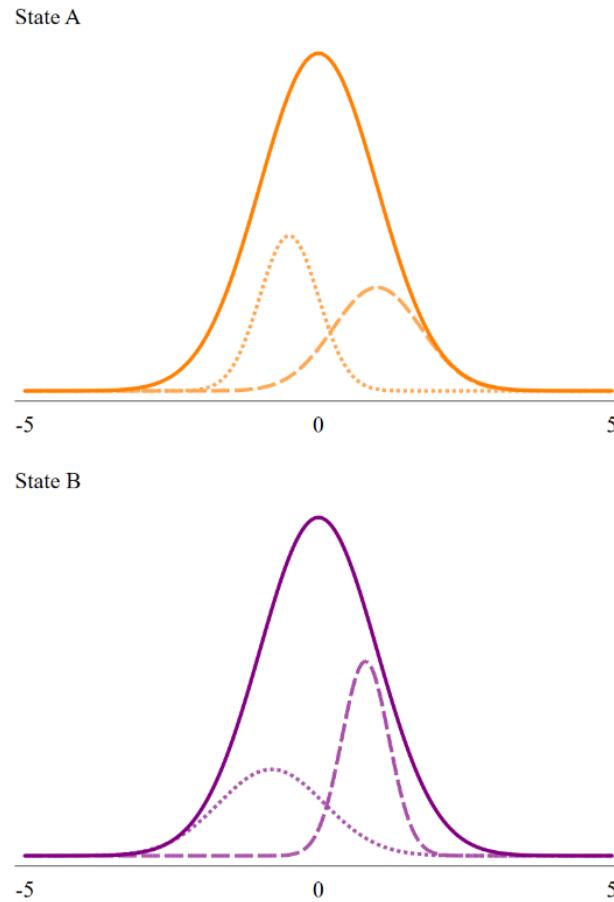


# How do we compare districts within states? ED**Facts**.

- ED**Facts** data help us compare school districts within a state
  - In State A, students in district A1 have higher scores, on average, than students in district A2.
  - In State B, students in district B1 have higher scores, on average, than students in district B2.
- We use statistical methods that we have published [here](#) and [here](#).
- Now that we have scores within states, how can we compare scores between states?



# How do we compare districts between states? NAEP.



# How do we standardize SEDA data? Two ways.

- Cohort Scale (CS)
  - 1 unit = 1 standard deviation in student-level proficiency in each grade.
  - Referenced to the same-grade average of the four national NAEP cohorts who were in 4th grade in 2009, 2011, 2013, and 2015.
  - Available in downloadable files. Well suited for research.
- Grade within-Cohort Scale (GCS)
  - 1 unit = 1 grade-level equivalent (roughly 1/3 an SD unit)
  - Referenced to the average amount student test scores changed per grade, from 4<sup>th</sup> to 8<sup>th</sup> grade, for national NAEP 2009, 2011, 2013, and 2015 4<sup>th</sup> grade cohorts
  - Presented at [edopportunity.org](http://edopportunity.org) and available in the downloadable files. Well suited for general audiences.



# What is “average”? 4 reference cohorts (NAEP Math)

# 4 Tips to remember when using SEDA achievement data

1. Within-state comparisons come from *EDFacts*, state accountability test data, every year and grade.
2. Between-state and cross-year comparisons come from NAEP, reading and mathematics data, in odd years and grades 4 and 8.
3. The Cohort Scale (CS) compares performance to the mean and SD of 4 reference cohorts, within each grade, in each grade's SD units.
4. The Grade-within-Cohort Scale (GCS) compares performance to the grade-to-grade progress of 4 reference cohorts, across grades, in grade-level equivalents.





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# Working with Pooled Data

We're measuring educational opportunity  
in every community in America.

# What can you explore with pooled data?

## Average test scores

The educational opportunities available in a community, both in and out of school, are reflected in students' average test scores. They are influenced by opportunities to learn at home, in neighborhoods, in child-care, preschool, and after-school programs, from peers and friends, and at school.

EXPLORE AVERAGE TEST SCORES IN YOUR SCHOOL & COMMUNITY →



## Learning rates

Learning rates measure how much students' scores improve each year while they are in school. They are a better indicator of school quality than average test scores, which are influenced by a range of experiences outside of school.

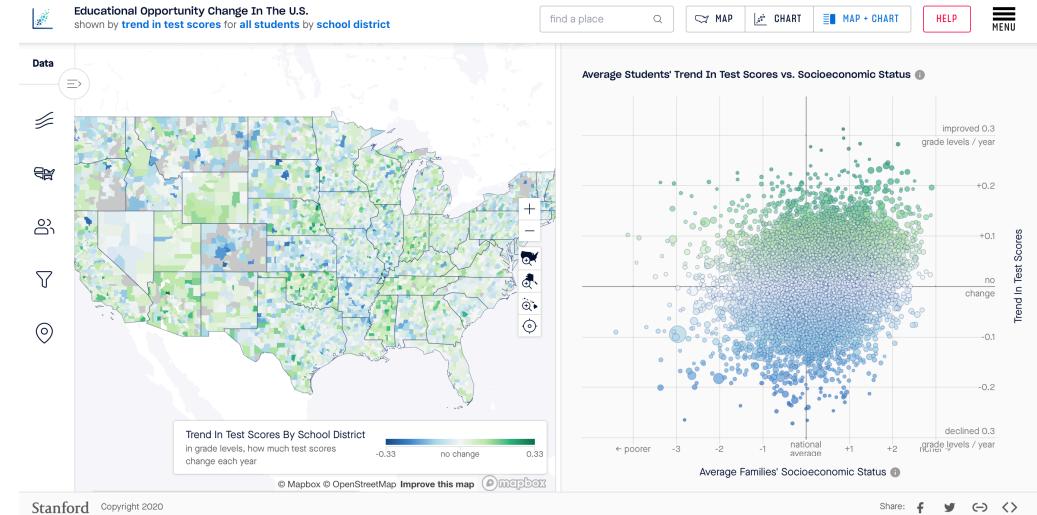
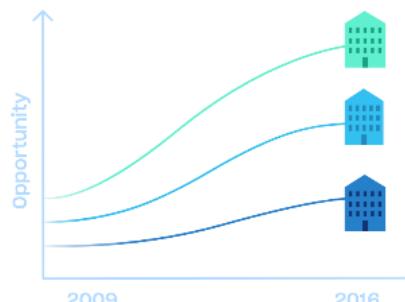
EXPLORE LEARNING RATES IN YOUR SCHOOL & COMMUNITY →



## Trends in test scores

Tracking average test scores over time shows growth or decline in educational opportunity. These trends reflect shifts in school quality as well as changes in family and community characteristics.

EXPLORE TEST SCORE TRENDS IN YOUR SCHOOL & COMMUNITY →



- The core data used on the [edopportunity.org](http://edopportunity.org) website.
- Summarize achievement across 2008/09–2017/18 AY.
- Three metrics on website.
  - *Fourth metric in the data files representing Math/RLA difference.*

# Using the pooled data for graphical presentations

AERA Open  
July-September 2019, Vol. 5, No. 3, pp. 1–22  
DOI: 10.1177/2332858419872459

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## States as Sites of Educational (In)Equality: State Contexts and the Socioeconomic Achievement Gradient

Heewon Jang  
Sean F. Reardon  
Stanford University

Socioeconomic achievement gaps have long been a central focus of educational research. However, not much is known about how (and why) between-district gaps vary among states, even though states are a primary organizational level in the decentralized education system in the United States. Using data from the Stanford Education Data Archive (SEDA), this study describes state-level socioeconomic achievement gradients and the growth of these gradients from Grades 3 to 8. We also examine state-level correlates of the gradients and their growth, including school system funding equity, preschool enrollment patterns, the distribution of teachers, income inequality, and segregation. We find that socioeconomic gradients and their growth rates vary considerably among states, and that between-district income segregation is positively associated with the socioeconomic achievement gradient.

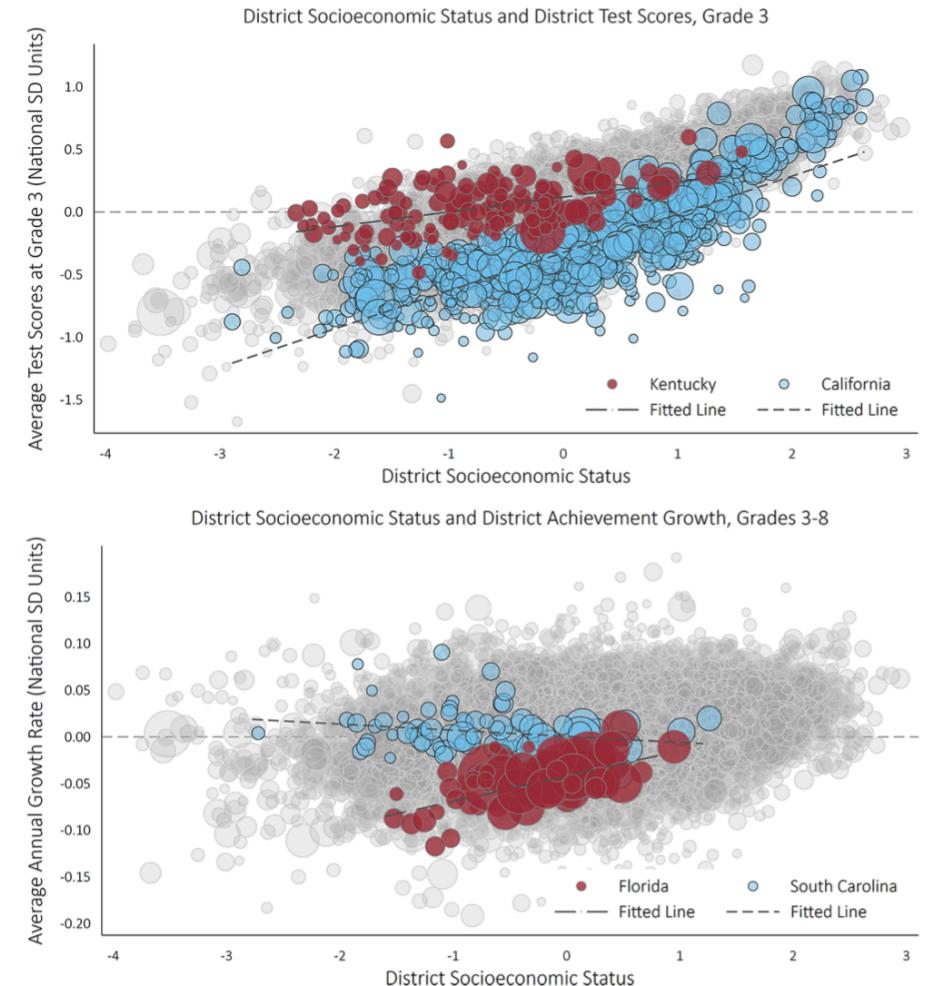


FIGURE 1. District mean achievement and achievement growth rate, by district socioeconomic status (SES).

# What's in the pooled achievement data?

- **One row per unit-subgroup**
  - Subgroups: all students, by race/gender/ECD status, and race/gender/ECD gaps
- **Four achievement parameter estimates (and their standard errors\*)**
  - **Average Test Score (\_avg)**: The average test score across grades and cohorts.
  - **Learning Rate (\_grd)**: The average within-cohort change from grade-to-grade.
  - **Cohort Trend (\_coh)**: The average within-grade change from cohort-to-cohort.
  - **Math Difference (\_mth)**: The average difference between math and ELA scores.
- *\*Standard errors are identified by (\_se) at end of variable name*
- **Two types of each achievement estimates**
  - Empirical Bayes (\_eb): Shrunken; best used as a predictor
  - Ordinary Least Squares (\_ol): Not shrunken; best used as an outcome



# Getting started with pooled SEDA achievement and covariate data

## Pooled Achievement File (sed<sub>a</sub>\_geodist\_pool\_cs\_4.0.dta)

| A  | B       | C           | D    | E        | F      | G        | H           | I   | J         | K         | L          | M          | N          |            |
|----|---------|-------------|------|----------|--------|----------|-------------|-----|-----------|-----------|------------|------------|------------|------------|
| 1  | sedalea | sedaleanam  | fips | stateabb | subcat | subgroup | gradecenter | gap | tot_asmts | cellcount | mn_asmts   | cs_mn_avg  | cs_mn_coh  | cs_mn_grd  |
| 2  | 100002  | ALABAMA YC  | 1    | AL       | all    | all      | 5.5         | 0   | 264       | 16        | 16.5       |            |            |            |
| 3  | 100002  | ALABAMA YC  | 1    | AL       | race   | blk      | 5.5         | 0   | 96        | 10        | 9.6        |            |            |            |
| 4  | 100002  | ALABAMA YC  | 1    | AL       | ecd    | ecd      | 5.5         | 0   | 32        | 2         | 16         |            |            |            |
| 5  | 100002  | ALABAMA YC  | 1    | AL       | gender | mal      | 5.5         | 0   | 247       | 16        | 15.4375    |            |            |            |
| 6  | 100002  | ALABAMA YC  | 1    | AL       | race   | mtr      | 5.5         | 0   | 102       | 10        | 10.2       |            |            |            |
| 7  | 100002  | ALABAMA YC  | 1    | AL       | ecd    | nec      | 5.5         | 0   | 32        | 2         | 16         |            |            |            |
| 8  | 100002  | ALABAMA YC  | 1    | AL       | ecd    | neg      | 5.5         | 1   | 64        | 2         | 32         |            |            |            |
| 9  | 100002  | ALABAMA YC  | 1    | AL       | race   | wbg      | 5.5         | 1   | 75        | 4         | 18.75      |            |            |            |
| 10 | 100002  | ALABAMA YC  | 1    | AL       | race   | wht      | 5.5         | 0   | 28        | 4         | 7          |            |            |            |
| 11 | 100002  | ALABAMA YC  | 1    | AL       | race   | wmg      | 5.5         | 1   | 26        | 2         | 13         |            |            |            |
| 12 | 100005  | ALBERTVILLE | 1    | AL       | all    | all      | 5.5         | 0   | 41125     | 119       | 345.588235 | -0.3134259 | -0.0171925 | -0.0414104 |
| 13 | 100005  | ALBERTVILLE | 1    | AL       | race   | asn      | 5.5         | 0   | 122       | 50        | 2.44       | -0.0846021 |            |            |
| 14 | 100005  | ALBERTVILLE | 1    | AL       | race   | blk      | 5.5         | 0   | 897       | 107       | 8.38317757 | -0.5906435 | -0.0146255 | 0.01935185 |

Every district will have multiple rows in the pooled achievement data (one row for each student subgroup or gap estimate).

Every district will have one row in the (fully) pooled covariate file.

Merge using seda IDs (e.g., **sedalea**).

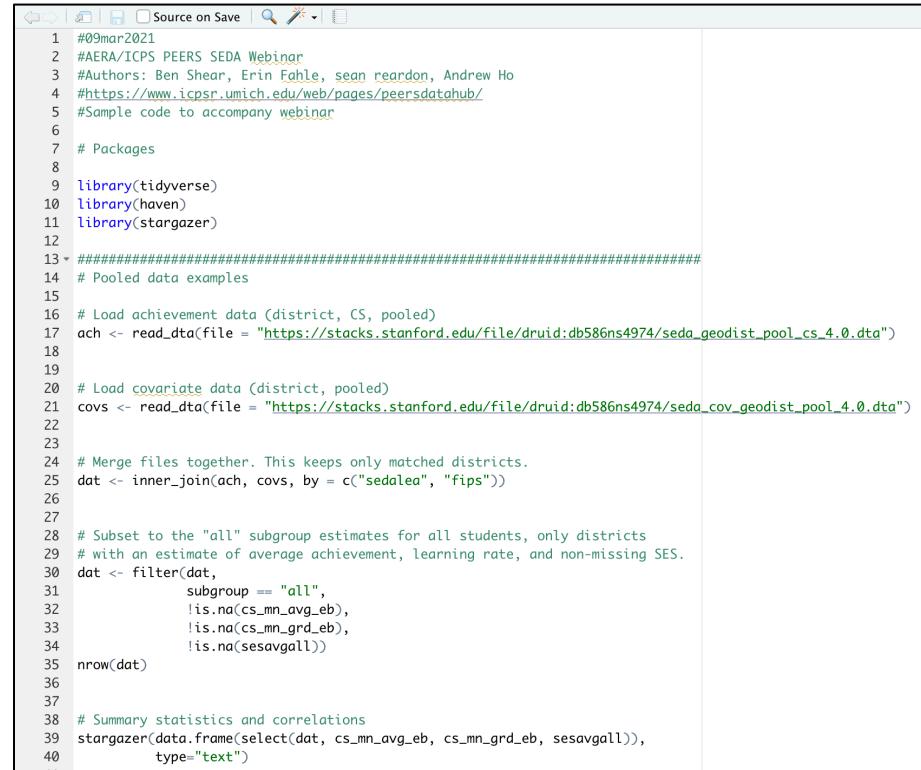
Many-to-one merge between achievement (e.g., sedalea-subgroup) and covariate (e.g., sedalea) data

See example R and Stata code.

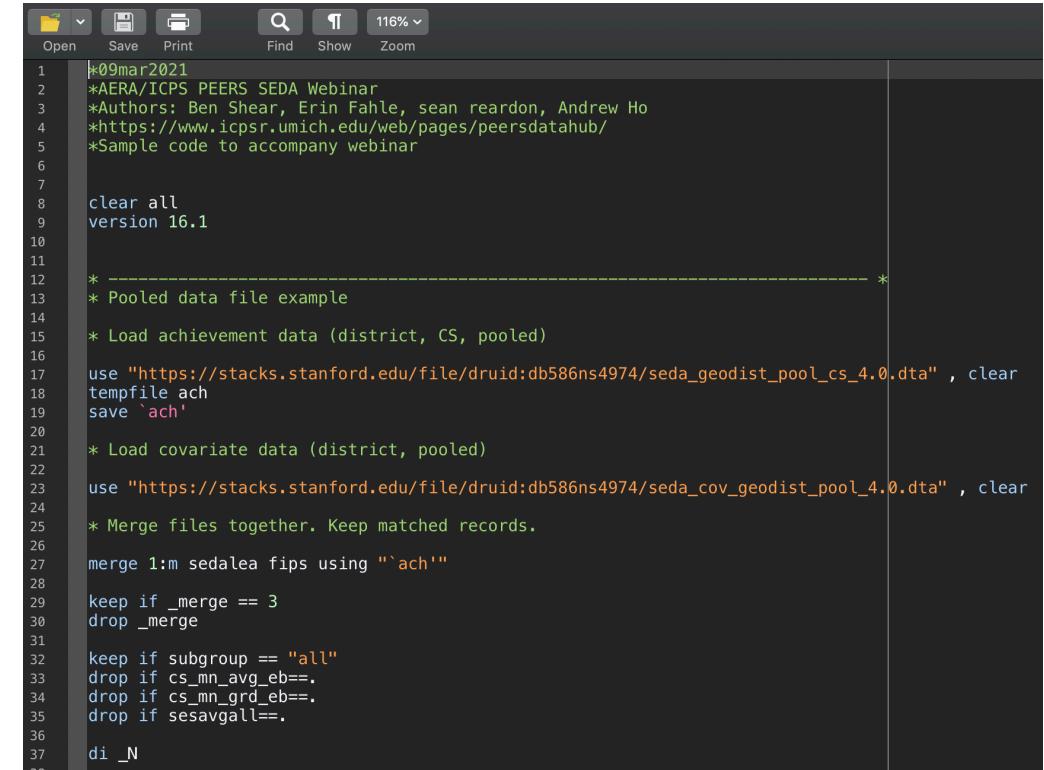
## Pooled Covariates File (sed<sub>a</sub>\_cov\_geodist\_pool\_4.0.dta)

| A  | B       | C           | D    | E     | F      | G    | H     | I               | J          | K          | L          | M          | N          |            |
|----|---------|-------------|------|-------|--------|------|-------|-----------------|------------|------------|------------|------------|------------|------------|
| 1  | sedalea | sedaleanam  | fips | urban | suburb | town | rural | locale          | perind     | perasn     | perhsp     | perblk     | perwht     | perf1      |
| 2  | 100005  | ALBERTVILLE | 1    | 0     | 0      | 1    | 0     | 0 Town, Distar  | 0.0018612  | 0.00458714 | 0.39539066 | 0.02406002 | 0.57410097 | 0.56339848 |
| 3  | 100006  | MARSHALL C  | 1    | 0     | 0      | 0    | 0     | 1 Rural, Distar | 0.00355321 | 0.00195775 | 0.17709132 | 0.0100883  | 0.80730939 | 0.62798846 |
| 4  | 100007  | HOOVER CIT  | 1    | 1     | 0      | 0    | 0     | 0 City, Small   | 0.00078199 | 0.06662998 | 0.07693557 | 0.23495801 | 0.62069446 | 0.19669166 |
| 5  | 100008  | MADISON CI  | 1    | 0     | 1      | 0    | 0     | 0 Suburb, Larg  | 0.00569498 | 0.08943959 | 0.03889903 | 0.20429561 | 0.6616708  | 0.16617025 |
| 6  | 100011  | LEEDS CITY  | 1    | 0     | 1      | 0    | 0     | 0 Suburb, Larg  | 0.00270598 | 0.00803631 | 0.12541057 | 0.23650961 | 0.62733752 | 0.47104907 |
| 7  | 100012  | BOAZ CITY   | 1    | 0     | 0      | 1    | 0     | 0 Town, Distar  | 0.00468904 | 0.00654032 | 0.22992738 | 0.01814319 | 0.74070007 | 0.557019   |
| 8  | 100013  | TRUSSVILLE  | 1    | 0     | 1      | 0    | 0     | 0 Suburb, Larg  | 0.00204206 | 0.02307571 | 0.00943141 | 0.10530009 | 0.86015075 | 0.07496114 |
| 9  | 100030  | ALEXANDER   | 1    | 0     | 0      | 1    | 0     | 0 Town, Distar  | 0.00141526 | 0.00854358 | 0.04238707 | 0.38983953 | 0.5578146  | 0.5296548  |
| 10 | 100060  | ANDALUSIA   | 1    | 0     | 0      | 1    | 0     | 0 Town, Remo    | 0.00035005 | 0.01534388 | 0.0205195  | 0.32832059 | 0.63546598 | 0.51694173 |
| 11 | 100090  | ANNISTON C  | 1    | 1     | 0      | 0    | 0     | 0 City, Small   | 0.00060757 | 0.00239396 | 0.02659258 | 0.91632175 | 0.05408411 | 0.81734264 |
| 12 | 100100  | ARAB CITY   | 1    | 0     | 0      | 0    | 0     | 1 Rural, Fringe | 0.00178644 | 0.00797881 | 0.01796097 | 0.00239254 | 0.96988124 | 0.28400677 |
| 13 | 100120  | ATHENS CITY | 1    | 0     | 0      | 1    | 0     | 0 Town, Fringe  | 0.00460859 | 0.01542176 | 0.13651723 | 0.24022704 | 0.60322535 | 0.45829281 |
| 14 | 100180  | ATTALLA CIT | 1    | 0     | 1      | 0    | 0     | 0 Sururb, Smal  | 0.00197417 | 0.00192383 | 0.07453847 | 0.17112042 | 0.75067556 | 0.63174582 |

# Sample R and Stata code



```
1 #09mar2021
2 #AERA/ICPS PEERS SEDA Webinar
3 #Authors: Ben Shear, Erin Fahle, sean reardon, Andrew Ho
4 #https://www.ipcpsr.umich.edu/web/pages/peersdatahub/
5 #Sample code to accompany webinar
6
7 # Packages
8
9 library(tidyverse)
10 library(haven)
11 library(stargazer)
12
13 ##### Pooled data examples
14
15 # Load achievement data (district, CS, pooled)
16 ach <- read_dta(file = "https://stacks.stanford.edu/file/druid:db586ns4974/seda_geodist_pool_cs_4.0.dta")
17
18 # Load covariate data (district, pooled)
19 covs <- read_dta(file = "https://stacks.stanford.edu/file/druid:db586ns4974/seda_cov_geodist_pool_4.0.dta")
20
21 # Merge files together. This keeps only matched districts.
22 dat <- inner_join(ach, covs, by = c("sedalea", "fips"))
23
24 # Subset to the "all" subgroup estimates for all students, only districts
25 # with an estimate of average achievement, learning rate, and non-missing SES.
26 dat <- filter(dat,
27   subgroup == "all",
28   !is.na(cs_mn_avg_eb),
29   !is.na(cs_mn_grd_eb),
30   !is.na(sesavgall))
31 nrow(dat)
32
33 # Summary statistics and correlations
34 stargazer(data.frame(select(dat, cs_mn_avg_eb, cs_mn_grd_eb, sesavgall)),
35           type="text")
```



```
1 #09mar2021
2 *AERA/ICPS PEERS SEDA Webinar
3 *Authors: Ben Shear, Erin Fahle, sean reardon, Andrew Ho
4 *https://www.ipcpsr.umich.edu/web/pages/peersdatahub/
5 *Sample code to accompany webinar
6
7 clear all
8 version 16.1
9
10 -----
11 * Pooled data file example
12
13 * Load achievement data (district, CS, pooled)
14
15 use "https://stacks.stanford.edu/file/druid:db586ns4974/seda_geodist_pool_cs_4.0.dta", clear
16 tempfile ach
17 save `ach'
18
19 * Load covariate data (district, pooled)
20
21 use "https://stacks.stanford.edu/file/druid:db586ns4974/seda_cov_geodist_pool_4.0.dta", clear
22
23 * Merge files together. Keep matched records.
24
25 merge 1:m sedalea fips using "`ach'"
26
27 keep if _merge == 3
28 drop _merge
29
30 keep if subgroup == "all"
31 drop if cs_mn_avg_eb==.
32 drop if cs_mn_grd_eb==.
33 drop if sesavgall==.
34
35 di _N
```

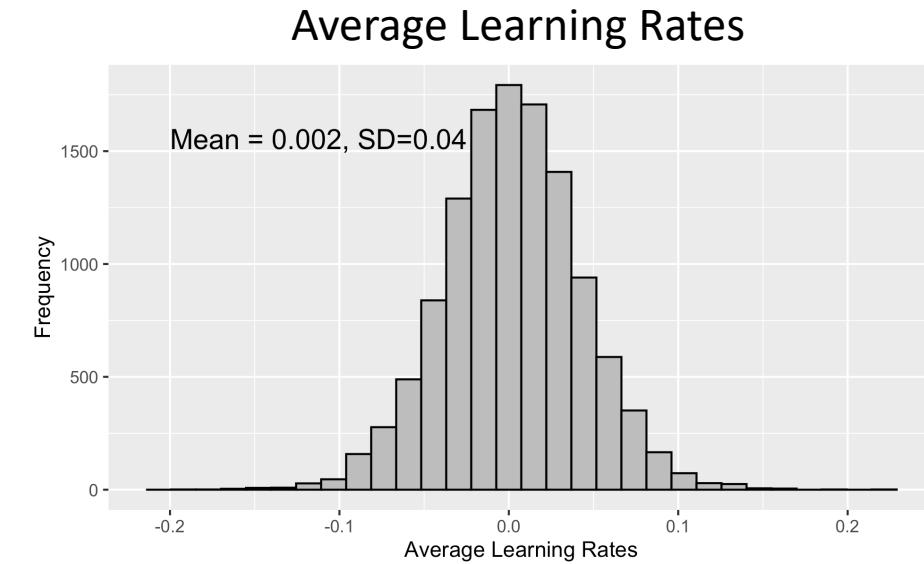
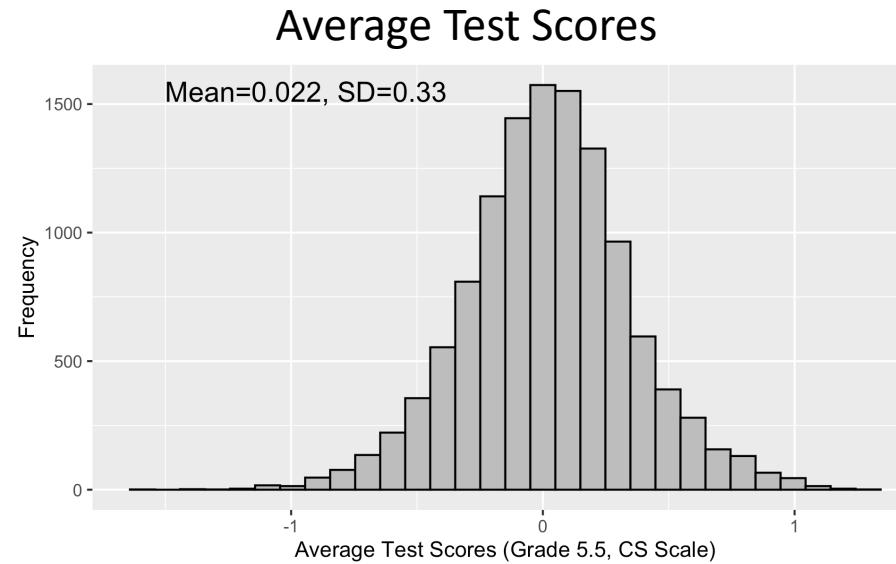


# Descriptive Statistics

| <b>Variable</b> | <b>N</b> | <b>Mean</b> | <b>St. Dev.</b> | <b>Min</b> | <b>Pctl(25)</b> | <b>Pctl(75)</b> | <b>Max</b> |
|-----------------|----------|-------------|-----------------|------------|-----------------|-----------------|------------|
| cs_mn_avg_eb    | 11,926   | 0.022       | 0.330           | -1.637     | -0.181          | 0.220           | 1.246      |
| cs_mn_grd_eb    | 11,926   | 0.002       | 0.040           | -0.186     | -0.024          | 0.028           | 0.228      |
| cs_mn_coh_eb    | 11,815   | 0.003       | 0.023           | -0.116     | -0.012          | 0.018           | 0.141      |
| cs_mn_mth_eb    | 11,862   | -0.006      | 0.111           | -0.531     | -0.081          | 0.065           | 0.447      |
| sesavgall       | 11,926   | 0.328       | 0.852           | -4.401     | -0.167          | 0.874           | 2.910      |



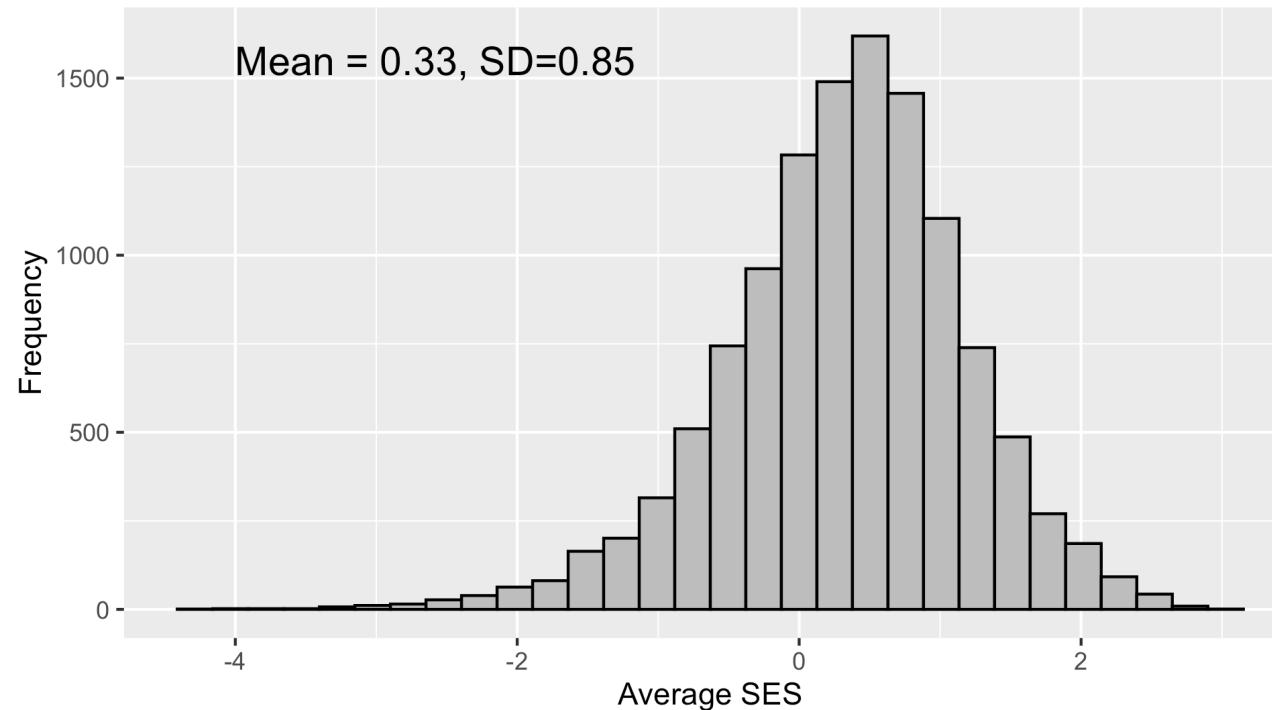
# How much do average scores and learning rates vary across districts?



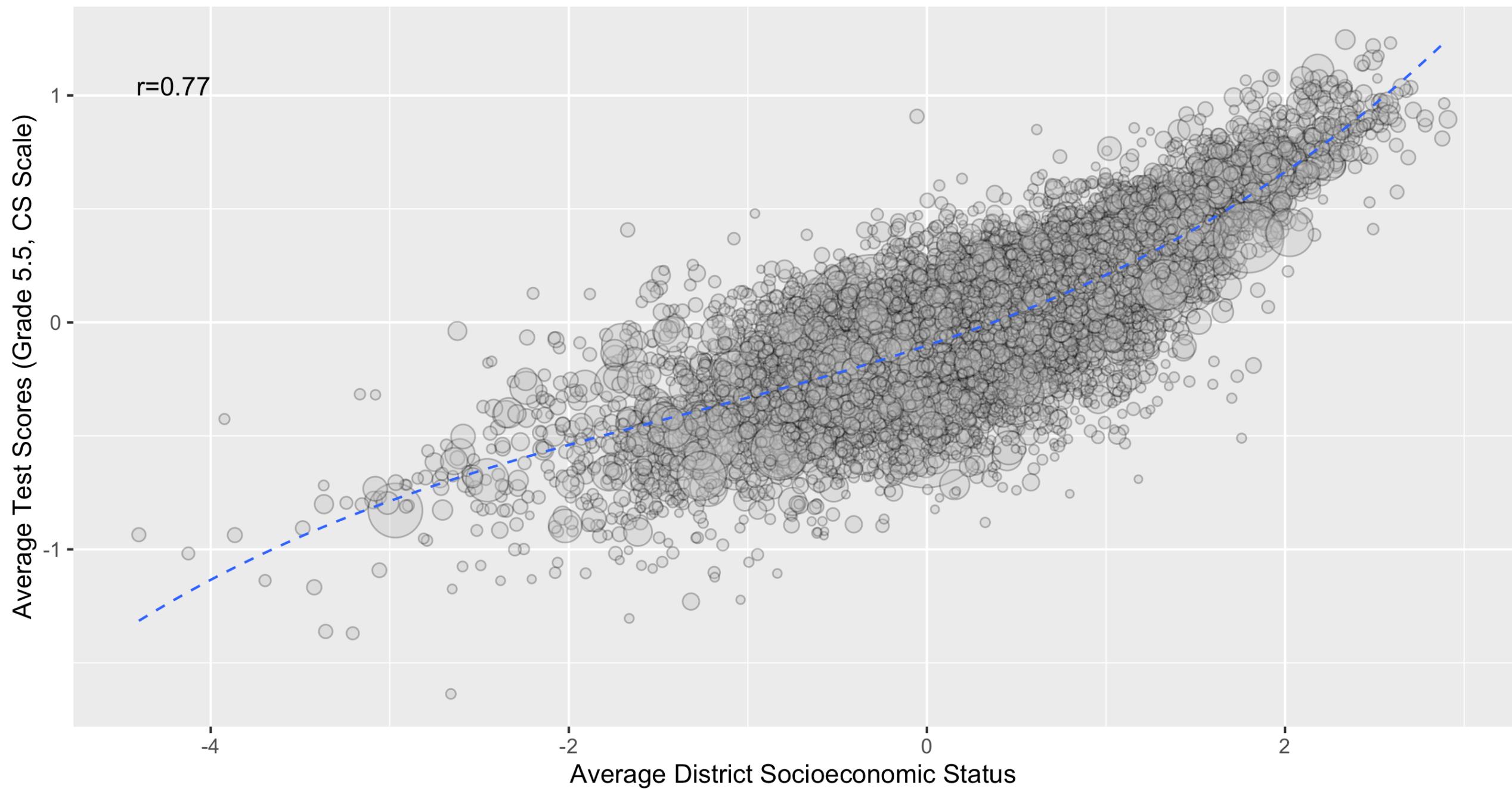
More variability in average test scores than average learning rates. On the CS scale, units are national cohort student-level standard deviations. For reference, a 1-unit change on the CS scale is equivalent to approximately 3 grade levels on the GCS scale.



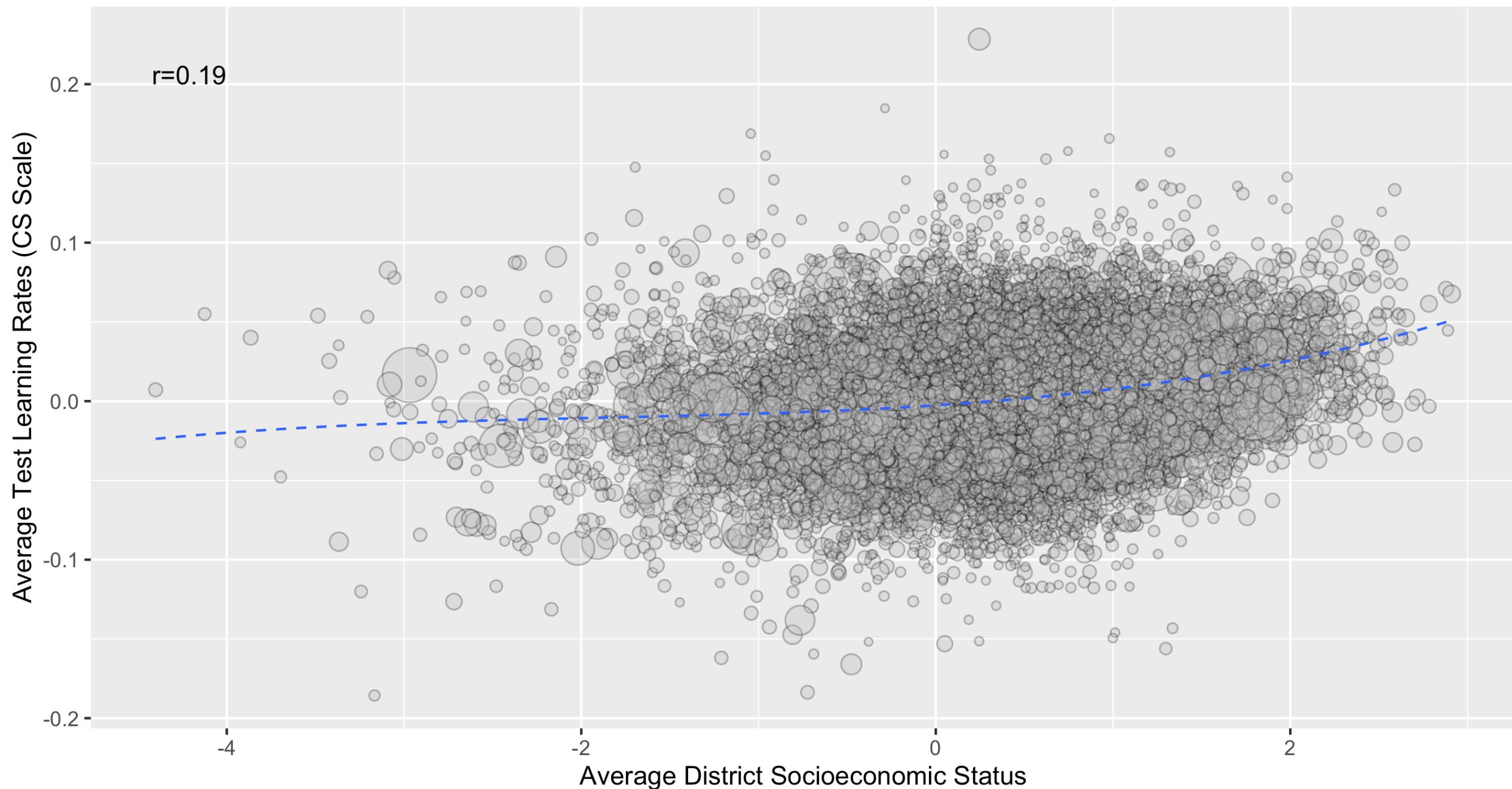
# How much does SES vary across districts?



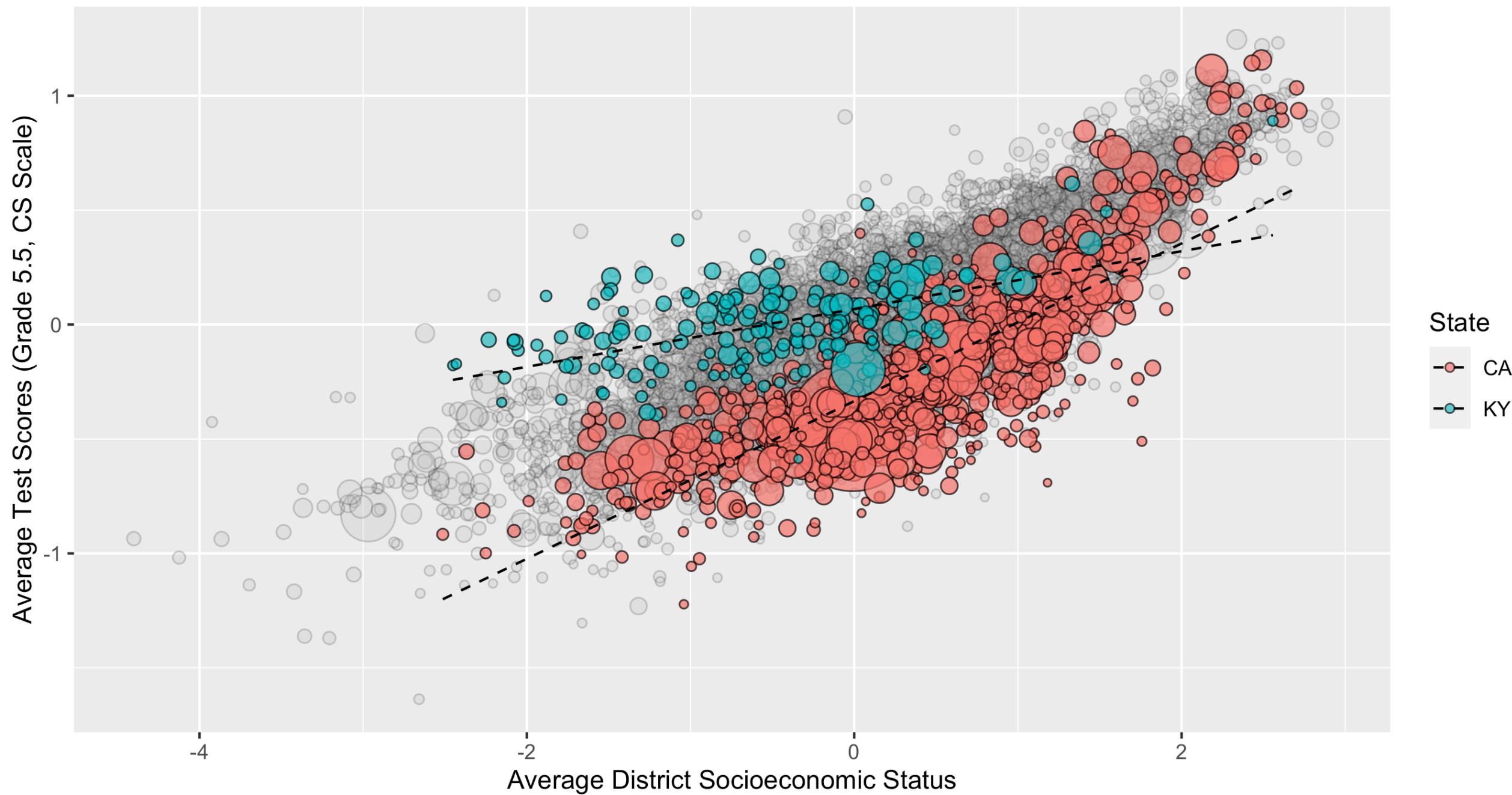
What is the association between district SES and average test scores?



What is the association between district SES and average learning rates?



# How does the district SES-achievement gradient differ across states?





The Educational Opportunity Project  
at Stanford University

# Working with Long Form Data

We're measuring educational opportunity  
in every community in America.

# What is in the long form achievement data?

- One row per unit-subject-grade-year
- Mean achievement estimate and standard error for each subgroup/gap
  - Mean Test Score (\_mn)
  - Standard Error of Mean Test Score (\_mnse)
  - Wide by subgroup:
    - All students (\_all)
    - Racial groups (\_blk, \_hsp, \_asn, \_wht)
    - Gender groups (\_mal, \_fem)
    - ECD Status groups (\_ecd, \_nec)
    - Gaps between groups (\_wbg, \_whg, \_wag, \_mfg, \_neg)
- Example in script file
  - seda\_geodist\_long\_cs\_4.0.dta



# What is in the long form achievement data?

**File:** seda\_geodist\_long\_cs\_4.0.dta

|     | A    | B        | C       | D            | E       | F     | G    | H          | I           | J          | K          | L           | M          | N          | O           | P          | Q          | R           |
|-----|------|----------|---------|--------------|---------|-------|------|------------|-------------|------------|------------|-------------|------------|------------|-------------|------------|------------|-------------|
| 1   | fips | stateabb | sedalea | sedaleaname  | subject | grade | year | cs_mn_all  | cs_mnse_all | totgyb_all | cs_mn_asn  | cs_mnse_asn | totgyb_asn | cs_mn_blk  | cs_mnse_blk | totgyb_blk | cs_mn_ecd  | cs_mnse_ecd |
| 242 | 1    | AL       | 100006  | MARSHALL COU | rla     | 8     | 2011 | -0.0071322 | 0.07377608  | 428        |            |             | 1          |            |             | 5          | -0.2125533 | 0.0792597   |
| 243 | 1    | AL       | 100006  | MARSHALL COU | mth     | 8     | 2012 | -0.1281208 | 0.05166885  | 462        |            |             |            |            |             | 3          | -0.2268914 | 0.05876794  |
| 244 | 1    | AL       | 100006  | MARSHALL COU | rla     | 8     | 2012 | -0.017004  | 0.05800994  | 459        |            |             | 2          |            |             | 3          | -0.218421  | 0.06188949  |
| 245 | 1    | AL       | 100006  | MARSHALL COU | mth     | 8     | 2013 | -0.1996432 | 0.05742419  | 476        |            |             | 1          |            |             | 6          | -0.3277039 | 0.06304464  |
| 246 | 1    | AL       | 100006  | MARSHALL COU | rla     | 8     | 2013 | -0.0862462 | 0.06582403  | 477        |            |             | 1          |            |             | 6          | -0.2792993 | 0.07462584  |
| 247 | 1    | AL       | 100006  | MARSHALL COU | mth     | 8     | 2014 | -0.2481891 | 0.04769016  | 445        |            |             | 2          |            |             | 5          | -0.3452039 | 0.05363341  |
| 248 | 1    | AL       | 100006  | MARSHALL COU | rla     | 8     | 2014 | -0.2162087 | 0.05132091  | 444        |            |             | 2          |            |             |            | -0.376163  | 0.05733177  |
| 249 | 1    | AL       | 100006  | MARSHALL COU | mth     | 8     | 2015 | -0.3447931 | 0.05238594  | 393        |            |             |            |            |             |            | -0.4371615 | 0.05948867  |
| 250 | 1    | AL       | 100006  | MARSHALL COU | rla     | 8     | 2015 | -0.1248958 | 0.05892635  | 393        |            |             |            |            |             |            | -0.1907705 | 0.06409867  |
| 251 | 1    | AL       | 100006  | MARSHALL COU | mth     | 8     | 2016 | -0.3646946 | 0.04955278  | 434        |            |             | 3          |            |             | 8          | -0.4868038 | 0.05926824  |
| 252 | 1    | AL       | 100006  | MARSHALL COU | rla     | 8     | 2016 | -0.098937  | 0.06020572  | 433        |            |             | 3          |            |             | 8          | -0.2306974 | 0.06688255  |
| 253 | 1    | AL       | 100006  | MARSHALL COU | mth     | 8     | 2017 | -0.4247385 | 0.05616551  | 430        |            |             |            |            |             | 3          | -0.5161828 | 0.0613376   |
| 254 | 1    | AL       | 100006  | MARSHALL COU | rla     | 8     | 2017 | -0.3244214 | 0.06308697  | 428        |            |             |            |            |             | 3          | -0.4407152 | 0.06838019  |
| 255 | 1    | AL       | 100006  | MARSHALL COU | mth     | 8     | 2018 | -0.4752883 | 0.05211227  | 451        |            |             | 2          |            |             | 5          | -0.6083037 | 0.05520908  |
| 256 | 1    | AL       | 100006  | MARSHALL COU | rla     | 8     | 2018 | -0.3875542 | 0.05771627  | 451        |            |             | 2          |            |             | 5          | -0.5284316 | 0.06328128  |
| 257 | 1    | AL       | 100007  | HOOVER CITY  | mth     | 3     | 2009 | -0.2331391 | 0.0661255   | 987        | 0.11701251 | 0.162532501 | 80         | -0.8076305 | 0.08376034  | 213        | -0.9145372 | 0.08572778  |
| 258 | 1    | AL       | 100007  | HOOVER CITY  | rla     | 3     | 2009 | 0.19445143 | 0.0635149   | 986        | 0.37706553 | 0.15372137  | 80         | -0.4101272 | 0.07298322  | 214        | -0.4380826 | 0.08413128  |



# Example long form data: LAUSD, CS scale estimates

|   | Math  |       |       |       |       |      |       |       |       |       |
|---|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
|   | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |
| 3 | -0.41 | -0.39 | -0.20 | -0.24 | -0.28 |      | -0.55 | -0.48 | -0.46 | -0.42 |
| 4 | -0.42 | -0.36 | -0.28 | -0.27 | -0.29 |      | -0.51 | -0.46 | -0.47 | -0.40 |
| 5 | -0.40 | -0.39 | -0.29 | -0.30 | -0.30 |      | -0.54 | -0.48 | -0.46 | -0.43 |
| 6 | -0.66 | -0.58 | -0.53 | -0.46 | -0.44 |      | -0.54 | -0.51 | -0.49 | -0.43 |
| 7 |       |       |       |       |       |      | -0.51 | -0.46 | -0.46 | -0.43 |
| 8 |       |       |       |       |       |      | -0.46 | -0.43 | -0.41 | -0.43 |

|   | ELA   |       |       |       |       |      |       |       |       |       |
|---|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
|   | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |
| 3 | -0.51 | -0.45 | -0.37 | -0.34 | -0.37 |      | -0.43 | -0.34 | -0.29 | -0.25 |
| 4 | -0.52 | -0.48 | -0.43 | -0.38 | -0.40 |      | -0.46 | -0.34 | -0.30 | -0.27 |
| 5 | -0.57 | -0.52 | -0.45 | -0.42 | -0.39 |      | -0.45 | -0.35 | -0.29 | -0.30 |
| 6 | -0.71 | -0.67 | -0.60 | -0.54 | -0.45 |      | -0.52 | -0.44 | -0.38 | -0.37 |
| 7 | -0.71 | -0.67 | -0.58 | -0.50 | -0.42 |      | -0.50 | -0.43 | -0.36 | -0.35 |
| 8 | -0.74 | -0.69 | -0.60 | -0.46 | -0.39 |      | -0.45 | -0.37 | -0.32 | -0.35 |

# Example long form data: LAUSD, CS scale estimates

| Math |       |       |       |       |       |      |       |       |       |       |
|------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
|      | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |
| 8    |       |       |       |       |       |      | -0.46 | -0.43 | -0.41 | -0.43 |
| 7    |       |       |       |       |       |      | -0.51 | -0.46 | -0.46 | -0.43 |
| 6    | -0.66 | -0.58 | -0.53 | -0.46 | -0.44 |      | -0.54 | -0.51 | -0.49 | -0.43 |
| 5    | -0.4  | -0.39 | -0.29 | -0.3  | -0.3  |      | -0.54 | -0.48 | -0.46 | -0.43 |
| 4    | -0.42 | -0.36 | -0.28 | -0.27 | -0.29 |      | -0.51 | -0.46 | -0.47 | -0.4  |
| 3    | -0.41 | -0.39 | -0.2  | -0.24 | -0.28 |      | -0.55 | -0.48 | -0.46 | -0.42 |

| ELA |       |       |       |       |       |      |       |       |       |       |
|-----|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
|     | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |
| 8   | -0.74 | -0.69 | -0.6  | -0.46 | -0.39 |      | -0.45 | -0.37 | -0.32 | -0.35 |
| 7   | -0.71 | -0.67 | -0.58 | -0.5  | -0.42 |      | -0.5  | -0.43 | -0.36 | -0.35 |
| 6   | -0.71 | -0.67 | -0.6  | -0.54 | -0.45 |      | -0.52 | -0.44 | -0.38 | -0.37 |
| 5   | -0.57 | -0.52 | -0.45 | -0.42 | -0.39 |      | -0.45 | -0.35 | -0.29 | -0.3  |
| 4   | -0.52 | -0.48 | -0.43 | -0.38 | -0.4  |      | -0.46 | -0.34 | -0.3  | -0.27 |
| 3   | -0.51 | -0.45 | -0.37 | -0.34 | -0.37 |      | -0.43 | -0.34 | -0.29 | -0.25 |

# Compare across subjects

| Math |       |       |       |       |       |      |       |       |       |       |
|------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
|      | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |
| 8    |       |       |       |       |       |      | -0.46 | -0.43 | -0.41 | -0.43 |
| 7    |       |       |       |       |       |      | -0.51 | -0.46 | -0.46 | -0.43 |
| 6    | -0.66 | -0.58 | -0.53 | -0.46 | -0.44 |      | -0.54 | -0.51 | -0.49 | -0.43 |
| 5    | -0.4  | -0.39 | -0.29 | -0.3  | -0.3  |      | -0.54 | -0.48 | -0.46 | -0.43 |
| 4    | -0.42 | -0.36 | -0.28 | -0.27 | -0.29 |      | -0.51 | -0.46 | -0.47 | -0.4  |
| 3    | -0.41 | -0.39 | -0.2  | -0.24 | -0.28 |      | -0.55 | -0.48 | -0.46 | -0.42 |
| ELA  |       |       |       |       |       |      |       |       |       |       |
|      | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |
| 8    | -0.74 | -0.69 | -0.6  | -0.46 | -0.39 |      | -0.45 | -0.37 | -0.32 | -0.35 |
| 7    | -0.71 | -0.67 | -0.58 | -0.5  | -0.42 |      | -0.5  | -0.43 | -0.36 | -0.35 |
| 6    | -0.71 | -0.67 | -0.6  | -0.54 | -0.45 |      | -0.52 | -0.44 | -0.38 | -0.37 |
| 5    | -0.57 | -0.52 | -0.45 | -0.42 | -0.39 |      | -0.45 | -0.35 | -0.29 | -0.3  |
| 4    | -0.52 | -0.48 | -0.43 | -0.38 | -0.4  |      | -0.46 | -0.34 | -0.3  | -0.27 |
| 3    | -0.51 | -0.45 | -0.37 | -0.34 | -0.37 |      | -0.43 | -0.34 | -0.29 | -0.25 |

# Compare across grades

| Math |       |       |       |       |       |      |       |       |       |       |
|------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
|      | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |
| 8    |       |       |       |       |       |      | -0.46 | -0.43 | -0.41 | -0.43 |
| 7    |       |       |       |       |       |      | -0.51 | -0.46 | -0.46 | -0.43 |
| 6    | -0.66 | -0.58 | -0.53 | -0.46 | -0.44 |      | -0.54 | -0.51 | -0.49 | -0.43 |
| 5    | -0.4  | -0.39 | -0.29 | -0.3  | -0.3  |      | -0.54 | -0.48 | -0.46 | -0.43 |
| 4    | -0.42 | -0.36 | -0.28 | -0.27 | -0.29 |      | -0.51 | -0.46 | -0.47 | -0.4  |
| 3    | -0.41 | -0.39 | -0.2  | -0.24 | -0.28 |      | -0.55 | -0.48 | -0.46 | -0.42 |
| ELA  |       |       |       |       |       |      |       |       |       |       |
|      | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |
| 8    | -0.74 | -0.69 | -0.6  | -0.46 | -0.39 |      | -0.45 | -0.37 | -0.32 | -0.35 |
| 7    | -0.71 | -0.67 | -0.58 | -0.5  | -0.42 |      | -0.5  | -0.43 | -0.36 | -0.35 |
| 6    | -0.71 | -0.67 | -0.6  | -0.54 | -0.45 |      | -0.52 | -0.44 | -0.38 | -0.37 |
| 5    | -0.57 | -0.52 | -0.45 | -0.42 | -0.39 |      | -0.45 | -0.35 | -0.29 | -0.3  |
| 4    | -0.52 | -0.48 | -0.43 | -0.38 | -0.4  |      | -0.46 | -0.34 | -0.3  | -0.27 |
| 3    | -0.51 | -0.45 | -0.37 | -0.34 | -0.37 |      | -0.43 | -0.34 | -0.29 | -0.25 |

# Compare across years

## Math

|   | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |
|---|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
| 8 |       |       |       |       |       |      | -0.46 | -0.43 | -0.41 | -0.43 |
| 7 |       |       |       |       |       |      | -0.51 | -0.46 | -0.46 | -0.43 |
| 6 | -0.66 | -0.58 | -0.53 | -0.46 | -0.44 |      | -0.54 | -0.51 | -0.49 | -0.43 |
| 5 | -0.4  | -0.39 | -0.29 | -0.3  | -0.3  |      | -0.54 | -0.48 | -0.46 | -0.43 |
| 4 | -0.42 | -0.36 | -0.28 | -0.27 | -0.29 |      | -0.51 | -0.46 | -0.47 | -0.4  |
| 3 | -0.41 | -0.39 | -0.2  | -0.24 | -0.28 |      | -0.55 | -0.48 | -0.46 | -0.42 |

## ELA

|   | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |
|---|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
| 8 | -0.74 | -0.69 | -0.6  | -0.46 | -0.39 |      | -0.45 | -0.37 | -0.32 | -0.35 |
| 7 | -0.71 | -0.67 | -0.58 | -0.5  | -0.42 |      | -0.5  | -0.43 | -0.36 | -0.35 |
| 6 | -0.71 | -0.67 | -0.6  | -0.54 | -0.45 |      | -0.52 | -0.44 | -0.38 | -0.37 |
| 5 | -0.57 | -0.52 | -0.45 | -0.42 | -0.39 |      | -0.45 | -0.35 | -0.29 | -0.3  |
| 4 | -0.52 | -0.48 | -0.43 | -0.38 | -0.4  |      | -0.46 | -0.34 | -0.3  | -0.27 |
| 3 | -0.51 | -0.45 | -0.37 | -0.34 | -0.37 |      | -0.43 | -0.34 | -0.29 | -0.25 |

# Follow cohorts

|   | Math  |       |       |       |       |      |       |       |       |       |
|---|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
|   | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |
| 8 |       |       |       |       |       |      | -0.46 | -0.43 | -0.41 | -0.43 |
| 7 |       |       |       |       |       |      | -0.51 | -0.46 | -0.46 | -0.43 |
| 6 | -0.66 | -0.58 | -0.53 | -0.46 | -0.44 |      | -0.54 | -0.51 | -0.49 | -0.43 |
| 5 | -0.4  | -0.39 | -0.29 | -0.3  | -0.3  |      | -0.54 | -0.48 | -0.46 | -0.43 |
| 4 | -0.42 | -0.36 | -0.28 | -0.27 | -0.29 |      | -0.51 | -0.46 | -0.47 | -0.4  |
| 3 | -0.41 | -0.39 | -0.2  | -0.24 | -0.28 |      | -0.55 | -0.48 | -0.46 | -0.42 |
|   | ELA   |       |       |       |       |      |       |       |       |       |
|   | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |
| 8 | -0.74 | -0.69 | -0.6  | -0.46 | -0.39 |      | -0.45 | -0.37 | -0.32 | -0.35 |
| 7 | -0.71 | -0.67 | -0.58 | -0.5  | -0.42 |      | -0.5  | -0.43 | -0.36 | -0.35 |
| 6 | -0.71 | -0.67 | -0.6  | -0.54 | -0.45 |      | -0.52 | -0.44 | -0.38 | -0.37 |
| 5 | -0.57 | -0.52 | -0.45 | -0.42 | -0.39 |      | -0.45 | -0.35 | -0.29 | -0.3  |
| 4 | -0.52 | -0.48 | -0.43 | -0.38 | -0.4  |      | -0.46 | -0.34 | -0.3  | -0.27 |
| 3 | -0.51 | -0.45 | -0.37 | -0.34 | -0.37 |      | -0.43 | -0.34 | -0.29 | -0.25 |

# Pooled file parameters summarize the long form data

“avg”

| Math |       |       |       |       |       |      |       |       |       |       |
|------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
|      | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |
| 8    |       |       |       |       |       |      | -0.46 | -0.43 | -0.41 | -0.43 |
| 7    |       |       |       |       |       |      | -0.51 | -0.46 | -0.46 | -0.43 |
| 6    | -0.66 | -0.58 | -0.53 | -0.46 | -0.44 |      | -0.54 | -0.51 | -0.49 | -0.43 |
| 5    | -0.4  | -0.39 | -0.29 | -0.3  | -0.3  |      | -0.54 | -0.48 | -0.46 | -0.43 |
| 4    | -0.42 | -0.36 | -0.28 | -0.27 | -0.29 |      | -0.51 | -0.46 | -0.47 | -0.4  |
| 3    | -0.41 | -0.39 | -0.2  | -0.24 | -0.28 |      | -0.55 | -0.48 | -0.46 | -0.42 |

| ELA |       |       |       |       |       |      |       |       |       |       |
|-----|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
|     | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |
| 8   | -0.74 | -0.69 | -0.6  | -0.46 | -0.39 |      | -0.45 | -0.37 | -0.32 | -0.35 |
| 7   | -0.71 | -0.67 | -0.58 | -0.5  | -0.42 |      | -0.5  | -0.43 | -0.36 | -0.35 |
| 6   | -0.71 | -0.67 | -0.6  | -0.54 | -0.45 |      | -0.52 | -0.44 | -0.38 | -0.37 |
| 5   | -0.57 | -0.52 | -0.45 | -0.42 | -0.39 |      | -0.45 | -0.35 | -0.29 | -0.3  |
| 4   | -0.52 | -0.48 | -0.43 | -0.38 | -0.4  |      | -0.46 | -0.34 | -0.3  | -0.27 |
| 3   | -0.51 | -0.45 | -0.37 | -0.34 | -0.37 |      | -0.43 | -0.34 | -0.29 | -0.25 |

“mth”

| Math |       |       |       |       |       |      |       |       |       |       |       |       |
|------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
|      | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |       |       |
| 8    |       |       |       |       |       |      |       | -0.46 | -0.43 | -0.41 | -0.43 |       |
| 7    |       |       |       |       |       |      |       | -0.51 | -0.46 | -0.46 | -0.43 |       |
| 6    | -0.66 | -0.58 | -0.53 | -0.46 | -0.44 |      | -0.54 | -0.44 | -0.54 | -0.51 | -0.49 | -0.43 |
| 5    | -0.4  | -0.39 | -0.29 | -0.3  | -0.3  |      | -0.54 | -0.48 | -0.46 | -0.43 |       |       |
| 4    | -0.42 | -0.36 | -0.28 | -0.27 | -0.29 |      | -0.51 | -0.46 | -0.47 | -0.4  |       |       |
| 3    | -0.41 | -0.39 | -0.2  | -0.24 | -0.28 |      | -0.55 | -0.48 | -0.46 | -0.42 |       |       |

| ELA |       |       |       |       |       |      |       |       |       |       |      |
|-----|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|------|
|     | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |      |
| 8   | -0.74 | -0.69 | -0.6  | -0.46 | -0.39 |      | -0.45 | -0.37 | -0.32 | -0.35 |      |
| 7   | -0.71 | -0.67 | -0.58 | -0.5  | -0.42 |      | -0.5  | -0.43 | -0.36 | -0.35 |      |
| 6   | -0.71 | -0.67 | -0.6  | -0.54 | -0.45 |      | -0.52 | -0.44 | -0.38 | -0.37 |      |
| 5   | -0.57 | -0.52 | -0.45 | -0.42 | -0.39 |      | -0.45 | -0.39 | -0.35 | -0.29 | -0.3 |
| 4   | -0.52 | -0.48 | -0.43 | -0.38 | -0.4  |      | -0.46 | -0.34 | -0.3  | -0.27 |      |
| 3   | -0.51 | -0.45 | -0.37 | -0.34 | -0.37 |      | -0.43 | -0.34 | -0.29 | -0.25 |      |

“coh”

| Math |       |       |       |       |       |      |       |       |       |       |
|------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
|      | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |
| 8    |       |       |       |       |       |      | -0.46 | -0.43 | -0.41 | -0.43 |
| 7    |       |       |       |       |       |      | -0.51 | -0.46 | -0.46 | -0.43 |
| 6    | -0.66 | -0.58 | -0.53 | -0.46 | -0.44 |      | -0.54 | -0.51 | -0.49 | -0.43 |
| 5    | -0.4  | -0.39 | -0.29 | -0.3  | -0.3  |      | -0.54 | -0.48 | -0.46 | -0.43 |
| 4    | -0.42 | -0.36 | -0.28 | -0.27 | -0.29 |      | -0.51 | -0.46 | -0.47 | -0.4  |
| 3    | -0.41 | -0.39 | -0.2  | -0.24 | -0.28 |      | -0.55 | -0.48 | -0.46 | -0.42 |

| ELA |       |       |       |       |       |      |       |       |       |       |
|-----|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
|     | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |
| 8   | -0.74 | -0.69 | -0.6  | -0.46 | -0.39 |      | -0.45 | -0.37 | -0.32 | -0.35 |
| 7   | -0.71 | -0.67 | -0.58 | -0.5  | -0.42 |      | -0.5  | -0.43 | -0.36 | -0.35 |
| 6   | -0.71 | -0.67 | -0.6  | -0.54 | -0.45 |      | -0.52 | -0.44 | -0.38 | -0.37 |
| 5   | -0.57 | -0.52 | -0.45 | -0.42 | -0.39 |      | -0.45 | -0.39 | -0.35 | -0.29 |
| 4   | -0.52 | -0.48 | -0.43 | -0.38 | -0.4  |      | -0.46 | -0.34 | -0.3  | -0.27 |
| 3   | -0.51 | -0.45 | -0.37 | -0.34 | -0.37 |      | -0.43 | -0.34 | -0.29 | -0.25 |

“grd”

| Math |       |       |       |       |       |      |       |       |       |       |
|------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
|      | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |
| 8    |       |       |       |       |       |      | -0.46 | -0.43 | -0.41 | -0.43 |
| 7    |       |       |       |       |       |      | -0.51 | -0.46 | -0.46 | -0.43 |
| 6    | -0.66 | -0.58 | -0.53 | -0.46 | -0.44 |      | -0.54 | -0.51 | -0.49 | -0.43 |
| 5    | -0.4  | -0.39 | -0.29 | -0.3  | -0.3  |      | -0.54 | -0.48 | -0.46 | -0.43 |
| 4    | -0.42 | -0.36 | -0.28 | -0.27 | -0.29 |      | -0.51 | -0.46 | -0.47 | -0.4  |
| 3    | -0.41 | -0.39 | -0.2  | -0.24 | -0.28 |      | -0.55 | -0.48 | -0.46 | -0.42 |

| ELA |       |       |       |       |       |      |       |       |       |       |
|-----|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
|     | 2009  | 2010  | 2011  | 2012  | 2013  | 2014 | 2015  | 2016  | 2017  | 2018  |
| 8   | -0.74 | -0.69 | -0.6  | -0.46 | -0.39 |      | -0.45 | -0.37 | -0.32 | -0.35 |
| 7   | -0.71 | -0.67 | -0.58 | -0.5  | -0.42 |      | -0.5  | -0.43 | -0.36 | -0.35 |
| 6   | -0.71 | -0.67 | -0.6  | -0.54 | -0.45 |      | -0.52 | -0.44 | -0.38 | -0.37 |
| 5   | -0.57 | -0.52 | -0.45 | -0.42 | -0.39 |      | -0.45 | -0.39 | -0.35 | -0.29 |
| 4   | -0.52 | -0.48 | -0.43 | -0.38 | -0.4  |      | -0.46 | -0.34 | -0.3  | -0.27 |
| 3   | -0.51 | -0.45 | -0.37 | -0.34 | -0.37 |      | -0.43 | -0.34 | -0.29 | -0.25 |

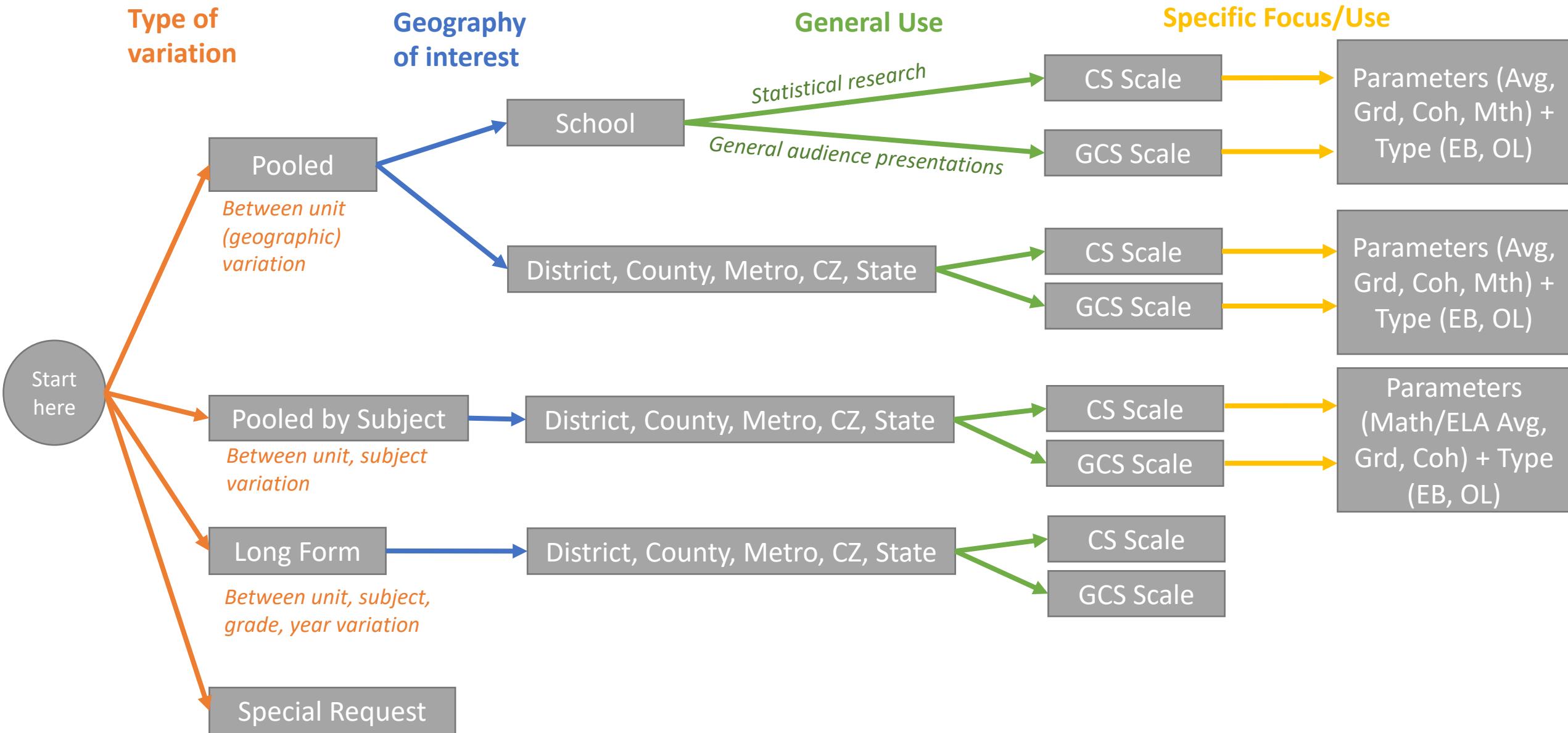


The Educational Opportunity Project  
at Stanford University

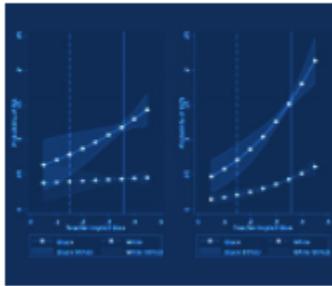
# Uses of SEDA

We're measuring educational opportunity  
in every community in America.

# Picking the Right SEDA Data for Your Study



# What have researchers explored with the pooled data?



## Bias in the Air: A Nationwide Exploration of Teachers' Implicit Racial Attitudes, Aggregate Bias, and Student Outcomes

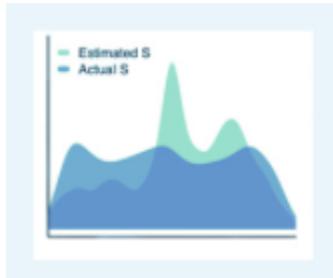
[Read the full paper here](#)

Chin, M. J., Quinn, D. M., Dhaliwal, T. K., & Lovison, V. S.

- Explored the connection between teachers' implicit and explicit racial biases (as measured by the implicit association test) to White/Black test score inequalities at the county level.

| SEDA Version | Pooled vs. Long | Unit   | Years              | Grades       | Subjects          | Scale | Parameter               | EB vs. OL | Link to Outside Data  |
|--------------|-----------------|--------|--------------------|--------------|-------------------|-------|-------------------------|-----------|-----------------------|
| 3.0          | Pooled          | County | 2009-2016 (Pooled) | 3-8 (Pooled) | Math+ELA (Pooled) | CS    | White-Black Average Gap | OL        | Project Implicit Data |

# What have researchers explored with the pooled data?



## Status, Growth, and Perceptions of School Quality

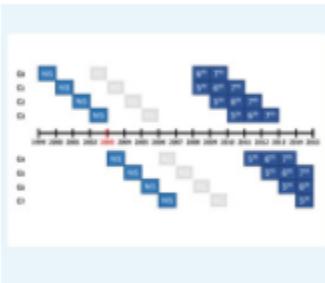
David M. Houston, Michael B. Henderson, Paul E. Peterson, Martin R. West

[Read the full paper here](#)

- Conducted a survey experiment in which they provided SEDA average achievement and growth rate data to participants in four experimental groups (status only, growth only, status + growth, control) to determine if the provision of information changed participants grading of schools.

| SEDA Version | Pooled vs. Long | Units    | Years              | Grades       | Subjects            | Parameters              | EB vs. OL | Scale                             |
|--------------|-----------------|----------|--------------------|--------------|---------------------|-------------------------|-----------|-----------------------------------|
| 2.1          | Pooled          | District | 2009-2015 (Pooled) | 3-8 (Pooled) | Math + ELA (Pooled) | Average and Growth Rate | EB        | Converted to national percentiles |

# What have researchers explored with the long form data?



## Personal Belief Exemptions for School Entry Vaccinations, Vaccination Rates, and Academic Achievement

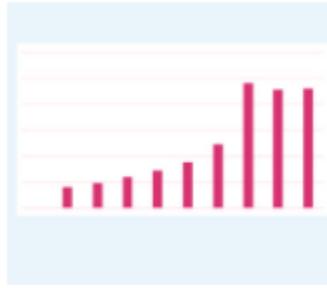
[Read the full paper here](#)

Nicole L. Hair, Anja Gruber, Carly Urban

- Examined how 2003 legislation expanding the availability of nonmedical exemptions in Texas and Arkansas influenced vaccination rates in early childhood and subsequent academic achievement in middle school.

| SEDA Version | Pooled vs. Long | Unit   | Years     | Grades | Subjects | Scale | Parameter           | Link to Outside Data |
|--------------|-----------------|--------|-----------|--------|----------|-------|---------------------|----------------------|
| 2.1          | Long            | County | 2009-2015 | 5-7    | Math+ELA | CS    | Average Test Scores | Vaccine information  |

# What have researchers explored with the special request data?



## Effects of Four-Day School Weeks on School Finance and Achievement: Evidence from Oklahoma

[Read the full paper here](#)

Emily Morton

- Estimated the impact of 4-day school weeks on math and ELA academic achievement in Oklahoma using a special tabulation of SEDA data.

| SEDA Version    | Pooled vs Long                                  | Units                 | Years     | Grades       | Subjects   | Scale | Link to Outside Data           |
|-----------------|---|-----------------------|-----------|--------------|------------|-------|--------------------------------|
| Special Request | Pooled (one estimate per district-year-subject) | Districts in Oklahoma | 2009-2016 | 3-8 (Pooled) | Math + ELA | CS    | District calendar and CCD data |



# The Educational Opportunity Project at Stanford University

## Q&A

We're measuring educational opportunity  
in every community in America.

# FAQs

- How do I merge SEDA achievement data with non-SEDA data?
- What is a “geodist”? What is “sedalea”?
- What is the difference between a grade slope (learning rate) and a cohort slope (trend)?
- How do I interpret a CS scale estimate? A GCS scale estimate?
- When do you recommend using the CS versus GCS scale?
- What sources of error should I be most concerned about when comparing (*units within the same state; units in different states; units across time or grades*)?

