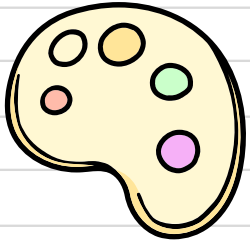


The background is a light blue gradient with stylized illustrations of school supplies: an orange pencil eraser at the top left, a blue pen at the bottom right, and a yellow notepad at the bottom left. A white rectangular box with rounded corners and a black border is centered on the page.

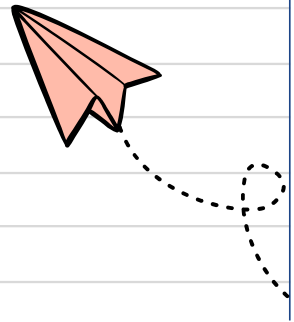
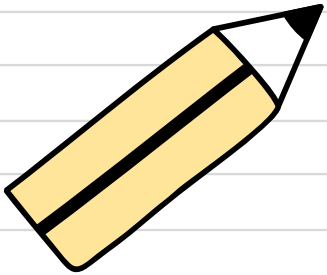
# SES & Achievement

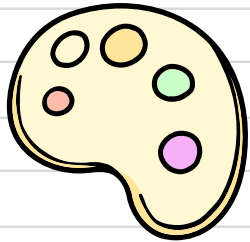
Using the OECD Programme for International  
Student Assessment (PISA) 2022



# Question!

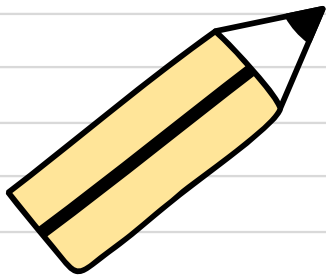
How much of a student's achievement is due to school factors (instruction / activities / teachers) vs. out-of-school factors (parental education / income / race)?



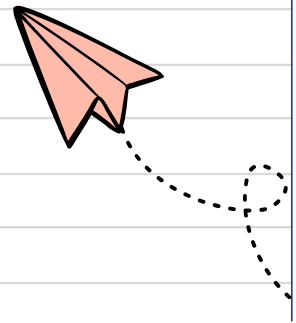


# 85-90%

How much of a student's achievement is due to school factors (instruction / activities / teachers) vs. out-of-school factors (parental education / income / race)?



\*Coleman Report '66



## Existing literature confirms this:

### Factors

Across countries and school subjects, student achievement is vastly explained by background, even systemic features like tracking.



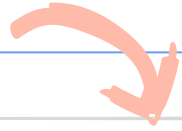
### But:

Is privilege/SES just one number?

OECD uses PISA Index of Economic, Social, and Cultural Status (ESCS)

### Intended Contribution

Decomposition of SES into **components** uncovers which ones drive disparities (Parental Income, Occupational Status)



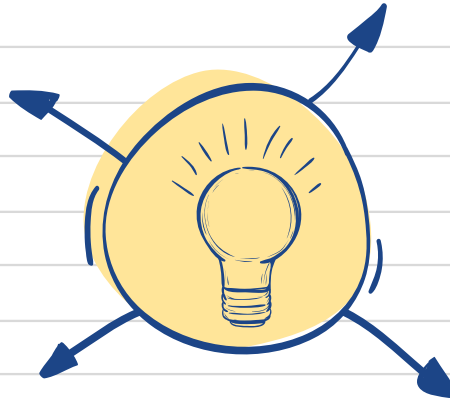
# Method & Data

## Source

PISA 2022, OECD & non-OECD countries

## Sample

students with  $\geq 6$  years of schooling, valid SES data



## Variables

ESCS, parental education, occupational status (OECD index), Plausible Values per Subject

## Strategy

Estimate SES-achievement gradients per country per subject, per component



## Method (cont.)

Steps:

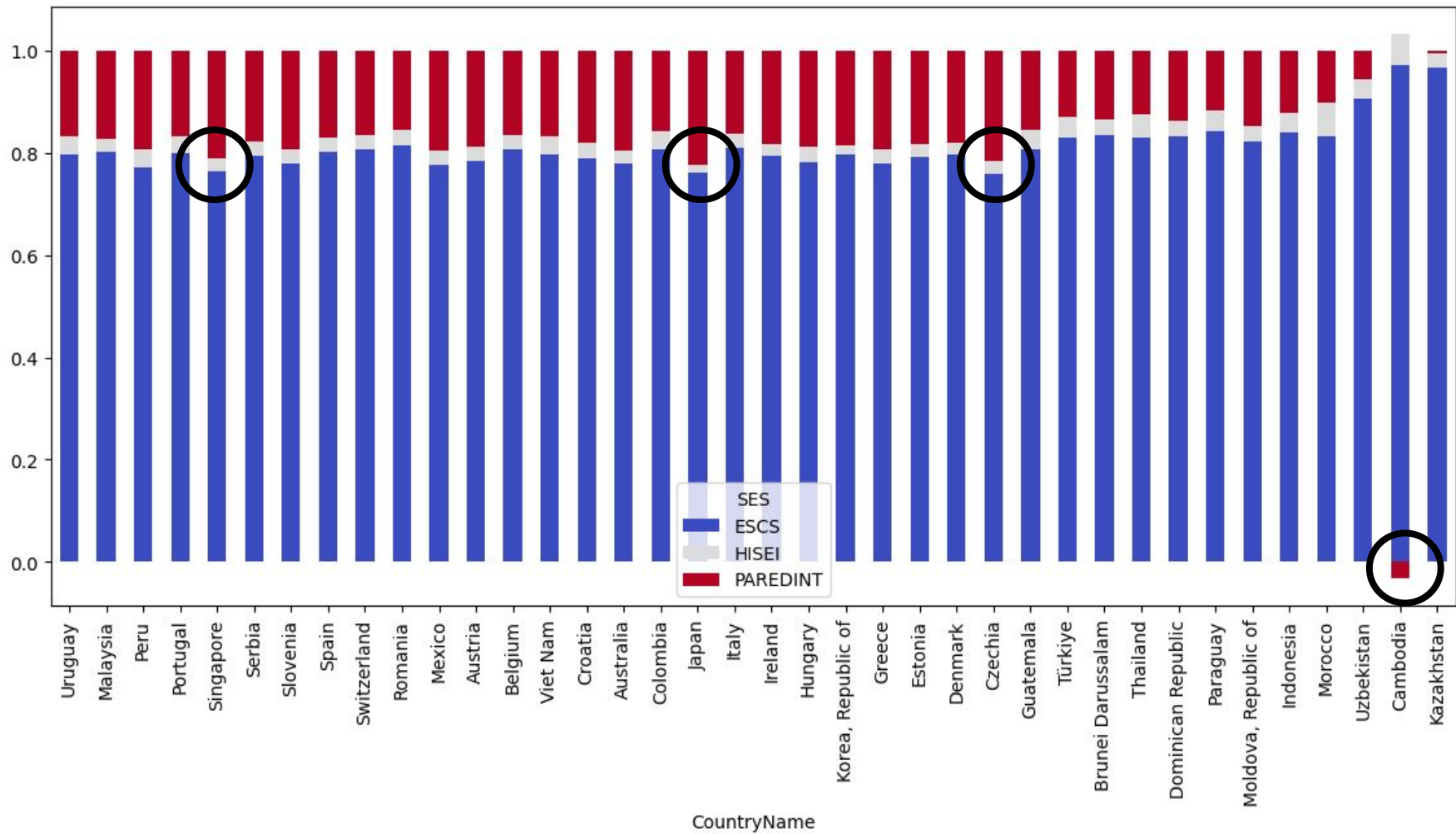
1. Decompose SES into ESCS, PAREDINT, HISEI
2. Run weighted regressions using student weights
3. Combine plausible values using Rubin's rules

$$Y_{ij}^{(pv)} = \beta_0 + \beta_1 \text{SES}_{ik} + \epsilon_{ij}$$

4. Normalize coefficients for cross-country comparison
5. Link SES gradients to subjects, age of earliest tracking (external source)

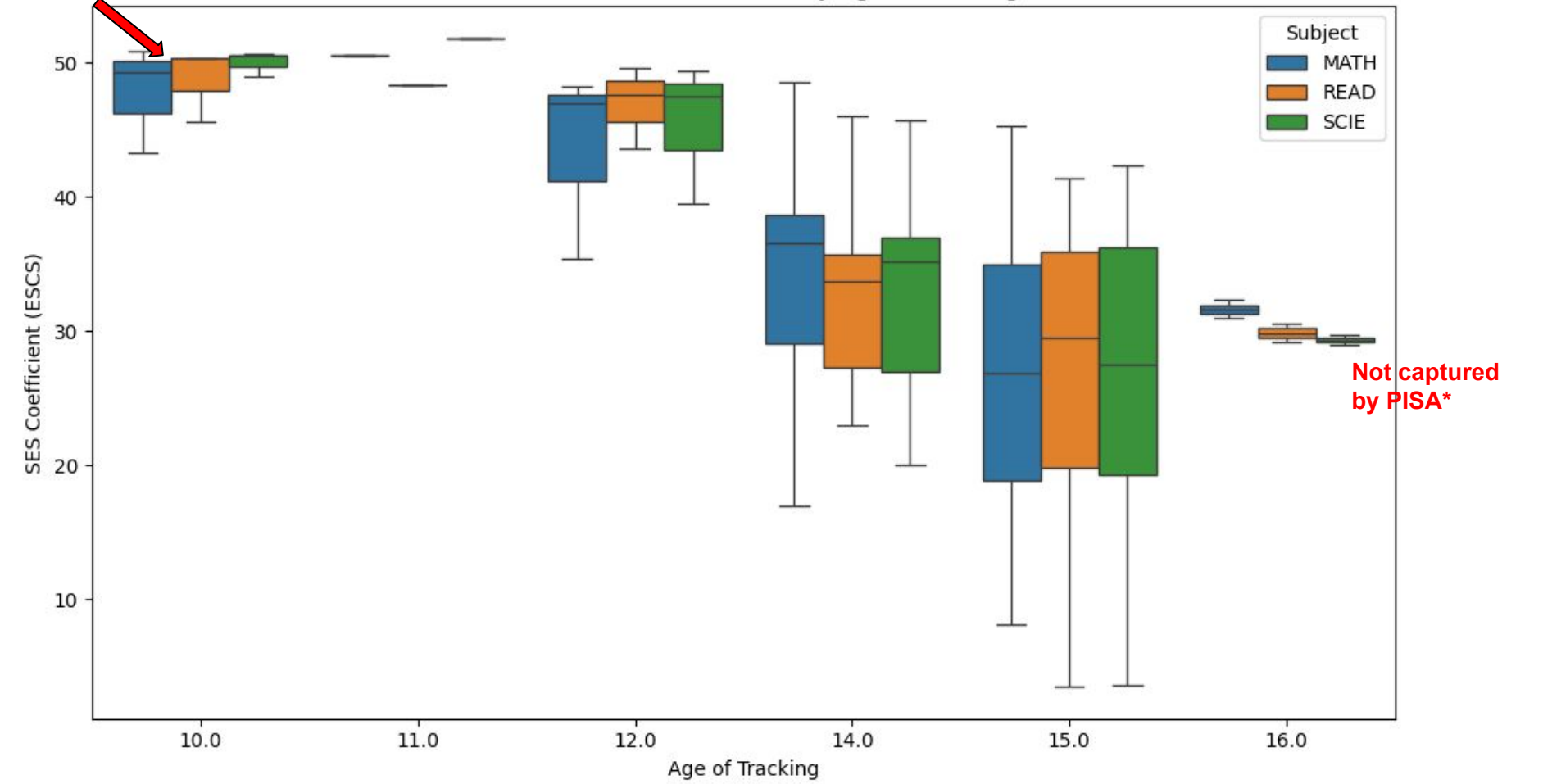
$$\bar{\beta} = \frac{1}{m} \sum_{pv} \beta^{(pv)}, \quad T = \bar{U} + \left(1 + \frac{1}{m}\right) B$$

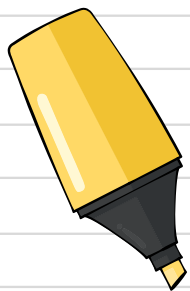




SINGAPORE

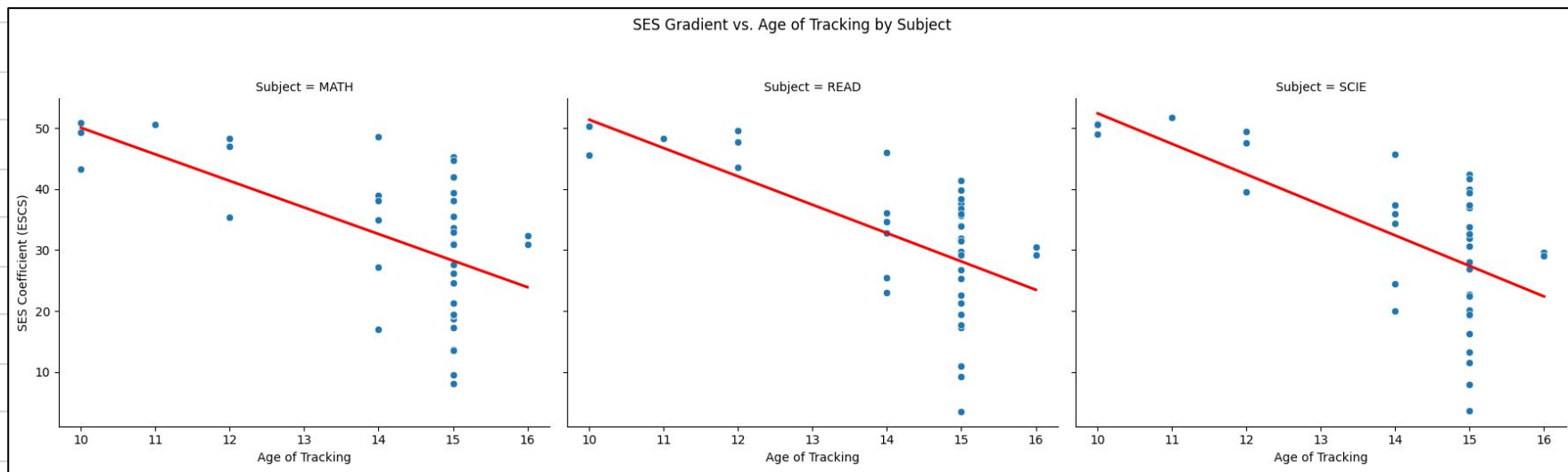
Distribution of SES Gradient by Age of Tracking





# Across Subjects (nth)

Subject	MATH	READ	SCIE
SES			
ESCS	$32.81 \pm 12.48$	$32.63 \pm 11.76$	$32.34 \pm 12.74$
HISEI	$1.20 \pm 0.39$	$1.21 \pm 0.39$	$1.19 \pm 0.41$
PAREDINT	$7.19 \pm 3.99$	$7.09 \pm 3.72$	$7.03 \pm 3.86$



# Takeaways



## ESCS still king

Factors like occupational status contribute little independently

## School Subjects

Results are consistent across academic subjects



## Early Tracking

may amplify SES effects

## Next Steps

causal mechanisms, additional institutional features

?

What questions came up for you?



# Thanks!



Do you have any questions?

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