



# “Greece in the Global Classroom”

## Insights from PISA 2018

*An Evidence-Based Overview of Student Performance, Investment and Equity*

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Data Visualization and Communication  
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# Introduction

# Introduction

- **Why PISA Matters**

- Global benchmark as Academic and Socioeconomic Status of Students in Reading, Math & Science
- Conducted by the OECD in 70+ countries every 3 years
- Enables cross-country comparisons of student outcomes
- Informs education policy with evidence-based insights

- **What this study examines**

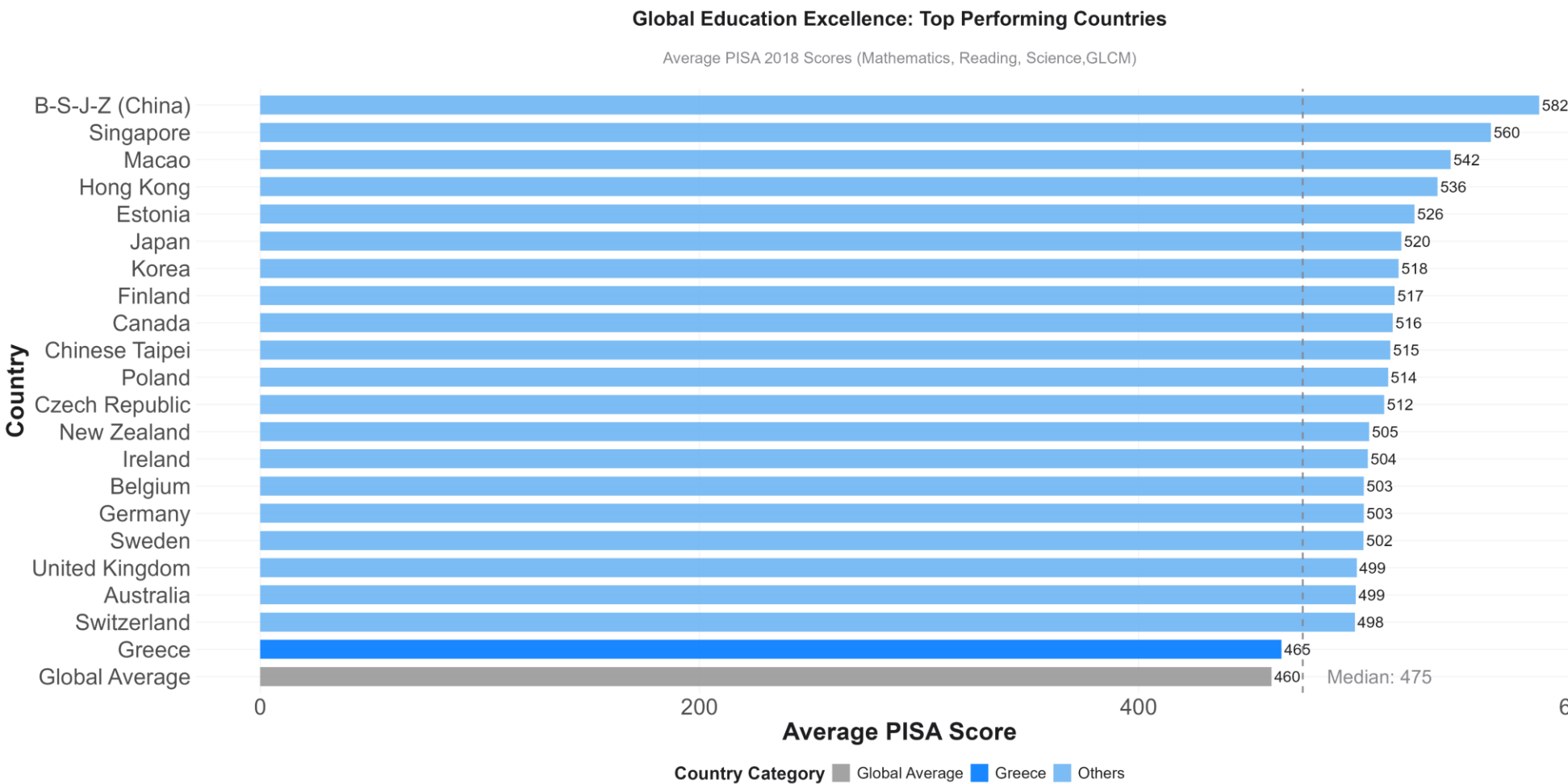
- Greece's performance in context of global, gender, equity, and investment dimensions



# R - Plots

# Academic Insights

# Global Education Excellence: Top Performing Countries



## Global Education Excellence: PISA 2018

### Highlights

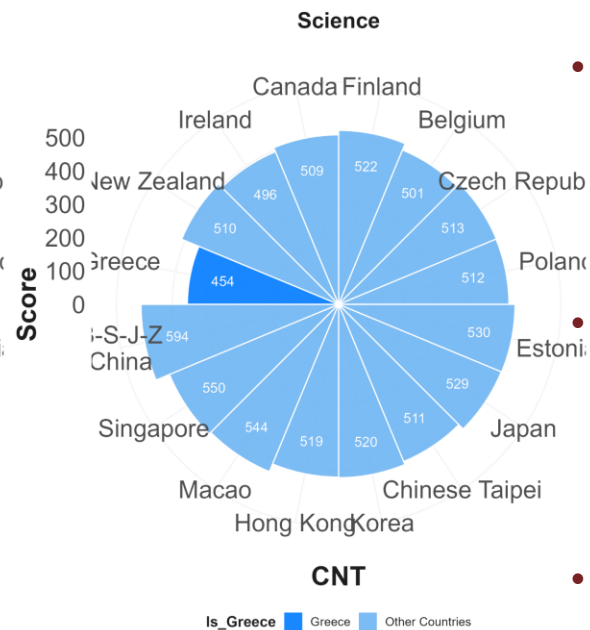
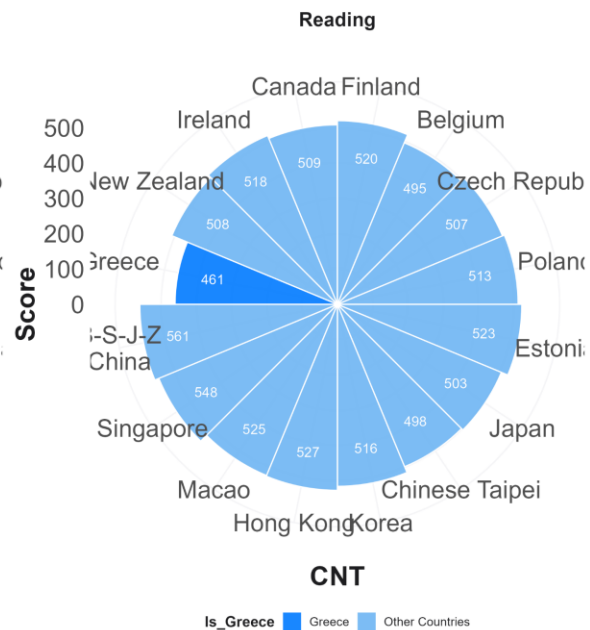
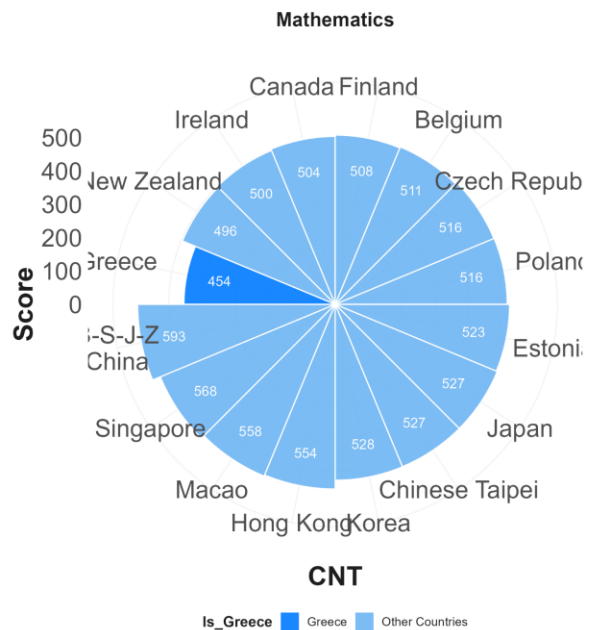
- **Top Performers:**
  - East Asian economies (China, Singapore, Macao) lead.
- **Strong Showing:**
  - Many European nations excel.
- **Greece's ranking:**
  - Greece's score (465), slightly above the global average of (460) below the median (475)
- **Overall:**
  - Wide range in global education performance.

### Sources

OECD PISA 2018, World Bank Education Data

Source: OECD PISA 2018

# Subject Excellence Across Top Performing Nations



## Subject-Wise PISA 2018 Performance

- **Mathematics**
  - China leads (593), followed by Singapore and Macao.
  - Greece: 454 — well below OECD average.
- **Reading**
  - Top scorers: China (561), Singapore, Hong Kong.
  - Greece: 461 — modestly below global average.
- **Science**
  - China again tops (594), followed by Singapore and Estonia.
  - Greece: 454 — among the lowest in this comparison.
- **Insights**
  - East Asian countries dominate across all subjects.
  - Europe performs well, especially in reading and science.
  - Greece trails significantly in all subjects, highlighting need for systemic educational improvements.

## Sources

OECD PISA 2018, World Bank Education Data

# Greece in Global Context: PISA Performance Ranking

## Greece in Global Context: PISA 2018

- Ranking Overview

Countries are ranked by average scores across math, reading, and science.

- Performance tiers are color-coded:

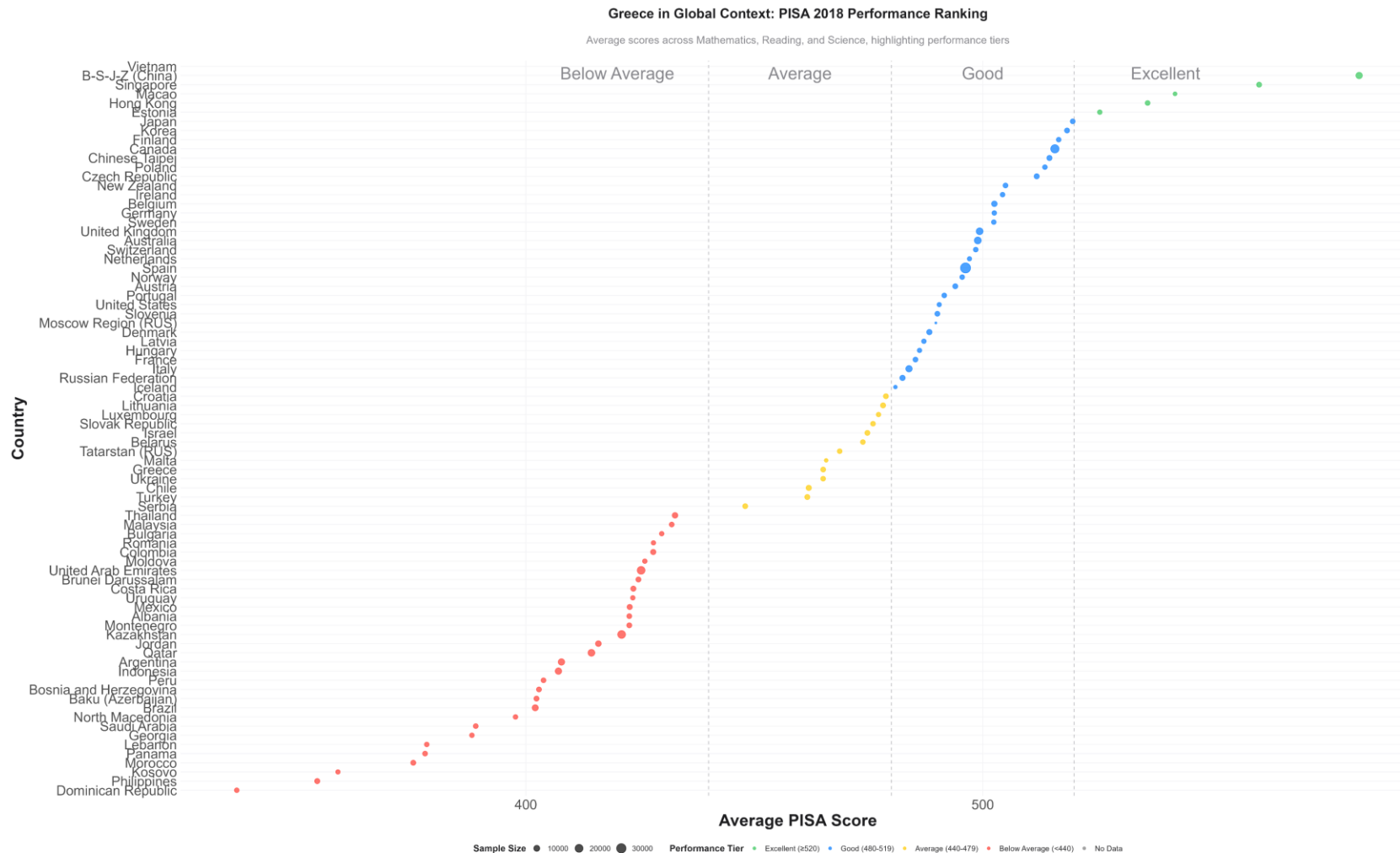
- Excellent ( $\geq 520$ )
- Good (480–519)
- Average (440–479)
- Below Average ( $< 440$ )

- Greece

- Score: 465, placing in the “Average” tier.
- Positioned just above the global average, but below most OECD peers

- Insights

- East Asian countries dominate across all subjects.
- Europe performs well, especially in reading and science.
- Greece trails significantly in all subjects, highlighting need for systemic educational improvements.



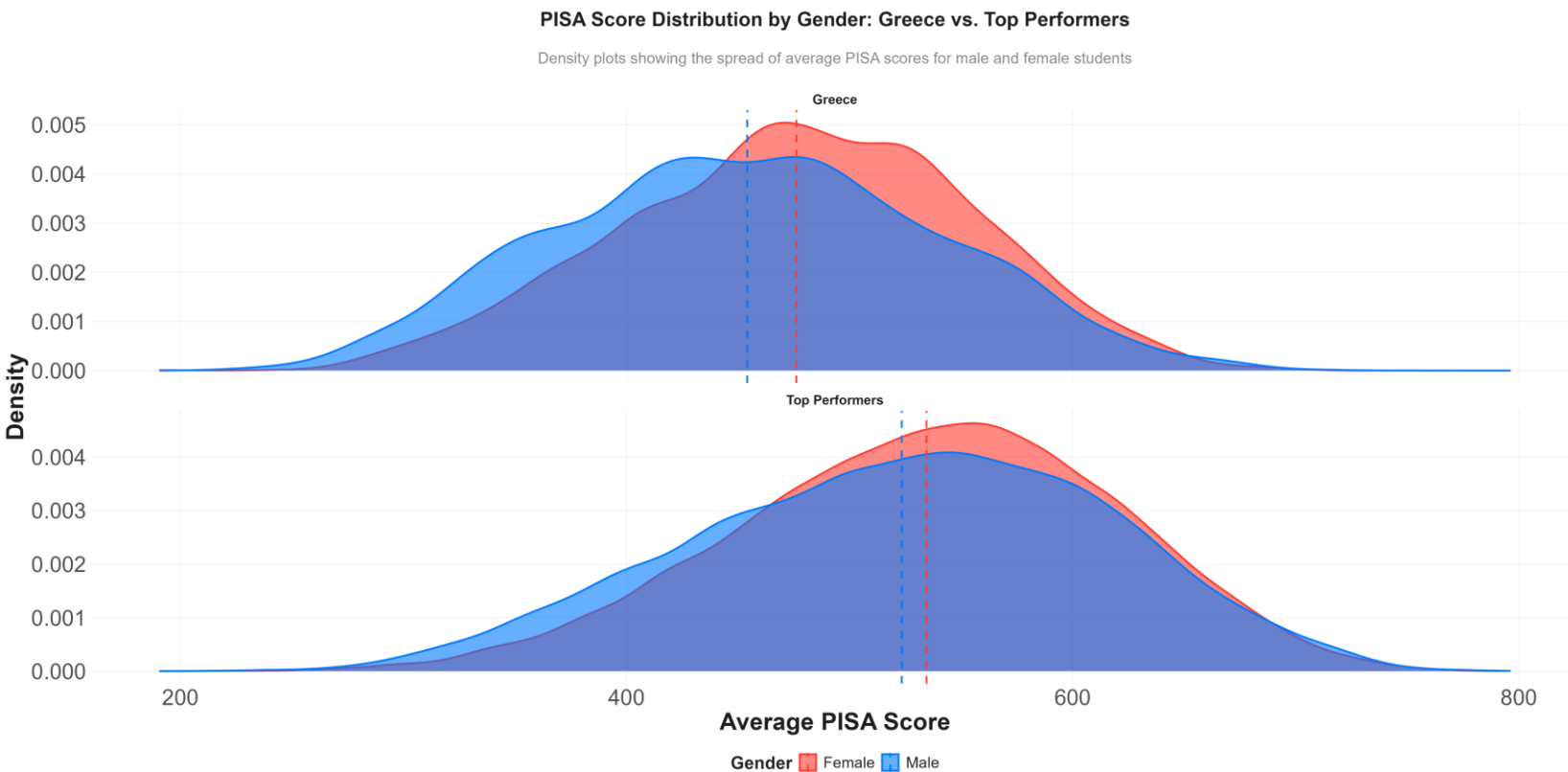
## Sources

OECD PISA 2018, World Bank Education Data



# Demographic Insights

# Gender Performance in Greece



Source: OECD PISA 2018

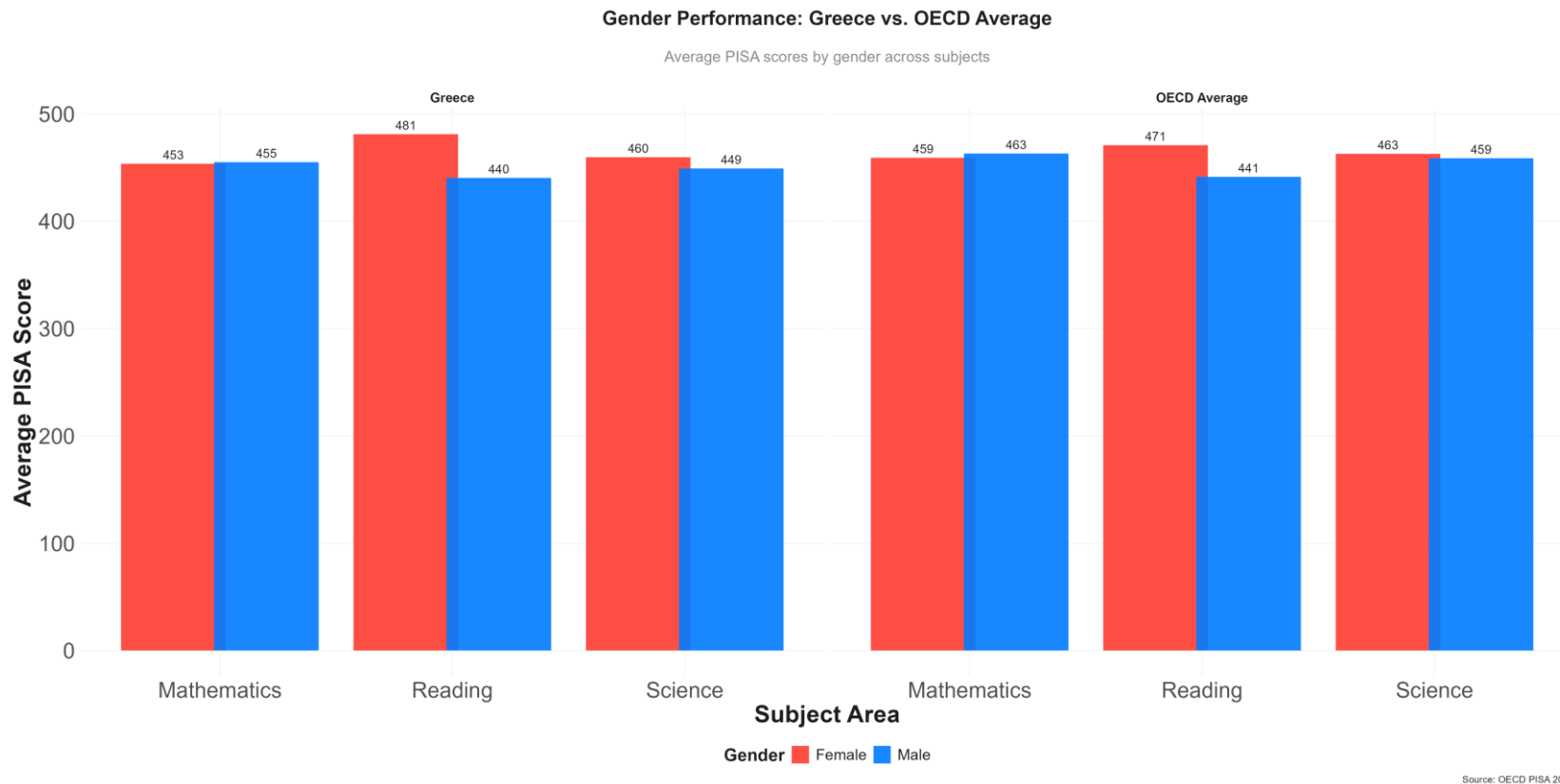
## Gender-Based Score Distribution

- **Top Performers (bottom plot):**
  - Females slightly outperform males. Scores are tightly clustered (550–580), indicating consistency.
  - Well above the OECD average.
- **Greece (top plot):**
  - Females lead slightly.
  - Broader score spread shows more variability.
  - Average: ~465 — above global average (460), below OECD median (475).
- **Insights**
  - Top performers: high, consistent results across genders.
  - Greece: moderate scores, wider spread implies equity/quality gaps
  - Gender gap is small but favors females in both groups.

## Sources

OECD PISA 2018, World Bank Education Data

# Gender Performance Gaps Across Countries



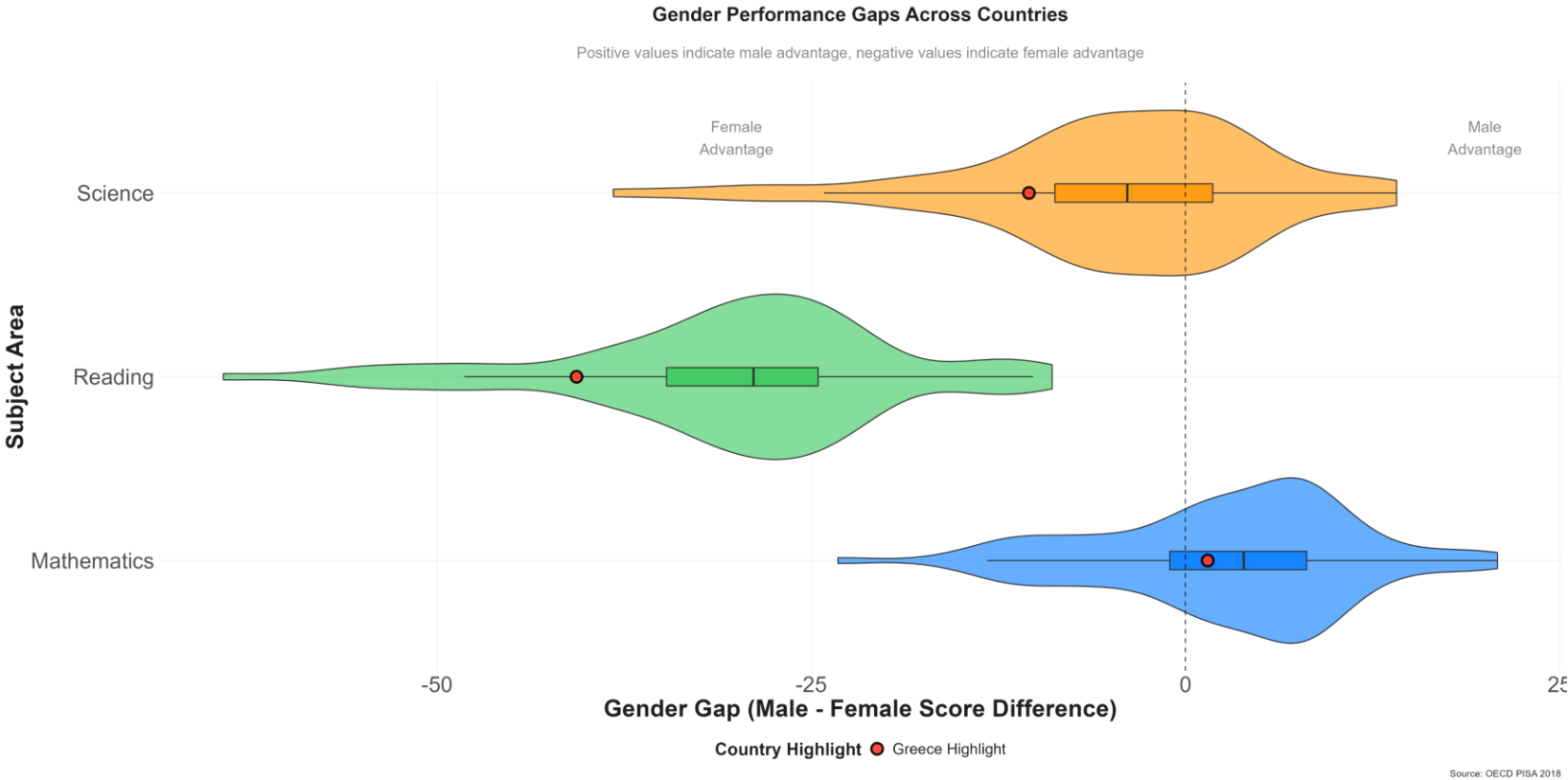
## Gender Comparison Across Subjects Greece:

- Girls outperform boys in Reading and Science.
- Math scores are nearly equal (Girls: 453, Boys: 455).
- Biggest gap in Reading: +41 for girls.
- **OECD Average:**
- Similar trends: Girls lead in Reading (+30) and Science (+22). Boys slightly ahead in Math.
- **Insights**
- Gender gaps in Greece reflect OECD patterns, but Reading gap is larger.

## Sources

OECD PISA 2018, World Bank Education Data

# Gender Performance Gaps Across Countries



## Gender Gaps in PISA 2018: Global Overview

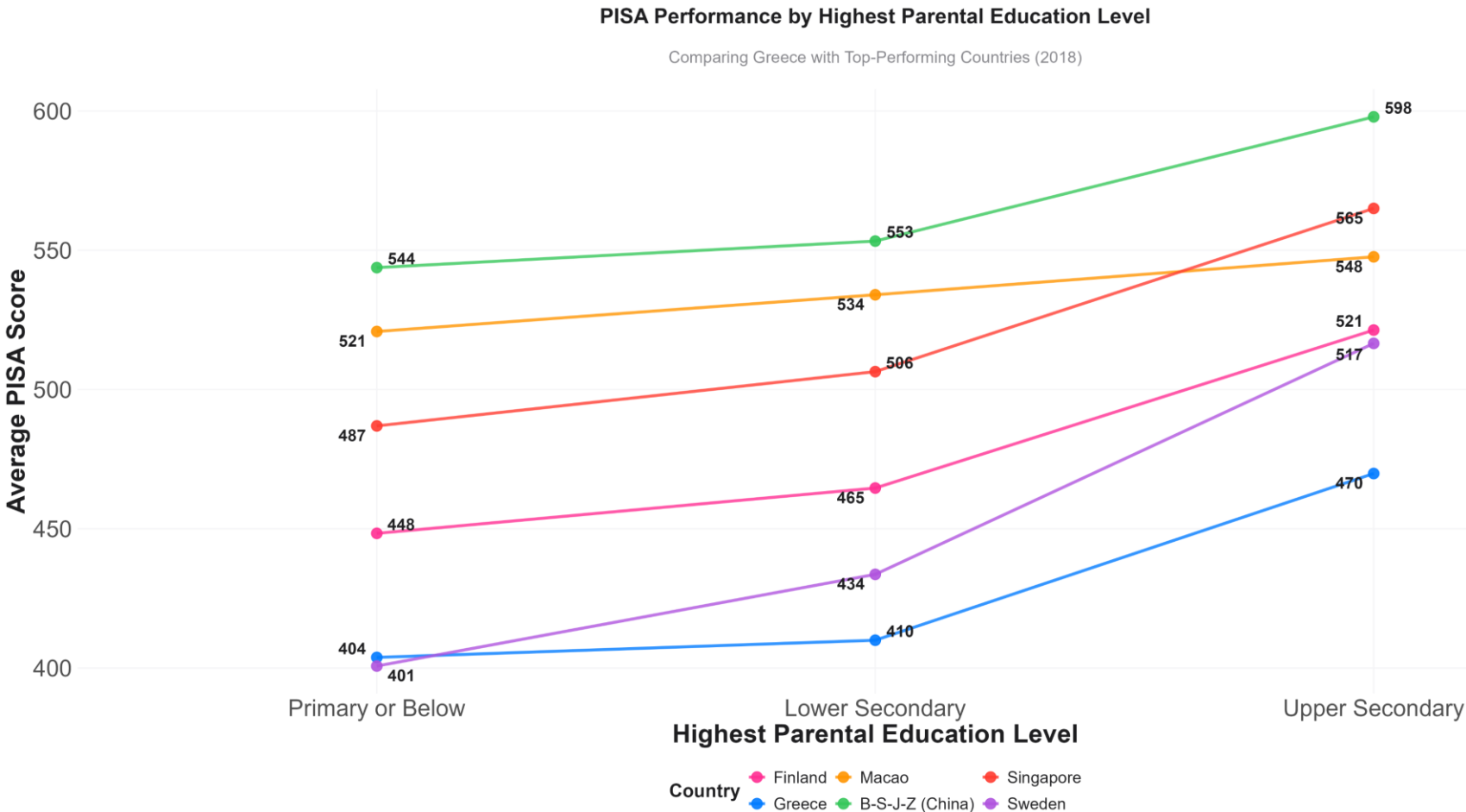
- **Science**
  - Most countries show a male advantage. Greece is near the global median — small gap.
- **Reading**
  - Female advantage is widespread and significant.
  - Greece aligns with this trend — strong female lead.
- **Mathematics**
  - Slight male advantage overall.
  - Greece again near the middle, with a small gender gap.
- **Insights**
  - Reading shows the largest and most consistent gender gap, favoring females.
  - Greece's gender gaps are moderate and closely match international patterns.

## Sources

OECD PISA 2018, World Bank Education Data

# Socioeconomic Insights

# Socioeconomic Impact on Performance



Source: OECD PISA 2018 (Only groups with >=30 students shown)

## Parental Education & Student Performance

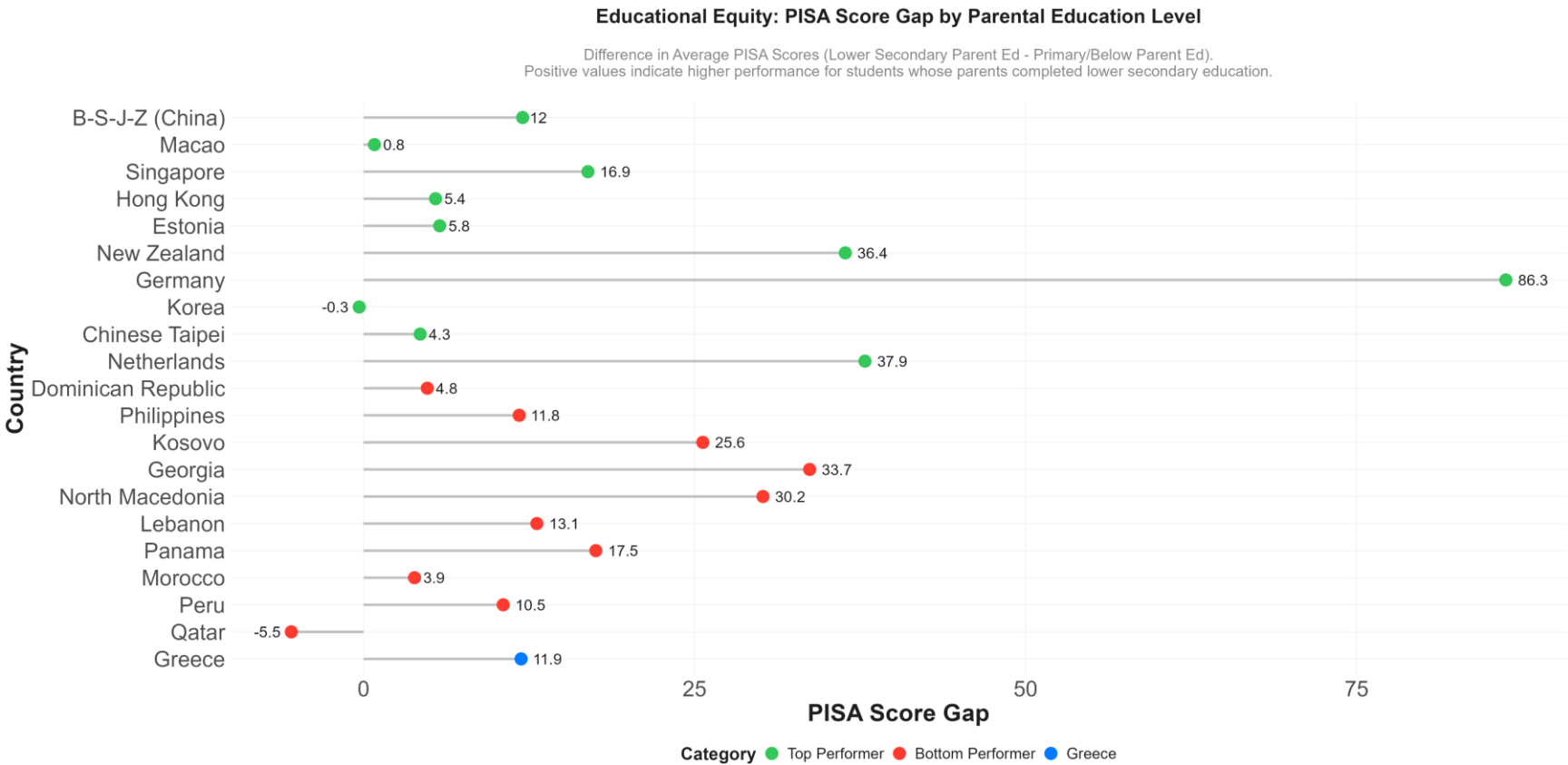
- **Greece:**
  - Greece shows a steady increase in student scores as parental education rises — from 404 (Primary or Below) to 470 (Upper Secondary). This represents a ~70-point gap, with lower baseline performance than peers.
- **Other Countries:**
  - Singapore and China (B-S-J-Z) show the highest scores across all levels, but also a steep gradient — indicating strong impact of family background.
  - Macao, Sweden and Finland exhibit less steep gains, reflecting more equitable systems where parental education has less impact on student outcomes.
- **Insights**
  - In Greece, student success is closely tied to family education level.

## Sources

OECD PISA 2018, World Bank Education Data

# Educational Equity:

## Gap Between Primary and Lower Secondary Parental Education



**Greece:**

- Greece shows a gap of 11.9 points, meaning students with lower-secondary educated parents perform moderately better than those with primary or less.

**Top Performers:**

- Countries like Singapore (16.9), China (12), and Korea (-0.3) show small or no gaps, suggesting greater equity at early education stages.

**Bottom Performers:**

- Bottom-performing countries like Georgia (33.7) and North Macedonia (30.2) display large gaps, highlighting strong socioeconomic dependence.

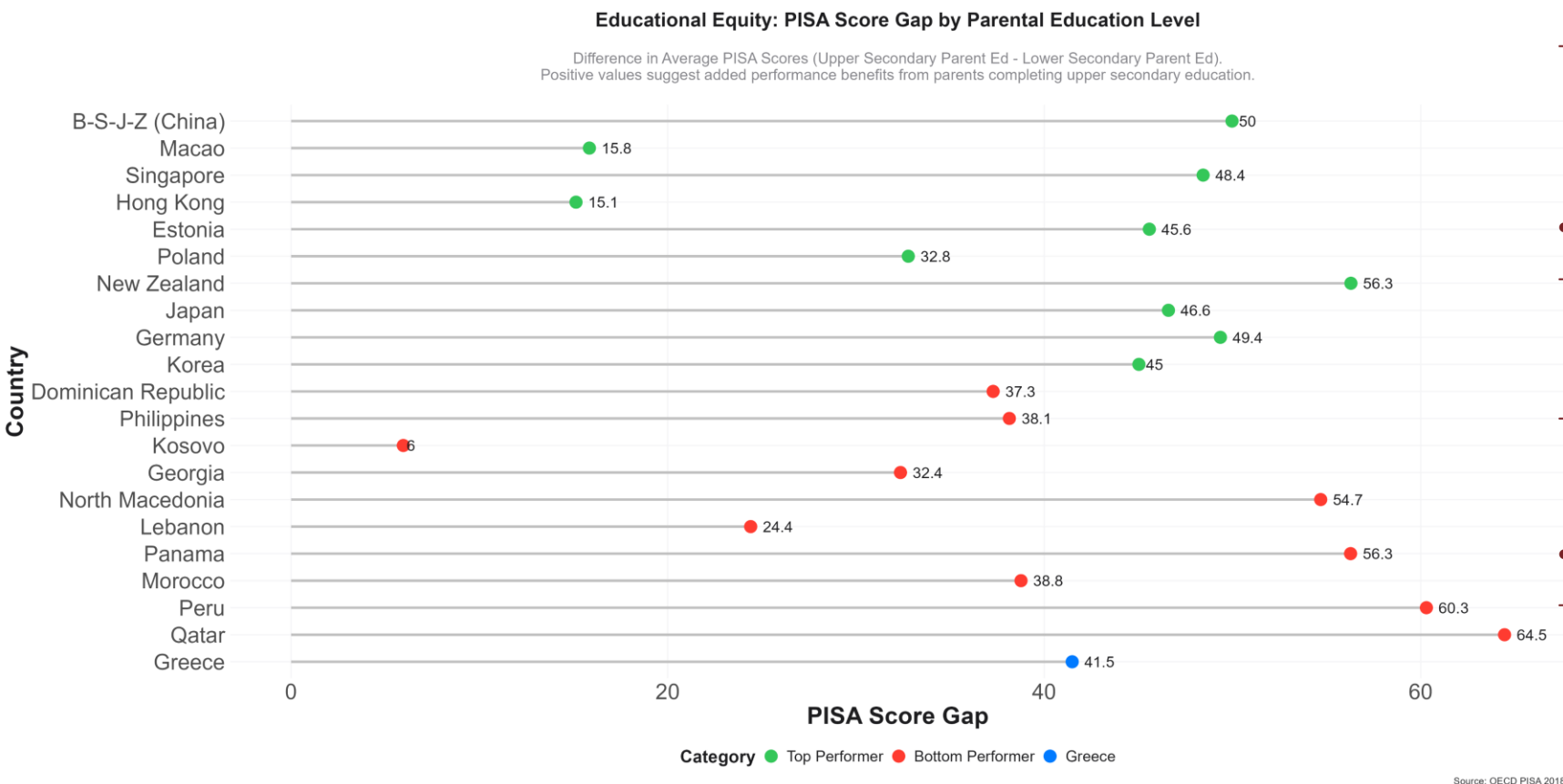
**Insight:**

- Greece's early equity gap is moderate — it reflects some benefit from parental education, but equity could be improved with stronger foundational support.

**Sources**  
OECD PISA 2018, World Bank Education Data

# Educational Equity:

## Gap Between Upper Secondary and Lower Secondary Parental Education



- **Greece:**
  - ● Greece shows a gap of 41.5 points, meaning students benefit significantly when parents complete upper secondary education.
- **Other Countries:**
  - ● New Zealand (56.3) and China (50.0) show strong but expected gains with upper parental education.
  - ● Countries like Peru (60.3) and Panama (56.3) exhibit high dependence on parental education, signaling systemic inequality.
- **Insight:**
  - Greece's uplift gap is large, suggesting parental education remains a key performance driver in secondary schooling outcomes.

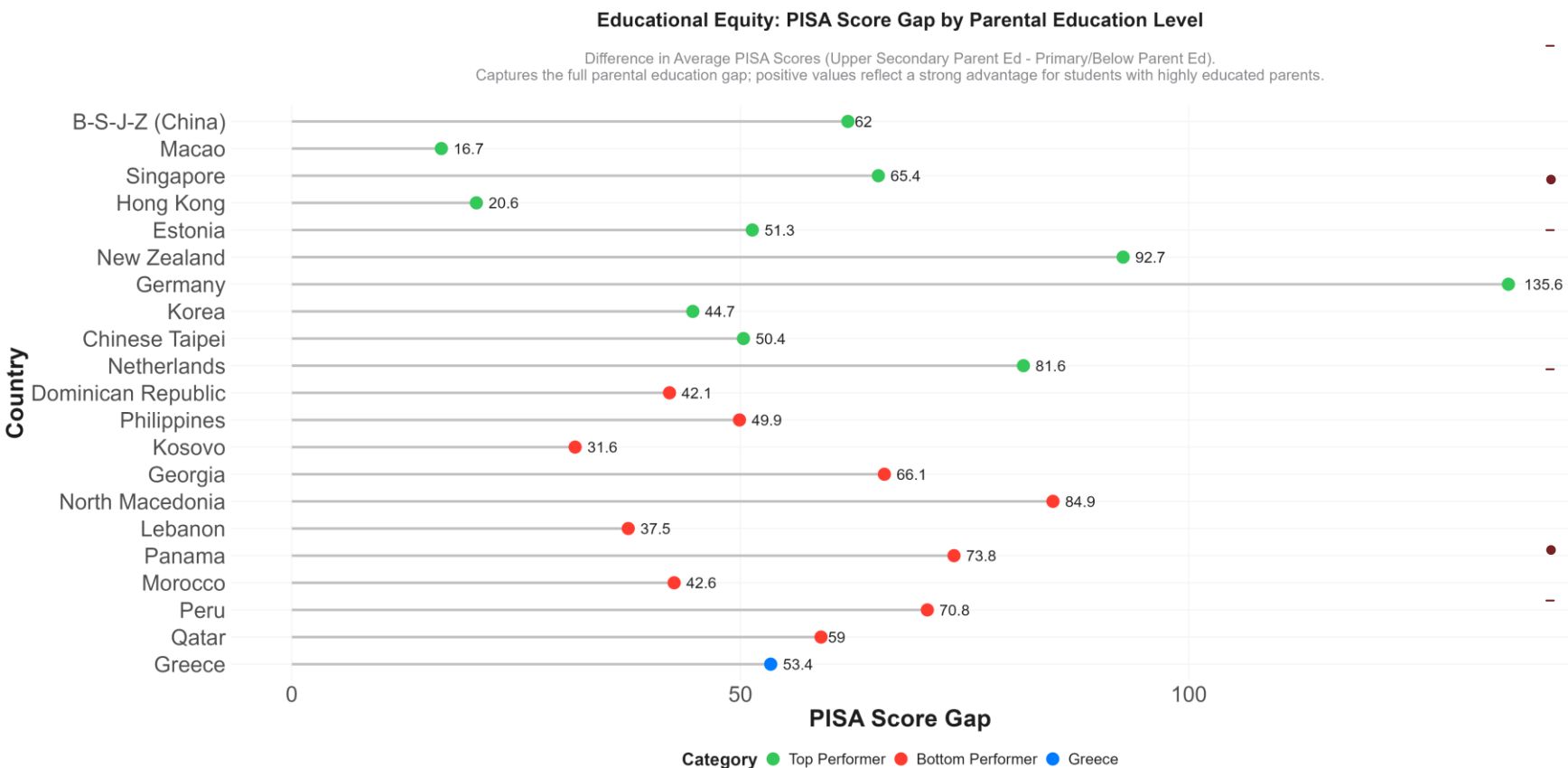
### Sources

OECD PISA 2018, World Bank Education Data



# Educational Equity:

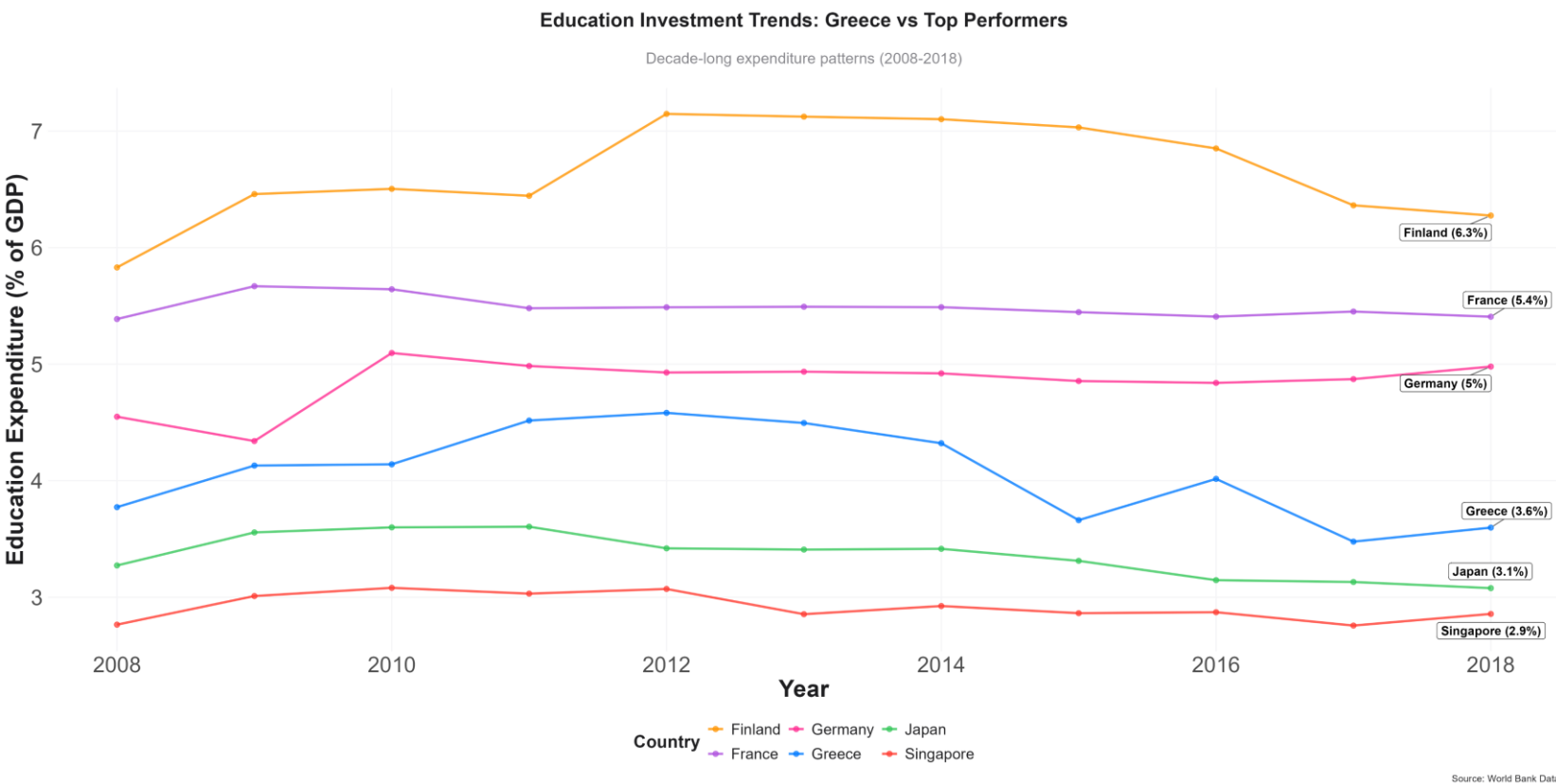
## Gap Between Upper Secondary and Primary or Below Parental Education



- **Greece:**
  - ● Greece shows a total gap of 53.4 points, meaning students with highly educated parents score substantially better.
- **Other Countries:**
  - ● Germany (135.6) and New Zealand (92.7) show massive gaps, reflecting stratified systems.
  - ● Several lower-performing countries (e.g., Panama, Peru) also show large full gaps, highlighting persistent generational disadvantages.
- **Insights**
  - Greece's full gap is significant but not extreme — still, more targeted support is needed for students from low-Socioeconomic Status families.

**Sources**  
OECD PISA 2018, World Bank Education Data

# Education Investment Trends: Greece vs Top Performers



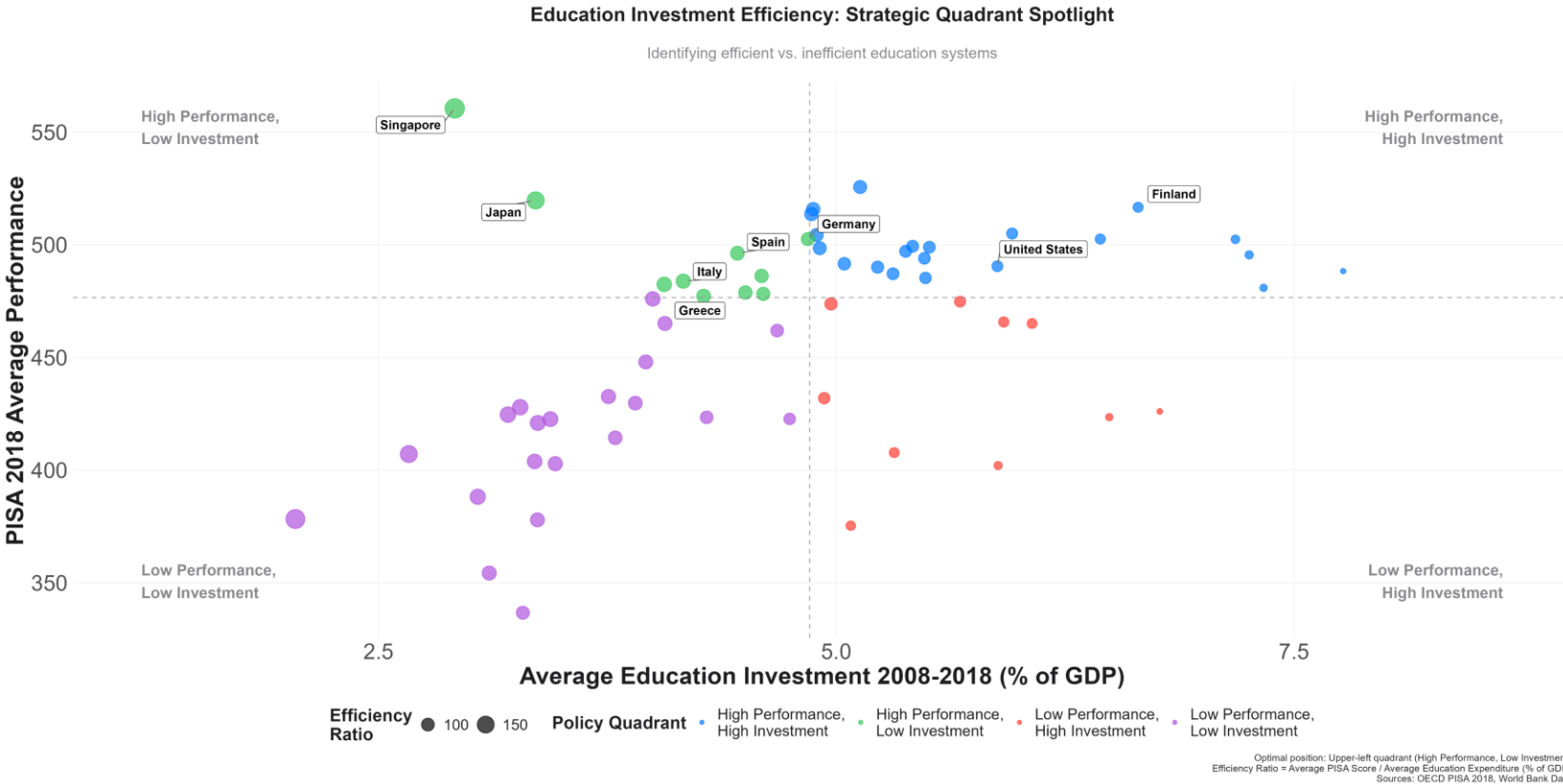
## Investment in Education: 2008–2018 Trends

- **Greece**
  - Started at 3.8% of GDP, peaked at 4.6% (2012), but dropped to 3.6% by 2018. Trend reflects economic constraints post-crisis.
- **Finland**
  - Consistently leads with 6–7% investment, finishing at 6.3% — highest among peers.
- **Other Nations**
  - France stable around 5.4%.
  - Germany around 5.0%, with a slight upward trend.
  - Japan and Singapore invest least (~3.1%–2.9%), yet perform strongly in PISA.
- **Insights**
  - Greece's declining investment impacts education quality long-term.
  - High performance isn't solely tied to high spending — but sustained investment like Finland's shows clear benefits.
  - Effective use of resources is as critical as volume of spending.

## Sources

OECD PISA 2018, World Bank Education Data

# Socioeconomic Impact on Performance



## Efficiency of Education Systems

- **Top Efficiency:**
  - Singapore & Japan: High performance with low spending.
  - Best value-for-investment systems.
- **High Investment, High Performance:**
  - Finland, Germany, U.S. perform well but at higher cost.
- **Greece:**
  - Low performance despite moderate spending → low efficiency.
  - Positioned in low performance / low investment quadrant.
- **Insights**
  - Greece must improve either investment efficiency or outcome returns to shift quadrant.

## Sources

OECD PISA 2018, World Bank Education Data

# Tableau Dashboard

# Dashboard

Click on Dashboard to Open Tableau File

## Dashboard Purpose

To explore the relationship between educational performance (PISA 2018 scores) and national education expenditure (% of GDP) across countries, using dynamic visualizations.

## Dashboard Components

### 1. World Map of PISA Math Scores

- **Bubble Size:** Total number of students per country.
- **Bubble Color:** Average Math score (red = low, blue = high).
- **Slider:** Filter top N performing countries.
- **Subject Selector:** Switch between Math, Reading, or Science.

### 2. Line Chart: Education Spending Over Time

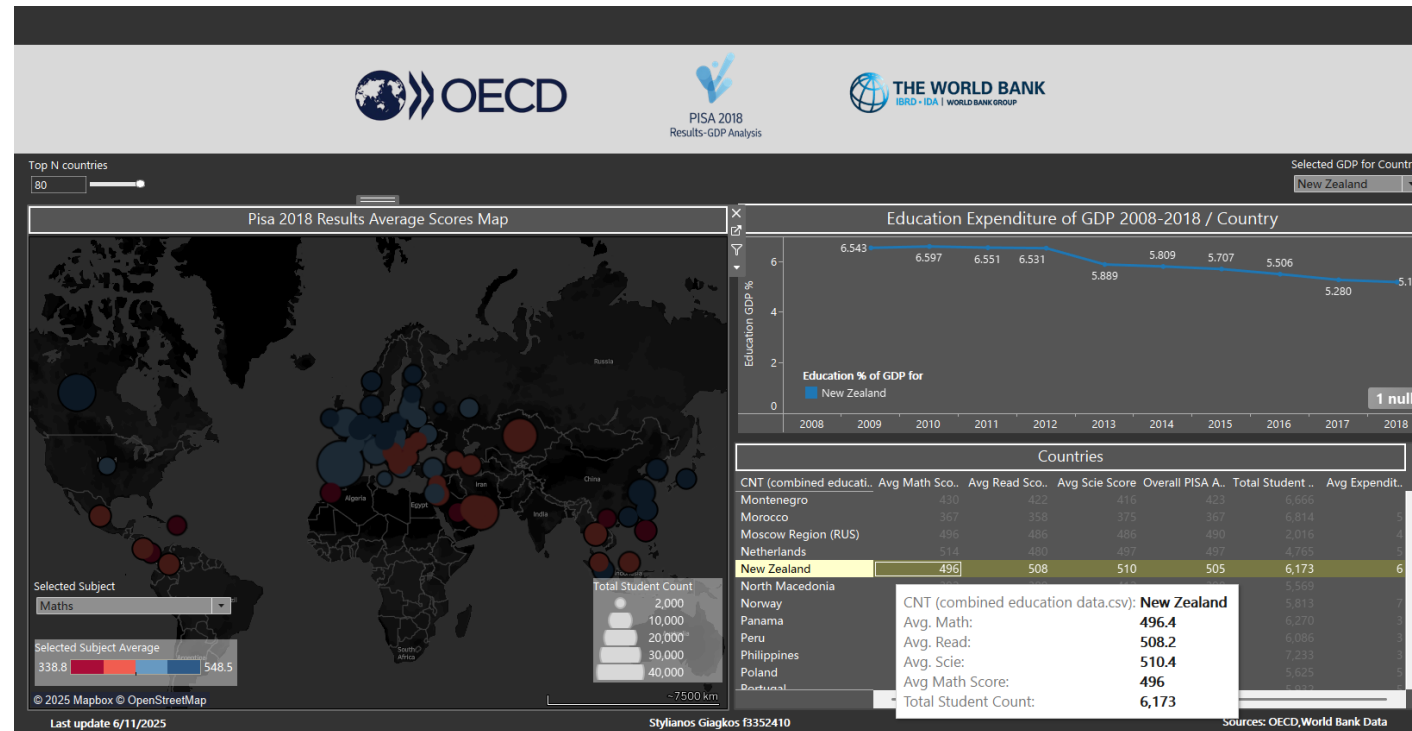
- Shows % of GDP spent on education (2008–2018) for selected country (e.g., *New Zealand*).
- Reflects spending trends and potential correlation with performance.

### 3. Data Table: Country Metrics

- Detailed metrics by country:
  - Average scores (Math, Reading, Science)
  - Overall PISA score
  - Total student count
  - Average GDP education expenditure

## Example Insight

New Zealand's education expenditure dropped from ~6.6% (2010) to ~5.2% (2018), yet it maintains high average scores (~500+), suggesting spending efficiency.



Greece in the Global Classroom: Insights from PISA 2018

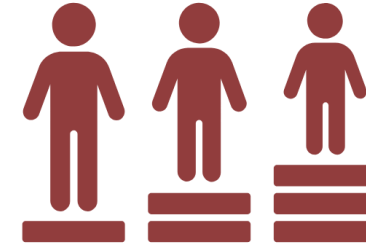
# Conclusions and Policy Recommendations

# | Summary of Findings



## Performance:

- Greece performs below the OECD median in all subjects.
- Gender gaps exist but are aligned with international trends.



## Equity & Socioeconomic Influence:

- Parental education strongly impacts student performance.
- Greece shows moderate-to-large equity gaps, especially in upper education transitions.



## Investment vs Outcome:

- Education funding has declined, and returns are relatively low.
- Greece sits in the low efficiency quadrant, unlike top performers.



## Global Standing

- Greece is not among the lowest, but trails behind high-achieving and equitable systems.
- Room for reform and smarter investment is clear.

# Toward a More Equitable and Effective Education System



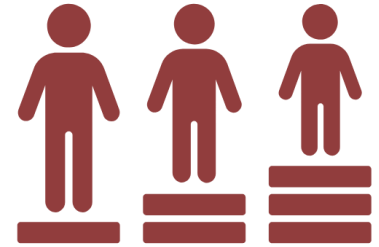
## 1. Strengthen Early Support

- Expand early childhood education and literacy programs for low-SES families.



## 2. Target Socioeconomic Gaps

- Introduce performance-based funding to schools in disadvantaged areas.
- Provide mentoring, tutoring, and enrichment for underperforming groups.



## 3. Promote Equity in Secondary & Tertiary Transitions

Reduce dropout rates and support pathways to upper secondary and vocational education.

Room for reform and smarter investment is clear.



## 4. Optimize Education Investment

- Increase investment in education gradually toward OECD average.
- Ensure funds target classroom-level quality, not just administrative expansion.



## 5. Leverage Data for Policy

Use PISA insights and school-level metrics to monitor impact, equity, and effectiveness.





# Thank You!