



# FOUNDATIONS OF PROSPERITY: INFRASTRUCTURE AND GOVERNANCE IN CROSS-COUNTRY DEVELOPMENT

## INTRODUCTION

Large disparities in economic prosperity persist across countries, commonly measured by GDP per capita. Infrastructure and governance are widely regarded as key drivers, shaping productivity, trade efficiency, and institutional performance. However, global correlations may mask important underlying differences across countries.

This study examines how infrastructure and governance relate to GDP per capita using cross-country data and tests whether these relationships remain consistent when countries are grouped by similar structural characteristics, such as income level and geographic region. While both factors are strongly associated with GDP per capita at the global level, the analysis finds that these relationships are largely driven by differences between high-income and low-income countries and weaken significantly within these more comparable groups. This highlights that their effects are context-dependent and become meaningful only when analyzed within specific structural and regional frameworks.

## DATA COLLECTION

Data for this study was obtained from the World Bank's World Development Indicators (WDI) and Worldwide Governance Indicators (WGI). GDP per capita (PPP, constant international dollars) was used as the primary measure of economic development. Infrastructure quality was proxied using the Logistics Performance Index (LPI), while governance was measured through a composite index constructed from Government Effectiveness, Regulatory Quality, and Rule of Law.

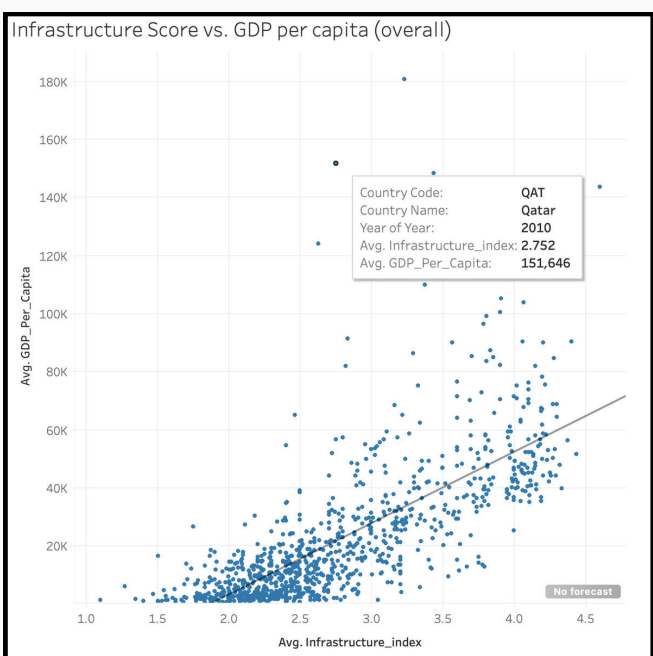
The dataset consists of cross-country observations across multiple years, with each observation representing a country-year pair. This structure enables both global comparisons and stratified analysis across income groups and regions.

## DATA CLEANING

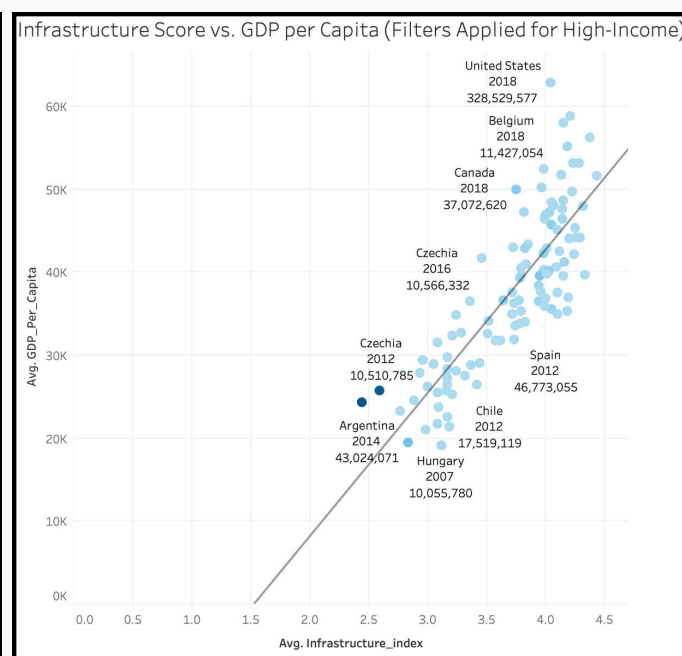
All datasets were unpivoted into long format. The governance dataset was further restructured so that Government Effectiveness, Regulatory Quality, and Rule of Law appear as aligned columns for each country-year. A Composite Governance Score was calculated as the average of the three indicators using only complete observations.

Missing and placeholder values (e.g., zeros) were treated as missing and excluded. Finally, in Tableau, all datasets were joined using country code and year, ensuring consistency across GDP, infrastructure, governance, and auxiliary variables for analysis.

## DATA ANALYSIS



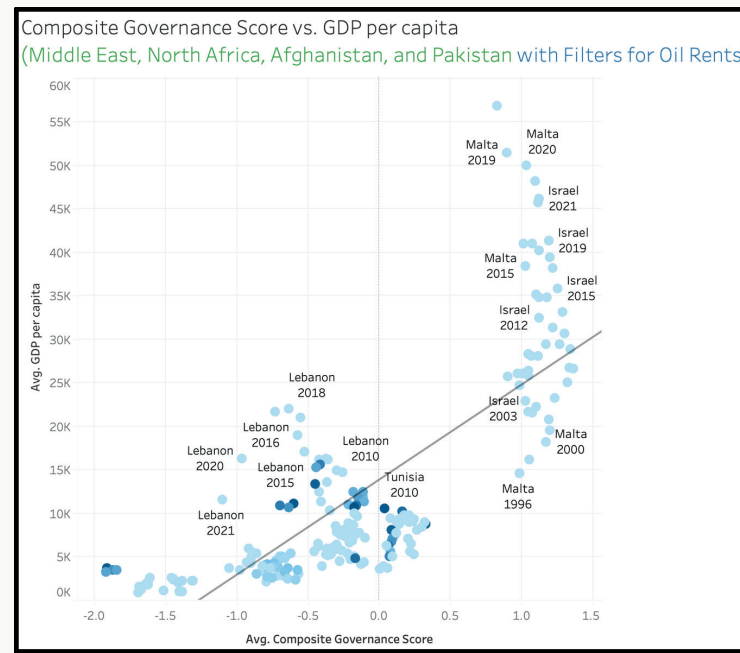
(a)



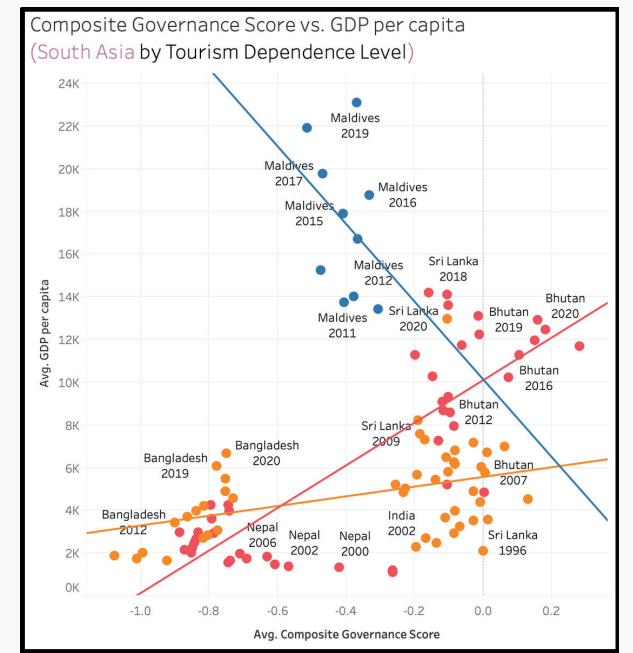
(b)

Figure (a) shows a strong positive relationship between infrastructure quality and GDP per capita at the global level, suggesting that countries with higher infrastructure scores generally tend to have higher levels of economic development. However, the broad dispersion of points and the presence of major outliers indicate that this global pattern is influenced by structural differences across countries, including resource dependence and population-related volatility.

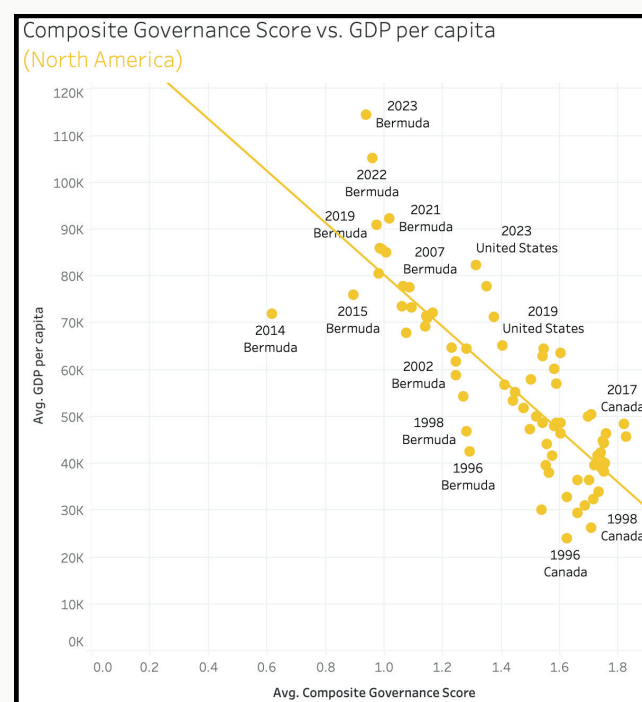
Figure (b) focuses on high-income economies after filtering out structurally atypical cases, such as countries with extreme oil rents or very small populations. Within this more comparable group, the relationship becomes much tighter and stronger, showing that infrastructure quality is a far more powerful predictor of GDP per capita among high-income countries. This suggests that infrastructure plays its most visible and consistent role when countries are compared within a similar stage of development.



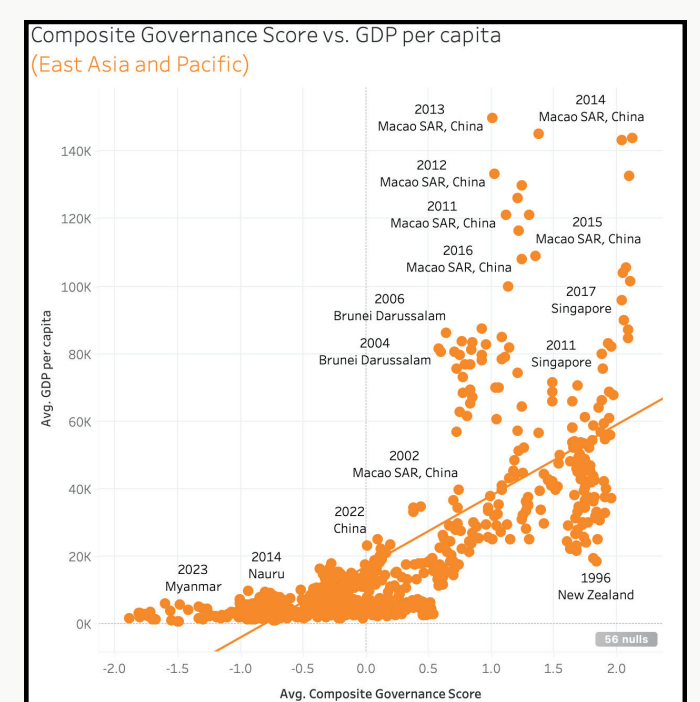
(e)



(f)



(g)



(h)

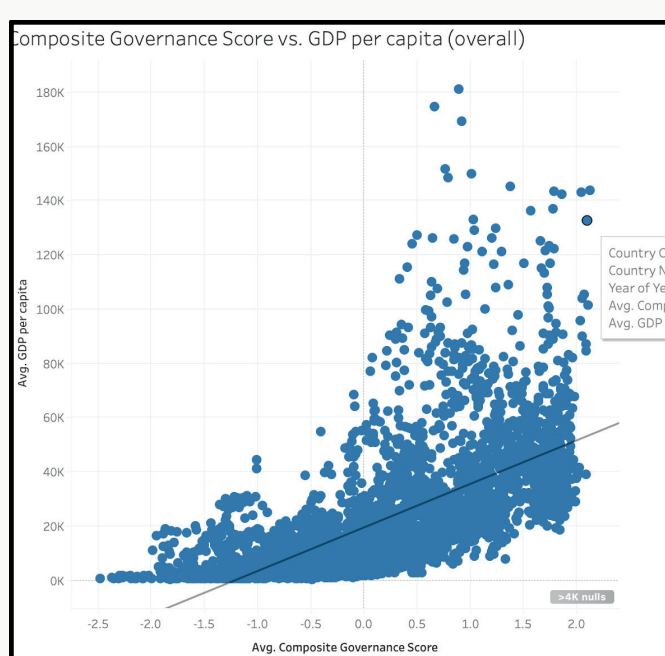
Figure (c) shows a clear positive relationship between governance and GDP per capita at the global level. However, the wide dispersion, especially at mid to high governance levels, indicates that governance alone does not fully determine economic outcomes. Figure (d) further shows that this relationship varies significantly across regions, suggesting strong context dependence.

This variation becomes more evident when examining specific regions. Figure (e) presents the Middle East, North Africa, Afghanistan, and Pakistan (MENAAP) region after filtering out observations with high oil rents, which in the unfiltered data create large vertical dispersion by generating high GDP per capita regardless of governance quality. Once these resource-driven outliers are excluded, the remaining data reveal a much stronger and more coherent positive relationship, indicating that governance aligns more closely with GDP per capita when such distortions are removed.

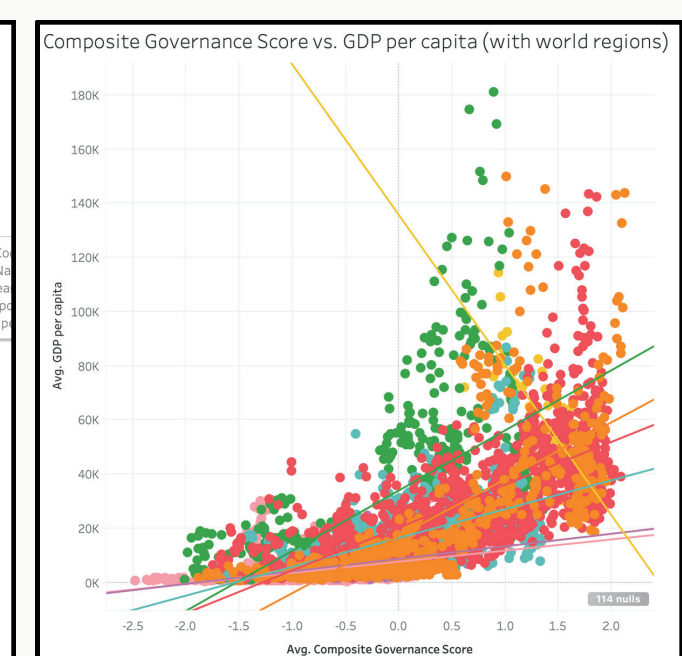
Figure (f) examines South Asia by grouping countries based on tourism dependence. In the aggregate data, countries with similar governance scores display large differences in GDP per capita, most notably due to outliers such as the Maldives. Disaggregating by tourism dependence reveals that high-tourism economies (blue line) exhibit weak or inconsistent relationships, while lower-tourism groups (red and orange lines) show a mildly stronger and more coherent trend, confirming that tourism-driven income can distort the governance-GDP relationship.

Figure (g) shows North America, where the fitted relationship between governance and GDP per capita appears negative. However, this result is not economically meaningful and reflects the structure of the regional sample rather than a true inverse relationship. The sample is extremely small, limited to the United States, Canada, and Bermuda, with governance scores tightly clustered and offering little variation. Within this narrow range, GDP per capita varies sharply, largely due to structural factors.

Figure (h) shows a strong and statistically robust positive relationship between governance and GDP per capita within East Asia and the Pacific. The data align closely along an upward trend, indicating that governance differences are consistently reflected in income variation within the region. Although some dispersion appears at higher governance levels, it remains structured rather than random. Outliers such as Macao SAR, China and Singapore lie above the trend due to sectoral concentration and small population size, but do not disrupt the overall pattern.



(c)



(d)

## CONCLUSION

This study shows that while infrastructure and governance are strongly associated with GDP per capita at the global level, these relationships are largely driven by structural differences between countries and weaken significantly within comparable groups.

Infrastructure shows its clearest impact among high-income economies after accounting for distortions such as oil rents and population scale, while governance becomes more meaningful at the regional level rather than within income groups. Overall, the findings demonstrate that prosperity is highly context-dependent, shaped not by any single factor but by broader structural forces including resource dependence, economic specialization, and regional dynamics.