

**Abstract:** Excess mortality—the difference between reported and predicted deaths based on previous years— can be a powerful and succinct indicator of the effectiveness of a country’s pandemic response. This research explores the impact of health and governance variables on excess mortality rates using COVID-19 response datasets provided directly by country governments. The study focuses on extracting the factors influencing excess mortality and building a predictive model to predict it. The objective is to help guide governments and policymakers by providing recommendations for both long- and short-term strategies to control excess mortalities during a pandemic.

## DATASET DESCRIPTION

**53 Countries Sampled**

**27 Variables Analyzed**

**2 Years of Data Used**

## METHODOLOGY

**Exploratory Factor Analysis**

**Hierarchical Linear Regression**

	Component			
	Vaccination Policies	Government Investment	General Health	Government Policies
Hospital Beds per Thousand			.630	
Total Vaccinations per Hundred			.817	
Life Expectancy			.876	
Workplace Closing				.897
Cancel Public Events				.899
Debt Contract Relief				.307
Fiscal Measures		.898		
Emergency Investment in Healthcare		.916		
Investment in Vaccines		.772		
Vaccination Distribution	.826			
Vaccine Rollout Planning	.889			
Vaccine Availability	.875			
Vaccine Financial Support	.762			

Figure 1 – SPSS Exploratory Factor Analysis Results

### Final Factors (Figure 1):

1. Vaccination Policies
2. Government Investment
3. General Health of the Population
4. Non-Vaccination Government Policies

### Vaccination Policies Factor Variables:

- **Vaccination Distribution:** Vaccine delivery & distribution
- **Vaccine Prioritization:** Existence of a prioritized plan for vaccine rollout
- **Vaccine Availability:** Records which categories (age groups, risk levels, etc.) of people – regardless of their position in a prioritized rollout plan – are currently receiving vaccines
- **Vaccine Financial Support:** Vaccine funding for demographic categories above

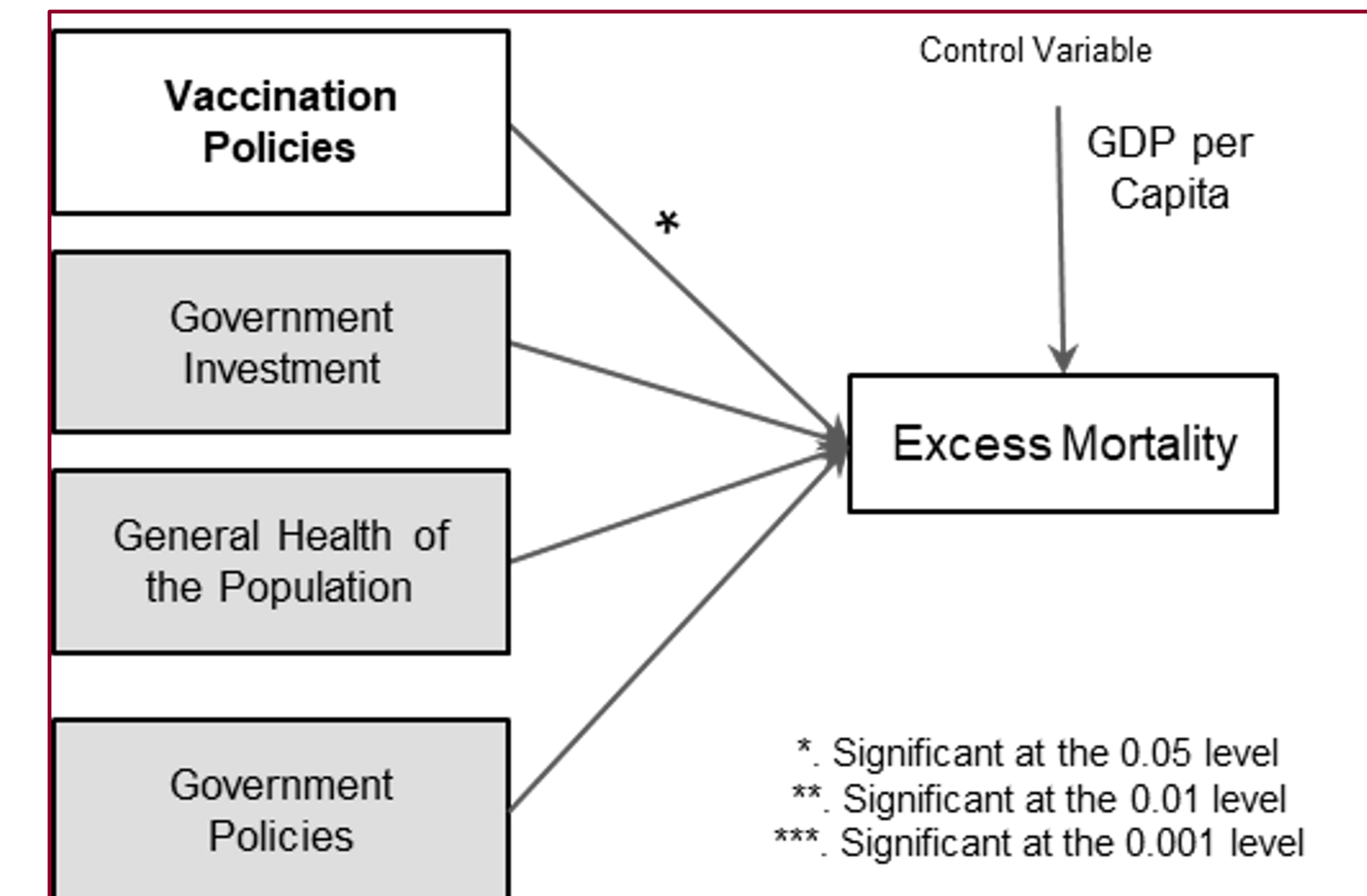


Figure 2 – Hierarchical Linear Regression Results

### Regression Findings (Figure 2):

- **Vaccination Policies** are the only significant factor when predicting excess mortality
- Besides vaccination policies, **positive COVID-19 test rates** and **average life expectancy** are the only other significant predictors of excess mortality, explaining roughly **40%** of the variance in excess mortality ( $R^2 = 0.403$ )

### Conclusion & Recommendations:

- Due to statistical insignificance of other variables and limited economic resources, policymakers should **prioritize vaccination policies (distribution, prioritization, etc.)** to raise average life expectancy & minimize excess mortalities
- Countries with limited financial resources still have options for lowering excess mortalities (i.e., establishing a vaccine rollout plan)