COVID-19 EFFECTS ON INSTITUTIONAL PERFORMANCE

A Brief View of the Peruvian Education Sector
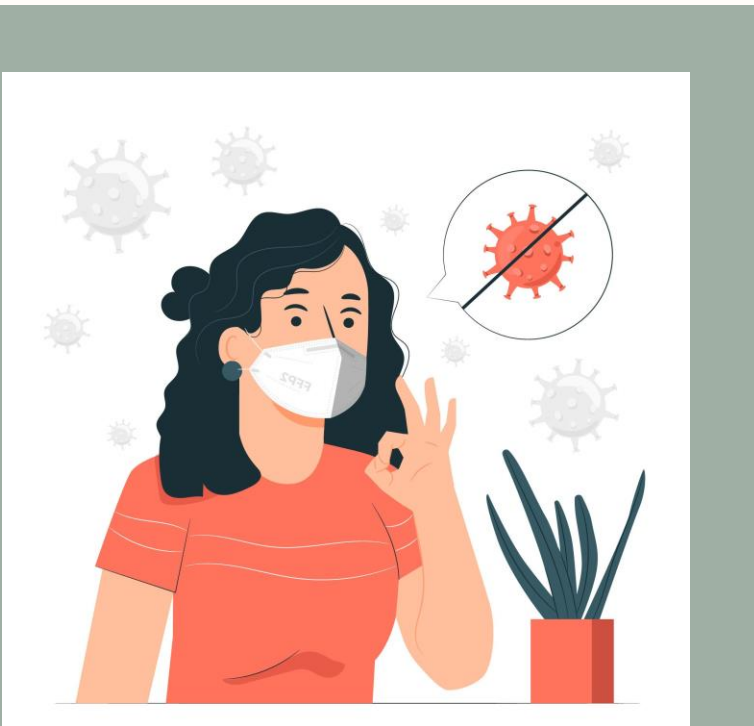
Presented by Rodrigo Garcia
Lima, Peru

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Introduction

The impact of the pandemic has been felt across all aspects of our lives, and we continue to uncover the ways in which it has altered our daily existence.
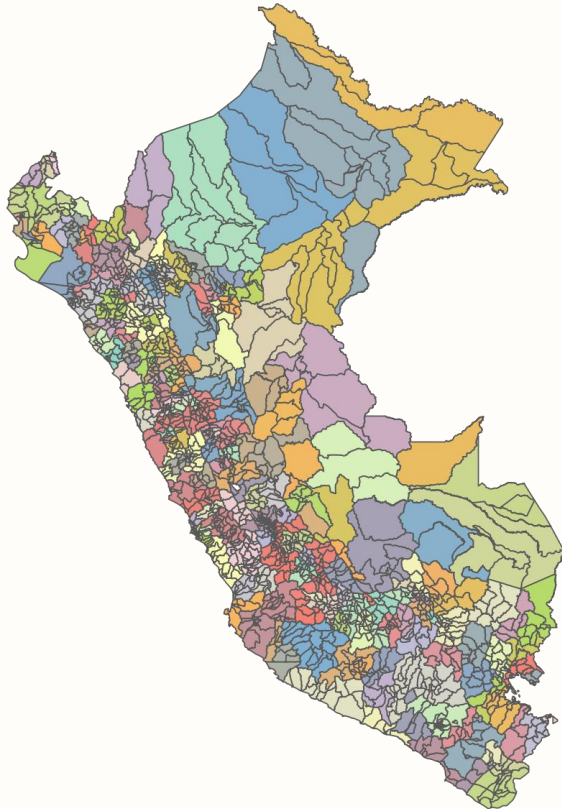
How did our institutions change? Did Covid-19 affected performance?

This analysis was part of the design of a Program of the Ministerio de Educación of Peru (Minedu). This is a brief and public version of that analysis.

Public Education in Peru

Map of the UGELs' Jurisdictions

Source: Own elaboration with R
1.874 district divided into 222 UGELs

Ministerio de Educación

Public Education in Peru is Governed by the "Ministerio de Educación" (Minedu) at the national level.

Regional Offices and UGELs

Additionally, many functions and responsibilities fall under 26 Regional Offices and 222 UGELs (Local Education Management Units)

The UGELs are responsible for a range of functions, including but not limited to:
- Enrolling students
- Hiring teachers
- Distributing books

Some of these processes are evaluated in the Compromisos de Desempeño (CdD), an RBF program of Minedu.
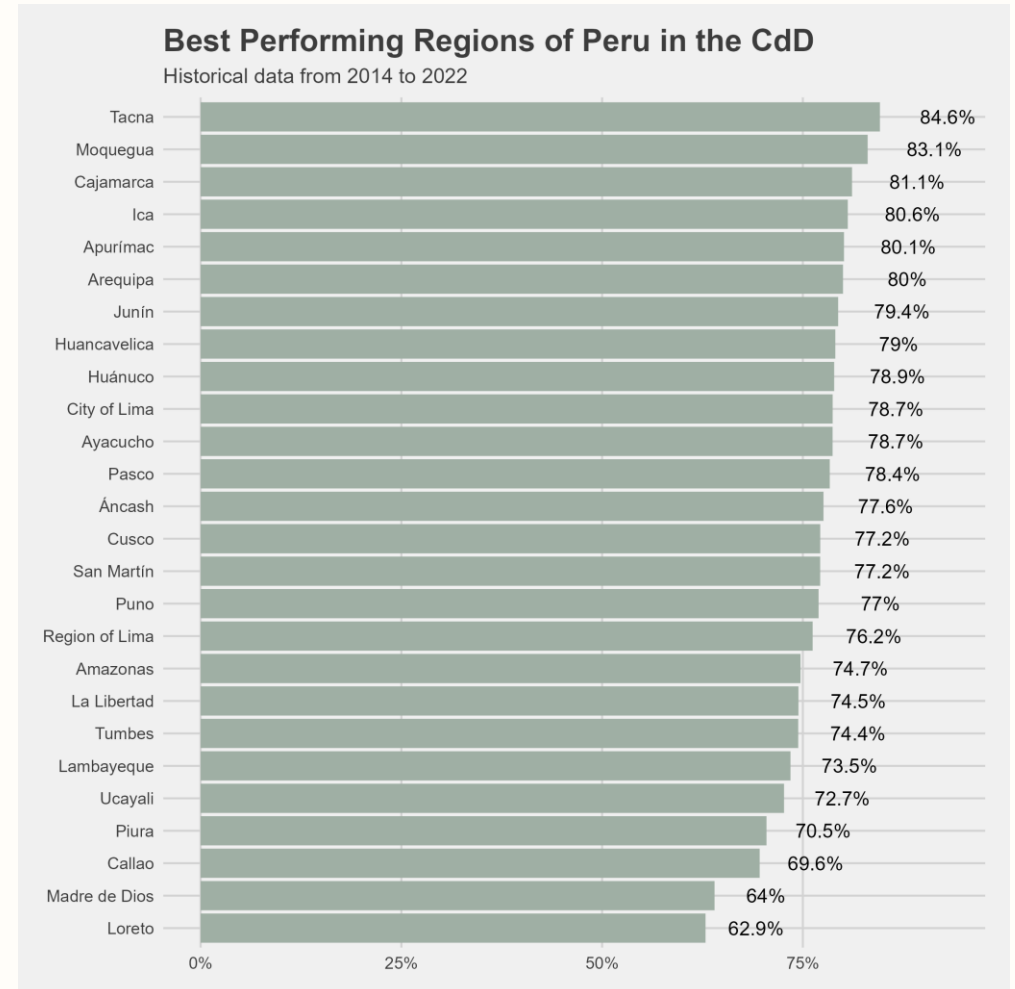
Data Used in the Analysis
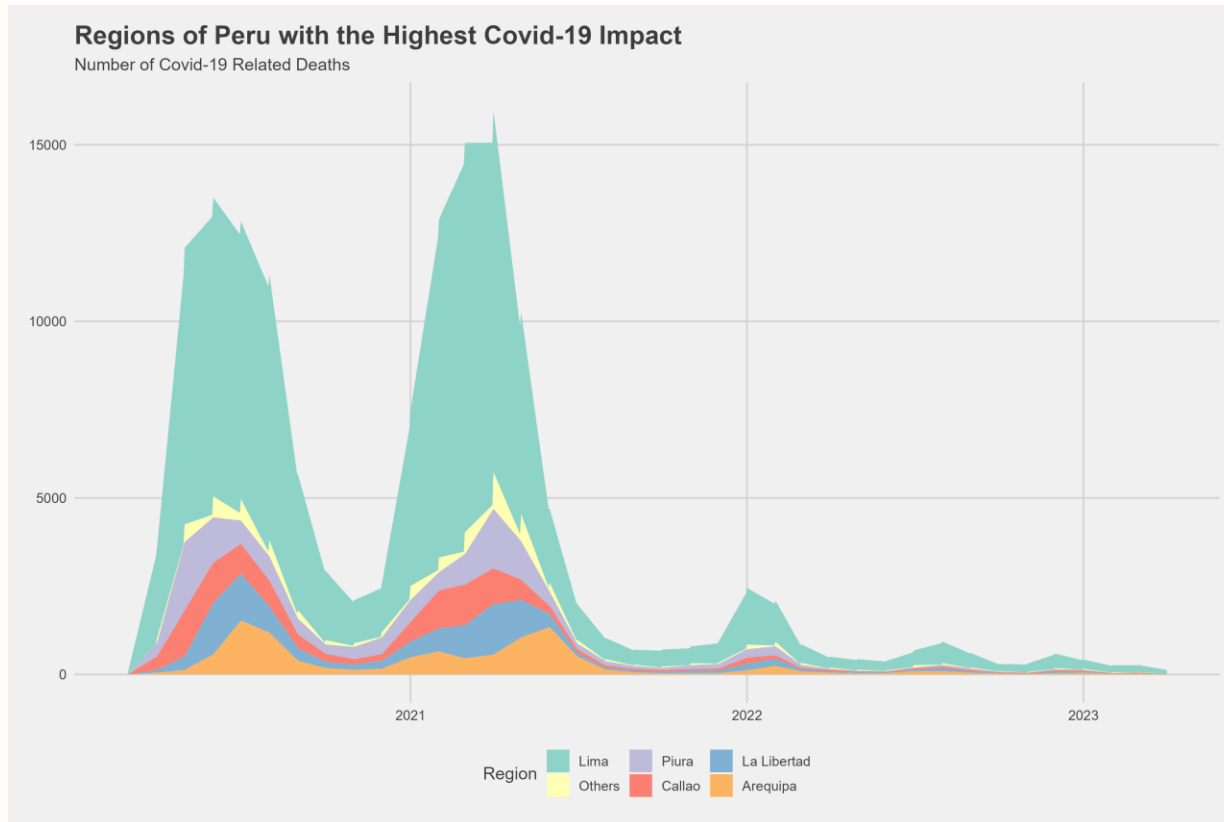
How to measure Institutional Performance?

The Compromisos de Desempeño (CdD) program evaluates indicators in the UGELs in exchange of results-based financing as a monetary incentive to institutions.

Historical data about the results in achievement value or "Valor Logrado" are available in the CdD website:

http://www.minedu.gob.pe/cdd/

Best Performing Regions of Peru in the CdD
Historical data from 2014 to 2022

Region	Value
Tacna	84.6%
Moquegua	83.1%
Cajamarca	81.1%
Ica	80.6%
Apurímac	80.1%
Arequipa	80%
Junín	79.4%
Huancavelica	79%
Huánuco	78.9%
City of Lima	78.7%
Ayacucho	78.7%
Pasco	78.4%
Áncash	77.6%
Cusco	77.2%
San Martín	77.2%
Puno	77%
Region of Lima	76.2%
Amazonas	74.7%
La Libertad	74.5%
Tumbes	74.4%
Lambayeque	73.5%
Ucayali	72.7%
Piura	70.5%
Callao	69.6%
Madre de Dios	64%
Loreto	62.9%

Data Used in the Analysis

Regions of Peru with the Highest Covid-19 Impact
Number of Covid-19 Related Deaths

How to measure Covid-19 Impact?

I used Covid-19 related deaths as a more accurate representation of the pandemic impact.

Infections may have been underreported due to testing scarcity.

Peru has been transparent in releasing pandemic data, which can be accessed through the "Datos Abiertos" (Open Data) website:
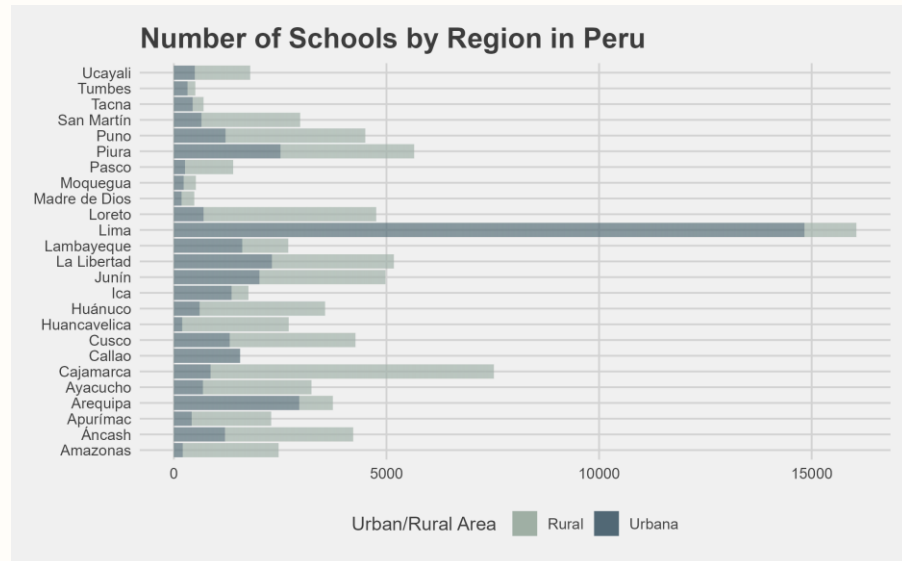
https://www.datosabiertos.gob.pe/dataset/fallecidos-por-covid-19-ministerio-de-salud-minsa
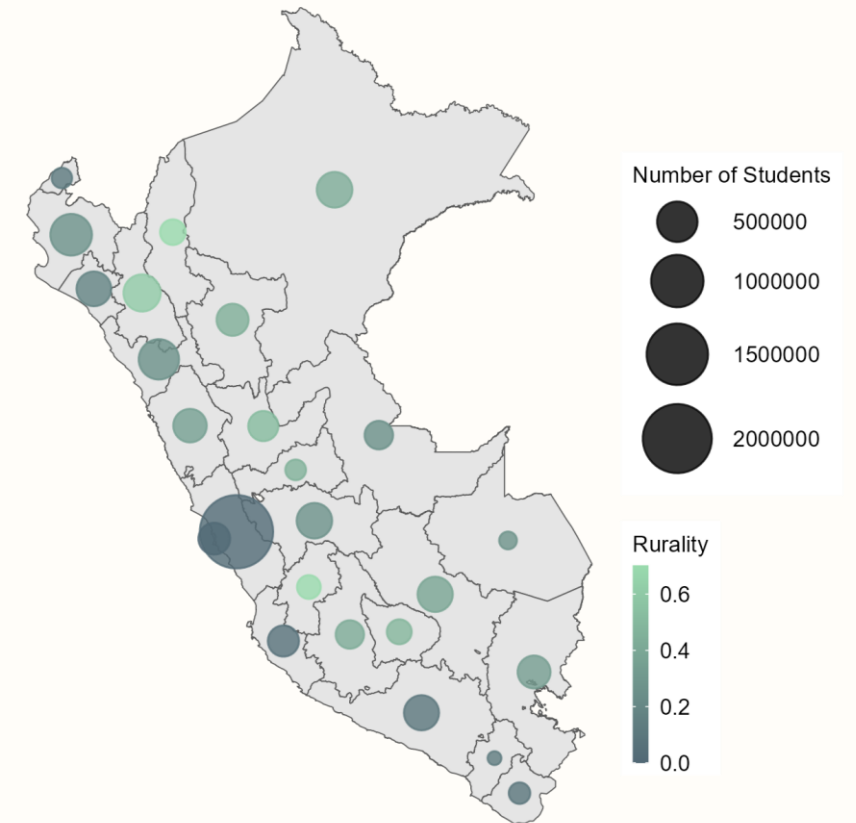
Data Used in the Analysis

Adittional Data Needed - UGELs

In order to associate the 1.874 districts to the 222 UGEL jurisdictions and to better characterize each UGEL, we required more data about the UGELs.

I used the education census of 2020, which can be found at: https://escale.minedu.gob.pe/uee/-/document_library_display/GMv7/view/6226837

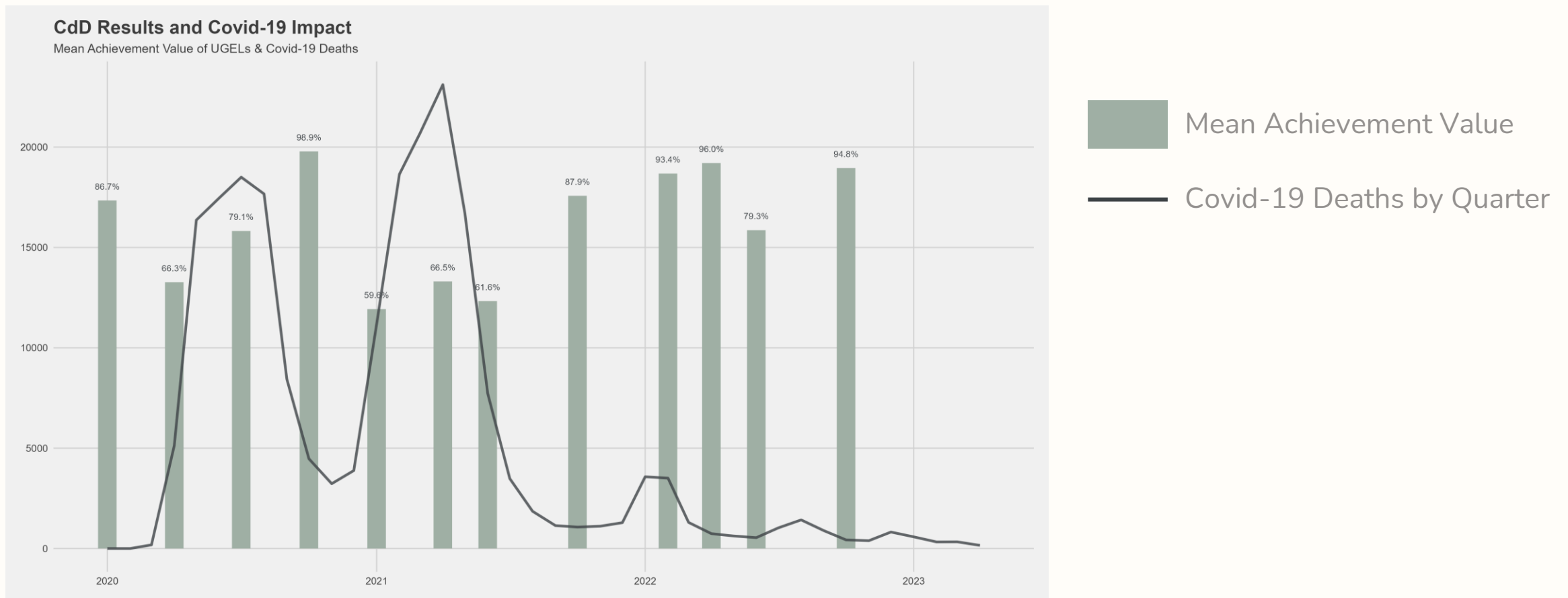**Number of Schools by Region in Peru**

Number of Students in each Region of Peru
Peru is Divided in 25 Regions and 1,874 Districts

Analysis

The two waves of the pandemic in Peru coincide with reductions in the performance of the UGELs in the CdD, measured as mean achievement value for each phase of the program.

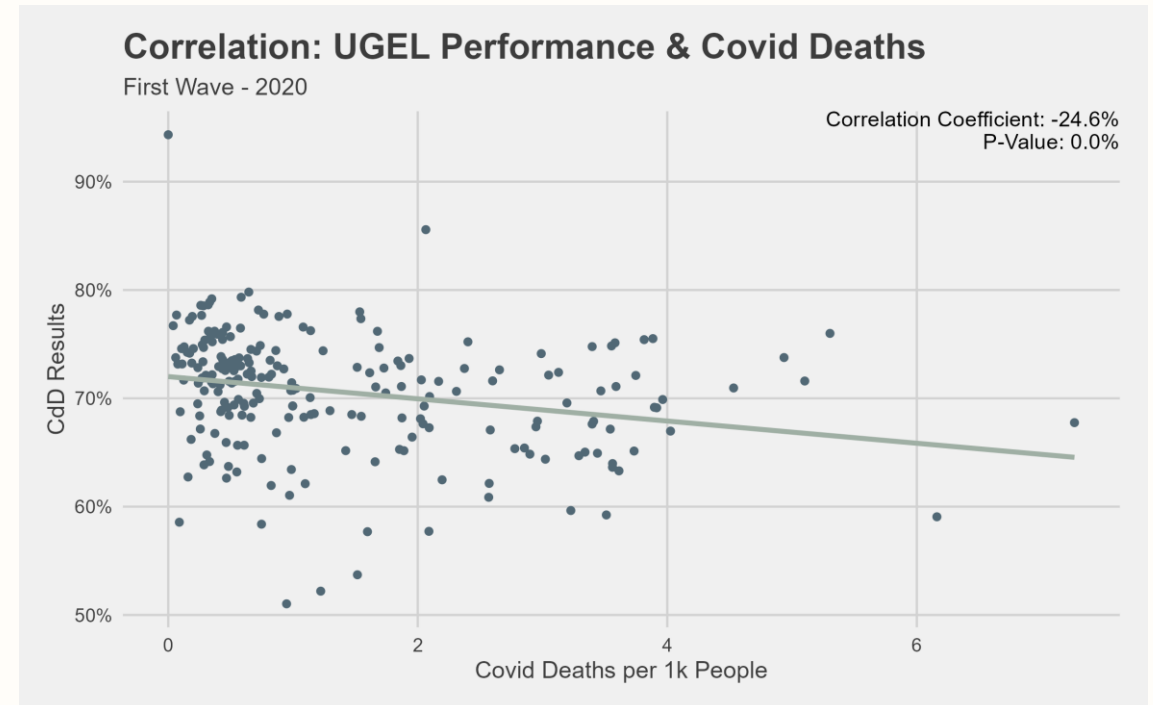

CdD Results and Covid-19 Impact
Mean Achievement Value of UGELs & Covid-19 Deaths

Legend:
- Mean Achievement Value
- Covid-19 Deaths by Quarter

Data labels: 86.7%, 66.3%, 79.1%, 98.9%, 59.6%, 66.5%, 61.6%, 87.9%, 93.4%, 96.0%, 79.3%, 94.8%

Correlation Analysis – First Wave

Covid-19 related deaths in the 2nd and 3rd quarters of 2020 – CdD results in the 2nd and 3rd phases of 2020.

It is apparent that during the first wave of Covid-19 in Peru, there was a strong negative correlation between the number of Covid-19 impact in each jurisdiction and UGELs performance in the CdD.

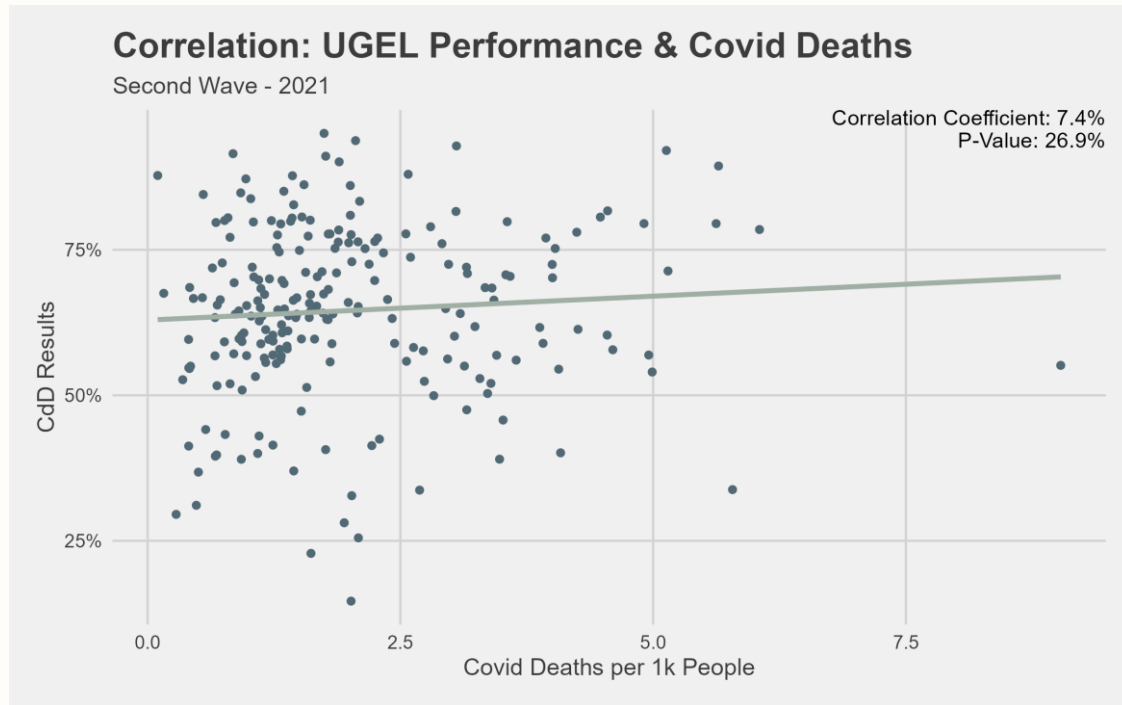This means **UGELs performance decreased if the Covid-19 impact was higher**.

It's important to note that this correlation may not necessarily imply causation. Other factors, such as limited human capital, may also have contributed to the variation in UGEL performance.

Correlation: UGEL Performance & Covid Deaths
First Wave - 2020

Correlation Coefficient: -24.6%
P-Value: 0.0%

CdD Results

Covid Deaths per 1k People

Correlation Analysis – Second Wave

Covid-19 related deaths in the 1st and 2nd quarters of 2021 – CdD results in the 1st and 2nd phases of 2021.

Correlation: UGEL Performance & Covid Deaths
Second Wave - 2021

Correlation Coefficient: 7.4%
P-Value: 26.9%

CdD Results

75%
50%
25%

0.0   2.5   5.0   7.5
Covid Deaths per 1k People

It seems that the second wave of Covid-19 related deaths in Peru may not be significantly correlated with UGEL performance, as the p-value is higher than .25.

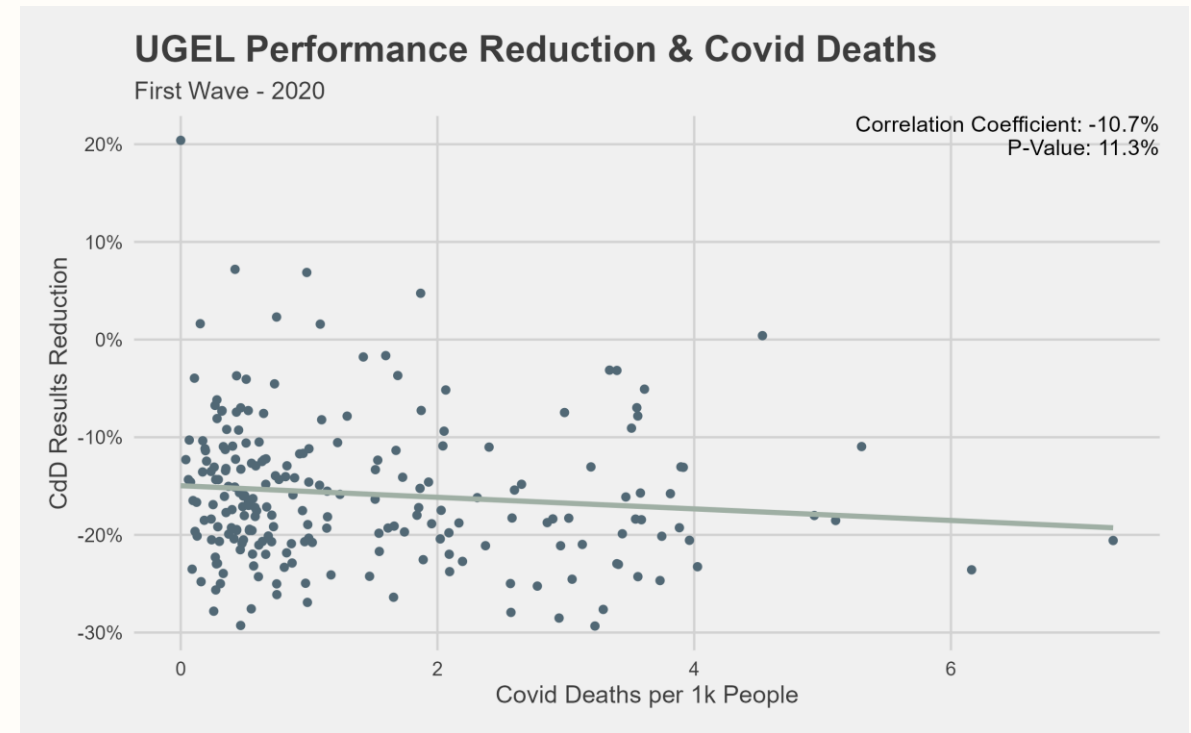Other factors may be contributing to the performance hit.

Perhaps institutions have become better adapted to the pandemic after a year of experience. More research needed.

Correlation Analysis – Performance Hit

Covid-19 related deaths in the 2nd and 3rd quarters of 2020 – CdD results reduction in the 2nd and 3rd phases of 2020, relative to the 1st phase.

It appears that there was a correlation between the impact of Covid-19 on each jurisdiction and the reduced performance of the UGELs in those jurisdictions during the first wave of the pandemic.

his correlation seems to be less evident in this case, and there might be other factors in play.

UGEL Performance Reduction & Covid Deaths
First Wave - 2020

Correlation Coefficient: -10.7%
P-Value: 11.3%

Linear Regression Models – First Wave

Regression Results

	Dependent variable:
	v1_2020_2_3
covid_deaths_2020_2	-0.021***
	(0.006)
covid_deaths_2020_3	0.006
	(0.005)
n_students	-0.00000**
	(0.00000)
rurality	-0.003
	(0.016)
Constant	0.719***
	(0.013)
Observations	221
R^2	0.133
Adjusted R^2	0.117
Residual Std. Error	0.052 (df = 216)
F Statistic	8.280*** (df = 4; 216)
Note:	*$p<0.1$; **$p<0.05$; ***$p<0.01$

We can observe that Covid-19 related deaths had a significant impact on UGELs performance during the first wave in 2020, but the effect was reduced during the third quarter of that year.

Additionally, the number of students had a significant but small impact on CdD results.

Linear Regression Models – Second Wave

Regression Results

	Dependent variable:
	vl_2021_1_2
covid_deaths_2021_1	0.005
	(0.025)
covid_deaths_2021_2	0.050**
	(0.024)
n_students	-0.00000
	(0.00000)
rurality	0.089*
	(0.048)
Constant	0.548***
	(0.045)
Observations	223
R^2	0.046
Adjusted R^2	0.029
Residual Std. Error	0.144 (df = 218)
F Statistic	2.652** (df = 4; 218)
Note:	*p<0.1; **p<0.05; ***p<0.01

We found that the impact of Covid-19 on UGELs performance during the second wave in Peru was not as significant as during the first wave in 2020.

However, the model revealed some interesting and somewhat contradictory results, as it showed that Covid-19 related deaths in the 2nd quarter and rurality had a positive impact on UGELs performance. One possible explanation could be that urban areas had multiple lockdowns mandates enforced by the government relative and that could have hindered the results of the UGELs.

Itis important to conduct more research to fully understand the underlying factors contributing to these results.

Linear Regression Models

Performance reduction in the first wave

	Dependent variable:
	vl_2020_dif
covid_deaths_2020_2	0.009
	(0.009)
covid_deaths_2020_3	-0.005
	(0.008)
n_students	-0.00000[*]
	(0.00000)
rurality	0.015
	(0.023)
Constant	-0.159[***]
	(0.019)
Observations	221
R^2	0.037
Adjusted R^2	0.019
Residual Std. Error	0.073 (df = 216)
F Statistic	2.065[*] (df = 4; 216)
Note:	[*]p<0.1; [**]p<0.05; [***]p<0.01

The third model may indicate that further analysis may be needed to finally understand how Covid-19 effected UGELs performance.

None of the variables selected explain the reduction in achievement value between phase 1 of the CdD 2020 and phases 2 and 3 of the same year.

Conclussions and Recommendations

- Our research highlights the significant impact that the first wave of Covid-19 had on UGELs performance in Peru in 2020.

- However, our analysis of the second wave in 2021 suggests that institutions may have adapted to the pandemic, and that there may have been underlying factors contributing to performance reduction.

- Further research is needed to fully understand the underlying factors contributing to these changes.

Thanks

Presented by Rodrigo Garcia – Lima, Peru