Effects of the Covid-19 Pandemic on the Colombian Labor Market: Disentangling the Effect of Sector-Specific Mobility Restrictions

Efectos de la pandemia por Covid-19 en el mercado laboral colombiano: identificando el impacto de las restricciones sectoriales a la movilidad

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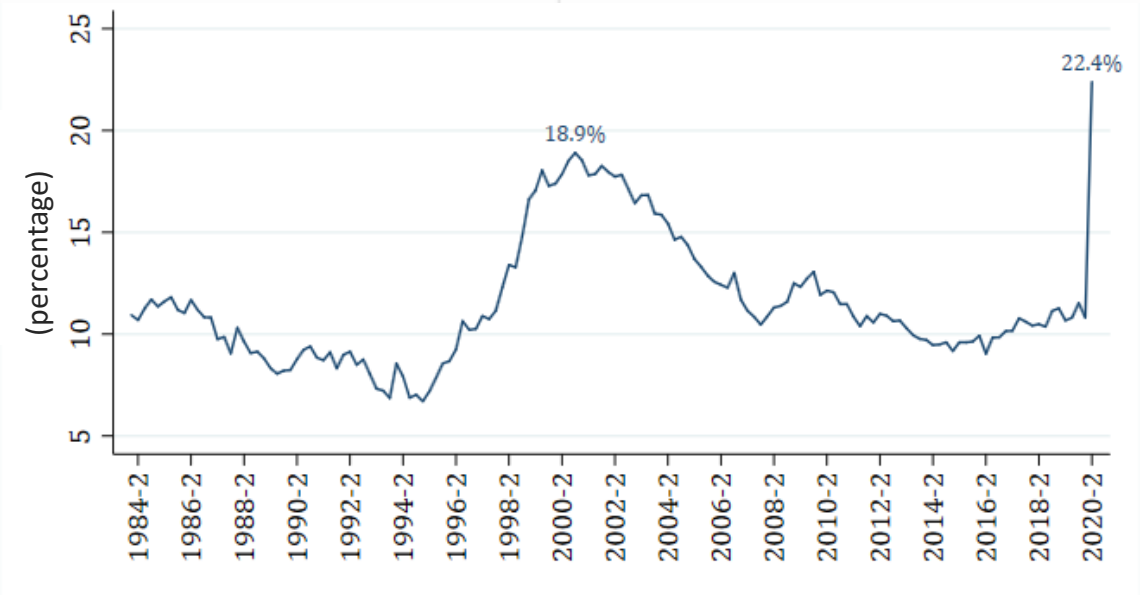
The deterioration of the labor market is historical

If the data for the two-month period April-May were that of the second quarter, the increase in UR and the fall in OR would be the highest since there are figures for the 7 cities (1980).

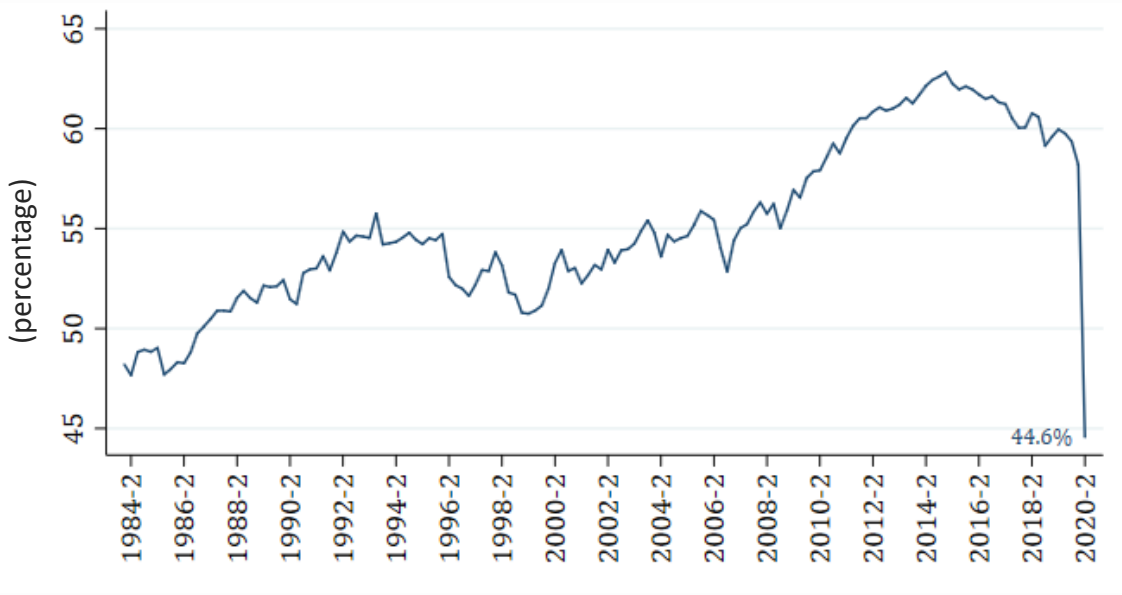
Unemployment Rate - Historic Seven Cities
Quarter.I 1984 – Quarter.II 2020*



*The data for the second quarter of 2020 incorporates the average for April and higher.
Monthly series. Seasonally adjusted series
Source: GEIH (DANE); calculations by Banco de la República

Unemployment

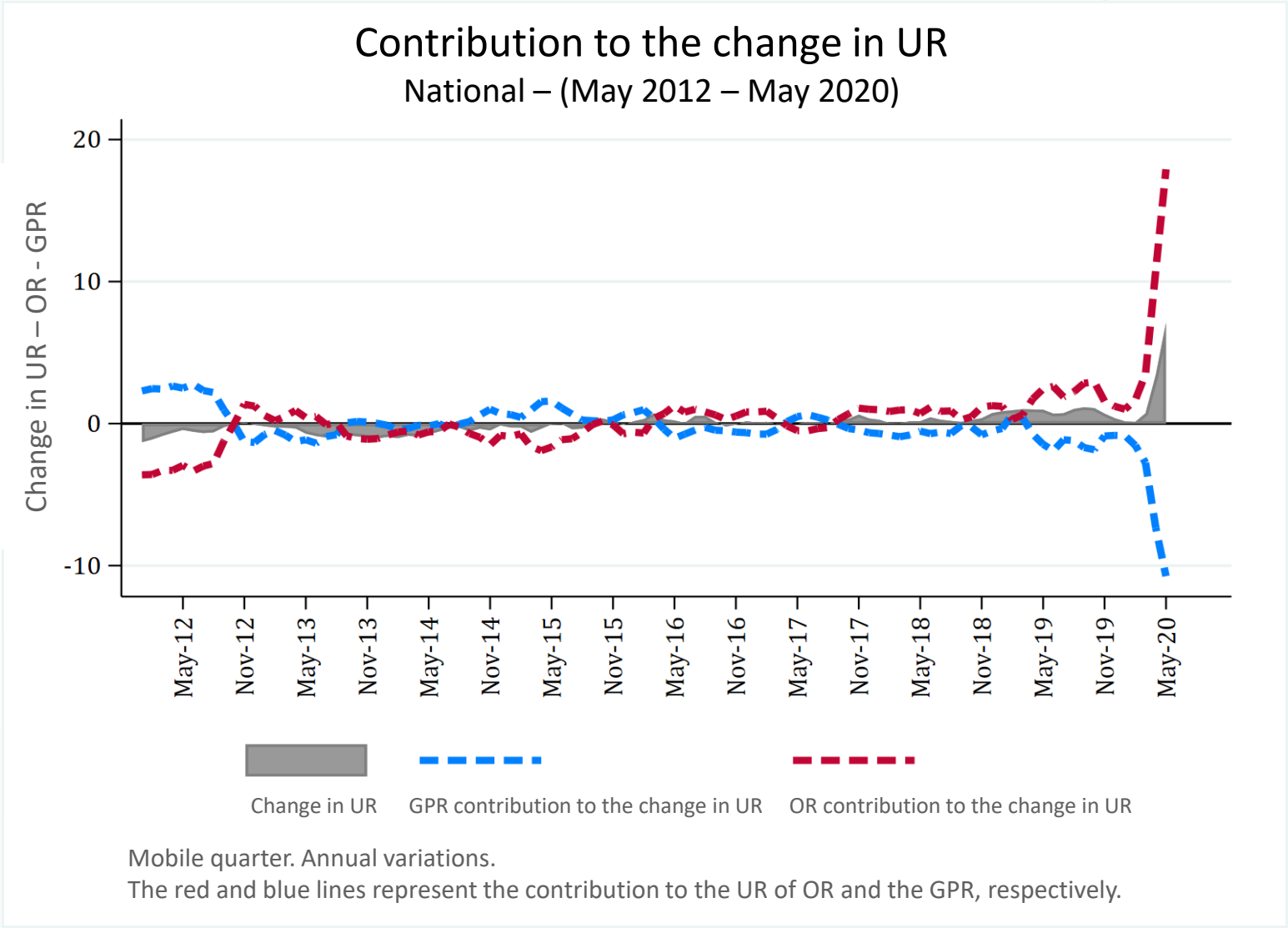
Occupation Rate - Historic Seven Cities
Quarter.I 1984 – Quarter.II 2020*S



*The data for the second quarter of 2020 incorporates the average for April and higher.
Monthly series. Seasonally adjusted series
Source: GEIH (DANE); calculations by Banco de la República

Occupation

The unemployment rate (UR) increased, explained by the sharp drop in occupation.



Mobile quarter. Annual variations.
The red and blue lines represent the contribution to the UR of OR and the GPR, respectively.

Context and Literature Review

- Some studies find negative effects of lockdown policies, but generally, lockdown effects explain just partially the deterioration of labor market results. Rojas et al. (2020), Gupta et al. (2020).

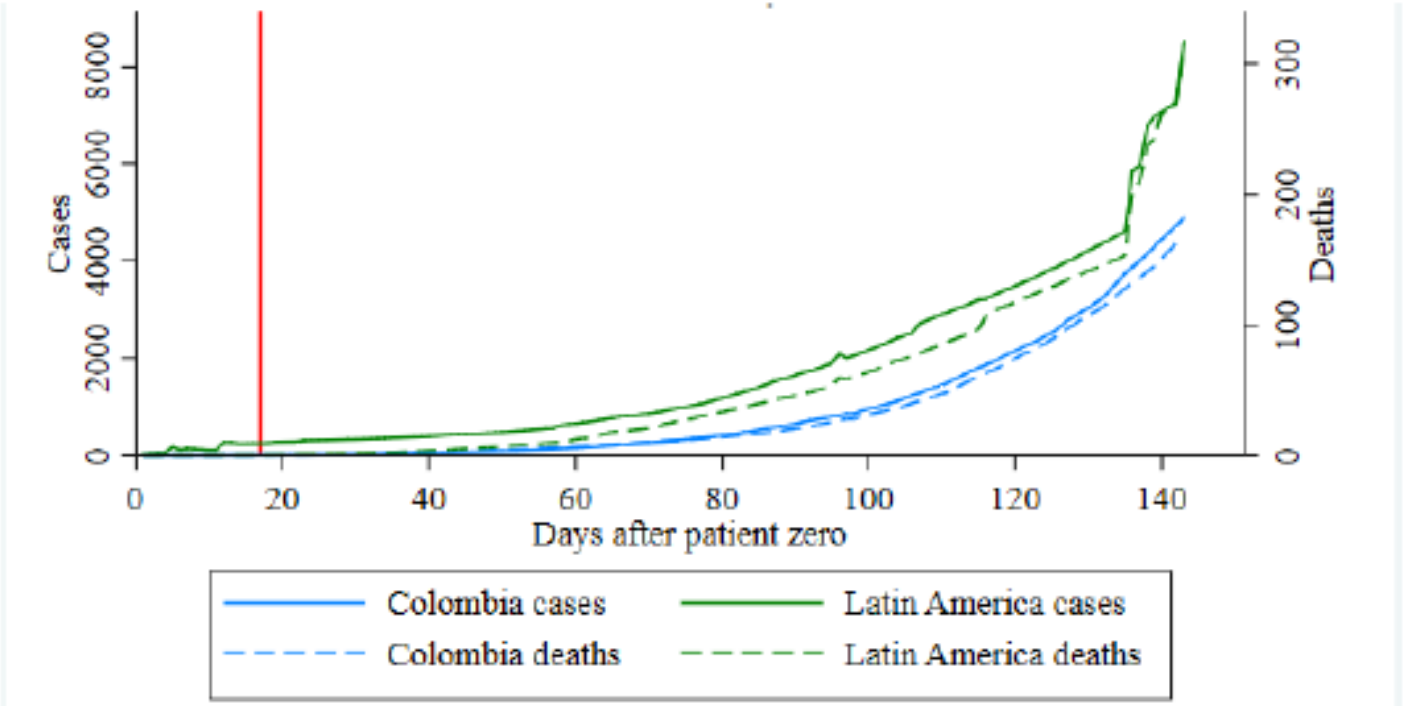
- Studies for countries where no restriction to mobility policies were implemented document sizeable effects of the pandemic on the labor market outcomes. Aum et al. (2020) for Korea, find that, even in the absence of mobility restrictions, the outbreak still has sizeable effects on employment; nevertheless, it accounts for less than half the reduction in employment in the US and the UK.

Lockdown Effect, Pandemic and Added Shock

- The impact of the current crisis on market employment may be heterogeneous by sub-sectors in specific cities, depending on:
  - 1. The aggregate negative shock of the pandemic.
  - 2. The specific impact on a particular sector of the preventive lockdown policy.
  - 3. Your degree of exposure to the disease given the city.
- We are going to try to separate these three effects through difference-in-difference exercises.

Colombia, like all countries in the region, has been significantly affected by the pandemic.

Figure 1: Covid-19 cases and deaths in Colombia and Latin American average



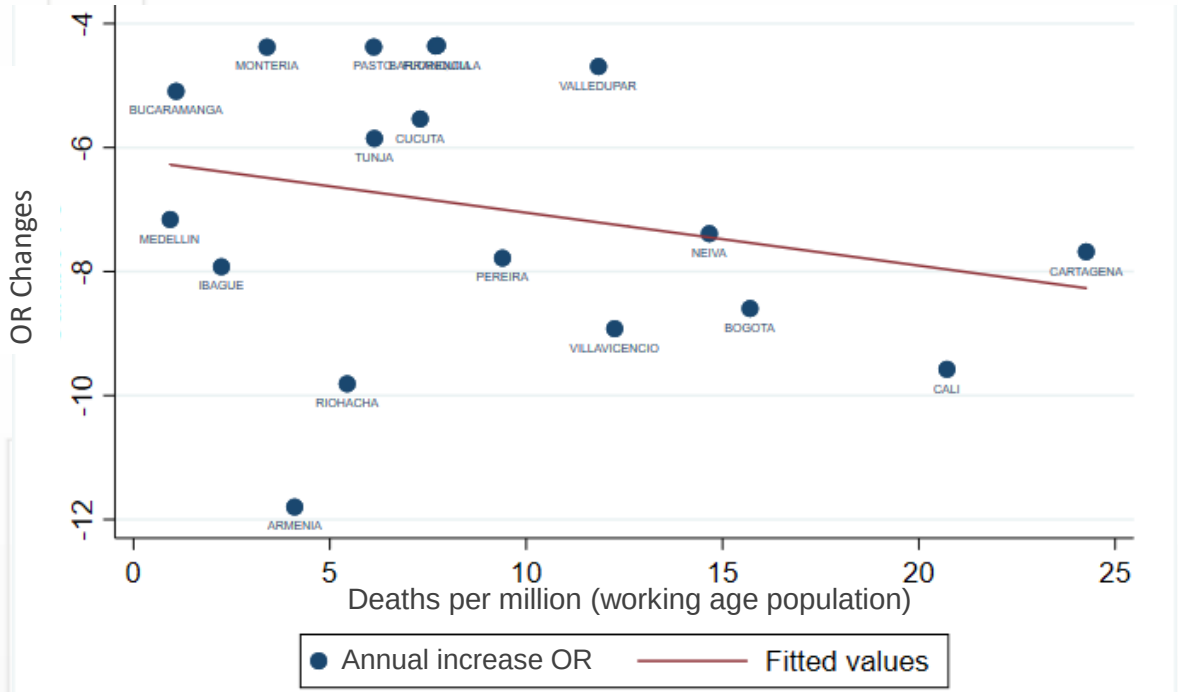
Notes: Cases and deaths per million. Red line indicates the beginning of the lockdown policies in Colombia.

Source: Our World in Data https://ourworldindata.org/.

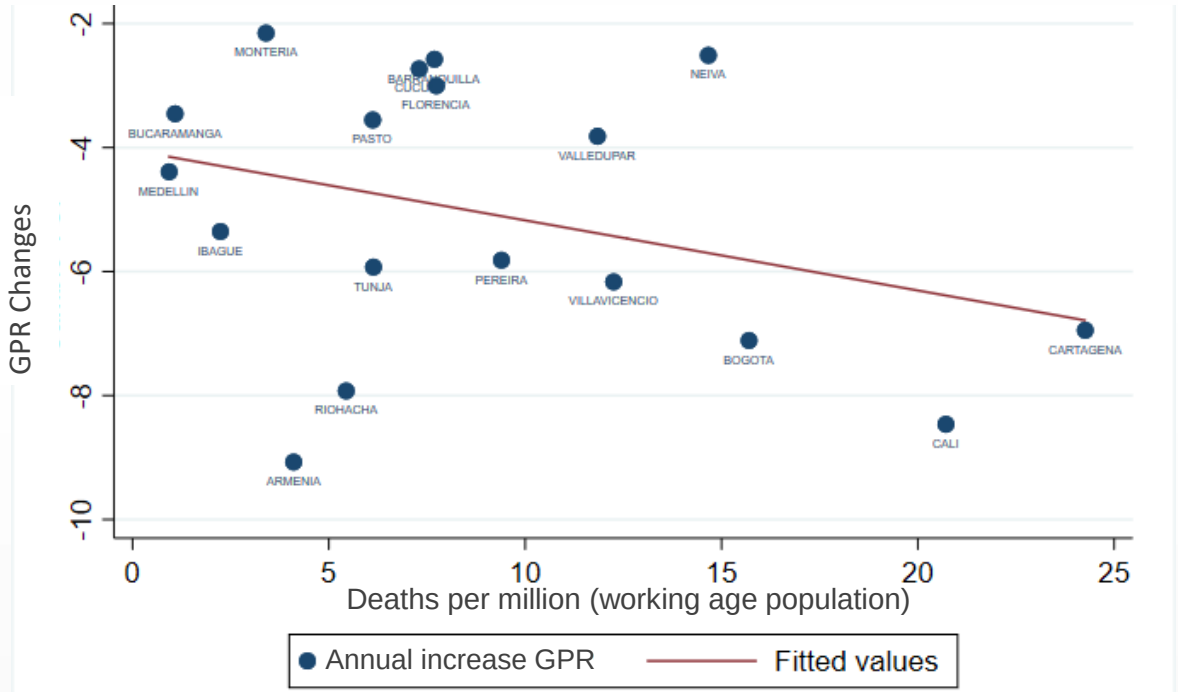
Change in labor results by cities

Metropolitan areas with the most deaths from covid-19, apparently had greater deterioration in occupation and labor participation.

OR Changes Feb-April vs Deaths per million
23 Areas

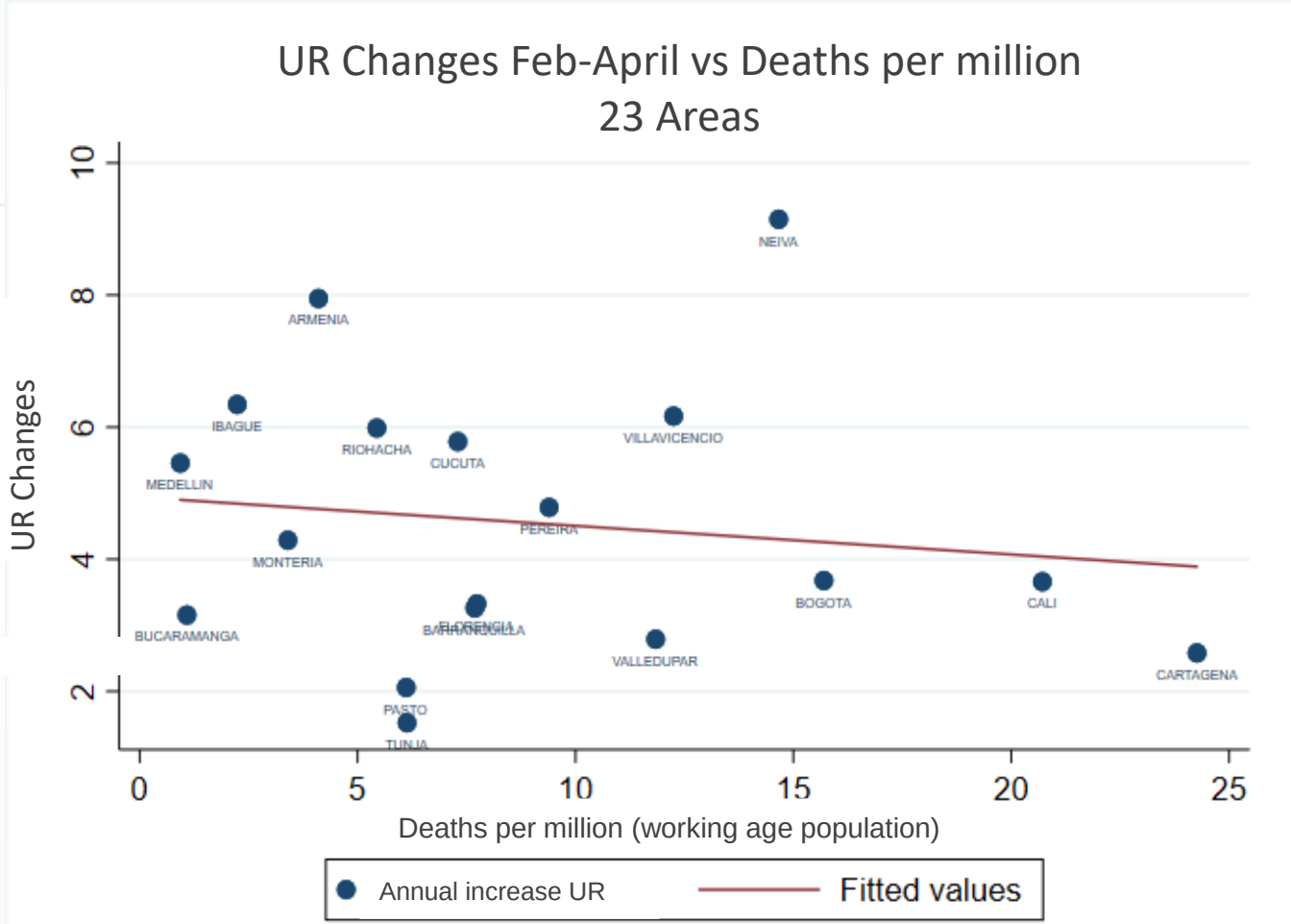


GPR Changes Feb-April vs Deaths per million
23 Areas



Change in labor results by cities

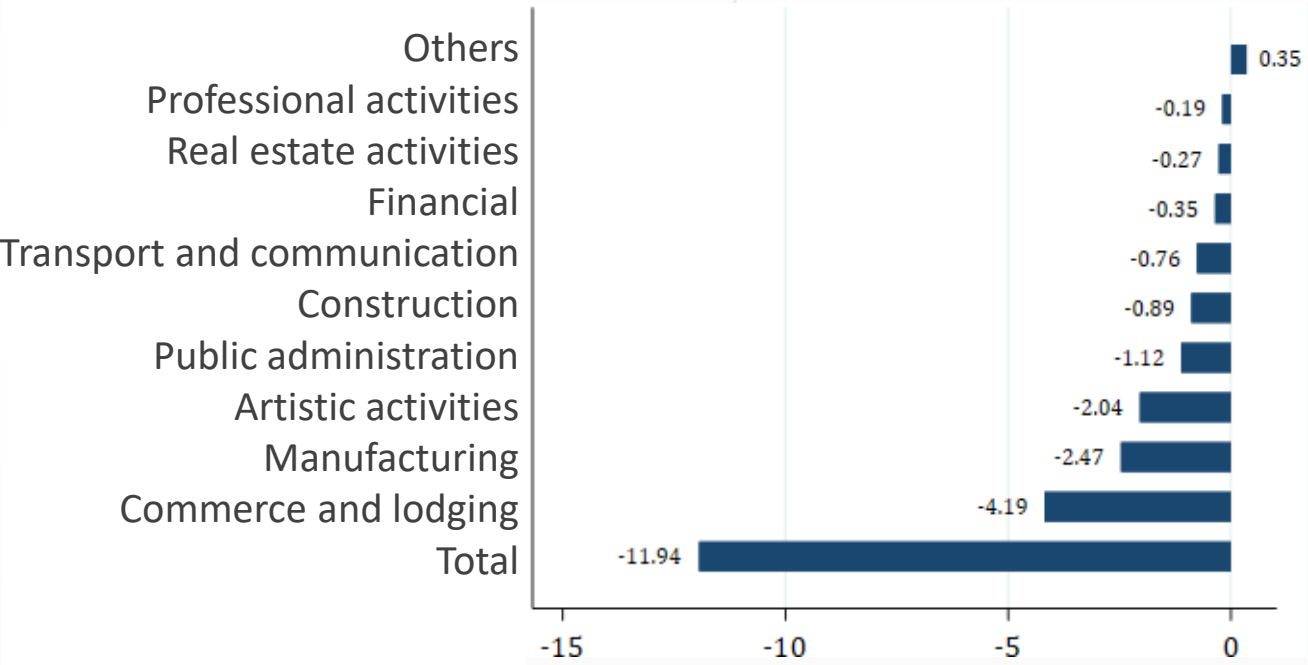
The gradient of the disease intensity measure with increases in unemployment is less pronounced because the effects on occupation and participation are offset.



Contribution by sectors to the fall in OR

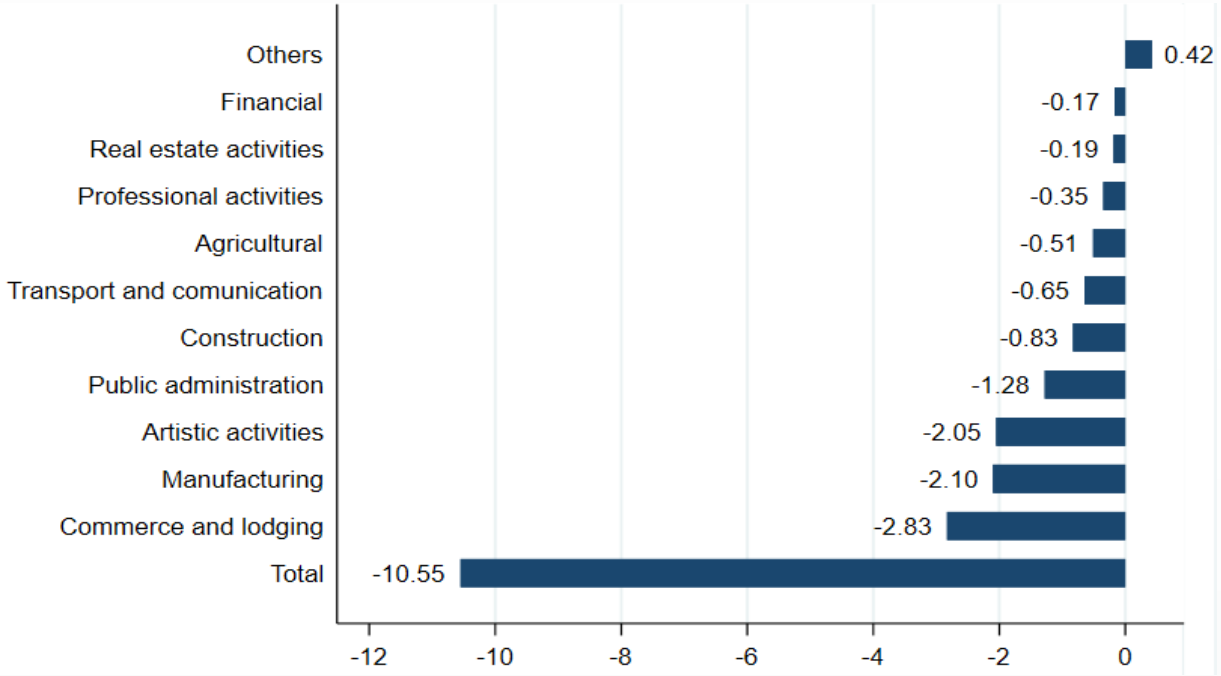
Although the deterioration in occupation is generalized, some sectors -presumably more affected by the lockdown policy- contribute more to the drop in total occupation.

Contribution to the variation of the last year by sectors
23 cities. (apr.2019 – apr.2020)



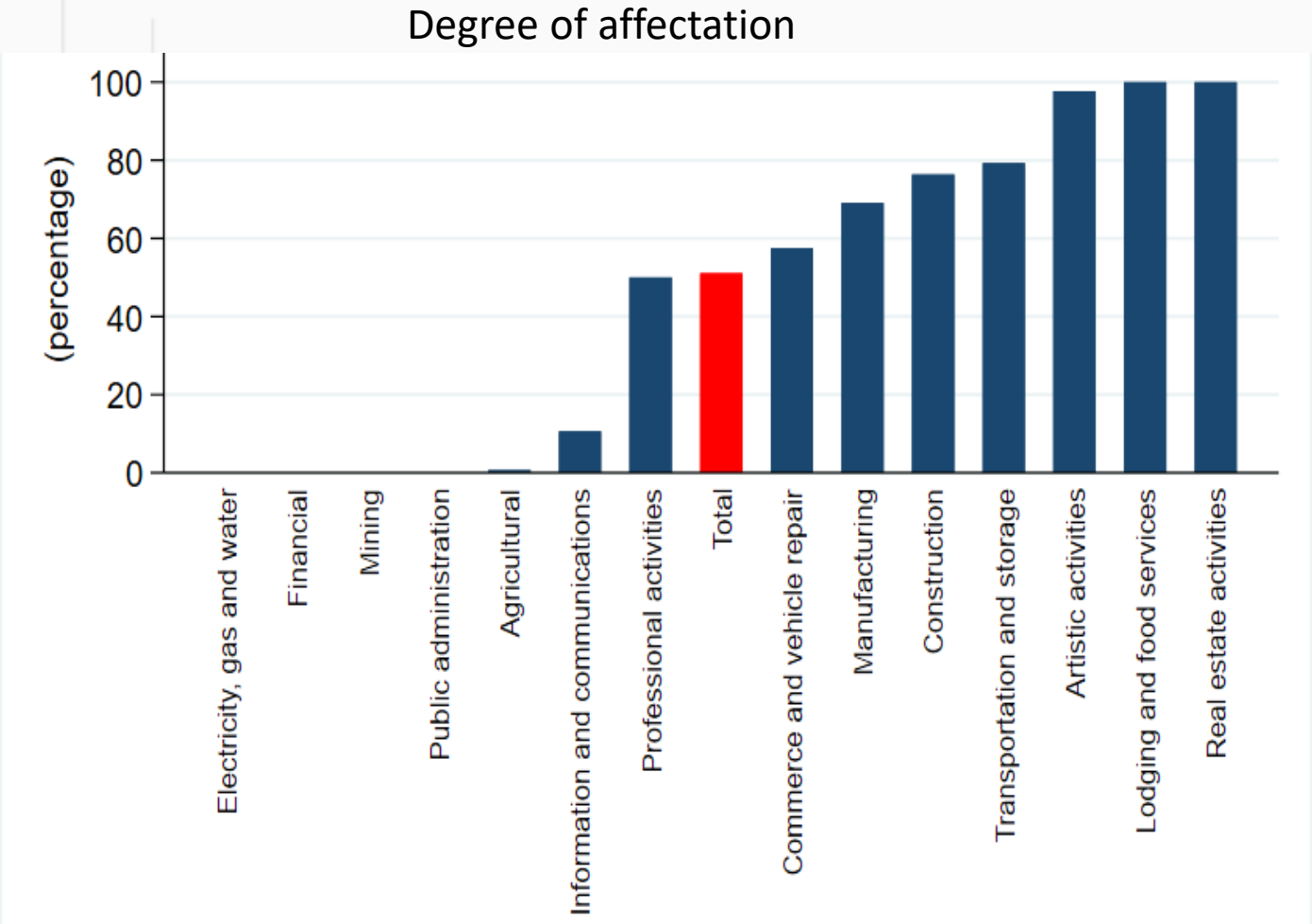
Series in mobile quarter. Seasonally adjusted series

Contribution to the variation of the last year by sectors
National total. (apr.2019 – apr.2020)



Series in mobile quarter. Seasonally adjusted series

Affected/Not Affected



Source: GEIH (DANE); calculations by Banco de la República

+ Given that the lockdown policy excludes certain sub-sectors, a measure of their level of involvement can be obtained.

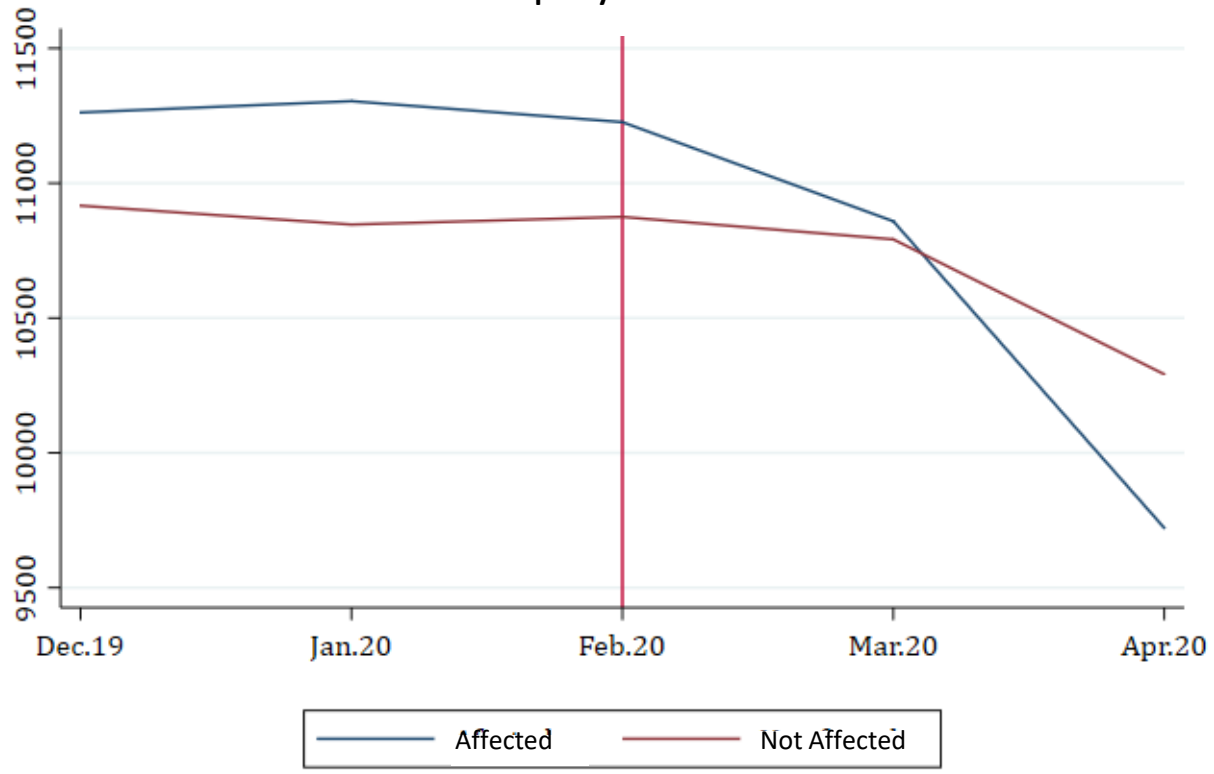
+ Sectors such as financial and agricultural had no or very low degree of impact.

+ Sectors such as lodging and food services or artistic activities had to close almost completely.

Lockdown Effect

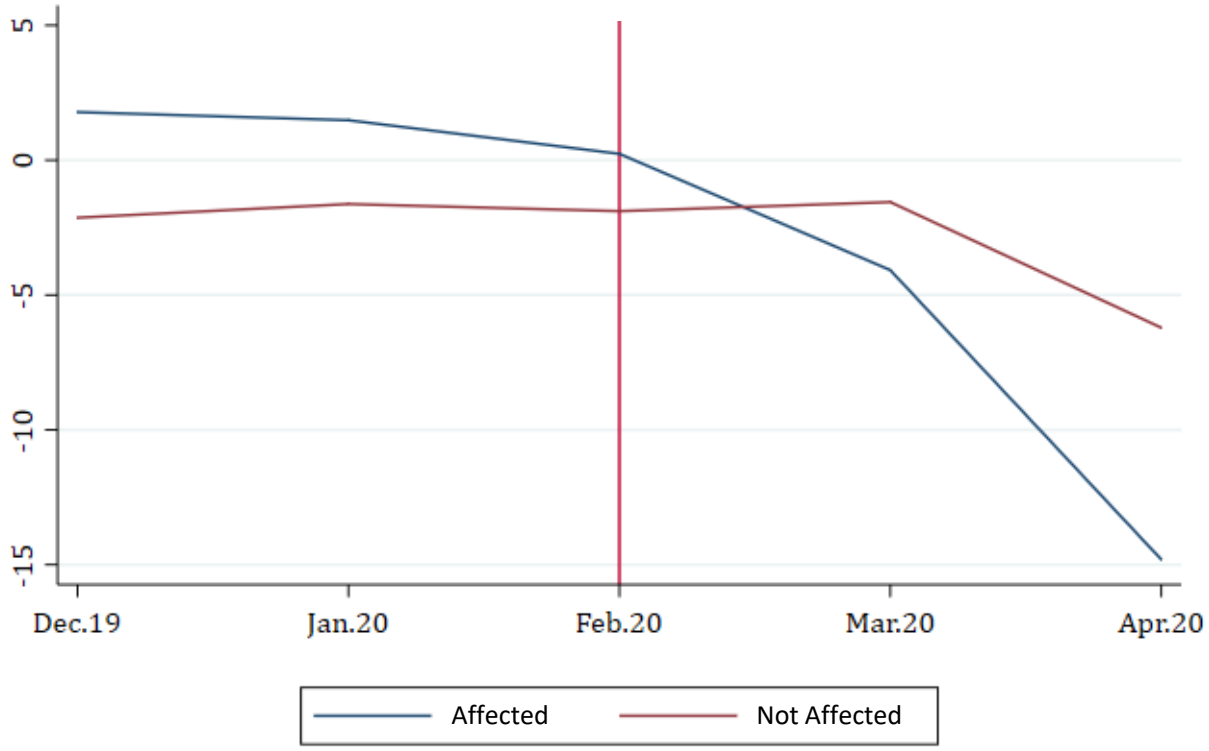
When analyzing the level of employment and its annual growth, it is shown that the deterioration in demand is concentrated in the affected sub-sectors, while the not affected sectors fell less.

Employment level



Series in mobile quarter. Seasonally adjusted series

Annual employment growth

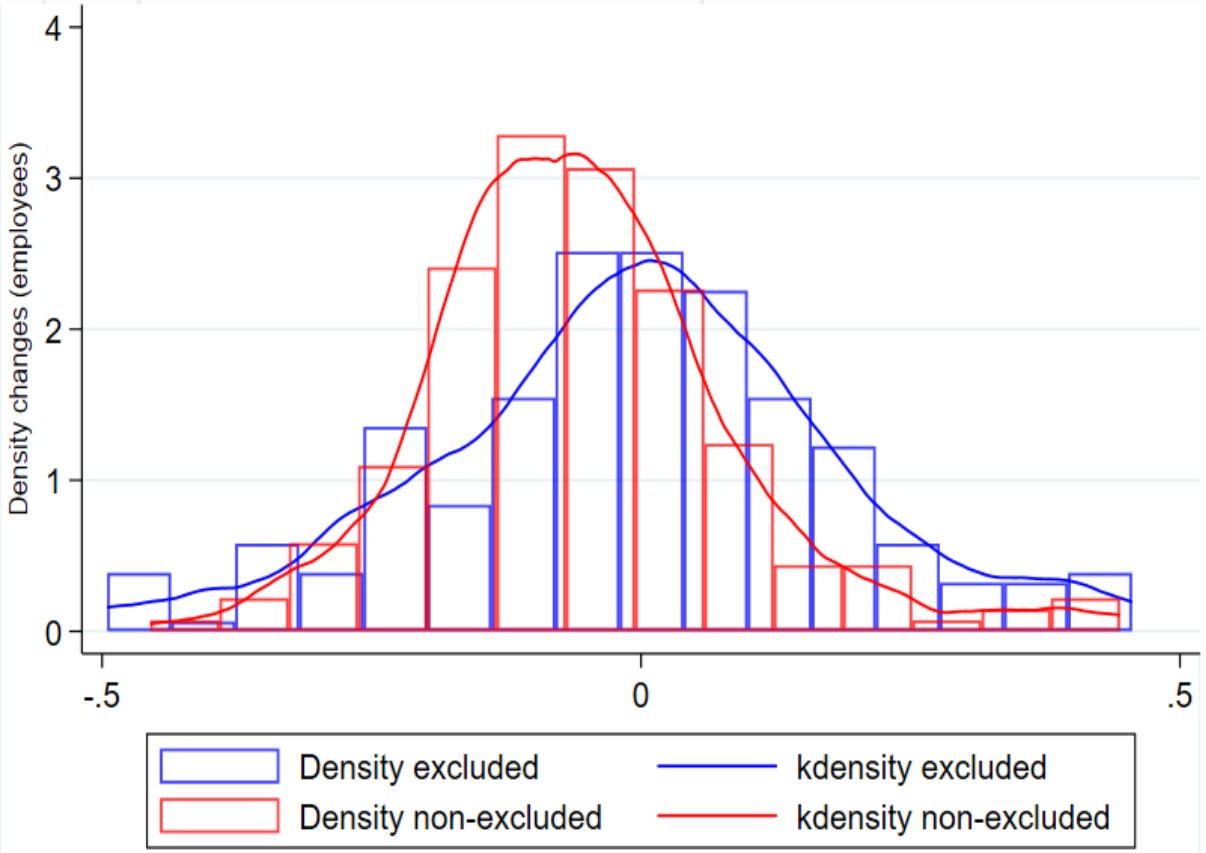


Series in mobile quarter. Seasonally adjusted series

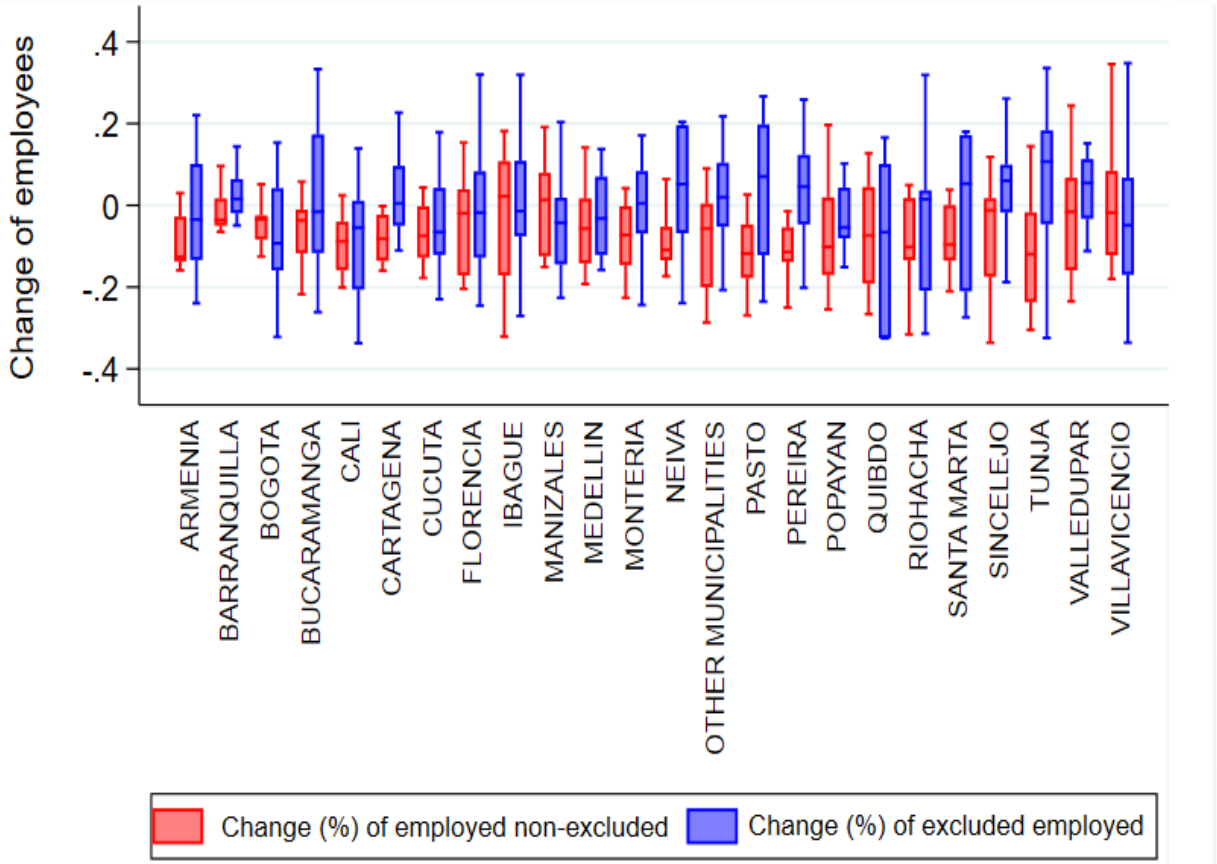
Changes in demand (Feb-Mar) for Affected/Not Affected

The affected sub-segments in the labor market show greater deterioration in demand.

Growth density % (Feb-Apr) Employed



Employed change % (Feb-Apr) for affected and excluded



Identifying the effect of the lockdown policy

- The most basic regression that identifies the effect of the confinement policy would be:

$$y_{jct} = \gamma\ confinement_j * post_t + X_{jct}\beta + \phi_{jc} + \delta_t + u_{jct}$$

- Where y is the occupation city c and sector j. The variable of interest is the interaction between $confinement_j$ which takes a value of 1 if the sector is not excluded and 0 otherwise, and $post_t$ which is equal to 1 in the periods following confinement.
- All estimates will be controlled for a measure of disease involvement (cases-deaths).
- The models control for sector, city and time fixed effects and the errors are clustered at the sector level.

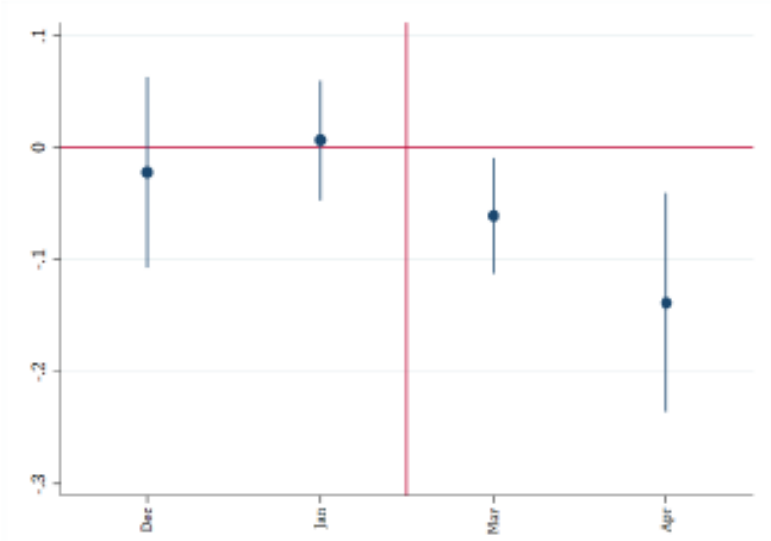
Result of the regressions: Employment

Table 2: Log of Employment Regressions

	Log. Employment	Log. Employment	Log. Employment	Log. Employment	Log. Employment	Log. Employment
Restricted x Post		-0.1305**			-0.1305**	-0.1305**
		(0.0584)			(0.0583)	(0.0581)
Share reported deaths				-0.0133***		-0.0133***
				(0.0044)		(0.0043)
Share reported cases			-0.0003**		-0.0003**	
			(0.0002)		(0.0001)	
December (2019)	-0.0194	-0.0194	-0.0194	-0.0194	-0.0194	-0.0194
	(0.0376)	(0.0376)	(0.0376)	(0.0376)	(0.0376)	(0.0376)
January (2020)	-0.0382	-0.0382	-0.0382	-0.0382	-0.0382	-0.0382
	(0.0351)	(0.0351)	(0.0351)	(0.0351)	(0.0351)	(0.0351)
March (2020)	-0.0589**	0.0004	-0.0503*	-0.0437*	0.0090	0.0156
	(0.0249)	(0.0339)	(0.0256)	(0.0255)	(0.0346)	(0.0342)
April (2020)	-0.2870***	-0.2277***	-0.2334***	-0.1608***	-0.1741***	-0.1015*
	(0.0469)	(0.0506)	(0.0508)	(0.0546)	(0.0550)	(0.0568)
Constant	8.4915***	8.4915***	8.4915***	8.4915***	8.4915***	8.4915***
	(0.0225)	(0.0225)	(0.0225)	(0.0224)	(0.0225)	(0.0224)
Observations	2,640	2,640	2,640	2,640	2,640	2,640
R-squared	0.9535	0.9536	0.9536	0.9538	0.9537	0.9539

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. The variable Restricted x Post represents the interaction between q_j, which takes value 1 if sector j is restricted, and $post_t$, which is equal to 1 starting in March 2020. Share report deaths and Share report cases stand for reported deaths and cases per one million working-age population in each city, respectively. In the fixed-effects by period our base month is February (2020). Standard errors are presented in parentheses and clustered at the city-sector level.

Figure 8. Event Study coefficients log of employment



Results: Employment

- + Employment was affected more than proportionally in the sectors not excluded (coefficient γ).
- + A negative effect is obtained from the variable that measures the intensity of the disease.
- + A negative shock is obtained from the time effect of the month of April.

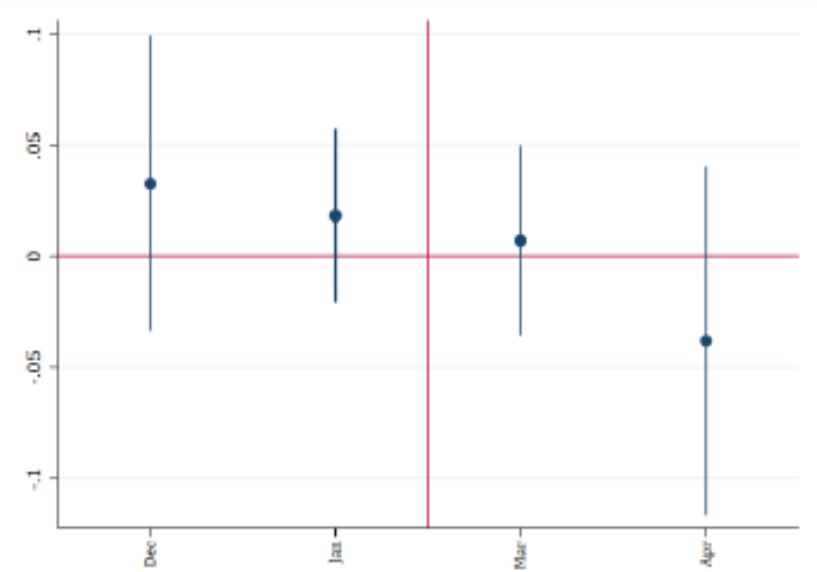
Result of the regressions: Wages

Table 4. Hourly wage regressions

	Log. Hourly wage	Log. Hourly wage	Log. Hourly wage	Log. Hourly wage	Log. Hourly wage	Log. Hourly wage
Restricted xPost		-0.0368			-0.0368	-0.0368
		(0.0810)			(0.0810)	(0.0807)
Share reported deaths				-0.0162**		-0.0162**
				(0.0070)		(0.0070)
Share reported cases			-0.0003		-0.0003	
			(0.0002)		(0.0002)	
December (2019)	-0.0894*	-0.0894*	-0.0894*	-0.0894*	-0.0894*	-0.0894*
	(0.0517)	(0.0517)	(0.0517)	(0.0517)	(0.0518)	(0.0518)
January (2020)	-0.0792*	-0.0792*	-0.0792*	-0.0792*	-0.0792*	-0.0792*
	(0.0443)	(0.0443)	(0.0443)	(0.0443)	(0.0443)	(0.0443)
March (2020)	-0.0195	-0.0028	-0.0120	-0.0011	0.0047	0.0156
	(0.0328)	(0.0443)	(0.0337)	(0.0338)	(0.0451)	(0.0459)
April (2020)	-0.2277***	-0.2110***	-0.1804**	-0.0741	-0.1637**	-0.0574
	(0.0664)	(0.0676)	(0.0720)	(0.0806)	(0.0737)	(0.0855)
Constant	8.0091***	8.0091***	8.0091***	8.0091***	8.0091***	8.0091***
	(0.0299)	(0.0299)	(0.0298)	(0.0297)	(0.0298)	(0.0297)
Observations	2,640	2,640	2,640	2,640	2,640	2,640
R-squared	0.8025	0.8025	0.8027	0.8035	0.8027	0.8035

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. The variable Restricted x Post represents the interaction between q_j, which takes value 1 if sector j is restricted, and $post_t$, which is equal to 1 starting in March 2020. Share report deaths and Share report cases stand for reported deaths and cases per one million working-age population in each city, respectively. In the fixed-effects by period our base month is February (2020). Standard errors are presented in parentheses and clustered at the city-sector level.

Figure 10. Event Study coefficients for hourly wages



Results Wages and Worked Hours

+ There are no differences in the drop in hourly earnings in the sectors not excluded (coefficient γ).

+A negative effect is obtained from the variable that measures the intensity of the disease.

+Similar results are obtained in the case of worked hours.

Result of the regressions : Salaried and Self-employed Employment

	Ln salaried	Ln self-employed
Restricted x Post	-0.1474**	-0.0866
	(0.0672)	(0.0841)
Deaths per million	-0.0075	-0.0130**
	(0.0047)	(0.0057)
December (2019)	-0.0137	-0.0343
	(0.0397)	(0.0662)
January (2020)	-0.0184	0.0154
	(0.0303)	(0.0498)
March (2020)	-0.0194	-0.0603
	(0.0484)	(0.0613)
April (2020)	-0.1547**	-0.0898
	(0.0666)	(0.0825)
Constant	7.6343***	7.4193***
	(0.0213)	(0.0366)
Observations	2,640	2,640
R-squared	0.9470	0.9220

+The effect of lockdown was concentrated in the salaried segment.

+ This effect is less than the effect of the joint shock that the Colombian economy received during the two months of March and April.

Conclusions

- The policy of sectoral restrictions on mobility seems to have a significant effect on job destruction, which is concentrated in the salaried group.
- The reduction in employment (Feb-Apr) of the average sector was 25%. An approximate statistical decomposition would be:
  - The sectoral restrictions on mobility explain 7pp = coefficient $post * affected$ * (share of affected = 0.51).
  - The general shock explains another approximately 10pp (post coefficient).
  - The intensity of the disease another 7pp = coefficients deaths per million (0.013) * average of deaths March-April (5.3).
- In wages and worked hours there are no differences in the fall in hourly earnings in the sectors not excluded, but there is a negative effect of the intensity of the disease.

Conclusions

+ Direct effects of these restrictions generated around a quarter of the job losses in March and April.

+ However, most of the observed reductions in employment were due to the spread of the disease and the negative aggregate shock suffered by the economy including not only the economic impact generated by the change in the behavior of agents, but also the effect aggregate of quarantine and other indirect effects of restrictions.

+Thus, even without the implementation of the sectoral restrictions, very significant drops in employment would have been observed.

Thank you