COVID-19 RESTRICTIONS IN THE US: WAGE VULNERABILITY BY EDUCATION, RACE AND GENDER

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Introduction

- In addition to the impact on health and the loss of many lives, the COVID-19 pandemic is having an enormous economic impact (In the US real GDP growth -3.5% in 2020, IMF)

- Not only GDP aggregates have been affected → distributional effects (O'Donoghue et al. (2020), Brunori et al. (2020), and Li et al. for Ireland, Italy or Australia; Palomino et al. (2020) and Almeida et al. (2020) for Europe)

- While absolutely necessary, restrictions and social-distancing to prevent the spread of the COVID-19 have had an asymmetric effect on the labour force and on the wage distribution.

Introduction

- In this work we study this asymmetry in terms of wage loss for workers in the US based on:
  - the nation-wide restrictions legislation
  - the wage distribution
  - the occupational structure of the economy: different workers in different occupations and industries have different ability to work during the pandemic

- Our results do not take into account government compensating measures nor the differences among states in the intensity of these restrictions (whether driven by different intensity in the spread of the virus or by different approach to restrictions policies).

Introduction

- While we are not producing estimates of poverty or inequality based on disposable income, having a common framework for the COVID-19 shock in the US allows us to have homogeneous first-round estimations of the economic *vulnerability* of different workers, based on the wage distribution and occupational structure across states and social groups.

- Objectives:
  - Calculate the potential inequality increase and and poverty risks in different states and social groups (by gender, education and race).
  - Flag the socio-economic groups more vulnerable to the shock and target more effective and sustainable counteracting policies.
  - Identify the social-dimensions more related to the disparities in labour-market vulnerability to the pandemic-control restrictions.
  - Highlight differences in access to high-quality shock-resilient jobs across social groups.

Data sources (I): Essentiality and Closure

- We have classified essential and closed activities based on the decisions made by the Cibersecurity and Infrastructure Security Agency (CISA) “Essential Critical Infrastructure Workforce”, identifying sectors that should continue working based on its essentiality.
- Essential workers (e.g. healthcare workers, agricultural sector) can work regardless of their teleworking index.
- All workers in closed activities (“Accommodation and restoration”, “arts and entertainment”, “non-essential retail”, “non-essential transport”) cannot work at all during the lockdown (and partially during the de-escalation period).

Data sources (II): Teleworking

- Following Dingel and Neiman (2020), we make use of the occupational teleworking information acquired from key attributes of occupations in the American O*NET database and apply it to the occupation and industry codes of the American Community Survey (ACS) .

- In total, we have essentiality, closure and and teleworking information for a matrix of 530 occupations x 271 industries.

Data sources (III): Wage and occupational distribution

- Our database is the American Community Survey
  - ✓ The ACS sample covers 5% of the US population.
  - ✓ Occ/ind codes, wages, and socio-economic information

- We have considered only those individuals aged 16-64 who were working in the previous year of the survey.
  - ✓ We drop from the sample:
    - Workers with zero wages, unpaid family workers, and individuals attending school and working less than 20 hours per week.
    - Individuals working less than 13 weeks in the last year.

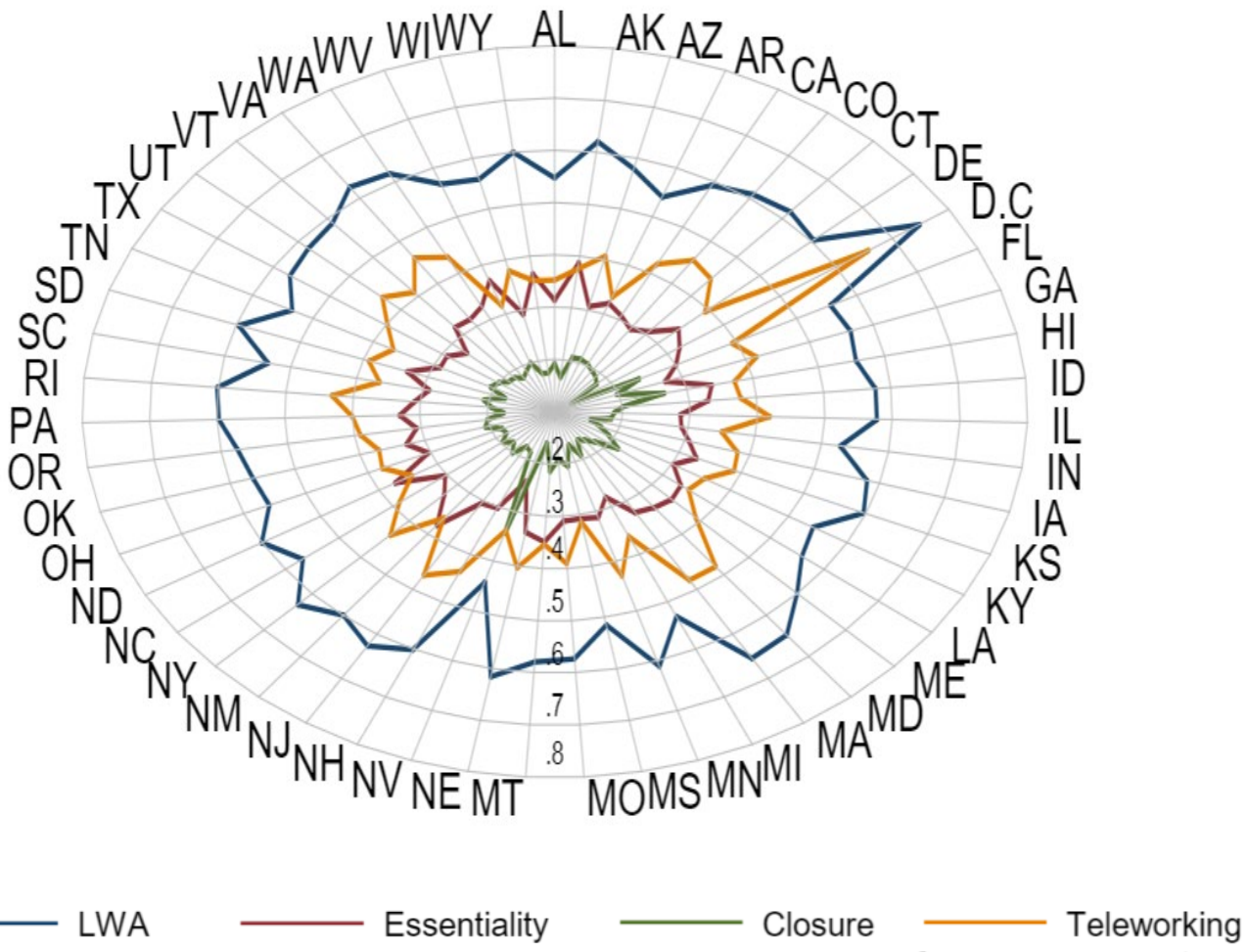
- The final size of our sample is 1,381,501 observations.

Lockdown Working Ability (LWA)

- We first estimate the "Lockdown Working Ability" Index (Palomino et. al 2020): the ability of each worker of occupation/industry to work under stay-at-home orders (lockdown).
- Based on the teleworking (T) ability (Dingel and Neiman, 2020), essentiality (E) and closure (C) of each occupation-industry combination.

$$LWA_i = \begin{cases} E_i + (1 - E_i)T_i & o_i = e\ (essential) \\ (1 - C_i)T_i & o_i = c\ (closed) \\ T_i & o_i \neq e, c \end{cases}$$

LWA by State



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LWA by education, race and gender

LWA

Race	Gender	Education				
		Primary	Secondary	Post-Secondary	Graduate	Total
Asian	Female	0.32	0.39	0.58	0.82	0.68
	Male	0.28	0.34	0.47	0.80	0.63
	Total	0.30	0.36	0.52	0.81	0.65
Black	Female	0.44	0.52	0.63	0.82	0.64
	Male	0.30	0.32	0.43	0.70	0.45
	Total	0.37	0.41	0.54	0.77	0.55
Hispanic	Female	0.34	0.45	0.61	0.78	0.57
	Male	0.35	0.35	0.46	0.72	0.44
	Total	0.35	0.40	0.53	0.75	0.50
Other	Female	0.33	0.44	0.58	0.77	0.55
	Male	0.34	0.35	0.44	0.69	0.43
	Total	0.34	0.39	0.51	0.73	0.48
White	Female	0.37	0.52	0.65	0.81	0.68
	Male	0.32	0.37	0.48	0.75	0.54
	Total	0.34	0.43	0.56	0.78	0.61
Total	Female	0.36	0.50	0.63	0.81	0.65
	Male	0.33	0.35	0.47	0.75	0.52
	Total	0.34	0.41	0.55	0.78	0.58

Methodology (II)

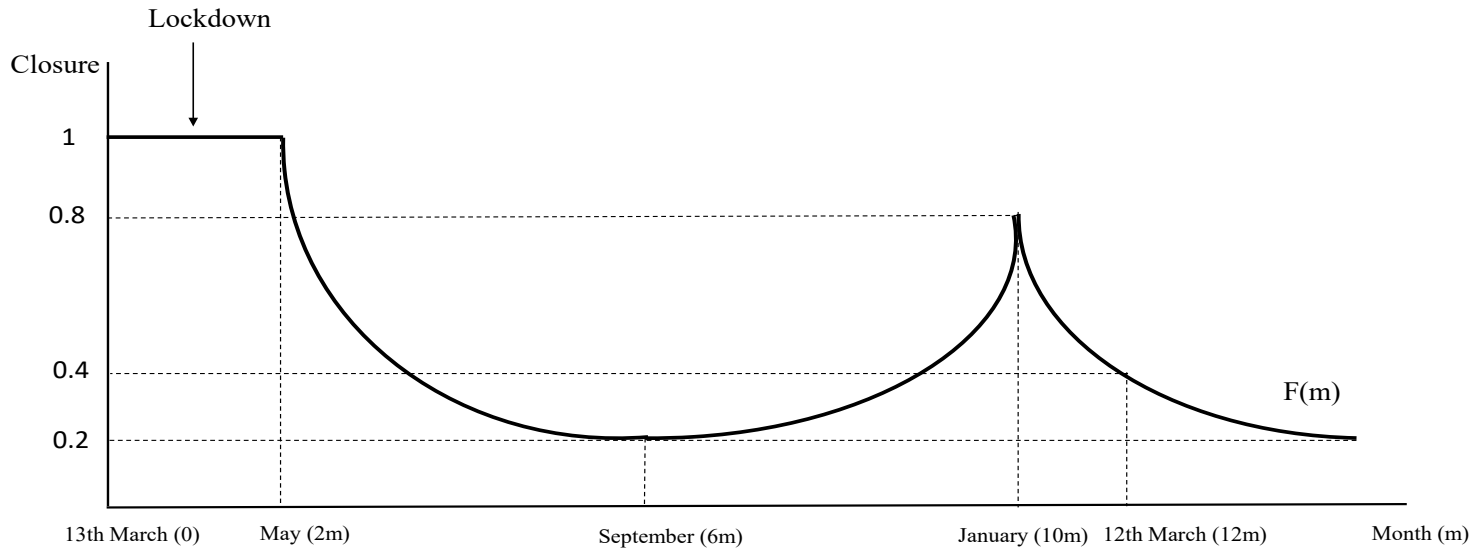
- The estimated wage loss for each worker during the lockdown period (wl_{it}) will be based on her salary on the pre-pandemic year (w_{it-1}), the duration of the lockdown (2 months) and the LWA index.

$$wl_{it} = w_{it-1} \cdot \frac{2}{12}(1 - LWA_i)$$

- For workers in closed occupations/industries, we also must consider wage losses due to inability to work on the subsequent de-escalation months and waves.

Methodology (III)

- We approximate the pattern in the closure of activities, based on the evolution of the pandemic, CISA regulations and high-frequency data on expenditure on these types of closed businesses (Chetty, 2020).



- Thus, for workers in closed occupations we additionally consider in their potential wage loss the proportion they cannot work during each month after the first lockdown. This approximates to 41% of the yearly wage, in addition to the lockdown loss.

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Changes in Inequality

- We compare the wage distribution after the stay-at-home and social restrictions orders with the original wage distribution .

- We estimate an increase in labour-market wage inequality (prior to any government intervention) of 4.1 Gini points (from 0.476 to 0.517). Wage losses to inability to work affect asymmetrically and differences widen. Increase is greater in Nevada (6.6) and smallest in D.C. (2.6).

- We also use the Mean Logarithmic Deviation Index (MLD) which shows an increase from 0.470 to 0.576.

- The MLD can be decomposed in inequality between groups and inequality within groups → We will use it to see whether wage inequality in three social dimensions (gender, race and education) increases during the pandemic.

Changes in Inequality

		Original Distribution	Share (%)	After COVID-19 Distribution	Share (%)	Change	Change in Share
Total		0.470		0.576		0.107	
Race	Within	0.450	95.9	0.553	96.0	0.103	0.08
	Between	0.019	4.1	0.023	4.0	0.004	-0.08
Gender	Within	0.454	96.6	0.562	97.6	0.109	0.95
	Between	0.016	3.4	0.014	2.4	-0.002	-0.95
Education	Within	0.393	83.7	0.475	82.5	0.082	-1.21
	Between	0.077	16.3	0.101	17.5	0.024	1.21
State	Within	0.460	98.0	0.565	98.1	0.105	0.06
	Between	0.009	2.0	0.011	1.9	0.002	-0.06
All groups	Within	0.359	76.4	0.440	76.4	0.082	-0.01
	Between	0.111	23.6	0.136	23.6	0.025	0.01
Contribution to the between component (Shapley Value)	Race	0.014	12.2	0.016	11.8	0.002	-0.40
	Gender	0.018	16.7	0.017	12.7	-0.001	-4.00
	Education	0.070	63.4	0.093	68.3	0.023	4.90
	State	0.008	7.7	0.009	7.2	0.001	-0.50

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Changes in Poverty

- We compare the number of workers below the poverty line (fixed at 60% of the pre-pandemic median) before and after the restrictions.

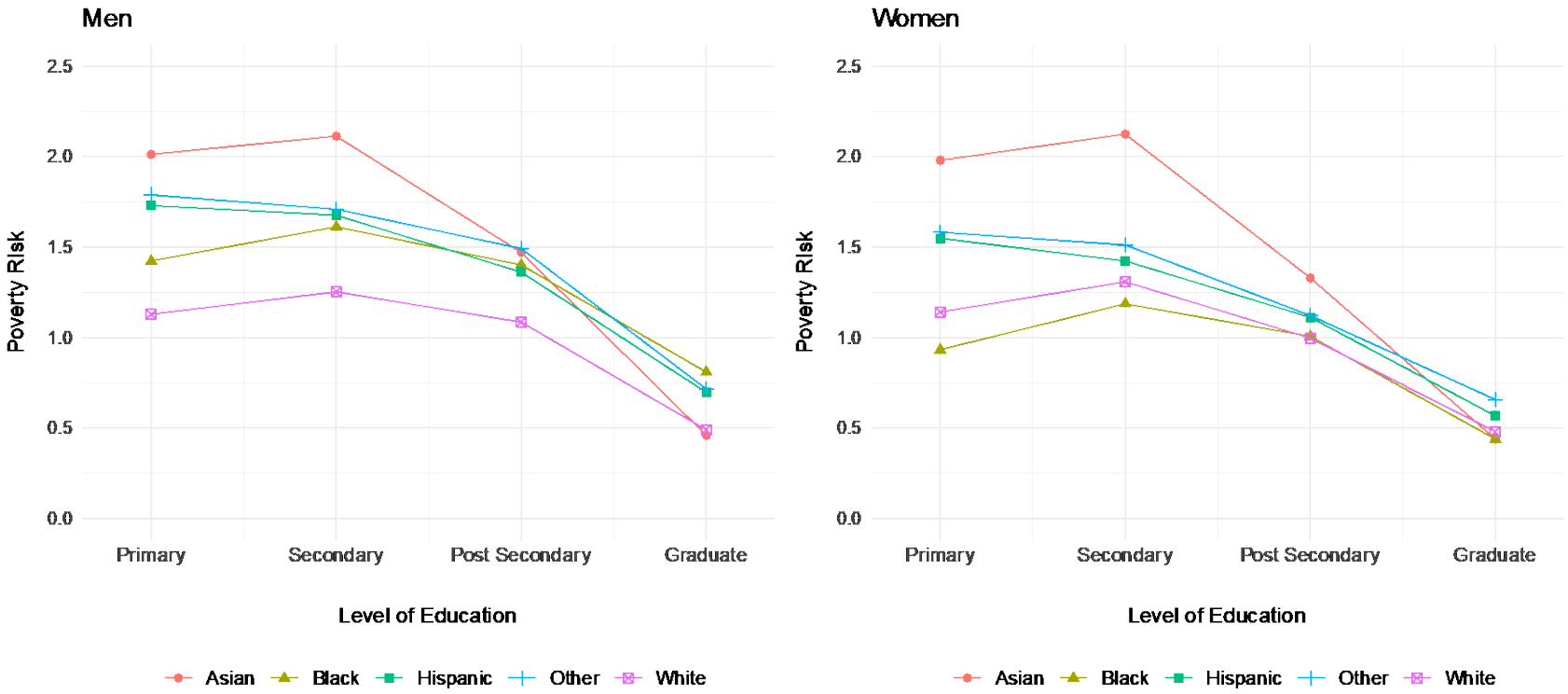
- We estimate an increase in labour-market wage poverty (prior to any government intervention) of 9.6 p.p. (from 0.282 to 0.379). Increase is greater in Nevada (18.7) and smallest in D.C. (4.7).

- The difference in headcount poverty increase is quite sizeable among social groups.

Changes in Poverty

		Population Share	Initial Poverty	Poverty Share	Poverty Change	Relative Poverty Risk
	k	n_k/N	H_k	$[(n_k/N)\cdot H_k]/H$	ΔH_k	$R_k = \Delta H_k/\Delta H$
Race	**Asian**	0.063	0.233	0.052	0.094	0.971
	Black	0.127	0.355	0.159	0.106	1.097
	Hispanic	0.118	0.352	0.147	0.125	1.297
	Other	0.087	0.362	0.111	0.131	1.353
	White	0.605	0.247	0.530	0.084	0.874
Total		1.000	0.282	1.000	0.096	1.000
Gender	**Female**	0.480	0.343	0.584	0.088	0.912
	Male	0.520	0.226	0.416	0.104	1.081
Total		1.000	0.282	1.000	0.096	1.000
Education	**Primary**	0.081	0.488	0.141	0.142	1.470
	Secondary	0.249	0.375	0.332	0.135	1.403
	Post-Secondary	0.308	0.317	0.346	0.108	1.122
	Graduate	0.361	0.142	0.181	0.049	0.511
Total		1.000	0.282	1.000	0.096	1.000

Changes in Poverty (relative poverty risk)



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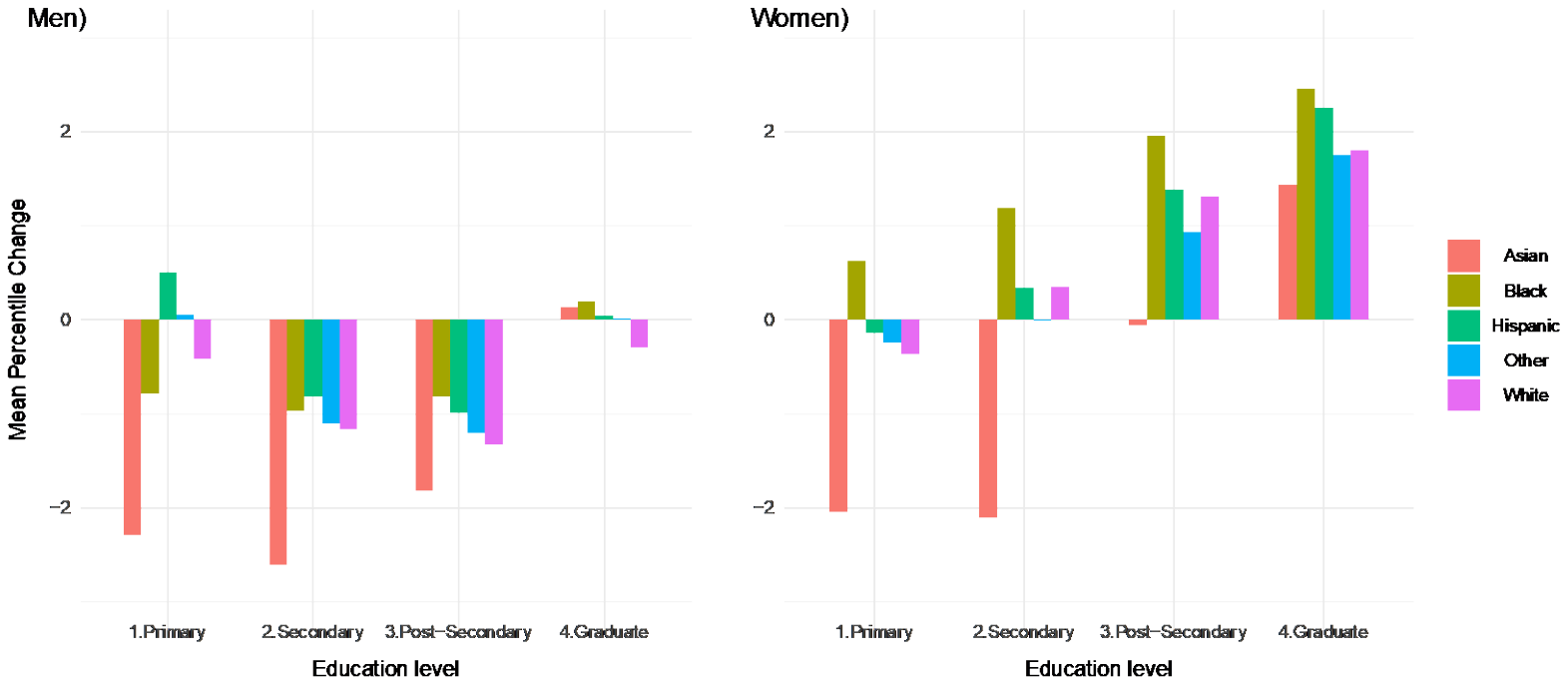
Wage rank-mobility

- We compare the mean percentile change in the wage distribution for each social group after the restrictions in our scenario.



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Conclusion

- We estimate a sizable increase in labour-market wage inequality (4.1 Gini points) in a stylized scenario assuming nation-wide restrictions in the US during the first year of the pandemic and prior to government compensating policies.
- Inequality increases both between and within social groups, although the divide increases the most between educational groups than between race groups, while wage inequality between gender would decrease.
- Headcount poverty increases 9.6 pp overall in the US. The increase is much higher for the lower educated, and differences by race or gender tend to be compressed as education levels go up. Black women have a low relative poverty risk at all education levels, while that does not happen for black men.
- The Asian divide: Educated Asians have low poverty risk, but low-educated Asians have the greatest poverty risk, both for men and for women. They also suffer the greatest downward rank mobility in the wage distribution.
- In general, men from all groups –except graduates- would on average move down in the wage rank distribution, while women from all groups –except lower educated Asians- would on average move up.

Discussion

- While we identify a potential increase in inequality, compensating policies in the US (CARES Act, Consolidations Act, American Rescue Plan Act) so far have had little progressivity (generalized amount checks for everyone under certain income thresholds, adjusted only for family size and number of children and dependents).
- The unemployment supplement benefit scheme has been prolonged until September, and that might counteract some of the effects diagnosed here.
- Still, the uneven exposure to the pandemic shock leaves many workers at dependent of governments generosity or else hoping for a speedy recovery after the vaccination campaigns.
- The prevalence of pandemic-vulnerable jobs is not evenly distributed across races, although these differences tend to fade out when university education is reached.
- This highlights that **increasing equal opportunities for higher education** would not only reduce salary gaps across races, but also produce equal access to adaptable and shock-resilient jobs.