

## **Covid-19 pandemic, school closures and perception of the importance of education in the country**

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### ***Abstract***

*The objective of this paper is to analyze the effects of the Covid-19 pandemic on the consideration of the importance of education in the society. Using a difference-in-differences strategy and representative survey data from 28 European countries: the Eurobarometers 91.5 (June-July 2019) and 93.1 (July-August 2020), we estimate the impact of the pandemic (approximated by regional mortality) over perception of education, as well as the effect of schools/universities closure, both from a personal and country-wide perspective. The results show that the pandemic has generated a deep rift in society. On the one hand, unemployed, immigrants and those who consider themselves as working class are more prone to think that education is no longer one of their fundamental concerns. On the other hand, among those who are more educated or consider themselves as "higher class", there is a substantial increase in concern for education at both the personal and societal levels.*

**Keywords:** *education, Covid-19, difference-in-difference, mortality.*

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## **1. Introduction**

Worldwide, school closures due to the pandemic affected at least 63 million primary and secondary school teachers (TTF, 2020). The impact of school closures on student learning loss depends on multiple factors, such as access to distance learning, students' attitudes toward self-directed instruction, quality of distance learning or support at home. Without structured school routine, and frequent contact and support from teachers and peers, students on the dropout path may become even more disengaged (OECD, 2020b). In addition, teachers may find it more difficult to identify red flags and act on them. According to PISA 2018, less than 70% of students attended schools where teachers had effective professional resources to learn how to use digital devices (OECD, 2019). Prolonged absence from school or lack of engaging distance learning mechanisms may lead students to become disconnected from their education, with detrimental long-term effects (OECD, 2020a).

Home environments and parental support add another layer to educational inequality. Distance learning strategies shift the burden of learning onto families, making student learning outcomes dependent on the home environment and the time parents are able to invest in their children's learning (Sayer et al., 2004). First, better educated parents are potentially better positioned to help their children with homework (Holmlund et al., 2008). Second, with the focus on digital learning, parents' digital skills are critical to the effectiveness of their children's learning strategies (Zhang and Livingstone, 2019). Third, more educated parents tend to be more likely to provide better emotional care to their children (OECD, 2019). As Moran et al. (2004) note, this creates "*opportunities for policymakers to support parents and influence child outcomes.*"

Shonkoff and Meisels (2000) show that strengthening and improving parental involvement through closer collaboration and networking improves parenting skills and benefits children. Studies focusing on parent-school engagement show that close engagement is a factor that improves student motivation and helps children acquire good quality education and training (Spera, 2005).

The objective of this paper is to analyze the effects of the Covid-19 pandemic on the consideration of the importance of education in the society. While previous studies refer to academic performance, continuity of studies, availability of technical means or teacher training, this paper will focus on the variable "*importance given to education*". For this purpose, we will compare the percentage of people who consider education to be one of the main concerns, both at the country level and according to their personal situation, at a pre-pandemic moment (2019) and after the first wave of the pandemic (summer 2020). We implement a difference in differences strategy, using representative survey data from 28 European countries: the Eurobarometers 91.5 (June-July 2019) and 93.1 (July-August 2020),

which allows us to introduce the regional relative mortality in 2019 or in 2020 with respect to the average 2015-2018.

## 2. Data

Data used come from two Eurobarometers (EB): the EB91.5 conducted between June and July 2019 and the EB93.1 conducted between July and August 2020. The Eurobarometer surveys are conducted on behalf of the European Commission under the responsibility of the Directorate-General Communication. The regular sample size (in the sense of completed interviews) is approximately 1000 respondents per country, except the United Kingdom (1,300) or Germany (1,000), and on the other extreme, Luxembourg, Cyprus and Malta with 500 interviews each. In the following analysis post-stratification weights will be used.

### *Dependent variables*

Both dependent variables refer to the level of concern about the education system. Firstly, the respondent is asked what he/she considers to be the two main concerns in his/her country. Fourteen possible alternatives are indicated (crime, economic situation, cost of living, taxation, unemployment, terrorism, housing, government debt, immigration, health and social security, education system, pensions, environment and climate and other issues). A binary variable (*EDUC\_country*) takes the value 1 if the education system is mentioned as one of the two largest country concerns. Secondly, the respondent is asked what he/she considers to be his/her two main personal concerns. The same fourteen alternatives are indicated. A binary variable (*EDUC\_personal*) takes the value 1 if one of the answers is the education system is one of the two most important personal concerns.

According to Table 1, in 2019, the countries with lowest level of concern at the national level were (Netherlands, Latvia, and Hungary) or at the personal level (Hungary, Netherlands, and Denmark). At the opposite extreme, Greece, Malta and Belgium at the national level and Lithuania, Spain and Greece at the personal level. In 2020, we observe that the inhabitants of the Netherlands and Denmark show the least concern on a personal level, while residents of Malta, Spain and Lithuania show the highest levels of concern.

### *Explanatory variables*

Sociodemographic characteristics. The following variables have been included in the model are: age, sex, nationality, marital status, number of years of education, relationship with economic activity and size of the area of residence. The survey indicates whether there are persons under 15 years of age in the household, although the kinship relationship is not known. The income level of the household is not recorded, but can be approximated by difficulties for making ends meet, having internet at home and self-reported social class.

**Table 1. Consideration of education as one of the main concerns of the country or one of the main personal concerns. Excess mortality with respect to the 2015-2018 average.**

	Most important issue facing your country EDUC_country		Most important issue you are facing at the moment EDUC_personal		Excess mortality with respect to average 2015-2019	
	Jun-Jul 2019	Jul-Aug 2020	Jun-Jul 2019	Jul-Aug 2020	2019	2020
Austria	9.65	8.53	6.77	4.70	-4.00	-1.89
Belgium	17.91	9.31	12.23	10.10	0.20	14.10
Bulgaria	11.07	8.33	10.12	8.43	-3.88	-4.34
Croatia	8.92	6.81	5.24	8.14	-7.94	-4.28
Cyprus	8.28	7.18	7.00	8.64	-12.40	4.98
Czech Republic	14.46	9.70	9.11	8.32	-1.77	-0.64
Denmark	9.16	4.16	4.78	4.46	-2.46	-1.30
Estonia	13.52	6.77	6.32	3.94	-1.79	0.12
Finland	11.96	7.65	7.98	8.56	-4.80	2.04
France	13.25	7.00	10.76	5.64	-5.65	6.52
Germany	10.37	7.46	7.80	5.86	-4.60	0.37
Greece	17.22	15.52	11.43	9.64	-8.51	0.38
Hungary	5.24	2.66	6.03	7.58	-2.60	-5.99
Ireland	11.75	10.29	7.23	7.37	-3.84	21.19
Italy	7.00	5.57	10.70	9.28	-3.91	14.97
Latvia	4.58	5.94	7.60	8.96	0.78	-5.74
Lithuania	13.48	13.65	7.87	10.94	4.38	-0.62
Luxembourg	11.63	12.24	5.07	6.67	-9.17	1.90
Malta	17.39	12.00	13.44	12.55	-9.41	4.14
Netherlands	4.37	2.99	5.96	3.78	-6.38	9.23
Poland	10.90	5.36	8.65	6.10	-3.95	0.62
Portugal	11.27	7.17	15.69	10.36	-4.51	4.50
Romania	6.29	5.70	5.90	5.13	-5.13	0.37
Slovakia	13.20	6.79	4.70	4.66	-2.49	-2.43
Slovenia	7.04	5.92	5.95	7.42	-3.15	2.36
Spain	13.37	14.48	10.83	11.24	-5.61	23.04
Sweden	7.52	4.47	7.41	6.99	-6.27	6.16
United Kingdom	9.55	8.17	4.25	5.11	-4.70	17.74
Total	11.14	8.42	8.07	7.66	-4.43	4.05

Source: Own work using Eurobarometer 91.5 (June-July 2019) and Eurobarometer 93.1 (July-August 2020). Regional statistics by nuts. Demographic statistics (Database - Eurostat (europa.eu)) for “Relative mortality in 2013” and “Relative mortality in 2020”.

School closure days: For the purpose of estimating the potential impact of the number of schools closure days over concerns about education, we have taken into account that the EB93.1 was carried out in July and August 2020, and have used 31st July as the reference date for calculating the closure period.

Epidemiology variables: For each region (NUTS<sup>1</sup>), the “relative mortality in 2019” is computed as registered weekly deaths (all causes) in 2019 by NUTS with respect to average deaths between 2015 and 2018 by NUTS (Database - Eurostat (europa.eu)). With this indicator we can identify regions where there is excess mortality if  $RM_{2019,Nut} \geq 0$ .

The “relative mortality in 2020” is computed as average weekly registered deaths (all causes) between week 11 ( $W_{11-2020}$ ) and the week when respondent was interviewed ( $W_{EB93.1}$ ) with respect to average weekly deaths between 2016 and 2019 by NUTS. With this indicator we can identify regions where there is excess mortality if  $RM_{2020,Nut} \geq 0$ . In this case, the variable “excess mortality” provides information on the “potentially” pandemic-related mortality burden (i.e., including deaths that are directly or indirectly attributed to Covid-19).

We have also included the average of 14-day notification rate of Covid-19 new cases. This variable is defined as newly reported COVID-19 cases per 100,000 population by week and NUTS-2 between week 11 ( $W_{11-2020}$ ) and week when respondent was interviewed ( $W_{EB93.1}$ ).

### 3. Model

To identify the impact of the pandemic on the educational system, we propose the following difference-in-difference (dif-in-dif) model that compares the concern about educational system, in regions with excess mortality versus all other regions, and in 2019 versus 2020. Given the extensive coverage of the pandemic in all media, it is reasonable to assume that citizens have had access to national and regional information on the evolution of mortality (Anwar et al., 2020; Tsao et al., 2021).

$$EDUC_{irct} = \alpha_0 + \alpha_1 RM_{rct} + \alpha_2 Year(2020)_t + \alpha_3 RM_{rct} Year(2020)_t + \alpha_4 Schools_{ct} + \alpha_5 Notif_{rct} + \gamma' X_{irct} + \delta_r + \nu_c + \varepsilon_{irct} \quad (1)$$

$$EDUC_{irct} = \{EDUC\_country_{irct}, EDUC\_personal_{irct}\}$$

where  $EDUC_{irct}$  denotes concern about educational system of individual  $i$  living in region (NUTS)  $r$  of country  $c$  and year  $t$ , whether one of the most important issues facing one’s country ( $EDUC\_country_{irct}$ ) or one of the most important issues facing oneself ( $EDUC\_personal_{irct}$ ).

$RM_{rct}$  represents the relative mortality of region (or NUT)  $r$  in year  $t$  (2019, 2020) with respect to the average 2015-2018. Two possibilities have been considered in the estimations, as a binary variable (1 there is overmortality, 0 otherwise) or as a continuous variable.

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<sup>1</sup> The nomenclature of territorial units for statistics (Nomenclature des Unités territoriales statistiques – NUTS) is a geographical system, according to which the territory of the European Union is divided into hierarchical levels. In this paper, NUTS-2 (basic regions for the application of regional policies) have been considered.

$Notif_{rct}$  is the average of 14-day notification rate of newly reported COVID-19 cases per 100,000 population in region  $r$  of country  $c$  and year 2020 (takes the value 0 for 2019),  $Schools_{ct}$  is number of closure school days due to the pandemic in country  $c$  (takes the value 0 for 2019).  $Year(2020)_t$  is an indicator variable equal to 1 if the individual is interviewed in 2020, 0 otherwise.  $X_{irct}$  contains individual-level variables: age, gender, nationality, marital status, relation with economic activity, age when stopped full-time education, household composition, having internet at home, difficulties in paying bills, self-reported level in society and size of municipality of residence. Regional and country fixed effects are captured by  $\delta_r$  and  $\nu_c$ , respectively. Robust standard errors are obtained with clusters at regional level. The dif-in-dif coefficient is  $\alpha_3$ , which represents the effect of the pandemic on the probability of considering that education is one of the most important issues in regions with Covid-19 excess mortality.

#### **4. Results**

Table 2 shows the results of the dif-in-dif model for the total sample and differentiating by sociodemographic characteristics. For the population as a whole, living in a region with Covid-19 overmortality increases personal  $EDUC\_personal$  by 1.18pp in households with children (15.20% with respect to the mean value) and is not significant in households without children. Regardless of household type, no significant effect is observed for  $EDUC\_country$ . On the other hand, an average notification rate of 100 cases per 100,000 inhabitants increases  $EDUC\_personal$  by 8pp, while each month of school closures leads to an increase in  $EDUC\_personal$  by 1.5pp (more than double the increase in  $EDUC\_country$ ; 0.6pp).

#### **5. Conclusions**

Although the long-term consequences of the pandemic on students are still unknown, this paper has attempted to address the extent to which it has changed our perception of education, both from a personal and country-wide perspective. The results show a rather worrying reality. The pandemic seems to be generating two independent and disconnected worlds. The importance attached to education has declined among those who consider themselves working class and unemployed. In contrast, concern for education has increased among those who are still studying, have higher education, are working (especially if they are white-collar). The other “world”, made up by the more educated, express an increase in their personal concern for education. Parents with better economic status and more stable jobs have been able to invest more in their children's education during the pandemic and have become more involved in their children's learning.

**Table 2. Estimations of the difference-in-difference model**

	EDUC_country			EDUC_personal		
	All sample	Living with children	Not living with children	All sample	Living with children	Not living with children
<b>All sample</b>						
Notification rate	0.0002*** (0.0001)	0.0002 (0.0002)	0.0002*** (0.0001)	0.0003*** (0.0001)	0.0008*** (0.0002)	0.0001** (0.0001)
Days school closure	0.0002*** (0.0001)	0.0002** (0.0000)	0.0002*** (0.0001)	0.0000 (0.0000)	0.0005*** (0.0001)	0.0000 (0.0000)
Year(2020)	-0.0662*** (0.0075)	-0.0719*** (0.0178)	-0.0649*** (0.0082)	-0.0242*** (0.0063)	-0.0385** (0.0183)	-0.0188*** (0.0060)
Relative mortality	-0.0106*** (0.0038)	-0.0055 (0.0085)	-0.0120*** (0.0043)	-0.0073** (0.0032)	-0.0022 (0.0087)	-0.0070** (0.0031)
Relative mortality* Year(2020)	0.0072 (0.0057)	-0.0019 (0.0128)	0.0100 (0.0062)	0.0117** (0.0047)	0.0118*** (0.0045)	0.0033 (0.0132)
N	54402	13363	41039	54402	13363	41039
R2	0.0192	0.0172	0.0170	0.0449	0.0377	0.0221
F	354.183	86.447	262.037	852.317	193.257	342.748
p-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Foreign</b>						
	EDUC_country			EDUC_personal		
Notification rate	0.0003 (0.0006)	0.0009 (0.0013)	0.0001 (0.0006)	0.0002 (0.0005)	0.0010 (0.0012)	-0.0002 (0.0005)
Relative mortality* Year(2020)	-0.0091 (0.0448)	-0.1429 (0.0999)	0.0459 (0.0502)	-0.0602 (0.0389)	-0.0155*** (0.0028)	-0.0872** (0.0417)
N	5001	1921	3080	5001	1921	3080
<b>Unemployed</b>						
	EDUC_country			EDUC_personal		
Notification rate	-0.0005** (0.0003)	-0.0002 (0.0006)	-0.0006** (0.0003)	-0.0002 (0.0002)	-0.0005 (0.0006)	-0.0001 (0.0002)
Relative mortality* Year(2020)	0.0048 (0.0190)	-0.0073 (0.0374)	0.0045 (0.0220)	-0.0223 (0.0159)	-0.0256*** (0.0061)	-0.0215 (0.0165)
N	3682	1160	2522	3682	1160	2522
<b>Still studying</b>						
	EDUC_country			EDUC_personal		
Notification rate	0.0000 (0.0004)	0.0006 (0.0007)	-0.0002 (0.0004)	-0.0007 (0.0004)	0.0004*** (0.0001)	-0.0011** (0.0005)
Relative mortality* Year(2020)	-0.0672** (0.0280)	-0.1055* (0.0581)	-0.0640** (0.0321)	0.0028 (0.0333)	0.0571*** (0.0092)	-0.0132 (0.0383)
N	4064	1031	3033	4064	1031	3033
<b>Working class</b>						
	EDUC_country			EDUC_personal		
Notification rate	-0.0003** (0.0001)	-0.0006 (0.0003)	-0.0002 (0.0001)	0.0002* (0.0001)	0.0001** (0.0000)	0.0001 (0.0001)
Relative mortality* Year(2020)	-0.0165* (0.0088)	-0.0210*** (0.0054)	-0.0034 (0.0233)	0.0033 (0.0067)	-0.0297*** (0.0027)	0.0084 (0.0059)
N	14044	2979	11065	14044	2979	11065
<b>Middle class</b>						
	EDUC_country			EDUC_personal		
Notification rate	0.0003*** (0.0001)	0.0004* (0.0002)	0.0003** (0.0001)	0.0003*** (0.0001)	0.0007*** (0.0002)	0.0001 (0.0001)
Relative mortality* Year(2020)	0.0104 (0.0070)	0.0095 (0.0151)	0.0108 (0.0078)	0.0197*** (0.0058)	0.0269*** (0.0054)	0.0119** (0.0058)
N	34704	8851	25853	34704	8851	25853
<b>Higher class</b>						
	EDUC_country			EDUC_personal		
Notification rate	0.0011*** (0.0003)	0.0010 (0.0007)	0.0011*** (0.0003)	0.0005* (0.0003)	0.0012*** (0.0001)	0.0004 (0.0003)
Relative mortality* Year(2020)	0.0002 (0.0237)	0.0173 (0.0473)	-0.0094 (0.0277)	0.0456** (0.0220)	0.0776*** (0.0033)	0.0254 (0.0223)
<b>Difficulties making ends meet: always/almost always</b>						
	EDUC_country					
Notification rate	0.0002 (0.0002)	0.0001 (0.0005)	0.0002 (0.0003)	0.0002 (0.0002)	0.0007 (0.0005)	0.0000 (0.0002)
Relative mortality* Year(2020)	-0.0149 (0.0141)	-0.0298 (0.0313)	-0.0088 (0.0157)	-0.0459 (0.0112)	-0.0435*** (0.0089)	-0.0016 (0.0112)
N	4883	1323	3560	4884	1323	3561

Regressions include age, sex, nationality, marital status, education, relation with economic activity, internet at home, difficulties for making ends meet, self-reported social class, size of municipality of residence, region fixed effects and country fixed effects. Coefficients for these variables not shown due to space constraints.

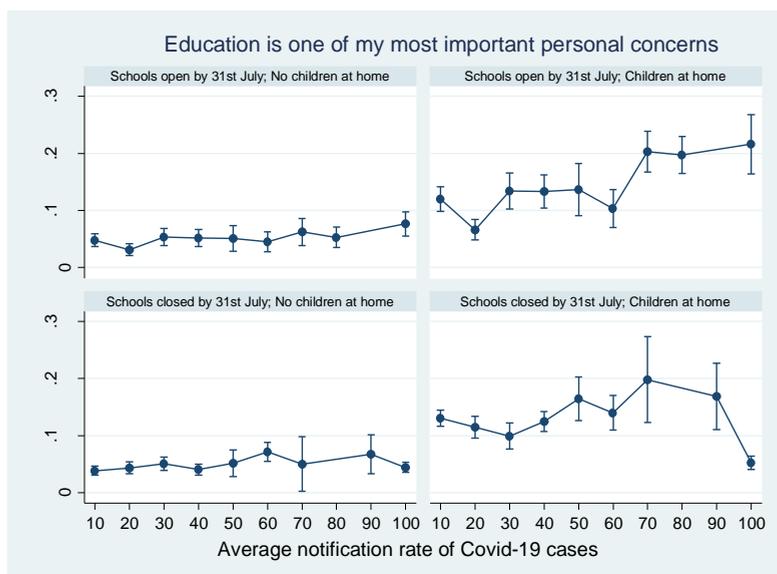


Figure 3. Effect of average notification rate of Covid-19 new cases per 100,000 inhabitants with respect and school closure over EDUC\_personal, conditioned on having children or not. In these figures a binary version of the variable “days of school closure” has been defined, that takes the value 1 if schools/universities had opened by 31st July and the value 0 if they were still closed.

Are these changes a consequence of the pandemic and the economic crisis, or has the pandemic simply exacerbated a previous trend? What will the long-term effects be? Will this shift in priorities affect children’s educational outcomes? All these questions provide a very relevant starting point for further research.

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