

How Has COVID-19 Affected Labor Income in Serbia? An Exploration of Gender, Education, the Possibility to Work from Home, and the Employment Sector Differences

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ABSTRACT

This paper investigates the impact of COVID-19 on labor income changes of employees in Serbia. The research was conducted on a representative sample of 3,044 individuals from Serbia, using the CATI method, whereby 1,464 of them were included in the analyses as they provided the complete data needed for this study. Employees' labor income was recorded by collecting data on wages before and nine months after the onset of the COVID-19 pandemic. To obtain the difference, we calculated the percentage change in wages, accounting for the nominal values. There was no significant gender difference in the percentage change of income, while there was a difference regarding education level. Employees with primary education experienced an average percentage increase in wages of 7.6%, whereas those holding secondary and tertiary education had a negligible increase (1.84%) and a decrease (-0.78%), respectively. The analysis revealed a significant interaction between gender and education, indicating that men with primary education had an average increase of 12.8%. Our results showed that employees who could not perform their jobs from home had an average percentage increase of 2.9% in wages. The employment sector also had an effect on percentage changes in wages. The construction and agriculture, forestry, and fishery sectors had an average percentage wage increase of 12.6% and 11.5%, respectively, while employees in the sector of other service activities experienced an average percentage decrease of 7.9%. In conclusion, this study sheds light on the diverse effects of the COVID-19 pandemic on labor income, emphasizing the importance of considering gender, education, remote work possibilities, and the employment sector.

Keywords: *COVID-19, labor income, impact, effect, gender, education, possibility to work from home, employment sector*

JEL Classification: J01, E24

INTRODUCTION

The COVID-19 pandemic presented a shock to economic activity and had a dramatic effect on labor income. Reasons were multifold, including partial or complete cessation of businesses due to restriction measures, a decline in demand, supply disruptions, and a decrease in employment. Non-essential industries, such as services and tourism, were most severely hit, as well as those that did not provide the possibility of work-from-home arrangements. This could have exacerbated already high levels of labor market inequality in Serbia.

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This study investigates the impact of labor market shocks induced by COVID-19 on labor income in Serbia. As the pandemic persisted for more than two years after the outbreak, observing and analyzing trends in the labor market becomes crucial not only to understand its impact retrospectively but also to provide valuable insights for evidence-based policymaking in the face of potential future labor shocks.

CONCEPTUAL FRAMEWORK AND HYPOTHESES

COVID-19 Outbreak in Serbia and the Impact on Macroeconomic Trends

The World Health Organization (WHO) Country Office in the People's Republic of China was informed about the cases of the novel coronavirus in Wuhan, the capital of Hubei province, on December 31, 2019, by Wuhan health authorities. WHO decided to name the novel coronavirus COVID-19 to avoid stigma and discrimination by connecting it to geographical locations, animal species, or specific groups of people (WHO, 2020). Due to the rapid global spread of the novel coronavirus and its significant economic, work, and overall life repercussions, the term was later heavily utilized.

In Serbia, the first case of Covid-19 was reported on March 6, 2020, by state health authorities. The following 60 days witnessed a rapid progression, with the number of registered cases exceeding 10,000. Numerous containment measures were introduced to curb the spread of Covid-19. These included a temporary ban on entry into Serbia for foreign citizens coming from areas with intensive coronavirus transmission, eventually leading to the closure of state borders. On March 15, 2020, a state of emergency was declared, accompanied by a ban on gatherings of more than five people and multiple-day curfews. City, intracity, and intercity public transport, as well as international air traffic, were temporarily suspended. Catering, recreation, and entertainment facilities, along with most local services and shops, were also temporarily closed. Business entities were advised to implement work-from-home arrangements wherever possible to reduce the number of employees on the premises. The Government of the Republic of Serbia lifted the state of emergency on May 6, 2020 ("Measures of the state of emergency", 2020).

Containment measures exacted a significant toll on the Serbian economy. After experiencing long-term GDP growth in previous years and a 5.2% growth (year-on-year) in the first quarter of 2020, Serbia faced a sharp drop in GDP of 6.2% in the second quarter of 2020 when the strictest measures were introduced. The decline in GDP continued in the third and fourth quarters of 2020, with decreases of 1.4% and 1.1% (year-on-year), respectively (SORS, 2021). These containment measures resulted in decreased mobility of people in Serbia (Figure 1), significantly impacting economic activities in certain sectors.

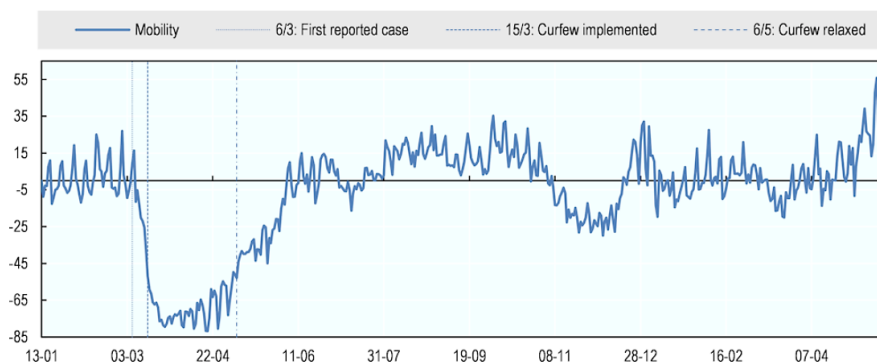


Figure 1. Mobility patterns throughout the crises in Serbia

Source: OECD based on Apple Mobility Trends Reports

Although some sectors have faced declines in activities and employment rates resulting from the COVID-19 crisis, the official statistical data on minimum and average wages in Serbia offer a somewhat different view of what happened with wages. For the sake of comparability, we will consider monthly net wages in February and May 2019 and 2020, accounting for their nominal values. The minimum monthly net wage in Serbia was 24,848 RSD in February and 28,575 in May 2019 (Paragraf Lex, 2019), and 27,606 RSD in February and 28,986 in May 2020 (Paragraf Lex, 2020), thus indicating a nominal increase of 11% in February and 1.5% in May, compared to the same month past year. The average monthly net wage was 52,426 RSD in February (SORS, 2019a) and 55,380 RSD in May 2019 (SORS, 2019b), 58,132 RSD in February (SORS, 2020a) and 58,892 RSD in May 2020 (SORS, 2020b), indicating a nominal increase of approximately 11% and 6%, respectively. However, we need to take into account that these averaged data include all the people who were employed at the moment, thus disregarding the total number of employed people, which could have masked the differences in wages of those who were employed continuously throughout the Covid-19 crisis period.

Vulnerable industries, such as the service and travel sectors, which imply constant interaction between providers and consumers, faced partial or complete cessation of business. As a result, a sharp decline in visits to retail facilities (except for grocery and pharmacy shops) and recreation centers of around 70% was recorded in April 2020 (Vladisavljević et al., 2021). The number of tourist overnight stays in Serbia decreased by 95% and 83% in April and May 2020, respectively (year-on-year) (Radivojević, 2020).

A sharp decline in economic activity of 14.6% was recorded in the arts, entertainment, and recreation sectors, as well as in the trade, transport, and accommodation sectors by 5.2% in 2020. Other sectors that experienced a drop in economic activity were those that are naturally hit during all economic downturns, such as construction, with a decrease of 5.1% in 2020, and industrial production, which recorded a sharp decline of 7.6% in Q2 of 2020 after a growth of 4.5% in Q1, followed by a slight annual growth of 0.4% due to a rebound in Q3 and Q4 (3.3% and 1.5%, respectively). On the contrary, the information and communication sector recorded a growth of 7.3%, as well as the agriculture, forestry, and fishing sectors (4.2%) and financial and insurance activities (4.1%) (SORS, 2021).

In Serbia, workers who were employed in the informal economy were the first to face employment termination. Not only do informally employed workers have lower wages (on average around 30% less than formally employed workers), but they also faced a sharp decline in work opportunities as this sector recorded a drop of 25% in Q2 of 2020 compared to Q2 of 2019 (Stanojević & Kotlica, 2021). These groups of workers include various tradespersons, market and street vendors, mechanics, caregivers, artists, informally employed workers in the hospitality industry, persons with seasonal employment, and others who faced cessation of business due to containment measures or a decline in demand (Bradaš et al., 2020). According to Udovički and Medić (2021), the drop in informal employment was especially pronounced in the cafe and restaurant industry, recording a decline of at least 90%. Since female and low-skilled workers are disproportionately represented in the hardest-hit industries, and the nature of their jobs does not allow for work-from-home arrangements, their position in the labor market was additionally aggravated.

The Impact of COVID-19 on Labor Income with Regard to Gender

Gender inequality in terms of labor market outcomes remains a persistent issue worldwide. In Serbia, the rate of female employment is lower than that of men (41.3% vs. 56.5%) (SORS, 2021), while on a global level, women earn, on average, 20% less than men (ILO, 2020). The problem seems to be exacerbated during the COVID-19 pandemic, as it brought substantial changes to the organization of professional and domestic work (Hupkau & Petrongolo, 2020). According to Israeli data, the economic downturn caused by the pandemic has resulted in larger job loss rates

for women than men, further exacerbating the gender income gap (Kristal & Yaish, 2020). Based on data from a multi-country survey, Dang and Nguyen (2021) demonstrated that during the COVID-19 pandemic, women faced a 24% higher likelihood of permanent job loss compared to men, and an expectation of a 50% drop in labor income than men did. The reasons for gender inequality regarding labor income are multifaceted. Approximately 510 million women (40% of the overall employed women worldwide) work in vulnerable industries severely hit by the recent economic downturn (Azcona et al., 2020). Moreover, the overrepresentation of women among domestic workers (55 million or 73% worldwide) contributed to the gender labor market inequality, as they faced a high likelihood of job and income loss due to lockdown and containment measures, along with the absence of adequate social security coverage. Other reasons include the overrepresentation of women among low-wage essential workers, such as nursing and healthcare aide professions (Bahn et al., 2020), and the disproportionate division of household chores, education, and childcare duties due to school and kindergarten closures, as well as home-based care for ill family members and relatives (Alon et al., 2020; ILO, 2018). Literature also pointed out single motherhood as an additional concern regarding the ability to work for pay (Hertz et al., 2021), as women face a higher likelihood of being single parents (Pew Research Center, 2018). The international data pointing to the worsened financial conditions of women resulting from the COVID-19 crisis are supported by the Serbian data as well. For example, research on women entrepreneurs in Serbia revealed that 76% of companies owned by women were negatively impacted by the crisis, and 14% were forced to reduce the number of employees (Popović-Pantić et al., 2020). Accordingly, we hypothesized that COVID-19 had an impact on labor income with regard to gender (H1), specifically that women experienced a larger decrease in income.

The Impact of COVID-19 on Labor Income with Regard to Education

Almost by default, low-educated and low-wage workers are disproportionately represented in sectors that were hardest hit by COVID-19 (Udovički & Medić, 2021; Bradaš et al., 2020). The literature suggests that during COVID-19, less educated or low-income workers faced a reduction in working hours nearly twice as much compared to others (Zimpelmann et al., 2021), which led to a reduction of income or loss of income source (Midões & Seré, 2022). Darvas (2021) states that low-educated individuals faced much more severe labor outcome difficulties during COVID-19 than those with tertiary education, as a greater share of their income stems from wages. Accordingly, the reduction of working hours or job loss represents a substantially larger income shock to those with lower educational levels. A study from South Africa implies that COVID-19 containment measures had negative repercussions regarding the income distribution factor, which had a substantially greater negative effect on low-educated labor compared to those with secondary or tertiary education (Arndt et al., 2020). Evidence from Portugal showed that 42.9% of surveyed participants reported income loss due to the COVID-19 pandemic, with one of their characteristics being a lower educational level (Gama et al., 2021). Piyapromdee and Spittal (2020) state that, in terms of negative demand shocks, low-educated workers are most vulnerable as they are most likely to work in industries subject to demand reductions. Accordingly, we hypothesized that COVID-19 had an impact on labor income with regard to education (H2), specifically that low-educated employees faced a larger income decrease.

The Impact of COVID-19 on Labor Income with Regard to Work-from-Home Possibility

Before the COVID-19 pandemic, working from home (WFH) was only occasionally available and primarily limited to a smaller number of occupations, such as knowledge workers, managers, and white-collar professionals (Yang et al., 2021). However, in response to the pandemic outbreak, companies had to adapt their workplace models to adhere to safety guidelines mandated by national health authorities and safeguard their businesses from potentially irreparable harm. As physical distancing measures became imperative in curbing the spread of the coronavirus, the

WFH approach was extended to all employees whose job nature allowed for a transition from the traditional workplace setting to remote locations, including their homes.

The literature provides evidence of inequality regarding the possibility of working from home. Workers with tertiary education and higher incomes had three times greater chances of working from home compared to lower-wage and lower-educated workers, who typically perform jobs that are less likely to be done remotely (Barbour et al., 2021). Belot et al. (2020) conducted a study based on a sample of 6,000 individuals from six countries and concluded that higher-income and younger groups had significantly greater chances of working from remote locations compared to those in the bottom 20% of income. A study from Japan found that more than 50% of workers employed in sectors unsuitable for offsite work, such as face-to-face services, experienced a reduction in working hours and income (Okubo, 2020). Bonacini et al. (2021) demonstrated a positive correlation between higher chances of working from home and an increase in average labor income. Additionally, evidence from the Western Balkan countries highlighted the widespread recognition of the benefits of remote work among respondents. It has been observed that a vast majority acknowledge these advantages, primarily focusing on financial gains. Approximately a quarter of respondents perceive remote work as an opportunity for additional income, while another fifth considers it a stable source of earnings (Đukanović et al., 2022). Accordingly, we hypothesized that COVID-19 had an impact on labor income with regard to work-from-home possibility (H3), specifically that employees without the possibility of working from home faced a larger income decrease.

The Impact of COVID-19 on Labor Income with Regard to the Employment Sector

Covid-19 had a significant adverse impact on economies worldwide, but the severity of economic disruptions varied across different sectors. According to the International Labour Organization (ILO), workers in wholesale and retail trade, as well as accommodation and food services sectors, experienced the most severe disruptions, particularly because 70% of them worked in small enterprises or as own-account workers. In Serbia, the passenger transportation and travel agencies, hospitality sector, personal services, and education faced income drops ranging from 50% to 80% during the state of emergency (Udovički & Medić, 2021). Other sectors that were hit hard included manufacturing, real estate, and business (ILO, 2020). Research by Qian and Fan (2020) in China provided evidence that the chances of facing reduced income were 0.43 for those employed in the public sector and 0.54 and 0.57 for those working in the private sector and as self-employed, respectively. In Japan, nearly half of all employees in the food and beverage and hospitality industry reported substantial decreases in income and working hours, while those employed in information and communications, research, and public service experienced different impacts (Okubo, 2020). Similarly, Italian data revealed that during COVID-19, individuals with a lower income were more likely to be employed in sectors subject to lockdown measures (Carta & De Philippis, 2021). This observation was supported by research by Palomino et al. (2020), who stated that Covid-19 had the most significant toll on workers employed in the hospitality, entertainment, food and drink, and arts sectors. Accordingly, we hypothesized that COVID-19 had an impact on labor income with regard to the employment sector (H4), specifically that those who were employed in sectors of accommodation and food services, and arts, entertainment, and recreation faced a larger income decrease.

METHODOLOGY

The research was conducted on a total sample of 3,044 individuals, residents of Serbia, whereas our analyses included 1,464 ($M_{age} = 41.74$, $SD_{age} = 10.97$) of them with complete data needed for the study. The method for data collection was computer-assisted telephone interviewing (CATI). A stratified random sampling procedure was employed to ensure that the data collected was representative of the Serbian population aged 18 to 65. The sampling procedure was carried out

by a professional agency for research of public opinion and involved the recruitment of participants from a large pool of contacts, in line with predefined strata and corresponding quotas based on age, gender, and education, with random selection within each stratum. The data was collected from May to June 2021.

We used a structured questionnaire comprising questions related to socio-demographic characteristics (i.e., gender and formal education level) and employment. All participants were asked about their working status. Also, they were asked to report whether they were employed in March and December 2020, including the period between these two time points, and whether they had an opportunity to work from home. The questionnaire also included recording data about the employment sector. All participants were asked to report their personal labor income defined as net wage for employed, pension revenue for retired, or equivalent remuneration for other work-inactive individuals. Unemployed individuals, students, prematurely retired individuals, permanently disabled individuals, and other work-inactive participants were excluded from the analysis. The analysis included only participants who were continuously employed from March to December 2020 and provided information about their wages. To analyze the data, we used chi-square tests, Cramer's V coefficient, t-tests for independent samples, one-way ANOVA, and two-way ANOVA. Sample characteristics regarding gender, education, WFH possibility, and employment sector are summarized in Table 1.

Table 1. Sample characteristics

Variable	Category	Frequency	Percent
Gender	Male	806	55.0
	Female	658	45.0
Education level	Primary	154	10.6
	Secondary	873	59.6
	Tertiary	437	29.8
WFH possibility	Yes	484	33.0
	No	980	67.0
Employment sector	Agriculture, forestry and fishing	80	5.5
	Mining and quarrying	14	1.0
	Process manufacturing	247	16.9
	Energetics	40	2.7
	Water supply, sewerage, waste management and remediation activities	12	0.9
	Construction	84	5.7
	Wholesale and retail trade, repair of motor vehicles and motorcycles	198	13.5
	Transportation and storage	82	5.6
	Accommodation and food service activities	52	3.5
	Information and communication	79	5.4
	Financial and insurance activities	38	2.6
	Real estate activities	0	0.0
	Professional, scientific, innovative and technical activities	56	3.8
	Administrative and support service activities	99	6.8
Public administration and defense, compulsory social service	80	5.5	

Variable	Category	Frequency	Percent
	Education	141	9.6
	Health and social welfare	101	6.9
	Arts, entertainment, recreation and other activities	34	2.4
	Other service activities	23	1.6
	Activities of households as employers	2	0.1
	Activities of extraterritorial organizations and bodies	0	0
Total		1464	100

Source: Authors' calculation

Note: We used the SORS classification of employment sectors, which represents the modification of the NACE classification

RESULTS

The participants reported their wages in March ($M = 446.50$ €, $SD = 243.90$) and December 2020 ($M = 445.15$ €, $SD = 252.61$). We calculated the income change for each participant as the percentage difference between their wages in December and March, whereby the calculations were based on nominal values. The average percentage change was 1.67% ($SD = 24.38$), with individual differences ranging from an 85% decrease to a 300% increase in wage.

Table 2. Gender differences in percentage wage change

Gender	Min	Max	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Men	-85.00	300.00	1.58	25.96	-0.15	1463	.88
Women	-80.00	250.00	1.78	22.31			

Source: Authors' calculation

There was no significant difference between men and women in the percentage change of income (Table 2). In contrast, there was a significant difference in the percentage change of income based on education level (Table 3).

Table 3. Wage change in percentage points by education level

Education	Min	Max	<i>M</i>	<i>SD</i>	<i>F</i>	<i>df</i>	<i>p</i>
Primary	-52.38	233.33	7.65	33.92			
Secondary	-80.00	300.00	1.84	24.62	6.03	2; 1463	.00
Tertiary	-85.00	100.00	-0.78	18.93			

Source: Authors' calculation

The observed difference indicated that individuals with primary education had a higher increase in wage compared to those with secondary and tertiary education (whose wages slightly decreased). In addition to this difference, we found a significant interaction ($F_{(2, 1464)} = 3.88$, $p < .05$) between education and gender (Figure 2).

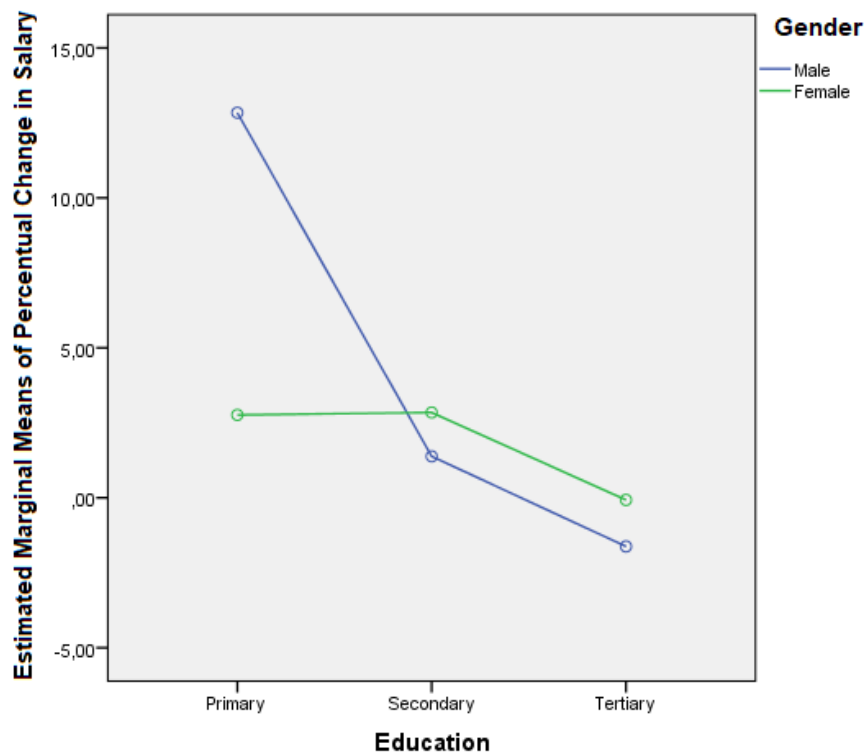


Figure 2. Interaction between gender and education

Source: Authors' calculation

This interaction (Figure 2) revealed that tertiary-educated men ($M = -1.62$, $SD = 18.47$) and women ($M = -0.07$, $SD = 18.82$) experienced a slight decrease in wage, while men ($M = 1.38$, $SD = 25.01$) and women ($M = 2.84$, $SD = 25.99$) with secondary education both had a percentage increase in wage. The difference was observed in the case of the low-education group, where primary-educated men ($M = 12.84$, $SD = 45.25$) had a considerably higher percentage increase in wages compared to women ($M = 2.76$, $SD = 16.58$).

Further on, we examined the differences in the percentage change of wage between participants with and without WFH possibility. The results showed a significant difference, indicating that those who did not have the possibility to work from home experienced an increased wage, while employees with such a possibility faced a minor percentage decrease (Table 4).

Table 4. Percentage wage change with regard to WFH possibility

WFH possibility	Min	Max	<i>M</i>	<i>SD</i>	<i>t</i>	<i>df</i>	<i>p</i>
Yes	-80.00	166.67	-0.84	20.97	-2.78	1462	.00
No	-85.00	300.00	2.91	25.81			

Source: Authors' calculation

The additional analysis revealed that the possibility of working from home is related to higher education ($\chi^2_{(2)} = 251.50$, $p < .001$, Cramer's $V = .41$). Specifically, employees with the possibility of working from home were shown to be overrepresented in the group with tertiary education (62.2%) and underrepresented in the groups with secondary (22.6%) and primary (9.1%) education. Furthermore, the results indicated a significant effect of the employment sector on the percentage change in wages. In Table 5, the F statistic is reported, corresponding to the results of

the one-way ANOVA conducted to examine the variability between employment sectors relative to the variability within groups, and the significance level associated with it was $p < .01$.

Table 5. Employment sector effect on percentage change in wage

Employment sector	Min	Max	M	SD	F	df	p
Agriculture, forestry and fishing	-50.00	300.00	11.62	50.48	2.73	18; 1463	.00
Mining and quarrying	-7.9	0.00	-1.18	2.79			
Process manufacturing	-80.00	127.27	0.57	20.95			
Energetics	-55.56	52.54	1.18	13.38			
Water supply, sewerage, waste management and remediation activities	-7.89	28.57	1.21	7.23			
Construction	-50.00	233.33	12.50	41.71			
Wholesale and retail trade, repair of motor vehicles and motorcycles	-75.00	150.00	0.95	21.47			
Transportation and storage	-41.67	100.00	3.57	21.08			
Accommodation and food service activities	-57.14	140.00	-3.89	29.59			
Information and communication	-52.38	166.67	2.88	24.55			
Financial and insurance activities	-40.00	54.55	0.49	18.34			
Professional, scientific, innovative and technical activities	-37.50	70.94	-0.51	16.62			
Administrative and support service activities	-70.83	50.00	-3.28	14.38			
Public administration and defense, compulsory social service	-50.00	100.00	-0.54	12.71			
Education	-64.29	33.33	-0.83	11.72			
Health and social welfare	-85.00	100.00	6.21	22.80			
Art, entertainment, recreation and other activities	-64.21	25.00	-5.21	19.58			
Other service activities	-80.00	16.67	-7.95	25.02			
Activities of households as employers	0.00	0.00	0.00	0.00			

Source: Authors' calculation

The participants employed in the sectors of agriculture, forestry, and fishery had the largest percentage increase in wages. Additionally, those employed in the health and social welfare sector, as well as those in the transportation and storage, and media and communication sectors, also experienced an increase in percentage differences in wages. On the other hand, participants employed in the sectors of other service activities, art, entertainment, and recreation, as well as the accommodation and food service sector, had a percentage decrease in wages. The employment sectors showed differences concerning the distribution of men and women ($\chi^2_{(2)} = 198.16$, $p < .001$) as well as employees with primary, secondary, and tertiary education ($\chi^2_{(19)} = 323.56$, $p < .001$). The sectors of construction and agriculture, forestry, and fishing were represented predominantly by men, and most employees in these sectors had primary and secondary education. In contrast, women were overrepresented in the health and social welfare sector (see Appendix 1).

DISCUSSION AND CONCLUSION

Our study aimed to explore the impact of COVID-19 on labor income with regard to gender, education, the possibility of working from home, and the employment sector. Based on our aim, we hypothesized that women would experience a more considerable decrease in income since

they are more often employed in the sectors primarily hit by restriction measures (e.g., trade or administration). However, our results showed no significant percentage difference in wage change from January to December 2020. Moreover, both men and women had a slight increase in wages (calculated as the percentage difference between nominal values of wages in two time points).

Furthermore, relying on previous findings, we assumed that a more substantial decrease in wages would be observed in low-educated employees. Previous studies yielded fairly consistent findings (e.g., Arndt et al., 2020; Midões & Seré, 2022), indicating that low-educated employees are likely to face more severe labor outcomes. However, our results contradicted previous findings, as employees with primary education had a considerable percentage increase in their wages, while those with tertiary education faced a slightly decreased income. This result was contrary to our hypothesis, prompting us to further investigate the possible interaction between gender and education. Upon examining the interaction, we found a significant effect. The interaction pointed out that only low-educated men had a substantial percentage increase in wages.

Our third hypothesis was that employees without the possibility to work from home would experience a larger income decrease. However, this hypothesis was also rejected. The results showed that employees without the possibility to work from home had a percentage increase in wages. This finding was somewhat unexpected and appeared vague. The explanation for this finding could be related to the relationship between the possibility of working from home and education. Consistent with previous studies (Barbour et al., 2021; Yang et al., 2021), we also found that the possibility of working from home is associated with tertiary education. Further analysis regarding the percentage change of wage in the employment sectors helped us better understand this finding regarding the possibility of working from home and education.

We assumed that participants employed in the sectors of accommodation and food services, as well as arts, entertainment, and recreation, would experience a larger income decrease. Our results supported this hypothesis. As expected, those sectors were faced with a reduction in workload due to the pandemic's impact. However, the substantial percentage increases in wages in the construction, agriculture, forestry, and fishery sectors were unexpected. The changes in the Serbian market from March to December 2020 provide one possible explanation. Shortly after the onset of the COVID-19 pandemic, real estate prices started to grow, and food prices also increased. These market changes likely contributed to wage increases in those sectors. This finding helps to understand the differences in wages regarding gender and education. Notably, the majority of employees in these two sectors are individuals with primary and secondary education, primarily men. Moreover, most employees in these sectors are unable to work from home due to the nature of their jobs (except for a minority with managerial roles). Therefore, a detailed analysis of the differences in percentage changes in income by employment sectors helped clarify somewhat vague differences in wages regarding education and the possibility of working from home.

While our study provides valuable insights, it is not without limitations. Firstly, the data collection was conducted using the CATI method, which may have introduced response bias and could potentially limit the generalizability of the findings to the broader population. Secondly, as the analyses relied on self-reported labor income data from a sample of employees, certain aspects of labor income changes may not have been fully captured, introducing the possibility of somewhat higher measurement error. Lastly, it is important to note that not all participants provided information on their wages, and therefore, our analysis was based solely on the data from employees who reported their wages, which may have introduced an additional bias.

In conclusion, we need to observe that this study contributes to the growing body of literature regarding the impact of COVID-19 on labor market outcomes by providing a more nuanced understanding of the effect of the pandemic on the position of workers in Serbia. Thorough analyses of this kind are essential in unprecedented times to offer valuable inputs to policymakers

and to indicate possible labor market trends in future economic shocks similar to the one that stemmed from the COVID-19 pandemic.

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APPENDIX**Table 1.** Employment in sectors by gender and education

Employment sector	Gender (%)		Education (%)		
	Men	Women	Primary	Secondary	Tertiary
Agriculture, forestry and fishing	77.5	22.5	43.8	46.3	10.0
Mining and quarrying	78.6	21.4	0.0	92.9	7.1
Process manufacturing	60.7	39.3	11.3	70.9	17.8
Energetics	70.0	30.0	7.5	62.5	30.0
Water supply, sewerage, waste management and remediation activities	75.0	25.0	7.7	69.2	23.1
Construction	89.3	10.7	24.7	63.5	11.8
Wholesale and retail trade, repair of motor vehicles and motorcycles	42.9	57.1	13.1	63.1	23.7
Transportation and storage	81.7	18.3	1.2	79.3	19.5
Accommodation and food service activities	52.9	47.1	7.8	72.5	19.6
Information and communication	68.4	31.6	1.3	57.0	41.8
Financial and insurance activities	18.4	81.6	2.6	34.2	63.2
Professional, scientific, innovative and technical activities	44.6	55.4	0.0	39.3	60.7
Administrative and support service activities	48.5	51.5	6.1	69.7	24.2
Public administration and defense, compulsory social service	57.5	42.5	5.0	65.0	30.0
Education	38.3	61.7	6.4	28.6	65.0
Health and social welfare	20.8	79.2	8.8	56.9	34.3
Art, entertainment and recreation and other activities	55.9	44.1	8.6	57.1	34.3
Other service activities	60.9	39.1	8.7	56.5	34.8
Activities of households as employers	55.0	50.0	50.0	50.0	0.0

Source: Authors' calculation

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