

# Drivers of Income Inequality during COVID-19 Pandemic in Jordan

Racha Ramadan

# **DRIVERS OF INCOME INEQUALITY DURING COVID-19 PANDEMIC IN JORDAN<sup>1</sup>**

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## Abstract

The COVID-19 pandemic is a global crisis that has added additional challenges and burdens on households, workers and governments. Using the COVID-19 MENA Monitor Household Survey, conducted by the Economic Research Forum, the present paper aims to assess the impact of COVID-19 crisis on income in Jordan. Logistic regressions are estimated to examine the impact of the individuals and households' characteristics on the likelihood of experiencing decline in household's income. Individuals working in hard hit sectors and vulnerable groups such as youth, women, poor households and those working informally are more likely to lose their income. Other vulnerable groups include individuals working in hard-hit sectors, those who were suspended and individuals whose wage payment had been decreased. These negative drawbacks of the pandemic on income and employment are expected to increase income inequalities in Jordan between the different socio-economic groups. As a response, targeted social protection programs, carefully designed to include vulnerable households experiencing job and income loss during the crisis, are highly required.

**Keywords:** COVID-19, income; employment, Jordan

**JEL Classifications:** C25, D30

## ملخص

جائحة كوفيد-19 أزمة عالمية أضافت تحديات وأعباء على الأسر والعمال والحكومات. باستخدام مسح COVID-19 MENA Monitor للأسرة، الذي أجراه منتدى البحوث الاقتصادية، تهدف هذه الورقة إلى تقييم تأثير أزمة COVID-19 على الدخل في الأردن. يتم تقدير الانحدار اللوجستي لدراسة تأثير خصائص الأفراد والأسر على احتمالية مواجهة انخفاض في دخل الأسرة. الأفراد الذين يعملون في القطاعات المتضررة بشدة والفئات الضعيفة مثل الشباب والنساء والأسر الفقيرة وأولئك الذين يعملون بشكل غير رسمي هم أكثر عرضة لفقدان دخلهم. وتشمل الفئات الضعيفة الأخرى الأفراد الذين يعملون في القطاعات المتضررة بشدة، والذين تم إيقافهم عن العمل والأفراد الذين تم تخفيض رواتبهم. من المتوقع أن تؤدي هذه العيوب السلبية للوباء على الدخل والعمالة إلى زيادة عدم المساواة في الدخل في الأردن بين مختلف الفئات الاجتماعية والاقتصادية. واستجابة لذلك، هناك حاجة شديدة لبرامج الحماية الاجتماعية المستهدفة، والمصممة بعناية لتشمل الأسر الضعيفة التي تعاني من فقدان الوظائف والدخل أثناء الأزمة.

## **1. Introduction**

Since the outbreak of Covid-19 in January 2020, the world's economy has been severely affected. All the countries of the world have been facing major economic and social challenges to save their populations' lives. The response plan for nearly all the countries included lockdowns, quarantine and other precaution measures to limit the spread of the virus. These measures resulted in economic slowdown, job loss and income decline.

Worldwide; 8.8% of global working hours were lost in 2020 compared to the fourth quarter of 2019. This is equivalent to a loss of 255 million full time jobs around the world. As for the Arab states, they witnessed a loss of 9% of working hours compared to the fourth quarter of 2019 which is equivalent to 5 million full time jobs on average in 2020. As a result, the employed population decreased by 2.2% and unemployment rate increased in the by 1.8% Arab region (ILO Monitor: Covid-19 and the world of work, 2021).

Jordan is not an exception. Jordan has witnessed the spread of Covid-19 since March 2020. On the 17th of March, a curfew was declared, flights were ceased, and exchanges on the Stock Market were suspended. Many individuals lost their jobs and their sources of income as a result of the lockdown, quarantine and other restrictions. Workers in the informal sector, workers in hard-hit sectors as manufacturing, tourism and construction (ILO, 2020a), women and migrants are expected to be the most affected by such crisis, which would result in an increase in income inequality. Such inequality may hinder any progress achieved in the development agenda. As the spread of the new coronavirus continues with the different waves and variants of the virus, addressing the main drivers of income loss is required to reduce the negative drawback on inequality and protect the vulnerable groups.

Against this backdrop, the present paper aims to assess the impact of the COVID-19 pandemic on income inequality in Jordan. More precisely, using the second wave of the COVID-19 MENA Monitor data conducted by Economic Research Forum in Jordan, logistic models are estimated to assess the vulnerability to income loss in June 2021 as a result of the pandemic. The paper examines the socio-demographic characteristics and employment status of the respondents who are more likely to experience decline in their household's income, compared to February 2020 before the spread of the virus. Such analysis is required to provide policy makers with evidence-based recommendations for well targeted policies and programs to reduce inequality.

This research is part of a research partnerships between UNDP Jordan and Economic Research Forum. This research partnership provides a series of papers looking at the different dimensions of inequalities in Jordan; income inequality, evolution of inequality of opportunity in education, and inequality in education attainment in Jordan (Hendy and Ben Mimoune, 2021; Ramadan, 2021; Rizk and Rostom, 2021)

The paper is organized as follows; section 1 reviews the literature discussing the impact of COVID-19 on income and exploring change in employment as main channel for income decline. Section 2 and 3 present the methodology and the data used. Section 4 discusses the estimated results and finally section 5 concludes.

## **2. Literature Review**

The lockdown and public health measures resulted in a reduction in the number of working hours, loss in employment and great losses in earnings, yielding to higher level of inequality. As Ferreira (2021) explained, there have been multiple assumptions around the world that income inequality is expected to increase as rich will be richer and poor will become poorer. However, it was observed globally that the developed countries suffered more from negative impacts of Covid-19 as they witnessed higher numbers of cases and deaths. As a result, global income inequality was reduced between developed and developing countries. This international decline trend in income inequality was observed since the start the start of this millennium. On the other hand, within country income inequality was strongly expected to rise. As less earnings for new labor force participants are expected during crisis compared to their previous and later peers (Ferreira, 2021). This was confirmed by Deaton (2021). Using the unweighted definition of inequality, Deaton (2021) perceived that global income inequality was reduced given that well-performing countries in 2019 suffered from the greatest losses during the pandemic. Yet, while using the population-weighted definition of inequality, global inequality increased. This was mainly due to the decrease of GDP per capita of India resulting in greater poverty for one of the largest populations in the world.

The impact of COVID-19 on income is disproportionate among the different regions and within the countries, according to the initial economic situation, individuals' characteristics and the applied policies to attenuate the negative economic drawbacks on individuals. For Latin American countries, Lustig et al (2020) studied the impact of the lockdown policies on poverty, inequality and income mobility in Argentina, Brazil, Columbia and Mexico. Based on the newest household surveys for the four countries, the risk of losing income is the highest for the middle groups rather than the poorest or the richest quintiles. Using microsimulation to estimate the potential income losses at household level, they found that there is an increase in poverty for all countries. Yet, it has hit harder the indigenous population in Brazil. Nevertheless, the social policies were offsetting the impacts of poverty for the indigenous population which has left the total effect similar for both groups in Brazil. Moreover, using Growth Incidence Curves, it appears that all households in four countries have been worse off regarding the income mobility. Yet, the effect was more intense for the middle-income group, for both female-headed and male-headed households. The findings show as well that the

expanded social assistance applied in Argentina, Brazil and Columbia have offsetting effects, especially for female headed households.

On the other hand, the Arab States witness high levels of inequality even before the outbreak of Covid-19. According to the UN (2020), only 31 billionaires own a wealth equal to the wealth owned by the bottom half of the poorest Arab population. The regional Gini coefficient of wealth is estimated at 83.9 when accounting for within-country inequality. Income inequality would further increase during the pandemic, with disproportionate impact on women, elderly, refugees and those working in the informal sector. On average, women's earnings are already less than men by 79%, on a per capita basis. Besides, women are expected to lose 700,000 jobs, mainly in the informal sector where they are highly concentrated. For migrants who constitute 40% of the workforce of the region, they are more likely to lose jobs, have limited access to services and difficulties to return to their origin countries. And, old people risk of not having the needed financial means to look after themselves, given their limited social security coverage (UN, 2020).

In Jordan, according to a rapid assessment of the impact of COVID-19 on vulnerable groups in the Jordanian labour market , 47 percent of the 1580 respondents were out of work during the first two weeks of April 2020. According to the assessment; 13 percent of the respondents had been permanently dismissed; 18 percent had been temporarily laid-off; and 16 percent were on paid leave. Additionally, the median monthly income has fallen from 368 to 215 Jordanian Dinars after the outbreak of Covid-19 (ILO, 2020a). Cefala et al. (2020) emphasized the same idea using a survey of 4,000 individuals in Jordan conducted through one of the largest mobile phone operators. They showed that earnings have been cut down by an average of 42%. Besides, 48% of respondents indicated that they had to borrow to overcome the crisis, 41% spent all their savings, 16% relied on family help, and 8% sold their assets.

Employment loss, working hours reduction and wage delay or reduction constitute key channel for income loss, with disproportionate impact among groups resulting in increasing income inequality. As the work of Cefala et al. (2020) asserted, earnings' loss resulted from reducing working hours, is disproportionate among different groups in Jordan. The disadvantaged workers include workers with non-secondary education, young workers, refugees and low wage workers.

The job loss probability is always driven by the share of tasks that can be remotely done at home Gemelas et al (2021). Running logistic regressions, Prassl et al. (2020) confirmed that being a permanent worker or having a greater share of remote tasks has a significant negative impact on the probability of job loss. And, being a salaried worker or having fixed hours contract affects negatively the probability of earnings

loss. As for the individual characteristics, women have a significant higher probability to lose their jobs in US and UK. Yet, those with a university degree are less likely to lose their jobs. Moreover, in Germany, the younger cohorts have a greater probability to lose their jobs.

In the MENA region, AlAzzawi (2021) discusses the repercussions of Covid-19 on employment by establishing a telework ability index. Such an index helps identifying the jobs that can be performed remotely according to jobs' characteristics. AlAzzawi (2021) showed that Covid-19 is not the only reason for jobs' loss. As not all jobs can be remotely done, job loss during pandemic also can be related to jobs' characteristics as well as work environment. For instance, a good internet connection and electricity are not always provided in all MENA countries. Hence, having jobs that can be remotely practiced does not mean necessarily that employees in MENA can work from home. AlAzzawi (2021) investigated micro-level data surveys for 5 Arab countries: Palestine, Tunisia, Jordan, Egypt, and Algeria. The percentage of teleworkable jobs varies enormously among the countries. It ranges from 29% in Jordan, 23% in Palestine and Algeria, 17% in Tunisia and only 2% in Egypt. Telework ability differs according to the economic sector as well; for instance, the index of telework ability is around 80% for education sector. Yet, it is equal to around 5% for agriculture and construction sectors.

Informality is a key aspect of employment in the MENA region that must be considered. And, as an average of 50% of the Arab population is informally employed, working from home would be very limited for most of the working population. AlAzzawi (2021) found that telework ability index for the informal sector ranges from 1% in Egypt to 19% in Jordan, showing that telework ability is very limited for informal employment. Using a logistic regression, AlAzzawi (2021) confirmed that telework ability is influenced as well by workers' characteristics. The results showed that being male and young (except for Tunisia) lowers the probability to be able to work remotely. This is explained by the fact that men are concentrated in jobs that cannot be done remotely as jobs in construction or manufacturing sectors. Moreover, working in a small enterprise of four employees or less, working informally, or working in agriculture or mining sectors reduce the ability to work remotely. And among the workers who are able to work from home, only a small share has the needed tools. For instance, only 10% of the workers of teleworkable jobs have the needed means to be able to perform their jobs.

In Jordan, Schweitzer (2020) conducted a survey on 606 workers and 93 employers to study the impacts of Covid-19 during the first two weeks of lockdown from 15th of March till 27th of March. The report shows that 80% of the surveyed individuals indicated that they did not work in week 2 compared to having worked more than one hour in the first week. They have witnessed a decrease in their working hours by 42%



in week 2 compared to week 1. Moreover, 24% of the respondents confirmed that while searching for jobs, they have found that available vacancies offered by employers have declined in the second week of the pandemic. Moreover, job loss and income decline would affect access to food, education and other services by vulnerable groups. Schweitzer (2020) has highlighted that 56% of the surveyed individuals in Jordan reduced their food intake and 67% delayed their rent payments to cope with income reduction during the crisis.

Summing the negative impact on employment, Raouf et al. (2020) estimated employment loss in Jordan at 20%. The negative impacts of the pandemic on employment is disproportionate according to the economic sector. Individuals working in the agricultural sector were highly affected. Only farmers with license were allowed to work during the lockdown (Raouf et al., 2020). As for industrial sector, the government supported and protected the main industries of food, export-oriented industries, pharmaceuticals and phosphates. Yet, other industries like textiles and clothing suffered from extreme losses where the production declined by 15%. This was explained in details through the ILO report on the impact of COVID-19 on sector specific-employment and skills in Jordan: garments and leather sector published in 2020. The sector of textiles and garments faced a tremendous decline in the local demand which has reached nearly zero sales in March and April 2020. Furthermore, as the United States of America represents 92% of the foreign demand and by ceasing trade activities, the exports fell as well. Raouf et al. (2020) underlined as well the impact on construction sector due to lack of mobility of workers to ensure social distancing. Bsisu (2020) studied the impact of Covid-19 on civil engineers and construction sector in Jordan. Using a survey on 150 civil engineers, the results of qualitative analysis show that 83.5% of office working engineers continued to work remotely and among them, 32% noticed a decrease in their productivity. As for field-working engineers, only 20% confirmed that social distancing and safety measures were applicable. And around 40% of the respondents declared that some civil engineers are likely to lose their jobs because of delays in projects which was their major concern. Raouf et al. (2020) have also showed that the services sector was the hardest hit where the sectoral GDP has declined by 29.5%. This is mainly due to the decline in transportation and travel activities by 35% as well as the severe decline of tourism. In fact, the decline in the tourism activities represents 80% of the total decline in the Jordanian GDP. Exploring levels of employment at the different sectors, agriculture, industry, and services have all witnessed a reduction in employment levels by 19.6%, 16%, and 24.3%, respectively.

### 3. Methodology

The paper attempts to examine the impact of the COVID-19 on income inequality in Jordan. As the negative impact of the pandemic on income is disproportionate among individuals based on their characteristics, the present research examines the socio-demographic characteristics of individuals who are more likely to experience income decline post the spread of the pandemic. The dependent variable is a binary variable equals 1 if the respondent's household experience a decline in total monthly income last month compared to February 2020, 0 if income increased or there was no change. Following the literature, a logit model is estimated to investigate the likelihood of experiencing loss in income in June 2021.

Determinants of loss of income include the respondent's characteristics as age, gender, nationality and education level. Other determinants include households' characteristics as household size, geographical location and the income quartile to which the households belong in February 2020.

As discussed in the literature, the employment status is key factor in explaining change in income, as wage is a key component of income. Thus, the employment status before the spread of the pandemic and any change in labor outcome as loss of jobs, reduction in working hours or wage payment are channels through which households may experience decline in income. Another key determinant is the formality of employment, the economic situation and income of individuals formally employed with contract and social security are expected to be more resilient to any shock as the COVID-19 crisis. Moreover, the economic activity of employed individuals matters as well. As expected, individuals who were employed, in February 2020, in one of the hard-hit sectors are more likely to observe their income decrease compared to those working in other sectors. According to the ILO (2020b), the sectors that were hard-hit by the spread of the coronavirus includes manufacturing, construction, retail and wholesale, and transportation sector. These sectors were the most affected by the lockdown and precaution measures.

Therefore, different versions of the model are estimated including different regressors reflecting the labor outcome of the respondents. The first version includes the employment status, if they are wage workers or self-employed, in addition to the economic activity of the respondent and other socio-demographic characteristics. The second version includes a binary variable equals 1 if the respondent is formally wage worker, in addition to the economic activity of the respondent and other socio-demographic characteristics. Finally, as many individuals were temporary or permanently suspended, and/or experienced decline in working hours or in payment, the third version of the model includes the change in the labor outcomes in terms of

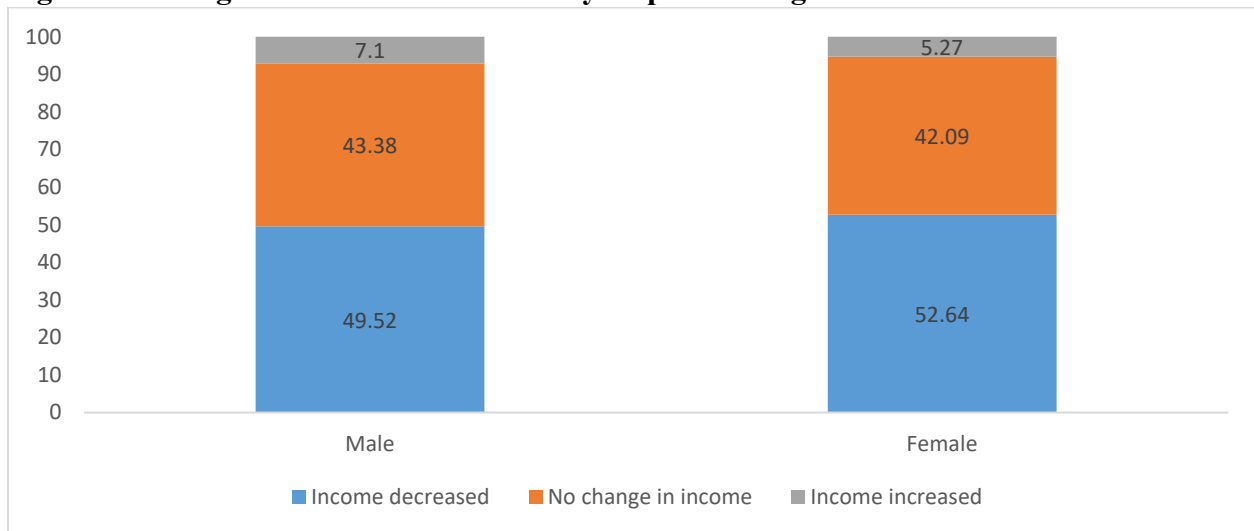
working hours and wage, in addition to the other individual and households' characteristics.

#### **4. Data**

The data set used in the present analysis was collected by the Economic Research Forum; the COVID-19 MENA Monitor data in Jordan. The survey contains information on basic socio-demographic characteristics of respondents, self-reports on change in income, food expenditure, employment, education methods and living conditions before and after the spread of the coronavirus. The used wave in the analysis is conducted in June 2021 (Wave 2) including 2503 individuals. There was a first wave conducted in March 2021, with 1553 individuals surveyed in the second wave were surveyed in the first wave as well. Among the 2503 respondents, 51% are female and 88% of the sample lives in urban areas. For the nationality of respondents, 86% are Jordanians, 4% Palestinians and 10% Syrians.

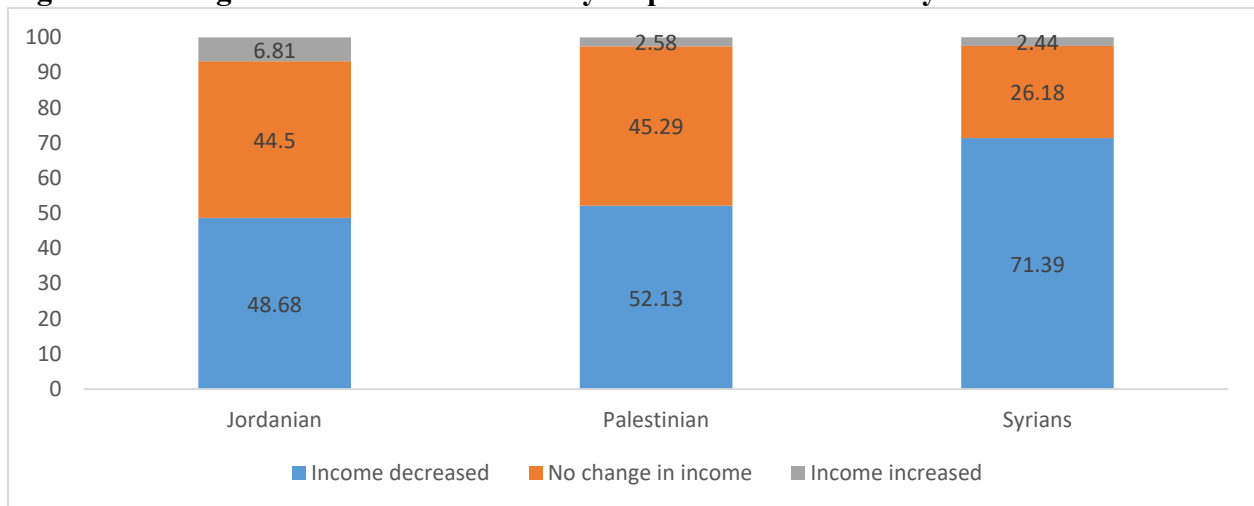
As a result of the pandemic, lockdown and precaution measures, 51% reported decline in their households' income in June 2021 compared to February 2020. It worth noting that there is no information regarding the composition of this income. Around 53% of female respondents report decrease in their household's income compared to 50% among men (Figure 1). Syrians are more vulnerable to decline in income, as around 71% report decreasing income, compared to only 2% states that their income increased between February 2020 and June 2021. These shares are 52% and 3% for Palestinians, respectively. And for Jordanians, around 50% state that their income declined because of the pandemic, while 7% experience increase in income (Figure 2). Residents in urban areas, epicenter of the spread of the virus, experience income decline more than individuals living in rural areas or refugee camps. In urban areas, 53% of the respondents see their income decrease, while in rural areas and refugee camps this share is 38% (Figure 3).

**Figure 1: Change in household's income by respondent's gender**



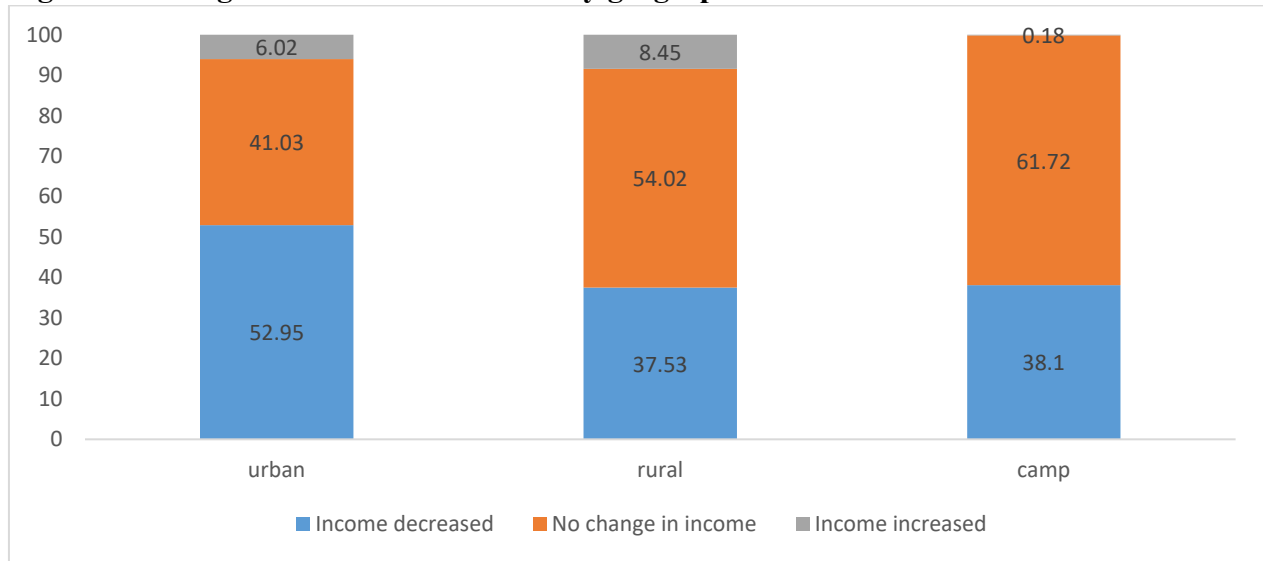
Source: Calculated by the author using COVID-19 MENA Monitor Data for Jordan- Wave 2

**Figure 2: Change in households' income by respondent's nationality**



Source: Calculated by the author using COVID-19 MENA Monitor Data for Jordan- Wave 2

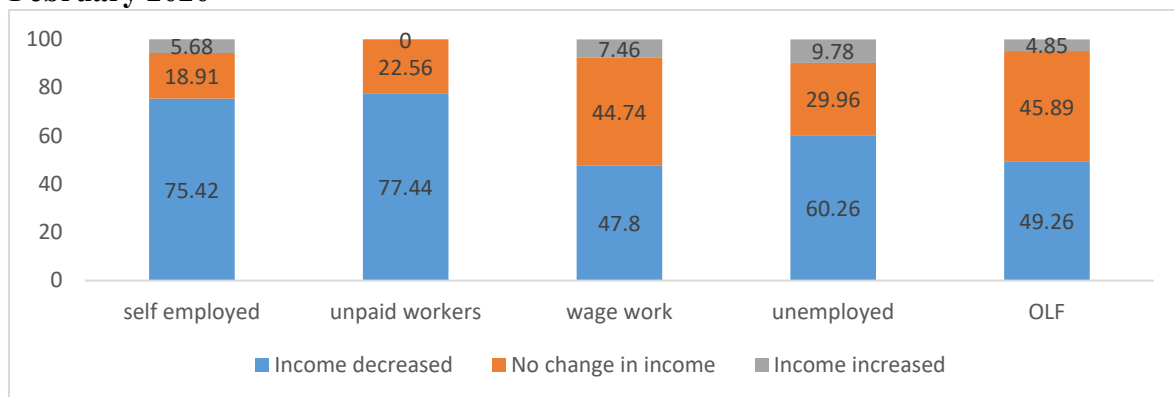
**Figure 3: Change in households' income by geographical location**



Source: Calculated by the author using COVID-19 MENA Monitor Data for Jordan- Wave 2

The negative impact of the pandemic on income is disproportionate among individuals based on the employment status. Figure 4 shows that among the employed in February 2020, the self-employed and unpaid workers are the main vulnerable groups. As 75% and 77% of the self-employed and unpaid workers, respectively, report decrease in their households' income in June 2021. While for wage workers, 49% state that their household's income decreased compared to 45% who reported that there was no change in their income. Similarly, 48% of those outside of labor force reported decline in income compared to 60% among unemployed. The decline in the households' income of the respondents who are out of labor force or unemployed showed that other sources of income, and not only wage, have been affected as well by the pandemic.

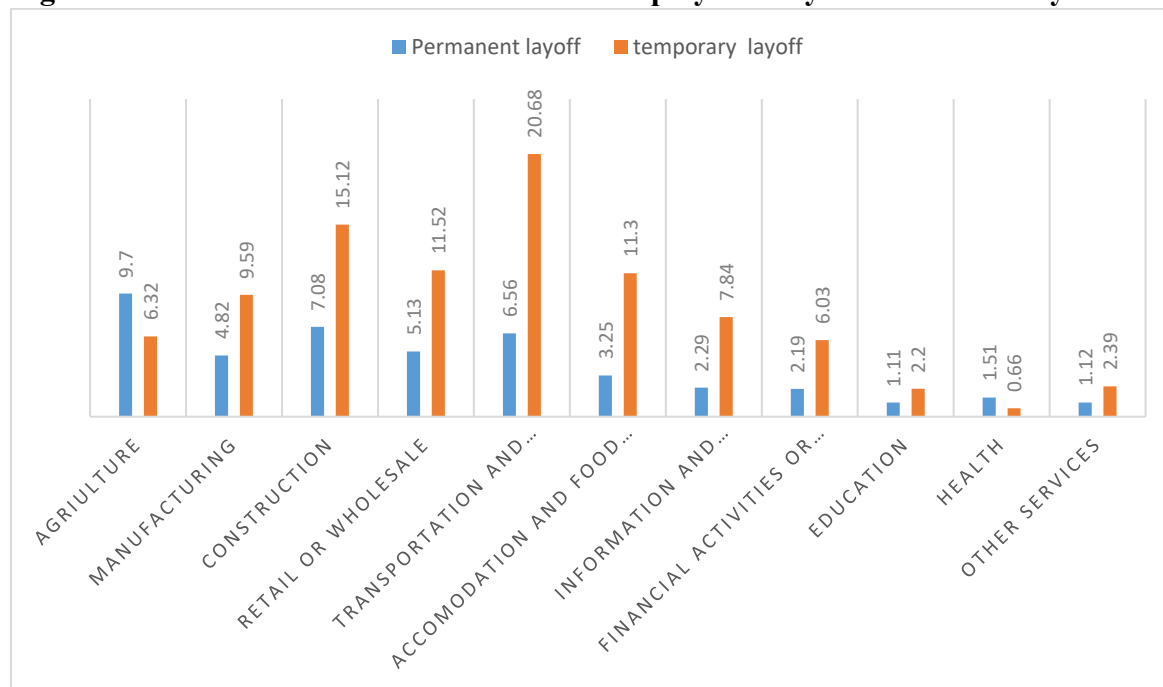
**Figure 4: Change in households' income by the respondent's employment status in February 2020**



Source: Calculated by the author using COVID-19 MENA Monitor Data for Jordan- Wave 2

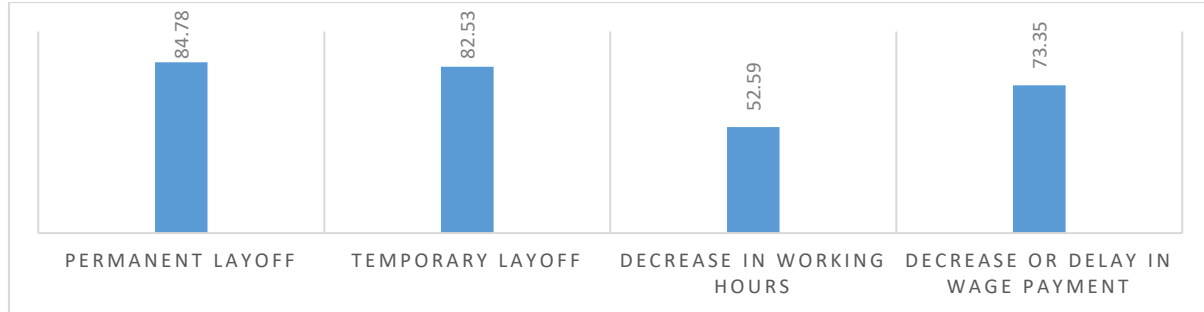
Informality is another key factor for the resilience of households to any shocks. Among the wage workers who are formally employed with social insurance, 55% did not experience any change in their income. Additionally, many economic activities as construction, retail and wholesale, transportation, accommodation and food services had been hard-hit by the pandemic. More than 10% of respondents who were working in these sectors in February 2020 had been temporary suspended and 3% or more had been permanently suspended (Figure 5). Many employers reduce working hours or wages to cope with the negative drawbacks of the pandemic. Among those who were employed in February 2020, 14% experienced decrease in their working hours in the last 60 days before the survey day, and 15% experience delay or decrease in their wage payment. These respondents are vulnerable to decline in their households' income as a result of change of their employment and wage payment. As figure 6 shows, among those who have been permanently suspended during the past 60 days of the survey day, 85% experience decrease in income. This share is around 85%, 53% and 73% among those who are temporary suspended, who experience decrease in working hours and those who experience delay or decrease in their wages, respectively.

**Figure 5: Prevalence of those who lost their employment by economic activity**



Source: Calculated by the author using COVID-19 MENA Monitor Data for Jordan- Wave 2

**Figure 6: Prevalence of respondents whose household income decrease according to change in their employment and payment**



Source: Calculated by the author using COVID-19 MENA Monitor Data for Jordan- Wave 2

## 5. Empirical Results

The estimated marginal effects of the regressors of the logit models are presented in table 1. The results show that elderly respondents are less likely to report a decline in their household's income for all versions of the model. This can be explained by the presence of other sources of income for elderly that may not be directly affected by the pandemic. Other income sources may include pensions or government support. Unlike young individuals whose wage or employment revenue are the main sources of income.

For the respondent's gender, it was found that female respondents are more likely to report decline in their household's income, compared to their male counterparts. This positive effect is significant only when the employment status in February 2020 is controlled for. It worth noting that three other versions of the model were estimated with interaction terms for gender. The interaction terms between gender and employment status, gender and economic activity and gender and change in employment status were not significant, with no impact on the significance or signs of the other variables. Likewise, a Syrian respondent is more likely to experience decline in their household's income as a result of the pandemic. And as found for female respondents, the interaction terms between being Syrians and the employment status had no significant impact on the probability of experiencing declining income.<sup>2</sup>

The results show that the larger the household size, characteristic of poor households, the more likely to experience decline in household's income. This positive marginal effect is not significant when formality of the respondent's employment is controlled for. Similarly, the marginal effect of living in urban areas is positive and significant for all versions of the model. This is expected as

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<sup>2</sup> The results of versions of the model with the interaction terms are available upon request.

urban areas are the epicenter of the spread of the virus and where the precaution measures and lockdown were strictly applied.

Education, a key factor in increasing resilience of individuals against any economic shock, has negative effect on the probability of decreasing income. The marginal effects of all education levels are negative. Though, only the marginal effects of basic and secondary education are significant. This means that respondents with basic or secondary education are less likely to experience income decline, compared to respondents with less than basic education. And for the income level, the findings show that households in high income quartile are less likely to experience decline in their household's income because of the pandemic. Though this negative marginal effect is significant only at the highest income quartile.

As discussed in the literature, employment status is a key determinant of household's income. In the first version of the model, being wage worker has no significant impact of the probability of decreasing income. While respondents who were self-employed in February 2020 are more likely to experience a decline in their household's income in June 2021, compared to those who are non-employed. These later may depend on other sources of income that may not be directly affected by the precaution measures and lockdown. While the self-employed are negatively affected given the economic slowdown and the public health measures. Similarly, informal employees, in February 2020, are more vulnerable to the negative drawback of the spread of the coronavirus. In the second version of the model, respondents who were formal wage workers, in February 2020, are less likely to observe a decline in their household's income in June 2021.

The lockdown and precaution measures implemented to control the spread of the virus had disproportionate impacts on the different economic activities. The marginal effects of being employed in manufacturing, construction, retail or wholesale, transportation, accommodation and food services are negative and significant. In other words, respondents, who were employed in one of these hard-hit sectors in February 2020, are more likely to experience decline in their households' income, compared to those working in other services.

As a response to the economic drawback of the pandemic, firms resort to different coping strategies as reducing wage, temporary suspension and/or permanent suspension. As found from the results of the third version of the model, respondents who experience any of these change in their employment or wage payment are more likely to observe a decrease in their household's income. Reducing working hours has no significant impact on the probability of decreasing household's income.



Finally, as a robustness check, panel data for respondents who were surveyed in the two waves conducted in March 2021 and June 2021 were used to estimate the third version of the model using a conditional fixed effect logistic regression and random effect logistic regression. The panel data allows following the changes in the employment and wage payment of the respondents and their impacts on the probability of decreasing household's income in March 2021 and June 2021. The results of the random effect model confirm the finding of the third version of the logistic regression discussed above. Large households living in urban areas are more likely to experience decrease in income. While households in the highest income quartile and whose respondents have high education level are less likely to experience decrease in income. And as found in the results of the third version; respondents who experience decrease in wage, temporary suspension and/or permanent suspension are more likely to report a decline in their household's income. For the results of the conditional fixed effect logistic regression, only respondents who had been permanently suspended are more likely to experience decrease in income. All variables with no-within group variance were omitted.<sup>3</sup>

## **6. Concluding Remarks and Policy Recommendations**

The spread of the coronavirus resulted in a contraction of the economic growth in Jordan by 1.8% (World Bank, 2021) with anticipated large and immediate losses in both income and employment (UNHCR, 2020). In Jordan, as in other Arab countries, earnings' loss was greater for specific groups compared to others. Thus, Jordan may witness higher income inequality due to the deterioration of the status of the most vulnerable groups (UN, 2020; Cefala et al., 2020)

The present research aims to assess the impact of COVID-19 crisis on income by examining the impact of the individuals' and households' characteristics on the likelihood of experiencing decreasing income. And as employment and wage payment constitute an important source of income, the analysis assesses the impact of employment status, change in employment and wage payment are considered as well. The results show that the economic drawback of the pandemic have disproportionate impacts on individuals according to their economic activity, education level, nationality, gender, income group and age. This may result in an increase in horizontal inequalities between the different socio-economic groups. The findings showed that women, youth, Syrians and individuals living in urban areas are more likely to lose income during the crisis. Moreover, employment is a key factor for household's resilience to income shocks. Informal employees, those working in hard-hit sectors and those who were suspended or had a decline in their wage payment, are more vulnerable to decreasing household's income.

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<sup>3</sup> All results of the conditional fixed effect logistic regression and random effect logistic regression are available upon request

These results are relevant from policy perspective for the implementation of well targeted policies and programmes. Government should improve the targeting of social protection system, as it reaches to a small fraction of population and remains poorly targeted (Krafft, Assaad, and Marouani 2021). Social protection programs should better target vulnerable groups based on their socio-demographic characteristics to reduce income inequality.

Finally, there are limitations in the present study that need to be considered. First, for data limitations, the analysis examines the decline in total household's income without investigating what sources of income had been lost or decreased. Though, it would be relevant for future research to consider the impact of the spread of coronavirus on the different sources of income. Second, the present analysis stops at June 2021, while there are other waves and variants of the COVID-19 that may continue affecting the labor market and the structure of the economy. Additionally, the progress in vaccination may attenuate the disadvantages of the pandemic. Hence, future research should consider these factors in studying the impact of the pandemic on income inequality.

**Table 1: Marginal effect of the variables of logit model of decreasing household's income**

Dependent Variable: Probability of decreasing household's income	Version 1	Version 2	Version 3
Age	-0.005*** (0.001)	-0.005*** (0.001)	-0.005*** (0.001)
Female respondent	0.074** (0.037)	0.007 (0.034)	0.044 (0.033)
Living in urban areas (Reference group= rural areas and refugee camps)	0.136*** (0.041)	0.149*** (0.041)	0.145*** (0.040)
Household size	0.014* (0.007)	0.011 (0.008)	0.013* (0.007)
Respondent's nationality (Reference group= Jordanian)			
Palestinian	0.046 (0.102)	0.027 (0.102)	0.046 (0.097)
Syrian	0.126** (0.052)	0.123** (0.052)	0.141*** (0.051)
Education (reference group=less than basic)			
basic	-0.096* (0.055)	-0.091* (0.055)	-0.103* (0.054)
secondary	-0.103* (0.057)	-0.117** (0.058)	-0.121** (0.057)
Higher education	-0.076 (0.062)	-0.083 (0.063)	-0.093 (0.063)
Income quartile (Reference group= lowest quartile)			
Second quartile	-0.044 (0.040)	-0.031 (0.041)	-0.047 (0.040)
Third quartile	-0.060 (0.045)	-0.030 (0.045)	-0.049 (0.045)
Fourth quartile	-0.137** (0.054)	-0.087 (0.055)	-0.113** (0.054)
Economic activity (Reference group= other services)			
Agriculture	-0.297 (0.205)	-0.345 (0.217)	-0.406*** (0.162)
Manufacturing	0.262** (0.110)	0.279*** (0.098)	0.133 (0.092)
Construction	0.231*** (0.088)	0.240*** (0.074)	0.115 (0.079)
Retail or wholesale	0.247*** (0.080)	0.244*** (0.062)	0.150*** (0.065)
Transportation, storage, accommodation and food services	0.179* (0.092)	0.188*** (0.083)	0.082 (0.080)
Information, Communication, financial activities and real estate	-0.108 (0.088)	-0.052 (0.080)	-0.183*** (0.070)
Education and health	-0.084 (0.076)	-0.015 (0.063)	-0.135*** (0.056)
Being formal wage worker		-0.168*** (0.051)	
Employment status (reference group= not employed or unpaid family worker)			
Wage Worker	0.000 (0.065)		
Self Employed	0.360*** (0.062)		
Change in employment and payment because of the pandemic			
Permanent layoff			0.379** (0.152)
Temporary layoff			0.238** (0.109)
Decrease in working hours			-0.020 (0.079)
Decrease or delay in wage payment			0.204*** (0.059)

Standard errors in parentheses, \*\*\*p&lt;0.01, \*\*p&lt;0.05, \* p&lt;0.1

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