



United Nations Development Programme

# LIVES VERSUS LIVELIHOODS: THE COVID-19 PANDEMIC AND LABOUR MARKETS IN ARAB STATES



RBAS WORKING PAPERS SERIES

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## Abstract

Since it began in March 2020, the COVID-19 pandemic has devastated the world economy. The impact on Arab countries and their citizens can be framed by the trade-off between lives and livelihoods: the attempt to save lives by imposing social distancing and strict lockdowns has had a severe impact on the ability of workers to maintain their livelihoods as businesses have downsized or shut down in the face of declining demand. Arab countries have also suffered from the simultaneous oil price shock, which has had both direct effects on oil-exporting countries and indirect impacts on oil-importing and fragile countries, through the effect on migrant workers. In this study, we investigate the potential impact of the COVID-19 pandemic, examining both demand- and supply-side effects. We analyse the characteristics of workers employed in the industries deemed to be at highest risk of a decline in economic activity and complement this with a study of the extent to which jobs can be successfully performed remotely. We develop a teleworkability index using micro data on occupational characteristics. We find that relatively few jobs in Arab countries are compatible with teleworking. While this share varies considerably by industry, gender, age and the nature of employment (formal vs informal), the digital divide (a lack of reliable access to vital tools for teleworking, such as a personal computer and reliable Internet access) make teleworking unlikely in practice even for those whose jobs could potentially be performed remotely. Our results confirm that the workers who were most vulnerable before the pandemic will be the hardest hit.



## 1. Introduction

The COVID-19 pandemic has devastated the world economy since its outbreak in early March 2020. It has damaged both health systems and economies and the Arab countries at varying stages of development and integration into the global economy, some of which were already in a situation of fragility and struggling with current or past conflicts, have been no exception. Arab economies have also suffered a simultaneous oil price shock, which has direct implications for oil-exporting countries, as well as indirect impacts on oil-importing and fragile countries through the effect on migrant workers and remittances.

The impact of the COVID-19 pandemic on Arab countries and their citizens can be framed as a trade-off between lives and livelihoods: the attempt to save lives by imposing social distancing and strict lockdowns has had a severe impact on the ability of workers to maintain their livelihoods as businesses have downsized or shut down in the face of declining demand. The pandemic's impact has therefore manifest as a shock to both aggregate supply and aggregate demand. In this study, we investigate the potential impact of the COVID-19 pandemic, examining both demand- and supply-side effects. We analyse the characteristics of workers employed in the industries at highest risk from the decline in economic activity.<sup>1</sup> We complement this with a study of the extent to which jobs can be successfully performed remotely.

On the demand side, we find that across countries, there are significant numbers of workers in COVID-vulnerable industries. While there are some notable differences across countries, overall, men, younger workers, workers with lower levels of education, workers living in urban areas, workers in blue-

<sup>1</sup> These will be referred to as COVID-vulnerable industries.

collar occupations, workers in informal employment, workers in private employment and self-employed workers are at greatest risk of losing their jobs or income during the pandemic.

The lockdowns imposed by governments in an attempt to slow the spread of COVID-19, which have now become recurring events in many countries due to the ebb and flow of infections, mean that only those who are able to work remotely have been able to maintain their livelihoods.<sup>2</sup> However, not every type of job lends itself to remote work. We develop an index of teleworkability based on micro data on the occupational characteristics of workers and use it to examine the degree of heterogeneity in access to jobs compatible with teleworking. We also examine the extent to which people with such jobs have access to vital tools for remote working, such as a personal computer and reliable Internet access.

We find that relatively few jobs in Arab countries are compatible with teleworking. The share of jobs that can potentially be performed remotely is particularly low for certain groups of workers: young (15–29 years of age), employed in the informal sector, male, rural, employed in microenterprises, working in agriculture or manufacturing, without university education and from lower wealth quintiles. Moreover, we find that even for workers with potentially teleworkable jobs, very few actually have access to the tools necessary for remote work such as a personal computer and reliable Internet access. The digital divide therefore makes teleworking unlikely in practice, even for those whose jobs could potentially be performed remotely. Our results confirm that the workers who were most vulnerable before the pandemic will be the hardest hit.

<sup>2</sup> For data on country lockdown measures, see the University of Oxford Coronavirus Government Response Tracker: <https://www.bsg.ox.ac.uk/research/research-projects/covid-19-government-response-tracker#data>



## 2. Arab labour markets in the run up to the crisis

There are several well-known structural challenges in the labour markets of the Arab region, primarily stemming from the strong divide between “good” formal jobs in both the public and private sectors and “bad” informal jobs (Assaad, 2014). This duality is a direct consequence of the social contract adopted from the 1950s through to the 1970s, based on a state-led model of industrialization. The resulting role of the public sector, including both government administration and state-owned enterprises, entrenched the preference for public-sector employment due to its higher wages and, more importantly, non-wage benefits.<sup>3</sup> This social contract began to fray and disappear in the 1980s, following exchange-rate and budget crises that forced most oil-importing middle-income countries and fragile and conflict-affected countries to move towards neoliberal models of economic development.<sup>4</sup>

<sup>3</sup> This contract involved significant government intervention in all aspects of economic and social life, while simultaneously guaranteeing free services such as health care and education, subsidizing primary needs (including several food items and energy) and direct price controls and protective measures in exchange for a narrow margin of political freedom. Many Arab countries also had an explicit or implicit public sector employment guarantee that drove demand for higher education. The multiple disequilibria and lack of competitiveness created by these policies, gave way to exchange rate and budget crises that were resolved with the help of international institutions like the IMF and strict conditions to reform and liberalize to allow a stronger private sector to emerge.

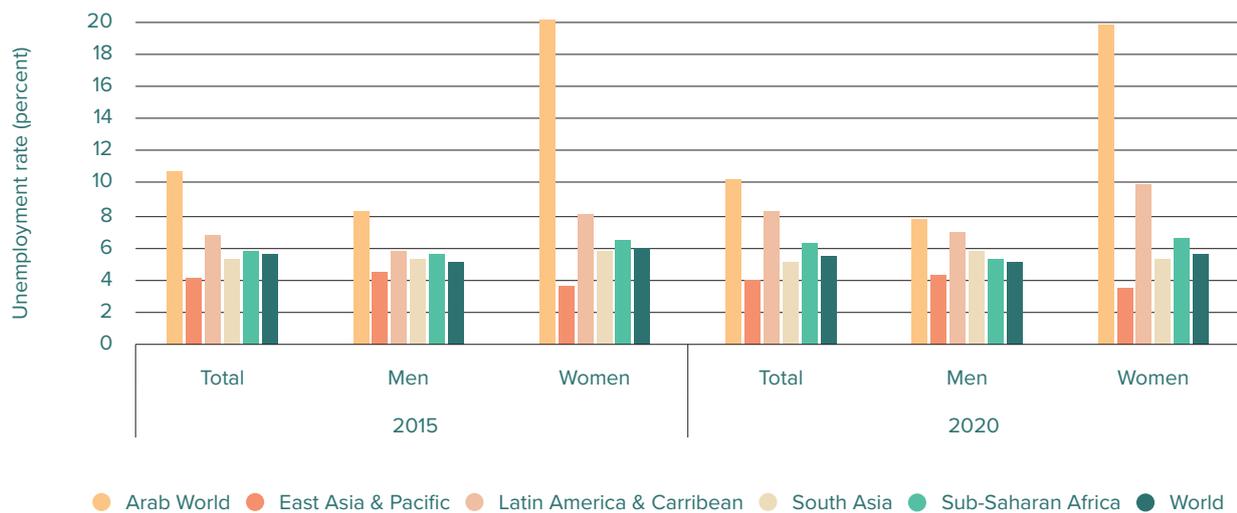
<sup>4</sup> See, for example, El-Haddad (2020), Harrigan and El-Said (2014) and Korayem (1996).

The availability of formal public-sector employment gradually declined in the following decades. This decline was not matched by an increase in formal private-sector jobs, leaving new entrants to the labour market at a considerable disadvantage compared to older cohorts. In oil-importing and fragile and conflict-affected countries, this disadvantage has been characterized by higher rates of unemployment, together with growing informality, as discussed below. In oil-exporting countries, there is a divide between lucrative public-sector jobs, held mostly by citizens,<sup>5</sup> and private-sector jobs, which vary greatly in their quality and are mostly performed by migrant labour.

The collapse of the social contract has resulted, in part, in high rates of unemployment, as educated workers wait for

good jobs, particularly in the public sector. Unemployment rates are higher in Arab countries than in other regions of the world (Figure 2.1), with total unemployment around double the world average. However, this figure hides a significant gap between men and women. Male unemployment is also around double the world average, while female unemployment is around four times the world average, making it the highest in the world. Within the Arab states there are also staggering differences between countries, ranging from low rates in the Gulf Cooperation Council (GCC) countries (although rising in some)<sup>6</sup> to the extremely high rates in Libya, the State of Palestine and Sudan (Figure 2.2). Unemployment in Iraq, Jordan, the State of Palestine and Tunisia has increased significantly over the last 10 years.

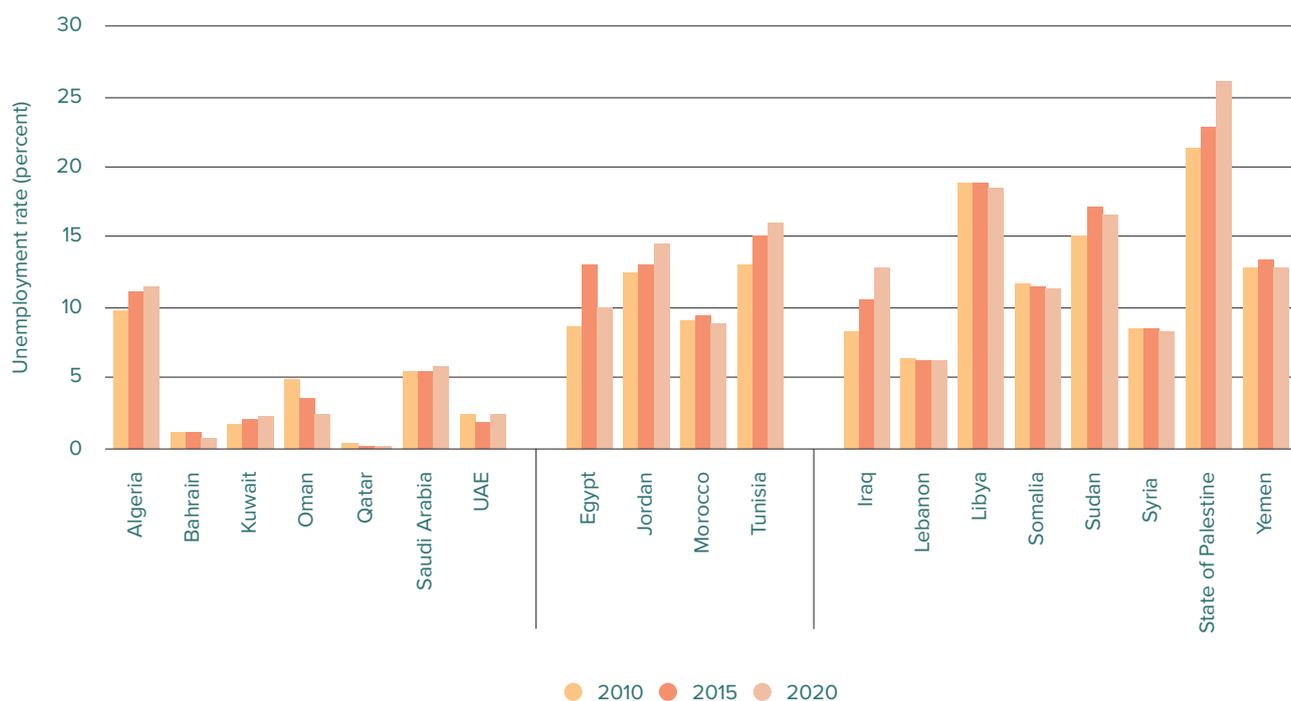
**Figure 2.1. Unemployment rate, overall and by gender, in 2015 and 2020 in Arab countries compared to other world regions (percentage)**



Source: World Development Indicators 2020, based on estimates modeled by ILO.

<sup>5</sup> Even in these relatively wealthy oil-exporting countries, unemployment has been on the rise as public sector employment opportunities dwindle for citizens, with the public sector becoming saturated. This is combined with a skills gap and continued preference by labour market entrants for what are still perceived as the “good” public sector jobs.

<sup>6</sup> Unemployment rates have been rising among citizens in the GCC in particular but overall unemployment rates are brought down by the large numbers of migrant workers.

**Figure 2.2. Unemployment rate, by country, 2010–2020 (percentage)**

Source: World Development Indicators 2020, based on estimates modeled by ILO.

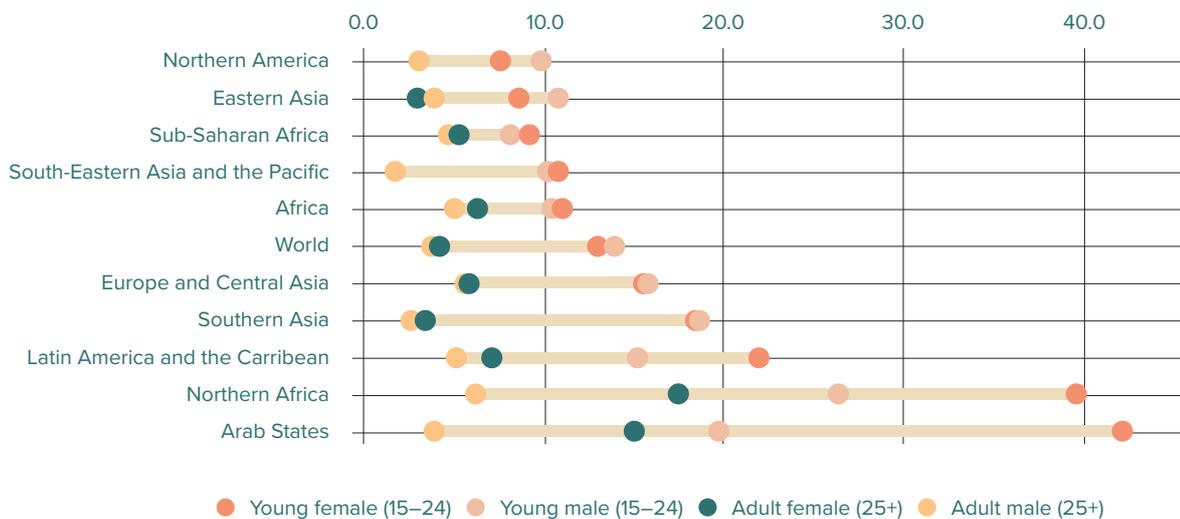
Unemployment rates are particularly high among youth, who make up the vast majority of unemployed people in the region. In fact, youth unemployment in North-African Arab countries<sup>7</sup> is the highest in the world, while in Arab states in Asia it is the second highest, and has been the fastest growing over the last decade.<sup>8</sup> The unemployment rate among young Arab women is more than double the figure for young men, reaching 42.1 percent in Arab states and 39.8 percent in North Africa (compared to 25.7 percent among young men), and has been growing much faster than among young men (Figure 2.3) (ILO, 2020b; ILO, 2020c). The lack of decent job opportunities means many women choose to forego the labour market completely to avoid having to accept informal employment that lacks job security and stability, paid leave, social and health insurance, and safety. This has led to some of the lowest female labour force participation rates in the world.<sup>9</sup>

<sup>7</sup> ILO defines the Arab states as comprising Bahrain, Iraq, Jordan, Kuwait, Lebanon, the Occupied Palestinian Territories, Oman, Qatar, Saudi Arabia, the Syrian Arab Republic, the United Arab Emirates and Yemen. It defines North Africa as comprising Algeria, Egypt, Libya, Morocco, Sudan and Tunisia.

<sup>8</sup> At 30 percent, youth unemployment in North Africa is the highest in the world, remaining practically constant between 2012 and 2020 (ILO, 2020b).

<sup>9</sup> See, for example, Krafft and Assaad (2014) and AlAzzawi and Hlasny (2020). It is worth noting that female labour force participation rates, although the lowest in the world, have been rising slowly over the last few years, especially among young women, as women have attained higher levels of education and cultural acceptance has grown.

Figure 2.3. Unemployment by age and gender, 2019 (percent)



Source: ILO (2020a).

Even more concerning is that the level of young people in informal employment is as high as 85 percent in Arab states (87.5 percent in North Africa), far higher than adults in the region (61 percent).<sup>10</sup> Arab states have the highest gap in the world between young people and adults in terms of formality of employment. This reflects the deteriorating labour market conditions for youth compared to older cohorts. Studies have found that youth who enter the labour market in informal jobs rarely transition into formal employment, regardless of education or experience.<sup>11</sup> Moreover, research has also shown that access to formal employment is correlated with family background, such as parental education, occupation and wealth, thereby exacerbating existing inequalities and reinforcing generational poverty. The role of personal and family connections (*wasta*) in securing public-sector jobs is also well established in several Arab countries.<sup>12</sup>

The Arab states have the highest regional proportion of young people (15–24 years of age) who are not in education, employment or training (NEET) in the world (34 percent in 2019 in Arab states, and 26 percent in North Africa).<sup>13</sup> This is particularly concerning, reflecting a low or even negative return on acquired education. The large numbers of young people—particularly young men—who are neither engaged in skills development or work represent potential for social and civil unrest (Campante and Chor, 2012, 2014; Pellicer, et al., 2020). There is also a high degree of gender inequality among NEETs: in 2019,

the rate among young men averaged 18 percent, compared to 52 percent among young women. For North Africa, the share of young women NEET (36 percent) was also double the figure for young men (18 percent).<sup>14</sup>

<sup>10</sup> ILO (2020b).

<sup>11</sup> See for example, AlAzzawi and Hlasny (2020) and Assaad, Krafft and Salemi (2019).

<sup>12</sup> Ibid.

<sup>13</sup> ILO modeled estimates (2020).

<sup>14</sup> ILO (2020c).



### 3. Existing estimates of current labour market impacts

In response to the COVID-19 crisis, most governments implemented restrictions on gatherings, ranging from strict lockdowns, such as in Jordan, Lebanon, Qatar and the UAE (at least for some of the time since the onset of the pandemic, depending on the severity of infection rates and hospital capacity), to partial curfews at night, such as in Egypt and Libya (UNDP, 2020). These lockdowns and curfews have had severe impact on businesses and their workers. The International Labour Organization (ILO) estimates that a substantial number of working hours were lost in 2020 (Figure 3.1). Relative to the last quarter of 2019, the organization estimates that Arab states lost 3.3 percent of working hours in the first quarter of 2020, 18.8 percent (revised up from 13.2 percent in their June 2020 estimate) in the second quarter, 9.4 percent in the third quarter (revised down from the September 2020 estimates due to a lower than expected impact on employment), and 4.7 percent in the fourth quarter.<sup>15</sup> This is equivalent to 1.7, 9.5, 4.8 and 2.4 million full-time jobs lost in each quarter (based on a 48 hour week), respectively. North Africa lost 2.5 percent of working hours in the first quarter of 2020, 23.3 percent in the second quarter (again revised upward from 15.5 percent), 9.4 percent in the third quarter (again revised down from the September estimate). This is equivalent to 1.5, 14, 5.7 and 3.9 million full-time jobs lost in each quarter, respectively. Over the whole year of 2020, ILO estimates that Arab states lost 9 percent of working hours, equivalent to

<sup>15</sup> The ILO monitor does not provide individual country estimates (ILO, 2020d; ILO, 2021), while ILOSTAT (May 2021 update) only provides the quarterly data for country groups, not individual countries. Annual estimates are available by country, but do not show as much detail in terms of the changing impact of the pandemic and accompanying workplace closures, on employment, over the year.

4.6 million full-time jobs, while North Africa lost 10.4 percent of working hours, equivalent to 6.3 million full-time jobs.<sup>16</sup>

These losses translate into a substantial loss of labour income in the region: 10 percent in Arab states (3.4 percent of GDP) and almost 12 percent in North Africa (5 percent of GDP) (ILO 2020d). Without adequate income support schemes, these substantial reductions in incomes will exacerbate future economic prospects as workers are

pushed into poverty, reducing aggregate demand. This will create a vicious cycle, where lower demand further reduces incomes and hence the prospect of a swift recovery. The ILO also estimates that Arab states could lose 4.4 percent of their working hours in 2021, equivalent to approximately 2.3 million full-time jobs, while North Africa could lose 4.7 percent of working hours in 2021, equivalent to 2.9 million full-time jobs.<sup>17</sup>

**Figure 3.1. Working hours, full-time equivalent jobs and lost labour income in Arab countries in 2020**



Source: Author's calculations based on ILO (2020d), ILO (2021) and ILOSTAT, retrieved March 2021.

Studies since the onset of the pandemic have shown that specific groups of workers, are affected much more severely by both lockdowns and the decline in aggregate demand.<sup>18</sup> Workers without access to reliable technology and hence with limited opportunities for teleworking, workers whose jobs cannot be performed from home due to the nature of their occupation and workers in informal employment whose income may have been wiped out completely due to the lockdowns will suffer most. The impact will also be far stronger in countries where

limited public-sector employment is available and fiscal constraints prevent substantial response measures as part of government support. These findings highlight the need for detailed country studies on the impact of COVID-19 on the labour market, disaggregated by industry, employment sector (formal/informal), gender and age (youth/non-youth) to provide an accurate picture of the impact of the crisis on these most vulnerable groups.<sup>19</sup>

<sup>16</sup> ILO modeled estimates 2021.

<sup>17</sup> ILO (2021).

<sup>18</sup> See for example Delaporte and Peña (2020), Dingel and Nieman (2020), Hatayama et.al. (2020), Saltiel (2020), among others as well as ILO (2020d) and references therein.

<sup>19</sup> The main reason for the upward revision of estimates by ILO of working hour losses for the second quarter of 2020 in the September ILO Monitor (COVID 19 and the world of work) was the realization that workers in developing and emerging economies, especially those in informal employment, were even more severely affected, due to fewer opportunities for teleworking and the greater impact of the crisis on informal workers (ILO, 2020d).

A number of international agencies, such as the World Bank<sup>20</sup> and UNDP,<sup>21</sup> and national statistical offices have already released preliminary results of rapid surveys and assessments that examine the impact of the COVID-19 pandemic on their labour markets, as well as on other indicators of well-being. For example, the World Bank rapid survey in Yemen (World Bank 2020a), conducted between March and April 2020, found that 18 percent of households could not reach their jobs due to COVID-imposed mobility restrictions and 31 percent of households were either not receiving salaries or receiving less than before the outbreak. Moreover, the share of households citing low wages and loss of employment as the most difficult challenges facing them increased from 45 to 49 percent, compared to before the pandemic. The assessment for Iraq (World Bank 2020b) focused on poverty and found that implementing a full curfew would have a severe impact on poverty due to changes in labour income raising the poverty headcount for the country as a whole by 10 percentage points and raising the poverty gap by 3 percentage points. In Djibouti, the results of the rapid phone survey also confirmed a strong impact of the pandemic on the labour market with almost one fifth of breadwinners losing their jobs since the start of the pandemic. This impact was more pronounced for households from the lowest income quintile. Of those who lost their jobs, 68 percent identified coronavirus related reasons as the cause of their current economic inactivity. Moreover, among those who maintained their pre-pandemic employment status, 42 percent were working less or not at all with a simultaneous reduction in income: 45 percent of those working less than usual received no income at all, while 36 percent received only a partial wage (World Bank 2020c).

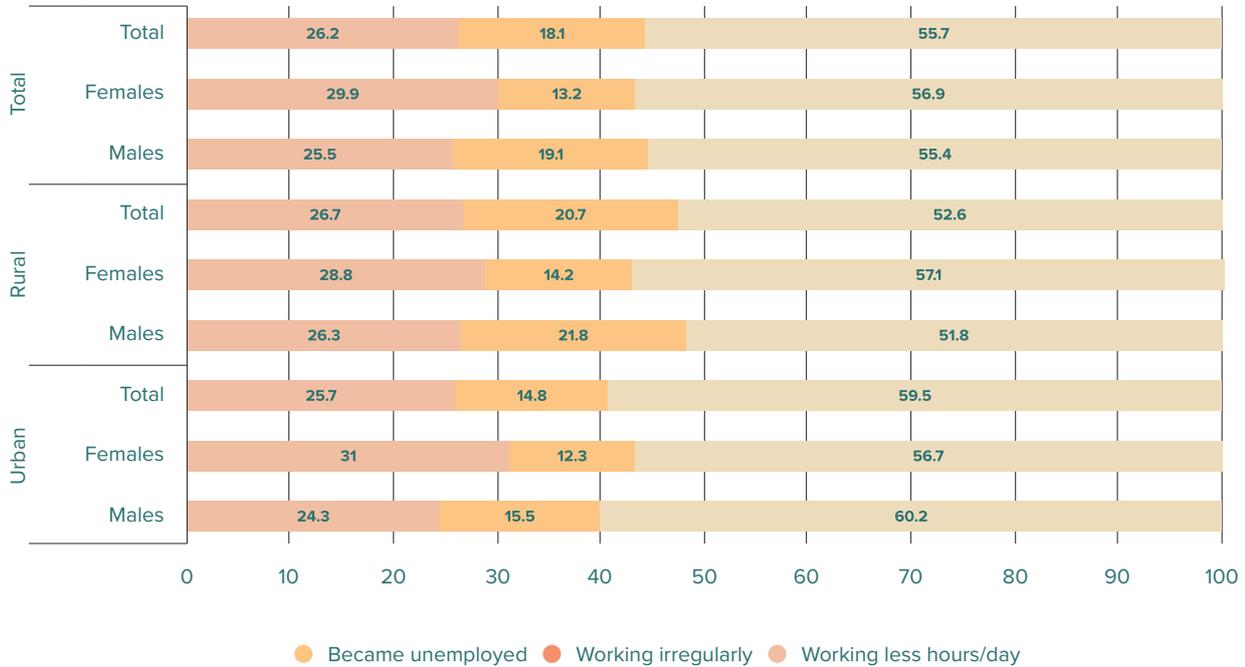
In Egypt, the Central Agency for Public Mobilization and Statistics (CAPMAS) released results of a special module of its household, income, expenditure and consumption survey conducted at the start of the pandemic (Government of Egypt, CAPMAS, 2020a). Results from this survey point to a very strong impact on households and workers up to the month of May, when the severest set of mobility restrictions were in place. Almost 62 percent of workers reported a change in their employment status: 55.7 percent reported working fewer days or hours, 26 percent had become unemployed and 18 percent were now working irregularly, receiving their income on a daily basis, with

significant fluctuation (Figure 3.2). There were also some minor differences by region and gender. Overall, 73 percent of individuals reported a decrease in their income since the onset of the pandemic, with 60 percent saying this was directly attributed to curfew restrictions, 35 percent due to becoming unemployed and 31.5 percent due to a decline in demand for their services. These impacts were also most severe among the youngest age groups (Figure 3.3).

**20** The World Bank just released its COVID-19 High-Frequency Monitoring Dashboard on December 22, containing preliminary results of rapid phone surveys to assess the impact of COVID-19 on households. At the time of this writing only the results for Djibouti, Iraq and Yemen were available.

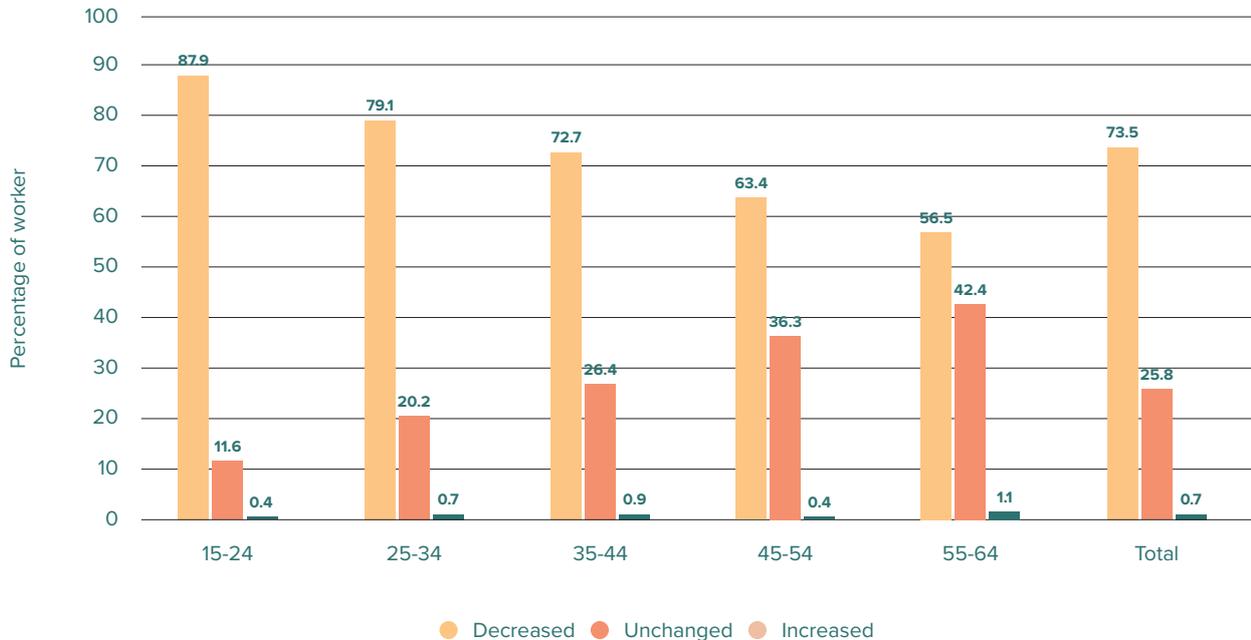
**21** UNDP (2020) provides detailed summaries and references to several rapid assessments conducted to examine the impact of COVID-19 on key sectors and groups including health, poverty, labour markets, migrant workers, small and medium enterprises and women.

**Figure 3.2. Relative distribution of affected individuals in Egypt by change in employment status, gender and region of residence (percentage)**



Source: Government of Egypt, CAPMAS (2020a).

**Figure 3.3. Percentage of workers experiencing changes in income in Egypt, by age group**



Source: Government of Egypt, CAPMAS (2020a).

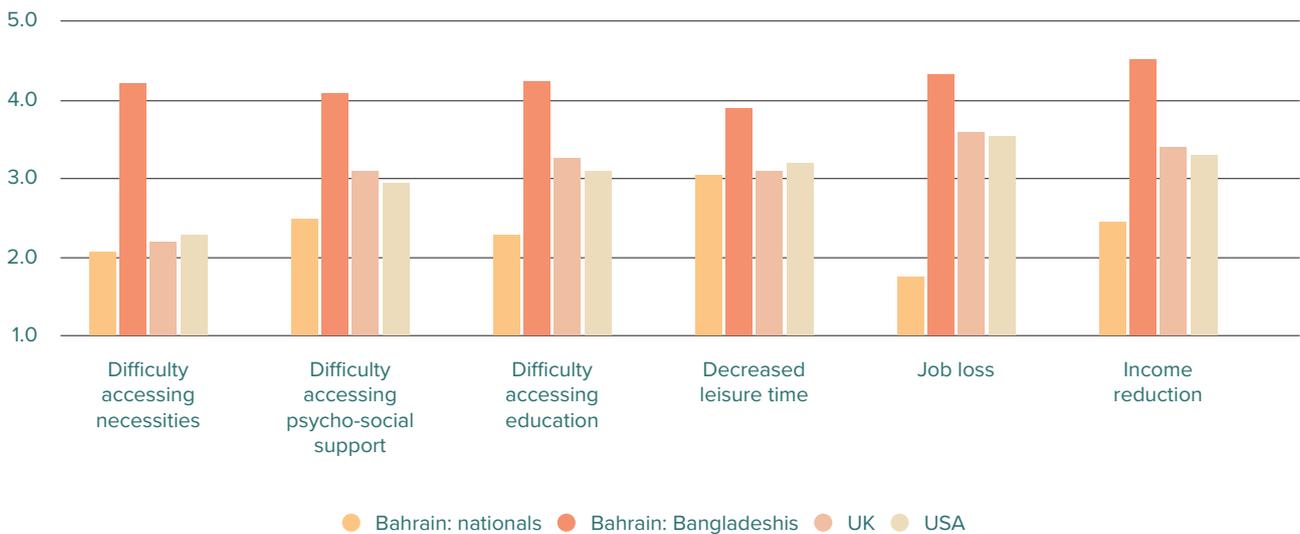
One important aspect that is beyond the scope of this paper is how the pandemic has affected migrant workers in the region. In Bahrain, a rapid survey by UNDP compared the impact of the COVID-19 pandemic on Bahrainis living in Bahrain to Bahrainis in the United Kingdom and the

United States, and to Bangladeshis living in Bahrain. Respondents were asked several subjective questions about their perception of the severity of several aspects of the impact of the pandemic on them personally. The results (Figure 3.4) showed that the majority of migrant

Bangladeshi workers in Bahrain felt they had been much more severely affected than any other group in terms of job loss and loss of income. The impact on Bahrainis in Bahrain was relatively low in terms of job losses and moderate in terms of loss of income. It was also lower than the impact on Bahrainis in the United Kingdom and the United States,

who suffered much more in terms of these two aspects. Furthermore, when asked how much they felt the pandemic would affect their working hours (Figure 3.5), migrant Bangladeshi workers also felt they had been severely affected, far more than any other group, especially in terms of second jobs.

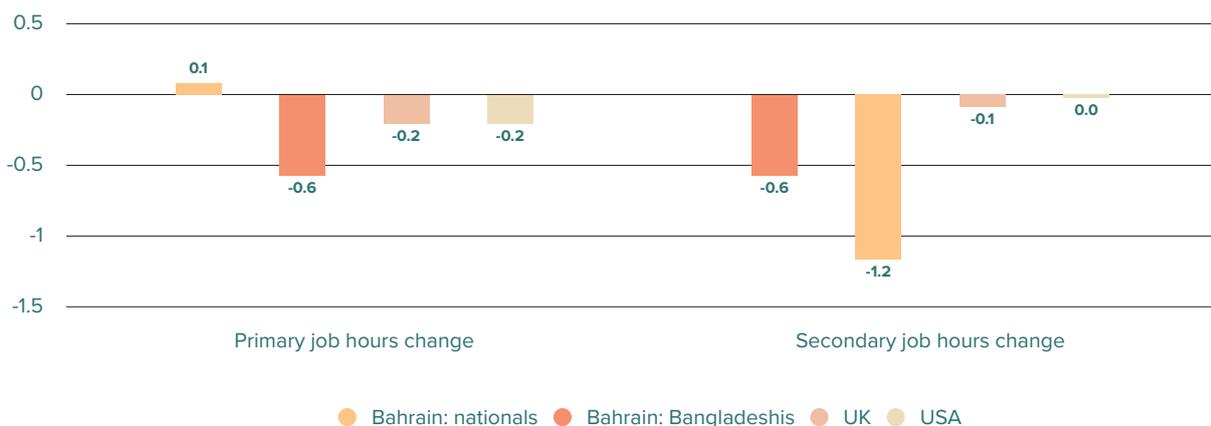
**Figure 3.4. Severity of impact of COVID-19 on different areas**



Source: DERASAT and UNDP (2020).

Notes: Respondents were asked several subjective questions about how they viewed the severity of the impact of the pandemic on them personally in several respects, on a scale from 1 (no effect on them at all) to 5 (an extremely large effect on them).

**Figure 3.5. Severity of impact of COVID-19 on hours worked**



Source: DERASAT and UNDP (2020).

Notes: Those who had a primary or secondary job before the COVID-19 pandemic and retained it were asked "How did the number of hours you worked in your primary/secondary job change on a scale of -2 (decreased a lot) to +2 (increased a lot)?"





## 4. Workers at risk: who will bear the brunt of the pandemic?

Implications for the labour market will depend on both the supply- and demand-side impacts of the pandemic. Certain businesses have been harder hit than others, not only due to mandated lockdowns for non-essential businesses and settings with a high risk of transmission but also due to the drop in demand. Movie theaters, sit-in restaurants, tourism resorts and luxury brands are all in this category. Equally concerning is the fact that these sectors are unlikely to recover quickly after the pandemic since consumers are not likely to “make up” for the lost demand.

In this section, we examine the labour market characteristics of workers in COVID-vulnerable industries. We use the sectoral risk classification developed by ILO in their second report of the impact of the COVID-19 pandemic on work (ILO, 2020e), a classification that is based on the organization’s assessment of the impact of the crisis on economic output at the industry level. The classification uses real-time economic and financial data from a wide range of sources, including the IHS Markit Global Business Outlook and Sector PMI indexes, the Institute of International Finance, the Cboe Volatility Index (VIX), McKinsey, the Organisation for Economic Co-operation and Development (OECD), Brookings, Moody’s and Eurostat. The ILO used three types of indices to determine the sectoral impact of the shock: (1) output indices of global firms; (2) real investments, domestic and international trade; and (3) business expectations. These indices provide insights into the extent of the impact of the shock on the production, sales and expectations of firms and, most importantly, on the impact on their plans for layoffs and short-term hiring.

## 4.1 Industry risk and worker characteristics

Table 4.1 shows the industry classification based on the ILO risk assessment and the total number of workers in the region in each industry. High-risk sectors include accommodation, food services, real estate, manufacturing and trade, which together account for over 30 percent

of all employment in the region. Another 13 percent of workers are in medium- to high-risk industries: transport, storage and communication, and other services.<sup>22</sup> While there is a higher proportion of men in industries classed as high risk or medium–high risk, a significant portion of workers in the “other services” category (classified as medium–high risk) are women.

**Table 4.1. Sectoral employment risk map for Arab countries**

Sectoral employment risk map, Arab States region				
Economic activity	Employment			Sectoral share of employment (%)
	Employment (thousands)	Women (%)	Men (%)	
<b>High risk</b>	<b>39,432</b>	<b>12.3%</b>	<b>87.7%</b>	<b>31.5%</b>
Accommodation and food service activities	3,707	10.2%	89.8%	3.0%
Real estate; business and administrative activities	4,764	14.1%	85.9%	3.8%
Manufacturing	12,286	15.0%	85.0%	9.8%
Wholesale and retail trade; repair of motor vehicles and motorcycles	18,675	10.5%	89.5%	14.9%
<b>Medium-high risk</b>	<b>16,439</b>	<b>19.3%</b>	<b>80.7%</b>	<b>13.1%</b>
Other services	7,454	37.2%	62.8%	5.9%
Transport; storage and communication	8,985	4.4%	95.6%	7.2%
<b>Medium and low-medium risk</b>	<b>43,579</b>	<b>16.1%</b>	<b>83.9%</b>	<b>34.8%</b>
Construction	16,483	1.0%	99.0%	13.1%
Financial and insurance activities	1,172	22.0%	78.0%	0.9%
Mining and quarrying	1,361	5.3%	94.7%	1.1%
Agriculture; forestry and fishing	24,563	26.5%	73.5%	19.6%
<b>Low risk</b>	<b>25,903</b>	<b>31.0%</b>	<b>69.0%</b>	<b>20.7%</b>
Education	9,204	48.9%	51.1%	7.3%
Human health and social work activities	3,794	47.8%	52.2%	3.0%
Public administration and defence; compulsory social security	11,686	13.9%	86.1%	9.3%
Utilities	1,219	6.4%	93.6%	1.0%
Total	125,353	18.4%	81.6%	100%

Source: UNDP compilation based on employment by industry estimates modeled by ILO.

While these statistics give a broad overview of the numbers of workers who may have been affected by the crisis, these workers are often at high risk due to simultaneous vulnerabilities in the labour market. For example, a youth worker in informal employment who is also self-employed and lives in a rural region may have suffered in multiple ways. To pinpoint these multiple vulnerabilities and their prevalence among high-risk industry workers, we use labour market data from five Arab

countries representing the three country groupings. Algeria is used as representative of oil-exporting countries;<sup>23</sup> data for Egypt (2018), Jordan (2016) and Tunisia (2014) were used to represent the group of oil-importing middle-income countries; and data for the State of Palestine (2019) was used for fragile and conflict-affected countries. While some similarities are implied by the results in Table 4.2a–4.2c there are also a lot of differences across countries.

<sup>22</sup> These include arts, entertainment and recreation; other service activities; activities of households as employers; undifferentiated goods- and service-producing activities of households for own use; and activities of extraterritorial organizations and bodies.

<sup>23</sup> Tabulations from the Algerian Labour Force Survey for 2014 were kindly made available by Walid Merouani, who had access to the micro-data files for the survey. We acknowledge that Algeria is very different from the GCC countries in terms of its labour force and industrial breakdown and these differences should be kept in mind when reflecting on the results obtained here. We did not have access to micro level data for any of the GCC countries.

## Oil-exporting countries

In Algeria (Table 4.2a), which is representative of oil-exporting countries, 27 percent of workers were in the high-risk industries, compared to 31.5 percent of workers in low-risk industries. Women (27.1 percent) were only slightly more likely to be in a high-risk industry than men (26.6 percent). Overall, women were concentrated in low-risk industries, with 57 percent of all working women in the low-risk category. Young people (26.1 percent) were slightly less likely to be in high-risk industries than older cohorts (26.9 percent). As expected, workers with higher levels of education were concentrated in the low-risk industries and there is a significant difference between these workers and those with upper-intermediate or intermediate and lower education. Those with intermediate or lower education were twice as likely to be in high-risk industries than those with university-level education.

Workers in white-collar occupations, including professionals, technicians and clerical support workers were least likely to be in high-risk industries. However, managers were relatively equally distributed among high- to medium-risk and low-risk industries. Blue-collar workers were concentrated in medium-risk, medium- to high-risk and high-risk industries. Agricultural workers were in low- to medium-risk industries, as expected from the industry risk classification.

There is a stark contrast between public and private-sector employees in Algeria: only 2 percent of private-sector employees were in low-risk industries, while 81 percent of public-sector employees were in this category. The majority of private-sector workers were in the high-risk category (40 percent) or medium-risk category (30 percent). A similar breakdown was observed for formality: the majority of formal workers (57 percent) were in the low-risk industries, while only 0.6 percent of informal workers were in this category.<sup>24</sup> Informal workers were concentrated in high-risk industries (35 percent) and medium-risk industries (33 percent).

The divide between the formal and informal sectors and the public and private sectors merits a closer look to see how these dynamics interact with occupational status. In Algeria, the majority of self-employed workers (45 percent), informal private-sector workers (59 percent), formal private-sector workers (58 percent) and employers (48 percent) were in high-risk industries. Workers who received irregular wages (36 percent of all workers) were concentrated in

medium-risk industries (35 percent), although a significant portion of this group were also in high-risk industries (24 percent). This category is particularly vulnerable since these workers are often paid by the day and typically have very little income in terms of a buffer against this kind of economic shock. Formal public-sector workers (around 28 percent of all workers) were mostly in the lowest-risk category.

It is also interesting to examine the family situations of workers in various risk categories. Workers from female-headed households were more likely to be in high-risk industries than those from male-headed households (29 percent compared to 26.4 percent). They were also slightly more likely to be in low-risk industries (35 percent compared to 31 percent). In terms of marital status, no single category has a disproportionately higher share of the high-risk industries, although divorced and widowed workers were concentrated in low-risk industries. Similarly, having children who are six years of age or younger, or between 6 and 14 does not appear to alter the likelihood of being in high-risk industries, although workers with children were slightly less likely to be in low-risk industries and slightly more likely to be in medium-risk industries.

## Oil-importing middle-income countries

Table 4.2b shows the differences across the three oil-importing middle-income countries (Table 4.2b) in terms of the characteristics of workers in high- and low-risk industries. In Egypt and Tunisia, the majority of workers were in low- to medium-risk industries (37 percent and 41 percent, respectively), followed by high-risk industries (25 percent and 23 percent, respectively). In contrast, in Jordan, 47 percent of all workers were in low-risk industries, while 28 percent were in high-risk industries. There were also significant differences between men and women: women were more highly represented among low-risk and low- to medium-risk industries (70–80 percent of all female employment). Young people were more likely to be in high-risk industries in Tunisia, and to a lesser extent in Egypt and Jordan.<sup>25</sup> Overall, urban workers were more likely to be in high-risk industries and workers with higher levels of education were much more likely to be in low-risk industries in all countries.

In all three countries, workers with white-collar occupations, such as professionals, technicians and clerical support staff, were less likely to be in high-risk industries,

<sup>24</sup> For all countries except Algeria, we had data on whether workers have a contract and whether they have social security benefits. For Algeria we only had data on whether workers have social security. Both were used to define formal employment for Egypt, Jordan, Tunisia and the State of Palestine. In practice social security was the more important factor in defining formality, since very few workers had social security but no contract, while many had a contract but no social security benefits. This makes the results comparable to those for Algeria.

<sup>25</sup> We have extended the age of young people to encompass workers who are 15–29 years of age instead of the traditional 15–24 age group. Many young people are students or undertake military service until their early twenties. Restricting the age to below 24 would disregard the occupational status of these young people.

while service and sales workers and blue-collar workers (e.g. crafts and related trades, plant and machine operators and those in elementary occupations) were most likely to be in medium- to high-risk and high-risk industries across the three countries. As expected, the majority of public-sector workers were in low-risk industries, while private-sector workers were concentrated in either the low- to medium-risk or high-risk industries. A similar breakdown was observed for formal and informal workers, with informal workers 1.5–2.5 times more likely to be in high-risk industries in Egypt and Jordan, while in Tunisia over 30 percent of *formal* workers were in high-risk industries, higher than the figure for informal workers.

Further probing the formal–informal and public–private divide in terms of occupational status, we found that the majority of self-employed workers, private workers (both formal and informal) and employers were in high-risk industries, while unpaid family workers (mostly agricultural workers), were in low- to medium-risk industries. Workers who receive irregular wages (those who earn a daily wage rather than a monthly one) were concentrated in low- to medium-risk and medium-risk industries in Egypt and Tunisia, but in high-risk industries in Jordan.

Next, we present some family characteristics of the industry risk portfolio or workers. Workers from female-headed households were somewhat less likely to be in high-risk industries in Egypt and Tunisia, and there was no difference between these workers and those from male-headed households in Jordan. Overall, the majority of workers from female-headed households were in low- to medium-risk industries in Egypt and Tunisia, and in low-risk industries in Jordan.

The higher the wealth quintile of the household, the more likely its workers would be in low-risk industries. Overall, however, the share of those in high-risk industries was relatively similar across wealth quintiles. Looking at marital status, there was no clear single trend: in Egypt single workers were more likely than married workers to be in high-risk industries but they were also heavily concentrated in low- to medium- risk industries. In Jordan and Tunisia, no major differences by marital status were observed. Similarly, there was no distinction in industry risk level depending on whether the worker had children (for both age groups 0–6 years and 6–14 years) in Egypt, while in Jordan and Tunisia, having children was associated with a slightly lower chance of being in a high-risk industry and slightly higher chance of being in a low-risk category.

## Fragile and conflict-affected countries

Table 4.2c reports results for the State of Palestine, as representative of fragile and conflict-affected countries.<sup>26</sup> The Palestine Labour Force Survey (2019)<sup>27</sup> was used to examine the characteristics of workers by their industry risk category. About one third of all workers in the State of Palestine were in high-risk industries. Men were more likely to be in this category than women (36 percent compared to 20 percent). Youth were also about one and a half times more likely to be in high-risk industries than older workers, and medium-risk industries constitute the second largest employer for this group. Workers in urban areas were more likely to be in high-risk industries but a significant share of rural workers (30 percent) and those resident in camps (28 percent) were also in high-risk industries. The higher the educational attainment, the less likely a worker was to be in a high-risk industry and there was a significant gap between those with university education and those with less education when it comes to being in low-risk industries.

In terms of job characteristics, service and sales workers were predominantly in high-risk industries, although significant groups of plant and machine operators and workers in elementary occupations were also in high-risk industries. Managers, professionals, technicians and clerical support workers were most likely to be in low-risk industries, similar to the oil-importing middle-income countries. As expected, the majority of public-sector workers were in low-risk industries (93 percent) while the majority of private-sector workers were in high-risk (46 percent) or medium-risk industries (25 percent). Similarly, the majority of formal workers were in low-risk industries (69 percent), while the majority of informal workers were in high-risk (42 percent) or medium-risk industries (24 percent).

In terms of the formal–informal and public–private divide and occupational status, the majority of self-employed workers (48 percent), unpaid family workers (51 percent), informal private workers (49 percent), formal private workers (32 percent) and employers (50 percent) were in high-risk industries. The majority of public-sector workers (both formal and informal) were in low-risk industries. Almost 40 percent of formal private-sector workers were also in medium-risk industries, the largest category among those workers.

<sup>26</sup> We chose the State of Palestine mainly due to data availability. It is important to note that each fragile and conflict economy has a very unique set of circumstances, but the analysis here is meant to highlight both some broad similarities across the region, while also pinpointing important differences.

<sup>27</sup> The Labour Force Survey for the State of Palestine does not have all the variables in the labour market panel survey, such as wealth quintile and workers on irregular wages and only covers people 10 years of age or older, meaning the variable for children is omitted, since it would be inaccurate.

In terms of the family characteristics of the industry risk portfolio for workers. Workers from female-headed households were more likely to be in high-risk industries in the State of Palestine, in contrast to Egypt, Jordan and Tunisia. However, they were just as likely to be in low-risk industries as their counterparts from male-headed

households. In terms of marital status, workers who have never been married were more likely to be in high-risk industries than those who have been married. Married and divorced/widowed workers were significantly more likely to be in low-risk industries.<sup>28</sup>

**Table 4.2a. Industry risk and worker characteristics in oil-exporting countries: Algeria**

Algeria						
Impact of crisis on economic output	Low	Low-medium	Medium	Medium-high	High	Share in employment
	%	%	%	%	%	%
Overall	31.5	11.7	21.4	8.8	26.7	100.0
Sex						
Male	26.7	13.0	24.6	9.2	26.6	84.2
Female	57.4	4.6	4.3	6.7	27.1	15.8
Total	31.5	11.7	21.4	8.8	26.7	100.0
Age group						
Youth: 15 to 29	32.9	11.6	22.1	7.3	26.1	32.5
Age 30 to 59	30.9	11.7	21.0	9.5	26.9	67.5
Total	31.5	11.7	21.4	8.8	26.7	100.0
Educational attainment						
Intermediate or less	18.8	13.7	26.7	9.7	31.1	58.8
Above intermediate	44.8	5.1	14.9	9.1	26.1	23.9
University & above	66.6	1.3	9.4	6.1	16.6	17.3
Total	33.3	9.5	20.9	9.0	27.4	100.0
Occup. of prim. job						
Managers	27.9	2.8	24.7	8.7	35.9	2.5
Professionals	78.4	0.7	6.6	4.9	9.4	9.8
Technicians and associate professionals	54.5	0.8	16.4	12.1	16.2	3.6
Clerical support workers	69.0	0.3	8.3	10.0	12.5	6.6
Service and sales workers	43.2	0.3	3.2	7.0	46.2	25.6
Skilled agricultural, forestry and fishery workers	0.7	98.9	0.0	0.0	0.4	8.0
Craft and related trades workers	3.5	0.3	52.7	1.3	42.1	18.7
Plant and machine operators, and assemblers	10.3	2.1	16.3	52.9	18.3	7.4

<sup>28</sup> No data on children or household wealth was available from the State of Palestine Labour Force Survey for 2019, meaning analysis similar to that for oil-importing middle-income countries was not possible.

Algeria						
Impact of crisis on economic output	Low	Low-medium	Medium	Medium-high	High	Share in employment
Elementary occupations	23.4	19.1	40.4	4.6	12.5	17.2
Total	31.5	11.7	21.4	8.8	26.7	100.0
	%	%	%	%	%	%
Sector of employment						
Public	81.1	0.6	7.1	5.7	5.4	37.4
Private	1.9	18.3	29.9	10.6	39.4	62.6
Total	31.5	11.7	21.4	8.8	26.7	100.0
Formality of prim. job						
Informal	0.6	22.4	33.3	9.1	34.6	44.6
Formal	56.5	3.0	11.8	8.5	20.2	55.4
Total	31.5	11.7	21.4	8.8	26.7	100.0
Work status						
Self employed	0.8	20.5	19.0	15.0	44.7	23.9
Unpaid family worker	0.0	67.8	5.0	1.8	25.4	2.0
Irregular wage worker	22.1	11.0	35.2	7.9	23.9	36.2
Informal private	0.9	18.1	14.6	7.6	58.8	1.4
Formal private	6.6	3.2	23.5	9.1	57.6	4.3
Formal public	82.3	0.6	6.9	5.0	5.2	27.9
Employer	4.3	19.8	19.0	8.6	48.3	4.3
Total	31.6	11.7	21.3	8.7	26.7	100.0
Household type						
Male headed household	31.2	12.0	21.6	8.7	26.4	91.7
Female headed household	35.3	7.8	18.9	9.1	29.0	8.3
Total	31.5	11.7	21.4	8.8	26.7	100.0
Marital status						
Single	33.4	10.6	21.4	7.4	27.2	42.5
Married	29.7	12.6	21.7	9.8	26.2	55.8
Divorced	46.3	5.2	10.7	9.5	28.4	1.1
Widowed(er)	43.8	16.2	8.1	5.4	26.5	0.6
Total	31.5	11.7	21.4	8.8	26.7	100.0
Children under 6						
No	32.6	11.5	20.8	8.5	26.7	70.1
Yes	29.1	12.1	22.7	9.5	26.6	29.9
Total	31.5	11.7	21.4	8.8	26.7	100.0
Children 6 to 14						
No	32.6	11.5	20.8	8.5	26.7	78.6
Yes	28.7	13.2	22.8	8.9	26.4	21.4
Total	31.8	11.9	21.2	8.5	26.6	100.0

Source: Author's calculations based on the Algeria Labour Force Survey for 2014.

**Table 4.2b. Industry risk and worker characteristics in oil-importing middle-income Arab countries**

Impact of crisis on economic output	Egypt						Share in employment	Low	Low-medium
	Low	Low-medium	Medium	Medium-high	High				
	%	%	%	%	%	%			
Overall	16.3	37.2	12.6	9.4	24.5	100.0	46.9	6.5	
Sex									
Male	14.4	23.1	17.9	13.4	31.2	67.6	43.8	5.6	
Female	20.2	66.4	1.5	1.2	10.6	32.4	62.0	11.0	
Total	16.3	37.2	12.6	9.4	24.5	100.0	46.9	6.5	
Age group									
Youth: 15 to 29	7.2	40.5	16.5	8.9	26.9	28.8	50.9	4.0	
Age 30 to 59	20.0	35.8	11.1	9.7	23.5	71.2	44.7	7.9	
Total	16.3	37.2	12.6	9.4	24.5	100.0	46.9	6.5	
Region of residence									
Rural	12.5	48.6	12.1	7.6	19.2	67.3	61.1	13.4	
Urban	24.1	13.5	13.8	13.2	35.4	32.7	43.0	4.6	
Total	16.3	37.2	12.6	9.4	24.5	100.0	46.9	6.5	
Educational attainment									
Intermediate or less	9.2	43.9	12.6	9.8	24.6	81.0	39.1	8.9	
Above intermediate	41.2	11.0	10.6	8.7	28.7	2.7	52.7	3.3	
University & above	47.6	7.9	13.2	7.8	23.4	16.3	67.4	0.9	
Total	16.3	37.1	12.6	9.4	24.5	100.0	46.9	6.5	
Occup. of crr. job									
Managers	26.7	0.8	5.6	35.8	31.2	3.9	59.5	0.0	
Professionals	69.5	1.0	13.8	7.1	8.6	10.5	72.6	0.4	
Technicians and associate professionals	42.4	2.9	12.4	14.5	27.8	4.0	49.1	0.6	
Clerical support workers	60.6	1.9	9.4	10.7	17.4	5.0	63.7	0.9	
Service and sales workers	15.5	0.4	1.8	7.2	75.0	15.5	58.4	0.5	
Skilled agricultural, forestry and fishery workers	0.0	99.2	0.2	0.1	0.5	36.8	3.4	96.0	
Craft and related trades workers	1.7	0.3	59.0	3.6	35.3	15.2	12.0	0.1	
Plant and machine operators, and assemblers	4.5	0.9	5.1	59.6	30.0	6.7	30.9	1.4	
Elementary occupations	11.1	5.7	14.5	20.0	48.7	2.6	40.5	4.6	
Total	16.3	37.2	12.6	9.4	24.5	100.0	46.9	6.5	
Sector of employment									
Public	72.4	1.7	7.4	9.0	9.4	19.1	88.1	0.4	
Private	3.0	45.5	13.9	9.5	28.1	80.9	12.8	11.6	
Total	16.3	37.2	12.6	9.4	24.5	100.0	46.9	6.5	
Formality of prim. job (ref. 1-Week)									
Informal	3.5	32.1	18.8	11.2	34.5	65.7	13.0	10.7	
Formal	52.8	2.2	9.8	12.9	22.3	34.3	67.1	0.6	
Total	20.4	21.8	15.7	11.8	30.3	100.0	48.1	4.2	

Jordan				Tunisia					
Medium	Medium-high	High	Share in employment	Low	Low-medium	Medium	Medium-high	High	Share in employment
%	%	%	%	%	%	%	%	%	%
10.5	8.3	27.7	100.0	14.2	40.8	15.9	6.2	22.9	100.0
11.5	9.3	29.9	82.8	14.9	30.5	23.2	7.7	23.8	67.0
6.1	3.8	17.1	17.2	13.0	61.6	1.1	3.2	21.1	33.0
10.5	8.3	27.7	100.0	14.2	40.8	15.9	6.2	22.9	100.0
10.1	6.1	28.8	35.2	10.3	34.1	14.8	8.0	32.8	21.0
10.8	9.5	27.1	64.8	15.5	42.2	16.3	5.7	20.3	79.0
10.5	8.3	27.7	100.0	14.4	40.5	16.0	6.2	22.9	100.0
6.2	4.6	14.6	21.6	9.5	55.8	15.8	4.2	14.6	65.2
11.7	9.3	31.3	78.4	23.5	11.8	16.3	9.8	38.5	34.8
10.5	8.3	27.7	100.0	14.4	40.5	16.0	6.2	22.9	100.0
10.2	9.7	32.0	67.8	10.6	43.5	16.4	6.2	23.3	92.6
8.8	6.8	28.4	9.0	51.2	11.2	8.0	5.6	24.0	3.6
12.2	4.7	14.8	23.2	69.6	2.2	8.9	7.4	11.9	3.9
10.5	8.3	27.7	100.0	14.3	40.7	15.8	6.3	22.9	100.0
13.5	0.0	27.0	0.7	38.6	2.3	27.3	11.4	20.5	1.2
11.9	4.3	10.8	21.0	85.7	0.0	3.3	4.9	6.0	5.1
8.8	15.2	26.4	6.1	47.9	3.2	12.8	6.4	29.8	2.6
8.1	5.6	21.6	5.9	52.4	2.4	14.6	9.8	20.7	2.3
0.6	4.1	36.4	28.1	25.4	3.3	1.4	9.3	60.6	14.4
0.3	0.0	0.3	6.0	0.4	98.1	0.1	0.0	1.4	31.2
35.8	2.5	49.6	15.0	1.2	2.4	67.8	1.0	27.6	19.4
7.4	39.8	20.5	9.6	7.0	6.6	9.6	48.5	28.4	6.4
8.9	10.4	35.7	7.7	15.2	48.5	4.7	4.4	27.3	17.3
10.5	8.3	27.7	100.0	14.4	40.5	16.0	6.2	22.9	100.0
3.0	3.3	5.2	45.3	74.9	8.9	4.6	5.7	5.9	17.6
16.8	12.5	46.3	54.7	1.4	47.3	18.4	6.3	26.6	82.4
10.5	8.3	27.7	100.0	14.4	40.5	16.0	6.2	22.9	100.0
15.9	15.1	45.4	35.1	2.9	43.7	24.4	6.5	22.5	53.1
8.1	5.0	19.2	64.9	33.0	14.0	12.7	8.5	31.8	46.9
10.8	8.5	28.4	100.0	17.0	29.8	18.9	7.4	26.9	100.0

Impact of crisis on economic output	Egypt						Share in employment	Low	Low-medium
	Low	Low-medium	Medium	Medium-high	High				
	%	%	%	%	%	%	%	%	
Work status									
Self employed	1.2	19.6	6.1	21.3	51.8	9.2	4.8	8.5	
Unpaid family worker	0.0	94.7	0.2	0.3	4.8	25.2	3.3	87.6	
Irregular wage worker	1.1	34.0	39.1	10.4	15.5	13.8	3.7	15.5	
Informal private	5.3	17.0	18.6	14.0	45.2	18.8	10.6	10.8	
Formal private	14.6	2.1	16.2	17.1	50.0	7.1	24.0	1.6	
Formal public	72.4	1.7	7.4	9.0	9.4	19.2	88.1	0.4	
Employer	1.6	48.0	8.4	5.2	36.8	6.6	3.9	10.5	
Total	16.3	37.2	12.6	9.4	24.4	100.0	46.9	6.5	
Household type									
Male headed household	16.3	35.7	13.0	9.9	25.1	93.1	46.9	6.4	
Female headed household	16.0	56.1	7.6	3.4	16.9	6.9	48.8	12.5	
Total	16.3	37.2	12.6	9.4	24.5	100.0	46.9	6.5	
Quintiles of household wealth									
1	5.8	55.8	12.4	7.6	18.4	22.8	28.7	20.2	
2	10.2	45.1	13.4	9.1	22.3	22.9	43.7	7.3	
3	15.8	37.5	12.7	10.2	23.8	20.0	50.3	3.5	
4	23.0	25.4	11.5	10.7	29.4	18.1	51.7	4.3	
5	32.6	12.7	12.9	10.1	31.7	16.3	50.9	3.4	
Total	16.3	37.2	12.6	9.4	24.5	100.0	46.9	6.5	
Marital status									
Single	8.6	30.8	19.3	9.7	31.6	18.0	46.1	7.1	
Married	18.2	36.8	11.8	9.9	23.4	77.5	42.4	9.1	
Divorced	26.0	27.9	12.8	7.9	25.3	1.4	50.0	0.0	
Widowed(er)	20.4	53.2	3.4	3.7	19.4	3.1			
Total	16.7	36.1	12.9	9.6	24.7	100.0	46.0	7.1	
Children under 6									
No	16.4	38.9	12.0	8.9	23.9	59.5	42.9	7.2	
Yes	16.1	34.7	13.6	10.2	25.4	40.5	52.2	5.7	
Total	16.3	37.2	12.6	9.4	24.5	100.0	46.9	6.5	
Children 6 to 14									
No	16.4	38.9	12.0	8.9	23.9	71.7	42.9	7.2	
Yes	17.2	37.8	11.9	9.3	23.8	28.3	47.3	8.0	
Total	16.6	38.6	11.9	9.0	23.9	100.0	44.1	7.4	

Source: Author's calculations based on labour market panel surveys for Egypt (2018), Jordan (2016) and Tunisia (2014).

Jordan				Tunisia					
Medium	Medium-high	High	Share in employment	Low	Low-medium	Medium	Medium-high	High	Share in employment
%	%	%	%	%	%	%	%	%	%
14.7	23.2	48.7	9.2	0.5	56.3	2.7	10.1	30.5	18.9
2.0	0.7	6.5	2.8	0.0	94.8	0.5	0.4	4.3	21.9
31.0	17.6	32.1	6.9	0.2	32.2	58.1	3.0	6.5	12.3
11.9	13.4	53.2	11.5	1.6	13.5	35.5	11.7	37.8	11.0
18.0	7.8	48.7	20.0	3.6	7.4	20.9	6.1	61.9	13.5
3.0	3.3	5.2	45.3	74.9	8.9	4.6	5.7	5.9	18.0
14.8	8.7	62.0	4.2	3.9	32.9	13.5	16.8	32.9	4.4
10.5	8.3	27.7	100.0	14.4	40.9	15.9	6.2	22.5	100.0
10.6	8.4	27.7	98.5	14.3	39.2	16.5	6.4	23.6	95.2
7.5	2.5	28.7	1.5	15.0	66.5	5.8	2.3	10.4	4.8
10.5	8.3	27.7	100.0	14.4	40.5	16.0	6.2	22.9	100.0
11.3	7.7	32.0	13.4	7.0	63.8	16.4	2.6	10.1	29.0
10.7	9.7	28.6	15.1	8.5	47.2	20.0	4.1	20.2	24.7
11.4	8.7	26.0	22.1	15.6	29.5	15.2	8.8	30.9	18.5
9.4	7.5	27.0	25.2	19.7	21.4	14.4	9.3	35.3	16.5
10.4	8.2	27.1	24.2	36.2	12.1	10.1	11.1	30.5	11.4
10.6	8.3	27.7	100.0	14.4	40.5	16.0	6.2	22.9	100.0
10.5	9.2	27.1	97.3	15.1	42.3	17.1	5.9	19.7	96.4
6.1	9.1	33.3	2.6	21.7	50.0	4.3	2.2	21.7	3.6
0.0	50.0	0.0	0.1						
10.4	9.3	27.2	100.0	15.4	42.5	16.7	5.7	19.7	100.0
11.3	8.2	30.5	56.7	13.1	42.9	15.1	5.6	23.3	74.0
9.6	8.5	24.0	43.3	18.0	33.6	18.7	7.8	21.8	26.0
10.5	8.3	27.7	100.0	14.4	40.5	16.0	6.2	22.9	100.0
11.3	8.2	30.5	71.5	13.1	42.9	15.1	5.6	23.3	83.1
11.2	8.9	24.6	28.5	17.3	39.1	18.1	6.3	19.2	16.9
11.2	8.4	28.9	100.0	13.8	42.3	15.6	5.7	22.6	100.0

**Table 4.2c. Industry risk and worker characteristics in fragile and conflict-affected Arab countries: State of Palestine**

State of Palestine						
Impact of crisis on economic output	Low	Low-medium	Medium	Medium-High	High	Share in Employment
	%	%	%	%	%	%
Overall	28.8	8.0	20.6	9.8	32.9	100.0
Sex						
Male	22.6	8.0	24.0	9.8	35.7	82.7
Female	58.3	8.0	4.1	10.0	19.7	17.3
Total	28.8	8.0	20.6	9.8	32.9	100.0
Age group						
Youth: 15 to 29	16.1	8.1	23.5	9.2	43.1	35.6
Age 30 to 59	35.8	7.9	19.0	10.1	27.3	64.4
Total	28.8	8.0	20.6	9.8	32.9	100.0
Region of Residence						
Urban	29.6	6.3	18.9	10.5	34.8	67.5
Rural	20.5	15.3	27.9	6.4	29.9	20.2
Camp	37.8	5.0	17.9	11.8	27.5	12.3
Total	28.8	8.0	20.6	9.8	32.9	100.0
Educational Attainment						
Intermediate or less	13.4	11.7	26.1	9.8	38.9	52.9
Above Intermediate	28.6	5.6	17.8	11.6	36.4	23.3
University & Above	63.1	1.8	11.1	7.9	16.1	23.8
Total	28.8	8.0	20.6	9.8	32.9	100.0
Occup. of prim. job						
Managers	70.2	1.7	8.8	4.8	14.4	5.4
Professionals	79.2	0.6	7.7	5.8	6.7	18.2
Technicians and associate professionals	65.7	0.5	9.6	14.4	9.7	5.3
Clerical support workers	54.2	0.0	13.0	17.6	15.3	1.7
Service and sales workers	15.5	0.2	0.4	9.3	74.5	17.8
Skilled agricultural, forestry and fishery workers	0.4	99.0	0.1	0.3	0.3	3.6
Craft and related trades workers	2.2	1.1	52.6	3.1	41.0	19.6
Plant and machine operators, and assemblers	6.7	1.2	6.8	48.0	37.3	8.4

State of Palestine						
Elementary occupations	12.3	18.9	34.8	5.6	28.4	20.2
Total	28.8	8.0	20.6	9.8	32.9	100.0
Sector of Employment						
Public/ Int'l Org.	93.4	0.2	0.4	5.7	0.4	25.5
Private	7.3	10.7	24.8	11.2	45.9	74.5
Total	29.3	8.0	18.6	9.8	34.3	100.0
Formality of prim. job						
Informal	11.9	11.0	23.6	11.5	42.0	70.2
Formal	68.5	0.7	13.5	5.7	11.5	29.8
Total	28.8	8.0	20.6	9.8	32.9	100.0
Work Status						
Self Employed	3.5	12.6	13.5	22.6	47.8	18.9
Unpaid Family Worker	0.6	40.4	6.1	1.7	51.3	4.8
Informal Private	6.2	9.3	27.6	8.3	48.6	32.3
Formal Private	19.8	1.9	38.0	8.0	32.2	12.6
Formal Public/ Int'l Org.	94.8	0.1	0.3	4.5	0.3	23.4
Informal Public/ Int'l Org.	77.6	0.9	1.7	18.5	1.3	2.1
Employer	4.6	7.1	33.4	5.2	49.6	5.9
Total	29.3	8.0	18.6	9.8	34.3	100.0
Household Type						
Male Headed Household	28.7	8.0	20.9	9.8	32.6	98.5
Female Headed Household	28.2	7.8	16.1	10.3	37.6	1.5
Total	28.7	8.0	20.8	9.8	32.7	100.0
Marital Status						
Never Married	17.2	8.9	21.4	8.5	44.0	30.1
Married	33.5	7.5	20.6	10.4	28.0	68.1
Other	47.6	6.0	9.8	8.1	28.4	1.8
Total	28.9	7.9	20.7	9.8	32.8	100.0

Source: Author's calculations based on the State of Palestine Labour Force Survey for 2019.



## 5. The potential to work from home in Arab states

Across the globe, the pandemic has ushered in a new era in which working from home is common. A practice that was once frowned upon by many employers became the way millions of non-essential workers met their occupational obligations during the lockdowns imposed around the world since March 2020. In the United States, for example, surveys in May 2020, when the strictest lockdown measures were in place in many states, found that almost twice as many workers were working from home on a full-time basis (42 percent compared to 26 percent who were working from their business premises, while the remaining 33 percent had become unemployed). Moreover, these workers accounted for over two thirds of US GDP (Bloom, 2020). This compares to just 7 percent of workers with access to a “flexible workplace” benefit or telework before the pandemic (Desilver, 2020). These numbers mask an extremely high level of inequality in terms of the ability to work from home, even within advanced economies like the United States, due to the distribution of occupations by socio-economic group, race, gender, industry and geographic location, as well as other constraints that make working from home challenging in practice.

In this section, we examine the extent to which jobs can be performed from home in Arab countries. The ability to work remotely varies considerably by occupation due to the nature of the job or industry. Many professions—particularly customer-facing service providers (for example, doctors, nurses, grocery store employees, hairdressers)—cannot work from home. Even within these categories, there are many distinctions: while an emergency room doctor cannot work from home, a dermatologist or endocrinologist may be able to meet patients virtually, provided adequate teleworking technology is available. We perform a detailed analysis of the prevalence of jobs compatible with remote

work by country, gender, industry, age group and formality, based on the distribution of occupations, finding varying degrees of compatibility within each of these groups.

A major limitation on the ability to work remotely is having access to the necessary tools, such as a computer and a reliable Internet connection. In some parts of the Arab world, having reliable electricity is still a challenge, as is having a strong enough Internet connection and multiple devices to allow several family members to hold video meetings and attend classes online simultaneously. Female workers are likely to be at a considerable disadvantage, given the multiple burdens of domestic work and childcare (still primarily performed by women in the region), in addition to their occupation. Balancing all three has already proven to be extremely difficult, even for women in developed countries, with many dropping out of the labour force in the absence of external childcare services.<sup>29</sup> This means that our analysis must also consider the degree to which workers with jobs compatible with teleworking actually have the tools required to perform them from home.

Another important consideration is the degree of proximity to others required to carry out work: while many jobs may have limited potential for working from home, some do not necessarily require close physical contact with other individuals and hence will be low-risk in terms of transmission. For example, a farmer cannot work from home but many farming activities require very little physical proximity, which depends on the crop in question, the degree of automation and the season (e.g. ploughing or harvest). It is therefore important to distinguish physical proximity from compatibility with working from home, since jobs that do not require physical proximity to others can easily return to work without increasing the risk of transmission and hence will mitigate the overall impact on the economy and health services.

Finally, the formality status of the worker is another crucial consideration. Informal workers are particularly vulnerable to aggregate demand shocks, given that their jobs lack the stability of contracts, social security and insurance to help them mitigate the impact of crises, and paid sick leave if they become infected. Many are also employed in jobs with

a greater risk of health impacts due to close proximity to others and a lack of proper health and hygiene standards.

## 5.1 Methodology

As a first step in this analysis, we developed an index of the compatibility of various types of occupations with working from home. We call this the teleworkability index (TWI). Existing surveys, such as those from the US Department of Labour O\*NET programme or the World Bank STEP Skills Measurement Program,<sup>30</sup> provide information on the daily activities of workers in various occupations, which offers insights into the jobs that can successfully be performed from home and those that cannot. We follow the methodology of Dingel and Nieman (2020),<sup>31</sup> Saltiel (2020) and Hatayama, Viollaz and Winkler (2020) in using skills surveys to determine the TWI of a job. Dingel and Nieman (2020) and Saltiel (2020) develop binary variables that eliminate the potential for remote work if a job satisfies any of several criteria that they deem to require a physical presence. In contrast, Hatayama et. al. (2020) develop a continuous variable that reflects the varying degree of potential for remote work by occupation, depending on how many of the criteria are met. The more criteria a particular job satisfies, the less likely it can be performed from home, and vice versa. This allows a more flexible approach, which better captures variability within sectors and within occupations.<sup>32</sup> Most existing studies rely on the classification of Dingel and Nieman (2020), which is based on the O\*NET occupational classification.

As noted by Delaporte and Pena (2020), the task content of occupations may vary significantly from one country to another. Depending on the potential to substitute labour, capital or technology in a given occupation, a job that can be performed from home in a wealthy advanced economy such as the United States or Germany may need to be performed face-to-face in a developing one. Saltiel (2020) addresses this limitation and estimates the share of jobs that are compatible with working from home in 10 developing economies using the information on workers' tasks in the STEP survey. While this is a better approach, the distinct nature of Arab labour markets may also limit the accuracy of this classification. We address this by developing a specific TWI for the region, using data from

<sup>29</sup> For example, the monthly jobs report from the US Bureau of Labor Statistics in September reported that women have been leaving the labour force at four times the rate of men, primarily due to the increased burdens of parenting with children home from school, the lack of child care services for very young children and increased household chores of cooking and cleaning due to families being home all day (Hsu, 2020).

<sup>30</sup> See, for example, the O\*NET database Content Model (<https://www.dol.gov/agencies/eta/onet>) or World Bank Group (2018).

<sup>31</sup> Dingel and Nieman classify the potential to work from home for all occupations using the responses to two surveys from the database administered by O\*NET, sponsored by the US Department of Labor. The O\*NET database contains detailed information on daily activities of workers for almost 1,000 occupations. See Dingel and Nieman (2020) for details.

<sup>32</sup> We rely on the Dingel and Nieman (2020) classification in this study, given its wide use and comparability across countries. As discussed in section 5.5, the questions in the surveys we have access to that could be used to construct a region-specific TWI are limited in their capacity to gauge workers' daily tasks in various occupations, meaning it is not feasible to follow the method of Hatayama, Viollaz and Winkler (2020).

the Egyptian Labour Market Panel Survey as a further robustness check.

## 5.2 Data

As with the analysis on industry-specific vulnerability to the pandemic presented above, we use micro surveys for a group of five Arab countries that represent oil-exporting countries, oil-importing middle-income countries and fragile and conflict-affected countries, based on data availability. Data from the Algeria Labour Force Survey in 2014 is used as representative of the group of oil-exporting countries. For the group of oil-importing middle-income countries, we have access to the labour market panel surveys for Egypt (2018), Jordan (2016) and Tunisia (2014). The datasets are nationally representative and provide a rich source of information on labour markets in each of these countries. For the group of fragile and conflict-affected countries, we used data from the Palestine Labour Force Survey for 2019, which provides detailed individual-level data, including occupational classification.<sup>33</sup>

Dingel and Nieman (2020) constructed an index of teleworkability based on responses to 15 questions from two O\*NET surveys. As mentioned above, the O\*NET surveys are sponsored by the US Department of Labour and provide information on the daily activities of workers by occupation, with occupations defined according to the standard occupational classification system (SOC). Dingel and Nieman (2020) used questions from the questionnaires on “Work Context” and “Generalized Work Activities”. The former includes questions that seek to capture the “physical and social factors that influence the nature of work” such as the use of email, interpersonal relationships, exposure to hazardous work conditions and structural job characteristics. The latter includes questions that capture the “general types of job behaviors occurring on multiple jobs”, such as interaction with others, handling machines and equipment, and performing physical activities.<sup>34</sup> If any of the chosen statements are true, they marked the

six-digit SOC occupation code as one that cannot be performed from home.

We use international concordance tables to cross-reference the Dingel and Nieman teleworkability index using the six-digit SOC occupational classification and the equivalent two-digit 2008 International Standard Classification of Occupations (ISCO) code used in the labour market panel surveys for Egypt, Tunisia, the State of Palestine and Jordan. The data for Algeria was only available with the three-digit 1988 ISCO classification and a separate process was used to obtain the correct correspondence. One of the complications that arises in this type of cross-referencing is that each six-digit SOC code maps to more than one ISCO occupation. To overcome this problem and avoid placing more weight on SOC codes that map to multiple ISCO codes, we follow Dingel and Nieman’s approach in allocating the US employment weight for the SOC codes across the ISCO codes in proportion to the employment share for the ISCO in question in the respective Arab country.<sup>35</sup> Applying the employment shares for each country gives the teleworkability index (TWI) for that country for each ISCO occupation. These are then merged with the micro data for each survey to obtain a measure of teleworkability at the individual level based on the individual’s two- or three-digit ISCO occupation code. We can then calculate the TWI index for the country as a whole by gender, industry, age group and formality based on the distribution of the ISCO occupations within each of these groups. For example, an industry with many managers and professionals, who typically have jobs that are highly compatible with teleworking will end up with a high TWI. In all our calculations, we also use survey weightings to ensure the results are representative at the national level.

The final step of the analysis will investigate the distinction between teleworkability and the ability to work from home in practice. Teleworkability does not automatically translate into actually being able to work remotely, given the digital divide prevalent in most countries in the region. A lack of a reliable Internet connection or access to a personal computer or other device that can be used to work from

<sup>33</sup> We also attempted to use data from a recent high frequency survey in Somalia. However, occupational classification in the survey is only available at the one-digit level which does not provide enough detail to perform the analysis.

<sup>34</sup> The complete set of statements from the “Work Context” questionnaire are (1) the average respondent states they use email less than once per month; (2) the majority of respondents say they work outdoors every day; (3) the average respondent says they deal with violent people at least once a week; (4) the average respondent says they spend the majority of time wearing common or specialized protective or safety equipment; (5) the average respondent says they spent the majority of time walking or running; (6) the average respondent says they are exposed to minor burns, cuts, bites, or stings at least once a week; and (7) the average respondent says they are exposed to diseases or infection at least once a week. The complete set of statements from the “Generalized Work Activities” are (1) performing general physical activities is very important; (2) handling and moving objects is very important; (3) controlling machines and processes [not computers or vehicles] is very important; (4) operating vehicles, mechanized devices, or equipment is very important; (5) performing for or working directly with the public is very important; (6) repairing and maintaining mechanical equipment is very important; (7) repairing and maintaining electronic equipment is very important; (8) inspecting equipment structures or materials is very important. If any of these statements are true the occupation is coded as one that cannot be performed from home.

<sup>35</sup> Dingel and Nieman (2020) provide the following example to explain this process: “if a particular SOC has 100 US employees and is associated with two ISCOs that have respective totals of 3000 and 1000 employees in a country, we allocate 75 of the SOC’s US employees to the larger ISCO and 25 to the smaller one. Those values of 75 and 25 are then used as that SOC’s weight when calculating the average across all SOCs within each ISCO for that country”.

home can prevent even the most eligible jobs from being successfully performed at home. Many household and labour market surveys in the region ask questions in this area (e.g. “Do you have access to the Internet at home?”, “Does your family have an Internet connection?”, “Does your family own a wireless Internet router?”, “Does your family own a desktop computer/notebook/laptop/tablet?”). This information is then used to develop a secondary index of TWI feasibility to capture how feasible teleworkability is in practice.

## 5.3 Results

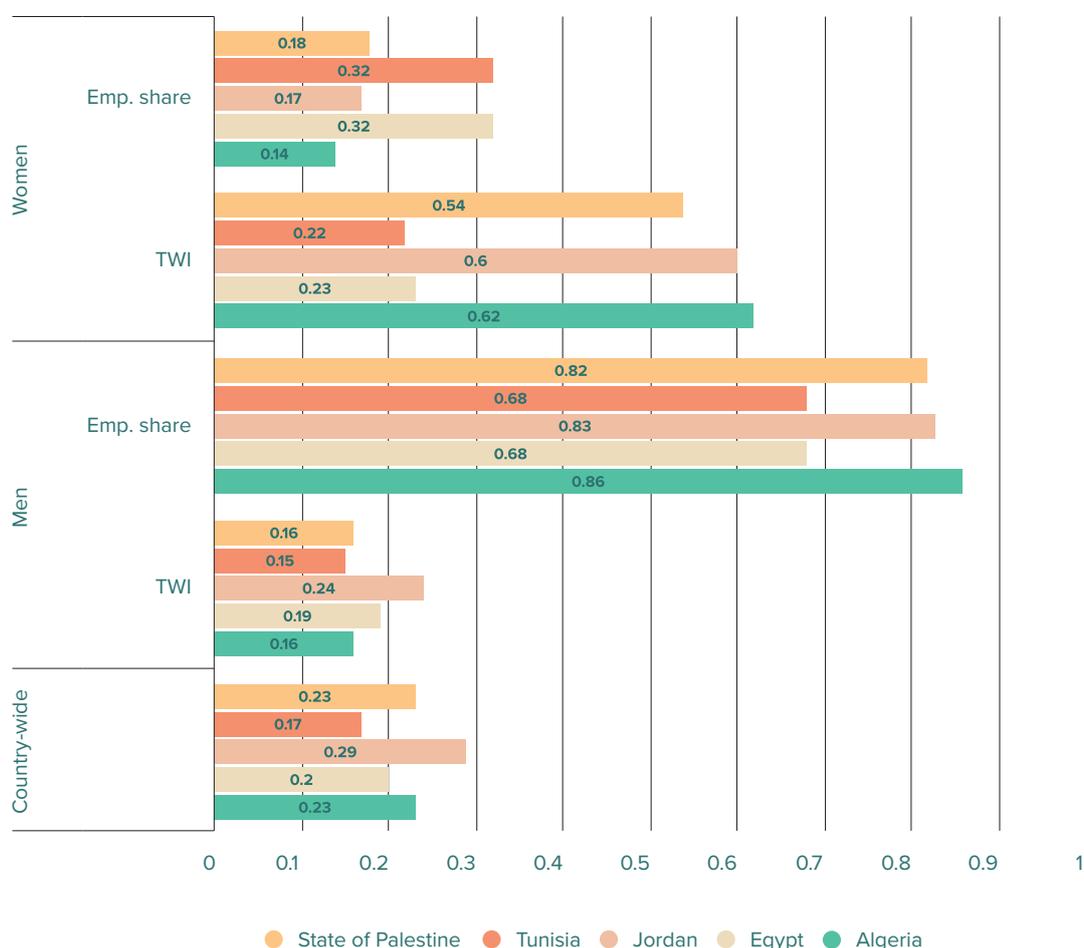
### 5.3.1 Teleworkability in selected Arab countries

The share of jobs that are suitable for teleworking (the average TWI for each country weighted by occupational employment shares in that country) is presented in Figure 5.1. The index varies widely across countries depending on the prevalence of different types of occupations in each economy. In Tunisia, only 17 percent of jobs are amenable to telework, while in Jordan 29 percent of jobs are teleworkable. For comparison, Dingel and Nieman (2020) found that 37 percent of jobs in the United States are teleworkable using the same teleworkability classification.<sup>36</sup>

Some groups of workers will be concentrated in the occupations that are more conducive to telework. The table then reports the TWI for women and men by country, as well as their share of overall employment in each country.<sup>37</sup> Men make up the majority of the working population in all countries and therefore their TWI drives the overall country TWI. The TWI for women in Algeria, Jordan and the State of Palestine are three times higher than for men, reflecting the fact that working women in these countries are concentrated in fewer occupations that are more compatible with remote working, such as teaching and administrative work. In Egypt and Tunisia, however, the TWI for women is much lower and much closer to the TWI for men. Women in these two countries are concentrated in low teleworkability occupations like farming, as detailed in section 5.3.3.

<sup>36</sup> The Labor Market Panel Surveys for Egypt, Jordan and Tunisia include a question on current place of work. This can provide insights into jobs that are already performed at home, even though they might not be “teleworkable”, such as a home-based catering business or craft business. The response to this question includes many categories such as “own home”, “shop/restaurant” and “workshop/factory”. We calculated the share of workers in each survey who responded that their current place of work was “own home”. That share was 2.9 percent for Egypt, 1.6 percent for Jordan and 1.5 percent for Tunisia. For those whose place of work was their home, the share of teleworkable jobs according to the TWI is 15 percent in Egypt, 12 percent in Jordan and 10 percent in Tunisia. Women are more likely to have responded that their place of work is home in Egypt and Tunisia (in Egypt 5.8 percent for females compared with 1.4 percent for males; in Jordan 1.3 percent for females compared with 1.7 percent for males; in Tunisia 3.9 percent for females compared with 0.6 percent for males). While this distinction between working from home and teleworking is important, those who were actually working from home in these surveys represent a very small share of workers in all three countries (under 3 percent) and therefore do not significantly alter our results. We are grateful to an anonymous referee for raising the issue of current work place location and how it relates to the TWI.

<sup>37</sup> Employment shares are reported in all tables to give a perspective on how large a particular group of workers is compared to overall employment.

**Figure 5.1. Teleworkability by country and gender**

Source: Author's calculations based on labour market surveys and the methodology described in the text.

### 5.3.2 Teleworkability by industry

Teleworkability also varies significantly across industries. Figure 5.2 shows teleworkability levels by industry for the five largest industries in terms of employment in each country (Tables A1a, A1b and A1c in the appendix present the full results of the TWI and employment shares by industry across the three country groupings). In Algeria, construction and agriculture, two of the largest industries in terms of employment and which together account for 40 percent of workers, have a very low TWI. Wholesale and retail trade (18 percent of employment) and education<sup>38</sup> (11 percent of employment) have higher TWIs (0.25 and 0.83 respectively).

In oil-importing middle-income countries, there is a significant difference between Egypt and Tunisia, on the one hand, and Jordan on the other. In both Egypt and Tunisia, almost 50 percent of employment is in agriculture and construction, both of which have a very low TWI. Manufacturing, and wholesale and retail trade, which employ approximately another 20 percent of workers, also have relatively low TWIs, albeit slightly higher than for agriculture and construction. Note that the TWIs for these two industries vary significantly across countries, reflecting the differing number of occupations within industries and the concentration of certain occupations in different countries. For example, the TWI for manufacturing in Tunisia is only 0.09, while in Jordan it is twice as high. In Jordan, education and public administration are the two largest industries in terms of employment, accounting for

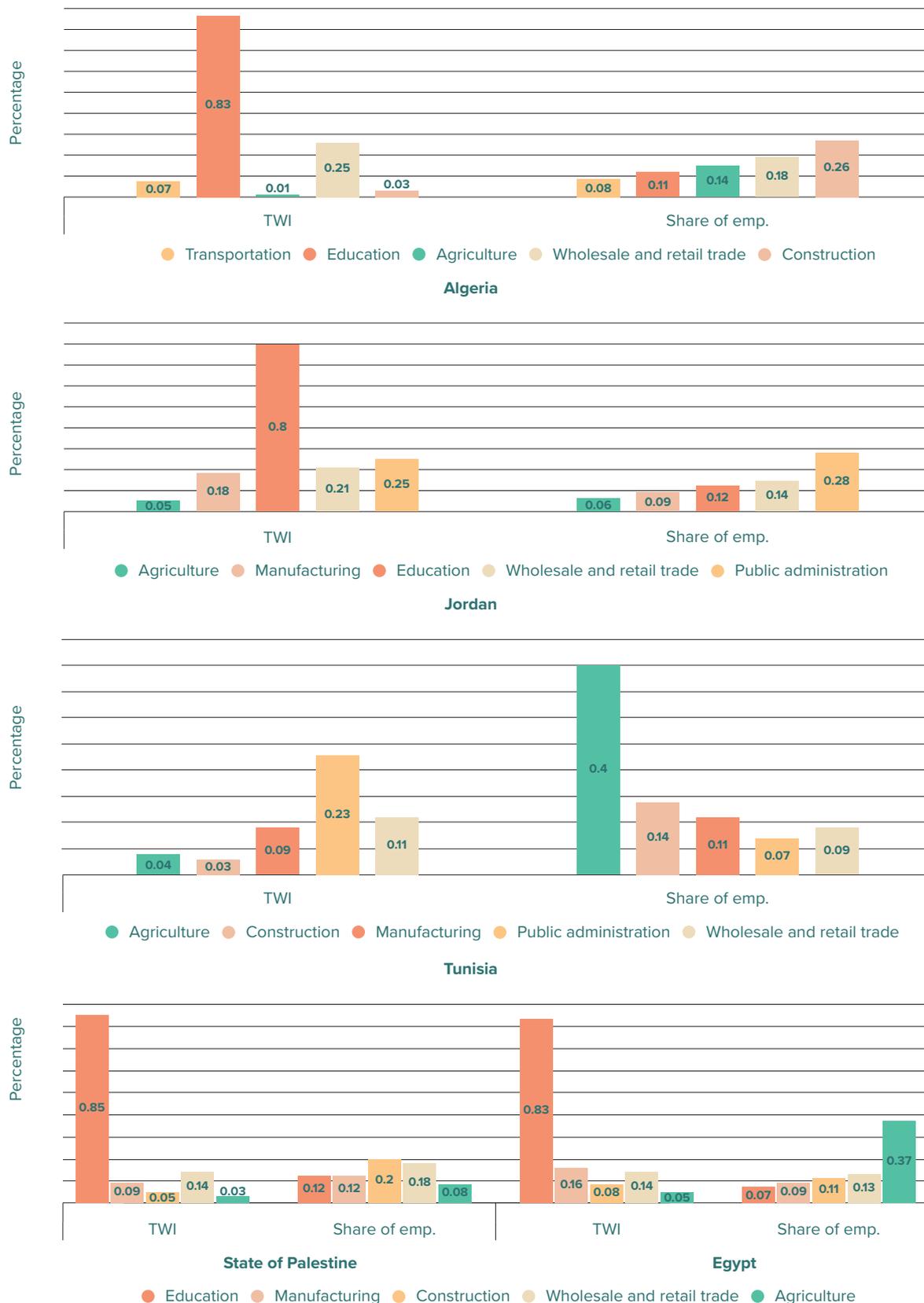
<sup>38</sup> It is worth noting while education jobs may be teleworkable in principle, their teleworkability depends critically on access to appropriate devices and a reliable Internet connection for both students and teachers, which varies drastically by country and socioeconomic group within each country.

a combined total of 40 percent of employment. These two industries have relatively high TWIs, especially education. Manufacturing, and wholesale and retail trade, the two other major employers in Jordan, also have higher TWIs than in Egypt and Tunisia, meaning workers in Jordan are in a better position than the other two countries.

Workers in the State of Palestine are more equally dispersed across industries. Agriculture and construction, which have very low TWIs, as elsewhere, account for just 28 percent of employment. Manufacturing, and wholesale and retail trade account for around 40 percent of employment, with slightly higher TWIs, albeit still lower than in Egypt and Jordan for the same industry. Education and public administration together account for about 20 percent of employment and have much higher TWIs (0.85 and 0.4 respectively). These TWIs are comparable to Egypt, although employment shares are higher in the State of Palestine.



Figure 5.2. TWI for the five largest industries in terms of employment in each country



Source: Author's calculations based on labour market surveys and the methodology described in the text.

### 5.3.3 Teleworkability by industry and gender

Tables 5.1a to 5.1c show the gender-disaggregated TWI by industry. In Algeria, women are concentrated in education, public administration and human health services, which together account for 70 percent of all women's employment in the country. Women's occupations in education and public administration have a very high TWI, while those in health services have moderate TWI, resulting in a very high level of TWI overall for women in Algeria. This suggests that working women in Algeria have a very high probability of continuing to work remotely even in the event of strict lockdowns. However, the burdens of domestic work and child care, as well as gender inequality in accessing technology may still hinder this potential.

In oil-importing middle-income countries (Table 5.1b), gender differences are also stark, both within and across countries. In Egypt and Tunisia, women are concentrated in agriculture (over 60 percent), with low TWIs, albeit higher than those of their male counterparts within the industry.

In Egypt, education is the second largest employer for women (12 percent) and women have very high TWI within the sector. In Tunisia, manufacturing is the second largest employer of women (14 percent) but their occupations within the sector have very low TWIs. In Jordan, women are concentrated in education (36 percent), human health services (14 percent) and public administration (10 percent). Their occupations in these industries are also much more compatible with teleworking than those of their male counterparts in the same industries. Agriculture employs 11 percent of women in Jordan but in occupations with very low TWIs (far lower than those of men in agriculture).

In the State of Palestine (Table 5.1c), women are concentrated in education (40 percent) and health (11 percent) and their occupations in these industries have higher TWIs than their male counterparts. Wholesale and retail trade, manufacturing and agriculture also account for a sizeable share of women's employment but the corresponding occupations have relatively low TWIs, albeit still higher than those of their male counterparts.

**Table 5.1a. TWI by industry and gender, oil-exporting countries: Algeria**

Industry	Algeria			
	Men		Women	
	TWI	Share of emp.	TWI	Share of emp.
A: Agriculture, forestry and fishing	0.01	0.16	0.05	0.06
B: Mining and quarrying	0.24	0.01	0.78	0.00
C: Manufacturing	0.10	0.06	0.32	0.03
D: Electricity, gas and water supply	0.24	0.01	0.58	0.01
F: Construction	0.03	0.30	0.21	0.02
G: Wholesale and retail trade; repair of motor vehicles and motorcycles	0.25	0.20	0.26	0.06
H: Hotels and restaurants	0.11	0.02	0.14	0.01
I: Transportation and storage	0.05	0.09	0.51	0.02
K: Financial and insurance activities	0.72	0.00	0.68	0.02
L: Real estate activities	0.48	0.01	0.68	0.02
O: Public administration and defence	0.48	0.04	0.78	0.13
P: Education	0.78	0.05	0.86	0.44
Q: Human health and social work	0.26	0.02	0.33	0.12
S: Other service activities	0.34	0.02	0.44	0.05
T: Activities of households as employers	0.03	0.00	0.18	0.01
U: Activities of extraterritorial organizations and bodies	0.29	0.00	0.18	0.00

**Table 5.1b. TWI by industry and gender, oil-importing middle-income countries: Egypt, Jordan and Tunisia**

	Egypt				Jordan				Tunisia			
	Men		Women		Men		Women		Men		Women	
	TWI	Share of emp.	TWI	Share of emp.	TWI	Share of emp.	TWI	Share of emp.	TWI	Share of emp.	TWI	Share of emp.
A: Agriculture; forestry and fishing	0.03	0.23	0.06	0.66	0.06	0.05	0.01	0.11	0.03	0.30	0.05	0.61
B: Mining and quarrying	0.26	0.00	0.54	0.00	0.18	0.01			0.12	0.01	–	–
C: Manufacturing	0.15	0.11	0.23	0.03	0.18	0.10	0.21	0.08	0.11	0.09	0.05	0.14
D: Electricity; gas	0.39	0.01	0.56	0.00	0.49	0.00	0.91	0.00	0.55	0.00	0.06	0.00
E: Water supply; sewage; waste management	0.23	0.01	0.56	0.00	0.25	0.00	0.52	0.00	0.03	0.00	–	–
F: Construction	0.08	0.16	0.37	0.00	0.06	0.07	0.91	0.01	0.03	0.21	0.04	0.00
G: Wholesale and retail trade	0.15	0.16	0.14	0.07	0.19	0.15	0.36	0.06	0.10	0.10	0.15	0.06
H: Transportation	0.18	0.09	0.33	0.00	0.15	0.06	0.66	0.00	0.03	0.06	0.00	0.00
I: Accommodation and food services	0.18	0.03	0.23	0.00	0.20	0.02	0.23	0.01	0.11	0.04	0.04	0.00
J: Information and communications	0.60	0.01	0.65	0.00	0.71	0.01	0.91	0.01	0.44	0.00	0.54	0.00
K: Financial and insurance	0.61	0.01	0.58	0.00	0.69	0.01	0.93	0.03	0.56	0.00	0.17	0.00
L: Real estate	0.78	0.00	0.52	0.00	0.67	0.00			0.43	0.00	0.00	0.00
M: Professional	0.56	0.01	0.63	0.01	0.61	0.02	0.79	0.03	1.00	0.00	1.00	0.00
N: Admin and support services	0.26	0.01	0.30	0.00	0.23	0.01	0.36	0.02	0.05	0.00	0.25	0.01
O: Public administration and defence	0.37	0.06	0.58	0.03	0.23	0.32	0.63	0.10	0.17	0.09	0.49	0.03
P: Education	0.80	0.05	0.85	0.12	0.70	0.07	0.90	0.36	0.65	0.05	0.82	0.08
Q: Human health and social work	0.22	0.02	0.22	0.05	0.16	0.03	0.29	0.14	0.19	0.01	0.23	0.02
R: Arts	0.39	0.00	0.51	0.00	0.33	0.00	0.98	0.00	0.58	0.00	0.90	0.00
S: Other service	0.24	0.03	0.25	0.01	0.17	0.02	0.19	0.02	0.05	0.01	0.13	0.02
T: Activities of households as employers	0.14	0.00	0.19	0.01	0.06	0.01	0.01	0.01	–	–	0.00	0.01
U: Activities of extraterritorial organizations and bodies					0.44	0.01	0.55	0.01				

**Table 5.1c. TWI by industry and gender, fragile and conflict-affected countries: State of Palestine**

Industry	Men		Women	
	TWI	Share of emp.	TWI	Share of emp.
A: Agriculture, forestry and fishing	0.03	0.08	0.03	0.08
B: Mining and quarrying	0.09	0.00		
C: Manufacturing	0.09	0.13	0.12	0.08
D: Electricity, gas, steam and air conditioning supply	0.34	0.00	0.87	0.00
E: Water supply; sewage, waste management and remediation activities	0.09	0.00		
F: Construction	0.05	0.24	0.51	0.01
G: Wholesale and retail trade; repair of motor vehicles and motorcycles	0.13	0.20	0.20	0.09
H: Transportation and storage	0.04	0.06	0.26	0.00
I: Accommodation and food service activities	0.06	0.04	0.19	0.02
J: Information and communication	0.59	0.01	0.69	0.01
K: Financial and insurance activities	0.62	0.01	0.81	0.02
L: Real estate activities	0.47	0.00	0.94	0.00
M: Professional, scientific and technical activities	0.63	0.01	0.68	0.02
N: Administrative and support service activities	0.19	0.01	0.26	0.01
O: Public administration and defence; compulsory social security	0.35	0.08	0.63	0.07
P: Education	0.76	0.05	0.90	0.40
Q: Human health and social work activities	0.17	0.03	0.27	0.11
R: Arts, entertainment and recreation	0.23	0.01	0.40	0.01
S: Other service activities	0.19	0.02	0.25	0.06
T: Activities of households as employers	0.23	0.00	0.84	0.00
U: Activities of extraterritorial organizations and bodies	0.36	0.01	0.52	0.01

Source: Author's calculations based on labour market surveys and the methodology described in the text.

### 5.3.4 Teleworkability by formality status and age group

Figure 5.3 shows TWI by formality status, as defined by coverage by contracts and social security. For all countries except Algeria, we had data on whether the workers had a contract and whether they had social security benefits. Both were used to define formal employment for Egypt, Jordan, the State of Palestine and Tunisia.<sup>39</sup> For Algeria,

we only had data on social security and this was used to define formality. The table shows that teleworkability for formal workers is three to four times higher than for informal workers. The fact that informal workers make up the majority of the workforce in Algeria, Egypt and the State of Palestine and nearly half in Jordan and Tunisia explains the low overall TWIs for all these countries.<sup>40</sup>

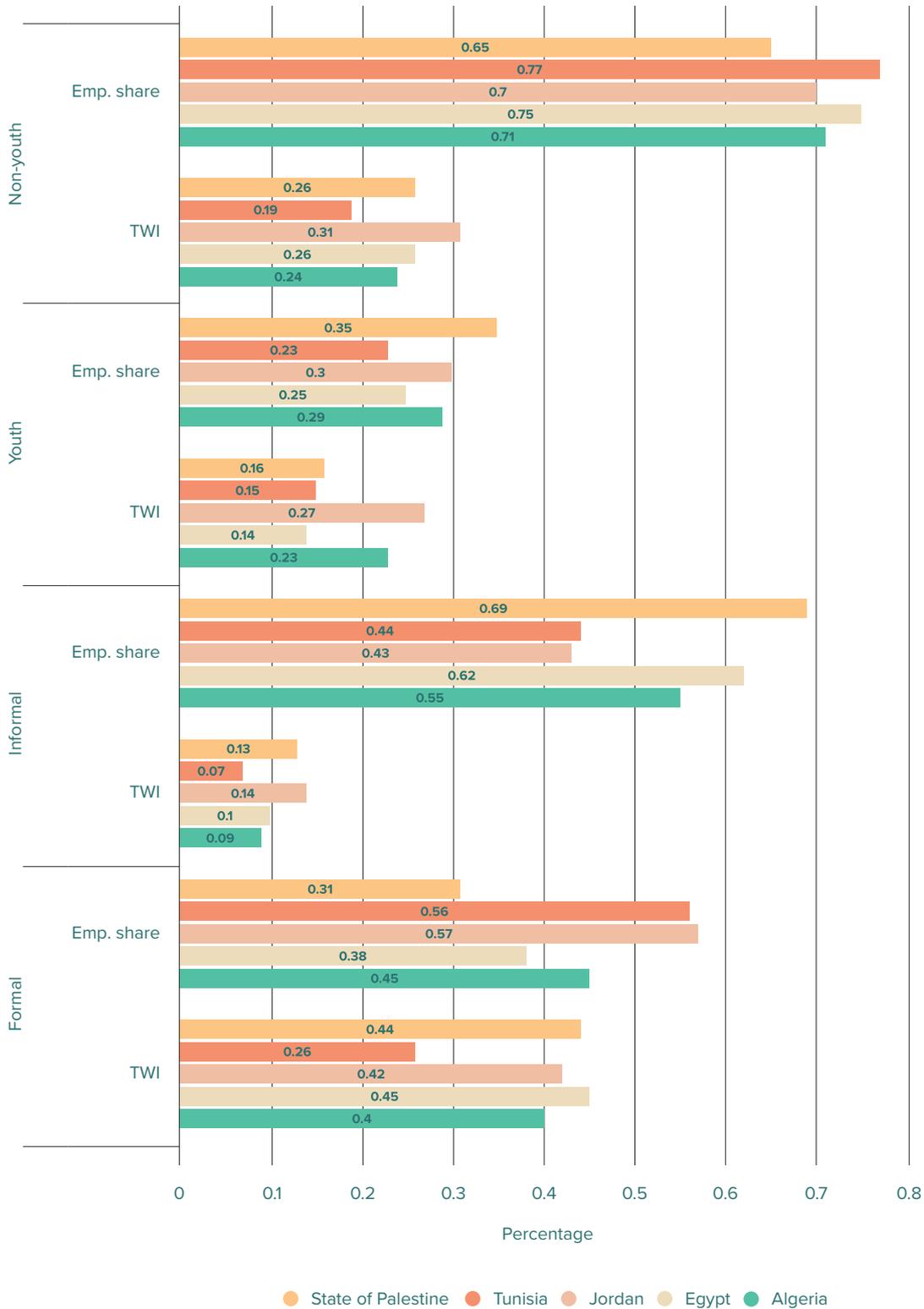
<sup>39</sup> In practice, social security was the more important factor in defining formality, since very few workers had social security but no contract, while many had a contract but no social security benefits. This makes the results comparable to those for Algeria.

<sup>40</sup> Irregular wage workers, who make up about 30 percent of all informal workers in Egypt, Jordan and Tunisia, are likely to be particularly vulnerable given the nature of their employment. We found that the share of jobs that would be teleworkable for irregular wage workers is even lower, at just 5 percent in Egypt, 7 percent in Jordan and 2.5 percent in Tunisia, compared with 23 percent, 33 percent and 19 percent for regular wage workers, respectively. This means the share of teleworkable jobs for irregular wage workers is just one-third to half the share of teleworkable jobs for all informal workers in these three countries, as shown in Figure 5.3. For perspective, irregular wage workers' share of total employment is 15 percent in Egypt and Jordan and 12.5 percent in Tunisia. Data on irregularity of employment was not available for Algeria and the State of Palestine but we expect their teleworkability levels to be similarly low.

We also examined the difference in TWIs between youth (15–29 years of age) and non-youth (30 years of age and above) and found that in Egypt and the State of Palestine,

youth were concentrated in occupations with relatively lower TWIs than older adults, while in the other three countries the differences were not significant.

**Figure 5.3. Teleworkability by job formality status and age group, by country**

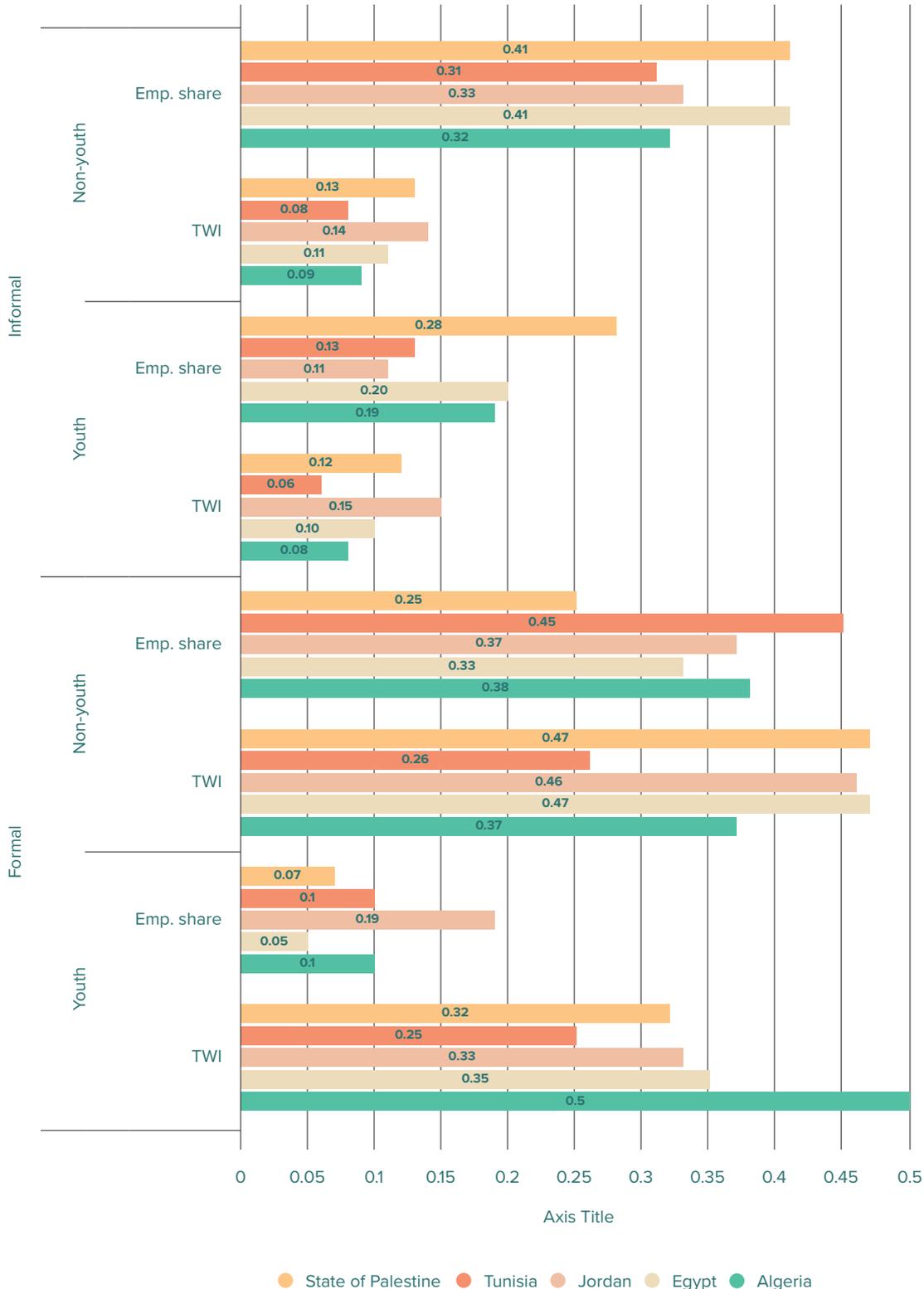


Source: Author's calculations based on labour market surveys and the methodology described in the text.

The distinction between formal and informal employment in different age groups is also important (Figure 5.4). Clearly, informal workers are at a disadvantage across the board, whether youth or not. The starker difference appears between formal youth and formal non-youth. In all

countries, except Tunisia (where both are low) the gap is 10 to 15 percentage points even within the formal sector which implies that even those youth in the “good” jobs are in occupations that were severely affected by the lockdowns.

**Figure 5.4. Teleworkability for formal and informal workers by age group**



Source: Author's calculations based on labour market surveys and the methodology described in the text.

## 5.4 Regression analysis: teleworkability and worker characteristics

In the analysis above, we examined how differences in occupational distributions within broader categories, such as gender, industry, formality and age group, affect the possibility of teleworking for these groups. There are large differences between these groups and these differences also vary significantly across countries. In practice, a worker may meet several of those “undesirable” characteristics and be at a disadvantage compared to others. For example, a young man working in agriculture in an informal job faces multiple disadvantages in terms of teleworkability. To further understand the observed characteristics that drive the relationships above, we take our analysis a step further to examine the relationship between worker characteristics and low teleworkability. The TWI two-digit occupational classification is merged with the individual data in the micro surveys to estimate the following simple logistic regression model:

$$y_{ij} = \alpha + \beta X_i + \varepsilon_{ij} \quad (1)$$

Where  $y_{ij}$  is a binary variable<sup>41</sup> that is one if the TWI for worker  $i$  in occupation  $j$ , is below the mean TWI for that country;<sup>42</sup>  $X_i$  is a vector of explanatory variables, including the worker’s gender, age (youth or non-youth), whether they have university education and whether they reside

in an urban region (not available for Algeria). We also included a binary variable for the household being in the highest wealth quintile, based on a household wealth index (asset data was not available for Algeria and the State of Palestine, therefore a wealth index could not be calculated), whether the worker is employed in a micro-enterprise (between one and four employees), whether they work in a broad industrial sector (agriculture and mining, manufacturing, and services [omitted]), and finally whether their employment is formal or informal, as defined above. Robust standard errors are reported to account for heteroscedasticity.

The results in Table 5.2 confirm that being male, young (except for Tunisia), working in an establishment with four employees or fewer, working in agriculture and mining or manufacturing and employed informally are all associated with low teleworkability. In contrast, having a university degree, being in the top wealth quintile and living in urban areas are associated with a higher TWI. These results imply that the impact of the pandemic would be most severe for those who were already most vulnerable in the labour market. Their inability to work remotely will exacerbate existing vulnerabilities associated with age, sector of employment, formality, whether self-employed, as well as rising unemployment for both youth and women, and further aggravate inequality in multiple dimensions.<sup>43</sup>

**Table 5.2. Logistic regression results of worker characteristics and low teleworkability**

	Algeria	Egypt	Jordan	Tunisia	State of Palestine
Male	1.802*** (0.059)	0.989*** (0.094)	1.308*** (0.178)	0.614*** (0.205)	1.707*** (0.048)
Youth	0.173*** (0.049)	0.649*** (0.093)	0.705*** (0.149)	0.365 (0.259)	0.572*** (0.046)
University education and above	-1.885*** (0.056)	-1.919*** (0.080)	-2.294*** (0.151)	-2.478*** (0.275)	-2.640*** (0.041)
Urban		-0.139* (0.074)	-0.483*** (0.140)	-0.300* (0.165)	-0.145*** (0.044)
Highest wealth quintile		-0.454***	-0.545***	-1.398***	

<sup>41</sup> We also estimated a simple OLS regression using TWI as a continuous variable and the results were qualitatively almost identical. We chose to report the results based on the binary low teleworkability variable instead to avoid misinterpretation since the measure cannot necessarily be interpreted linearly. Using the binary variable provides a benchmark and allows us to answer the question: “what are the characteristics of workers least likely to have a teleworkable job?”

<sup>42</sup> A similar analysis was performed, defining  $y_{ij}$  relative to the median instead of the mean. The results were similar in terms of signs but the results based on the mean had a higher significance. In the interests of brevity, only the results based on the mean are reported. The other results are available upon request.

<sup>43</sup> As further robustness checks, additional specifications of the model were examined. In one specification, all wealth quintiles were included in the regression (lowest quintile was the omitted category). The results were qualitatively identical, with the probability of low teleworkability falling for higher wealth quintiles. However, the coefficients on the wealth quintiles for Jordan were no longer statistically significant. A second specification also included all education categories (with illiterate being the omitted category). Once again, the results were qualitatively identical, with the probability of low teleworkability falling with higher education levels. These results are available upon request.

	Algeria	Egypt	Jordan	Tunisia	State of Palestine
		(0.088)	(0.147)	(0.201)	
Micro-enterprise	0.607***	0.629***	1.083***	1.377***	1.006***
	(0.042)	(0.079)	(0.283)	(0.232)	(0.055)
Agriculture and mining	2.006***	2.216***	0.669**	1.650***	2.515***
	(0.093)	(0.172)	(0.304)	(0.391)	(0.203)
Manufacturing	1.100***	0.613***	0.179	1.168***	0.795***
	(0.090)	(0.105)	(0.409)	(0.395)	(0.082)
Informal	0.950***	1.450***	0.912***	1.152***	0.807***
	(0.045)	(0.074)	(0.201)	(0.238)	(0.047)
Constant	-1.094***	-0.383***	0.185	1.160***	-0.100
	(0.058)	(0.105)	(0.197)	(0.237)	(0.062)
Observations	20,338	15,525	5,377	3,408	28,395
Pseudo R-squared	0.34	0.394	0.351	0.371	0.450

Source: Author's calculations based on labour market surveys and the methodology described in the text.

Note: the dependent variable is a binary variable that is one if the TWI for worker in occupation is below the mean TWI for that country. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 5.5 Teleworkability and the digital divide: feasibility of working from home in practice

Using data on access to a computer and Internet connection (only available for Egypt, Jordan and Tunisia), we next examine the impact of the digital divide on the distinction between the compatibility of work with teleworking and actually being able to work remotely. Compatibility with remote working does not automatically translate into actually being able to work from home, given the digital divide that is prevalent in most countries in the region. The lack of a reliable Internet connection or access to a personal computer or another device that can be used to work from home can prevent even the most eligible jobs from being successfully performed at home. The surveys we have used have asked questions such as “Do you have access to the Internet at home?”, “Does your family have an Internet connection?”, “Does your family own a wireless Internet router?”, “Does your family own a desktop computer/notebook/ laptop/ tablet? If so, how many?” This information was used to determine the share of workers with a TWI above the mean (or median) who also own a computer/laptop/tablet and have a home Internet connection. The results are shown in Table 5.3 and

imply that only a very small share of workers who could potentially work remotely (those whose TWI is above the mean) actually have the tools to do so in practice: just 5 percent in Egypt (7 percent for TWI above the median), 7 percent in Jordan (10 percent for TWI above the median) and 5 percent in Tunisia (7 percent for TWI above the median). Thus, while in each country some workers have jobs compatible with remote work, only a very small fraction have the tools to do so. While this result may seem to render the telework potential discussed in the previous sections unlikely in practice, there is a silver lining. The fact that the lack of access to technology is the problem in Arab countries studied here is potentially a positive result: this constraint is very much surmountable, since it is a matter of investing in the right tools and infrastructure, which is much easier than trying to create a structural change in the occupational distribution of the economy as a whole. As mentioned above, even for the United States, Dingel and Nieman (2020) found that only 37 percent of jobs were teleworkable. This suggests that workers in the region can work remotely if the digital divide is overcome, especially in the short run, through for example device distribution programmes and improvements to Internet access and reductions in cost.

**Table 5.3. Share of high TWI workers who have home access to a computer and an Internet connection**

	Egypt	Jordan	Tunisia	Total
TWI	0.20	0.29	0.17	0.20
TWI>mean and own a computer and Internet connection	0.05	0.07	0.05	0.05
TWI>median and own a computer and Internet connection	0.07	0.10	0.09	0.07

Source: Author's calculations based on labour market surveys and the methodology described in the text.

## 5.6 Robustness check: region-specific teleworkability index

As a robustness check, and to ensure that we are basing our analysis on a region-specific understanding of the tasks required for each occupation, we develop our own classification using survey questions from the Egyptian Labour Market Panel Survey.<sup>44</sup> The survey includes 18 questions that can be used to infer the task content of occupations, similar to questions used by other researchers such as Dingel and Nieman (2020) and Saltiel (2020) to determine the potential to work from home (Table 5.4). The index was constructed using data from the responses to these questions at the individual level.

One drawback of the questions in the Egyptian Labour Market Panel Survey compared to the O\*NET survey or those of the OECD Programme for the International Assessment of Adult Competencies (PIAAC), on which the other researchers based their studies, is that the Egyptian survey only asks about work requirements and exposure to risk, not frequency. It does not ask workers how often they might have to carry heavy objects or how often they are exposed to extreme heat, for example. As such, there is no way to determine whether various aspects of the job are common or rare. To accurately gauge the degree to which a job can be performed from home, we ideally need to know whether these activities are performed on a daily or weekly basis, not just occasionally. As such, we calculated several different iterations of the index, ranging from more to less restrictive, depending on how many criteria were included.

As mentioned earlier, the survey includes information on the current location of work. All workers whose response was “own home” were included in all the indices discussed below as being able to work from home. These made up 3 percent of the sample (TWI–ELMPS1). We then added several other criteria based on similar studies (Dingel and Nieman, 2020 and Saltiel, 2020), data availability, and our judgement as to what may or may not make a job conducive to working from home. Table 5.4 includes the detailed questions used in each successive index. Jobs that require computer skills or where the respondent answered that they use a computer in their work, whether connected to the Internet or not, were also considered to be teleworkable. Adding these jobs to the “own home” work location, brought the share of teleworkable jobs to

19.2 percent (TWI–ELMPS2). We then proceeded to add all other criteria that could make a job more likely to be performed remotely, such as not supervising others, not working in tourism and not carrying heavy items (in addition to the first three criteria). This brought the total share of teleworkable jobs to 24.6 percent (ELMPS–TWI3). Since the onset of the pandemic, the nature of many jobs has changed dramatically. For example, many jobs that require dealing with the public are now performed at home. This may be particularly true of jobs that also require computer skills or where the respondent uses a computer at work, such as in administrative work or public services. As such, for TWI–ELMPS4 we included all the questions, except the question about whether the respondent deals with the public. This raised the share of jobs that can be performed remotely to 31.4 percent.

For the next set of indices, we investigated the share of jobs that may not necessarily require computer skills or the use of a computer at work, but may still be done remotely, such as craft-related jobs, by including all criteria other than those relating to computer skills or use. The share of jobs that can be performed remotely falls to just 10 percent (TWI–ELMPS5). When not dealing with the public is eliminated (TWI–ELMPS6) the share rises to 19 percent. We then went on to progressively eliminate criteria. Eliminating any of criteria 3, 4, 5, 7 or 8, did not significantly change the share from 19 percent (not shown to save space). When any of criteria 9 to 17 are eliminated, the share rises slightly with each (not shown to save space). When all of these are removed, it rises to 26 percent (TWI–ELMPS7). We interpret this as indicating that far fewer non-computer related jobs may be performed remotely, but this share rises significantly when fewer restrictions are included, as expected.

We conclude that for jobs that require computer skills or the use of a computer at work, the share of jobs that can be performed remotely ranges from 19 to 31 percent. For jobs that do not require computer skills or the use of a computer at work, the share of jobs that can be performed remotely ranges from 19 to 26 percent. These shares are similar to the TWI index based on the Dingel and Nieman (2020) classification. Without more detailed information on the daily activities of workers, rather than just whether a given activity ever forms part of the job, it is hard to narrow the classification further without making unjustifiable assumptions.

<sup>44</sup> The surveys for Jordan and Tunisia only included a subset of the questions that could be used to construct the index and even where the questions were included, only very few observations had responses to these questions, with the majority missing. We therefore had to rely exclusively on the labour market panel survey for Egypt for the construction of the index.

**Table 5.4. Questions used to calculate TWI indexes for the Egyptian Labour Market Panel Survey**

	TWI-ELMPS1	TWI-ELMPS2	TWI-ELMPS3	TWI-ELMPS4	TWI-ELMPS5	TWI-ELMPS6	TWI-ELMPS7
Is your current place of work "own home"? =1 if yes	X	X	X	X	X	X	X
1. Does your job require computer skills?		X	X	X			
2. Do you use a computer in your work, whether connected to the Internet or not?		X	X	X			
3. Does your job <i>not</i> require supervising others?			X	X	X	X	X
4. Does your job <i>not</i> require physical fitness?			X	X	X	X	X
5. Is your work <i>not</i> related to tourism (e.g. providing goods and services for tourists)?			X	X	X	X	X
6. Do you <i>not</i> deal with the general public in your job?			X		X		
7. Do you <i>not</i> carry heavy stuff at your work?			X	X	X	X	X
8. Do you <i>not</i> operate any heavy machines at your work?			X	X	X	X	X
Are you <i>not</i> exposed to any of these?							
9. Dust and flames?			X	X	X	X	
10. Fire or fuel?			X	X	X	X	
11. Loud noise and vibrations?			X	X	X	X	
12. High risk equipment?			X	X	X	X	
13. Extreme heat/extreme cold?			X	X	X	X	
14. Work underground?			X	X	X	X	
15. Working in sea/river?			X	X	X	X	
16. Working in a dark place?			X	X	X	X	
17. Bending for a long time?			X	X	X	X	
Jobs that can be performed remotely (percentage)	2.9	19.2	24.6	31.4	10.1	19.1	26.4

Source: Author's calculations based on the Egyptian Labour Market Panel Survey for 2018 and the methodology described in the text.

The Egyptian Labour Market Panel Survey also includes a question that can help us to understand the degree of personal proximity required for each occupation. Jobs that may have a low TWI may still be safe to perform if they require low personal proximity. The question "Does your job require supervising others?" is used to gauge this aspect.

Table 5.5 shows that about 12 percent of all jobs require close personal proximity in the form of supervising others. We split this first by occupation in the top panel and then by industry. Managers, technicians and professionals are among the occupations that require the greatest personal proximity. In terms of industry, jobs in arts and entertainment, electricity and gas, and information and communications are among those with the highest need for personal proximity. However, it is important to note the

limitation of this measure, since many jobs that require supervision by others can still be performed from home (e.g. where tasks can be easily shared by email) and several

jobs that do not require supervision may still require close personal proximity (e.g. workers on a production line are not all supervisors).

**Table 5.5. Personal proximity by occupation and industry**

Occupation of current job	Does your job require you to supervise others?
	Yes
Managers	45.5
Professionals	19.0
Technicians and associate professionals	23.1
Clerical support workers	14.8
Service and sales workers	9.3
Skilled agricultural, forestry and fishery workers	8.3
Craft and related trades workers	9.0
Plant and machine operators, and assemblers	4.2
Elementary occupations	3.1
Economic activity	
A: Agriculture; forestry & fishing	8.3
B: Mining & quarrying	13.5
C: Manufacturing	13.8
D: Electricity; gas	22.9
E: Water supply; sewage; waste management	9.1
F: Construction	10.5
G: Wholesale & retail trade	10.9
H: Transportation	5.6
I: Accommodation & food services	16.7
J: Information & communications	20.4
K: Financial & insurance	17.4
L: Real estate	3.5
M: Professional	16.9
N: Admin & support services	15.1
O: Public administration & defense	14.8
P: Education	16.7
Q: Human health & social work	13.0
R: Arts	25.6
S: Other service	10.1
T: Activities of households as employers	3.9
U: Activities of extraterritorial organizations and bodies	13.8
Total	11.8

Source: Author's calculations based on the Egyptian Labour Market Panel Survey for 2018 and the methodology described in the text.





## 6. Summary, conclusions and policy recommendations

This study has examined the potential labour market impacts of the COVID-19 pandemic. Before the pandemic, Arab labour markets were already struggling to provide enough decent jobs for new labour market entrants and suffered from extremely low female labour force participation rates and extremely high levels of informality. The crisis has only exacerbated the difficulties faced by workers and it is precisely those who were already most vulnerable before the pandemic that have been most affected.

We examined the characteristics of workers in industries that have and are likely to continue to suffer the largest reduction in economic activity based on the ILO industry risk classification. We found that across all three country groups significant numbers of workers were in COVID-vulnerable industries that were highly susceptible to the impact of the pandemic on economic activity. While there are some notable differences across countries, overall men, young workers, workers with lower levels of education, workers residing in urban areas, workers in blue-collar occupations, and workers in informal employment, private employment and self-employment, were most likely to be in these highest-risk industries.

We further examined the extent to which occupations can be performed remotely in each country group, given the recurring lockdowns implemented in most countries. We constructed a teleworkability index based on the daily tasks and activities of workers for each occupation. We found that overall, few jobs can be performed from home, ranging from 17 percent in Tunisia to 29 percent in Jordan. In most countries, industries with the lowest teleworkability indices had the highest concentration of workers. Women, public-sector, white-collar and formal workers were found to have a relative advantage. Workers who

were most likely to suffer from lockdowns were those who were young (15–29 years of age), employed in the informal sector, male, rural, employed in microenterprises, work in agriculture or manufacturing, do not have university education and come from lower wealth quintiles, since their jobs tend to be least compatible with telework. We also investigated the impact of the digital divide and the fact that despite it being theoretically possible to perform a job remotely, this may prove to be infeasible in practice due to a lack of access to tools such as a computer and Internet connection. We found that even for workers whose jobs were compatible with teleworking (above the median or mean index in each country), only a very small fraction have the necessary tools, such as a computer and home Internet connection, to make this feasible in practice.

The COVID-19 pandemic has been called the “great unequalizer”, particularly for its unequal impact on the labour market. This paper has shown that workers who are young, male, resident in rural areas, employed informally, work in agriculture and manufacturing and come from a lower wealth quintile are particularly vulnerable both to impacts to aggregate demand and supply. On the one hand, these workers are concentrated in the industries that are most likely to suffer severe economic decline due to the impact of the crisis on aggregate demand. On the other, their occupations are least likely to be compatible with teleworking, meaning that the supply-side impact will also increase their vulnerability, either to losing their jobs or to the higher health risks involved in continuing to work in close physical proximity to others.

Policymakers will need to carefully address the labour market challenges facing Arab countries in different stages of development. The typical policy recommendations of encouraging more formalization and job creation are still valid but the urgency of the pandemic and its impact on the world of work (likely to continue well beyond the current crisis) has created additional pressing recommendations. In the short term, minimizing job losses and protecting the health and well-being of workers is a clear priority. This will require both government support to the industries at greatest risk, especially labour-intensive industries like accommodation and food services and wholesale and retail trade, but also small and micro enterprises across all industries, whose workers are among the least likely to be able to work remotely. This support can be in the form of direct capital investments in small businesses through cash, capital goods or livestock, which have been shown to encourage self-employment and boost

earnings (Blattman and Ralston, 2015). Governments should also provide clear health guidance and subsidies for the procurement of personal protective equipment for workers whose jobs require close contact with either the public or other employees. Government support should prioritize industries that employ blue-collar workers, young people, workers without a university education or workers employed informally. This support should be conditional on retaining staff, with at least partial payroll preservation, to ensure that the intended beneficiaries – the workers – are indeed supported. This will require the implementation of monitoring and evaluation programmes to ensure compliance.

The challenges inherent to providing meaningful support programmes for informal businesses mean it may be more practical to provide direct cash transfers to informal workers, as has already been the case in some countries (e.g. Egypt, Jordan, Morocco and Tunisia). More generally, all workers who lose their jobs due to the pandemic or those at high risk can be supported through direct and indirect social assistance programmes, including waivers or deferred payments for basic services like electricity, water and Internet, as well as rent (perhaps also with a moratorium on evictions). This can be complemented by debt forgiveness and renegotiation programmes for existing debt with entities such as microfinance and banking institutions. The adequate provision of this kind of social assistance is a challenge, both financially and logistically, and will likely require considerable investment in social protection infrastructure. To bridge the digital divide in the short term, governments can sponsor digital device distribution programmes (such as tablets for school children, which has already been implemented in several countries) as well as subsidizing or deferring payments for Internet access to facilitate remote work in practice.

In the medium to long term, these policy options can be expanded to incorporate policies that would directly raise demand for labour, which several studies have shown is the most pressing labour market problem facing the region.<sup>45</sup> Reforms should promote job creation in the private sector and decent working conditions. This should be implemented within a broader effort to increase competition<sup>46</sup> and diversification especially into high-productivity industries, and to reduce reliance on low value-added industries like construction<sup>47</sup> that only create temporary employment and are highly vulnerable to economic shocks. Investing in strong telecommunications infrastructure and closing the digital divide across

<sup>45</sup> See, for example, Diwan and Haidar (2017); Assaad, et al. (2019); Assaad, Krafft and Yassin (2020), among others.

<sup>46</sup> Several recent studies have shown that politically connected firms in the region that tend to capture most of the profits, as well as preferential access to capital, resources and regulatory privileges are less productive and create few jobs, while crowding out smaller more efficient firms (El-Haddad, 2020; Diwan, Keefer and Schiffbauer, 2015; Diwan and Haidar 2017).

<sup>47</sup> See, for example, Morsy, Levy and Sanchez (2015).

geographic, gender and socio-economic strata can significantly improve the potential to work remotely. It is equally important to create new opportunities, which should specifically target young people and women. The pandemic has highlighted the importance of digital skills and the need for more targeted investment in technical skills to match the demand for labour in such circumstances. Policymakers should support, incentivize, and carefully design the development of skills by vulnerable workers in high growth areas, particularly the digital and green economies (Blattman and Ralston, 2015).

The crisis poses a challenge like no other but it can also provide a valuable opportunity to build back better by encouraging higher-quality education matched to labour market demand, providing incentives for job creation and formalization, and gearing national and regional educational policies towards innovation, high-tech, high value-added industries that have continued to fare well while other sectors have suffered. It is crucial to prioritize maximizing opportunities for young women and men within this new paradigm.

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## Appendix

**Table A1a. TWI by industry, oil-exporting countries: Algeria**

Industry	TWI	Share of emp.
A: Agriculture, forestry and fishing	0.01	0.14
B: Mining and quarrying	0.26	0.01
C: Manufacturing	0.12	0.06
D: Electricity, gas and water supply	0.27	0.01
F: Construction	0.03	0.26
G: Wholesale and retail trade; repair of motor vehicles and motorcycles	0.25	0.18
H: Hotels and restaurants	0.11	0.02
I: Transportation and storage	0.07	0.08
K: Financial and insurance activities	0.70	0.01
L: Real estate activities	0.55	0.01
O: Public administration and defence; compulsory social security	0.58	0.06
P: Education	0.83	0.11
Q: Human health and social work activities	0.30	0.03
S: Other service activities	0.37	0.03
T: Activities of households as employers	0.09	0.00
U: Activities of extraterritorial organizations and bodies	0.28	0.00

**Table A1b. TWI by industry, oil-importing middle-income countries: Egypt, Jordan and Tunisia**

Industry	Egypt		Jordan		Tunisia	
	TWI	Share of emp.	TWI	Share of emp.	TWI	Share of emp.
A: Agriculture, forestry and fishing	0.05	0.37	0.05	0.06	0.04	0.40
B: Mining and quarrying	0.32	0.00	0.18	0.01	0.14	0.01
C: Manufacturing	0.16	0.09	0.18	0.09	0.09	0.11
D: Electricity, gas, steam and air conditioning supply	0.40	0.00	0.53	0.00	0.31	0.00
E: Water supply; sewage, waste management and remediation activities	0.25	0.01	0.28	0.00	0.03	0.00
F: Construction	0.08	0.11	0.08	0.06	0.03	0.14
G: Wholesale and retail trade; repair of motor vehicles and motorcycles	0.14	0.13	0.21	0.14	0.11	0.09
H: Transportation and storage	0.18	0.06	0.15	0.05	0.03	0.04
I: Accommodation and food service activities	0.19	0.02	0.20	0.02	0.11	0.03
J: Information and communication	0.61	0.00	0.76	0.01	0.48	0.00
K: Financial and insurance activities	0.60	0.00	0.78	0.01	0.46	0.00

Industry	Egypt		Jordan		Tunisia	
	TWI	Share of emp.	TWI	Share of emp.	TWI	Share of emp.
L: Real estate activities	0.75	0.00	0.67	0.00	0.29	0.00
M: Professional, scientific and technical activities	0.57	0.01	0.65	0.02	1.00	0.00
N: Administrative and support service activities	0.26	0.01	0.27	0.01	0.15	0.00
O: Public administration and defence; compulsory social security	0.41	0.05	0.25	0.28	0.23	0.07
P: Education	0.83	0.07	0.80	0.12	0.73	0.06
Q: Human health and social work activities	0.22	0.03	0.22	0.05	0.20	0.02
R: Arts, entertainment and recreation	0.41	0.00	0.39	0.00	0.72	0.00
S: Other service activities	0.24	0.02	0.17	0.02	0.09	0.02
T: Activities of households as employers	0.16	0.01	0.05	0.01	0.00	0.00
U: Activities of extraterritorial organizations and bodies	---	---	0.46	0.01	---	---

**Table A1c. TWI by industry, fragile and conflict-affected countries: State of Palestine**

Industry	TWI	Share of emp.
A: Agriculture, forestry and fishing	0.03	0.08
B: Mining and quarrying	0.09	0.00
C: Manufacturing	0.09	0.12
D: Electricity, gas, steam and air conditioning supply	0.39	0.00
E: Water supply; sewage, waste management and remediation activities	0.09	0.00
F: Construction	0.05	0.20
G: Wholesale and retail trade; repair of motor vehicles and motorcycles	0.14	0.18
H: Transportation and storage	0.04	0.05
I: Accommodation and food service activities	0.07	0.04
J: Information and communication	0.62	0.01
K: Financial and insurance activities	0.69	0.01
L: Real estate activities	0.49	0.00
M: Professional, scientific and technical activities	0.65	0.01
N: Administrative and support service activities	0.21	0.01
O: Public administration and defence; compulsory social security	0.40	0.08
P: Education	0.85	0.12
Q: Human health and social work activities	0.22	0.04
R: Arts, entertainment and recreation	0.27	0.01
S: Other service activities	0.21	0.03
T: Activities of households as employers	0.73	0.00
U: Activities of extraterritorial organizations and bodies	0.41	0.01

Source: Author's calculations based on labour market surveys and the methodology described in the text.

Notes: '---' implies there were no observations.

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