

Full Length Research Paper

Impact of COVID-19 on Lesotho's informal economy: A case study of the hair dressing sector

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This paper uses real-time survey data from the hairdressing sector and qualitative response modeling to investigate the effects of the COVID-19 induced nationwide lockdown of March 2020 on Lesotho's informal economy. Results show that workers in the hairdressing sector experienced challenges accessing basic goods and services in the wake of the lockdown. Workers also faced drops in hours worked and monthly earnings. This culminated in an erosion of savings and an accumulation of household debt. Workers that experienced difficulty accessing basic goods and services and those whose main source of income came from the hair dressing sector, were three times as likely to experience a decrease in their earnings. Those able to work from home were found to be moderately less likely to experience a decrease in earnings. A comprehensive scoping study of Lesotho's hairdressing business and other informal sector businesses is recommended to identify vulnerable groups and guide the development of effective policies and protective measures to withstand similar extraordinary shocks in the future.

Key words: Lesotho, informal economy, COVID-19, economic impact.

INTRODUCTION

On March 11, 2020, the World Health Organization (WHO) declared coronavirus, also referred to as COVID-19 or SARS-CoV-2, a pandemic, as the outbreak became an international public health crisis that affected thousands of people in most parts of the world. As at January 10, 2021 the world had recorded over 88 million COVID-19 cases and 1.9 million deaths. Out of these numbers, Lesotho's share of confirmed cases stood at 2577 and 50 deaths (WHO, 2021). The virus, though a public health threat, could become an economic and financial threat with long-term ramifications for the global economy. In an effort to prevent its global spread, regions

and countries affected by the virus such as Europe, China and the United States (US) implemented measures that can be characterised by physical distance, restricted movement of persons and nation-wide lockdowns. Although the severity of the nation-wide lockdowns varied across countries and regions, a common thread is that they affected all economic sectors of production. The consequence has been drastic drops in the numbers of hours worked, especially in non-essential economic sectors. This has resulted in elevated levels of unemployment and inactivity, with inactivity showing signs of rising at a much faster rate than unemployment.

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The high levels of unemployment have mostly affected women more than men and have resulted in substantial losses in labour income (ILO, 2020; IMF, 2020; Haas and Teachout, 2020).

The global share of workers residing in countries with required workplace closures, in an effort to curb the adverse effects of the virus, was 94% in September, 23, 2020. Although strict economic lockdown measures can be used as tools to flatten the infection curve, they are likely to result in unfavourable effects on the global economy, especially for workers in the informal economy. This is because they are typically economically marginalised and have very little social protection (ILO, 2020; Balde et al., 2020). Informal economy enterprises are those owned by individuals or households. They are not independent of their owners since they are not constituted as separate legal entities from them. They usually do not have complete financial accounts that would allow for a separation of the entity's production operations from the owner's other activities. The goods and services produced (for example, hairdressing, carpentry etc.) are usually meant for sale or barter. The size of the enterprise, in terms of number of employees, is usually less than five (Hussmanns, 2004; ILO, 2020). There are approximately close to two billion workers in the informal economy worldwide, most of which are located in developing economies. Roughly 5 to 25 million of these workers are at risk losing their jobs due to COVID-19 and associated economic lockdown measures. Widespread job losses are likely to lead to a loss in earnings and rise in unemployment (Komin et al., 2020; Haas and Teachout, 2020; ILO, 2020; IMF, 2020).

Notwithstanding its relatively late detection, COVID-19 has spread rapidly in Lesotho since the confirmation of the country's first case in May, 2020. In the wake of the pandemic and in light to the country's weak effective public health system, the country (much like the rest of the world) has opted for prevention and behavioural change measures such as physical distancing and lockdowns. In March 2020, authorities announced and implemented a 21-day national lockdown that was originally scheduled to end in April 2020 but was subsequently extended to May of the same year. The lockdown called for the closure of schools, churches, non-essential businesses and prohibited other social gatherings. According to UNDP (2017), the biggest sources of household income in Lesotho are subsistence farming and survivalist activities that account for approximately 29.5%. This is followed by salaried employment, estimated at 28.5%. Only about ten% of the labour force is engaged in formal employment, with the rest forming either part of smallholder or subsistence agricultural sector or the urban informal economy, both of which are characterized by poor productivity, low incomes and little protection. Although there is evidence of growing empirical research on the impacts of COVID-19 on labour markets (Balde et al., 2020; Adams-Prassl et al., 2020; Williams and Kayaoglu, 2020), to the best of

our knowledge, there has not been any micro-level study of the impact of the pandemic induced nationwide lockdown of March 2020 on Lesotho's informal economy. Such a study would be of interest to policy makers interested in micro-level evidence of how Lesotho's informal economy was affected by the COVID-19 induced nationwide lockdown of March 2020 and whether the informality of the sector exacerbates labour market developments.

The objective of this paper is to use real-time survey data from August 14th 2020 to September 21st 2020 to investigate the effects of the COVID-19 induced nationwide lockdown of March and May 2020 on Lesotho's informal economy. A single sector case-study approach is adopted to evaluate how the lockdown impacted jobs, earnings and access to basic goods and services in the sector. The focus is put on sectors that are defined as "high-risk" in the time of COVID-19. According to Balde et al. (2020), high-risk sectors are contact intensive sectors such as hotels, restaurants, tourism, hairdressing, tailoring and transport. Workers in such sectors are more likely to lose their jobs and encounter declines in earnings. The authors choose the hairdressing sector as the case-study of interest. This is mainly motivated by the availability of a reliable sampling frame¹ and the accessibility of respondents. Further motivation behind choosing the hairdressing sector comes on the back of an August 18, 2020, article titled "Cut down to size" by The Post, a local newspaper. According to The Post (2020), the COVID-19 pandemic and resultant government lockdowns were having devastating effects on Lesotho's hairdressing sector, adversely affecting employment, revenue generation and household income, by extension. Noteworthy, Rantšo (2016) points out that in Lesotho, one of the main ways households supplement their formal sector incomes is through the mostly informal hairdressing sector. These households typically use the extra money they receive to pay for their children's education as well as other necessities like clothing, rent, and food. Thus, losing this source of money can have a disastrous impact on people's ability to support themselves.

To the best of our knowledge, no other research has been conducted at the time of this study to evaluate the COVID-19 pandemic's economic effects, particularly from a micro viewpoint with a focus on the informal economy. The current study examines how employment, household income and access to basic goods and services by workers in the hairdressing sector were impacted by the COVID-19 pandemic and the government's shutdown of the economy using primary survey data gathered through questionnaires. Policy makers can benefit from the paper's results by using them to establish appropriate

¹ The study uses the BoS (2019) Continuous Multipurpose Household Survey/ Household Budget Survey 2017-2018 to develop a sample frame of the hairdressing sector.

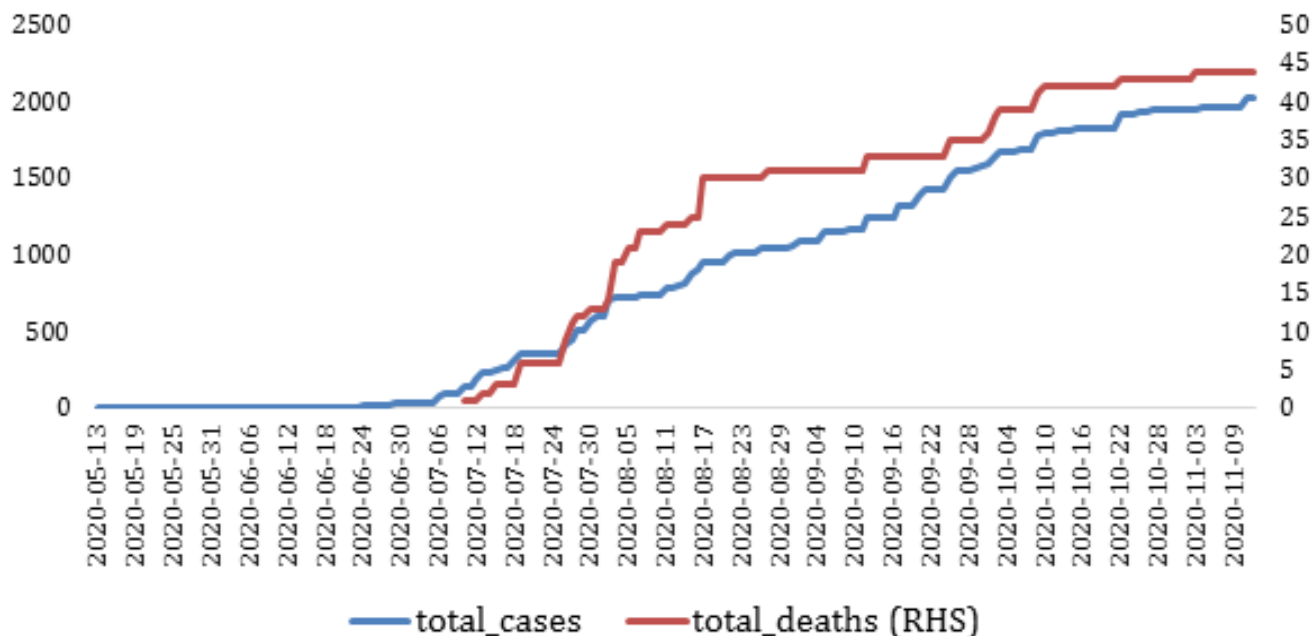


Figure 1. Lesotho Distribution of COVID-19 Cases and Deaths as at 11 November, 2020.
Source: NACOSEC – COVID-Data.

methods for assisting those in the nation's informal sector.

Brief background of covid-19 in Lesotho

The first COVID-19 case was reported on 13th May, 2020 in Lesotho. Since then, the number of cases has increased precipitously as shown in Figure 1. To coordinate the response to the pandemic, through the ministry of health, the country developed a preparedness and response plan and the national COVID-19 response integrated plan in collaboration with other stakeholders. An inter-ministerial committee was also created to oversee the implementation of the plans. Even before the country could register any case, the committee adopted an array of containment measures, such as declaration of a national state of emergency, social distancing, travel restrictions, closure of borders allowing only essential goods, closure of schools, churches and other social gatherings, a 21-day lockdown in March 2020 that was extended to May 5th. Post May 5th 2020, the lockdown was relaxed and some non-essential business were allowed to gradually reopen but some, such as hair salons, alcohol outlets, gym were still restricted as the country had now adopted risk mitigation strategy that followed WHO protocols and recommendations. This was after the formation of the National COVID-19 Secretariat (NACOSEC) in July 2020.

With the formation of NACOSEC, Lesotho adopted the susceptible infectious recovered (SIR) model to manage the spread of COVID-19 pandemic. In this light, the

country's strategy targets the basic reproduction number of less than one to reduce infections and raise the line of the health-care system capacity, to reduce likelihood of needless deaths. The basic reproduction number represents the average number of people who will contract a contagious disease from one person in a population of people who were previously free of infection and have not been vaccinated. To keep the basic reproduction number at the desired level, Lesotho's intervention was more preventative as the capacity of the health system is not strong enough to deal with the demands of COVID-19. However, the WHO Strategic Preparedness and Response Plan for COVID-19 emphasises that people living in low resource capacity settings, of which Lesotho is a candidate, are vulnerable to the impact of the COVID 19. As such, measures for prevention and control that have been implemented in high resource settings such as physical distancing, movement restrictions, home confinement, hand washing with running water and soap, closure of schools, churches, workplaces and other social gatherings may be somewhat difficult to implement and could be more harmful to the survival of most people.

Noticing that the adopted measures to mitigate COVID-19 both in Lesotho and around the world could have devastating economic consequences on households, particularly on the poor, the Government adopted a host of fiscal and monetary policy responses as outlined in Table 1. The nature of the policies consisted of a mix of tax relief, increased spending and access to liquidity. The most vulnerable were cushioned against the impact of the

Table 1. Government of Lesotho policy response to COVID-19.

Type	Policy response
	The government has set aside LSL 700 million for COVID-19 response.
	Emergency assistance expanded on existing social grants to include other groups such as disabled and informal economy workers
Fiscal	Provision of a cash subsidy to industrial workers to the tune of LSL 800 for 3 months About LSL100 million in subsidies to support food production
	The Lesotho Revenue Agency deferred corporate income tax for the first two quarters for all businesses and tax deferrals for the pay as you earn (PAYE) and value added tax (VAT) for non-essential service providers
	To influence reduction in borrowing costs and relief on interest payments, the Central Bank of Lesotho (CBL) reduced policy rate from 6.25% in March to 3.50% in July, 2020
	The CBL has encouraged implementation of flexible measures in the insurance sector and payment holidays
Monetary	The CBL negotiated with mobile network operators to remove fees for transactions below LsL50 and to temporarily increase mobile money transaction limits until December, 2020 to encourage the use of non-cash payments
	The CBL provided support to the Banks through the use of capital conservation buffers to advance credit, short term liquidity provision and has exempted certain limits/regulations such as suspension of Basel II

virus through expanded social assistance, assisted food production, and aid to small businesses through credit guarantees.

REVIEW OF LITERATURE

Recently, there has been a welcomed contribution of empirical studies that conduct micro-level investigations to evaluate the impact of COVID-19 on labour markets in marginalised sectors of the economy. The studies have been undertaken in countries such as Armenia (Beglaryan and Shakhmuradyan, 2020); United Kingdom and United States (Adams-Prassl et al., 2020); Thailand (Komin et al., 2020) as well as the sub-Saharan African region (Balde et al., 2020). The studies include those that evaluate how the pandemic and resultant nationwide lockdowns have affected workers in the informal economy, relative to those in the formal sector. Others assess how the virus' impact on workers in small and medium sized enterprises (SMEs) differs from that of workers in large companies. The data used in the investigations is of a primary micro-level nature collected through online and face-to-face surveys. Study variables include lack of access to basic goods and services, ability to work from home and main income, on worker earnings. The data are analysed through descriptive statistics and qualitative response models (that is, Logit and Probit) where the dependent variable (for example, earnings loss or job loss) is a binary variable.

The main findings of the studies under review show that informal economy workers and those working in SMEs are the most-hard hit by the COVID-19 pandemic relative to the workers in the formal sector and in large companies. Workers without college degrees were more significantly likely to lose jobs with younger workers even

more likely to lose earnings. Studies show moderate evidence that employees that were able to work from home were less affected by the pandemic. However, this did not negate workers tapping into their savings and accumulating household debt to compensate for reduced income. Policy recommendations centre on the need for authorities to provide targeted income support to workers in high-risk sectors.

MATERIALS AND METHODS

This section describes the data and methodology used in the study. The focus is on the data collection tools, the choice of variables and the empirical technique to be used in the analysis of the data.

Data collection tools and survey design

In order to evaluate the impact of the COVID-19 induced nationwide lockdown on the hairdressing sector in Lesotho, primary data was collected through the administration of questionnaires² in the district of Maseru. We use data from the BoS (2019) Continuous Multipurpose Household Survey/ Household Budget Survey 2017-2018 to develop a sample frame of the hairdressing sector. The sample frame consists of 379 hairdressing businesses across the country's ten districts, of which, 110 are the number of hairdressers in the district of Maseru. A representative sample (whose size was dependent on accessibility of respondents) was selected using simple random sampling. This was to ensure fair and accurate representation of the underlying population, with no discrimination on issues such as gender, age etc. This study notes the limited possibility of undertaking field surveys during the pandemic. According to Balde et al. (2020), Adams-Prassl et al. (2020) as well as Williams and Kayaoglu (2020), the spread of the COVID-19 pandemic and relevant infection control measures, such as lockdowns and drastic social distancing, has limited the possibility

² A copy of the questionnaire is presented in Appendix A1.

of conducting field surveys to collect data necessary to document the effects of the virus on labour markets in developing economies. One possible way in which this challenge can be overcome is to adopt the use of innovative online surveys. The nature of how the questionnaires was administered (that is face to face or online) depended on the COVID-19 restrictions prevalent during the time of study as well as the extent to which respondents were able to effectively respond to questions via the internet. Table 2 outlines the survey design.

In the same way as Balde et al. (2020) and Adams-Prassl et al. (2020), the survey design obtained information that covered three broad information streams from individual respondents, namely, demographic, employment, and daily/monthly earnings information. Respondents were expected to provide a micro-level understanding of the impacts of the COVID-19 induced lockdown of March 2020 in the hairdressing sector and reflect how workers in that particular sector have been affected. Interest was also on whether there are specific job and worker characteristics that allow individuals to cushion against the shock of the crisis. In accordance with International Labour Organisation (ILO) standards, the informal nature of the job (that is, hair dressing) is captured by asking workers if their employment benefitted from health insurance or pension contribution.

Choice of variables

In light of the study's objective, a set of specific variables is developed from the questionnaire responses. The choice of variables is guided by data availability and the empirical literature as outlined in Section 1.2. These variables are presented and explained in Table 3. Lesotho declared a national lockdown from 29th March to 21st April, effectively putting the economy to a complete stop. The national lockdown was further extended from 21st April to 5th May 2020 before conditions were slightly eased. In the same way as Balde et al. (2020); Beglaryan and Shakhmuradyan (2020) and Komin et al. (2020), the definition of variables recognises three periods. Namely, a pre-lockdown period, a lockdown period and a post lockdown period³, respectively. This allows the study to capture the lockdown's effect on earnings and access to basic goods and services before it started, during the lockdown and sometime after it was eased.

For the empirical analysis, the dependent variable is "Earnings". The independent variables are "Access"; "Main_Income"; "Home_Work" and "Gender", respectively. Based on the pairwise correlation between the dependent variable and the independent variables as presented in Appendix A2, a positive relationship is expected between Access and Earnings. A positive relationship is also expected between Main_Income and Earnings. Conversely, a negative relationship is expected between Home_Work and Earnings as well as between Gender and Earnings.

Empirical strategy

In order to assess the impact of the March 2020 COVID-19 nationwide lockdown on earnings in the hairdressing sector, the variable "Earnings" (as explained in Table 3) is chosen as the dependent variable. Since the dependent variable is a binary response variable, the study uses a qualitative response model, in a similar way to Balde et al. (2020), as well as Williams and Kayaoglu (2020). Specifically, the study uses a logit model whose

underlying distribution function is the logistic distribution function. Control variables in the model are chosen from the handful of suitable variables presented in Table 3. The logistic distribution function is presented in Equation 1.

$$P_i = E(Y = 1|X_i) = \frac{1}{1+e^{-(\beta_1+\beta_2X_i)}} \quad (1)$$

Equation 1 can be re-written as Equation 2:

$$P_i = \frac{1}{1+e^{-(\beta_1+\beta_2X_i)}} = \frac{e^{(\beta_1+\beta_2X_i)}}{1+e^{(\beta_1+\beta_2X_i)}} \quad (2)$$

In Equation 2, P_i can be interpreted as the *probability of an event occurring* (that is, decrease in earnings) given a set of independent variables in the model. Thus, $E(1 - P)$ would be the probability of decrease in earnings, which can be written as Equation 3:

$$1 - P_i = \frac{1}{1+e^{(\beta_1+\beta_2X_i)}} \quad (3)$$

Following from Equations 1 to 3, Equation 4 represents the odds ratio in favour of decrease in earnings:

$$\frac{P_i}{1-P_i} = \frac{1+e^{(\beta_1+\beta_2X_i)}}{1+e^{-(\beta_1+\beta_2X_i)}} = e^{(\beta_1+\beta_2X_i)} \quad (4)$$

Taking the natural log of Equation 4 we get Equation 5:

$$L_i = \ln\left(\frac{P_i}{1-P_i}\right) = \beta_1 + \beta_2X_i \quad (5)$$

From Equation 5, L , which is the log odds ratio, is linear in X and also linear in the parameters. L_i is the logit model, commonly used to estimated models with limited dependent variables.

RESULTS AND DISCUSSION

The results of this study are based on data gathered through the use of a questionnaire that was administered on a face-to-face basis to a group of thirty respondents (that is $n=30$) consisting of workers (owners and managers) in Maseru's hairdressing sector, between August 14th 2020 to September 21st 2020. The choice of district and number of respondents was largely influenced by accessibility of respondents and ease of data gathering in the time of COVID-19. The sample covered owners and managers in hairdressing business supported by the Maseru City Council (MCC) and those that operate outside of the subsidy provided by the MCC. The response rate to the questionnaires was 100%. The data⁴ were analysed using MS Excel and STATA. The discussion is divided into two sub-sections, namely: (i) descriptive statistics and (ii) main findings and discussion, respectively.

Descriptive statistics

Most of the respondents (93%) are the owners of the hairdressing businesses, leaving only 7% for managers. Most businesses (70%) have been in operation for over 6 years. About 70% of the respondents are male of which 43% are youth (between 23 and 35 years of age). In

³The period from January to February 2020 and before the 29th March 2020 lockdown. The lockdown period from 29th March 2020 to 5th May 2020. The post lockdown period, from 21st April to 14th August 2020 (the time of the survey).

⁴ To aid replication of the study results, the study's data can be made available upon request.

Table 2. Survey design.

Nature of information required	Areas of interest
Demographic	Living area Age Gender Marital status Level of education and Children
Employment	Job status in early beginning of March (If jobless, reasons for being jobless) Employed or self employed ⁵ Presence of social protection benefits Presence of health insurance or pension contribution Presence of job contract and type of contract Current job status as at time of survey (If jobless, reasons for being jobless) Status of earnings in sector of occupation Ability to work from home
Monthly earnings	Net monthly earnings from all sources for months January, February and March 2020. Earnings loss (explained as one if respondent earned less after march 2020 (April, May, June) relative to average earnings in January and February 2020. Struggle to paying usual bills or expenses

Table 3. Study variables and their definitions.

Variable	Definition
Earnings	A categorical variable that reflects the respondents’ decrease in earnings, with a value of 1 for those who report that they either had zero or less than average monthly earnings from 29 th March 2020 until the time of the survey (14 th August 2020) and 0 otherwise.
Gender	A dummy variable taking the value of 0 for females and 1 for males
Age	A categorical variable that reflects the age interval of the respondent, with a value of 1 for those aged 15-24, value of 2 for aged 25-39, value 3 for aged 40-54, and value 5 for those aged 55 or above.
Marriage	A categorical variable that reflects the marital status of respondents, with a value of 1 for single, value of 2 for married, value 3 for divorced, value 4 for widowed, value 5 for other.
Dependents	A categorical variable that reflects the nature of child and adult dependents in the household. It has a value of 1 if the household has children under 10 years of age, the value of 2 for child dependents older than 10 years old, a value of 3 for child dependents less than and older than 10 years old, a value of 4 for children and adult dependents and a value of 5 for adult dependents.
Education	A categorical variable that reflects the education level of respondents. It is equal to 1 if they have no formal education, 2 if they have primary education, 3 if they have secondary education, 4 if they have C.O.S.C, 5 if they have vocational education, 6 if they have a university qualification and 6 for other.
Status	A categorical valuable that groups respondents according to their socio-professional category, with value 1 for owner and value 2 for managers.
Access	A categorical variable that is fashioned from exploring answers to various questions seeking the main challenges respondents faced during the pandemic. Although the answers are not limited, they could include: difficulty in paying bills, buying food and medicine etc. The variable has a value of 1 if the respondent expressed no challenges and 2 otherwise.

⁵ March is chosen as the structural break point, since it marks the start of national lockdown in Lesotho.

Table 3. Cont'd.

Home_Work	A categorical variable that reflects the respondents' ability to work from home, with value 1 if they are not able to work from home and a value of 2 for otherwise
Main_Income	A categorical valuable that evaluates whether respondents have any other source of income aside from hairdressing , with value 1 if hairdressing is not the main income and a value 2 otherwise.

Figure 2, majority of female respondents (27%) are aged above 40 years. Most respondents have attained secondary and COSC education accounting for 40 and 30% respectively. Just over half (60%) of the respondents are married. Figure 3 shows that married respondents have more dependents to look after especially children less than 10 years and adults (mostly their parents).

The analysis reveal that as a result of COVID-19 restrictions, especially lockdown, respondents experienced severe reduction in earnings from as high as LsL 390,000 per month during the period before COVID-19 to as low as LsL 1,500 per month after the lockdown. As revealed by Table 4, respondents have lost 75% of earnings, on average, due to COVID-19 and associated restrictions. Female owners lost more than their male counterparts because apart from hair, they provide other products such as facials, spa and nails.

In Figure 4, the analysis reveal that most respondents did not find it difficult to pay rent (67%) and salaries (70%). This is mainly due to cheap rental for respondents who operate at the Maseru City Council facilities. For salaries, almost all respondents report that hairdressing sector in Lesotho is commission based (at 10% of the cost of service) and therefore workers are paid salaries depending on their own contribution to the business. This no-work no-pay approach indicates that the most hit are the employees of the respondents. In fact, when asked if they laid off workers as a result of lockdown effects, most respondents indicated that their workers left on their own to work at station-based⁶ hair salons because the commission they were getting was no longer adequate to meet even basics such as transport costs. Owners viewed this to be a huge risk to their businesses as they lose many clients to these workers when they leave. Majority (80%) of the respondents find it difficult to service debt, which include insurance premiums, society/funeral contributions and school fees.

Respondents were asked to give opinion on the outlook of the hairdressing sector in the wake of COVID-19 or any other crisis that may emerge. Mostly, respondents indicate that the outlook for the sector is bleak. About half of the respondents opine that business continuity is severely bleak. Their view is that the hairdressing sector is mostly threatened by the pandemic given its contact nature. They mention that these new normal warrants

looking for alternative sources of income.

Qualitative response model

This section presents results from the qualitative response model. According to Bujang et al. (2018), a regular logistic regression uses a standard maximum-likelihood based estimator and thus requires a large sample size for efficiency. The small size of the sample in this study (n=30) makes it less advisable to evaluate the *probability of an event occurring* (that is decrease in earnings) given a set of independent variables, using an ordinary logistic regression. In light of this, the regular logistic regression is discarded in favour of the Exact logistic regression. This variant of logistic regression is a much viable alternative that boasts three relevant advantages. First, it can be used to provide more reliable statistical inference when the sample size is too small for a regular logistic regression. Second, it can be used in cases of missing data. Third, the model's estimates do not depend on asymptotic results (Mehta and Patel, 1995).

Our study uses the STATA 'exlogistic' package to estimate six groups of Exact logistic regression models. The six groups are: (i) Access; (ii) Access and Main Income; (iii) Access and Working from Home; (iv) Access and Gender; (v) Working from Home and Main income and last (vi) Working from Home and Gender. In each group, the dependent variable *Earnings* and its relationship with a handful of variables of interest is evaluated. The independent variables considered are *Access*, *Main_Income*, *Home_Work* and *Gender*, respectively. All variables are as explained in Table 3. Appendix A2 presents pairwise correlations for the study variables. Interestingly, all variables except *Home_Work* and *Gender* have a positive impact on the dependent variable. However, *Gender* is not statistically significant.

Group 1: Access

Table 5 presents the Exact logistic regression results for Earnings against *Access*, in terms of log odds and odds ratio, respectively. We evaluate how respondents' access to basic goods and services, or lack thereof, impacted on their likelihood to experience a decrease in earnings, in light of the lockdown. The overall model is statistically significant, as reflected in the model score, which uses a

⁶ Station-Based Hair Salons lease out space to individuals at a certain fee per day or per month

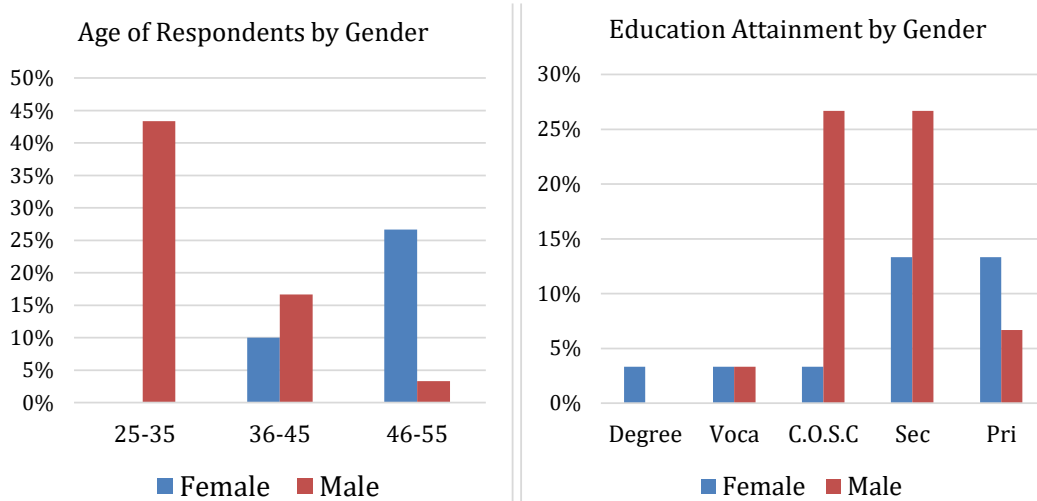


Figure 2. Gender, Age and education attainment of the respondents (%).

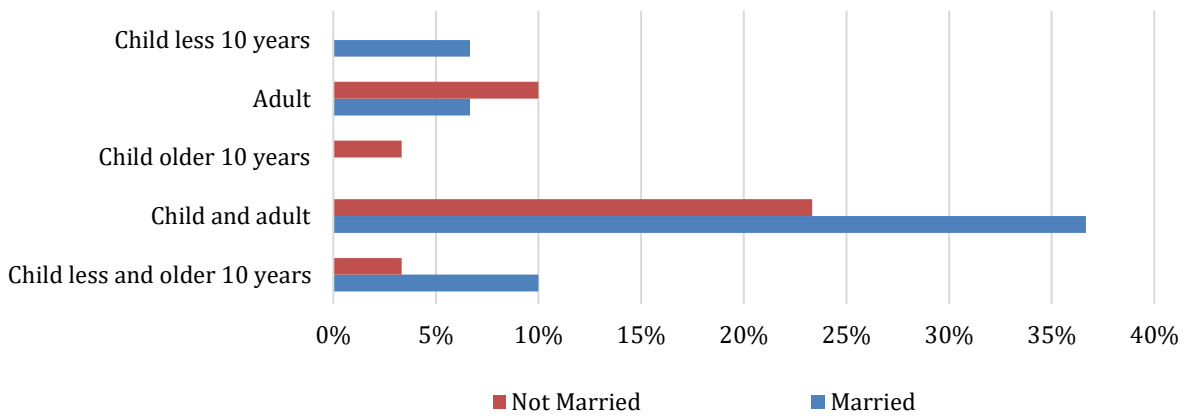


Figure 3. Number of dependents by marital status of the respondents.

Table 4. Respondents business earnings before and after lockdown restrictions.

Daily earnings in different periods (amounts in Lesotho Loti (LsL))				
	PreCOVID_earnings	Lockdown_earnings	PostCOVID_earnings	Earnings_lost
Maximum	13000	3000	5000	10000
Average	1,898	378	683	1,431
Minimum	150	0	50	100
Monthly earnings in different periods (amounts in Lesotho Loti (LsL))				
Maximum	390,000	90,000	150,000	300,000
Average	56,950	11,330	20,500	42,931
Minimum	4,500	0	1,500	3,000
Earnings lost due to lockdown restrictions (%)				
Maximum			77	
Average			75	
Minimum			67	

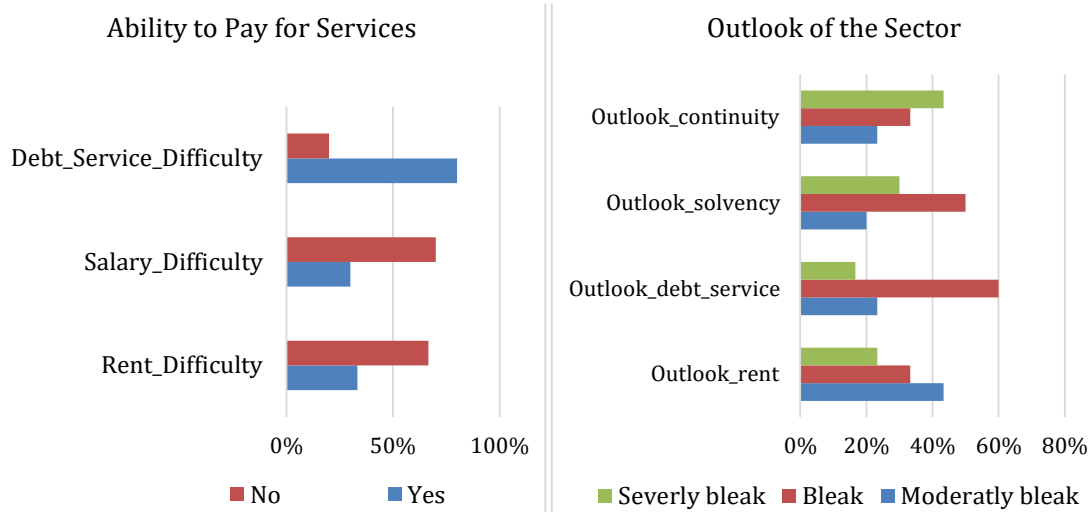


Figure 4. Respondents' ability to pay for business operations and outlook of the sector.

Table 5. Log odds and odds ratio – access.

Earnings	Coef.	Odds ratio	Suff.	2*Pr(Suff.)	[95% Conf. Interval]	
Access	1.093		66	0.0327	0.0797	2.1567
		2.986	66	0.0327	1.0829	8.6429
Number of obs.					78	
Model score					5.468328	
Pr ≥ score					0.0234	

The continuous variable, **age**, is used as a frequency weight (fw).

chi-square score to test for the overall model significance. The sufficient statistic (Suff.) tests the null hypothesis that the model coefficient(s) equal 0 against a two-sided alternative. The probability of the sufficient statistic, labelled 2*Pr(Suff.), indicates that *Access* is statistically significant. This means that for every one unit change in *Access*, the expected log odds of *Earnings* increase by 1.10. This means that respondents that experienced difficulties accessing basic goods and services had a higher likelihood to experience a decrease in earnings. If a respondent experienced difficulty accessing basic goods and services, their odds of having a decrease in earnings were 2.99 times greater than those of a respondent that had not experienced such challenges. A similar finding was obtained by Balde et al. (2020) as well as Adams-Prassl et al. (2020), who explain that, given the contact intensive nature of the hairdressing sector, the restricted movement of goods and persons could also impede access to inputs, access to the sector products and services by consumers and thus curtail daily demand. These developments could lead to a decrease in earnings and an erosion of savings, as operational costs outweigh any possible revenue generated by the

business. Appendix A3 presents the standard error of odds ratio and results of probability test. The probability test results confirm the statistical significance of the independent variables considered in the model.

Group 2: Access and main income

Respondents were asked whether the hairdressing business was their only source of income and whether they experienced any challenges in accessing basic goods and services in the wake of the lockdown. Table 6 presents the Exact logistic regression results for *Earnings* against *Access* and *Main_Income*, in terms of log odds and odds ratio, respectively. The overall model is statistically significant. The expected log odds and odds ratios of both *Access* and *Main_Income* are also statistically significant. Complementary of the results in Group 1, a one-unit increase in *Access* leads to a 1.01 increase in the log odds of *Earnings*. Similarly, a one-unit increase in *Main_Income* results in a 0.1 increase in the log odds of *Earnings*. Respondents whose main source of income was in the hairdressing sector had 2.70 greater

Table 6. Log odds and odds ratio – access and main income.

Earnings	Coef.	Odds ratio	Suff.	2*Pr(Suff.)	[95% Conf. Interval]	
Access	1.009		66	0.0585	-0.0317869	2.093701
		2.743	66	0.0585	0.968713	8.114891
Main_Income	0.994		63	0.0738	-0.0823642	2.129556
		2.703	63	0.0738	0.9209365	8.411128
Number of obs.					78	
Model score					9.275227	
Pr ≥ score					0.0091	

The continuous variable, age, is used as a frequency weight (fw).

Table 7. Log odds and odds ratio - access and working from home.

Earnings	Coef.	Odds ratio	Suff.	2*Pr(Suff.)	[95% Conf. Interval]	
Access	0.935		66	0.1798	-0.3524817	2.295926
		2.546	66	0.1798	0.7029414	9.933631
Home_Work	-2.732		48	0.0000	-4.116791	-1.508475
		0.065	48	0.0000	0.0162967	0.2212472
Number of obs.					78	
Model score					30.58034	
Pr ≥ score					0.0000	

The continuous variable, age, is used as a frequency weight (fw).

odds of experiencing a decrease in earnings, relative to respondents with other sources of income. A possible explanation is that workers in the informal economy often rely on a single source of income without a way to cushion against any negative income shock. This led to a depletion of savings and an increase in household debt as workers looked to compensate reduced income (Balde et al., 2020; Adams-Prassl et al., 2020; Bick and Blandin, 2020; Bartik et al., 2020; Beine et al., 2020; Komin et al., 2020). The standard error of odds ratio and results of probability test are displayed in Appendix A4. The statistical significance of the model coefficients is further affirmed by the probability test results.

Group 3: Access and working from home

Respondents’ ability to work from home and its impact on Earnings is evaluated. Table 7 presents the exact logistic regression results for *Earnings* against *Access* and *Home_Work*, in terms of log odds and odds ratio, respectively. The model score confirms the overall statistical significance of the model. Contrary to the results from Group 1 and Group 2, the expected log odds and odds ratio of *Access* are not statistically significant. However, the log odds and odds ratio of *Home_Work* are highly statistically significant. A one-unit increase in *Home_Work* leads to a 2.73 decline in the log odds of

Earnings. A respondent that is able to work from home is 0.07 times less likely to experience a decrease in earnings relative a respondent that is not able to work from home. A similar result was obtained by Beglaryan and Shakhmuradyan (2020), in Armenia and Adams-Prassl et al. (2020) in the case of the United Kingdom (UK) and United States (US). Appendix A5 presents the standard error of odds ratio and results of probability test. The statistical significance of the independent variables is assessed and confirmed by the results of the probability test.

Group 4: Access and gender

Table 8 presents the Exact logistic regression results for *Earnings* against *Access* and *Gender*, in terms of log odds and odds ratio, respectively. The chi-square score used to test for the overall model significance shows that overall, the model is statistically significant. Similar to results in Group 1 and 2, the expected log odds and odds ratio of *Access* are statistically significant, with a one-unit increase in *Access* leading to a 1.07 increase in the log odds of *Earnings*. Interestingly, the log odds and odds ratio of *Gender* are not statistically significant in explaining the likelihood of a decrease in earnings in the hairdressing sector. This could point towards the possible lack of gender defined roles in the hairdressing sector.

Table 8. Log odds and odds ratio – access and gender.

Earnings	Coef.	Odds ratio	Suff.	2*Pr(Suff.)	[95% Conf. Interval]	
Access	1.07		66	0.04	0.04	2.15
		2.92	66	0.04	1.04	8.60
Gender	-0.85		19	0.12	-1.92	0.18
		0.43	19	0.12	0.15	1.20
					Number of obs.	78
					Model score	8.467075
					Pr ≥ score	0.0125

The continuous variable, age, is used as a frequency weight (fw).

Table 9. Log odds and odds ratio – working from home and main income.

Earnings	Coef.	Odds ratio	Suff.	2*Pr(Suff.)	[95% Conf. Interval]	
Homework	-2.68		48	0.00	-4.05	-1.47
		0.07	48	0.00	1.04	0.23
Main_Income	0.69		63	0.38	-1.92	2.06
		1.99	63	0.38	0.15	7.83
					Number of obs.	78
					Model score	29.76877
					Pr ≥ score	0.0000

The continuous variable, age, is used as a frequency weight (fw).

The standard error of odds ratio and results of probability test are presented in Appendix A6.

Group 5: Working from home and main income

Table 9 presents the results of the Exact logistic regression for *Earnings* against *Home_Work* and *Main_Income*, in terms of log odds and odds ratio, respectively. The overall statistical significance of the model is tested and verified by the chi-square score (Model score). The expected log odds and odds ratio of *Home_Work* are highly statistically significant while those of *Main_Income* are not. Similar to the Group 3 results, a one-unit increase in *Home_Work* leads to a 2.68 decline in the log odds of *Earnings*. The odds that a respondent will experience a decrease in earnings, decline by 0.06 if the respondent is able to work from home, relative to when they are not. The standard error of odds ratio and results of probability test as presented in Appendix A7 confirm the statistical significance of the model's independent variables.

Group 6: Working from home and gender

Table 10 presents the Exact logistic regression results for

Earnings against *Home_Work* and *Gender*, in terms of log odds and odds ratio, respectively. The overall model is statistically significant. In the same way as results obtained in Group 3 and 5; the respondents' ability to work from home had a highly statistically significant impact of reducing the odds of experiencing a decrease in earnings in the hairdressing sector. In contrast, the role of gender is not statistically significant. The standard error of the odds ratio and the statistical significance of the model variables is evaluated and confirmed by the probability test presented in Appendix A8.

Conclusion

The objective of this paper was to use real-time survey data from August 14th 2020 to September 21st 2020 to investigate the effects of the COVID-19 induced nationwide lockdown of March 2020 on Lesotho's informal economy. Using a case study of the hairdressing sector, results reflect that worker in the hairdressing sector experienced challenges accessing basic necessities in the wake of the government instituted national lockdown and stay-at-home orders. This was coupled with drops in hours worked, increases in inactivity and a drop in monthly earnings. Collectively,

Table 10. Log odds and odds ratio – working from home and gender.

Earnings	Coef.	Odds ratio	Suff.	2*Pr(Suff.)	[95% Conf. Interval]	
Homework	-2.77		48	0.00	-4.15	-1.55
		0.06	48	0.00	0.16	0.21
Gender	-0.80		19	0.27	-2.16	0.48
		0.45	19	0.27	0.12	1.62
Number of obs.					78	
Model score					30.13024	
Pr ≥ score					0	

The continuous variable, **age**, is used as a frequency weight (fw).

these developments led to an erosion of savings and an accumulation of household debt. Qualitative response model results from the Exact logistic regression reveal that; respondents that had trouble accessing basic goods and services and those whose main source of income came from the hairdressing sector, were three times as likely to experience a decrease in their earnings, relative to those with access and alternative income sources. Respondents that were able to work from home were found to be moderately less likely to experience a decrease in earnings relative those who were not. The results are explained by a drastic reduction in hours of work in the sector, coupled with movement restrictions, increased costs of inputs and increased cost of transport. A major contribution of the study is that it has been able to provide a micro-level account of the impact of COVID-19 lockdowns on a high-risk sector in the informal economy.

Given the study results, the government of Lesotho is recommended to provide targeted social assistance and cash transfers to workers in the hairdressing sector. This would help smooth consumption over the period of lockdown related income shocks and reduce the propensity of household debt accumulation. It is recommended that the government conduct a thorough scoping of the hairdressing sector to highlight its actual size. This will inform the extent of support that will be needed, as well as associated financial costs for providing such assistance. Because of the nature of the informal economy, workers are economically marginalized and have little to no social protection. This suggests that they are comparatively more susceptible to the negative shock of the COVID-19 outbreak and lockdowns imposed countrywide by the government. By deduction, it is reasonable to conclude that other informal sectors of the economy had comparable difficulties based on the study findings that demonstrate the detrimental effects of COVID-19 on workers in the hairdressing sector. For this reason, it is advised that the government create an extensive and thorough database that will be utilized to identify additional susceptible groups in the event of future crises, particularly those in the informal sector.

This will assist to mitigate the negative effects of comparable future crises by guiding the effective creation of policies and protective measures for the informal economy.

Cognisant of the lack of fiscal space to sustain proposed policies for an extended period of time, any support to vulnerable groups should be timebound and anchored on a comprehensive medium-term fiscal framework. Furthermore, the authorities are encouraged to strengthen their public financial management and governance structures to foster efficiency in revenue mobilization and budget execution while ensuring public debt sustainability. This should be complimented with building necessary buffers to help finance well targeted support to vulnerable groups in the event of a shock.

The current study can be extended in two ways. First, considering the small sample size and single district focus, undertaking the study from a national focus as opposed to a district level as well as from a cross-country perspective could yield interesting policy lessons. Second, further work to incorporate more study variables than just those considered in the current paper could also offer insightful understanding into how COVID-19 affects Lesotho's informal economy.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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APPENDIX

A1: Questionnaire

Informal Sector and COVID-19 – Case of Hair Dressing in Maseru CBD

September, 2020

We are collecting information on the Impact of COVID-19 on Hair Saloon Business in Lesotho. You have been randomly selected for the survey and we seek your cooperation and permission to answer a few questions on how the COVID-19/lockdown affected your business. The information that you will provide here will be treated with the strictest confidentiality and shall not be used anywhere else except for the intended purpose. Your identity and that of your employees will be kept anonymous.

Name of the Interviewer: _____

Name of the Hair Saloon: _____

Position of the respondent _____

Owner

Manager

Date of the interview: _____

Time the interview is started: _____

1. Demographic characteristics of the Respondents						
Sex M/F	Marital Status	Age (specify)	Number dependents of	Education (highest level attained)	Business Lines	
Code 1. Single 2. Married 3. Divorced 4. Widowed 5. Other (specify)		Code 1. Children dependents less than 10 years old 2. Children dependents older than 10 years old 3. Adult dependents		Code 1. No formal education 2. Primary 3. Secondary 4. C.O.S.C 5. Vocational (college, technician) 6. University degree 7. Other specify		1. Hair 2. Nails 3. Spa (Massage) 4. Other (Specify)
2. Which year did your Saloon start operations?				_____		
3. Where do you reside? (specify village)				<input type="checkbox"/>		

Appendix A1 Cont'd

4. Where is your business operating from?	<input type="checkbox"/> Own Space <input type="checkbox"/> Rented Space <input type="checkbox"/> Mocucu/street <input type="checkbox"/> Other (specify)
5. What is the source of energy in this Saloon?	<input type="checkbox"/> LEC power grid <input type="checkbox"/> Electric generator <input type="checkbox"/> Solar system <input type="checkbox"/> Battery (specify) <input type="checkbox"/> None
6. What is the source of water in this Saloon?	<input type="checkbox"/> Paid Wasco meter <input type="checkbox"/> Public Running Tap <input type="checkbox"/> Use of Mobile Containers <input type="checkbox"/> Other (specify)
7. Do you own and use a smart phone?	<input type="checkbox"/> Yes <input type="checkbox"/> No
8. Before the lockdown was announced, were saloon owners engaged to propose how best to operate as a result of COVID-19?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Do not know
9. How many operating days did the saloon lose due to COVID-19 lockdown in the following levels?	<input type="checkbox"/> Red Level <input type="checkbox"/> Orange Level <input type="checkbox"/> Purple Level
10. On average, how much income did your business earn during the following periods	<input type="checkbox"/> Before COVID-19 restrictions (Before March, 2020) <input type="checkbox"/> During COVID-19 restrictions (During Lockdowns) <input type="checkbox"/> Post COVID-19 restrictions (After the lockdowns)
11. On average, how much income/earnings did your business lose as a result of the lockdown?	M_____
12. During lockdown, were you able to operate from home?	<input type="checkbox"/> Yes <input type="checkbox"/> No
13. If yes in (12), on average how much income did you make?	M_____
As a result of the lockdown, which of the following are relevant?	
14. Difficulty in paying rent	<input type="checkbox"/> Yes <input type="checkbox"/> No
15. Difficulty in paying salaries	<input type="checkbox"/> Yes <input type="checkbox"/> No

Appendix A1. Cont'd

16. Difficulty in servicing debt (Y/N)	<input type="checkbox"/> Insurance premium <input type="checkbox"/> Funeral contributions <input type="checkbox"/> School Fee <input type="checkbox"/> Society Contribution <input type="checkbox"/> Other (specify)
17. As a result of the lockdown, did you lay off some workers?	<input type="checkbox"/> Yes <input type="checkbox"/> No
18. If yes in (17), how many workers were laid off?	
19. If yes in (17), when the lockdown was lifted, did you recall all workers?	<input type="checkbox"/> Yes <input type="checkbox"/> No
20. If no, can you share the contacts of the non-recalled workers to follow up on how they have been affected?	<input type="checkbox"/> Yes _____ <input type="checkbox"/> No
21. In your neighbourhood, are there other hair saloons that have shut down as a result of COVID-19/lockdowns?	<input type="checkbox"/> Yes (Specify number) <input type="checkbox"/> No
22. Is this the main economic activity	<input type="checkbox"/> Yes <input type="checkbox"/> No If No, Specify here
What is your outlook in relation to the following:	
23. Ability to pay rent	
24. Ability to pay salaries	
25. Ability to service debt	
26. Ability to pay for other business operations (e.g utilities)	
27. What is your outlook on the overall business continuity in this sector?	
28. How are you going to factor the "new normal" into your business plans?	

Time the interview is completed: _____

A2. Pairwise correlation coefficients.

	Earnings	Access	Main_Income	Home_Work	Gender
Earnings	1				
Access	0.2787 (0.1359)	1			
Main_Income	0.2958 (0.1124)	0.1722 (0.3630)	1		
Home_Work	-0.5303 (0.0026)	-0.2217 (0.2390)	-0.2466 (0.1889)	1	
Gender	-0.1571 (0.4069)	-0.0326 (0.8643)	-0.4258 (0.0190)	0.1070 (0.5735)	1

Probabilities are in parenthesis.

A3. Standard error of odds ratio and results of probability test – access.

Earnings	Coef.	Prob.	Pr<=Prob.	[95% Conf. Interval]	
Access	1.09	0.01	0.0234	0.08	2.16
Earnings	Odds ratio	Std. Err.			
Access	2.985694	1.415657			
				Number of obs.	78
				Model prob.	0.01
				Pr ≤ prob.	0.02

A4. Standard error of odds ratio and results of probability test – access and main income.

Earnings	Coef.	Prob.	Pr<=Prob.	[95% Conf. Interval]	
Access	1.01	0.20	0.057	-0.03	2.09
Main_Income	0.99	0.03	0.0536	-0.08	2.13
Earnings	Odds Ratio	Std. Err.			
Access	2.742727	1.327046			
Main_Income	2.702936	1.354054			
				Number of obs.	78
				Model prob.	0.00
				Pr ≤ prob.	0.01

A5. Standard error of odds ratio and results of probability test–access and working from home.

Earnings	Coef.	Prob.	Pr<=Prob.	[95% Conf. Interval]	
Access	0.93	0.63	0.1439	-0.35	2.30
Home_Work	-2.73	0.00	0	-4.12	-1.51
Earnings	Odds ratio	Std. Err.			
Access	2.546269	1.490672			
Home_Work	0.065096	0.0378071			
				Number of obs.	78
				Model prob.	0.00
				Pr ≤ prob.	0.00

A6. Standard error of odds ratio and results of probability test–access and gender.

Earnings	Coef.	Prob.	Pr<=Prob.	[95% Conf. Interval]	
Access	1.07	0.15	0.0356	0.04	2.15
Gender	-0.85	0.04	0.0991	-1.92	0.18
Earnings	Odds ratio	Std. Err.			
Access	2.915236	1.402906			
Gender	0.4275964	0.2053984			
				Number of obs.	78
				Model prob.	0.00
				Pr ≤ prob.	0.01

A7. Standard error of odds ratio and results of probability test—working from home and main income.

Earnings	Coef.	Prob.	Pr<=Prob.	[95% Conf. Interval]	
Home_Work	-2.68	0.00	0	-4.05	-1.47
Main_Income	0.69	0.12	0.3642	-0.64	2.06

Earnings	Odds Ratio	Std. Err.
Home_Work	0.0682843	0.392544
Main_Income	1.994409	1.189617

Number of obs.	78
Model prob.	0.00
Pr ≤ prob.	0.01

A8. Standard error of odds ratio and results of probability test—working from home and gender.

Earnings	Coef.	Prob.	Pr<=Prob.	[95% Conf. Interval]	
Home_Work	-2.77	0.00	0	-4.15	-1.55
Gender	-0.80	0.09	0.2458	-2.16	0.48

Earnings	Odds Ratio	Std. Err.
Home_Work	0.0628028	0.363534
Gender	0.4490604	0.261797

Number of obs.	78
Model prob.	0.00
Pr ≤ prob.	0.00