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Socio-economic impacts of illnesses on employment outcomes in Uganda

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EXECUTIVE SUMMARY

Uganda faces a growing double burden of disease. Communicable diseases still account for the largest share of morbidity, while non-communicable diseases (NCDs) are rising rapidly and now contribute approximately one-third of total deaths. Yet the consequences of this dual crisis on labour market outcomes remain relatively underexplored. This study analyses the socio-economic impacts of illnesses on employment in Uganda, using data from the 2019/20 Uganda National Household Survey (UNHS). It identifies key drivers of both communicable and non-communicable diseases (NCDs) and assesses their effects on employment, earnings, and labour supply among the working-age population.

The findings reveal a substantial prevalence of illnesses, with 16.3 percent of individuals aged 14-64 reporting a communicable disease in the month prior to the survey, compared to 4.6 percent for NCDs. Women bear a disproportionate share of illness, accounting for 60 percent of reported cases, and prevalence is higher in rural areas. Significant regional disparities are observed, particularly for communicable diseases in Teso, Elgon, and West Nile, and for NCDs in Elgon, Busoga, and Bukedi.

The study employs logistic regression to identify drivers of illness and a Heckman selection model to estimate the labour market effects of illness. Notably, the most significant predictors of poor health at the individual worker level are wealth quintile and gender. NCDs are more common among wealthier individuals, likely due to both higher exposure to lifestyle-related risks and better access to diagnosis. However, environmental and demographic factors such as sanitation and hygiene, also play an important role. Poor sanitation conditions such as using shared toilets and unsafe waste disposal, increase the likelihood of communicable illness, while access to handwashing facilities reduces it.

Regression analysis shows that illness adversely affects labour market outcomes, with more pronounced impacts for non-communicable diseases (NCDs) than for communicable conditions. NCDs are associated with an estimated 30 percent reduction in monthly earnings, compared to a 23 percent decline for communicable diseases, largely driven by increased worker absenteeism. These effects are especially strong for women, likely reflecting additional constraints such as caregiving responsibilities and more limited workplace support. Further, the study finds that individuals in poor health are more likely to be unemployed, work fewer hours, and be concentrated in informal employment characterized by low job security and limited access to social protection.

These findings underscore the urgent need for government ministries, including Water and Environment and Health, and other stakeholders such as NGOs, to strengthen Water, Sanitation, and Hygiene (WASH) initiatives and promote targeted behavioral interventions, such as handwashing, to prevent communicable illnesses. Equally important is the establishment of a social protection scheme such as health insurance that includes informal workers to improve access to healthcare, reduce the disease burden, and enhance productivity. Finally, region-specific interventions are needed to address unique health challenges in high-burden areas, such as Teso and Elgon, which are particularly affected by malaria and NCDs.

LIST OF ABBREVIATIONS

MOH	Ministry of Health
NCDs	Non-Communicable Diseases
OOP	Out-of-pocket
UBOS	Uganda Bureau of Statistics
UCI	Uganda Cancer Institute
UNHS	Uganda National Household Survey
WAP	Working-age population
WASH	Water, Sanitation, and Hygiene
WHO	World Health Organization

1 INTRODUCTION

Good Health is essential for economic stability and social well-being, particularly in developing countries where health shocks can significantly disrupt household welfare and national productivity. According to the World Health Organization (WHO, 2018), Uganda is currently facing a critical double burden of disease, with rising morbidity and mortality from both infectious diseases (malaria, HIV/AIDS, tuberculosis) and a rapid surge in non-communicable diseases (NCDs) like hypertension, diabetes, and cancers.

Communicable diseases, such as malaria, HIV/AIDS, and tuberculosis remain the leading causes of illness and death, accounting for more than 50 percent of total morbidity and mortality in recent years (WHO, 2023). At the same time, NCDs such as cardiovascular diseases, cancers, diabetes, and chronic respiratory conditions are on the rise and now account for approximately 35 percent of the total disease burden (WHO, 2023). Relatedly, 22 percent of Ugandans face a risk of premature mortality (ages 30–70) from NCDs. This rising NCD burden is commonly associated with increased urbanisation and lifestyle changes (Economic Policy Research Centre [EPRC], 2023). Beyond its impact on mortality, the dual disease burden in Uganda exerts considerable pressure on the health system, constrains labour productivity, and generates wide-ranging socioeconomic consequences for households and the nation.

The Government of Uganda has implemented several measures to address the drivers of illness and improve health outcomes. Through the Ministry of Health, the country has undertaken mass distribution of insecticide-treated nets (ITNs), rolled out malaria vaccination for children under two in high-burden districts, and strengthened staffing across health facilities. Additionally, Village Health Teams (VHT) have been trained to support communities especially in the rural areas in fighting against diseases and assisting health care workers in providing health services. Despite these interventions, the dual disease burden remains high. For instance, Malaria incidence stands at about 478 cases per 1,000 population (WHO, 2023), while the country records approximately 34,000 new cancer cases annually and an estimated 716,000 adults living with diabetes (WHO, 2023; UCI, 2024). Mental health disorders, particularly depression and anxiety, also affect nearly three in ten Ugandans (Kagaari, 2021).

This persistent and growing disease burden carries significant economic consequences. Research shows that poor health can make it difficult for individuals to remain active in the labour market. Illness may cause workers to miss work (absenteeism), work while unwell with reduced productivity (presenteeism), experience diminished physical or mental capacity, or, in severe cases, develop a disability, all of which can lower productivity or even lead to job loss (Stephens et al., 2008; Toohey, 2018). These consequences not only affect individual livelihoods but may also increase public expenditures on disability benefits, sick leave, unemployment support, and early retirement (Fouad et al., 2017). Moreover, poor health can push workers into low-paying or precarious informal employment and accelerate their exit from the labour market, reducing household welfare and heightening the risk of poverty (Gürtzgen & Hiesinger, 2024; Inoue et al., 2021; Kochovska et al., 2018).

In Uganda's context, Bridges and Lawson (2008) using Uganda National Household Survey show that illnesses negatively affect labour market participation with a greater impact among women than men. In contrast, Matovu et al. (2009) find higher absenteeism among male workers than females, leading to an estimated annual loss of UGX 6.4 billion (about US$3.5 million), equivalent to 0.04% of Uganda's GDP in 2005. Despite this evidence, most studies focus on labour market participation, with limited attention to how illnesses impact broader aspects of job quality, such as informality and job security, which are crucial for worker welfare.

Past studies identify broad determinants of illness in developing countries such as Uganda. Communicable diseases (CDs) are often linked to socio-economic inequalities, including poor sanitation, undernutrition, and limited access to healthcare (Hassan et al., 2024; Lyons et al., 2025), while non-communicable diseases (NCDs) are more closely associated with urbanization-related lifestyle factors such as unhealthy diets, physical inactivity, and the use of alcohol and tobacco (Siddharthan et al., 2021; Mbeta, 2023;

Ndejjo et al., 2024). However, there is limited evidence on which of these factors play a more dominant role in explaining the prevalence of CDs versus NCDs, particularly among the employed population. Workers' health may be influenced by additional factors beyond conventional structural drivers, including exposure to work-related conditions that predispose them to illness (Lawson, 2004; Park & Kim, 2019). Furthermore, work schedules and job demands may constrain health-seeking behaviour in certain sectors. As such, the determinants of illness among working-age individuals may differ from those affecting the broader population, since workers' health is shaped not only by structural conditions but also by employment-specific factors.

Considering these gaps, this study therefore investigates the socio-economic effects of illness on employment outcomes in Uganda. By examining how health status translates into labour market disadvantages, the research aims to inform integrated health, labour, and social protection policies that can mitigate the economic consequences of ill health in contexts marked by a double disease burden. Specifically, the study addresses the following research questions: What are the main drivers of most common communicable diseases and NCDs among the working age population in Uganda? What is the effect of communicable and non-communicable diseases on different labour market outcomes?.

The rest of the study is as follows: Section 2 reviews the related literature. Section 3 presents the conceptual framework. Section 4 describes the methods and data employed to achieve the study objectives. Section 5 presents and discusses the findings. Section 6 concludes with policy implications.

2 RELATED LITERATURE

This section examines the key drivers of illnesses and further explores how these health shocks affect labour supply, productivity, earnings, and employment outcomes in developing countries.

Research shows that illnesses are caused by several multi-dimensional and interlinked factors, typically classified into four broad categories: socio-environmental, health behavior, clinical care, and physical environment factors (Sycamore Institute, 2021; Hood et al., 2016; WHO, 2024). While all these factors influence illness across populations and contexts, substantial evidence highlights that some drivers have a greater impact on health outcomes than others (Bradley et al., 2011; WHO, 2013; Dupas & Miguel, 2017). Notably, social and economic factors often exert a more significant influence on health outcomes than clinical care (Braveman et al., 2011; Woolf et al., 2015).

Socio-environmental factors are the conditions that enhance an individual's ability to access health-related knowledge, resources, and the capacity to manage health conditions. These include income, education, social protection, employment status among others. In Uganda, evidence shows that individuals from low-income backgrounds often face significant barriers to accessing healthcare and are more susceptible to malnutrition, which increases vulnerability to disease (Nabyonga-Orem et al., 2009; Namyalo et al., 2025). In contrast, individuals with higher incomes and education levels are typically better equipped with health knowledge and resources, enabling them to access healthcare services and adopt preventive health practices, leading to improved health outcomes (Kiwanuka et al., 2009; Rutebemberwa et al., 2009).

This pattern is evident not only at the individual level but also across households and communities, where those in more affluent and better-educated settings tend to enjoy longer and healthier lives (Sycamore Institute, 2021; Nakiboneka et al., 2020). Furthermore, people of low socio-economic status, who often live in informal settlements and remote rural areas with limited access to water and quality sanitation facilities, face a higher risk of suffering from waterborne diseases such as cholera and diarrhea (Forstinus et al., 2016; Musaazi et al., 2019). In Uganda, however, the challenge of water and sanitation extends beyond low-income areas, increasing the risk of waterborne diseases nationwide. Notably, only 19 percent of households have access to safely managed sanitation services, and just 68 percent of the population has access to basic water services (UNICEF, 2021). Research shows that 75 percent of Uganda's disease burden (including cholera, dysentery, and Ebola) is linked to inadequate Water, Sanitation, and Hygiene (WASH) practices in the country (AMREF,

2023).

In addition, poor health behaviors increase individuals' risk of illness. In developing countries such as Uganda, the most common risky health behaviors include smoking, alcohol consumption, physical inactivity, and poor diet. Estimates from the 2019/20 Uganda National Household Survey show that 13 percent of individuals aged 10 years and above reported daily consumption of alcohol, tobacco, or drugs (UBOS, 2022). This dependence on substances coincides with a rising trend in obesity among the working-age population. Specifically, the proportion of individuals aged 15–49 years who are obese increased from 9 percent to 11 percent among males and from 24 percent to 26 percent among females between 2016 and 2022 (UBOS, 2018; UBOS, 2023). Beyond alcohol and substance abuse, obesity is also driven by poor diets and physical inactivity (Ruma et al., 2024; Odokonyero et al., 2023). Obesity is more common among urban dwellers who rely on energy-dense, processed foods that are high in fats and sugars and low in fruits, leading to excessive caloric intake (Ikudayisi, 2020; Kyomuhendo & Adeola, 2021; Amugsi et al., 2017).

Finally, physical environment factors include both natural and built environments such as buildings, public infrastructure, and transportation systems, which, when poorly maintained or contaminated, increase the risk of illnesses. There has been a rise in respiratory diseases such as pneumonia and asthma, especially in urban areas, due to air pollution (Kirenga et al., 2018; Okello et al., 2024). Additionally, lack of access to clean water and reliance on contaminated sources remain primary contributors to disease prevalence (Manetu & Karanja, 2021; Forstinus et al., 2016). Poor waste management and the use of unsafe water sources further contribute to frequent outbreaks of waterborne diseases, including cholera, typhoid, and dysentery.

Beyond the built environment, climate change also influences the spread of vector-borne diseases such as malaria, primarily due to changes in temperature and rainfall. Specifically, rising temperatures and unpredictable rainfall patterns expand mosquito breeding grounds, thereby increasing the incidence of malaria in regions that were previously unaffected (Nakiboneka et al., 2020; Giesen et al., 2020; Blanford et al., 2013). For example, in Mozambique, Cyclone Idai, which struck in 2019, led to increased temperatures and altered rainfall patterns, contributing to malaria outbreaks in inland highland areas that were traditionally considered low risk (Searle et al., 2023). Similarly, regions prone to flooding such as Teso and Kasese are also known for high malaria prevalence (Boyce et al., 2016; Keats et al., 2022). Rising temperatures and erratic rainfall patterns further increase the frequency and intensity of floods, which often lead to the contamination of water sources and create favorable conditions for disease outbreaks (Opiyo et al., 2021).

These drivers of illness are not merely public health concerns, they have direct implications for labour market outcomes. Extensive evidence demonstrates that poor health conditions through the impact of both communicable and non-communicable diseases affect employment. These effects manifest in the form of decline in labour market participation, productivity and economic stability in various contexts. For instance, evidence from Egypt shows that chronic diseases contribute to higher rates of absenteeism and presenteeism and affect workers' productivity across different sectors (Fouad et al., 2017). Similarly, Issa et al. (2023) find that both chronic and acute illnesses negatively affect labour market participation in Tanzania, especially in rural areas where healthcare access remains limited. Their study also suggests that sickness affects male's labour market supply.

In a related study, Bridges and Lawson (2008) utilize the Uganda National Household survey (UNHS) to show that poor health significantly lowers the likelihood of employment in the formal labour market especially among women in Uganda. Specifically, experiencing illness in the past month reduces the likelihood of being in paid employment by 6.2 percent for women, compared to 3.9 percent for men. Relatedly, Matovu et al. (2012) identify malaria as a major illness that affects productivity in Uganda, with nearly 48 percent of respondents reporting it as a cause for work absence. Their study further estimates economic losses at UGX 6.4 billion per year due to health-related work absences, an indication of the economic burden of communicable diseases on national productivity. Grinza and Rycx

(2018) investigate the impact of sickness absenteeism on productivity. They show that an increase of 1 percentage point in the rate of absenteeism in sickness entails a productivity loss of 0.24 percent in Belgium. However, this impact varies across worker categories, with more pronounced negative effects among high-tenure or blue-collar workers, and in industrial firms where tasks are highly interdependent.

Research consistently highlights the gendered impact of illness on employment outcomes. Evidence shows that non-communicable diseases (NCDs), such as diabetes and hypertension, have a more significant effect on women's labour market participation and productivity (Miszkurka et al., 2012; Ekholuenetale et al., 2023; Koch & Thsehla; 2022). These studies reveal that women with NCDs are more likely than men to exit formal employment, primarily due to the unequal burden of unpaid care work, they are expected to perform while also managing their health (WHO, 2017). The expectation for women to continue caregiving even when ill often compels them to reduce or forgo time in paid employment. These patterns are consistent with findings by Lawana et al. (2023) and Koch and Thsehla (2021), who report that women with multiple NCDs are significantly more likely to be economically inactive.

Furthermore, Fouad et al. (2017) employ a propensity score matching technique to examine the effect of chronic diseases on work productivity in Egypt. Their findings suggest that workers with chronic diseases were more likely to experience higher rates of absenteeism and presenteeism by 6.34 and 2.36 respectively, which ultimately affects overall productivity. Chronic diseases are also related to negative critical work point situations that cause severe stress to employees and that may disrupt present or future productivity in the work setting. These findings align with Sarker et al. (2016) who find that occupational illness heightens presenteeism among informal workers (rickshaw pullers, shopkeepers and restaurant workers). More specifically, their study reveals occupational hazards are associated with illnesses that increase absenteeism by 100 days as well as high out of pocket expenditures averaging USD 197.

Relatedly, illnesses can significantly undermine employment stability, particularly in low-income jobs that often lack supportive and flexible work arrangements such as paid sick leave, workplace accommodation, or health insurance coverage. Evidence from the United States shows that breast cancer survivors without health insurance are substantially less likely to remain employed two years after diagnosis, largely due to limited workplace support and experiences of discrimination (Blinder et al., 2017; Blinder et al., 2019). Similarly, cancer survivors in low-wage occupations face greater challenges in returning to work, including difficulties taking time off for recovery with paid leave or transitioning into flexible part-time or full-time roles (Swanberg et al., 2018). These patterns underscore the importance of supportive work environments in enabling individuals with health conditions to remain economically active.

Complementary evidence suggests that interventions aimed at improving health of workers can positively influence labour market outcomes. For example, Doğrul (2015) finds that better health status increases labour force participation among older men and younger women in Turkey. Likewise, Stephens (2018), using randomized controlled trial evidence from the United States, shows that sustained interventions targeting cholesterol reduction, blood pressure control, and smoking cessation improved earnings by approximately 3 percent and total family income by about 4 percent.

Overall, previous studies indicate that illnesses affect employment outcomes, including productivity, in different ways, and the results vary across countries. In Uganda, a few studies on the nexus between illnesses and employment outcomes have not examined comparative effects of different commonly occurring diseases (communicable and non-communicable) on employment outcomes to inform targeted policy responses.

This study addresses that gap directly by estimating the differential effects of communicable diseases and NCDs on employment outcomes, using a Heckman two-step selection model applied to nationally representative data from the 2019/20 UNHS. Specifically, the study aims to influence the implementation of the National Social Protection Policy (2015) to further expand social protection coverage, including cash transfers to workers incapacitated by illness. In addition, the study's

findings could support the design and implementation of the national health insurance scheme that seeks to extend health insurance coverage to the most vulnerable workers, especially those employed in the informal sector.

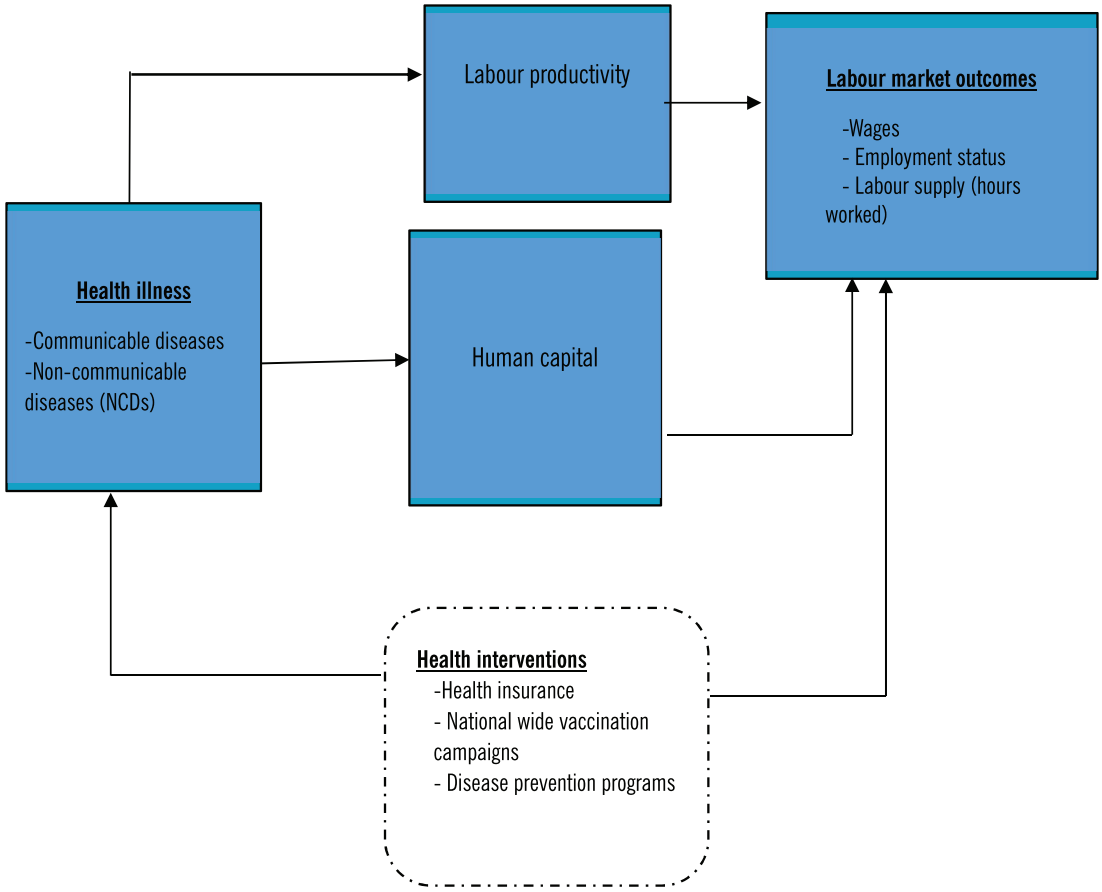
3 CONCEPTUAL FRAMEWORK

The conceptual framework (Figure 1) of this study draws from Pintor et al. (2024), which suggests that ill-health or illnesses affect labour market outcomes through two main pathways: (i) labour supply reflected in the number of hours worked; (ii) labour productivity measured by the (hourly) wage of workers.

The immediate effect on labour supply manifests through two channels: absenteeism and presentism. Absenteeism refers to the rate at which workers are absent from their jobs, typically measured by the number of days missed over a specific period, while presenteeism measures the number of days workers are present. This effect manifests in both direct and indirect ways. First, the direct effect occurs when illness prevents a worker from performing their duties, resulting in reduced productivity. The indirect effect may arise from shifts in household labour dynamics. For instance, other family members may increase their labour supply to offset income losses due to the illness-related absence of a working member. Similarly, workers may partially or fully withdraw from employment to provide care for family members who were previously part of the workforce. On the other hand, presenteeism refers to a situation where employees continue to work despite being unwell which limits their ability to perform effectively.

Regarding labour productivity, illnesses directly impair workers' ability to perform tasks by limiting their physical capacity or diminishing their concentration and cognitive functioning on the job. Alternatively, illnesses can also affect the worker's ability to operate

Figure 1: The link between health illness and labour market outcomes



Source: Pintor et al. (2024) with authors' modification

machinery or equipment efficiently, leading to reduced productivity and, in turn, lower wage earnings. Further, through the human capital channel, poor health, especially in childhood and adolescence can indirectly affect the workers' cognitive ability and education, which in turn affect their skills, academic achievement and future earning potential.

The extent to which illness affects productivity and labour supply is influenced by health interventions such as health insurance. For instance, workers with access to an insurance scheme are likely to have a lower expected time out of work, as it reduces the likelihood of a worker getting sick (preventive medicine) and enhances the likelihood of recovery from illness (curative medicine) (Dizioli & Pinheiro, 2016). Also access to insurance can boost the worker's morale and increase their productivity which explains the notion that workers in "good jobs" are happier and more productive (Middeldorp et al., 2020).

This framework directly informs the empirical strategy of the study in two ways. First, it guides variable selection: the main independent variable of interest is illness, defined as a binary indicator equal to one if an individual reports having been sick in the past 30 days and zero otherwise, distinguishing between communicable diseases (fever as a proxy for malaria, and cough as a proxy for respiratory infection) and NCDs (hypertension, diabetes, heart disease, and cancer). The dependent variables capture the key labour market outcome channels identified by the framework: monthly earnings (productivity/wage channel), weekly hours worked (labour supply channel), employment status, and informality of employment. Second, the framework motivates the use of the Heckman two-step selection model, as illness may influence both labour market participation and outcomes conditional on participation, leading to potential selection bias.

4. DATA AND METHODS

This section presents the data and methods used to analyze data to address the research objectives

4.1 Data

This study draws on secondary data from the 2019/20 Uganda National Household Survey (UNHS), conducted by the Uganda Bureau of Statistics. The survey is nationally representative, covering 13,732 households and 64,619 individuals, and includes socio-economic, labour force, and community modules. Our analysis focuses on the socio-economic and labour force modules, which provide detailed information on health status and employment outcomes.

i) Measuring illnesses

The socio-economic module of the UNHS captures self-reported health information, including the incidence of illness or injury within the past 30 days, duration of illness, healthcare utilization, work absenteeism due to illness, insurance coverage, and awareness of health insurance schemes. While self-assessed health is inherently subjective and may be influenced by reporting bias and individual interpretation, it remains widely used in empirical research on health and labour market outcomes. Empirical evidence shows that self-reported health measures are strongly correlated with objective health indicators and predict future morbidity, healthcare utilization, work capacity, and mortality risk (Jylhä, 2009; Vingilis et al., 2011; Cheng et al., 2017; Idler, 2018).

Moreover, self-assessed health has been extensively applied in analyses of labour force participation, earnings, and absenteeism across diverse contexts, including low- and middle-income countries (McInerney & Mellor, 2012; van den Berg et al., 2013; Polanco et al., 2024). The evidence suggests that perceived health influences labour supply decisions beyond clinically measured health status, reinforcing its relevance for analysing labour market outcomes. Notwithstanding these advantages, limitations of subjective health measures including reporting heterogeneity and justification bias need to be considered when interpreting results. Although clinical diagnosis would provide the most accurate assessment of an individual's health and specific illness, it is not economically feasible within a large-scale household survey. Consequently, self-reported health measures offer a practical and scalable alternative for capturing health status in nationally representative surveys.

From the UNHS, several communicable illnesses or their symptoms are reported by survey respondents. These include malaria, cough, acute fever, weight loss among others. The survey also asks respondents whether they suffer from several non-communicable diseases such hypertension, cancer or diabetes. Communicable diseases refer to illnesses that can be transmitted from individual to another either directly or indirectly. On the other hand, Non-communicable diseases (NCDs) are illnesses that are not contagious and cannot be spread from one person to another such as Diabetes, hypertension, and Cancer among others. For this study, we specifically focus on fever (as a proxy for malaria) and cough (as a proxy for respiratory infection) among communicable diseases, and hypertension, diabetes, heart disease, and cancer among NCDs.

ii) **Employment outcomes**

The labour module captures employment information of the survey respondents aged 14-64 years. These include but are not limited to, the employment status (whether employed or unemployed), sector of employment, monthly wages and weekly hours worked. The module also captures information on whether workers have access to sick leave, social protection through contribution to any pension or social security contribution scheme among others.

Table 1A in the Appendix presents the variables used for this study and their measurements. The selection of these variables is informed by the variables indicated in conceptual framework considering their relevance in Uganda's context.

4.2 Methods

This study adopts a quantitative research design using secondary data from the 2019/2020 Uganda National Household Survey (UNHS). The analysis focuses on labour market outcomes as the dependent variable, specifically among individuals within the working-age population, defined here as those aged 15 to 64 years. Four indicators of labour market outcomes are considered: (i) monthly earnings, (ii) labour market participation, (iii) employment status and (iv) informality of workers. According to UBOS (2023), informal employees are workers whose work and employment relationship lack formal legal recognition (contract), social protection and regulatory coverage. Put differently, these workers are employed without formal contracts, social security, or employment benefits, often working in precarious conditions. The primary independent variable of interest is whether the worker suffered from any sickness in the last 30 days preceding the survey.

To address the research questions on the derivers of common illnesses, we employ a logistic regression model. This approach is appropriate given that the outcome variable—illness occurrence is binary, taking the value 1 if the respondent reported experiencing a specific illness and 0 otherwise. As such, we employ the following econometric equation to determine these drivers of sickness in Uganda

$$\text{Log}\left[\frac{\pi}{\pi-1}\right] = \beta_0 + \gamma_i X_{ij} + \mu_{ij} \quad (1)$$

Where $\left[\frac{\pi}{\pi-1}\right]$ is the odds/probability of suffering from illness by individual i and X is a vector of individual, household, and regional control variables, while μ_{ij} is the error term. Put differently, the log odd of an individual suffering a particular illness depends on different characteristics at individual, household, school and community levels.

Second, we examine how illness affects different labour market outcomes. However, we only observe outcomes like wages or hours worked for individuals who are employed. However, illness can affect both the decision to work and how much people are able to work. For example, a person suffering from malaria may miss several days of work but remain employed, while someone with a chronic condition like diabetes may stop working altogether. If we estimate the impact of illness using only employed individuals, we ignore those who are too sick to work, and this leads to biased results. In practice, this means we end up comparing relatively healthier workers (e.g., someone with a mild cough who still works) and miss those with severe conditions who are out of the labour force, thereby underestimating the true effect of illness.

To address this challenge, we adopt the Heckman two-step selection model (Heckman, 1979). This method corrects for bias that arises because labour outcomes

are only observed for a non-random group of individuals. In the first step, we estimate the likelihood that an individual participates in the labour market, based on factors such as health status, age, education, gender, and location. In the second step, we estimate the effect of illness on labour outcomes, while correcting for the fact that the sample of employed individuals is not random. This approach provides more reliable estimates of how illness affects work and productivity.

The first stage of the Heckman selection model estimates the probability of employment as follows:

$$Employed_{ij} = \gamma Z_{ij} + \eta_i, \quad (2)$$

where if $_{ij} = 1$ individual i in household j is employed, and 0 otherwise; Z_{ij} is a vector of observed demographic and socio-economic characteristics; and η_i is an error term capturing unobserved determinants of labour force participation. The first-stage equation is critical because labour outcomes such as hours worked or earnings are only observed for those who participate, and ignoring this non-random selection would yield biased estimates of illness effects. The inverse Mills ratio (IMR) derived from this equation is subsequently included in the outcome equation to correct for selection bias.

The second stage models labour outcomes conditional on employment:

$$Y_i = \beta X_{ij} + \lambda\, IMR_{ij} + \epsilon_i \quad (3)$$

where Y_i denotes the different labour market indicators such as hours worked or monthly earnings, social security access; X_{ij} includes indicators for communicable diseases (CDs, e.g., malaria and respiratory infections) and non-communicable diseases (NCDs, e.g., hypertension, diabetes, heart disease, cancer), as well as other demographic and socio-economic controls; IMR_{ij} is the inverse Mills ratio from the selection equation; and ϵ_i is the error term. The coefficient β captures the effect of illness on labour outcomes while correcting for non-random selection into employment, providing consistent estimates for both CDs and NCD

5 FINDINGS

5.1 Descriptive statistics

Table 1 shows the summary statistics for all variables used in the study. On average, 16.3 percent of the working-age population report suffering a communicable disease, while 4.6 percent report a non-communicable disease (NCD) 30 days before the survey. Malaria is the most common illness, reported by about 42.7 percent of those who report sick, while high blood pressure is the most common NCD, affecting around 3 percent of the working-age population. The data also show that more than 46 percent of individuals who fell ill missed work at least once during the 30 days before the survey, indicating a substantial loss in work productivity.

With respect to substance use, the prevalence of tobacco use, and alcohol consumption stand at 3.9 percent and 17.2 percent respectively. Additionally, the largest share of the WAP have access to improved sources of drinking water (81.7 percent) and a toilet facility (91.7 percent) while about 8.3 percent still use bushes instead of a toilet facility. Furthermore, about 26.5 percent of the population report sharing a toilet facility with other households while only about 20.3 percent have a hand-washing facility next to the toilet. With respect to solid waste disposal, on-site waste disposal, whereby waste is disposed off within the premises such as through burning or burying rather than collected for off-site disposal, is the commonly used method (93.5 percent). In addition, nearly sixty percent of the population sleep in congested rooms with more than two people sleeping in the same room (58.3 percent).

Among the employed population, the largest share works in the micro enterprises (78.4 percent) and services sector (45.4 percent). The median monthly earnings for workers is estimated at UGX 150,000, and the household size at six people.

Table 1: Descriptive statistics of the variables

Variable	N	Mean	S.D
Communicable disease	33,363	0.163	0.37
Non-Communicable Disease (NCD)	33,363	0.046	0.21
Sickness Absenteeism	5,245	0.446	0.46
Malaria (1=Yes)	5,447	0.427	0.495
Coughs (1=Yes)	5,447	0.133	0.34
Sex: Female	33,363	0.534	0.499
Residence: Urban	33,363	0.256	0.437
Diabetes	33,363	0.006	0.08
Heart disease	33,363	0.013	0.116
High Blood pressure	33,363	0.035	0.127
Cancer	33,363	0.002	0.043
Aged 14-17	33,363	0.194	0.395
Aged 18-30	33,363	0.364	0.481
Aged 31-64	33,363	0.442	0.442
Highest educ: None	25,770	0.149	0.356
Highest educ: Primary	25,770	0.541	0.498
Highest educ: Secondary	25,770	0.228	0.42
Highest educ: Post-Secondary	25,770	0.082	0.274
Quintile 1	33,363	0.211	0.408
Quintile 2	33,363	0.201	0.401
Quintile 3	33,363	0.199	0.399
Quintile 4	33,363	0.192	0.394
Quintile 5	33,363	0.197	0.398
Married	33,363	0.528	0.499
Divorced/separated	33,363	0.066	0.249
Widow/widower	33,363	0.036	0.186
Never married	33,363	0.37	0.483
Central	33,363	0.195	0.396
Eastern	33,363	0.335	0.472
Northern	33,363	0.228	0.42
Western	33,363	0.242	0.429
Tobacco use (1= yes)	33,362	0.039	0.194
Alcohol use (1=yes)	33,362	0.172	0.377
Water source (1=improved)	33,342	0.817	0.387
Share Toilet (1=yes)	30,420	0.265	0.442
Hand washing facility (1=yes)	30,420	0.203	0.402
Solid waste disposal (1=On-site)	33,193	0.935	0.935
Congestion (1 =yes)	33,338	0.583	0.493
Agriculture	11,986	0.398	0.489
Production	11,986	0.148	0.355
Services	11,986	0.454	0.498
Formality (1=yes)	11,743	0.187	0.39
Monthly Wage [UGX]	525	150,000	250,000
Household size	33,363	6	3
Weekly hours	11,983	46.139	22.709

Source; Authors 'own computation based on the UNHS 2019/20: The sub-regional distribution of the surveyed individuals is reported separately in Appendix Table A2

Figure 2 shows the distribution of communicable diseases and NCDs across different characteristics; sex, residence and wealth index quintile. Our analysis shows that of the workers suffering from communicable diseases, the prevalence is higher among women (61.7 percent) than men (38.4 percent). Similarly, more women reported suffering from an NCD (70.3 percent) than men (29.7 percent). These findings do not necessarily indicate higher morbidity among women compared to men. Rather, they may be explained by poor health seeking behavior of men as well as their tendency to disregard symptoms or defer seeking treatment when sick (Lawson 2004; Chavalala et al. 2025).

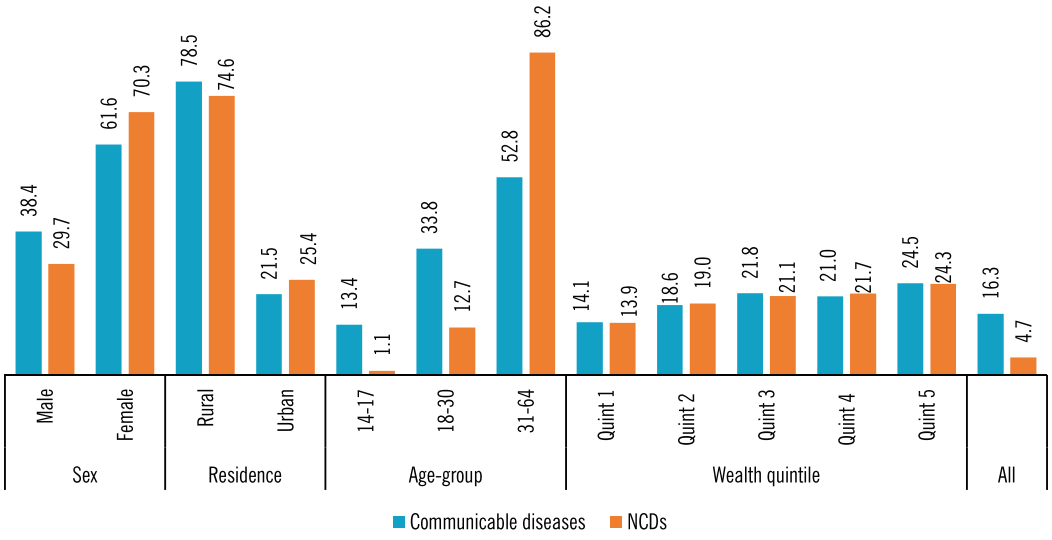
Geographically, the disease burden, whether communicable disease or NCDs is concentrated in rural areas (78.5 percent of reported CDs and 74.6 percent of reported NCDs respectively). This pattern may be attributed to the challenging living conditions in rural areas, characterized by poor sanitation and limited access to healthcare facilities, which heighten disease risks and hinder effective disease prevention and treatment. While NCDs are often perceived as an urban health issue, the higher burden of NCDs in rural areas underscores the limited access to chronic disease care, and emerging lifestyle shifts, such as increased consumption of processed foods without adequate health education.

Age-wise, the results show that individuals aged 31-64 years (52.8 percent) bear a disproportionately higher burden of communicable diseases compared to the younger age groups. Similarly, the prevalence of NCDs is significantly higher among people aged 31-64 years (86.2 percent) than those of lower age. These results suggest a positive relationship between age and communicable illnesses as well as NCDs.

Finally, the wealth status seems to influence disease prevalence. Notably, the richest individuals (quintile 5) report the largest share of reported communicable diseases and NCDs, at 24.5 percent and 24.3 percent respectively. These findings may be explained by healthcare-seeking behavior that accompanies rising income levels. Additionally, greater wealth is linked to exposure to NCD risk factors such as sedentary lifestyles, poor dietary habits, and alcohol consumption (Sun et al., 2024; Ding et al., 2025).

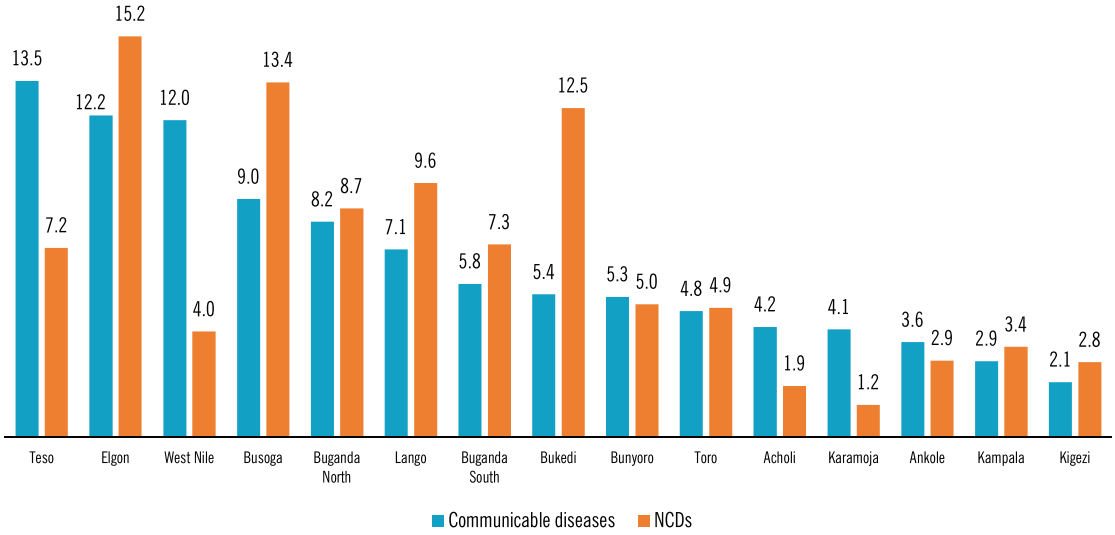
Figure 3 shows that the burden of communicable diseases and NCDs vary across the 15 sub-regions. The analysis shows that Teso has the largest proportion of the working age population that reported suffering from a communicable illness within a month preceding the survey (13.5 percent), followed by Elgon (12.2 percent) and West Nile (12.0 percent). With respect to NCDs, Elgon has the largest share of the population that reported to be suffering from an NCD (15.2 percent), followed by Busoga (13.4 percent), and Bukedi (12.5

Figure 2: Distribution of Communicable diseases and NCDs by selected characteristics (%)



Source: Authors' construction

Figure 3: Distribution of Communicable diseases and NCDs by sub-region (%)



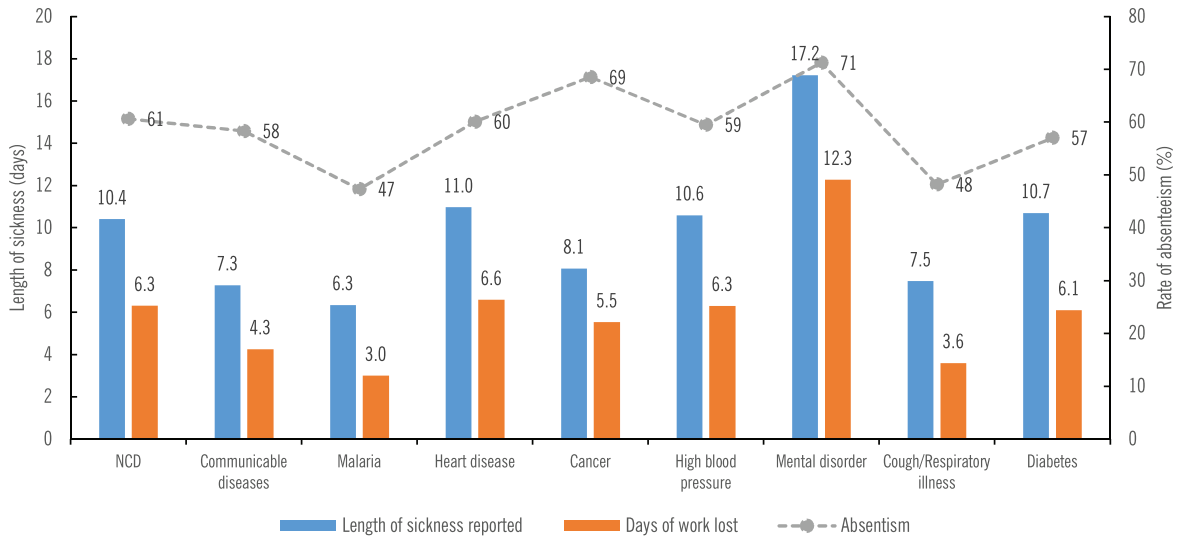
Source: Author's construction

percent).

Figure 4 presents the number of workdays lost due to illness, based on individuals' reports over the previous 30 days before the survey. Although non-communicable diseases (NCDs) typically extend beyond a one-month period, we use this window to approximate severe illness episodes. To better capture their implications for labour participation, we report both days absent from work and days worked while suffering from the illness.

The results show that absenteeism is highest among individuals with mental disorders, averaging 12.3 days lost (71 percent). This is followed by cancers (5.5 days; 69 percent), heart disease (6.6 days; 60 percent), high blood pressure (6.3 days; 59 percent), and diabetes (6.1 days; 57 percent). The highest rate of sickness absenteeism among communicable diseases is observed in respiratory illnesses/coughs (3.6 days; 48 percent) and Malaria (3 days; 47 percent). Overall, these results suggests that sickness related absenteeism is largely driven by NCDs due to their

Figure 4: Average duration of Illness and associated absenteeism across major illnesses



severity and longer duration translating to increased labour force participation and productivity.

5.2 Drivers of illnesses among the working population

Table 2 presents average marginal effect estimates from logistic regression models that examine the drivers of illness in Uganda. The dependent variable in each model reflects the probability of experiencing a specific type of illness. The regression controls for a range of individual, household, and community-level characteristics that include age, income level, education, access to clean water, sanitation facilities, and housing conditions.

To account for heterogeneity in health outcomes, four separate models are estimated. Model (1) explores the determinants of all reported communicable illnesses, while Models (2) and (3) focus on the two most reported symptoms; fever (used as a proxy for malaria) and cough (as an indicator of respiratory infections), respectively. Model (4) investigates the drivers of non-communicable diseases (NCDs), including heart disease, cancer, diabetes, and hypertension.

Generally, the results suggest that prevalence of illnesses is associated with older individuals, women and high-income population. Regarding age, our estimates show that the working population aged 18-30 and 31-64 years are 2 percentage points and 3 percentage points more likely to get sick compared to their counterparts in the 14-17 years category respectively. Wide evidence suggests that as individuals grow, their immune systems tend to weaken, making them susceptible to illnesses (Nikolich-Žugich, 2018; WHO, 2022). Moreso, as workers age, it becomes challenging to maintain a work life balance and increase the stress levels of limited physical activity, further increasing the risk of frequent illnesses. However, Malaria is an exception as it is more prevalent among children under the age of 5 years, and it declines with age.

The results also link poor sanitation facilities to increased risk of illnesses. For example, workers from households that share toilet facilities are 3.4 percentage points more likely to report communicable sickness compared to those with private toilets. Relatedly, workers from

Table 2: Drivers of illnesses among the working age population (Average Marginal effects estimates)

Variables	Communicable	Malaria	Respiratory (coughs)	NCDs
	(1)	(2)	(3)	(4)
Aged 18-30	0.0249*	-0.1093**	-0.0195	0.0203***
	(0.0146)	(0.0537)	(0.0383)	(0.0038)
Aged 31-64	0.0308**	-0.1706***	0.0144	0.0780***
	(0.0153)	(0.0558)	(0.0402)	(0.0043)
Female	0.0513***	-0.0390**	-0.0410***	0.0395***
	(0.0055)	(0.0181)	(0.0129)	(0.0035)
Unimproved water source	0.0098	0.0025	-0.0163	0.0032
	(0.0074)	(0.0226)	(0.0144)	(0.0049)
On-site waste disposal	0.0406***	-0.0159	-0.0153	0.0032
	(0.0105)	(0.0421)	(0.0304)	(0.0069)
Shared toilet	-0.0348***	-0.0173	-0.0051	-0.0121***
	(0.0061)	(0.0173)	(0.0123)	(0.0040)
Quintile 2	0.0303***	0.0300	-0.0115	0.0098**
	(0.0069)	(0.0292)	(0.0198)	(0.0046)
Quintile 3	0.0719***	0.0826***	-0.0161	0.0189***
	(0.0074)	(0.0285)	(0.0192)	(0.0048)
Quintile 4	0.0868***	0.0691**	0.0046	0.0247***
	(0.0080)	(0.0293)	(0.0203)	(0.0052)

Variables	Communicable	Malaria	Respiratory (coughs)	NCDs
Quintile 5	0.1705***	0.0765**	-0.0022	0.0362***
	(0.0098)	(0.0306)	(0.0215)	(0.0061)
Alcohol use	0.0348***	-0.0171	0.0191	0.0162***
	(0.0072)	(0.0199)	(0.0143)	(0.0045)
Tobacco use	0.0442***	-0.0118	0.0267	0.0135***
	(0.0138)	(0.0357)	(0.0243)	(0.0089)
Handwashing facility	-0.0162**	0.0564***	-0.0225	0.0023
	(0.0066)	(0.0214)	(0.0138)	(0.0043)
Urban=1	-0.0360***	-0.0462**	-0.0362***	0.0037
	(0.0062)	(0.0212)	(0.0137)	(0.0041)
Education: Primary	-0.0150*	0.0308	0.0027	-0.0119**
	(0.0087)	(0.0246)	(0.0170)	(0.0051)
Education: Secondary	-0.0461***	0.0544*	-0.0116	-0.0203***
	(0.0097)	(0.0290)	(0.0198)	(0.0059)
Education: Post Sec & Degree	-0.0754***	-0.0024	0.0149	-0.0239***
	(0.0115)	(0.0399)	(0.0296)	(0.0073)
Divorced/separated	0.0115	-0.0336	0.0120	-0.0019
	(0.0093)	(0.0261)	(0.0194)	(0.0050)
Widowed/divorced	0.0821***	-0.0283	-0.0143	0.0439***
	(0.0141)	(0.0316)	(0.0209)	(0.0082)
Never married	-0.0502***	-0.0247	0.0047	-0.0429***
	(0.0075)	(0.0285)	(0.0216)	(0.0042)
Congestion	0.0048	0.0204	-0.0048	-0.0130***
	(0.0054)	(0.0171)	(0.0119)	(0.0035)
Observations	21,736	3,862	3,862	21,736

Note: The regression models also include controls for Uganda's 15 sub-regions; however, these estimates are not reported, as they are not the primary focus of the analysis (Situma et al., 2024). The reference categories used in the models are age group 15–17 years, improved water source, wealth quintile 1 (poorest), and no formal education. For the congestion variable, a household is classified as congested if more than two people sleep in the same room (coded as 1 for yes, 0 otherwise). Standard errors are reported in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

homesteads that dispose waste on site (near their place of residence) are 4.1 percentage points more likely to report illnesses than their counterparts that dispose garbage off site. Disposing solid onsite creates breeding grounds for parasites which increases the risk of contagion for communicable diseases.

More importantly, households with handwashing facilities are 1.6 percentage points less likely to report any communicable illness compared to their counterparts without the facility. These findings underscore the significance of sanitation as a key public health intervention for disease prevention as highlighted in earlier studies. Notably, studies by Heinen et al. (2015) and Freeman et al. (2014) show that individuals that use shared toilets and poor disposal management practices are at a higher risk of suffering from communicable diseases such as diarrhoea compared to their counterparts that use private toilets.

The findings further reveal that the WAP from households with higher socio-economic status report a greater prevalence of illness compared to those in lower wealth quintiles. Our findings are consistent across all forms of illnesses except cough where workers from poor households are more prone to sicknesses. The results contrast with previous studies such as Cutler & Lleras-Muney (2010) and Caranci et al (2023) which correlate higher disease prevalence to poverty. Specifically, they argue that individuals from well-to-do

backgrounds often have better diets, better housing and sanitation and health care which act as a key pathway for health outcomes, whether for communicable or non-communicable diseases. In addition, individuals from low socioeconomic status are less likely to access preventive care services and are often diagnosed at later stages leading to worse health outcomes

However, the pattern is different for NCDs which are reported by workers from wealthier quintiles with greater access to financial and dietary resources. Specifically, in Uganda, individuals in the middle- and upper-class continually exhibit poor dietary habits, including high consumption of processed foods, sugary beverages, and low physical activity that heighten their risk of non-communicable diseases (NCDs) (Kusolo et al., 2023; WHO, 2023). Despite better access to resources, lifestyle changes such as increased alcoholism and tobacco, more prevalent among the wealthy increase their risk to lifestyle diseases. Our evidence indeed confirms that the two substances are high risk factors for both communicable and non-communicable diseases such as respiratory infections, cancer, hypertension and tuberculosis among others. Notably, people that use alcohol and tobacco are more likely to report suffering from both communicable and non-communicable diseases.

5.3 The effect of illnesses on different labour market outcomes

Table 3 presents estimates from the regression analysis that examine the effect of illnesses on different labour market outcomes. We estimate the differential effect of NCDs and communicable diseases on several labour market outcome indicators: monthly earnings, labour market participation, employment status and informality of workers. The analysis controls several individual, household, and regional factors.

The results in columns (1) and columns (5) suggest that all illnesses are associated with reduced monthly earnings of working employees, however the impact is more pronounced for NCDs compared to communicable diseases . Specifically, holding other factors constant, being ill from NCDs is associated with earning a wage 30 percent less compared to the counterparts not suffering from NCDs. Relatedly, workers who report communicable diseases earn about 23 percent less in monthly wages compared to their counterparts that do not report communicable diseases. This finding is consistent with previous evidence that health-related illnesses can cause sustained declines in labour income, primarily among full-time workers rather than those employed part-time through low productivity and absence from work (Dobkin et al., 2018; Acuna et al., 2019; Meo & Eryilmaz, 2025). The differential impact between NCDs and CDs likely reflects the chronicity and

Table 3: The effect of illnesses on various Labour market outcomes

	NCDs				Communicable Diseases			
Variables	**Log (Wages)**	**Log (Work hours)**	**Employed**	**Formality**	**Log (Wages)**	**Log (Work hours)**	**Employed**	**Formality**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Illness (1= Yes)	-0.356***	-0.020*	-0.036***	-0.041	-0.264*	-0.007	-0.013**	-0.111***
	(0.179)	(0.012)	(0.011)	(0.052)	(0.129)	(0.007)	(0.007)	(0.032)
Females	-0.461***	-0.518***	-0.042***	-0.041***	0.008	0.007	-0.355***	-0.339***
	(0.110)	(0.117)	(0.005)	(0.006)	(0.005)	(0.006)	(0.034)	(0.033)
Females **X** Illness	-0.717**	-0.016	0.022	0.010	-0.418*	-0.013	0.008	-0.104
	(0.348)	(0.023)	(0.022)	(0.105)	(0.245)	(0.014)	(0.013)	(0.065)
Education: Primary	0.158	0.025***	-0.023***	0.220***	0.158	0.025***	-0.023***	0.221***
	(0.145)	(0.008)	(0.008)	(0.040)	(0.146)	(0.008)	(0.008)	(0.040)
Education: Secondary	0.279*	0.039***	-0.031***	0.398***	0.273	0.039***	-0.032***	0.394***
	(0.164)	(0.009)	(0.009)	(0.049)	(0.167)	(0.009)	(0.009)	(0.050)

	NCDs				Communicable Diseases			
Variables	**Log (Wages)**	**Log (Work hours)**	**Employed**	**Formality**	**Log (Wages)**	**Log (Work hours)**	**Employed**	**Formality**
Post Secondary	0.672***	0.020*	-0.054***	0.984***	0.701***	0.020*	-0.055***	0.979***
	(0.220)	(0.011)	(0.011)	(0.063)	(0.222)	(0.011)	(0.011)	(0.067)
Married (1=Yes)	0.043	0.102***	-0.035***	0.180***	0.045	0.102***	-0.035***	0.178***
	(0.057)	(0.004)	(0.002)	(0.012)	(0.058)	(0.004)	(0.002)	(0.012)
Sector: Production	0.482***	0.035***		0.040	0.482***	0.036***		0.046
	(0.124)	(0.008)		(0.036)	(0.125)	(0.008)		(0.037)
Sector: Services	0.673***	0.096***		-0.036	0.698***	0.096***		-0.036
	(0.108)	(0.006)		(0.029)	(0.109)	(0.006)		(0.029)
Quintile 2	0.055	0.020**	0.031***	-0.094**	0.051	0.020**	0.031***	-0.091**
	(0.137)	(0.009)	(0.009)	(0.041)	(0.138)	(0.009)	(0.009)	(0.041)
Quintile 3	0.212	0.047***	0.045***	-0.262***	0.177	0.047***	0.045***	-0.258***
	(0.133)	(0.009)	(0.009)	(0.042)	(0.133)	(0.009)	(0.009)	(0.043)
Quintile 4	0.504***	0.052***	0.069***	-0.448***	0.487***	0.052***	0.069***	-0.445***
	(0.155)	(0.009)	(0.009)	(0.047)	(0.156)	(0.009)	(0.009)	(0.049)
Quintile 5	0.665***	0.062***	0.090***	-0.423***	0.663***	0.062***	0.091***	-0.413***
	(0.162)	(0.009)	(0.009)	(0.047)	(0.164)	(0.009)	(0.009)	(0.049)
Age	0.009*	-0.007***	0.002***	-0.007***	0.007	-0.007***	0.002***	-0.007***
	(0.005)	(0.000)	(0.000)	(0.001)	(0.005)	(0.000)	(0.000)	(0.001)
Weekly hours	0.429***	0.691***		0.172***	0.408***	0.691***		0.166***
	(0.093)	(0.006)		(0.026)	(0.094)	(0.006)		(0.026)
Household size	0.039**	-0.001	-0.004***	-0.028***	0.038**	-0.001	-0.004***	-0.029***
	(0.016)	(0.001)	(0.001)	(0.005)	(0.016)	(0.001)	(0.001)	(0.005)
Constant	13.577***	4.037***	0.867***	0.001	13.694***	4.039***	0.872***	0.022
	(0.733)	(0.021)	(0.014)	(0.080)	(0.750)	(0.021)	(0.015)	(0.084)
Selection model								
Married	-0.098***	-0.161***		-0.123***	-0.098***	-0.161***		-0.123***
	(0.012)	(0.005)		(0.011)	(0.012)	(0.005)		(0.011)
Age	0.001	0.015***		0.018***	0.001	0.015***		0.018***
	(0.002)	(0.001)		(0.002)	(0.002)	(0.001)		(0.002)
urban	0.134***	0.112***		0.130***	0.129***	0.112***		0.127***
	(0.036)	(0.011)		(0.038)	(0.036)	(0.011)		(0.039)
Constant	-1.993***	-0.515***		1.036***	-1.990***	-0.515***		1.037***
	(0.072)	(0.028)		(0.073)	(0.072)	(0.028)		(0.073)
P(Rho)	-0.551	-0.977		-0.792	-0.635	-0.977		-0.779
Chi−square statistic(x^2)	7.13	257.3		4.70	6.14	254.6		4.70
P-value	0.018	0.000		0.013	0.013	0.000		0.031
N	31,983	31,510	11,908	11,909	31,983	31,510	11,908	11,909

Note: Standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Coefficient estimates for Enterprise size (Small, Medium and Large) and Sector of employment (Agriculture, Production and Services) are not reported in Column (3) because the dependent variable; Employed is defined only for individuals in the labour force. Since business size and sector are characteristics of those already employed, they do not vary for the unemployed and therefore take a constant value, making them unsuitable for inclusion in this model. In this model 1-8, the models controls for other critical variables such as marital status, Age, Urban/rural location.

severity of NCDs characterized by long-term or limiting conditions which strongly constrain labour supply and productivity of workers from the onset compared to communicable diseases (Meyer & Mok, 2019; Piper et al., 2022).

An interaction between gender and illness indicates that health shocks result in larger earnings losses for women than for men. This pattern may reflect several factors. First, as shown earlier, women report a higher prevalence of illness, whether from non-communicable diseases (70.3 percent versus 29.7 percent for men) or communicable diseases (61.6 percent versus 38.4 percent). Second, women are disproportionately employed in the informal sector, which typically lacks social insurance or sickness benefits, leaving them more vulnerable to income loss during periods of illness. Third, societal expectations often require women to balance multiple caregiving responsibilities, which can compel them to continue working even when unwell, further exacerbating health problems and reducing productive employment time (Mussida & Patimo, 2021; Del Boca et al., 2020).

Regarding labour force participation, the results in columns (2) and (6) indicate that non-communicable diseases (NCDs) are associated with a two-percentage-point reduction in working hours, whereas communicable diseases (CDs) do not show significant losses. This does not imply that CDs have no impact on labour outcomes; rather, the effects may be temporary and reflect presenteeism, where workers remain on the job despite suffering a CD illness, a pattern commonly observed in informal labour markets in developing countries (Piper et al., 2022). The UNHS data indicate that presenteeism among workers reporting communicable diseases stands at 56 percent compared to 53 percent of those affected by non-communicable diseases (NCDs).

Regarding employment status columns (3 and 7), illness reduces employment (whether one is employed or not) by 1.8 percentage points, with larger penalties for NCDs. This aligns with prior research showing that chronic conditions can prevent labour market entry (ex-ante effect) and increase the risk of job loss or early retirement among current employees (ex-post effect) (Dobkin et al., 2018; Meyer & Mok, 2019). The stronger impact of NCDs compared to CDs highlights the importance of chronicity and severity in determining long-term labour market exclusion. Finally, communicable diseases are associated with higher informality, reducing the likelihood of formal employment by approximately 11.1 percentage points, while the effect of NCDs on formality is not statistically significant. This pattern could point to the fact informal work environments often have poorer health and safety conditions, increasing exposure to communicable diseases.

6. CONCLUSION AND POLICY IMPLICATIONS

6.1 Conclusion

This study examines the socio-economic impacts of illnesses on labour market outcomes in Uganda. Using data from the 2019/20 nationally representative Uganda National Household Survey (UNHS), we identify the key drivers of both communicable and non-communicable diseases and investigate their effects on employment outcomes among workers across the country.

The findings reveal a substantial burden of communicable diseases within Uganda's working-age population. Specifically, the results show that about 16.3 percent of individuals aged 14–64 years report suffering from a communicable disease within the month prior to the survey. While non-communicable diseases affect a smaller share (4.6 percent), they are more prevalent among older and wealthier individuals. Overall, women bear a greater burden of illness, accounting for 60 percent of reported cases. This underscores their greater vulnerability to both communicable diseases and NCDs. The results further indicate higher prevalence of illnesses in rural areas compared to urban areas. The findings also show regional disparities in illness patterns, with the Teso, Elgon, and West Nile sub-regions reporting the highest burden of communicable diseases. For NCDs, Elgon, Busoga, and Bukedi sub-regions are the most affected. These spatial variations suggest the need for targeted regional interventions in public health planning and

resource allocation.

Regression analysis identifies a range of demographic, socio-economic and environmental drivers of illness. Demographically, older individuals are more likely to fall sick, reflecting age-related declines in immunity and increased exposure to stress and chronic conditions. Women are also more likely to suffer from illnesses, which may be linked to their caregiving responsibilities and greater likelihood of reporting symptoms and seeking healthcare. Environmental conditions, particularly sanitation and hygiene are closely associated with health outcomes. Specifically, individuals living in households with shared toilet facilities or practicing on-site waste disposal are more likely to suffer from illness due to increased exposure to pathogens. In contrast, the presence of handwashing facilities is associated with a lower likelihood of illness, underscoring the preventive role of basic hygiene practices. These findings reinforce longstanding public health evidence that improved sanitation infrastructure is essential for reducing communicable diseases.

An unexpected yet important finding is the higher prevalence of NCDs among wealthier individuals. This may partly reflect greater access to healthcare and diagnostic services, leading to higher detection rates. However, it also points to a growing exposure to lifestyle-related risk factors in more affluent populations, for instance diets high in processed foods, reduced physical activity, and increased consumption of alcohol and tobacco. These results present a dual burden of disease: while communicable diseases remain prevalent in poorer and environmentally disadvantaged settings, NCDs are emerging as a significant health challenge among wealthier segments of the population.

With respect to the employment effects of illness, the findings reveal differential impacts between communicable diseases (CDs) and non-communicable diseases (NCDs). NCDs exert a substantially stronger adverse effect on earnings, reducing monthly wages by approximately 30 percent compared to a 23 percent reduction associated with communicable disease. In terms of labour supply, NCDs are associated with a statistically significant reduction of approximately two percentage points, while the effect of CDs on hours worked is not statistically significant, consistent with the pattern of presenteeism, where workers with acute communicable illnesses continue working despite being unwell. Analysis of employment outcomes shows that illness reduces the likelihood of employment by 3.6 percentage points for NCDs and 1.3 percentage points for communicable diseases.

6.2 Limitations and Future research

This study is not without limitations. First, Illness is measured using self-reported data rather than clinical diagnoses. As noted in the literature (Case & Deaton, 2005; Smith, 2009), self-reported health measures are prone to measurement error due to recall bias and differences in reporting behaviour, which can result in misclassification of health status and bias the estimated effects. Future research could address this limitation by incorporating objective health measures, such as clinically verified conditions or biomarkers, or by linking survey data to health facility records. Additionally, because this study relies on cross-sectional data, it primarily captures short-term illness. Using panel or longitudinal data would allow for a clearer distinction between short-term and chronic illness and provide more precise estimates of their effects on labour market outcomes

6.3 Policy Implications

Based on the evidence presented in this study, we recommend the following policy actions:

Improving access to basic Water, Sanitation and Hygiene (WASH) infrastructure: There is need for government stakeholders such as the Ministry of Water and Environment and Ministry of Health to prioritize investments in safe waste disposal systems, household handwashing stations and access to clean water, especially in rural and high-burden regions such as Teso, Elgon, and West Nile. The local governments should develop by-laws and enforcement mechanisms to ensure each household builds and uses its own toilet. This would serve as a foundational intervention for reducing illness and improving workforce productivity.

Adopt flexible health screening at work places: Given the significant negative impact of illnesses on wages, work hours, and employment, particularly

among women in Uganda, there is need for workplaces to adopt comprehensive health programs such as routine health screening aimed at the prevention, early detection, and management of NCDs like diabetes, as well as prevalent CDs such as malaria and tuberculosis. These programs should also test women with tight schedules with care work once they leave work to go to their homes.

Implementing targeted behavioral and wellness campaigns. The high burden of non-communicable diseases among wealthier and older working populations in Uganda calls for targeted behavioural and wellness interventions led by the Ministry of Health. This includes implementing health awareness campaigns in urban communities and workplaces to promote improved nutrition, regular physical activity, and reduced consumption of alcohol and tobacco.

Integrating women's preventive health services into the Village Health Team (VHT) Strategy. The Ministry of Health and other stakeholders in the health sector need to utilize and strengthen the VHT structure to deliver gender-responsive, community-based preventive health services. This would involve integrating women-focused health education and outreach into VHTs' routine activities, particularly in rural and peri-urban areas where they are already activities. The enhanced VHT mandate would include regular household visits and community-based screenings for both communicable and NCDs that most affect women.

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APPENDIX

Table A1: Definitions of all the variables and their measurement

Variables	Definition and Measurement
Illness	Self-reported illness or injury during the last 30 days before the survey (1 if Yes and 0 otherwise)
Malaria	Self-reported malaria or fevers in the last 30 days before the survey (1 if Yes and 0 otherwise)
Respiratory (coughs)	Self-reported Suffering from cough in the last 30 days before the survey (1 if Yes and 0 otherwise)
Non-Communicable Disease	Self-reported to be currently suffering from any of the following NCDs (Diabetes, High blood pressure, heart disease & Cancer)
Residence	Location residence of the respondent (A binary variable that takes 1 if Rural and 0 otherwise)
Highest education	Self-reported highest grade completed by the respondent (Indicated by 5 category dummies; No formal education; Primary, secondary, Post secondary)
Wealth Quintile	Income quintile of the respondent (Indicated by income quintile dummies; Quintile 1- Quintile 5)
Marital status	Self-reported current marital status of the respondent (Indicated by 5 categories Divorced/separated Widow/widower, never married)
Tobacco use	An individual uses any tobacco products such as cigarettes related products (1 if Yes and 0 otherwise)
Water source	Household's source of water for drinking (category dummies; Improved water source; unimproved water source)
Share Toilet	An individual lives in a household that shares this toilet facility with other households (1 if Yes and 0 otherwise)
Hand washing facility	The household has a hand-washing facility next to the toilet (1 if Yes and 0 otherwise)
Solid waste disposal	Self-reported commonly used method of solid waste disposal by the household (Indicated by 2 categories on site Solid waste disposal; Offsite solid disposal (1=On-site)
Congestion	Household is congested if more than 2 people sleep in the same room (1 if Yes and 0) otherwise)
Size of enterprise	The number of individual workers in an enterprise and MSME policy (2015) categorization
Sector	Sector of employment based on ISIC classification (Categories; Agriculture, Production and Services)
Employment status	An individual is employed or unemployed (1 if Yes and 0 otherwise)
Formality	Self-reported whether the employee remits social security or has a written employment contract (1 if Yes and 0 otherwise) otherwise)
Monthly earning	Amount of money (in Uganda Shilling) an individual earned in the last month from the main job of employment
Household size	The number of members living together in a household

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