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Investigation of Urban Youth Unemployment Duration in East, West, and Horo Guduru Wollega Zones: A Survival Models Analysis

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Abstract

Currently, urban youth unemployment duration is the central inquiry that has attracted the attention of policymakers of developing nations. Therefore, this study investigated urban youth unemployment duration in the East, West, and Horo Guduru Wollega Zones, Ethiopia. Primary data was collected from 249 youth residents in Shambu, Nekemte, and Gimbi cities, Ethiopia. Survival model analysis was employed through Kaplan-Meier proportional hazard model duration analysis. The result of the study revealed that the average period of job search in the study area is 10.18 months, while the unemployment duration is 24 months. The result of the study also publicized that the unemployment duration event happened in 52 percent, a majority, of the respondents. Further, the result from the hazard rate also found that the explanatory variables such as government regulation, field of specialization, job preference, and year of graduation are found to be significant variables, whereas unemployment certificate, size of the firms, and types of institutions are found to be insignificant determinants of unemployment duration in the study area. The policy implication is that local administrations need to work in collaboration with the regional and federal authorities to reduce the period of job search and unemployment duration in the study area.

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INTRODUCTION

Youth unemployment is one of the major concerns of policymakers in African countries in general and in Ethiopia in particular, as the population is dominated by the young. This is because young people make up a sizable portion of the population in these nations. Poverty has a connection to the other factor. Youth must be appropriately directed toward productive pursuits to break the cycle of poverty and underdevelopment. The first two are financial. Therefore, the issue of urban youth unemployment must be effectively addressed (Van et al., 2024; Nuseibeh, 2023; ILO, 2020; Imtiaz et al., 2020).

Ethiopia's situation is not an exception to this rule either. Even though Ethiopia's GDP grew by an impressive 7.4% in the previous three years, the majority of the country's youth were unable to find enough work as a result of this expansion. Nonetheless, young people make up more than 40% of the urban population; thus, resolving their issues will have a significant impact on the nation's socioeconomic situation (Berhe, 2021; Shita et al., 2025).

Despite several structural changes conducted in the economy, unemployment in general, and youth unemployment in particular, is still a daunting socioeconomic challenge for the country (Adinkra & Ahiakpor, 2024). Young people in metropolitan regions have the highest rate of unemployment of any demographic, according to numerous research and government reports. In 2018, the country's young unemployment rate was 25.3%, greater than the average for all unemployment in the country. This indicates that, out of 100 economically active young people, around 26 are unemployed (Alawad et al., 2020; CSA, 2018; Bayrak et al., 2018).

With 560,924 unemployed people, the Oromia Region had the highest percentage of unemployed people in all of the country's urban districts. Amhara Region came in second with 471,786 unemployed people, Addis Ababa City Administration with 398,346 unemployed people, and SNNPR with 284,484 unemployed people. The Tigray Region accounted for the middle share, with 171,129 jobless individuals. In the Gambella Region, 7,418 unemployed people made up the lowest share. This suggests that the proportion of unemployment to the overall population of the nation varies with the size of each region's urban area (WB, 2020).

Those between the ages of 15 and 29 are considered youth. In January 2020, the percentage of unemployed teenagers (249,878) was 25.7 percent, greater than the overall unemployment rate for adults and older age groups. Youth unemployment rates for women were 31.7 percent, while rates for men were 18.8 percent. Between April 2014 and January 2020, there was a trend of fluctuation in the general youth unemployment rate; the same pattern applies to young men. In comparison to their male counterparts, female youths exhibit increasing tendencies along with greater rates of unemployment (Ahmed & Ahmed, 2021).

Given that young people make up the majority of the population in Ethiopia, as in all of Africa, youth unemployment is a top concern for policymakers. It is necessary to correctly address the issue of urban youth unemployment because young people in Ethiopia account for over 40% of the country's urban population and are seen as the key to both political and economic stability (CSA, 2020; Berhe, 2021).

Several research studies have been done on the factors that contribute to youth unemployment. To illustrate, Khatun (2017) and Shina (2020) investigated the elements that contribute to youth unemployment in Ethiopia's metropolitan areas, primarily aiming to pinpoint the primary causes of youth unemployment as well as the obstacles that young people in Ethiopia encounter while attempting to work for them (Marinescu & Skandalis, 2021). The analysis discovered that, in tandem with shifting economic conditions, the nation's youth unemployment determinants are also evolving (Shita et al., 2025). The primary goal of the investigations was to identify the key variables influencing youth unemployment throughout Ethiopia. One did not bring up the topic of the length of unemployment (Pastore et al., 2022; Bekana, 2020).

This has been verified in the Ethiopian study by Sisay (2020) in another investigation. The study found that dealing with inflation is difficult. Given that the causes of unemployment fluctuate over time, this indicates that the issue is persistent. Additionally, it is discovered that the following factors significantly affect youth unemployment in Areka town, Wolaita zone: household income, job desire, credit availability, training accessibility, and cooperative membership. According to the study's multi-stage sampling design, specific locations should be used, individual families' earnings should be improved, and credit access should be made available. Recording the primary reasons for youth unemployment remained a primary emphasis of the studies (Muchemwa & Odimegwu, 2024).

A relevant study was recently carried out in the Wolaita zone by Tegegne (2019), who examined the socioeconomic factors that contribute to youth unemployment in Ethiopia. Using the example of Wolaita Sodo town, the study indicated a positive correlation between the cost of job searching and the employment status of young people. This fact is similar to what is also found in Ghana (Oteng &

Nyame, 2024). The study also showed that those institutional factors, social and demographic characteristics, education level, confidence, and human-related information availability all had a substantial impact on the youth unemployment rate in the studied area (Abshoko, 2016; Analytica, 2023).

According to Duguma & Tolcha (2019), factors that influence urban adolescent unemployment in Guder town include sex, educational attainment, marital status, skill match, and young access to finance. The statistical significance of family income and market information did not translate to lower rates of urban youth unemployment in the municipality (Bekana, 2022).

The main causes of unemployment in the town, according to Admaw (2021), are lack of job opportunities, lack of initial capital to start work, lack of skill and experience, rural-urban migration, smoking cigarettes and shisha, and household and individual-level factors like gender, migration status, educational attainment, and marital status. Megersa (2018) also looked into the determinants of youth unemployment in Addis Ababa, Ethiopia, and found that these factors significantly affect youth employment status (Mohammed & Hashim, 2024).

On the other hand, Mohanty (2018) has investigated youth unemployment using a descriptive case study on Nekemte town by linking it highly with micro- and small-scale enterprises. The study found that micro- and small-scale enterprises can create job opportunities for youth in the city. The study failed to deal with the major determinants of unemployment and failed to consider the impact of urban unemployment on household welfare (Kebu et al., 2023).

Statement of the problem

There isn't much empirical research on young unemployment in Ethiopia or the study region as a whole because the country lacks labor market statistics. The empirical studies that have been scientifically documented thus far in Ethiopia have mostly focused on the causes of unemployment; little is known about the length of unemployment or the factors that influence it. Because of this, little is understood about duration and the factors that influence it in Ethiopia. Furthermore, to the best of our knowledge, no study has been conducted to document the length of unemployment and its rate in the study area (the east, west, and Horo Guduru Wollega Zones in the Oromia Region of West Ethiopia), even though this concept is crucial for national policymakers.

The current study then conducts an empirical analysis of the factors that influence the length of youth unemployment in metropolitan areas within the three Wollega zones. Its goal is to investigate, within a regional framework, the incidences (risks) of youth unemployment and the factors that influence it. To do this, the research concentrated on the following queries: What are the differences in the frequency and length of unemployment among various youth groups? For instance, after residence, place, gender, and level of education. What factors influence the length of young unemployment in the east, west, and Horo Guduru Wollega zones' urban areas?

This study is different in several respects from earlier research conducted in Ethiopia. Firstly, in contrast to the majority of earlier research, it examines the frequency and length of unemployment in the east, west, and Horo Guduru Wollega Zone urban areas. Second, since the length of unemployment varies from region to region, the provincial dimension is included in the current study to provide a detailed picture of the duration in the study area.

This aids in determining the extent to which the three Wollega zones are impacted by the problem and persistence of unemployment. Finally, the study's methodology makes use of modern survival analysis methods, such as the Cox proportional hazard model (a semi-parametric duration analysis model) and the Kaplan-Meir estimator (a non-parametric duration analysis model), which aid in the detailed analysis of unemployment duration in the study area.

Research questions

The study raised the following three questions.

1. What are the demographic characteristics of unemployed urban youths in Shambu, Gimbi, and Nekemte cities?
2. How long is the urban youth unemployment duration in Shambu, Gimbi, and Nekemte cities?
3. What are the determining factors of urban youth unemployment duration in Shambu, Nekemte, and Gimbi Cities?

MATERIALS AND METHODS

Results

Research design

We employed a quantitative research design to investigate urban youth unemployment in the three Wollega zones (east, west, and Horo Guduru Wollega Zones). This design is selected because it enables the instigators to address the objectives of the study.

Types and sources of data

To achieve the objective of the current study, we employed primary and secondary data sources. Secondary data was obtained from the offices that provide statistical data on urban employment and unemployment surveys. From the data, it is possible to obtain the characteristics and size of the economic activity status in the study area. Moreover, the data on employed and unemployed populations of the zones at urban levels on an annual basis are provided in the offices (Thomas, 2021).

Similarly, primary data was obtained for the study from youth residents in urban areas of the east, west, and Horo Guduru Wollega zones. As different nations have diverse threshold levels of age to define youth, this study accepted the youth definition by Ethiopia. For instance, the ILO's youth age is 15 to 24 years inclusive. The lower limit is most of the time school-leaving age, while the upper limit is mostly the higher education (first degree) completion age. This is why there is a greater difference between the upper and lower age limits for the definition of ILO and other nations, too (ILO, 2020). The definitions vary depending on the cultural, economic, social, and labor market conditions of the nations. In the majority of developing nations, the upper limit of the youth age range is between 24 and 35 years.

Sampling techniques and data collection methods

The study employed a structured questionnaire to collect relevant data. Primary data from the individuals in three Wollega zones were utilized. A two-stage stratified sampling procedure was adopted to select a sample of 249 urban youth to be enumerated in the survey. This is because stratified random sampling performs better when the population is diverse in a study.

It is also widely accepted as the most convenient form of probability sampling in a heterogeneous population. This supports the accuracy of various strata. It also covers maximum populations, which in turn enables larger samples that again enhance the quality and accuracy of the study. The sample size of the study is listed in Table 1. It presents data obtained from the office of job creation of the respective cities. The data included the registered unemployment level only. They gave us record books and we checked the number of registered urban youths in the respective categories.

Table 1

Sample size of the study

N	N_1(East Wollega)	N_2(West Wollega)	N_3 (Horo/G/Wollega)
Unemployed Youth	Nekemte	Gimbi	Shambu
No. of Unemployed Youth	18,642	12,202	10,480

Where N is the total population, and it is the sum of N_i *as* $N = N_1 + N_2 + N_3$.

However, we took this for a month. The number of youth unemployment registered months of August and September was not included. Thus, the number to be taken from cities may vary when we start the study. The main issue is that a large sample (248) will be included in the study for accuracy. However, we included the numbers from each city.

Now the sample size from each is given as:

$$n_i = \frac{nN_i}{N}$$

Where, n_i shows the sample from the strata while N_i Represents the population of each city. Moreover, n shows the total sample size to be included in the study.

$n_1 = \frac{nN_1}{\mathrm{N}} = \frac{248(18{,}642)}{41{,}324} = \frac{4623216}{41{,}324} = 111.87 \rightarrow 112$—from Nekemte City

$n_2 = \frac{nN_2}{\mathrm{N}} = \frac{248(12{,}202)}{41{,}324} = \frac{3026096}{41{,}324} = 73.82 \rightarrow 74$ — from Gimbi City

$n_3 = \frac{nN_3}{\mathrm{N}} = \frac{248(10{,}480)}{41{,}324} = \frac{2599040}{41{,}324} = 62.89 \rightarrow 63$ — from Shambu City

Thus, the sample size in the study is 248, obtained from 112+74+63. It is believed that the 249 (larger population, which is good for accuracy). As per the rule of thumb sample size above 200 is a large sample size.

Because duration data are often not normally distributed and include censored people, they require a different statistical analysis than quantitative data. Since there is an instantaneous risk associated with the possibility of transitioning from unemployment to employment, it is irrational to assume normalcy (Kothari, 2004; Binti et al, 2016).

One component of duration data that makes it challenging to analyze using a typical statistical model is censoring (Rao & Schoenfeld, 2007). Both logistic regression and linear regression are unable to appropriately handle censored data and take into account variations in the timing of event occurrence. Additionally, censoring results in skewed hazard functions (Kiefer, 1988). Additionally, excluding censored participants lowers the sample size, which makes event analysis more difficult. The time from a precisely defined temporal origin to the occurrence of a specific event or endpoint is what survival data relate to. The response variable in many application domains is the survival time, which includes task completion times, machine life, and length, and applications specifically in medicine. The study of survival data has a few unique characteristics. The majority of the time, the data are severely skewed, non-normal, and have few long survival durations. Additionally, censored data frequently results in the event of interest never being observed in all participants. Censored information could be to the left or right.

Gehan (1969) asserted that a significant volume of suppressed data would negatively impact the statistical tests. To analyze survival data, one can employ parametric, semiparametric, and nonparametric techniques. Since the research does not make any assumptions about the functional form of the hazard, nonparametric and semiparametric approaches are being used to analyze the data. In this study, staying jobless is referred to as "alive," whereas landing a job is referred to as "death." The remaining jobless (t) unit of time from the start of the study is the survival function S (t).

The survival function shows what percentage of unemployed people continue to be unemployed over time. Because the Cox regression-based test has the advantage of including sample design elements and seeing the relationship between the variables and survival distribution, it is utilized instead of the log-rank test. The log-hazard scale is the one on which linearity is presumed (Kaur, 2019).

Description of the study variables

The study employs ten study variables that are convenient for the survival analysis. Table 2 displays the variables and their corresponding explanations in the Cox regression model. Accordingly, continuous, dummy, and categorical variables are included in the model based on their convenience. This reflects that appropriate variables are included in the study.

Table 2

Variables for Cox regression, explanations, and expected signs

Variables	Nature of data	Explanation	Symbol	Expected sign
Period of job search	Continuous	months	PJS	Dependent variable
Whether the job will be obtained or not (the event will happen or not)	Dummy	1-if thinking of obtaining a job, 0-if not	EVENT	Positive
Unemployment certificate	Dummy	1-if there is a certificate 0-otherwise	UNCER	Positive
The size of firms in which a job is expected	Categorical	Large, Small, and Medium	SF	Negative/positive
Government regulatory	Dummy	1-if benefited, 0 otherwise	REG	Negative/positive
Specialization	Categorical	Social &Natural	SPE	Negative/positive
Job preference	Dummy	1-if preferred job, 0 otherwise	JP	Negative/positive
Type of institution from which the degree was obtained	Categorical	Public & Private	TPI	Negative /positive
Year of graduation	Continuous	Years	YG	Positive/ negative

Source: author's Buildings, 2022

Specifications of the study models

The study specified two survival models to analyze the data for unemployment duration analysis.

Kaplan–Meier Estimator Nonparametric Duration Analysis

In the nonparametric approach to duration analysis, survival estimates are conducted. This study adopts the Kaplan-Meier estimator, which estimates a survival function.

The survival function $S(.)$ gives the probability that a spell will last until a certain time t. It is written as:

$$S(t) = \Pr\,(T > t) \quad (1)$$

Where T is a random variable that represents spell duration, while t represents the actual spell duration $S(t) = Pr\,(T > t)$ represents the cumulative distribution of T and

$$P(t) = \frac{d(pt)}{dt} \quad (2)$$

The probability density function, consequently, the survival function will be given:

$$S(t) = 1 - P(t) \quad (3)$$

The instantaneous probability of becoming unemployed is calculated using the hazard function $h(.)$, which is written as:

$$\mathrm{h(t)} = \frac{P(t)}{S(t)} \quad (4)$$

Where $S(t)$the survival function and $p(t)$ is the probability density function of T.

The Kaplan–Meier estimator accounts for both spell duration and people who may leave a study in the course of the study. In this case, the Kaplan–Meier estimator denotes whether a spell is right censored or uncensored. A spell is denoted as right censored if the spell continues or if it is not known whether the spell ends, while a spell is denoted as uncensored if the spell is known to have ended (Dalgaard, 2008).

The survival function for uncensored data is written as:

$$S(t) = \mathbb{H}_{t(i)<t}\,\{1\text{-}\frac{m(i)}{r(i)} \quad (5)$$

Where $t_{(1)} < t_{(2)} < \ldots < t_{(k)}$ Refers to distinct failure times, are $m(i)$ refers to the number of failure times equal to$t(i)$, and $r(i)$refers to the

number of individuals whose failure time is at least $t = t\,(i)$. This estimator is also called the product-limit estimator because one way of describing the procedure is that it multiplies together conditional survival curves for intervals in which there are either no censored observations or no failures. The estimator becomes a step function as the estimated survival is reduced by a factor of $1 - \frac{1}{ri}$ If there is a failure at the time $t_{(i)}$ and a population of $r_{(i)}$ is still in the study and uncensored.

The null hypothesis states that there is no difference between survival curves. The test statistic is calculated as:

$$x^2(\log\, rank) = \frac{(O_1 - E_1)2}{E_1} + \frac{(O_2 - E_2)2}{E_2} \qquad (6)$$

Where O refers to the number of observed failures in the sample, and E refers to the total number of expected failures in the sample. The total expected number of events for a group is the sum of the expected number of events at the time of each event. The expected number of events at the time of an event can be calculated as the risk for 'failure' at that time multiplied by the number of unemployed in that group.

Proportional hazard model estimation for duration analysis

The hazard function calculates the likelihood that, assuming that the jobless period has lasted till time t, it will end in the upcoming brief period, let's say, it. Numerous socioeconomic factors, including personal traits, level of education and ability, job history, knowledge of the labor market, and local demand conditions, may have an impact on the shift from unemployment to employment.

The Cox-proportional hazard model was utilized in the study to investigate the length of unemployment. The hazard rate is the dependent variable in the proportional hazards specification, which also ascertains how explanatory variables affect the hazard rate (Kiefer, 1988). Additionally, it can manage variables with censored durations that vary over time and enable the investigation of duration dependence (Lancaster & Nickell, 1980).

We use Cox proportional hazard models to examine the effects of several covariates on the hazard function. Linearity is assumed on a log-hazard scale, and a linear model for the log-hazard may be written as:

$$Loghi(t_i) = B_0 + B_1x_{i1} + B_2x_{i2} + B_3x_{i3} + \ldots\ldots B_nx_{ik} \qquad (7)$$

i is a subscript for observations, and x refers to the covariates. B_0 is constant a represents a kind of log-baseline hazard, since $Logh_i(t) = B_0$, when all explanatory variables are zero in this case. The Cox model leaves the baseline hazard function $B_0(t) = logh_o(\mathrm{t})$ unspecified:

This model is semi-parametric because the covariates enter the model linearly, although the baseline hazard can take any form. Consider observations n_i and n_i With different x-values:

$$h(t) = B_o(t)\exp\,(B_x + B_x + \cdots + B_x \qquad (8)$$

This model is semi-parametric because the covariates enter the model linearly, although the baseline hazard can take any form. Consider observations n_i and n_i With different x-values:

$$n_i = B_1x_{i1} + B_2x_{i2} + B_3x_{i3} + B_4x_{i4} + \cdots B_ki_k \qquad (9)$$

$$n_i = B_1x_{i1} + B_2x_{i2} + B_3x_{i3} + B_4x_{i4} + \cdots B_ki_k \qquad (10)$$

The hazard ratio for these two observations,

$$\frac{h_i(t)}{h_i(t)} = \frac{h_o(t)e^{ni}}{h_0(t)e^{ni}} = \frac{e^{ni}}{e^{ni}} \qquad (11)$$

It is independent of time t. Consequently, the Cox model is a proportional hazards model, thus avoiding assumptions about the form of the baseline hazard of unemployment (Fox, 2002). The coefficient b_j Is interpreted in terms of the relative risk when:

The covariate x_{ij} Is increased by 1:

$$\frac{a(t)\exp\,(B_1(x_{i1} + x_{i2} + \cdots + B_j(B_{ij} + 1) + \cdots + B_kx_{ik}}{a(t)\exp\,(B_1(x_{i1} + B_2x_{i2} + \cdots B_jx_{ij} + \cdots B_k\,xi_k} = \exp\,(B_j) \qquad (12)$$

The fundamental premise of this model is the proportionality of the hazard function, which states that the baseline hazard is the same for every unit in the population and that covariates, such as age, gender, and education, alter individual hazard rates

multiplicatively throughout any length of unemployment spell (Lancaster & Nickell, 1980).

RESULTS AND DISCUSSIONS

Descriptive statistics results

Table 3 shows that the average period of job search in the study area (Shambu, Nekemte, and Gimbi) is 10.18 months. Further, this event happened to 52.2 percent of the respondents. This implies that the majority of the respondents have searched for jobs for more than 10 months.

Table 3

Descriptive statistics of the survival model

Variables	Short of a variable	Mean	Standard Deviation
Period of job search	PJS	10.18474	5.321708
Event happened	EVENT	0.5220884	0.5005179
Unemployment certificate	UNCER	0.4939759	0.5009707
Size of the firms	SF	0.5863454	0.49348
Government regulation	REG	0.4798387	0.5006037
Specialization	SPE	0.5582329	0.4975975
Type of institution	TPI	0.5180723	0.5006797
Job preference	JP	0.5421687	0.4992221
Year of graduation	YG	0.5381526	0.4995464
Observation	249		

Source: Authors' computation from STATA15

Figure 1 presents the gender of the respondents. The result depicts that the respondents of the study are mainly females. This means 56.63% of the respondents are female. This shows that females are the major victims of unemployment in the east, west, and Horo Guduru Wallaga zones of Oromia, while males account for 43.37% of the respondents.

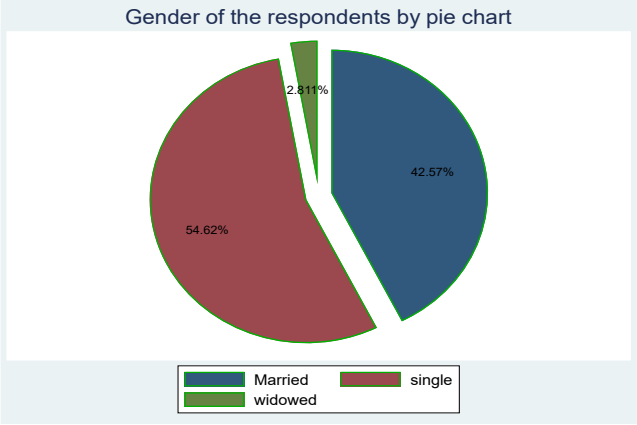

Figure 1. *Gender of the respondents.*

Source: Authors' computation from STATA 15

The age distribution of the respondents is shown by the histogram in Figure 2. As it is possible to observe, unemployment is distributed between the ages of 20 to 30. It follows that 50 % of the respondents are between the specified ages. This is because the majority of Ethiopian youths graduated from the university and other training institutions at the age of 20. Another point of finding from the figure is that the unemployed individuals in the East, West, and Horo Guduru Wallaga Zones are below 35 years old. This reflects that unemployment is highly distributed among the productive age of the respondents.

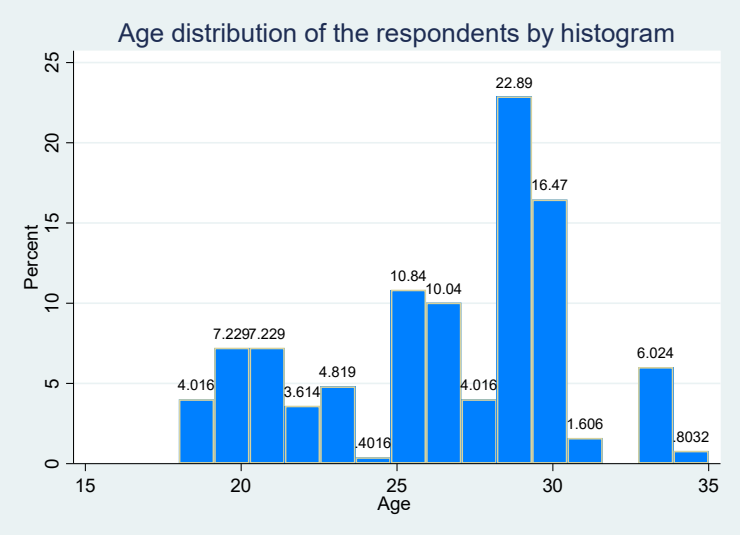

Figure 2. *Age distribution of the respondents*
Source: Authors' computation from STATA 15

Figure 3 presents the education of the respondents in the East, West, and Horo Guduru Wollega zones. It is found that the majority of unemployed individuals are from two institutions: Higher education and vocational education. Accordingly, it is found that the majority of the unemployed graduates are those from higher education. This accounts for 65.46% of the respondents. On the other hand, a 34. 54% of the respondents have graduated from vocational studies. This is because the two institutions are the major institutions that produce graduates in Ethiopia.

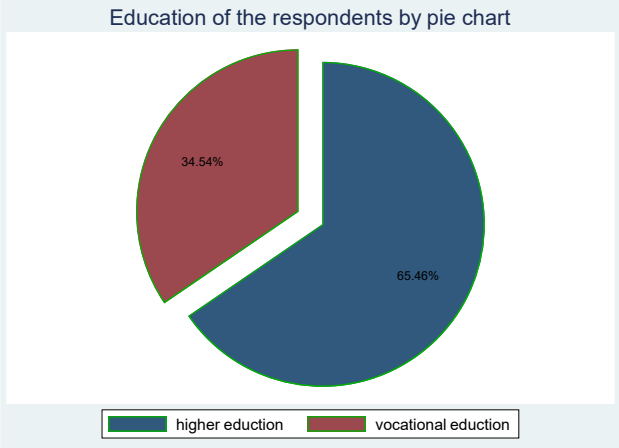

Figure 3. Education of the respondents
Source: Authors' computation from STATA 15

Figure 4 displays the current residences of respondents. Accordingly, it is found that the majority of the respondents (45.38 percent) are currently living in Nekemte town. This shows that the city is relatively favorable for the job search. It is also very easy to move to any area from Nekemte city. On the other hand, 35.74% of the respondents are living in Shambu City after completing their studies in either a university or vocational education. This suggests that it is easy for job seekers to travel to Addis Ababa or anywhere after registering for vacancies. Finally, the result of the study reflects that only 18.88% of the respondents are living in Gimbi City after graduating from institutions.

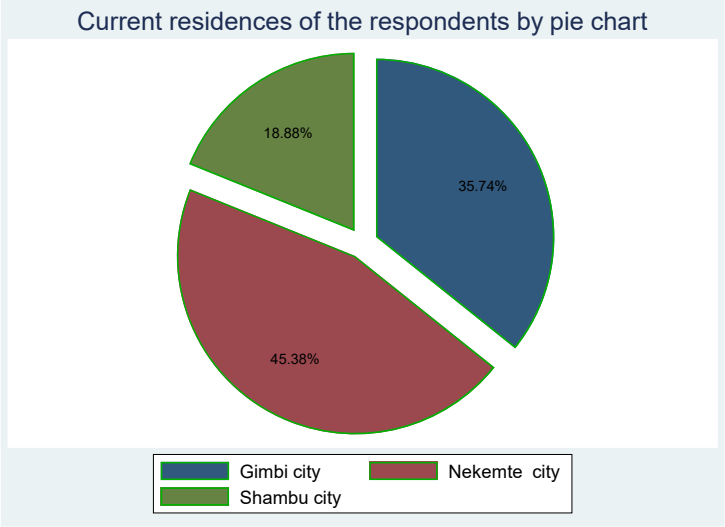

Figure 4. Current residences of the respondents
Source: Authors' computation from STATA 15

Figure 5 illustrates the family education of the respondents. Accordingly, the majority (55.02%) of the education of the respondent's family is primary education. This means that the family has the commitment to teach their child, but they do not know the details of the job search. The implication of this is that the family expects that their child will be employed in a government organization.

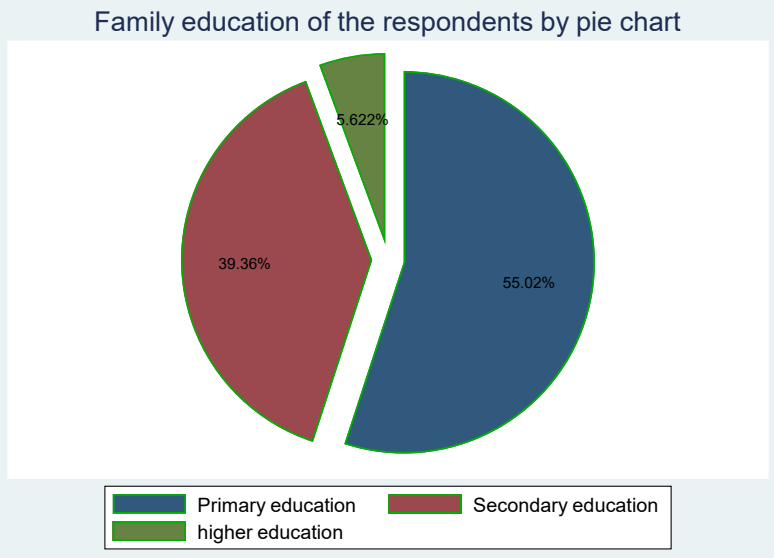

Figure 5. *Education of the family of the respondents*
Source: Authors' computation from STATA 15

This is the way we say family education is important in shaping the attitude of the youth. On the other hand, 39.36% of the respondents' family education is secondary education, while only 5.62 % families of the respondents graduated from higher education. This indicates that the majority of unemployed individuals in East, West, and Horro Guduru Wallaga zone are from families' educated primary and secondary education.

Figure 6 designates the education of the family of the respondents. Accordingly, the majority (47.79%) of the respondents' families are non-

skilled workers, as their education was also from primary education. It seems that the families are engaged mainly in farming. On the other hand, 34.54% of the respondents are professional workers. This includes those who completed higher education and secondary education. This also includes skilled workers. Further, 11.65% of the respondents' families were unemployed. The issue is that unemployed individuals are affected by their family's employment. Furthermore, 6.024% of them were inactive.

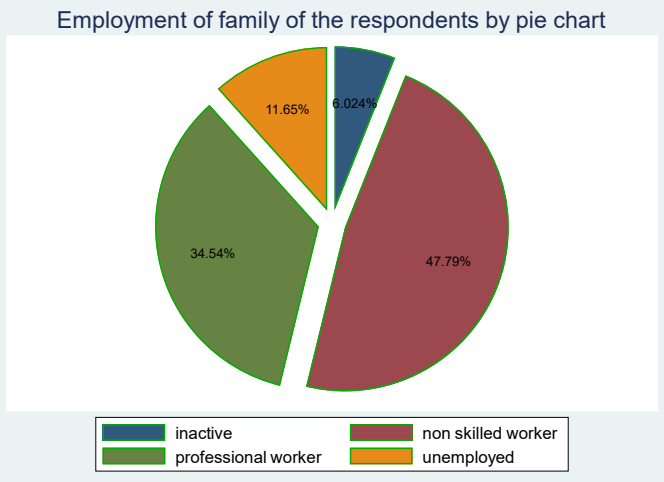

Figure 6. *Employment of the respondent's family*
Source: Authors' computation from STATA 15

Hazard Rates of Urban Unemployment in Shambu, Nekemte, and Gimbi Cities

This section discusses the rate of hazard associated with the explanatory variable of the study. The hazard rates of seven explanatory variables were used in the analysis. These are unemployment certificates, size of the firms, government regulation, specialization, type of institution, job preference, and year of graduation.

Table 4

Result of Cox proportional hazard model: Cox regression, Breslow method for ties

Variable	Hazard ratio	Robust std. errors	P-value
Unemployment certificate	1.127187	0.1936781	0.486
Size of the firms	0.7879178	0.1383794	0.175
Government regulation	0.6644545 *	0.1172323	0.021
Specialization	1.378088 **	0.2262589	0.051
Type of institution	0 .9250656	0.1640966	0.661
Job preference	1.387493**	0.2446885	0.063
Year of graduation	1.361242**	0.2519342	0.096

Note:, ** shows significance at 5% and 10% levels. The result reported is a hazard ratio.*

Table 4 depicts the hazard ratio result of the Cox regression through the proportional hazard model. Government regulation is found to be significant at a 5% level of significance with a hazard ratio of 0.6644 and a probability value of 0.021. The meaning is that individuals who are included in or benefit from the government regulation have a 33.56 percent (0.6644-1) lower hazard rate. This result is logical as the inclusion of the youth in the government regulation scheme can reduce the rate of hazard.

On the other hand, the speciation of the respondents is found to be significant at a 10% level of significance, with a hazard ratio of 1.378088

showing that specializations in natural sciences have a 37.8 percent increase in hazard rate. This shows that unemployment duration has a greater rate in natural science specializations compared to the social sciences. This is a convincing result as the natural science stream lacks job opportunities due to several reasons in the Wollega zones. For instance, there is no industry in which many natural science streams can be employed in the three Wollega zones.

When we come to job preference, it is observed with the hazard ratio of 1.3874 and found to be significant at a 10% level of significance, showing that respondents who have an attitude of job preference have a 38.74% increase in the hazard rate compared to those without the attitude of job preference. This implies that job preference is one of the factors that lead to higher unemployment duration.

Another explanatory variable was the year of graduation. From the proportional hazard model, we observed that the year of graduation has a hazard ratio of 1.3612, revealing that the respondents who graduated before 2021 face a 36.12 percent increase in hazard rate compared to the 2021 onward graduates. This is the logical result, as the priority in employment is mainly delivered to fresh graduates in both public and private institutions in Ethiopia. The national case in this regard may adversely affect the situation in the Wollega zones.

The other explanatory variables (only three out of seven), unemployment certificate, size of the firms, and type of institution, were found to be insignificant in determining unemployment duration in the study area. The hazard ratio of the unemployment certificate is found to be 1.1271, showing that urban youths in the study area with no unemployment certificate face a 12.71 percent increase in the hazard rate, reflecting that they have a high unemployment duration compared to youths with an unemployment certificate. This is because companies request unemployment certificates from employees to avoid double employment.

Similarly, the size of the firm is observed to be 0.7879 in the Cox regression of the Breslow method for ties. This implies that individuals who have a chance to be employed in large companies have a 21.21 percent lower hazard rate (0.7879-1= -0.2121) compared to those who have no chance in large firms. This is logical as large companies have the chance to employ more due to their relatively large vacancies.

Regarding the type of institution from which the degree is obtained, we observed the type of institution (TPI) with a hazard rate of 0.9250, showing that the urban youth who graduated from the public institution have a 7.5% lower hazard rate(0.9250-1=0.075) compared to those who are from the private institutions. This is because employing organizations have more confidence in the graduates of public universities when compared to private institutions. The coefficient of the proportional hazard model that is estimated from the Breslow method for ties was utilized to provide the youth unemployment in the study areas. The coefficient of the non-parametric Cox regression is explained in Table 4.

Youth unemployment duration in Shambu, Gimbi, and Nekemte

Table 5 shows the result of urban youth unemployment duration in the Wollega cities of Shambu, Nekemte, and Gimbi. The result of the study shows that government regulation is observed with a negative coefficient (-0.4087889) in the proportional hazard model, where the coefficient is reported. This shows that urban youths excluded by the government regulation have a high unemployment duration. Government regulations in this study are the services that youth provide to the people in the local administration within the framework of the government plan. For instance, the free services during the summer program are an indicator of this. A youth with the service certificate is considered as one included in the government regulation and provided priority in employment, while this is not the case for a youth without the service certificate. This result is found to be significant at a 5 % level of significance.

Specialization is found to be positive in the regions with 0.3206974. This shows that urban youths specializing in social science have a lower unemployment duration compared to urban youths specializing in the natural sciences. This shows that natural science specializing youths have a greater hazard rate. This result is found to be significant at a 10% level of significance.

Table 5

Coefficients of the Cox proportional hazard model: Cox regression

Variable	Coefficient	Robust std. errors	P-value
Unemployment certificate	0.1197253	0.1936781	0.486
Size of the firms	-0.2383615	0.1383794	0.175
Government regulation	-0.4087889*	0.1172323	0.021
Specialization	0.3206974**	0.2262589	0.051
Type of institution	-0.0778906	0.1640966	0.661
Job preference	0.3274983**	0.2446885	0.063
Year of graduation	0.3083978**	0.2519342	0.096

*Source: Author's calculation from STATA 15, Note: * and ** show 5% and 10% levels of significance.*

The other explanatory variable, job preference, is found to be positive with the reported Cox regression coefficient of 0.3274983. This shows those urban youths with no job preference attitudes have lower unemployment duration, while this is not the case for those who prefer jobs. This is convincing evidence as attitudes of an urban youth can adversely affect their opportunity to work.

The year of graduation is also found with a positive coefficient of 0.3083978. This implies that urban youths in the study are that were graduated before 2021 have a lower unemployment duration compared to those who graduated before the year 2021. This is a very convincing result since fresh graduates in Ethiopia are given priority in most organizations.

Coming to the unemployment certificate, the result of our study revealed that it has a positive coefficient of 0.1197253. This implies that the urban youths in Shambu, Nekemte, and Gimbi with unemployment certificates have lower unemployment duration compared to those with no certificates. This is because unemployment is considered the criterion for employment in many public and private organizations.

From the survival model analysis, we found that the size of the firms of the firm has a negative reported coefficient of -0.2383615. This reflects that an individual with the attitude of ignoring small firms and small jobs faces a higher unemployment duration. Finally, the type of institution from which the degree is obtained is found with a negative coefficient of -0.0778906. This shows that urban youth who graduated from private institutions have a higher unemployment duration compared to those who obtained their degree from public institutions in Ethiopia. This is very considerable as there is a perception of quality of education problems in private educational organizations in Ethiopia.

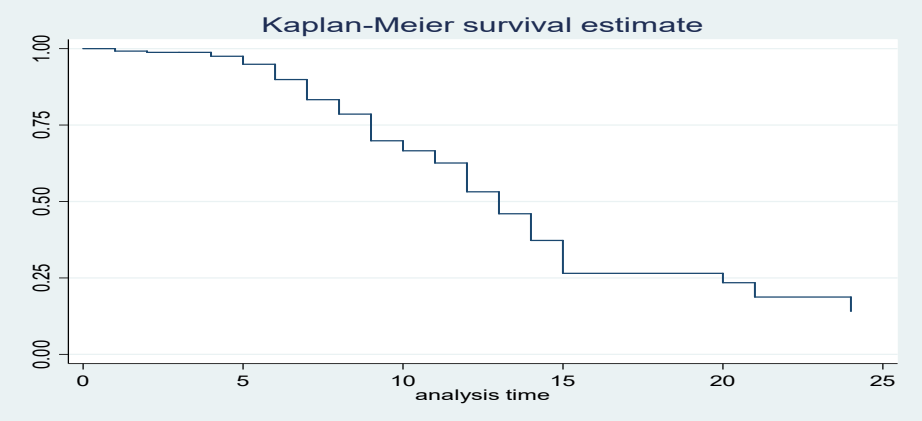

Figure 7. *Kaplan-Meir survival estimate curve of the study*

Figure 7 shows the survivors' unemployed urban youths in the study area over time. It starts from 1, indicating our estimated model has a full sample, and runs up to the end period. From the graph, the arrow shows the period 15 of the study, and there are 25 percent survivors or unemployed urban youths in the study area. This implies a large number of unemployed people in the study area during the periods under consideration.

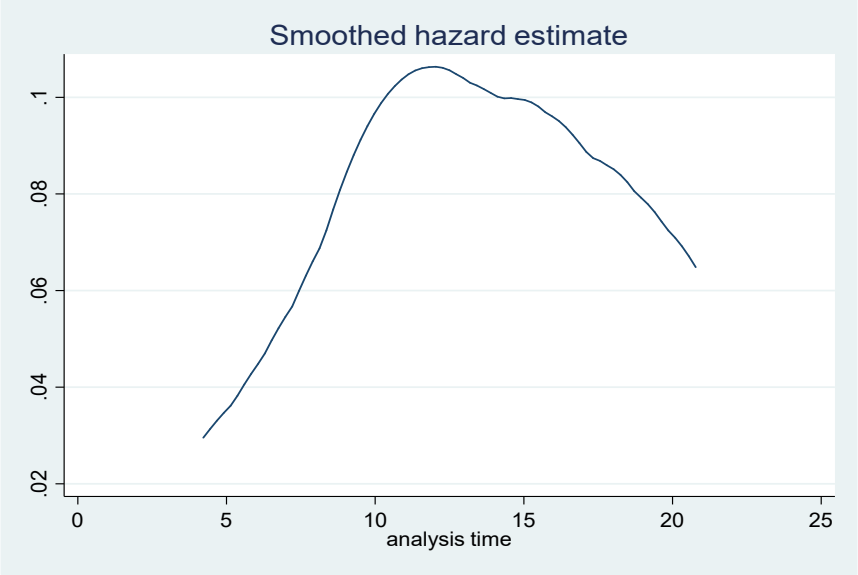

Figure 8. *The graph of the smoothed hazard estimate*

The result in Figure 8 displays that unemployment in the Shambu, Nekemte, and Ghimbi cities decreased after period 15. These further display that employment was relatively good before period 15; however, it gradually declined after period 15. This is a true result, as the pandemic that affected the global economy also affected the unemployment duration in the study area. From Figure 9, we can understand that the cumulative hazard estimate of the study does not show a tendency to decrease in the study area, Shambu, Nekemte, and Ghimbi cities of Wollega zone. This is not good for the economy of the area, as the hazard rate is increasing. The lower and the higher hazard rates are showing a rising graph. This shows that lower hazard rates (relatively good) are offset by the higher hazard rate (unfavorable) in the study area.

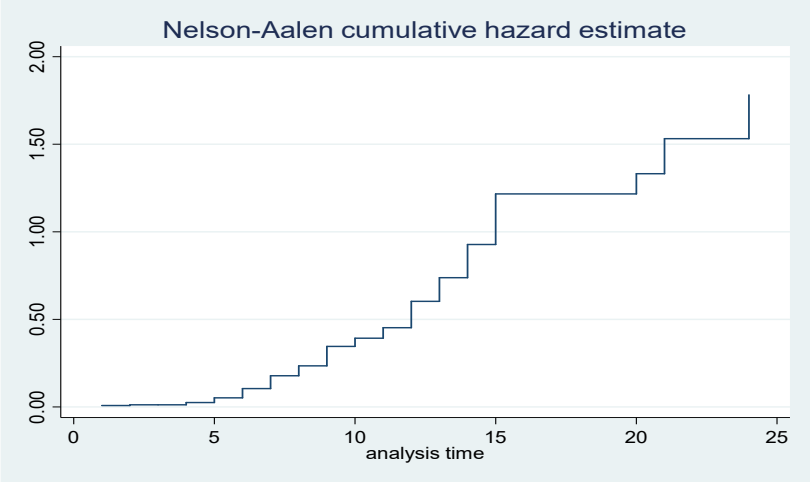

Figure 9. *Nelson-Aalen cumulative hazard estimate curve*

Survival function of the study

The survival function estimate from the Kaplan-Meir survival estimate shows that the average -duration of youth unemployment in the study areas, Shambu, Nekemte, and Gimbi, is 24 months. This is shown by the survivor function in Table 6.

Table 6

The survivor function of the model

Time	Total begging	Failure experienced	Net lost	Survivor function	Standard error
1	249	2	8	0.9920	0.0057
2	239	1	0	0.9878	0.0070
3	238	0	5	0.9878	0.0070
4	223	3	7	0.9751	0.0100
5	209	6	8	0.9489	0.0144
6	191	11	7	0.8989	0.0200
7	159	14	18	0.8330	0.0251
8	144	9	6	0.7859	0.0282
9	107	16	21	0.6986	0.0324
10	100	5	2	0.6659	0.0340
11	93	6	1	0.6260	0.0357
12	74	14	5	0.5317	0.0382
13	58	10	6	0.4599	0.0392
14	45	11	2	0.3727	0.0396
15	26	13	6	0.2650	0.0378
20	20	3	3	0.2344	0.0373
21	8	4	8	0.1875	0.0365
24	74	2	6	0.1407	0.0397

Source: Authors' computation from STATA 15.

Table 7 presents the survivor function of the estimate and reveals maximum period of unemployment duration in the study area is 24 months. Thus, the unemployment duration period in the study area is 2 years. This reflects the high unemployment duration in the study area. Another fact observed from the econometric result is that there are 14.07% of survivors at the end of the 24 months in the study area.

Diagnostic test of proportional hazard assumptions

We used the global test to check whether the hazards are proportional or not. The rejection of the null hypothesis shows that the hazards are not proportional and the model is not safe, while failure to reject the null hypothesis shows that the hazard is proportional, and it is good news for the model.

Table 7

Result of the proportional hazard model assumption test

Test	chi2	Degree of freedom	Prob>chi2	Decision
Global test	10.82	7	0.1466	Hazards are proportional

Source: Authors' computation from STATA 15.

Table 8 presents the diagnostic test of the proportional hazard model. The chi2 of the test is found to be 10.82 with 7 degrees of freedom. Further, Prob>chi2 of the model is provided as 0.1466, reflecting that we cannot reject the null hypothesis, which says the hazard rates are proportional. Thus, the result of our study is safe, and we can draw conclusions and policy implications from our model.

Table 8

The Wald chi2 tests of the Cox regression

Parameters	Values	Decision
No. of failures	130	The model is fit
Time at risk	2524	
Log pseudo-likelihood	-591.80536	
Wald chi2(7)	20.69	
Prob > chi2	0.0042	

Source: Authors' computation from STATA 15.

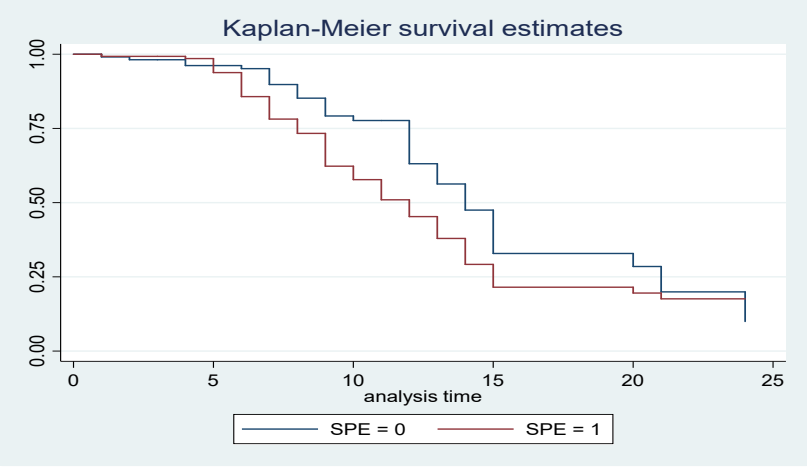

Figure 10. *Kaplan-Meier Survival estimate curve for specializations*

Table 8 presents the Wald chi2 tests of the Cox regression for the Breslow method for ties in the survival model analysis. The result suggests that the estimated model is fit as it is provided by a very small Prob > chi2 0.0042. The implication is that we can safely draw conclusions and recommendations from the model's estimated results, as the model passed all the diagnostic tests. Figure 10 presents a survival estimate for the sample group of specialization variables, and reflects that the groups are proportional. This implies that our model is proportional. Subsequently, this supports the proportionality of the hazard model, indicating that there is no doubt regarding the reliability and validity of the result of our model.

Discussions

This study investigated urban youth unemployment duration in Shambu, Nekemte, and Gimbi cities. The study employed the survival model analysis through the proportional hazard estimation technique. The study included a large sample size in the study which is good for the accuracy of the findings. The result of descriptive statistics revealed that females are victims of unemployment and its duration in the study area. In terms of age, the findings of our study revealed that youth unemployment is severe for the age group between 20 to 30 years. The result of descriptive statistics also shows that the majority of unemployed urban youths are those who graduated from higher education. It is also found that the majority of urban youth unemployed persons are currently residing in Nekemte city compared to others. This is due to the convenience of the city for the job search.

The econometric result also revealed that the average period of a job search is 10.18 months, while the unemployment duration is 24 months. This unemployment duration event happened in 52 percent of the respondents. This shows that there is a high unemployment duration in the study area and a high average period of job search. The result from the hazard rate found that the explanatory variables such as government regulation, field of specialization, job preference, and year of graduation are found to be significant variables whereas Unemployment certificate, size of the firms, and types of institutions are found to be insignificant determinants of unemployment duration in the study area.

CONCLUSIONS

The findings of the study also revealed that urban youths who benefited from government regulation have a lower hazard rate compared to those who are not beneficiaries of government regulation schemes. Further, specializations in natural sciences faced an increase in hazard rate compared to their social science specialization counterparts. Urban youths in the study area with an attitude of job preference attitude have faced an escalation in the hazard rate compared to those without the attitude of job preference. The Survival model analysis also revealed that the respondents who graduated before 2021 face an increase in hazard rate compared to the 2021 onward graduates.

Another point of conclusion is that urban youths in the study area with no unemployment certificate face an increase in the hazard rate. Furthermore, urban youths with a chance to be employed in the large companies associated with their specializations have a lower hazard rate compared to those with no chance in large firms. This implies that large companies have a greater chance of posting vacancies compared to others. Regarding the type of institutions from which the urban youths graduated, our results indicated that urban youth who graduated from public institutions are observed to have a lower hazard rate compared to youths who obtained their degree from private academic institutions. The result from the Cox regression revealed that unemployment duration is high where government regulation is not addressed, with natural science specializing urban youths in the study area, where urban youths develop job preference attitude, if urban youths graduate before the year 2021, where youths have no unemployment certificate and where urban youths are graduated from private educational institutions.

Recommendations

Based on the conclusion of the study, the following policy recommendations are forwarded. First, as major victims of unemployment and its duration in the study area are female, the local and regional administrations need to consider gender disparities in their strategic plan for unemployment reduction.

Secondly, as the majority of job seekers in the study area are found to be the productive age between 20 to 30 years, the offices of job creation and labor of the respective cities need to create additional opportunities in collaboration with regional and federal government bodies.

The third recommendation goes to higher education institutions in the country. The majority of unemployed urban youths in the study area have graduated from higher institutions. Thus, both public and higher institutions need to consider the market issues in human capital production. Furthermore, natural science stream-specialized urban youths were found to have a high unemployment duration. Thus, higher education needs to create an entrepreneurship mindset in the minds of its students so that they can innovate, invent, and diffuse technologies. Private higher education needs to work on improving the quality of education delivery in line with the government policy to reduce the unemployment duration of their graduates. They also need to eliminate the perception which says education from private higher institutions has low quality. The other recommendation of the study is that vacancies should mainly consider only fresh graduates. This contributed a lot to the unemployment duration in the study area. Consequently, the government should provide a general policy direction regarding the employment of non-fresh graduates in the study area. The local administrations, along with the regional, can play a lion's share in this.

Very interestingly, the policy input of this study can deliver is regarding the attitude of the urban youths. Their attitude toward job preference and ignoring small-sized firms contributed a lot to the unemployment duration in the study area. Hence, the local administration of the respective cities and higher education institutions in the respective cities need to create awareness to change the attitudes of youths. Finally, the government regulation should widen access to its regulation as much as possible and improve urban public services delivery, for instance, by providing unemployment certificates for the unemployed urban youths.

CRediT authorship contribution statement

Isubalew Daba: Writing - Original Draft, Methodology, Writing - Review & Editing, Formal analysis, Data Curation, Investigation and Visualization, **Gemechu Mulatu:** Supervision, **Gadisa Abera**: Conceptualization, **Desalegn Iticha**: Validation resources

Declaration of Competing Interest

The authors declared no competing interests in any shape or form.

Ethical approval

The Ethical Approval certificate is obtained from the Research and Innovation Director at Wollega University.

Data availability statement

Data that underlie the findings of this study can be supplied upon reasonable request.

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REFERENCES

Abshoko, A. D. (2016). Determinants of youth unemployment; Evidence from Ethiopia. *Global Journal of Human-Social Science: A Arts & Humanities - Psychology*, *16*, 1–20. https://globaljournals.org/GJHSS_Volume16/2-Determinants-of-Youth.pdf

Adinkra, D. E., & Ahiakpor, F. (2024). Unemployment duration and its covariates:

Evidence from selected regions in Ghana. *SAGE Open*, *14*(4). https://doi.org/10.1177/21582440241287606

Admaw, T. (2021). The cause and consequences of unemployment: A case study in Debre Birhan town, Ethiopia. *Developing Country Studies*, *11*(2), 21–28. https://www.iiste.org/Journals/index.php/DCS/article/view/55530

Ahmed, H. M. S., & Ahmed, Y. A. (2021). Constraints of youth entrepreneurs in Ethiopia. *Journal of Global Entrepreneurship Research*, *11*(1), 337–346. https://doi.org/10.1007/s40497-021-00292-z

Alawad, A. S., Kreishan, F., & Selim, M. (2020). Determinants of youth unemployment: Evidence from Jordan. *International Journal of Economics & Business Administration*, *8*(4), 152–165. https://ijeba.com/ journal/576

Analytica, O. (2023). Risks to China from unemployed youth rise. In *Emerald Expert Briefings*. Emerald. https://doi.org/10.1108/oxan-db281401

Bayrak, R., & Tatli, H. (2018). The determinants of youth unemployment: A panel data analysis of OECD countries. *The European Journal of Comparative Economics*, *15*(2), 231–248. https://doi.org/10.25428/1824-2979/201802-231-248

Bekana, D. M. (2020). Employment creation for youth in urban areas of developing economies: The Ethiopian experience. In *Global Encyclopedia of Public Administration, Public Policy, and Governance* (pp. 1–15). Springer International Publishing. https://link.springer.com/referenceworkentry/10.1007/978-3-319-31816-5_4019-1

Bekana, D. M. (2022). Employment creation for youth in urban areas of developing economies: The Ethiopian experience. In *Global Encyclopedia of Public Administration, Public Policy, and Governance* (pp. 3906–3920). Springer International Publishing. https://link.springer.com/referenceworkentry/10.1007/978-3-030-66252-3_4019

Berhe, M. W. (2021). Empirical analysis of urban youth unemployment in Ethiopia. *African Development Review*, *33*(1), 104–116. https://doi.org/10.1111/1467-8268.12514

CSA. (2018). *Urban employment unemployment survey 2016 https://catalog.ihsn. org/ catalog /7327/related-materials*

CSA. (2020). *Statistical Report on the 2020 Urban Employment Unemployment Survey 1-324 Statistical Bulletin the Federal Democratic Republic of Ethiopia*. https://documents1.worldbank.org/curated/en/717091632198808079/txt/Employment-in-Urban-and-Rural-Ethiopia.txt

Duguma, A. L., & Tolcha, F. T. (2019). *Determinants of urban youth unemployment: The case of Guder town, western shoa zone, Ethiopia*. https://doi.org/10.5281/ZENODO.3382077

Fox, J. (2002). *'Cox Proportional Hazards Regression for Survival Data', Appendix to an R and S-Plus Companion to Applied Regression. Available at: http://cran.r-project.org/doc/contrib/Fox-Companion/appendix-cox-regression.pdf*.

Gehan, E. A. (1969). Estimating survival functions from the life table. *Journal of Chronic Diseases*, *21*(9–10), 629–644. https://doi.org/10.1016/0021-9681(69)90035-6

ILO. (2020). ILO Reports on Growing Number of Unemployed, Uneducated Youth https://sdg.iisd.org/news/ilo-reports-on-growing-number-of-unemployed-uneducated-youth/

Imtiaz, S., Ali, A., Khan, Z., Ullah, M., Khan, M., & Jacquemod, J. (2020). Determinants of youth unemployment in Pakistan. International Journal of Economics and Financial Issues, 10(5), 171–177. https://doi.org/10.32479 /ijefi . 10386

Kaur, V. (2019). Research Methodology. In *Knowledge-Based Dynamic Capabilities* (pp. 77–112). Springer International Publishing. https://link.Springer. com/book/10.1007/978-3-030-21649-8

Kebu, H., Berisso, O., & Mulugeta, M. (2023). Drivers of migration and determinants of wellbeing among internal youth migrants in

Ethiopia: Towns along Addis Ababa -adama route in focus. *Heliyon*, *9*(3), e13780. https://doi.org/10.1016/j.heliyon.2023.e13780

Khatun, M. M. (2017). Macroeconomic determinants of youth unemployment and inactivity rates in Bangladesh. *Journal of Economics and Sustainable Development*, *8*(4), 117–122. https://www.iiste.org/Journals/index.php/JEDS/article/download/35522/36542

Kiefer, N. M. (1988). Economic duration data and hazard functions. *Journal of Economic Literature*, *26*(2), 646–679. https://www.jstor.org/stable/2726365

Kothari, C. R. (2004). *Research Methodology: Methods and Techniques. 2nd Edition, New Age International Publishers. 0.59646/rmmethods/040.*

Lancaster, T., & Nickell, S. (1980). The analysis of re-employment probabilities for the unemployed. *Journal of the Royal Statistical Society. Series A (General)*, *143*(2), 141. https://www.jstor.org/stable/2981986

Marinescu, I., & Skandalis, D. (2021). Unemployment insurance and job search behavior. *The Quarterly Journal of Economics*, *136*(2), 887–931. https://doi.org/10.1093/qje/qjaa037

Megersa, A. (2018). Determinants of youth (Un)employment in Addis Ababa, Ethiopia. *International conference on african development archives*. https://scholarworks.wmich.edu/africancenter_icad_archive/136/

Mohammed, S. F., & Hashim, S.H. (2024). A critical review on rural youth unemployment in Ethiopia. *International Journal of Adolescence and Youth*, *29*(1). https://doi.org/10.1080/02673843.2024.2322564

Mohanty, A. K. (2018). Micro and Small Scale Enterprise And Youth Unemployment: A descriptive case study on Nekemte Town. *International Journal of Research in Social Sciences*, *18*(12), 219–229. https://www.academia.edu/38220673/

Muchemwa, M., & Odimegwu, C. (2024). Investigating the self-employed: the South African perspective. *Journal of Entrepreneurship in Emerging Economies*, *16*(5), 1319–1337. https://doi.org/10.1108/jeee-12-2022-0376

Nuseibeh, R. A. (2023). *Urban youth unemployment, marginalization and politics in MENA* (2022nd ed.). Springer International Publishing. https://link.springer.com/book /10.1007/978-3-031-15301-3

Oteng, C., & Nyame, I. N. (2024). Idiosyncratic covariates of unemployment duration in Ghana: The joint effect of migration and education. *Revue Africaine de Developpement [African Development Review]*, *36*(3), 444–456. https://doi.org/10.1111/1467-8268.12772

Pastore, F., Quintano, C., & Rocca, A. (2022). The duration of the school-to-work transition in Italy and in other European countries: a flexible baseline hazard interpretation. *International Journal of Manpower*, *43*(7), 1579–1600. https://doi.org/10.1108/ijm-03-2021-0135

Rao, S. R., & Schoenfeld, D. A. (2007). Survival methods. *Circulation*, *115*(1), 109–113. https://pubmed.ncbi.nlm.nih.gov/17200454/

Shina, E. S. (2020). Determinants of youth unemployment: The case of Hawassa city. *Journal of Business and Management*, *22*(4), 01-07. https://doi.org/10.9790/487X-2204080107

Shita, N. G., Mekonnen, M. A., Tegegne, Y. E., Nigussie, M. M., & Woudneh, A. F. (2025). Predictors of youth unemployment duration and impact evaluation of job creation program in East Gojjam Zone. *PloS One*, *20*(4), e0320795. https://doi.org/10.1371/journal.pone.0320795

Sisay, S. A. E. (2020). Macroeconomic determinants of unemployment in Ethiopia *Global Scientific Journal, 8* (2)*,* 4718-4729. https://etd.aau.edu.et/items/992ea2ba-d9ed-48a4-9e21-de2336a48c61

Tegegne, T. K. (2019). Socioeconomic determinants of youth unemployment in Ethiopia, the case of Wolaita Sodo town, southern Ethiopia. *Developing Country*

Studies, *9*(10), 38–45. https://scholar.archive.org/work/zxvav2o3jvafvfhlza4gsmhg6y

Thomas, C. G. (2021). *Research methodology and scientific writing*. Springer International Publishing. *Research methodology and scientific writing*. https://link.springer.com/book/10.1007/978-3-030-64865-7

Van, L. B., Khiem, P. H., Linh, D. H., Vu, N. T., & Anh, M. V. (2024). Vocational training and labor market outcomes in rural Vietnam. *Nongye Jixie Xuebao (Transactions of the Chinese Society of Agricultural Machinery)*, *55*(6). https://nyjxxb.net/index.php/journal/article/view/1877

WB. (2020). *Addressing youth unemployment needs urgent action–World Bank Report*. https://www.worldbank.org/en/news/press-release/2020/09/29/addressing-youth-unemployment-in-ghana-needs-urgent-action