



International Journal of Advance Research Publication and Reviews

Vol 03, Issue 8, pp 526-534, August, 2026

An Analysis of Occupational Safety and Health of Employees: A Case Study of Harare City Council, Department of Roads.

¹Musabayana Lawrence Ivainashe, ²Mandizvidza Tafadzwa, ³Dr Chipo Mutongi

¹⁻³ Midlands State University

¹ivainashemusa@gmail.com, ²mandizvidza94@gmail.com, ³mutongic@staff.msu.ac.zw.

ABSTRACT

Public service delivery from local authorities in Zimbabwe is inconsistent as a result of numerous constraints in the civil service structures and economic constraints that lead to shortage of government resources amongst other factors to adequately finance those services. There is a scarcity of literature elucidations on the safety and health of road works department activities and operations especially with the strain from the Covid-19 pandemic. In this study, we investigated the occupational health and safety of employees within Harare City Council focusing on employees from the Roads Department. The study used interpretivism research philosophy, as it was a case study that took a qualitative approach. Over 60% of respondents alluded that most occupational accidents in the department were to a lesser extent emanating from personal negligence but to a larger extent a result of their working environment and equipment provided by the employer. We recommend continuous specialized training to employees. The employer should provide adequate personal protective clothing/ equipment and ensuring that the working conditions of employees are conducive.

KEYWORDS: Covid-19, Safety and health, Occupational accidents, Working conditions

INTRODUCTION

The field of workplace safety and health has gradually grown in response to social, political, technical, and economic changes. [Brown et al. \(2021\)](#) found that an unhealthy workplace is a major concern in the United States. Measures and strategies to prevent, control, mitigate, or eliminate occupational hazards and risks have been developed and continuously implemented to keep up with technological and economic changes. Despite these advancements, workplace accidents and illnesses continue to occur. According to [Hämäläinen et al. \(2006\)](#), the overall annual rate of fatal and non-fatal occupational accidents in Africa is estimated to be 270 million. [Walters et al. \(2015\)](#) consistently ranks construction and maintenance industry as one of the most dangerous sectors, with a fatality rate of 24.9 percent per 100,000 workers. In order to achieve self-sufficiency after 1980, the Zimbabwean government established parastatals, counties, and state enterprises. However, the dynamic nature of the working environment has presented many challenges to Harare City Council (HCC). HCC has failed to understand the importance of working environment for employee job satisfaction and thus face a lot of difficulties in 2020 a year clouded by the Corona Virus infectious disease (COVID-19) pandemic ([Mathew et al., 2022](#)). HCC has faced numerous challenges in terms of service delivery, including water supply, refuse collection, road maintenance, and stand allocation. ([Ncube et al., 2022](#)). People in the city have lost faith in the organization's ability to provide services. Employee health has been affected by the municipality's way of operating ([Alonso and O'Neill, 2011](#)). The costs related to the accidents have a negative impact on the Council, employees, the community and the environment.

Previous studies on the safety health and environmental impacts associated with construction and maintenance sector have made a significant contribution to the body of information available. Many studies have been done in developed countries municipal sectors as general not pin pointing to the division of roads. In South Africa, a similar study was done but focused specifically on the private sector therefore a gap in studying municipalities exists ([van Heerden et al., 2018](#)). There is a gap in the knowledge pool on issues associated with municipality workers exposure to hazards particularly the roads division in Zimbabwe. HCC roads division has been struggling to ensure prevention and recurrence of these accidents and injuries in order to do away with the extra costs associated with them. In light of this, the study will focus on the analysis of occupational health and safety of employees at HCC focusing employees within the roads division. The findings of this study will be instrumental in formulating solutions to the occupational safety and health problems within the roads and works department at HCC.

Study area

Harare is a capital city which has an estimated population of 2 098 199, accounting for 16 percent of Zimbabwe's total population ([ZIMSTAT, 2012](#)). Harare is a self-governing city that functions similarly to a province in terms of administration. It is Zimbabwe's most important financial, commercial, and communication hub. Harare is situated at an altitude of 1490 meters and is located at 17° 51' 50" S and 31° 1' 47" E. Harare is surrounded by hot weather, with an average annual high temperature of 21.6 degrees Celsius and an annual low temperature of 6.5 degrees Celsius in July, the coldest month of the year. There are three major seasons: hot dry season (September to October), warm, cool dry season (May to August), and wet season (September to October), (November to March). Harare receives an average rainfall of 825mm to 855mm per year, according to ([Nhiwatiwa et al., 2021](#)). Harare is a strongly subtropical grassland, with *Brachystegia speciformis* as the most dominant vegetation, forming miombo woodlands ([Mushore et al., 2019](#)).

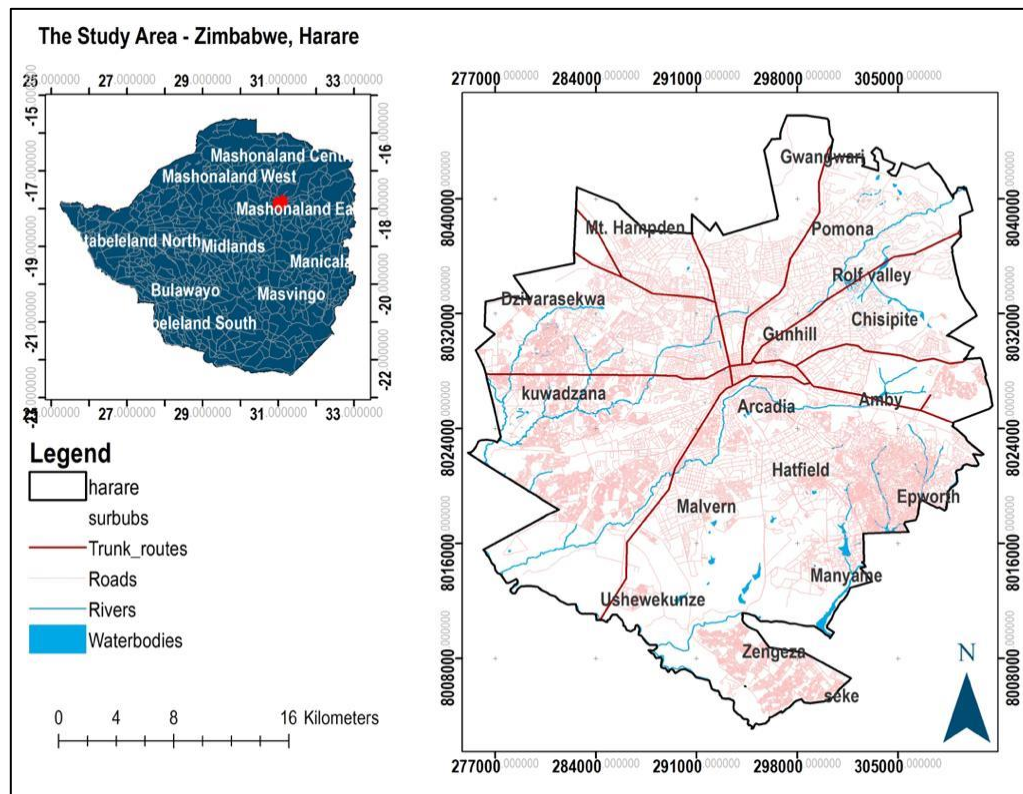


Figure Error! No text of specified style in document.: Study area map

METHODOLOGY

Research Design

The exploratory research design was used in this analysis to collect descriptive data. Surveys, focus groups, open answers, and secondary analysis are all used in exploratory research to collect data. According to [Girard et al. \(2013\)](#), exploratory research is the most useful and acceptable research design for projects that approach a topic with high levels of ambiguity and ignorance, and when the issue is not well understood, such as when there is no established research on the subject matter. Under interpretivism research philosophy, it was possible to socially investigate the Roads Department with regards to occupational health practices.

Target population, sampling procedure and sample size

The target population for the study includes Harare City management, Supervisors and other employees. The study only focused on employees within the Roads Department at Harare City Council. The target population was 420, and the sample size was determined using the sample size estimation method proposed by ([Krejcie and Morgan, 1970](#)). The sampling technique that was used in this research was stratified random sampling which is a probability sampling technique. There are three sectors of Engineers, Drivers and General-hands within the road works department, and so three strata were created and later on randomly selected. The lotto method used involved assigning numbers to members in the target population and then using computer generated random numbers to select members.

Sample size was determined using the formula for estimating sample size by ([Krejcie and Morgan, 1970](#)). The formula is as follows: $S = \frac{X^2 NP(1-P)}{d^2(N-1) + X^2 P(1-P)}$ where S denotes the sample size required, X^2 is the chi square value at the given level of confidence at one degree of freedom, N is the size of the target population, P 0.5 denotes the proportion of the population, and d denotes 0.05, the level of significance ([Cohen, 1970](#)). The study employed the [Krejcie and Morgan \(1970\)](#) model of computing a sample from a known population. Using the formula above, a sample size of 201 was derived from

401 targeted population. Participants were randomly selected until the number of 201 is reached.

Data Collection Instruments

The researcher used instruments that were in tandem with the situations at hand. Because of COVID 19, there are some instruments that were digitalised in order to obtain reliable information from the research at hand.

Primary data

Due to limitations in relying with secondary data, the researcher also used primary data to get first-hand information from the field. Primary data gathering instruments that were used in this research are questionnaires, interviews and observations.

Questionnaire Survey

A cost-effective, self-administered, standardized questionnaire was used in the study. A five-point Likert scale (Likert, 1932) was used, with 1 indicating Strongly Disagree (SD), 2 indicating Disagree (D), 3 indicating Neutral (N), 4 indicating Agree (A), and 5 indicating Strongly Agree (SA).

Structured interviews

Face to face interviews were carried out by means of a well-structured interview schedule with a guide that comprised of logically organised questions directed by the researcher. The researcher also made use of social media in interviewing the respondents digitally through calls. An external stakeholder, NSSA officer was interviewed since they are the most appropriate stakeholder for this study relating to the records of accidents, reports of inspections and compliance levels of HCC with NSSA requirements.

Observations

The field observation checklist for the area under study established daily workers duties, risks workers are exposed to, levels of knowledge regarding to the hazards and risks experienced and it evaluates responses of workers on the effectiveness of measures that are in place. Participant observation was done to investigate for filling up the gaps observed during direct observation. Getting involved with the workers and interacting more with them gave the researcher significant exposure and experience on occupational risks and accidents without solely relying on what was said, their perceptions and thoughts.

Secondary Data

Knowledge from other outlets, such as textbooks, journals, periodical magazines, and newspapers, was added to the internet. The researcher saves money by using secondary data because the information is readily accessible.

Reliability

[McDonald et al. \(2006\)](#) states that reliability refers to the extent to which data collection techniques or analysis procedures yield consistent findings. Reliability entails internal consistency and replicability.

Validity

[Mugenda and Mugenda \(2003\)](#) define validity as the accuracy and meaningfulness of inferences based on research results. Validity was achieved by employing accepted definitions, constructions of terms and those of concepts. Validity in this study was also cemented by ensuring that causal explanations were supported by evidence, ensuring that interpretations and findings are derived from data transparently.

Data presentation and analysis tools

Findings from the study were qualitatively and quantitatively analysed using the SPSS software and Microsoft excel. Descriptive statistical analysis was used to present the general respondents' information such as the response rates, the ages of the respondents and the likes using graphical representations, indices and percentages using MS Excel. Inferential statistical analysis was conducted using SPSS. Before final analysis was performed, the data was be cleaned to eliminate discrepancies and thereafter, classified on the basis of similarities. In accomplishing all analysis details with efficiency and effectiveness, the researcher used SPSS, a renowned statistical tool for data analysis. The relationship between variables was tested using chi square tests of significance. Correlation was also tested using Pearson correlation tests in SPSS. Qualitative data was analysed by the use of descriptive statistics such as mean and standard deviation to summarise and relate study variables. Frequency distributions were used to predict how many people or what percentage of people were in favour of a particular ideas. These were then presented using tables, pie charts, bar charts and histograms for easier interpretation as mentioned earlier under descriptive statistics.

RESULTS AND DISCUSSION

Response Rate

A total of 201 questionnaires were distributed. 141 questionnaires were completed hence 70.1% response rate was achieved. 100% response rate was not achieved because of COVID-19 lockdowns, respondents ignored and others wrongly submitted questionnaires.

Socio-Demographic Characteristics of Respondents – (i) Age and Sex

Our findings show that female respondents were 12.7 % (n = 18) compared to 87.3 % (n = 123) of male respondents. Over the years, the HCC road maintenance section has been dominated by male employees due to the high physical demand of the work to achieve a world class city status by 2025. The roads maintenance works supervisor highlighted high work load thus the exclusion of female employees over the years. This is proved by a percentage of 4.9 % (n = 7) female respondents from the age of 31-40 and 2.1 % (n = 3) from the age of 51+ and is explained by the fact that female workers are mostly cooks and janitors. However, an inclusion of the younger female workforce of between 21-25 years (5.6%) shows that these jobs within the department are now being opened up to female employees even after 'O' or 'A' level.

(ii) Marital Status of Respondents

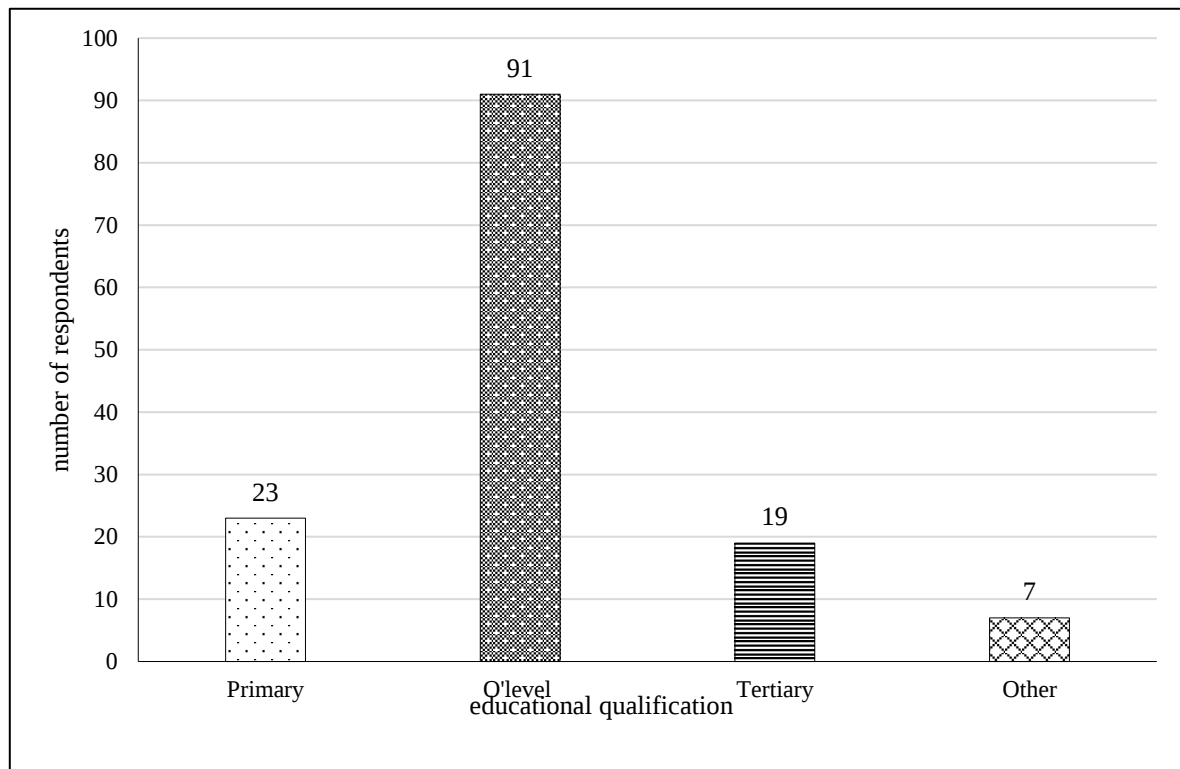
Table 1: Marital status of the respondents

		Frequency	Percent (%)	Valid Percent (%)	Cum... Percent (%)
Valid	Single	36	25.5	25.5	25.5
	Married	89	63.1	63.1	88.7
	Divorced	16	11.3	11.3	100.0
Total		141	100.0	100.0	

Findings in table 1 reveal that all females who participated in this research were married. In an interview, one of the female respondents indicated that financial situations pushed her to work in the labour-intensive road maintenance department. This level of desperation implicates workers as they ignore risks in order to feed their families. This connives with [Kokabisaghi \(2018\)](#), who indicated that economic situations in developing countries can affect the nature of SHE policies at work as companies take advantage of poverty.

Years Employed at the Department of Road Works

Results show that 48,9% of the respondents worked in the road maintenance section for 1 to 5 years, while 26,2% worked for 6-10 years, 17.7% worked for 11-15 and 11.6 % had worked for more than 16 years. These findings suggested that respondents were suitable on the study's subject as they had worked at HCC for a sufficient amount of time.

Educational qualification of Respondents**Figure 1:** Educational qualifications of the respondents.

The results from the questions presented to the respondents show that 64.5% attained secondary level education, while 16% only have primary level education, 13.4% having tertiary education and the remaining 5% indicated other qualifications. The Human Capital Manager indicated that level of education is now used in employing people although it was not prioritised before. This explained 16.3% employees who had only primary level qualifications in the age group 50+. Level of education determines how people are conscious to safety and health issues.

Types of occupational safety and health hazards**Table 2:** Types of hazards within the road works department

Type of Hazards	Frequency	Percent (%)	Valid Percent (%)	Cum... Percent (%)
Physical	102	72.4	72.4	72.4
Chemical	10	7.1	7.1	79.5
Biological	22	16.3	16.3	95.8
Psychosocial	5	3.5	3.5	100.0
Total	141	100.0	100.0	

Operators and assistants highlighted similar manually and mechanically intensive daily duties which involved standing or crouching for long hours when covering potholes, repairing damaged roads. Within their responsibilities, the respondents identified associated hazards. Hazards identified were physical, chemical, biological and psychosocial as shown in table 2.

Physical Hazards – (i) Noise

65% of the respondents worked for many hours in noisy environments. This was observed in the metal work department with noise caused by machinery,

equipment and motor vehicles. The SHE officer also testified high noise levels that surpassed the prescribed limit values, and long-term exposures causing negative effects on operators' health, including hearing loss. Similarly, [Vignisdottir et al. \(2019\)](#) found that road workers exposed to high noise levels exceeding 91dBA had temporary, permanent hearing loss and trauma.

(ii) Vibration - Hand-arm and Whole-body vibrations

Workers use vibrating compactors when maintaining roads. [Krajnak \(2018\)](#) indicated that hand to arm vibrations can cause neurological, musculoskeletal and vascular disorders. Truck drivers are at risk when the body is resting on a vibrating surface.

Environmental conditions

The respondent indicated exposure to extensive heat, cold and rains. The SHE officer mentioned that sun hats, overalls and raincoats are provided by the institution to deter the risks.

Ergonomic Hazards

Observations revealed workers are exposed to carrying and placing heavy materials such as steel bars and concrete pillars. Due to manual nature of the works bending, pushing and pulling also forms part of their work causes high strain on their back and limbs. [Barkley et al. \(2017\)](#) indicated that lifting loads in awkward postures due to bad design in maintenance work causes ergonomic injuries.

Chemical Hazards

Our findings reveal that the roads workers are exposed to hazardous substances such as asphalt fumes containing asphaltenes and polycyclic hydrocarbons (PAHs), organic solvents, petroleum liquids, dust and benzene.

Table 3: Chi square tests on the exposure of the road's workers on chemical hazards.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.852 ^a	25	.027
Likelihood Ratio	20.567	25	.004
N of Valid Cases	141		

a. 26 cells (87.5%) have expected count less than 5. The minimum expected count is .32

The Chi-Square value for table 4.3 is 0.027 and it is less than 0.05 therefore we accept H_1 hypothesis which states that there is a relationship between occupation and type of hazards.

Psychosocial hazards – (i) Pressure from uncompleted tasks

The researcher observed that workers worked under pressure sometimes to complete given tasks. The respondents indicated that during the COVID-19 lockdowns, they worked at 75% capacity hence putting pressure on the insufficient workforce. This is in line with [Javaid et al. \(2018\)](#) who indicates that, targets put pressure on workers, resulting in stress and increasing the probability of mistakes and accidents.

(ii) Long working hours

The researcher noted that this led to poor mental health, sleeping problems, fatigue and poor work-life balance amongst the interviewees who were not aware.

(iii) Isolated work

The truck driver transports gravel and other materials to work sites alone and have to help themselves if an accident happens. Fatal accidents may take more time to discover.

(iv) Exposure to unexpected safety and health risks

Road maintenance work is less respected and is given little attention by management. The SHE officer reported that road works are mostly characterised

by manual labour which requires little or no mental work. This may give maintenance workers the impression that their work is poorly acknowledged hence affecting job satisfaction and work-related stress.

Effects of Occupational Safety and Health Risks

63% of the respondents were knowledgeable on the effects of safety risks. This is in contrast with [van Heerden et al. \(2018\)](#), who noted that employees in developing countries have little to no knowledge on the safety principles of their work place. The safety office confirmed that trainings were done regularly although ergonomic issues were hardly followed up.

(i) Work related sickness

87% reported that the nature of work results in injuries. According to [Chang et al. \(2020\)](#), leave days should be acquired upon consistency in loss of concentration at work to avoid accidents. Zimbabwe's Labour Act Chapter 28:01 states that leave days shall be granted to employees. However, the Human Capital Manager highlighted that most employees took leave days without providing medical reports. The Chi-Square value of $0.01 < 0.05$ showed an association between accidents and age. Young workers are not experienced and are frontline workers. Conditions of stress and high blood pressure were stated in the age range of 41+ years. Respondents reported working during COVID-19 lockdown while incapacitated hence stress. Berry et al., 2004 alluded stress to structural changes of stiffness of the large arteries with age.

(ii) Financial Challenges

Respondents indicated self-funding medical bills which were higher than their salary and without compensation. This relates to [Chang et al. \(2020\)](#) who found that poor safety and health policies attracted extra costs from injuries at work.

(iii) Marital Problems

The normal dismissal time was 16:00hrs on weekdays but in some instances, employees would work until 18:00hrs. Workers complained on raising suspicions with partners at home. ([Ansah et al., 2018](#)) similarly noted that if one is affected at work; the probability is high that the family will also suffer the predicaments.

(iv) Effects on the organisation

Workers pointed out poor and delayed salaries in year 2020 and had not been paid in 2021 by February hence skilled personnel resigned from work. [van Heerden et al. \(2018\)](#) noted South African companies that closed as a result of litigation and compensation claims by injured employees. This also reduces the council's service delivery function and adds costs of hiring.

Causes of Occupational Safety and Health hazards

Table 4: Causes of occupational accidents within the road division.

Cause	Percentage of Respondents (%)
Personal negligence	15
Mechanical fault	45
Organizational policies	25
Restrictive working space	15

The results concur with [Ansah et al. \(2018\)](#) who found that occupational hazards emanate from poor procedures, behaviours and low compliance to regulations.

Evaluation of Health and Safety Measures in the Roads Division.

43% attested that the employer did not offer adequate and timely assistance in the case of work-related illness or accidents. 65% were not in support and 35% were neutral on the appointment of a supervisor since safety issues were still rampant. The supervisor highlighted administrative issues that affected them such as availing of protective clothing. Stakeholders expressed concerns whereby policy makers implement policies without consultation. [Bhoyrul et al. \(2019\)](#), says no matter how good a policy may be, it can fail if people are not involved.

CONCLUSION

Employees in the local authority's roads division are exposed to chemical, physical, psychosocial and ergonomic hazards. Health, marital, and financial problems amongst others emanate from these hazards. The organization loses skilled workers and has poor public service delivery. Measures to curb the risks exist but are not efficiently implemented due to organizational issues discussed in the study.

RECOMMENDATIONS

The employees must be constantly trained on SHEQ issues for awareness. Management must give attainable targets to workers within stipulated working hours. Management must prioritize safety issues hence promote behavior-based safety to build a safety culture within the organization. Stakeholders' participation must be utilized to enhance inclusivity and multidisciplinary in policy formulation. The organization must hire external auditors to periodically audit SHEQ management systems for effectiveness.

REFERENCES

- ALONSO, A. D. & O'NEILL, M. A. 2011. What defines the "ideal" hospitality employee? A college town case. *International Journal of Hospitality & Tourism Administration*, 12, 73-93.
- ANSAH, E. W., MINTAH, J. K. & OGAH, J. K. 2018. Psychosocial safety climate predicts health and safety status of Ghanaian fuel attendants. *Universal Journal of Public Health*, 6, 63-72.
- BARKLEY, A. D., AHN, K. & CHOI, S. D. 2017. A Survey Study of Ergonomic Risks Associated with Older Workers in the Road Construction Industry.
- BHOYRUL, B., LECAMWASAM, K., WILKINSON, M., LATHEEF, F., STOCKS, S. J., AGIUS, R. & CARDER, M. 2019. A review of non - glove personal protective equipment - related occupational dermatoses reported to EPIDERM between 1993 and 2013. *Contact dermatitis*, 80, 217-221.
- BROWN, C. E., SCHWATKA, N., DEXTER, L., DALLY, M., SHORE, E., TENNEY, L. & NEWMAN, L. S. 2021. The importance of small business safety and health climates during COVID-19. *Journal of occupational and environmental medicine*, 63, 81.
- CHANG, V., BAUDIER, P., ZHANG, H., XU, Q., ZHANG, J. & ARAMI, M. 2020. How Blockchain can impact financial services—The overview, challenges and recommendations from expert interviewees. *Technological forecasting and social change*, 158, 120166.
- COHEN, J. 1970. Approximate power and sample size determination for common one-sample and two-sample hypothesis tests. *Educational and Psychological Measurement*, 30, 811-831.
- GIRARD, A., ROCHETTE, A. & FILLION, B. 2013. Knowledge translation and improving practices in neurological rehabilitation: managers' viewpoint. *Journal of evaluation in clinical practice*, 19, 60-67.
- HÄMÄLÄINEN, P., TAKALA, J. & SAARELA, K. L. 2006. Global estimates of occupational accidents. *Safety science*, 44, 137-156.
- JAVOID, M. U., ISHA, A. S. N., SABIR, A. A., GHAZALI, Z. & NÜBLING, M. 2018. Does psychosocial work environment factors predict stress and mean arterial pressure in the Malaysian industry workers? *BioMed research international*, 2018.
- KOKABISAGHI, F. 2018. Assessment of the effects of economic sanctions on Iranians' right to health by using human rights impact assessment tool: a systematic review. *International journal of health policy and management*, 7, 374.
- KRAJNAK, K. 2018. Health effects associated with occupational exposure to hand-arm or whole body vibration. *Journal of Toxicology and Environmental Health, Part B*, 21, 320-334.
- KREJCIE, R. V. & MORGAN, D. W. 1970. Determining sample size for research activities. *Educational and psychological measurement*, 30, 607-610.
- MATHEW, N., RUMBIDZAI, C. & FUNGISAI, M. 2022. Exploring factors enabling the spread of COVID - 19: Narratives of health professionals in Harare, Zimbabwe. *Health & Social Care in the Community*.
- MCDONALD, S., BORNHOFEN, C., SHUM, D., LONG, E., SAUNDERS, C. & NEULINGER, K. 2006. Reliability and validity of The Awareness of Social Inference Test (TASIT): a clinical test of social perception. *Disability and rehabilitation*, 28, 1529-1542.
- MUGENDA, O. M. & MUGENDA, A. G. 2003. Quantitative and qualitative approaches. Nairobi: Acts Press.

MUSHORE, T. D., DUBE, T., MANJOWE, M., GUMINDOGA, W., CHEMURA, A., ROUSTA, I., ODINDI, J. & MUTANGA, O. 2019. Remotely sensed retrieval of Local Climate Zones and their linkages to land surface temperature in Harare metropolitan city, Zimbabwe. *Urban Climate*, 27, 259-271.

NCUBE, A., SADONDO, P., MAKHANDA, R., MABIKA, C., BEINISCH, N., COCKER, J., GWENZI, W. & ULGIATI, S. 2022. Circular bioeconomy potential and challenges within an African context: From theory to practice. *Journal of Cleaner Production*, 133068.

NHIWATIWA, T., MUNGENGE, C., MHLANGA, L. & DALU, T. 2021. Stratification regimes and thermodynamic modelling of a subtropical African reservoir. *Lakes & Reservoirs: Research & Management*, 26, 33-41.

VAN HEERDEN, J. H., MUSONDA, I. & OKORO, C. S. 2018. Health and safety implementation motivators in the South African construction industry. *Cogent Engineering*, 5, 1446253.

VIGNISDOTTIR, H. R., EBRAHIMI, B., BOOTO, G. K., O'BORN, R., BRATTEBØ, H., WALLBAUM, H. & BOHNE, R. A. 2019. A review of environmental impacts of winter road maintenance. *Cold Regions Science and Technology*, 158, 143-153.

WALTERS, D., WADSWORTH, E. J. K., JOHNSTONE, R. & QUINLAN, M. 2015. A study of the role of workers' representatives in health and safety arrangements in coal mines in Queensland.

ZIMSTAT, Z. 2012. Provincial Report. STATISTICS (ed.). Harare Zimbabwe: Government of Zimbabwe.

Declaration

- Originality: We declare that this article is an original work and has not been published previously in any form.
- Authorship: We confirm that all authors have made a significant contribution to the article and meet the criteria for authorship.
- Conflict of Interest: We declare that there is no conflict of interest, financial or otherwise, that may have influenced the outcome of this work.
- We confirm that this study was conducted in accordance with relevant ethical guidelines and regulations.
- Data Availability: We declare that the data used in this study are available upon request.
- Plagiarism: We declare that this article does not contain any plagiarized material.