COMMUNITY RISK ASSESSMENT REPORT 2019

City of Windhoek

The Gateway to Endless Opportunities

Namibia Statistics Agency

CRA Enumerators with CoW Management

A mission is a statement of the reason or reasons for the existence of the City, the ultimate purpose it serves in society, and the boundaries (i.e. social, political, economic, spatial) within which it operates.

Mission

A vision statement provides strategic direction and describes what the City's leadership wants the organisation to achieve in the future.

Vision

Values (also "core values") are the basis upon which the leadership of the City make decisions, plan strategies, and interact with each other and their stakeholders. Core values reflect what is important to the City and its members.

Values

FOREWORD

City of Windhoek has conducted Phase1 Community Risk Assessment in 2018 which focused only on informal settlements thirteen sites namely: Ohanmbo Dha Nehale, 8ste De Laan Otjomuise, 7nd De Laan Otjomuise, Ounongouye, Ondelitotela, Ongulombashe 1, Havana illegal (Peter Nanyemba), Okahandja Park, Cuba/Havana, Onyika 1,Goreagab Formal, Kilimanjaro and Havana (Brenden Shimbwaye).

In September 2019, Phase 2 was conducted and the targeted areas where formal settlements of Windhoek such as Academia, Avis, Cimbebasia, Damara location, Dolam, Donkerhoek, Doradopark, Eiland, Eros, Gemeente, Gologota, Grysblock, Hakahana, Herero location, Hochlandpark, Katutura, Khomasdal, Windhoek Central, Klein Windhoek, Ludwisdorf, Okuryangava, Olympia, Ombili, Otjomuise, Pioneerpark, Rock Crest, Soweto, Spokies dorp, Suiderhof, Tobias Hainyeko, Town, Wambo location, Wanaheda, Windhoek East, Windhoek North, Windhoek West) and 4 parts of Windhoek rural namely Elisenheim, Groot Aub, Finkenstein (Kapps farm) and Omeya.

A community Risk Assessment is conducted after every 6 months. The main objective of the assessment is to assess the hazards, risks, vulnerabilities, and capacities of the residents within the jurisdiction of the City of Windhoek. An assessment assist stakeholders such as City of Windhoek to introduce Community Based Disaster Risk Management (CBDRM) interventions in the planning . The outcome of this assessment will provide a valuable indication of what hazards exist or are likely to occur in the City of Windhoek.

The Community Risk Assessment targets the population in private households excluding those in institutions for example, in school hostels, army/police barracks, hospital wards, prisons, etc. However, persons residing in institution premises were only included if they lived in private accommodations which constitute a household. Therefore, the estimated population presented in this report reflects the estimated household population within the jurisdiction of City of Windhoek in 2019. This report presents highlights from basic analysis of the Community Risk Assessment Phase 2 data and presents results.

F Nkahungu

Her Worship the Mayor Fransina Kahungu
City of Windhoek

PREFACE AND EXECUTIVE SUMMARY

This report presents results of the 2019 City of Windhoek Phase 2 Community Risk Assessment of which field work was carried out in September to December 2019. The previous Community Risk Assessment Phase 1 was conducted in April 2018.

The Disaster and Emergency Risk Management (EDRM) division was tasked to conduct a comprehensive Community Risk Assessment (CRA) for the jurisdiction of the Municipality of Windhoek in line with the Namibia Disaster Risk Management Act No. 10 of 2012 Section 13 (2) (a-h). The Division conducted an assessment from 17 September 2019- 08 December 2019.

A wide range of data on the characteristics of the population, households and housing conditions is presented in this report and the data only represent the study area, which is the selected formal settlement of Windhoek as stated above. The population characteristics include age and sex composition, education, employment disability of the study population. The household and housing conditions include average household size, housing amenities, ownership and topography.

The assessment results show that study population of the formal settlements of Windhoek is very youthful with about 66.7 percent of the population under the age of 34 years and 39.2 percent is Youth, while 27.7 5 are Children between the age 0-14 years and the elderly (60 years and above) are 5.8 percent. The proportion of the population aged 85 and above is 0.1 percent of the entire population of formal settlements of Windhoek, whilst those that are below the age of 5 years constitute of 9.6 percent of the population. The sex ratio is estimated at 88 Males per 100 females. This means that there are more females than males in formal settlements of Windhoek.

The result indicates that 53.8 percent of the Population aged 15 years and above in the formal settlement (study area) have Secondary as their highest level of education. Furthermore, data reveals that 36.8 percent of the study Population has tertiary as their highest level of education followed by Primary and None at 7.3 percent and 2.1 percent respectively. The results further reveals that there is no big difference in the highest level of education between males and females. In terms of employment status, a total of 52.6 percent of the study population aged 15 years and above are unemployed and only 47.4 percent are employed. Out of the employed population, 86.1 percent are permanently employment and 13.9 percent are temporally employed.

In terms of dwelling unit, majority (88.6 percent) of the dwelling units are built with bricks and a minimal (10.7 percent) from Zink. Furthermore, 58 percent households are owned, 33 percent are rented and 7 percent stay with relatives rent-free.

In terms of hazards occurrence in the past 5 years, the assessment revealed that river/flash floods caused by heavy rain occurred 47.3 percent of the time, followed by landslides 17.5percent, the 3rd hazard that household experience is exposed to is extreme cold (16.3 percent) the other hazard is crime with (8.2 percent).

The City of Windhoek would like to take this opportunity to express its profound appreciation and gratitude to Namibia Statistics Agency, Directorate of Disaster Risk Management in the Office of the Prime Minister, University of Namibia for the technical assistance rendered in order to conduct the Community Risk Assessment.

Special thanks goes to all Neighbourhood Watch groups for the City of Windhoek who assisted the data collection team to sensitize residents and last but not least, the residents of City of Windhoek for their cooperation during the data collection phase.

Chief Executive Office, Robert N Kahimise
City of Windhoek

NSA SG REMARKS

The Namibia Statistics Agency (NSA) is established by section 6 of the Statistics Act No.9 of 2011 as a central repository of all statistics produced in Namibia. The NSA is further tasked with the collection, production, analyses and dissemination of official and other statistics as well as developing and coordinating the National Statistics System (NSS) and the National Spatial Data Infrastructure (NSDI).

In the realm of the NSS coordination, the NSA and the City of Windhoek entered into a technical partnership in 2018 whereby the NSA provided technical assistance and support to the City of Windhoek to undertake the Phase 1 of the Community Risk Assessment Survey which focuses on the informal settlements.

This partnership was further extended in 2019 following the successful implementation and release of the Phase 1 report, when the City of Windhoek embarked upon the Phase 2 of the Community Risk Assessment focusing on the formal areas of the city. In this case, the NSA participated as an equal partner and stakeholder in disaster risk reduction providing technical assistance from planning and questionnaire design, determining the sample size, developing the electronic application for listing purposes, training data collectors on the listing tool and methodology, field supervision, data processing, analysis as well as report writing.

This report is therefore a product and testimony of the importance of partnership and efficient coordination and collaboration between the two institution in ensuring the quality of the survey result. I sincerely applaud the City of Windhoek for taking a step in the right direction by partnering with the NSA in this endeavor. I therefore wish to reiterate that the NSA as a coordinating body, will continue to provide technical assistance and coordination mechanisms as part of our competitive advantage and our mandate, to the producers of statistics in the latter and spirit of the Statistics Act.

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Statistician-General

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CONCEPTS AND DEFINITIONS

Acceptable risk	The level of potential losses that a society or community considers acceptable given existing social, economic, political, cultural, technical and environmental conditions (United Nations Office for Disaster Risk Reduction, 2015).
Adaptation	The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate (United Nations Office for Disaster Risk Reduction, 2015).
Affected people	People who are affected by a hazardous event (United Nations Office for Disaster Risk Reduction, 2015).
Capacity	The combination of all the strengths, attributes and resources available within a community, society or organization to manage and reduce the risks and strengthen resilience (UNISDR,2009).
Climate change	Refers to "any significant change in measures of climate such as temperature, precipitation, or wind that lasts for an extended period (decade or longer). Climate change may result from: natural factors such as change in the sun's intensity or slow changes in ocean circulation; human activities that change the atmosphere's composition (such as through burning fossil fuel) and land surface (through deforestation, reforestation, urbanisation, and desertification)", etc. (Grieving et al.., 2015).
Coping capacity	The ability of people, organizations and systems, using available skills and resources, to manage adverse conditions, risk or disasters (UNISDR,2009).
Disability	Disability means physical, pyscho-social or sensory impairment that alone or in combination with social and environmental barriers, affects the ability of a person concerned to take part in education, vocational or recreational activities (National Disability Policy, 1997).
Disaster	Is a "serious disruption of the functioning of a community or society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic or environmental losses" (UNISDR, 2017).
Disaster risk	Is "the potential (not actual and realized) loss of life, injury, or destroyed or damaged assets, which could occur to a system, society or a community in a specific period of time, determined probabilistically as a function of hazard, exposure, vulnerability and capacity" (UNISDR, 2017).
Disaster Risk Management (DRM)	"Is the application of disaster risk reduction policies and strategies to prevent new disaster risk, reduce existing disaster risk and manage residual risk, contributing to the strengthening of resilience and reduction of disaster losses" (UNISDR, 2017).
Disaster Risk Reduction	Is a process aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience, improving welfare, and therefore to the achievement of sustainable development" (UNISDR, 2017).

Exposure	It is referred to "the situation of people, infrastructure, housing, production capacities and other tangible human assets located in hazard-prone areas" (UNISDR, 2017).
Extensive risk	The risk of low-severity, high-frequency disasters, mainly but not exclusively associated with highly localized hazards (UNISDR,2009).
Hazard	Is "a process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption, or environmental degradation" (UNISDR, 2017).
Mitigation	Refers "to the lessening or minimising of the adverse impacts of a hazardous event" (UNISDR, 2017).
Preparedness	Activities and measures taken in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warnings and the temporary evacuation of people and property from threatened locations. (UNISDR, 2017).
Prevention	Activities to provide outright avoidance of the adverse impact of hazards and means to minimize related environmental, technological and biological disasters. Depending on social and technical feasibility and cost/benefit considerations, investing in preventive measures is justified in areas frequently affected by disasters. In the context of public awareness and education, related to disaster risk reduction changing attitudes and behaviour contribute to promoting a "culture of prevention". (UNISDR, 2017).
Reconstruction	The medium and longer-term repair and sustainable restoration of critical infrastructures, services, housing, facilities and livelihoods required for full functioning of a community or a society affected by a disaster (UNISDR,2017).
Recovery	The restoring or improving of livelihoods and health, as well as economic, physical, social, cultural and environmental assets, systems and activities, of a disaster-affected community or society, aligning with the principles of sustainable development and "build back better", to avoid or reduce future disaster risk (Sendai Framework for Disaster Risk Reduction, 2015 – 2030)
Rehabilitation	The rapid and basic restoration of services and facilities for the functioning of a community or a society affected by a disaster (UNISDR,2009)
Resilience	The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions (UNISDR,2017).
Response	Actions taken during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected (UNISDR,2009).
Risk	Is "a combination of the probability of an event and its negative consequences" (UNISDR, 2009).

Risk assessment	Is a methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods and the environment on which they depend (UNISDR, 2009).
Urbanization	Urbanisation is defined by demographers as the increasing share of population living in urban areas (Poston and Bouvier, 2010).
Vulnerability	Refers to "the condition determined by physical, social, economic, and environmental factors, which increase the susceptibility of an individual, a community, assets, or systems to the impacts of hazards (UNISDR, 2017).

LIST OF ACRONYMS

CoW	City of Windhoek
CRA	Community Risk Assessment
CSPro	Census and Survey Processing System
DRR	Disaster Risk Reduction
EA	Enumeration Area
EDRM	Emergency and Disaster Risk Management
GPS	Global Positioning System
NDRMP	Namibia Disaster Risk Management Policy
NSA	Namibia Statistics Agency
ODK	Open Data Kit
OPM	Office of the Prime Minister
PSU	Primary Sampling Unit
SFDRR	Sendai Framework for Disaster Risk Reduction
SPSS	Statistical Package for the Social Sciences
STATA	Statistics and Data
WASH	Water, Sanitation and Health
UNISDR	United Nations International Strategy for Disaster Reduction
SDG	Sustainable Development Goals

CAUTIONARY NOTE

NSA has used design weight to extrapolate the survey estimates to their Windhoek Formal settlements population and this has introduced decimals, which has a rounding effect when different variables are calculated, hence some totals may be out with about one unit. Hence, users should be aware that there might be an insignificant difference in totals because of rounding off effects when calculating the totals manually.

1. INTRODUCTION

Windhoek is facing the challenge of rapid and often unplanned expansion, where people settle in unproclaim and demarcated locations and thus exposing a greater number of people and economic assets to the risk of disasters. The continuous influx of people in the city over the years have seen a continuous growth of the city which has put strain on the resources of city and has continue to exposure the lives, property and infrastructure to disasters..

Strengthening the capacity of the disaster risk management of the City of Windhoek will assist in reducing the risk vulnerability of its inhabitants and assets. Hence, one of the most effective ways to mitigate disaster risk is to conduct and analyse regular Community Risk Assessment (CRA), that involves communities in the identification of their vulnerabilities and capacities as well as developing an action plan that will enable communities to build their capacity and thus lessen the impact of emergencies and disasters.

Windhoek, as both the administrative and political capital, forms the heart of the Republic of Namibia, and cannot afford to be ill-prepared for any emergency/disaster. The National Disaster Risk Management Policy of 2009 states that, "All Local Authorities must establish and implement a framework for disaster risk management within its area of jurisdiction aimed at ensuring an integrated and uniform approach to disaster risk management." Hence, the Emergency and Disaster Risk Management (EDRM) division found it prudent to conduct a Community Risk Assessment.

According to the World Health Organisation (2011), more than half of the world's population live in urban areas as cities are the lifelines of society and engines for economic growth. However, rapid urban growth poses many challenges to city authorities and, if not well managed, cities can also become generators of new vulnerabilities to potential disasters.

1.2 Windhoek Population

According to the Namibian 2011 Population and Household census report (NSA, 2011), Windhoek had a population of more than 320,000 people. The 2010 Windhoek Low Income Settlements Map indicates that there were 72 recorded informal settlements. This figure could be slightly higher after the recent alteration of the municipal boundary which extended southward to the boundary with the Hardap Region, eastward to Seeis, northward to the boundary with the Otjozondjupa region and westward to Baumgartsbrunn. New settlements added include, among others, Groot Aub, Omeya, Finkenstein, Herbothsblick, and Sungate. The University of Namibia`s Neudamm Campus and the Hosea Kutako International Airport are all within the extended boundary.

1.3 Urban migration

Windhoek has encountered significant rural-urban migration in recent year especially after independence. The influx of people in the City of Windhoek causes enormous challenge of rapid urbanization at an annual rate of 4.5 Percent (Van Rooi, 2010). Most of the migrants come from northern, rural areas in search of employment opportunities in the capital, and end up settling illegally in informal settlements on the outskirts of Windhoek which is consequently growing at a rate of about 10 percent (Van Rooi, 2010). Many migrants have settled in the northern and north-western areas of the city, primarily in the informal settlement and most of these migrant households are poor. The urban migrants living in informal settlements are particularly vulnerable to disasters due to the tendency of residing in high risk areas and faulty shelters, having limited access to basic and emergency services and general lack resilience.

1.4 Climate change

There have been some noticeable climate variations in the City with extreme cold or hot waves being experienced. The City's increased climate variability imposes additional challenges to effective urban management and the delivery of key services. It has brought about an increase in flash floods, heat and cold waves, domestic and veld fires which affect the livelihoods of the City's residents. Issues of adaptation to climate change will be an integral part of the vulnerability capacity assessment process.

1.5 Overall assessment objectives

The main objective of the assessment was to assess the hazards, risks, vulnerabilities, and capacities in the City of Windhoek. An assessment is a gateway to introducing Community Based Disaster Risk Management (CBDRM) interventions. The outcome of this assessment will provide a valuable indication of what hazards exist or are likely to occur in the City of Windhoek.

1.5.1 Specific assessment objectives

i. Assess risks and hazards faced by the communities in the City of Windhoek and the capacities they have for dealing with those;

ii. Identify disaster risk reduction activities to prevent or lessen the effects of expected hazards, risks and vulnerabilities;

iii. Study finding to assist in drawing up a DRM action plan for inclusion in the development plans of the City;

iv. Study finding to assist in Devising a preparedness and response plan for the identified unavoidable risks;

v. Compile a comprehensive report on the findings and recommendations for stakeholders;

vi. Compile a Citywide Risk Profile and Map.

1.5.2 Expected outcomes

i. Risk and hazards of the targeted community and their capacity identified;

ii. Key disaster risk reduction (DRR) activities identified for effective, integrated, project planning;

iii. A community disaster risk management activities identified to assist in devising the mainstreaming Disaster Risk Management into planning;

iv. The compilation and sharing of a comprehensive assessment report with findings and recommendations for implementation.

v. The creation of a community disaster risk management structure.

vi. Improved understanding of the City's disaster risk management among community members.

1.6 Sampling Methodology

1.6.1 Target Population

The survey targeted the entire population in the formal suburbs of the City of Windhoek (CoW) in all 10 constituencies that are within the municipal boundaries of the city of Windhoek. In addition, the survey targeted the households in estates within the Municipal land boundaries.

1.6.2 Sampling Frame

The survey used the existing geographical area frame from the Namibia Statistics Agency (NSA), to develop an area frame specifically for this survey. First, the shape files for the suburbs provided by CoW were integrated with NSA frame to have clear demarcation of suburbs boundaries. Secondly, to include specific farms and estates (i.e. Elisenheim, Omeya, Finkenstein and Kapps Farm), the EA with those estates were re-digitized and new EAs were demarcated as such to ensure that the EA covers only the specific estates and settlement and not the surrounding areas. Constituencies then explicitly stratified the frame.

1.6.3 Sample design

The Community Risk Assessment survey was designed to provide estimates at constituency level for the population within the CoW. Ideally, enumeration of all household within the CoW would have given a better estimate of the community risk within the municipal land. However, due to cost and time constraints, it was not practical to conduct a census and therefore a representative sample was drawn to give estimates. To cope with the heterogeneity of the area frame within each constituency, stratified sampling and systematic random sampling were used. Enumeration areas were grouped into 10 strata based on constituencies administrative boundaries. Then within each of the 10 constituencies strata, the EA were ordered from the first EA to the last EA.

Therefore, the study employs a two-stage stratified cluster sampling design. In the first stage, the selection of EAs within in each constituency using probability proportional to size and the second stage is the selection of households from the sampled EA using systematic random sampling. A total of 2 685 households constituted the sample representing all 10 constituencies from 179 PSUs. Power allocation procedure was adopted to distribute the sample across the constituencies so that the smaller constituencies get adequate sample. All individual within the selected households were interviewed.

1.6.4 Drawing the Sample

The overall sample was allocated to the constituency using probability proportional to size. However, there are four areas that were needed to be in the sample with certainty namely: Omeya, Elisenheim, Finkenstein & Kapps Farm (self-selected area).

Moreover, the inclusion probability of the EA was proportional to the size of the EA, in terms of the number of households per EA. Within each constituency, the number of required EA were selected using systematic sampling procedure.

Households within each EA were selected using systematic sampling using the fresh listing of housing generated from the listing activity which was done in each EA immediately before the commencement of interviews. A total of 15 households were selected in each EA to be interviewed.

1.6.5 Sample weight

The sample was designed such that direct survey estimates could be produced at, urban/rural levels of the Windhoek formal settlements. The design weights were the inverse of the selection probabilities (i.e. Inverse sampling rate) at both first (PSU level) and second (Household level) stages. The PSUs that were found to be larger or difficult to manage were segmented, such as Elisenheim and Omeya. PSUs and their design weights were adjusted accordingly to account for the third level of selection (selection of segment). In order to account for household non-response, the design weights were adjusted for household non-response, although part of the problem with non-response had been mitigated through adjusting the sample for non-response.

1.7 Households response rate

The overall, response rate was 84.5 percent. Windhoek East constituency has the lowest response rate, while the highest response rate was observed in Moses ||Garoeb constituency.

Table 1. 1: Households response rate by constituency

Constituency	Households		
	sampled	Responding	Response rate
John Pandeni	300	260	86.7
Katutura Central	300	268	89.3
Katutura East	285	255	89.5
Windhoekdal	315	270	85.7
Moses //Garoëb	225	209	92.9
Samora Machel	255	219	85.9
Tobias Hainyeko	150	127	84.6
Windhoek East	300	219	73.0
Windhoek Rural	180	151	83.9
Windhoek West	375	290	77.3
Total	2685	2268	84.5

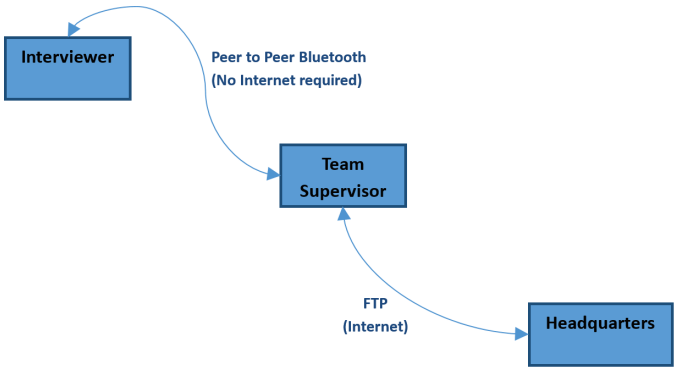
1.8 Data processing

The data processing methodology that was adopted for this study was the Computer Assisted Personal Interview method referred to as CAPI. Data management tools to collect, transmit, store and clean survey data were designed and developed using CSPro 6.3.2 and ODK.

1. Listing & Sampling

2. Questionnaire – CSEntry and ODK

3. Data Transmission



4. Case-Management

5. Data Export to Stata/SPSS

Figure 1.1: CRA survey data capture processing using CAPI

The programs developed are listed below and explained on how they were used in the field;

1.8.1 In-field automated listing and sampling program

Data processing developed a systematic sampling routine program. This reduced errors of supervisors not properly following the sampling algorithm or introducing bias in the household selection. In addition, it ensured that substitution of households is done procedurally in that substitution households are selected from the same stratum as the households to be substituted.

1.8.2 Case Management program

This program allowed for the automation of the following field activities with minimum human interventions.

A team consisted of one supervisor and two interviewers. Interviewers listed households and then each independently transmitted the households' information to the supervisor's tablet. The supervisor then merged the listing files on a tablet and run the program to sample from the listed households. The supervisor further assigns the sampled households to the respective interviewers. During the household interview, the interviewers will then transmit the household roster data to the supervisor in order to ensure data quality. In order to successfully transmit the data, the interviewers were required to validate all household data in the tablet, while the supervisors were required to validate all primary sampling units (PSUs) data in the tablet before transmitting the data further to the headquarter server. At both levels of validation, if the data did not pass the validation tests, the staff concern was then required to provide an explanation as to why the submitted data are incomplete.

Case Management and data flow was tightly controlled, but the system allowed for some flexibility. For instance, substitution of sampled households, was done with the assistance of the data processing team who provided codes to unlock the substitution action.

1.8.3 Data Entry program

Data entry application was built with many consistency checks, skipping patterns and other validations such as maximum and minimum acceptance range per variable. Supervisors were given minimum variables to check on a day to day basis, especially for others specify (notes) variables. As a result, data consistency checks, coding and validation was done at field level. This minimized the time spent on post data cleaning, validation and editing process.

1.8.4 Data synchronization program

This program allowed for the following; Supervisors were given SIM cards and controlled transmission of data to the Head Office. Since MD5 (Message Digest 5 Algorithm) hashes was stored on the program, only modified data was transferred and only newly collected data was sent to head office.

Interviewers did not have SIM cards and hence, their programs and files were updated via the supervisor's tablets. Transmissions between supervisor's tablets and interviewer's tablets were done via a locally created WI-FI hotspot.

1.8.5 Post data processing programs

The implementation of CAPI application allowed for improved data quality due to consistency checks in the data entry application. In-field coding using lookups files eliminated the need for a time consuming coding process at the Data Processing Centre (DPC). For this survey, data cleaning was divided into two (2) parts, primary and secondary cleaning.

Primary data cleaning was done by data processing unit and it involved the following programs and activities.

(a) Concatenate program

Data is transmitted to head office via ftp server and stored in folders by geographical hierarchy of the survey. The concatenate program was designed to concatenate data from each interviewer into one file per section. Then program takes the PSU level generated data and concatenates files per constituency to create a regional file. Subsequently, generate a regional file for each section. In the end, there is PSU, Region folders created in this process.

(b) Submission Analysis program

This program checks if all the sections have been validated and writes the finding to three output files (csv). These files are KEPT cases, Removed cases and Review cases. KEPT cases are all the validated and completed households found in the data file. Removed cases include all the households removed from the data files. These can be blank households or substituted households from the sampled households and/or households with missing sections either for household or individual. Review cases consist of all the households that require input / decision from subject matter whether it should be KEPT or Removed from the data file.

(c) Merge data program

This program simply merges all the data per section into one file per household.

(d) Data consistency check program

Numerous batch programs were developed to run through the data to sort and fix inconsistencies. Main programs developed were; **Case specific edits program** – this program allows implementing edit rules which are specific to a case (household), these rules are provided by subject matter after checking/ investigating each household. **General edits program** – this program fix any data inconsistency found during the run. **Standardize data program** – removes deleted persons and ensure that the head of household is on the first row for each household. In the end, only valid person lines are remaining in the data file. **Recode variables program** – this program recodes variable values from the notes (others specify) to different values based on the input from subject matter (SM). An excel sheet is provided to SM to put the correct value for each case and variable for recoding, then program convert the excel sheet to CSpro data file and implements the changes. **Add weight program** – the weight is also applied through the CSpro post data processing program. Sampling team designed weight (both individual and household) based on the completeness of survey interviews by PSU. Once the weight is applied to the dataset; Data Processing (DP) runs the final **Merge flatten program**, which convert and flatten the multi select answers into more human readable data. The final step is to drop the person identification information such as person's name from the dataset, this is done via an **Anonymize data program**.

The first stage of data processing activities end at this stage, with the production of the version one (1) dataset as output. The planning, designing, developing, testing and implementing the survey data management programs took at six months before actual fieldwork, while the post data processing took only two (2) months to complete after the fieldwork. The next process is the secondary cleaning phase which was done by SM and produced version two (2) of the datasets.

1.9 Recruitment, training and fieldwork

1.9.1 Recruitment of field staff

The enumerators were recruited through an invitation of a Notice Board Vacancy advert at the City of Windhoek notice board and website.

QUALIFICATION REQUIREMENT: Grade 12 (20 points in 5 subjects with a E symbol in the English Language, a D symbol in Mathematics, or Economics) Tertiary qualification in Population Studies/ Statistics/GIS or Economics.

EXPERIENCE REQUIREMENT: Three (3) months data collection experience.

KNOWLEDGE: Data collection and or GIS.

SKILLS: Computer literacy, communication, interpersonal and attentive to details.

A total of 112 applicants were shortlisted and invited for a pre-selection test which was written on the 16 August 2019. Out of 112 pre-shortlisted candidates, only 80 applicants participated in the pre-selection test. A total of 47 candidates achieved a pass mark which was 50%. As a result, 41 candidates attended training from 9-13 September 2019, however only 26 candidates were selected to as enumerators. The final selection for the 26 enumerators was based on their highest performance in the test as well as their conduct during the training process. The rest (15) of candidates were reserves.

1.9.2 Training

An intensive training of field staff was conducted on 9-13 September 2019 by Cow and NSA staff. CoW staff were Team Supervisors while NSA staff were technical support. The training program covered the survey methodology, questionnaire, concepts and definitions and the use of data capturing applications ODK through an android tablet.

1.9.3 Survey field structure

The survey consisted of field teams operating within the boundaries of the CoW, under the supervision of the CoW Early Warning, Monitoring and Assessment Section. The field operations consisted of thirteen (13) teams, which consist of two (2) enumerators and one (1) team supervisor. Teams were allocated with PSU, 10 teams each worked on 13 PSUs, 1 team worked on 12 PSUs, 1 team on 11 PSUs and 1 team worked on 10 PSUs. The survey was concluded in seventy-nine (79) days on the 08 December 2019. The work plan was designed to include the first three days for listing of households within the selected PSUs and three days to administer the questionnaire to the sampled 15 households per PSU.

1.9.4 Survey publicity and advocacy

Various media platforms were used to raise awareness about the survey prior and during the survey. In addition to the media platforms, various Neighbourhood Watch Groups were used to share information to the residents.

1.9.5 Field monitoring and data quality control

To ensure reliable, quality and timely data, data collection consisted of a series of data assurance activities which was undertaken at different levels of monitoring. The reporting structure is depicted in figure 1.2.

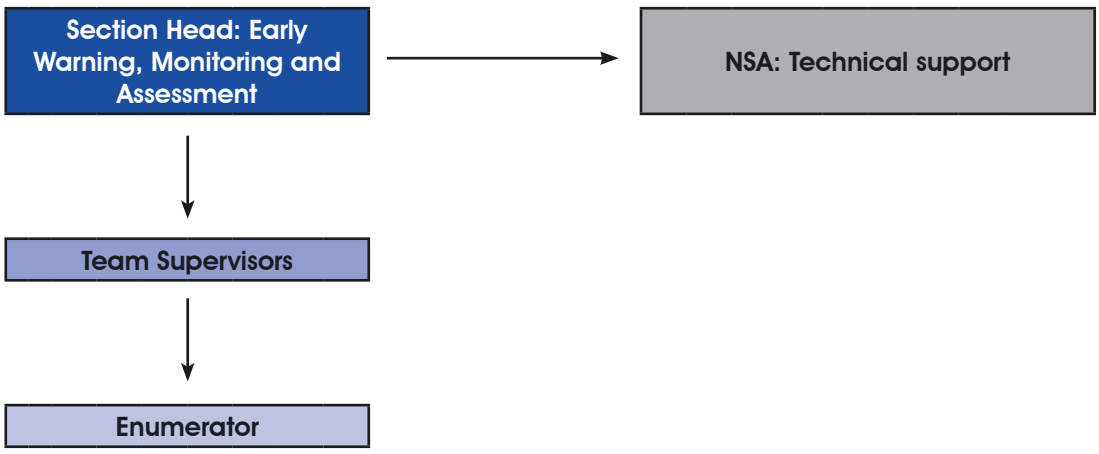


Figure 1.2: Filed word reporting structure

In addition, daily transmission of the collected data to head office were undertaken to ensure minimum effect in the event of loss or damaged to the data collection tools. As a result, secondary verification and completeness checks were carried out to ensure correct, complete and valid information are transmitted.

2. Population structure

This chapter provides information on the Demographic Characteristics of the Population such as age and sex. These variables were used to describe the demographic profile of the Windhoek formal settlement Population.

2.1 Population

The total population in the study suburbs is about 179,555 people where Katutura had the most people (56,506) and where Finkenstein_Kapps_Farm has the smallest number of people at 280 as shown in Figure 2.1.

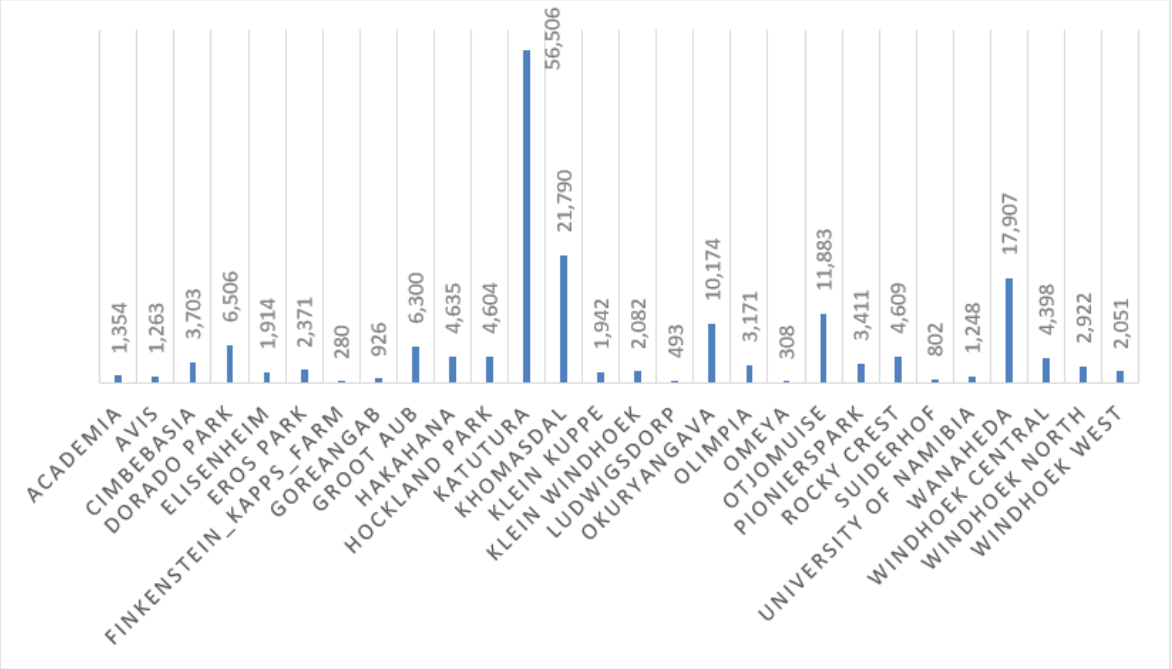


Figure 2.1: Population in the study suburbs of Windhoek formal settlements

Windhoek formal settlement' Population is youthful with about 27,8 percent are children (below the age of 15 years) and 66.9 percent of the population under the age of 34 years and only about 5.8 percent are over the ages of 60 years. The working age population of Windhoek formal settlements are 66.5 percent of the total population. The proportion of the population aged 85 and above is 0.1 percent of the entire population as shown in the Table 2.1.

The sex ratio is estimated at 88 Males per 100 females. This means that there are more females than males in Windhoek formal suburbs. However, there are more males than females in the age groups 10-14, 60-64 and 85+. Table 2.1 further shows that about 96.9 percent of the population live in urban area as compared to only 3.1 percent that live in rural areas of Windhoek formal settlements. Furthermore, the table also reveal that there are more females than males living in both urban and rural areas

Table 2.1 Total Population by Sex, Area & Broad Age Group

Age Group	Sex						Sex Ratio
	Male		Female		Both Sexes		
	Number	%	Number	%	Number	%	
WHK (study Areas)	**84,250**	**100%**	**95,305**	**100%**	**179,555**	**100%**	**88**
Urban	**81,569**	**97%**	**92,358**	**97%**	**173,928**	**97%**	**88**
Rural	**2,680**	**3%**	**2,947**	**3%**	**5,627**	**3%**	**91**
0-4	8329	10.2%	8895	9.6%	17224	9.9%	94
5-9	8002	9.8%	8522	9.2%	16524	9.5%	94
10-14	8328	10.2%	7635	8.3%	15963	9.2%	109
15-19	7643	9.4%	8802	9.5%	16445	9.5%	87
20-24	8709	10.7%	10134	11.0%	18843	10.8%	86
25-29	8635	10.6%	10942	11.8%	19576	11.3%	79
30-34	6966	8.5%	8485	9.2%	15450	8.9%	82
35-39	6835	8.4%	8367	9.1%	15201	8.7%	82
40-44	5197	6.4%	5363	5.8%	10560	6.1%	97
45-49	4061	5.0%	5269	5.7%	9331	5.4%	77
50-54	3277	4.0%	3997	4.3%	7274	4.2%	82
55-59	3347	4.1%	3404	3.7%	6751	3.9%	98
60-64	2302	2.8%	2259	2.4%	4560	2.6%	102
65-69	1148	1.4%	1351	1.5%	2499	1.4%	85
70-74	665	0.8%	796	0.9%	1462	0.8%	84
75-79	469	0.6%	537	0.6%	1005	0.6%	87
80-84	225	0.3%	367	0.4%	592	0.3%	61
85+	114	0.1%	99	0.1%	213	0.1%	115
unknown	**0**	**0.0%**	**82**	**0.1%**	**82**	**0.0%**	**0**

2.2 Education

The survey collected information on level of education. Table 2.2 provides information on the highest level of education. This question was asked to all persons and information is presented for all people.

The results shown in Table 2.2 and figure 2.2 indicates that 43.1 percent of the Windhoek formal settlement Population have Secondary as their highest level of education. Furthermore, the table reveals that 27.7 percent of the Windhoek formal settlements Population have Tertiary as their highest level of education. People who has attained the highest Primary education is 20.1 percent and 9.1 percent of people has No education.. The table further reveals that between males and females there no is difference in the highest level of education for No Education and Tertiary education, while there are more males with Primary education and more females with secondary education.

Table 2.2 Highest level of education attainment for all people by sex

Education	Sex					
	Male		Female		Total	
	Number	%	Number	%	Number	%
None	7,297	9.2%	8,067	9.0%	15,364	9.1%
Primary	17,022	21.5%	16,912	18.8%	33,934	20.1%
Secondary	32,901	41.6%	39,911	44.4%	72,812	43.1%
Tertiary	21,871	27.7%	24,924	27.8%	46,795	27.7%
Total	**79,091**	**100.0%**	**89,814**	**100.0%**	**168,905**	**100.0%**
Missing System					**10,650**	**5.9%**
Total study Pop					**179,555**	

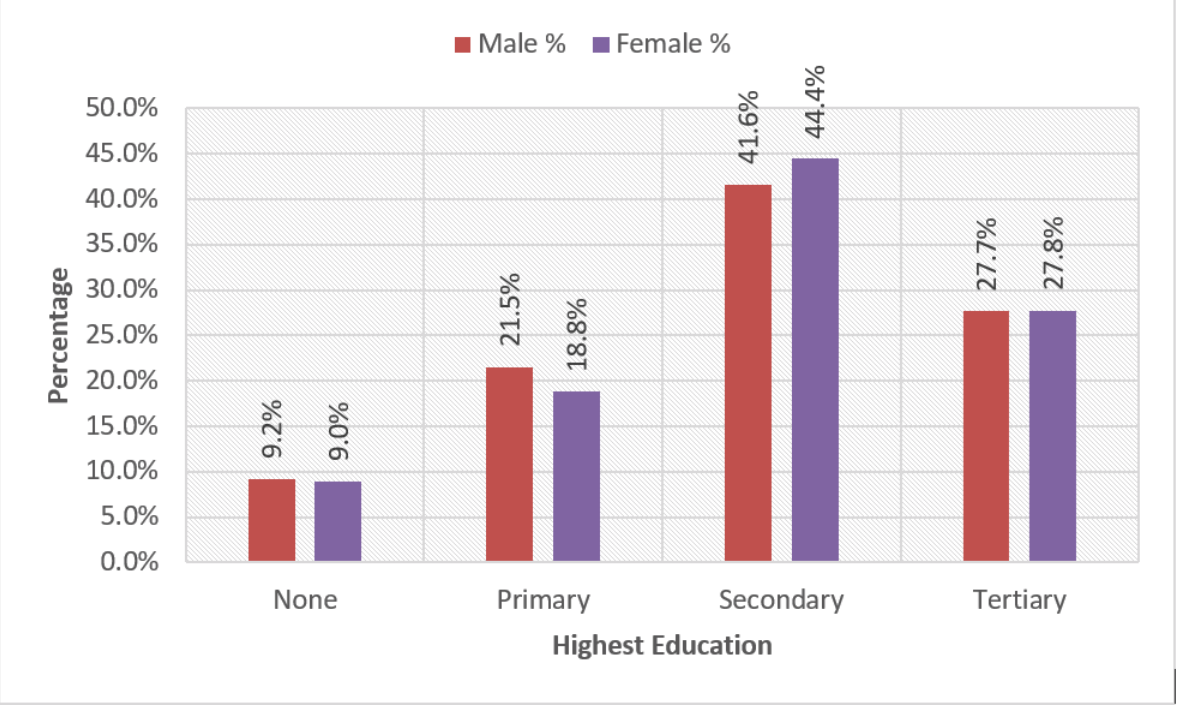


Figure 2.2: Highest level of education by sex

2.3 Employment Status

The survey collected information on the employment status of the Windhoek formal settlements, where the respondents were asked whether they were currently employed or not and those employed, whether on the paid or profit job. The question was ask to the population aged 11 years of age and above. The survey included the age groups 11-14 to try establish if there is any child labour or children that is supposed to be in schools but working.

Although, the questions were ask for people 11 years and above its worth noting that all the children 11-14 years were not employed, hence and indication that there were no child labour in the Windhoek Informal settlements.

If one include the age groups 11-14 and 60 years and above in the calculation of employment, the unemployment number will be artificially increased, since these people is supposed to be in school or on retirement. This is evident in the data where unemployment for 11 years and above are 56.7 percent compare to 49.6 percent for the working age population (15-59 years). The data also show that 1 percent of the population 60 years and above are still employed and 6.3 percent unemployed, while the retirement age of Namibia is 60 years. However, if one consider the adult or working age population (15-59 year olds), 50.4 percent of the working age (15-59) population is employed and 49.6 percent are unemployed. Table 2.3 indicates that for 15 years and above population there are more females (33,279 or 54.1%) that are employed than males (28,280 or 45.9%).

Figure 2.3 shows that 56.7 percent of the Windhoek population aged 11 years and above are unemployed and only 43.3 percent are employed.

Table 2.3: Employment Status by sex

Age Group	Male				Female				Total Employed		Total Unemployed		Grand Total	
	Employed		Unemployed		Employed		Unemployed							
	Number	%	Number	%	Number	%	Number	%	Employed	%	Unemployed	%	Number	%
11 - 14 years	-	0.0%	6,437	8.0%	-	0.0%	5,814	7.2%	-	0.0%	12,251	8.6%	12,251	8.6%
15 - 59 years	27,477	44.6%	27,192	33.8%	32,706	53.1%	32,057	39.8%	60,183	42.4%	59,249	41.7%	119,432	84.1%
60 +	803	1.3%	4,119	5.1%	573	0.9%	4,836	6.0%	1,376	1.0%	8,955	6.3%	10,331	7.3%
Total	28,280	45.9%	37,748	46.9%	33,279	54.1%	42,707	53.1%	61,559	43.3%	80,455	56.7%	142,014	100.0%

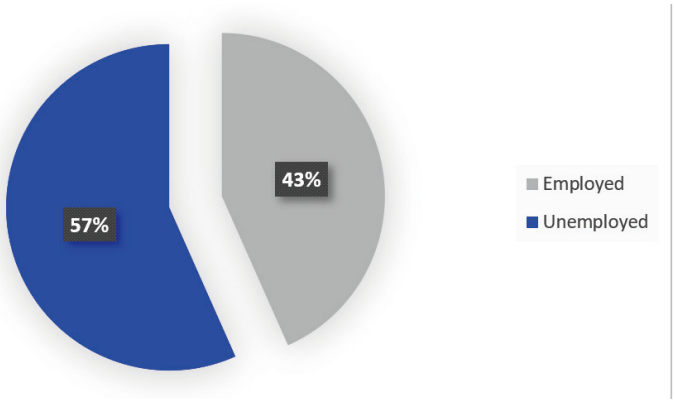


Figure 2.3: Employment Status

2.4 Occupation, Income, entity and Social Grants

The survey collected information on the occupation and income of the respondents. This information is important in the sense that it provides information on the types of employment the population engaged in and the monthly income of the respondents used to determine the socio-economic status of the population. Table 2.4 showed that 61,559 people were employed in various occupations, where 28,280 were males and 33,279 were females, this indicates that there are more females than males that are employed in various occupations.

Table 2.4 shows that 63.5 percent of the Windhoek formal Settlements population is concentrated in the service workers & sales and professional occupations. The occupation with the fewest people is the skilled agriculture, with only 0.8 percent.

Table 2.4 shows that there are more males than females that are employed in the armed forces occupation with 9.1 percent males to 3.7 percent females. The table further reveals that there are more males than females in the following occupations: legislators and managers; technicians and associate professionals; craft & related trade; skilled agriculture and plant and machine operator. The data also show that some of the occupations turn to attract more males vs females, while other is the opposite.

Table 2.4 Occupation by Sex

Occupation	Sex				Windhoek formal Settlements	
	Male		Female			
	Number	Percent	Number	Percent	Number	Percent
Windhoek formal Settlements	28 280	100	33 279	100	61 559	100
armed forces	2 568	9.1	1 235	3.7	3 804	6.2
legislators & managers	1 151	4.1	897	2.7	2 048	3.3
professionals	8 040	28.4	11 178	33.6	19 218	31.2
technicians & associate professionals	4 563	16.1	1 723	5.2	6 285	10.2
clerks	1 042	3.7	4 375	13.1	5 417	8.8
service workers & sales	8 456	29.9	11 413	34.3	19 869	32.3
skilled agriculture	280	1.0	228	0.7	508	0.8
craft & related trade	501	1.8	291	0.9	792	1.3
plant & machine operators	718	2.5	78	0.2	796	1.3
elementary occupation	961	3.4	1 861	5.6	2 823	4.6

Figure 2.4, shows that the majority of respondents with tertiary education as their highest level of education are concentrated mostly in the professional occupation. Furthermore, the service workers & sales occupation is mostly comprised of the population with no education, as well as those with primary and secondary education.

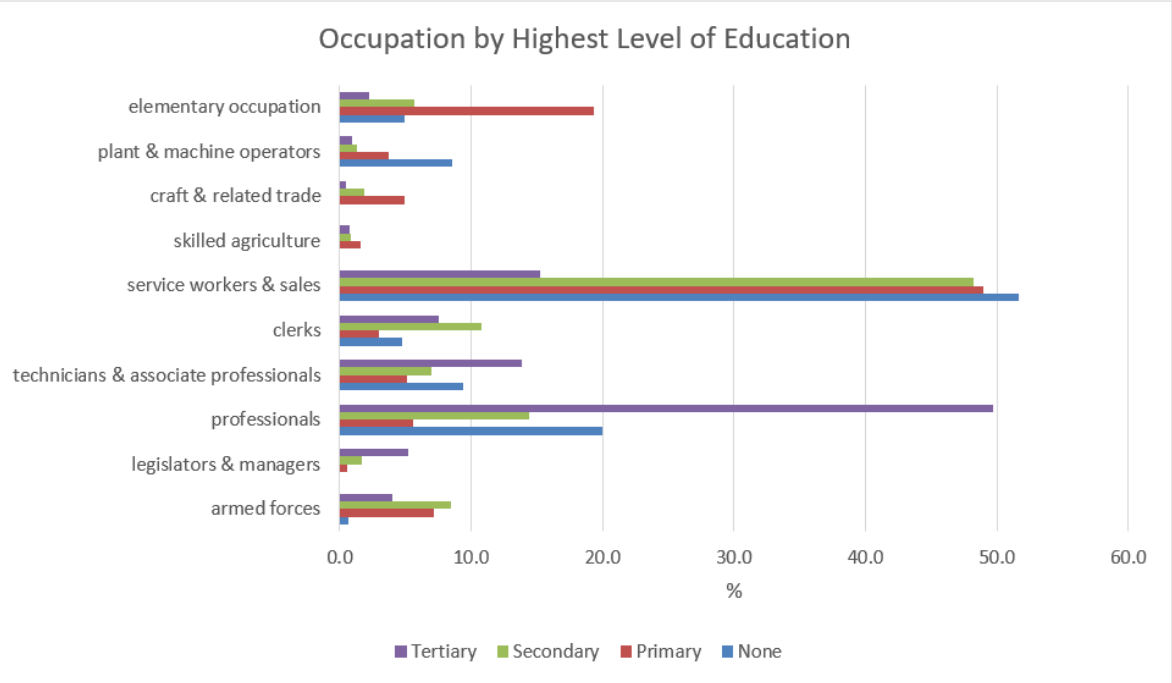


Figure 2.4: Occupation by Highest Educational Level

Table 2.5 shows that 86 percent of the population are permanently employment and 14 percent of the population is temporally employed. Figure 2.5 shows that the service workers and sales occupation employed the highest number of the population on a temporal basis, about 47 percent of the population employed was on temporal basis. Furthermore, the professional occupation employed the highest number of permanent staff (32 percent) of the population.

Table 2.5: Occupation by type of employment contract

Occupation	Employment contract				Windhoek formal settlements	
	Temporally		Permanent			
	Number	Percent	Number	Percent	Number	Percent
Windhoek formal settlements	8 419	100	52 010	100	60 428	100
Not Stated					1131	1.8
armed forces	96	1.1	3 669	7.1	3 765	6.2
legislators & managers	29	0.3	2 019	3.9	2 048	3.4
professionals	2 062	24.5	16 731	32.2	18 793	31.1
technicians & associate professionals	546	6.5	5 680	10.9	6 226	10.3
Clerks	532	6.3	4 776	9.2	5 309	8.8
service workers & sales	3 945	46.9	15 505	29.8	19 450	32.2
skilled agriculture	0	0.0	508	1.0	508	0.8
craft & related trade	219	2.6	530	1.0	749	1.2
plant & machine operators	238	2.8	553	1.1	791	1.3
elementary occupation	751	8.9	2 039	3.9	2 791	4.6

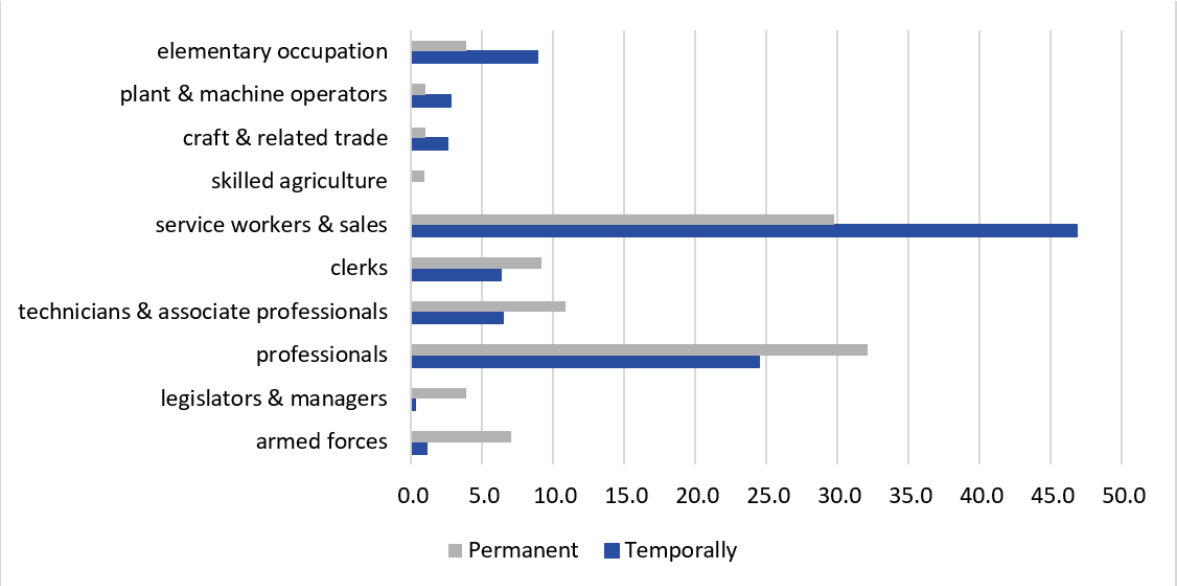


Figure 2.5: Occupation by type of Employment contract

Table 2.6 shows that the private enterprises was the biggest employer with more than 53 percent of the population followed by the government and parastatals with 22 percent and 14 percent respectively.

Table 2.6 Occupation by Entity

Occupation	Entity						Windhoek formal settlements
	Government	Parastatal	Private enterprises	Non Profit Organisations	Cooperatives	Private Households	
Windhoek formal settlements	**13 662**	**8 430**	**32 757**	**600**	**684**	**5 280**	**61 413**
Note Stated							**146**
armed forces	3 081	447	261	0	0	0	3 789
legislators & managers	380	262	1 348	0	57	0	2 048
Professionals	5 905	3 660	9 059	239	145	164	19 172
technicians & associate professionals	899	1 108	4 089	13	36	140	6 285
Clerks	1 477	681	3 164	14	81	0	5 417
service workers & sales	1 523	1 765	12 444	271	291	3 533	19 827
skilled agriculture	149	37	248	0	18	57	508
craft & related trade	23	29	559	0	0	180	792
plant & machine operators	42	174	530	0	0	50	796
elementary occupation	182	267	1 055	63	55	1 157	2 779

Figure 2.6 shows that the majority of the population in Windhoek formal settlements (48 percent) have a monthly income of less than N$1,000. Furthermore, the data also reveals that 3.6 percent of the population have a monthly income in the income range of N$9,001 – N$11,000 and only about 9.4 percent of the total population have a monthly income of N$21,000 and above. The data also show that there are more females who earn in the range 1,001-11,000 compare to male, while in the range of 11,001 and above there are more male compare to female.

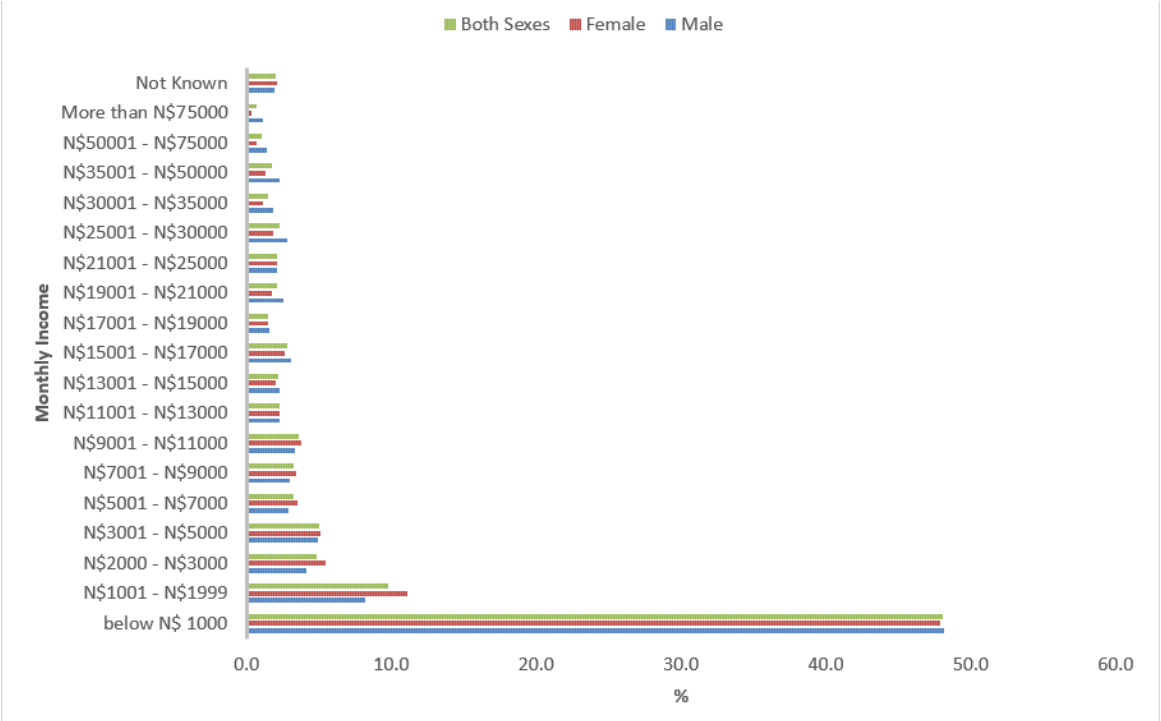


Figure 2.6 Monthly Income by Sex

Figure 2.7 shows that 56.4 percent of people in rural areas have a monthly income below N$1,000 and 47.8 percent of the urban population earn below the N$1,000. .

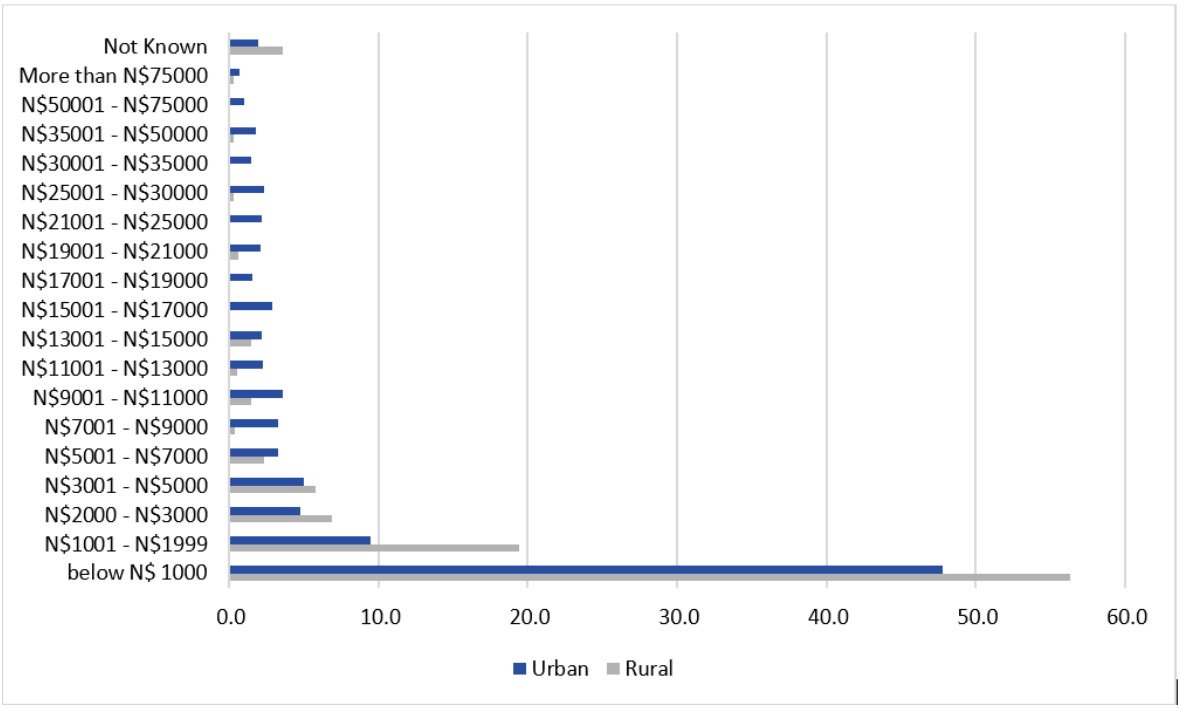


Figure 2.7: Monthly Income by urban/rural

The data in Table 2.7 reveal that although people has indicated that they were not employed, they indicated that they earn an income from other source. Hence, the data must be read with that understanding. Table 2.7 shows that 77.6 percent of the Windhoek formal settlements population who are unemployed have a monthly income below N$1,000 and only 21.1 of the employed population have a monthly income below N$1,000.

Table 2.7: Monthly Income by Employment Status

Monthly Income	Employment Status					
	Employed		Unemployed		Windhoek formal settlements	
	Number	Percent	Number	Percent	Number	Percent
below N$ 1000	12 979	21.1	43 450	77.6	56 429	48.0
N$1001 - N$1999	3 657	6.0	7 806	13.9	11 463	9.8
N$2000 - N$3000	4 721	7.7	991	1.8	5 713	4.9
N$3001 - N$5000	5 360	8.7	553	1.0	5 913	5.0
N$5001 - N$7000	3 416	5.6	379	0.7	3 795	3.2
N$7001 - N$9000	3 529	5.7	253	0.5	3 781	3.2
N$9001 - N$11000	3 865	6.3	331	0.6	4 196	3.6
N$11001 - N$13000	2 561	4.2	100	0.2	2 661	2.3
N$13001 - N$15000	2 403	3.9	126	0.2	2 529	2.2
N$15001 - N$17000	3 274	5.3	64	0.1	3 338	2.8
N$17001 - N$19000	1 691	2.8	100	0.2	1 791	1.5
N$19001 - N$21000	2 332	3.8	129	0.2	2 461	2.1
N$21001 - N$25000	2 381	3.9	102	0.2	2 483	2.1
N$25001 - N$30000	2 654	4.3	66	0.1	2 721	2.3
N$30001 - N$35000	1 709	2.8	19	0.0	1 728	1.5
N$35001 - N$50000	1 920	3.1	111	0.2	2 031	1.7
N$50001 - N$75000	1 143	1.9	65	0.1	1 208	1.0
More than N$75000	799	1.3	54	0.1	853	0.7
Not Known	1 165	1.7	25 756	2.4	26 921	2.0

2.5 Disability

Disability means physical, pyscho-social or sensory impairment that alone or in combination with social and environmental barriers, affects the ability of a person concerned to take part in education, vocational or recreational activities (National Disability Policy, 1997).

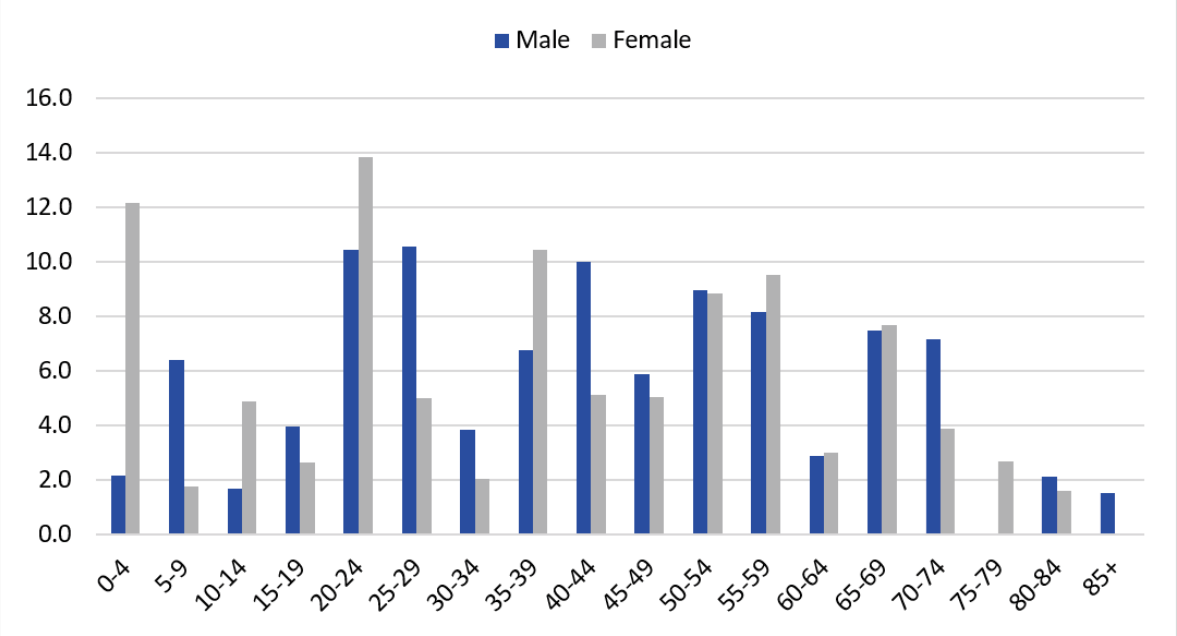
For the purpose of this survey, respondents were just asked if they have any form of impairment described in the disability definition by giving a yes or no answer.

The result presented in Table 2.8 reveals that a total of 3 691 people were people with disabilities, comprising of 53.6 percent males and 46.4 females. The proportion of persons with disabilities was higher in urban (96.7%) than in rural area (3.3%).

Table 2.8 Persons with Disability by Sex and Age Group

Age group	Sex					
	Male		Female		Windhoek formal settlements	
	Number	Percent	Number	Percent	Number	Percent
Windhoek formal settlements	**1 977**	**100**	**1 714**	**100**	**3 691**	**100**
Urban	**1926**	**97.4**	**1642**	**95.8**	**3568**	**96.7**
Rural	**51**	**2.6**	**73**	**4.2**	**124**	**3.3**
0-4	43	2.2	208	12.2	251	6.8
5-9	126	6.4	30	1.8	157	4.2
10-14	33	1.7	83	4.9	116	3.2
15-19	78	4.0	45	2.6	123	3.3
20-24	207	10.4	237	13.8	444	12.0
25-29	209	10.6	85	5.0	294	8.0
30-34	76	3.8	35	2.0	110	3.0
35-39	134	6.8	179	10.4	313	8.5
40-44	197	10.0	88	5.1	285	7.7
45-49	116	5.9	86	5.0	202	5.5
50-54	178	9.0	152	8.9	329	8.9
55-59	161	8.2	163	9.5	325	8.8
60-64	57	2.9	51	3.0	109	2.9
65-69	148	7.5	131	7.7	279	7.6
70-74	142	7.2	67	3.9	208	5.6
75-79	0	0.0	46	2.7	46	1.2
80-84	42	2.1	27	1.6	70	1.9
85+	30	1.5	0	0.0	30	0.8

Figure 2.8: Persons with disabilities by age and sex



The results presented in figure 2.9 reveals that only 29.0 percent of people 15 years and above with disabilities are employed while 71.0 percent are unemployed. This is very close or similar to people 11 years and above with 28.7 percent employed and 71.3 percent unemployed.

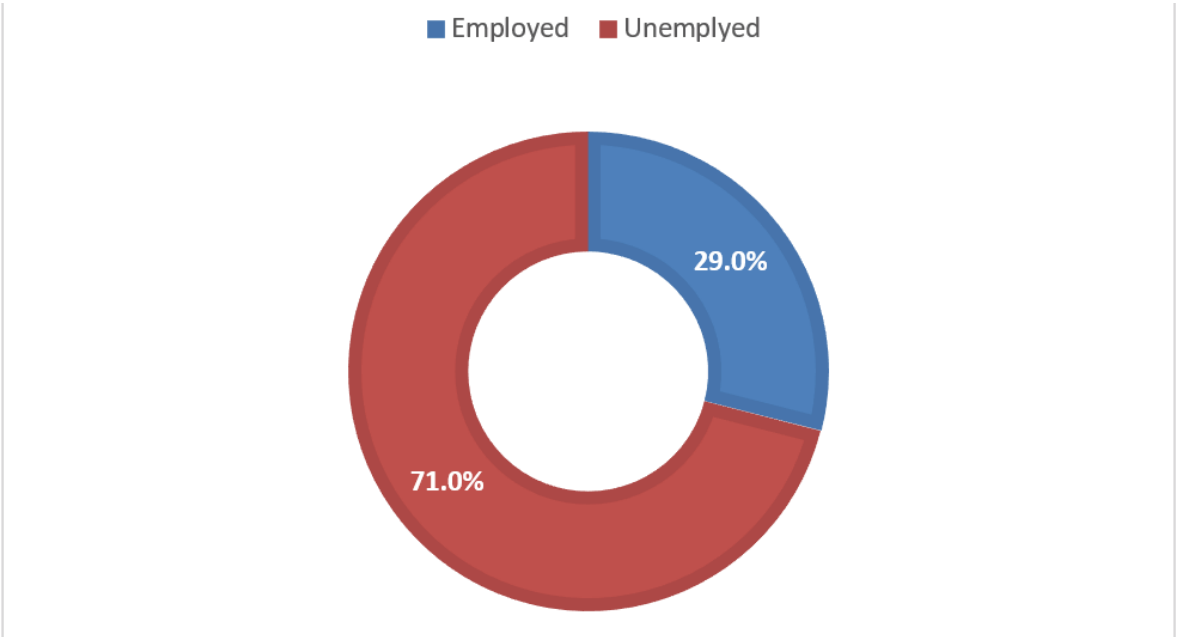


Figure 2.9: Persons with disability by employment status

The results presented in figure 2.10 reveals that the private enterprise is the highest employer of people with disability with 56.1 percent followed by the government with 28.8 percent.

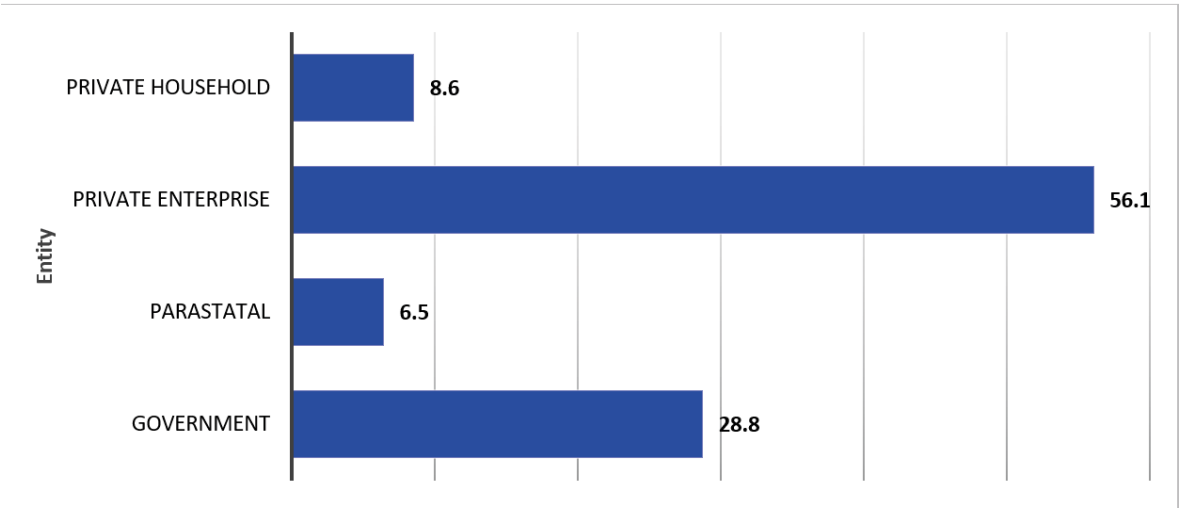


Figure 2.10: Disability by Entity

The results presented in figure 2.11 reveals that only 28.7 percent of people with disability are receiving disability grants and 27.0 percent are receiving pension. Furthermore, 38.4 percent indicated that they receive other grants.

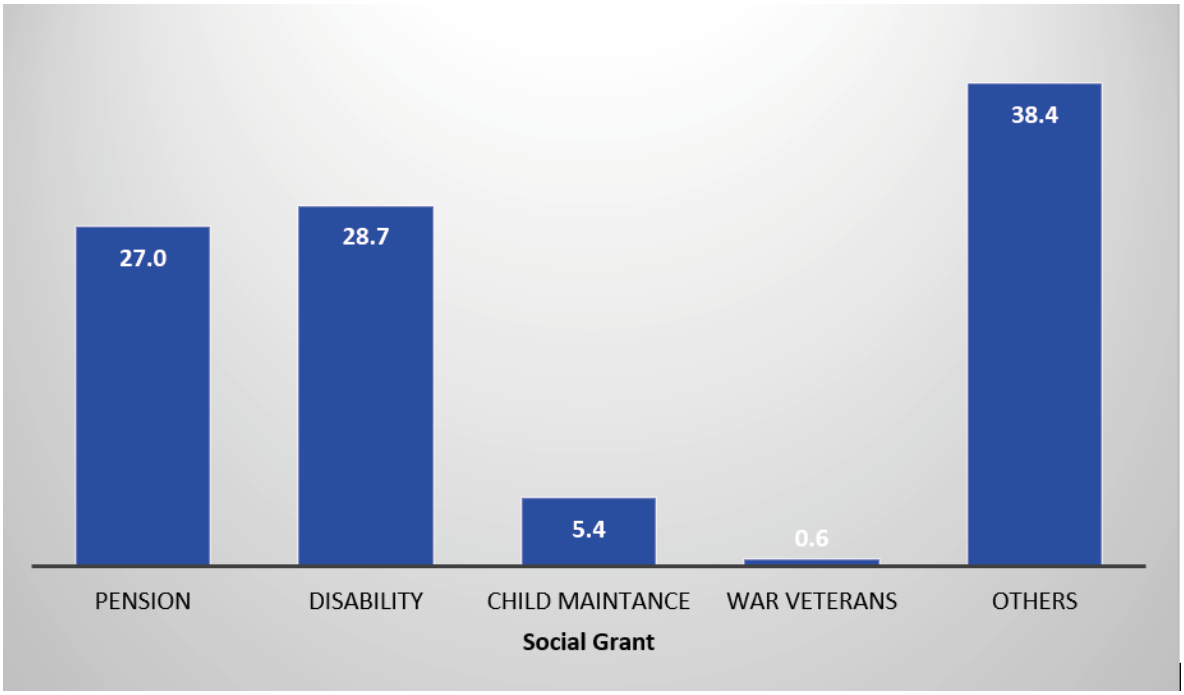


Figure 2.11: Disability by Social Grants

Table 2.9 shows that a total of 89,507 people are recipients of social grants out of the total study population of 179,555. Furthermore, The table shows that 10.2 percent out of the 89,507 people are recipients of the old age pension, 2.0 percent are receiving child maintenance and 0.9 percent are receiving disability grant.

Table 2.9: Social Grants the study population

Social Grant	Number	Percent
Pension	9 090	10.2%
Disability	827	0.9%
OVCs	612	0.7%
Child Maintenance	1 764	2.0%
War Veterans Grant	161	0.2%
Others	77 053	86.1%
Total	**89 507**	**100.0%**
Not Stated	90 048	50.2%
Grand Total	**179 555**	**100**

3. Household Characteristics

The survey focused on households located in formal settlement areas of Windhoek. This section will focus on main language spoken in the household, number of years the household have been living in the dwelling unit and household size.

It is essential to know the number of years that the household lived in the dwelling unit, to monitor movements and relocations within Windhoek. Figure 3.1 depicts that about 35.6 percent of households lived in the particular dwelling unit for less than 5 years while 16.1 percent of households lived in the same dwelling unit for 30 years or more.

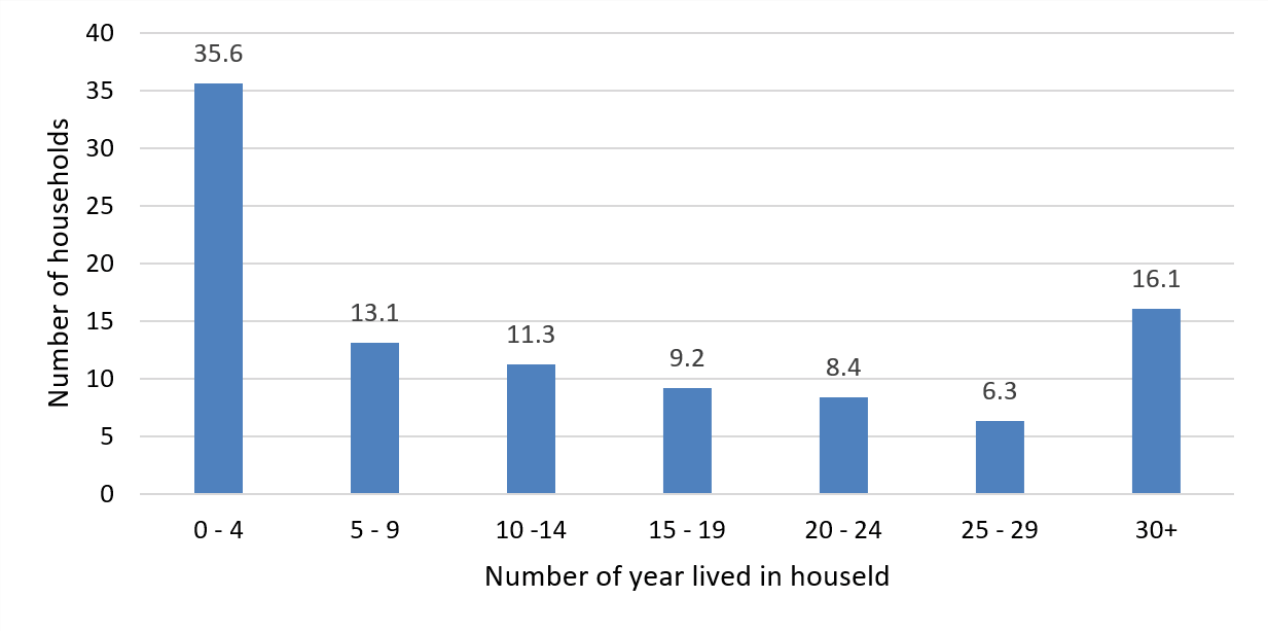


Figure 3.1: Number of years the household lived in the household

Households were asked to indicate the main language that the household communicates in. Table 3.1 indicates the main language spoken at home by sex of head of household. The top 3 spoken languages in households in Windhoek formal settlements are Oshiwambo (27.9 Percent), Afrikaans (23.6 percent) and Otjiherero (13.0 Percent).

Table 3.1: Language spoken at home by Sex of head of household

Home language	Sex of Head of Household			
	Female	Male	Total	Percent
Oshiwambo	7 146	5 183	12 329	27.9
Afrikaans	6 114	4 320	10 434	23.6
Otjiherero	2 934	2 829	5 763	13.0
Khoekhoegowab	1 899	3 720	5 619	12.7
English	3 779	1725	5 504	12.5
Non-Namibian	968	407	1 375	3.1
Silozi	970	268	1 238	2.8
German	574	267	841	1.9
Setswana	267	243	510	1.2
Rukwangali	298	15	313	0.7
Otjizemba	85	16	101	0.2
Rumanyo	34	0	34	0.1
Thimbukushu	30	0	30	0.1
San Languages	0	29	29	0.1
Unknown	34	16	50	0.1
Total	**25 132**	**19 038**	**44 170**	

Table 3.1 further indicated that Rukwangali, Otjizemba, Rumanyo, Thimbukushu and San languages are the least spoken with less than 1 percent.

When looking at the sex of the head of household, Figure 3.2 indicates that majority (56.9%) of households are female headed.

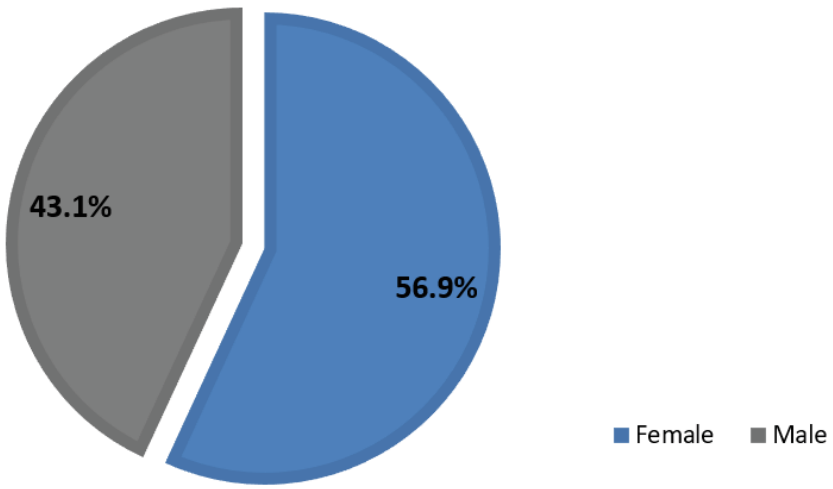


Figure 3.2: Head of household by sex

Figure 3.3 shows that households that have less than 10 household members are headed by females while majority of the households that have 10 and more household members are headed by males.

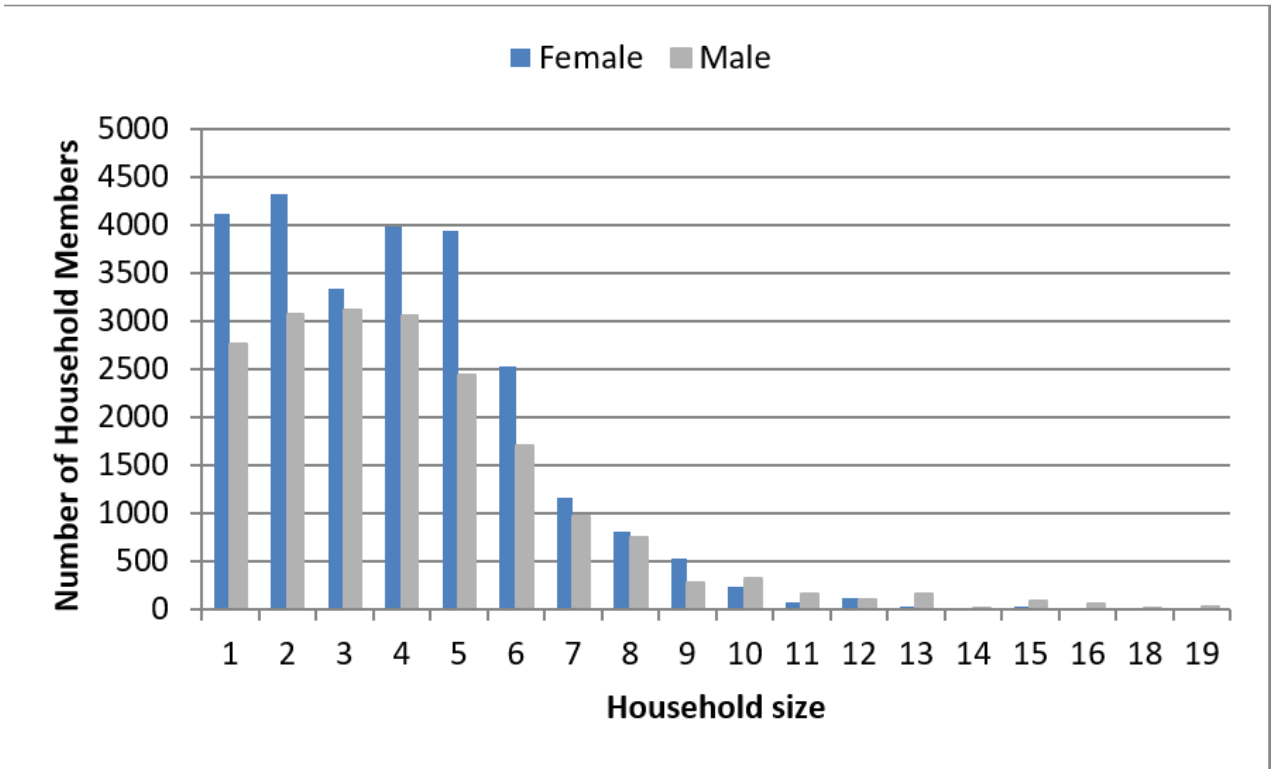


Figure 3.3: Household size by Sex of head of household

Figure 3.4 shows different reasons why members of a household may choose to move from their dwelling units, majority of households (47.2 Percent) moved from their homes because of housing affordability, while 10.5 percent to seek for jobs and 7.4 percent due to security reasons.

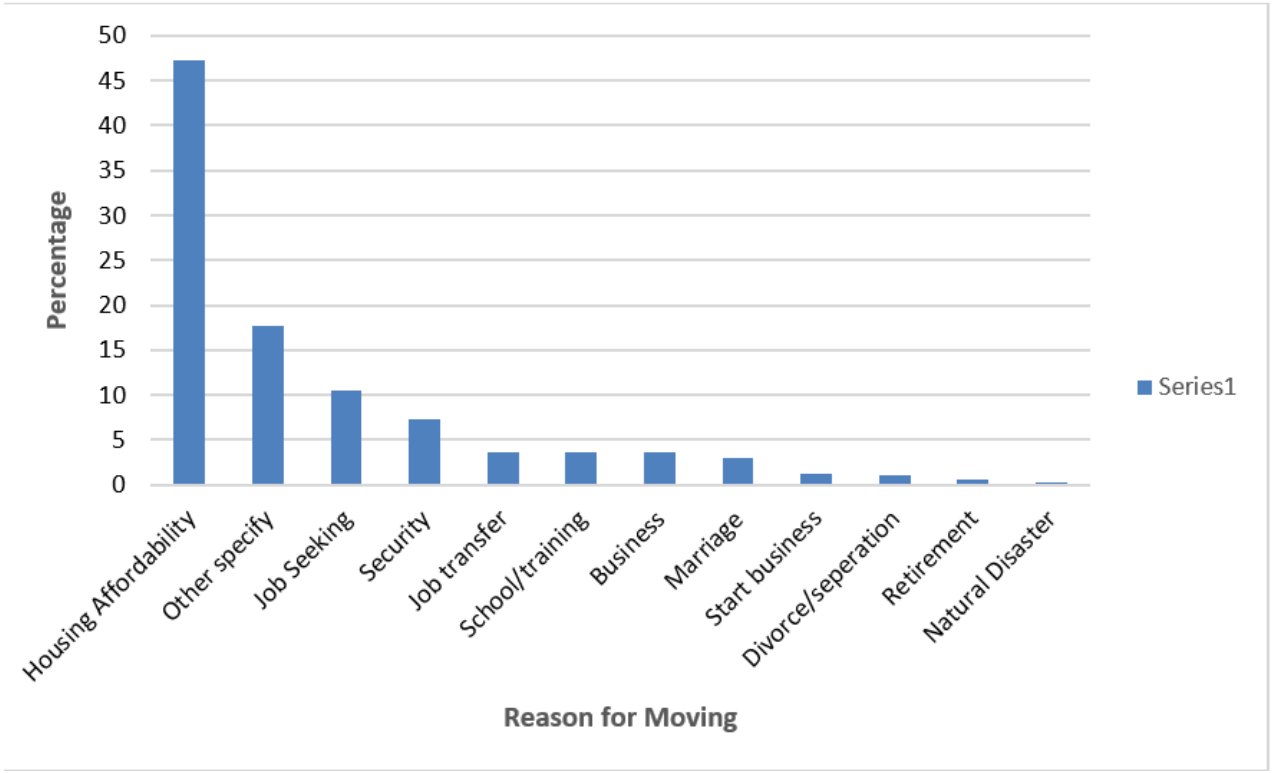


Figure 3.4: Reason for moving to current dwelling

4. HOUSEHOLD

4.1 Types of housing structure

This section focuses on dwelling unit types, household ownership, services, energy and the types of disasters and hazards experienced by households. Table 4.1 presents distribution of the dwelling type by household ownership. The result showed that the majority (88.6%) of the dwelling units are built with bricks and a minimal (10.7 percent) from Zink. Furthermore, 58.1 percent of households are owned, 33.1 percent are rented and 7.4 percent stay with relatives rent-free.

Table 4.1: Dwelling type by household ownership

Dwelling type	Household ownership					
	Owner	Renting	Relative	Other	Total	Percent
Zinc House	2 210	1 965	491	65	4 731	10.7
Bricks	23 304	12 573	2 748	508	39 133	88.6
Board House	117	81	8	33	239	0.5
Other	30	0	36	0	66	0.2%
Total	**25 661**	**14 619**	**3 283**	**606**	**44 169**	
Percent	**58.1**	**33.1**	**7.4**	**1.4**	**100%**	
Note stated					**1**	

When looking at Table 4.2, one observed that most of the dwelling units 66.8 percent are built on a flat area followed by 19.3 percent of dwelling units on a slope area. Additionally, 90.9 percent of dwelling units have access to a tarred road and only 0.5 percent has access to a foot path.

Table 4.2: Distribution of dwelling units by area topography and type of road

Area topography	Type of road				Total	Percent
	Tarred road	Graded road	Dirt/track road	Foot Path		
Slope Area	7 805	680	29	17	8 531	19.3
Near river bed	4 884	473	111	24	5 492	12.4
Flat area	26 909	2 404	43	150	29 506	66.8
On top of Hill	534	94		12	648	1.4
Total	**40 132**	**3 651**	**183**	**203**	**44 169**	
Percent	**90.9**	**8.3**	**0.4**	**0.5**		
Note stated					**1**	

4.2 Services

This section focuses on the types of services in the different dwelling units, the services that we are looking at is source of water, distance of source of water, type of toilet facility and methods of removal.

Figure 4.1 Indicates that majority of households have access to their own water taps for drinking (85.2 %), cooking (94.5 %) and washing/bathing (95.3 %).

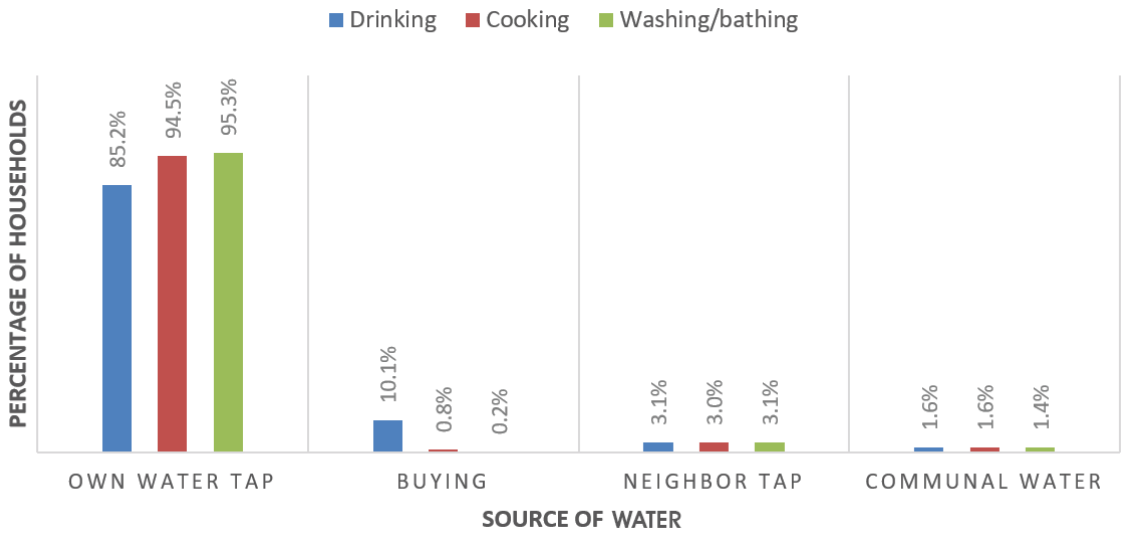


Figure 4.1: Household sources of water for drinking, cooking and washing/bathing

Figure 4.2: shows a description of household's methods water payment, more than 20 000 households use cash as a method of payment to the municipality, close to 20 000 pay their water through an account. Less than 5 000 households get their water from nature (rivers, boreholes, rain etc…), prepaid cards, neighbours card or own access card.

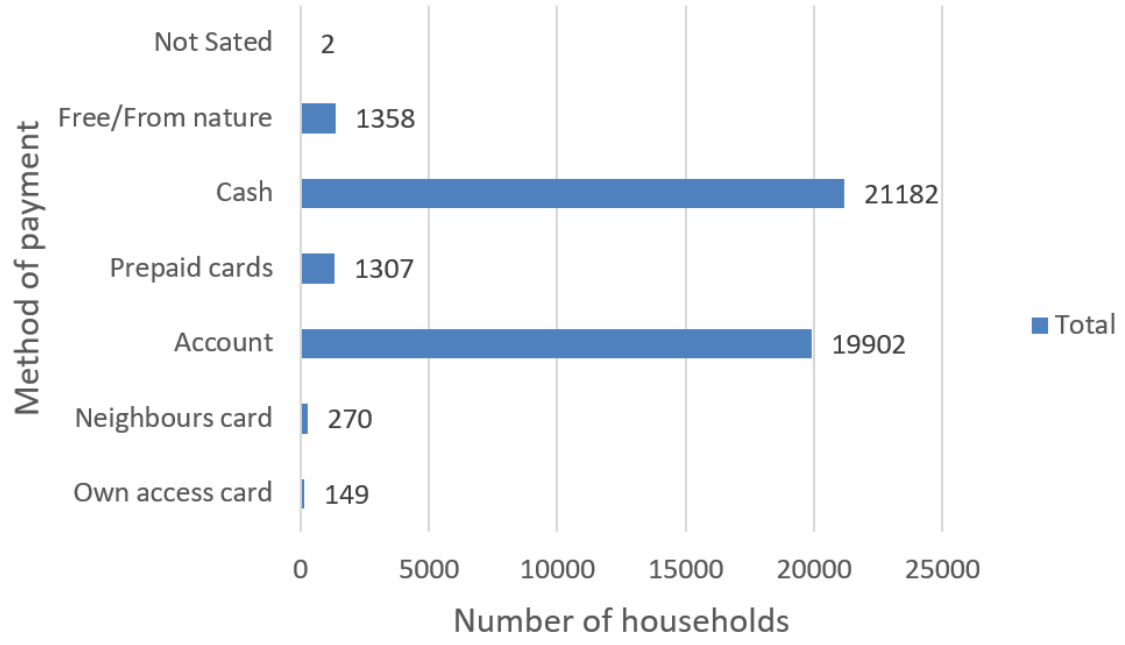


Figure 4.2: Household method of water payment

Table 4.3, show that the majority of households (85.2%) reported that they access their water for drinking from their own water taps, with 10.1 percent of households reported having to buy water to meet their drinking need. With respect to distance travelled to access sources of water for drinking, the result shows that 95.7 percent of households travelled 5 minutes at most.

Table 4.3: Households source of water for drinking by distance in minutes

Distance (Minutes)	Source of water for drinking				Total	Percent
	Neighbour tap	Own Water tap	Communal water	Buying		
5	1 057	36 443	450	4 303	42 253	95.7
10	143	631	119	103	996	2.3
>10	173	541	158	49	921	2.1
Total	**1 373**	**37 615**	**727**	**4 455**	**44 170**	
Percent	**3.1**	**85.2**	**1.6**	**10.1**		

Table 4.4 shows that 42 736 out of 44 170 (96.8) Households had flushing toilet, followed by 729 dwelling units that had pit latrines as their main toilet. Only 162 were making use of bushes to answer the call of nature.

Table 4.4: Number of households by type of toilet

Toilet type	Frequency	Percent
Other	543	1.2
Pit latrine	729	1.7
Flushing toilet	42 736	96.8
Bush	162	0.4
Total	**44 170**	**100.0**

Figure 4.3 shows that 94.5 percent household refuse is collected by municipality followed by self-removal methods (3.8 Percent) , a minimal 0.2 percent of households bury or burn their refuses.

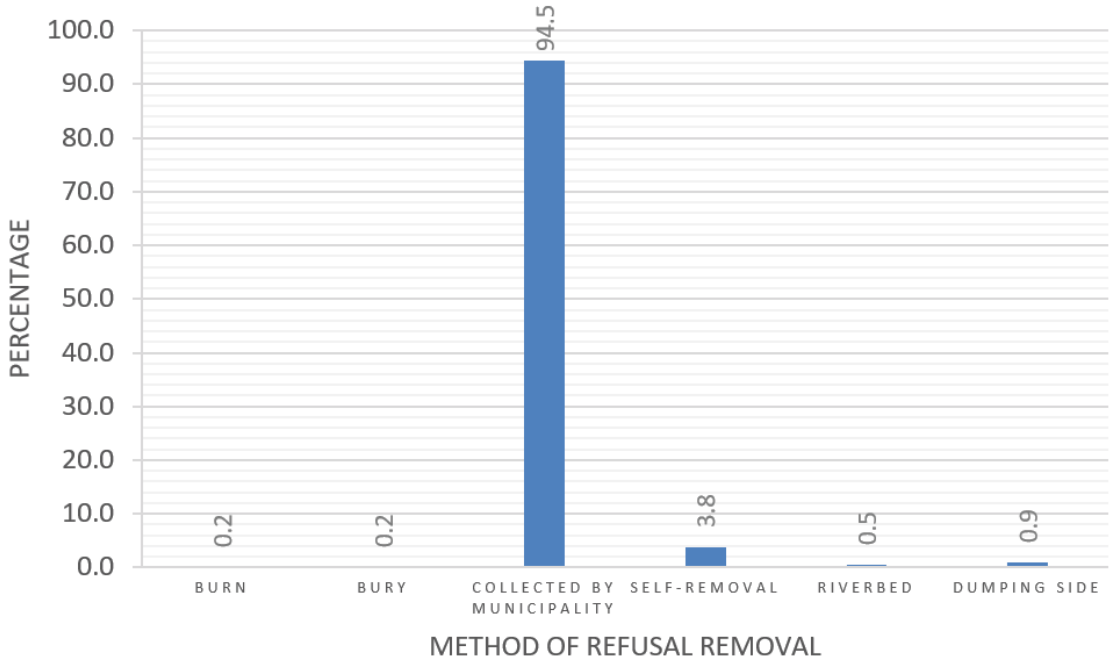


Figure 4.3 Ways of refuse removals

4.3 Energy, Disasters and Hazards

This section focuses on the energy that household for daily needs such as cooking. The study also ask the household any disaster and hazards that the households were exposed to and if the energy that they use may have cause some of the disaster or hazards.

Households were interviewed on the type of energy that is used for either cooking and lighting, of which the majority of households use electricity for cooking (41 032) and lighting (42, 991), followed by households that use firewood (4 558) and Gas (3 903) for Cooking. Besides electricity for lighting most household use candles (1 369) and renewable energy (473). Although it is not common about 26 households also indicated that they use candles for cooking. The data also indicate that some household use more than one method cooking and lighting.

Table 4.5 Source of energy for cooking or lighting

Household source of energy	Cooking	Lighting
Paraffin	131	120
Gas	3 903	156
Firewood	4 558	228
Other	64	278
Renewable energy	2 23	473
Candle	26	1 369
Electricity	41 032	42 991

Table 4.6 present the distribution of households that indicated having experienced loss of the following: life, property or damage to environment disaggregated by the source of energy used by the respective households. Most households (39.3%) have lost their property or goods, while 31.0 percent has lost life and 29.7 percent indicated that their environment had been damaged. Candles cause the highest percentage of hazards to households (25.1 %), followed by Gas (22.0 %) and Firewood (21.9%). The source of energy that causes the least damage to households is Paraffin (14 %).

Table 4.6 Source of energy by type of loss

Source of energy	Type of loss			Total	Percent
	loss of life	Loss of property	Damage to Environment		
Firewood	877	1 038	1 816	3 731	21.9
Gas	1 222	1 304	1 212	3 738	22.0
Paraffin	1 231	1 146	0	2 377	14.0
Electricity	618	1 645	654	2 917	17.1
Candle	1 330	1 563	1 373	4 266	25.1
Total	**5 278**	**6 696**	**5 055**	**17 029**	
Percent	**31.0**	**39.3**	**29.7**		

Table 4.7 presents the type of action that the households has taken to deal with specific disasters. The respondents could choose multiple responses on the types of disasters as applicable to them. The data indicated that most of the Households (44 596) affected by fire has taken any action, followed by those affected by Crime (16 900) and then Strong wind (816). To cope with the disaster most household (46 363) seek assistance from GRN and other organizations, followed by 8 080 households that seek assistance from the City of Windhoek, while 6 082 households don't take Any Action to seek assistance.

Table 4.7: Action taken by household to cope with type of disasters

Action taken	Type of disaster								Total
	Flood	Crime	Fire	Epidemic	Landslide/ Debris flow	Strong wind	Motor Vehicle Accidents	Aviation Accidents	
1. Long-term	0	45	0	0	0	0	0	0	45
2. Seek alternative or additional jobs	0	214	26	0	0	0	0	0	240
3. Borrowing money	0	46	18	0	0	12	0	0	76
4. Seek Assistance from GRN, and other organizations	0	1 973	44 176	0	0	52	28	33	46 262
5. Seek Assistance from City of Windhoek	65	7 585	176	34	0	17	203	0	8 080
6. No action	238	4 735	143	41	17	473	434	0	6 081
7. Others	166	2 302	57	0	38	197	151	0	2 911
8. Permanent Relocation	0	0	0	0	0	0	0	0	0
Total	**469**	**16 900**	**44 596**	**75**	**55**	**751**	**816**	**33**	**63 695**

Households were also interviewed if they have experience any disaster or hazards in the past five years. Most household (32 821) indicated that River floods caused by heavy rain was the most hazard experience by them, followed by Landslides /debris (12 169 households) and Exposure to extreme cold (11 297). In contrast, Exposure to extreme heat was identified as the least hazards experienced by 115 households.

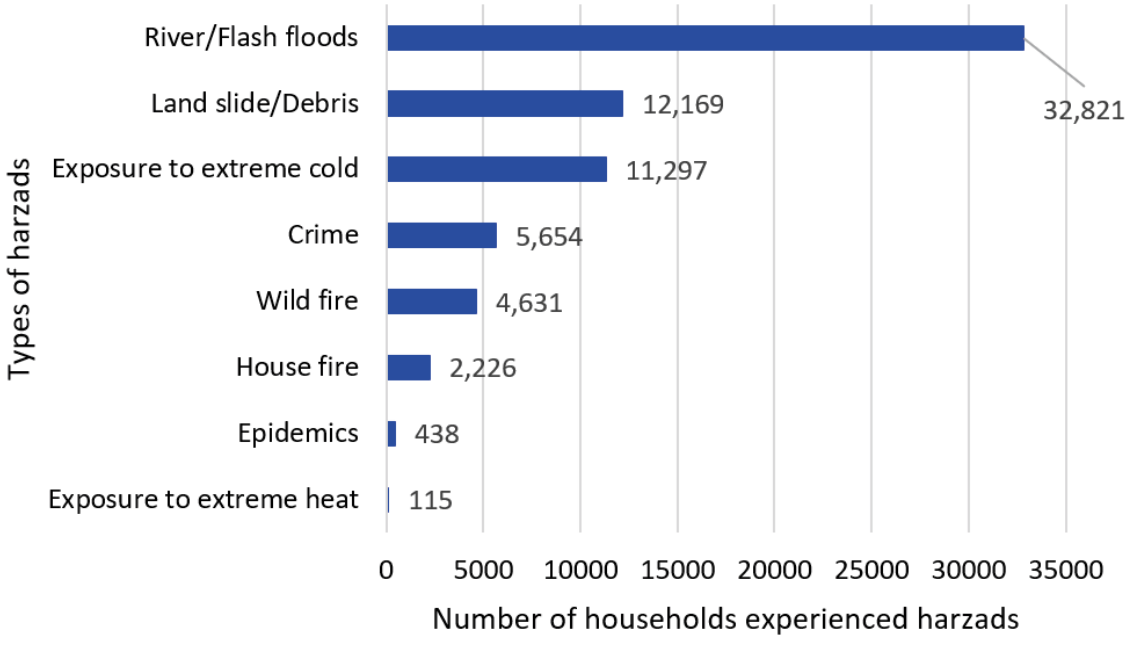


Figure 4.4: Number of households exposed to hazards in the past five years

Table 4.8, present the types of hazards that the household has been concerned with for the past 12 Months by level of concern. The respondents could choose multiple responses on the types of disasters that they were concern with in the last 12 months as applicable to them. The data indicate that most of households are generally Not Concern with any of the hazards besides Crime. About 19 141 (43.3%) of households are extremely concerned about Crime. If you look closer to the data its noted that 156 households and 100 households did not indicate any level of concern for MVA hazards and Aviation Accident hazards respectively.

Table 4.8: Number of Households by level of concern by different types of hazards

Hazards	Concern about Hazard				Total
	Extreme (extremely concerned	Severe (very concerned	Moderate (somewhat concerned)	Not concerned	
River floods	2 819	1 505	6201	33 645	44 170
Flash Floods	3 422	1 799	7491	31 458	44 170
Wild fire	2 793	1 221	5 612	34 544	44 170
House fire	4,309	2 714	9 505	27 642	44 170
Epidemics	4 258	3 123	8 771	28 018	44 170
Crime	19 141	7 617	9 830	7 582	44 170
Exposure to extreme cold	3 345	2 900	11 841	26 084	44 170
Exposure to extreme heat	6 830	5 146	11 626	20 568	44 170
Land slide/Debris	1 974	770	4 243	37 183	44 170
Wash	7 215	5 284	10 248	21 422	44 170
MVA	7 627	4 682	12 706	18 999	44 014
Aviation Accidents	2 079	756	2 863	38 372	44 070
Total	**65 812**	**37 515**	**100 936**	**325 518**	**529 782**

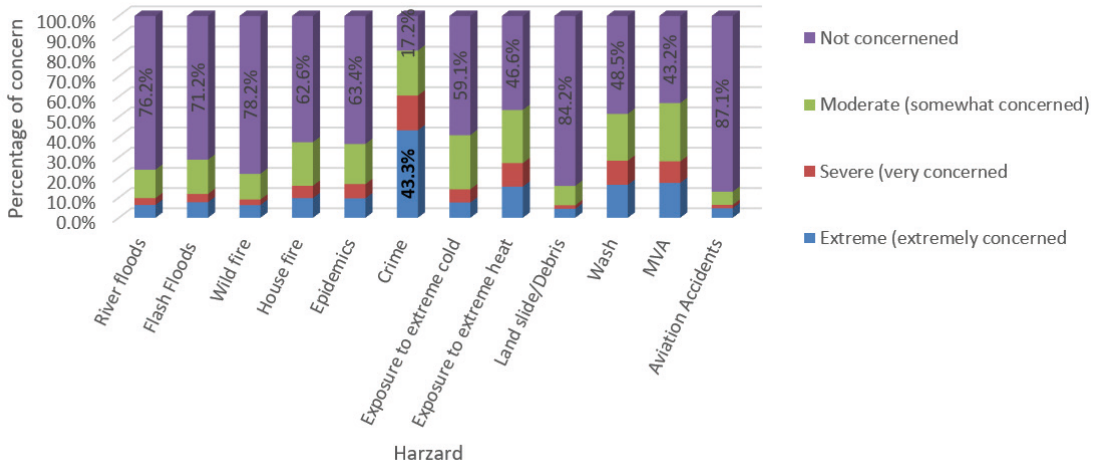


Figure 4.5: Percentage of Households by level of concern by different types of hazards.

The study also looks at households that experience any lack food and their coping strategies undertaken. Households were ask if they undertake certain action/behavior to address the lack of food in the household in the last 30 before the study. Figure 4.6 shows that, most household (29.1%) indicated that they use their Saving to buy food followed by 22.5 percent of household that Borrow money to buy food and 18.9 percent of households that have to Reduce their expenditure on other things to buy food. About 5.5 percent of household had to resort to begging to get food, while a significant number had to sell they Household Assets (5.5%), Animals (4.5%), Productive Assets (4.0%) while 2.3 percent of Household had to change their children from a Private school to a Public school and 1.4 percent of household had to sell property or land.

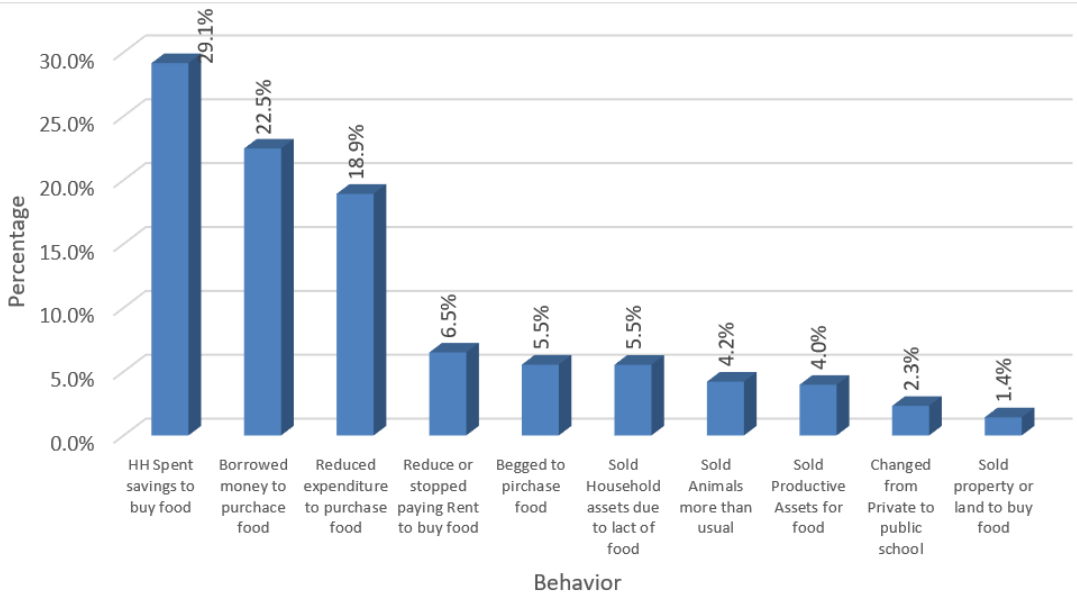


Figure 4.6: Number of Household by behaviour type to address the lack of food

Figure 4.7 show that the sex of the head of household determine how a household will respond to the lack of food in the household. Female headed households turn to Reduce expenditure, sold household assets, animals, productive assets, property or land and change schools. While male head households turn to borrow money, stop paying rent and resort to begging.

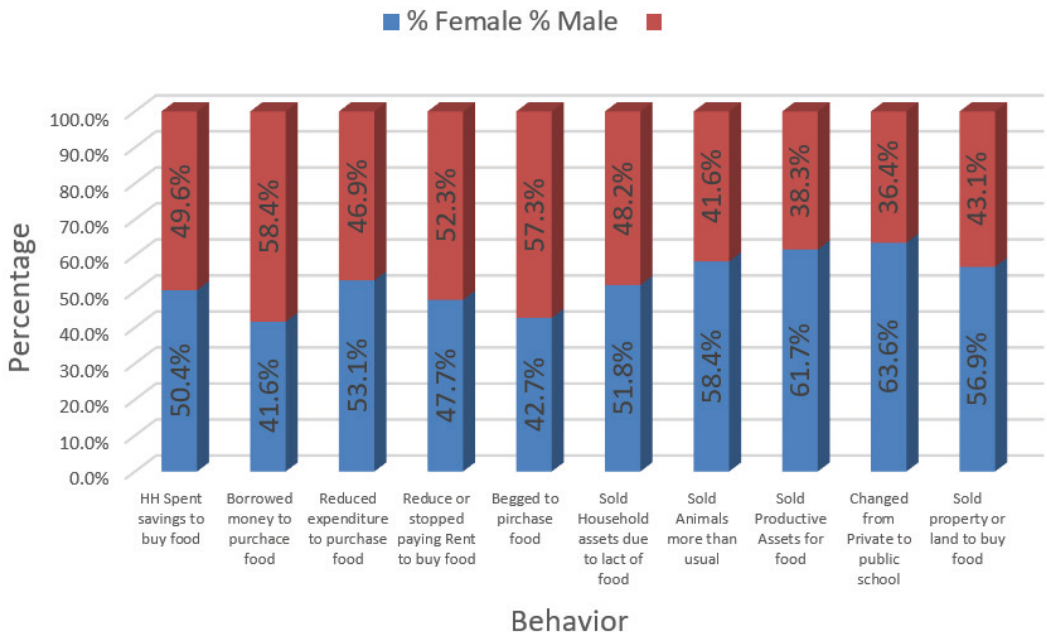


Figure 4.7: Percentage of Household by sex and by behaviour type to address the lack of food

5. CONCLUSION

The Community Risk Assessment has shown that it is a useful tool for identifying the communities' risks, needs, vulnerabilities and capacity. The assessment highlights a growing trend of increasing under-development and lack of essential services, fragmented communities, high unemployment rates, exposure to hazards, rapid and unplanned urbanization. The living conditions of households were below an acceptable level as the majority earned low or no monthly income. These economic conditions have forced households to use cheap and high-risk energy sources, such as candles for lighting, which were responsible for the majority of house fires. In addition, other hazards, such as crime, flooding, epidemics and environmental health, were also identified by community members. These hazards can also rapidly upscale into local emergencies, leading to widespread loss of property, temporary displacement and prolonged hardship.

Although the households are faced with these hazards on a daily basis, there are also capacities in the informal settlements, as was highlighted in the assessment. In addition, the households also render assistance to each other when they are faced with emergencies. However, it has emerged that most households did not have the necessary information regarding how to seek assistance, mitigate risks or cope with the hazards. This revelation is of great concern, and it calls for a need to step up awareness efforts to ensure that community members have the necessary information to deal with hazards.

For the City of Windhoek and other development partners to reduce the vulnerability of communities to disasters and accelerate the achievement of the Sustainable Development Goals (SDG) and National Development Plan (NDP) successfully for the citizens of Windhoek, a disasters risk management strategy and plan need to be developed and reviewed regularly to monitor change over time.

6. References

1. World Health Organization (2011), Publications on water, sanitation and health, *https://www.who.int/water_sanitation_health/publication/2011_publication/en/*

2. Namibia Statistics Agency (2011), Namibia 2011 Population and Housing Census Main Report, *https://nsa.org.na/page/publications/*

ANNEXURE OF TABLES

Table 1: Monthly Income by Sex

Monthly Income	Sex				Windhoek formal settlements	
	Male		Female			
	Number	%	Number	%	Number	%
Windhoek formal settlements	**53 863**	**100**	**63 616**	**100**	**117 479**	**100**
below N$ 1000	25 945	48.2	30 485	47.9	56 429	48.0
N$1000 - N$1999	4 409	8.2	7 054	11.1	11 463	9.8
N$2000 - N$3000	2 237	4.2	3 476	5.5	5 713	4.9
N$3001 - N$5000	2 672	5.0	3 241	5.1	5 913	5.0
N$5001 - N$7000	1 573	2.9	2 222	3.5	3 795	3.2
N$7001 - N$9000	1 609	3.0	2 172	3.4	3 781	3.2
N$9001 - N$11000	1 816	3.4	2 379	3.7	4 196	3.6
N$11001 - N$13000	1 228	2.3	1 433	2.3	2 661	2.3
N$13001 - N$15000	1 240	2.3	1 289	2.0	2 529	2.2
N$15001 - N$17000	1 640	3.0	1 698	2.7	3 338	2.8
N$17001 - N$19000	835	1.6	956	1.5	1 791	1.5
N$19001 - N$21000	1 353	2.5	1 108	1.7	2 461	2.1
N$21001 - N$25000	1 148	2.1	1 335	2.1	2 483	2.1
N$25001 - N$30000	1 532	2.8	1 188	1.9	2 721	2.3
N$30001 - N$35000	1 007	1.9	721	1.1	1 728	1.5
N$35001 - N$50000	1 209	2.2	822	1.3	2 031	1.7
N$50001 - N$75000	743	1.4	465	0.7	1 208	1.0
More than N$75000	613	1.1	240	0.4	853	0.7
Not Known	**1 054**	**2.0**	**1 331**	**2.1**	**2 385**	**2.0**

Table 2: Monthly Income by urban/rural

Monthly Income	Urban/Rural				Windhoek formal settlements	
	Rural		Urban			
	Number	%	Number	%	Number	%
Windhoek formal settlements	**3 339**	**100**	**114 140**	**100**	**117 479**	**100**
below N$ 1000	1 882	56.4	54 547	47.8	56 429	48.0
N$1000 - N$1999	650	19.5	10 813	9.5	11 463	9.8
N$2000 - N$3000	231	6.9	5 482	4.8	5 713	4.9
N$3001 - N$5000	194	5.8	5 719	5.0	5 913	5.0
N$5001 - N$7000	78	2.4	3 717	3.3	3 795	3.2
N$7001 - N$9000	14	0.4	3 767	3.3	3 781	3.2
N$9001 - N$11000	51	1.5	4 145	3.6	4 196	3.6
N$11001 - N$13000	20	0.6	2 641	2.3	2 661	2.3
N$13001 - N$15000	49	1.5	2 481	2.2	2 529	2.2
N$15001 - N$17000	0	0.0	3 338	2.9	3 338	2.8
N$17001 - N$19000	0	0.0	1 791	1.6	1 791	1.5
N$19001 - N$21000	22	0.7	2 439	2.1	2 461	2.1
N$21001 - N$25000	0	0.0	2 483	2.2	2 483	2.1
N$25001 - N$30000	10	0.3	2 711	2.4	2 721	2.3
N$30001 - N$35000	0	0.0	1 728	1.5	1 728	1.5
N$35001 - N$50000	10	0.3	2 021	1.8	2 031	1.7
N$50001 - N$75000	0	0.0	1 208	1.1	1 208	1.0
More than N$75000	10	0.3	844	0.7	853	0.7
Not Known	**121**	**3.6**	**2 264**	**2.0**	**2 385**	**2.0**

Table 3: Suburb by household ownership

Unified Suburb	Household Ownership					
	Owner	Renting	Relative	Other	5	Total
Academia	277	123	0	0	0	400
Avis	349	168	0	30	0	547
Cimbebasia	642	189	38	0	0	869
Damara location	121	121	62	0	0	304
Dolam	70	17	35	0	0	122
Donkerhoek	67	57	13	0	0	137
Dorado Park	981	493	131	0	0	1605
Eiland	46	0	0	0	0	46
Elisenheim	436	42	0	0	0	478
Eros	551	256	0	0	0	807
Finkenstein	10	0	0	0	0	10
Gemeente	38	25	0	0	0	63
Golgota	333	87	32	0	0	452
Groot Aub	1192	49	95	42	33	1411
Grysblock	267	233	23	0	0	523
Hakahana	276	251	87	0	0	614
Herero Location	69	113	46	0	0	228
Highland park	117	0	0	0	0	117
Hochland park	676	227	33	0	0	936
Kapp Farm	10	0	0	0	0	10
Katutura	8544	5442	1730	120	28	15864
Khomasdal	3671	1883	290	144	32	6020
Klein Windhoek	504	345	24	0	12	885
Kleine Kuppe	273	431	19	0	0	722
Ludwigsdorf	132	33	0	0	0	165
Okuryangava	158	182	81	16	0	437
Olympia	131	131	26	26	0	314
Ombili	37	75	19	0	0	131
Omeya	120	17	0	0	0	137
Otjomuise	1611	639	95	0	0	2345
Pioneers park	902	422	42	0	42	1408
Rocky Crest	832	253	0	0	0	1085
Soweto	148	97	51	17	0	313
Spokies dorp	61	0	0	0	0	61
Suiderhof	411	161	0	0	0	572
Tobias Hainyeko	8	8	0	0	0	16
Town	0	24	0	0	0	24
Unknown	21	0	0	0	0	21
Wambo Location	53	35	35	0	0	123
Wanahenda	610	819	175	13	0	1617
Windhoek	64	458	0	0	10	532
Windhoek Central	52	153	0	0	31	236
Windhoek East	209	102	0	0	12	323
Windhoek North	422	430	102	0	0	954
Windhoek West	163	26	0	0	0	189
Total	**25664**	**14617**	**3284**	**408**	**200**	**44173**

Table 4: Suburb by distance to source of water

Unified Suburb	Distance			
	5m (five minutes)	10m (ten minutes)	>10m (More than ten minutes)	Total
Academia	400	0	0	400
Avis	547	0	0	547
Cimbebasia	870	0	0	870
Damara location	304	0	0	304
Dolam	17	0	105	122
Donkerhoek	137	0	0	137
Dorado Park	1 570	35	0	1 605
Eiland	46	0	0	46
Elisenheim	477	0	0	477
Eros	807	0	0	807
Finkenstein	10	0	0	10
Gemeente	63	0	0	63
Golgota	384	68	0	452
Groot Aub	1 174	173	63	1 410
Grysblock	523	0	0	523
Hakahana	539	0	74	613
Herero Location	205	0	23	228
Highland park	117	0	0	117
Hochland park	912	24	0	936
Kapp Farm	0	0	10	10
Katutura	1 5039	411	413	1 5863
Khomasdal	5964	28	27	6019
Klein Windhoek	865	20	0	885
Kleine Kuppe	723	0	0	723
Ludwigsdorf	165	0	0	165
Okuryangava	393	25	19	437
Olympia	315	0	0	315
Ombili	113	18	0	131
Omeya	137	0	0	137
Otjomuise	2 229	78	38	2 345
Pioneers park	1407	0	0	1407
Rocky Crest	1 085	0	0	1 085
Soweto	296	17	0	313
Spokies dorp	61	0	0	61
Suiderhof	571	0	0	571
Tobias Hainyeko	16	0	0	16
Town	24	0	0	24
Unknown	21	0	0	21
Wambo Location	123	0	0	123
Wanahenda	1 488	0	128	1 616
Windhoek	522	0	10	532
Windhoek Central	235	0	0	235
Windhoek East	313	0	10	323
Windhoek North	855	99	0	954
Windhoek West	189	0	0	189
Total	**42 251**	**996**	**920**	**44 167**
Not Valid				3

Table 5: Household source of energy for cooking and lighting

Household source of energy	Cooking	Lighting
Paraffin	131	120
Gas	3903	156
Firewood	4558	228
Other	64	278
Renewable energy	223	473
Candle	26	1369
Electricity	41032	42991

Table 6: Suburb by Accessible road for cars

Unified Suburb	Accessible road for cars		
	Yes	No	Total
Academia	400	0	400
Avis	547	0	547
Cimbebasia	870	0	870
Damara location	304	0	304
Dolam	122	0	122
Donkerhoek	137	0	137
Dorado Park	1606	0	1 606
Eiland	46	0	46
Elisenheim	477	0	477
Eros	807	0	807
Finkenstein	10	0	10
Gemeente	63	0	63
Golgota	452	0	452
Groot Aub	1 259	152	1 411
Grysblock	507	15	522
Hakahana	598	16	614
Herero Location	228	0	228
Highland park	117	0	117
Hochland park	936	0	936
Kapp Farm	10	0	10
Katutura	15 636	227	15 863
Khomasdal	6020	0	6020
Klein Windhoek	885	0	885
Kleine Kuppe	715	8	723
Ludwigsdorf	165	0	165
Okuryangava	417	21	438
Olympia	315	0	315
Ombili	131	0	131
Omeya	137	0	137
Otjomuise	2 286	60	2 346
Pioneers park	1 407	0	1 407
Rocky Crest	1 085	0	1 085
Soweto	313	0	313
Spokies dorp	61	0	61
Suiderhof	571	0	571
Tobias Hainyeko	8	8	16
Town	24	0	24
Unknown	21	0	21
Wambo Location	123	0	123
Wanahenda	1 606	10	1 616
Windhoek	501	31	532
Windhoek Central	235	0	235
Windhoek East	322	0	322
Windhoek North	921	33	954
Windhoek West	189	0	189
Total	**43 590**	**581**	**44 171**

Table 7: Suburb by type of road

Unified Suburb	Type of road				Total
	Tarred road	Graded road	Dirt/track road	Foot Path	
Academia	400	0	0	0	400
Avis	547	0	0	0	547
Cimbebasia	870	0	0	0	870
Damara location	304	0	0	0	304
Dolam	122	0	0	0	122
Donkerhoek	137	0	0	0	137
Dorado Park	1606	0	0	0	1 606
Eiland	0	31	15	0	46
Elisenheim	477	0	0	0	477
Eros	778	29	0	0	807
Finkenstein	10	0	0	0	10
Gemeente	63	0	0	0	63
Golgota	452	0	0	0	452
Groot Aub	42	1109	120	139	1410
Grysblock	523	0	0	0	523
Hakahana	273	330	10	0	613
Herero Location	228	0	0	0	228
Highland park	117	0	0	0	117
Hochland park	936	0	0	0	936
Kapp Farm	0	10	0	0	10
Katutura	14 311	1471	38	43	15 863
Khomasdal	5 904	116	0	0	6 020
Klein Windhoek	885	0	0	0	885
Kleine Kuppe	723	0	0	0	723
Ludwigsdorf	165	0	0	0	165
Okuryangava	417	0	0	21	438
Olympia	315	0	0	0	315
Ombili	95	36	0	0	131
Omeya	137	0	0	0	137
Otjomuise	2 231	115	0	0	2 346
Pioneers park	1 407	0	0	0	1 407
Rocky Crest	1 085	0	0	0	1 085
Soweto	313	0	0	0	313
Spokies dorp	61	0	0	0	61
Suiderhof	571	0	0	0	571
Tobias Hainyeko	16	0	0	0	16
Town	24	0	0	0	24
Unknown	21	0	0	0	21
Wambo Location	123	0	0	0	123
Wanahenda	1 222	394	0	0	1 616
Windhoek	531	0	0	0	531
Windhoek Central	235	0	0	0	235
Windhoek East	313	10	0	0	323
Windhoek North	954	0	0	0	954
Windhoek West	189	0	0	0	189
Total	**40 133**	**3651**	**183**	**203**	**44 170**

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