**Data Analysis Plan: Social Autopsy of Adult Deaths and Care Seeking**

**Introduction**

The information about recent causes of adult deaths is limited due to paucity of data. Using appropriate statistical methods, COMSA data are analyzed to provide countrywide (national and regional level) cause-specific information of adult deaths and adult care seeking pattern that is useful for formulating policy and developing programs to improve adult health in Mozambique.Using appropriate statistical methods, COMSA social autopsy data are analyzed to identify the social causes of adult deaths, and to examine care seeking during acute and chronic illnesses among adults across the country. Employing the pathway to survival frameworks, the analysis uses frequencies and crosstabulation of relevant variables. Results from regression models are used in the analysis of care seeking patterns.

**Data required for the analysis**

COMSA verbal and social autopsy of adult deaths includes the analysis of available data collected through a structured questionnaire developed by the COMSA team of researchers. For the analysis, data on causes of adult deaths from InterVA and InSilico, along with VASA data and general information about the cases, are used.

**Analysis methods**

This analysis examines deaths of individuals aged 18+ (excluding maternal deaths, analyzed separately due to distinct protocols) to identify social and biological causes. Using the Pathway to Survival model, social autopsy data are analyzed with variables like care access and socioeconomic status to pinpoint barriers (e.g., delayed treatment). Biological causes are classified using InterVA-5 and InSilico verbal autopsy algorithms, assigning causes like tuberculosis or heart disease, with results stratified by sex and region.

Care-seeking behavior prior to an adult death is analyzed by categorizing actions as no care, formal care (e.g., health facilities, hospitals), informal care (e.g., traditional healers), or mixed formal-informal care, across groups defined by age, sex, and urban-rural residence. Multinomial logistic regression models measure associations between care-seeking type and characteristics of the deceased (e.g., education, employment, socioeconomic status).

Independent variables—age, sex, education, marital status, employment, household wealth, social autonomy (decision-making power), social capital (community networks), residence (urban-rural), and region (provinces)—are analyzed to characterize socio-demographic profiles and causes of death. Socio-demographic characteristics are summarized using percentage distributions in two age groups (18-49 years, working-age; 50+ years, older adults), with chi-square tests assessing differences (e.g., education levels by age). Causes of death, determined by InterVA-5 and InSilico verbal autopsy algorithms (e.g., assigning malaria or diabetes), are analyzed by age group, sex, and region to identify patterns (e.g., chronic diseases in older adults, infectious diseases in rural areas).

Social autonomy and social capital as independent variables are analyzed if they played a role in care seeking of the deceased. Social autonomy has been defined as being an active participant of community groups including vocational training group, savings group or microcredit program, community cooperative such as an agricultural cooperative, political group, religious group, sports club, youth/student club, women’s group and other groups. Social capital is characterized as having people in the community working together on community issues (education/schools, health services/clinics, paid job opportunities, credit/finance, roads, public transportation, water distribution, sanitation services, agriculture, justice/conflict resolution, security/police services, mosque/church/temple, and other issues) that affect entire or part of the community.

Principal component analysis is conducted to create a composite measure of wealth--an index from 20 variables concerning household’s ownership of assets. The index is then subdivided into tertiles to categorize as lowest, middle and highest levels in terms of household wealth.

The Pathway to Survival model is used to analyze the steps, possible breakdowns and reported care and failures in the pathway to survival that may have contributed to causes of adult deaths.Responses related to care seeking are categorized as no care seeking, care sought at home and care sought outside home. Seeking care outside home includes care sought from formal provider (doctor, nurse/midwife and trained community health worker), care sought from informal provider (traditional providers, family members and pharmacists), and care sought from formal or informal provider.

In addition to Pathway to Survival analysis, socio-demographic factors that are associated with care seeking from formal and informal providers are explored. Multinomial regression analysis (informal, informal or formal, and formal being the outcome variables, and other socio-demographic characteristics of deceased as independent variables) is conducted.

Overall, findings obtained from descriptive data analysis are reported. To ascertain the relationship between two categorical variables, chi-squared tests are conducted. P-value for significant statistical association is determined at 0.05, 0.01 and 0.001 levels.

Affixed below is the list of independent and dependent variables that are used in the analysis. Also, a list of dummy tables used in this analysis is included.

**Table 1a. Description of independent variables**

|  |  |  |
| --- | --- | --- |
| ***Characteristics (variable name)*** | | |
| Age (ageinyears2) | Age of deceased | Categorical (0=18-49, 1=50 and above) |
| Gender (q1203) | Sex of deceased | Categorical (0=Female, 1=Male) |
| Education (a4004) | Highest level of education reported | Categorical (0=Primary, 1=Secondary and higher) |
| Marital status (a4002) | Marital status of deceased | Categorical (0=Single/divorced/separated/widowed, 1=Married/life partner) |
| Employment (a4007) | Employment status of deceased | Categorical (0=Unemployed, 1=Employed) |
| Household wealth (wlthindx1) | Twenty household possession variables used to create household wealth using Principal Component Analysis | Categorical (0=Lowest, 1=Middle, 2=Highest) |
| Social autonomy (socautonomy) | Active participant of 9 community groups | Categorical (0=no, 1=yes) |
| Social capital (soccapital) | People in the community worked together on community issues that affect entire or part of the community; turned to anyone in community for help during illness in pregnancy | Categorical (0=No, 1=Yes) |
| Residence (residence) | Deceased lived in rural or urban area | Categorical (0=Rural 2=Urban) |
| Region (region) | Deceased lived in the region of Mozambique | Categorical (0=North, 1=Central, 2=South) |

**Table 1b. Description of Care seeking as outcome variables**

|  |  |  |
| --- | --- | --- |
| Care-seeking (variable 1) | Whether care was  sought from informal, or informal and formal, or formal provider | Categorical (0 = Informal, 1 = Informal and formal, 2=Formal) |
| Care-seeking (variable 2) | Whether care was  sought from either informal or formal provider | Categorical (0 = Informal, 1 = Formal) |

**Dummy Tables**

**Table 1: Socio-demographic characteristics of the adults who died of different causes, Mozambique 2018-2020**

|  |  |  |  |
| --- | --- | --- | --- |
| **Characteristics** | **%**  **Total adult deaths**  **(N=)** | **%**  **Deaths in age group 18-49**  **(n1=)** | **%**  **Deaths in age group 50+**  **(n2=)** |
| Gender |  |  |  |
| Female |  |  |  |
| Male |  |  |  |
| Education |  |  |  |
| Primary |  |  |  |
| Secondary and higher |  |  |  |
| Marital status |  |  |  |
| Single/ divorced/separated/widowed |  |  |  |
| Married/ Life partner |  |  |  |
| Employment |  |  |  |
| Unemployed |  |  |  |
| Employed |  |  |  |
| Household wealth |  |  |  |
| Lowest |  |  |  |
| Middle |  |  |  |
| Highest |  |  |  |
| Social autonomy\* |  |  |  |
| No |  |  |  |
| Yes |  |  |  |
| Social capital+ |  |  |  |
| No |  |  |  |
| Yes |  |  |  |
| Residence |  |  |  |
| Rural |  |  |  |
| Urban |  |  |  |
| Region |  |  |  |
| North |  |  |  |
| Central |  |  |  |
| South |  |  |  |

\*Active participant of community groups

+People in the community worked together on community issues that affect entire or part of the community; turned to anyone in community for help during illness in pregnancy

**Table 2: Pathway to Survival Indicators/components of adult deaths, Mozambique 2018-2020**

|  |  |
| --- | --- |
| Pathway to Survival Components | Adult deaths (N= )  % |
| **Illness recognition at home** |  |
| 1. Deceased adult man or woman, or caregiver recognized sign(s) of possibly severe or severe illness |  |
| **Care-seeking patterns** |  |
| 2. No care given or sought for deceased |  |
| 3.1 Deceased received home care only |  |
| 3.2 Deceased sought or tried to seek outside care as first action |  |
| 3.3 Deceased sought or tried to seek outside care as middle action |  |
| 3.4. Deceased sought outside care as last action |  |
| **Choice of outside care** |  |
| 4.1 Formal care only |  |
| 4.2 Informal and formal care |  |
| 4.3 Informal care only |  |
| **Choice of any formal care** |  |
| 5.1 Died en route, or could not reach the health care provider |  |
| 5.2 Reached the first health care provider and died at the facility |  |
| 5.3 Reached the first health provider and left the facility alive |  |
| **Decision of health provider at discharge** |  |
| 6.1 Deceased was not referred, nor received any home care recommendations |  |
| 6.2 Deceased was referred to another health care provider |  |
| **The caregiver followed the recommendation and went to a second or last provider** |  |
| 7.1 Referral compliance (Deceased visited health provider where he/she was referred) |  |

**Table 3: Care seeking from formal providers among adults who died of acute or chronic illnesses, Mozambique 2018-2020**

|  |  |  |
| --- | --- | --- |
| **Characteristics** | **%**  **Sought care from formal providers**  **(Deaths from acute illness, N=)** | **%**  **Sought care from formal providers**  **(Deaths from chronic illness, N=)** |
| Age at death |  |  |
| 18-49 years |  |  |
| 50+ years |  |  |
| Gender |  |  |
| Female |  |  |
| Male |  |  |
| Education |  |  |
| Primary |  |  |
| Secondary and higher |  |  |
| Marital status |  |  |
| Single/ divorced/separated/widowed |  |  |
| Married/ Life partner |  |  |
| Employment |  |  |
| Unemployed |  |  |
| Employed |  |  |
| Household wealth |  |  |
| Lowest |  |  |
| Middle |  |  |
| Highest |  |  |
| Social autonomy\* |  |  |
| No |  |  |
| Yes |  |  |
| Social capital+ |  |  |
| No |  |  |
| Yes |  |  |
| Residence |  |  |
| Rural |  |  |
| Urban |  |  |
| Region |  |  |
| North |  |  |
| Central |  |  |
| South |  |  |

\*Active participant of community groups

+People in the community worked together on community issues that affect entire or part of the community; turned to anyone in community for help during illness in pregnancy

**Table 4: Association between care seeking from formal providers and other characteristics of adults who died of acute cause of illness, Mozambique 2018-2020**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Characteristics** | **Odds Ratio** | **SE** | **p-value** | **CI** |
| Age at death |  |  |  |  |
| 18-49 years |  |  |  |  |
| 50+ years |  |  |  |  |
| Gender |  |  |  |  |
| Female |  |  |  |  |
| Male |  |  |  |  |
| Education |  |  |  |  |
| Primary |  |  |  |  |
| Secondary and higher |  |  |  |  |
| Marital status |  |  |  |  |
| Single/ divorced/separated/widowed |  |  |  |  |
| Married/ life partner |  |  |  |  |
| Employment |  |  |  |  |
| Unemployed |  |  |  |  |
| Employed |  |  |  |  |
| Household wealth |  |  |  |  |
| Lowest |  |  |  |  |
| Middle |  |  |  |  |
| Highest |  |  |  |  |
| Social autonomy\* |  |  |  |  |
| No |  |  |  |  |
| Yes |  |  |  |  |
| Social capital+ |  |  |  |  |
| No |  |  |  |  |
| Yes |  |  |  |  |
| Residence |  |  |  |  |
| Rural |  |  |  |  |
| Urban |  |  |  |  |
| Region |  |  |  |  |
| North |  |  |  |  |
| Central |  |  |  |  |
| South |  |  |  |  |

\*Active participant of community groups

+People in the community worked together on community issues that affect entire or part of the community; turned to anyone in community for help during illness in pregnancy

**Table 5: Association between care seeking from formal providers and other characteristics of adults who died of chronic cause of illness, Mozambique 2018-2020**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Characteristics** | **Odds Ratio** | **SE** | **p-value** | **CI** |
| Age at death |  |  |  |  |
| 18-49 years |  |  |  |  |
| 50+ years |  |  |  |  |
| Gender |  |  |  |  |
| Female |  |  |  |  |
| Male |  |  |  |  |
| Education |  |  |  |  |
| Primary |  |  |  |  |
| Secondary and higher |  |  |  |  |
| Marital status |  |  |  |  |
| Single/ divorced/separated/widowed |  |  |  |  |
| Married/ life partner |  |  |  |  |
| Employment |  |  |  |  |
| Unemployed |  |  |  |  |
| Employed |  |  |  |  |
| Household wealth |  |  |  |  |
| Lowest |  |  |  |  |
| Middle |  |  |  |  |
| Highest |  |  |  |  |
| Social autonomy\* |  |  |  |  |
| No |  |  |  |  |
| Yes |  |  |  |  |
| Social capital+ |  |  |  |  |
| No |  |  |  |  |
| Yes |  |  |  |  |
| Residence |  |  |  |  |
| Rural |  |  |  |  |
| Urban |  |  |  |  |
| Region |  |  |  |  |
| North |  |  |  |  |
| Central |  |  |  |  |
| South |  |  |  |  |

\*Active participant of community groups

+People in the community worked together on community issues that affect entire or part of the community; turned to anyone in community for help during illness in pregnancy