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Basic Tabulations

Workshop on data analysis and report writing for civil registration based vital statistics

Nadi, Fiji

30 January – 03 February 2023

**Bloomberg
Philanthropies**



**DATA FOR
HEALTH INITIATIVE**



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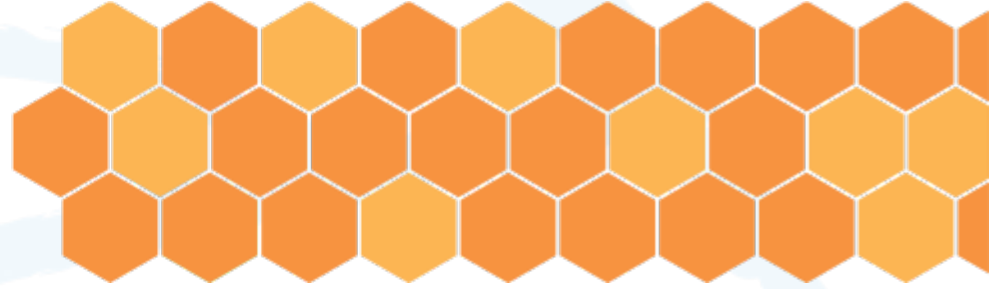


UNITED NATIONS
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Economic and Social Commission for Asia and the Pacific



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Tabulations of live births (Chapter 4 – Vital Statistics Report Template)

Importance of birth data

- ❖ Birth data has important statistical and administrative uses: It is key in planning for infrastructure and delivery of social services.
- ❖ Statistical uses:
 - ❖ Measurement of population growth, fertility rates
 - ❖ Providing denominators for early mortality calculations e.g. infant mortality rate (IMR), Neo natal mortality rate and under 5 mortality rate U5M.
- ❖ Administrative uses:
 - ❖ Planning infrastructure for: health, school, housing etc.
 - ❖ Sub-national birth data facilitates following up children eligible for key health and social services e.g. education and immunization.



Live Births / Still Births

❖ A **live birth** is a birth where a newborn, regardless of the length of his or her gestation, is born and demonstrates any sign of life.

❖ The **WHO** defines a still birth as....

“a baby born with no signs of life. Different countries use different cut-offs for the minimum number of weeks the pregnancy must have lasted to be classified as a stillbirth, with earlier pregnancy losses considered ‘miscarriages’. The World Health Organization (WHO) defines a stillbirth as a baby born with no signs of life at or after 22 weeks of pregnancy, but recommends that a 28-week cut-off be used for international comparison”

❖ **Although statistics on still births are important in themselves, they should not be included in birth data for calculating vital statistics estimates and indicators.**

Which tables to include?

- The tables and graphs to be presented on live births will depend on the variables that are collected when registering a birth.
- When considering which tables on births to include in the vital statistics report, it is useful to look at the **'Priority List'** in the Annex of 'Production of a Vital Statistics Report: Guide'*

* You can find this document in the Google Drive

Basic tables needed for analysis

- For births:
 - Total Number of births by year
 - Total Births by year, by sex
- Number of births by year, by age of mother (5-year age groups)
- Number of births by place of occurrence
- Number of births by place of birth (health facility/community)
- Births by place of usual residence
- Number of births by ethnicity (where available)

These estimates should be computed for both your civil registration and HIS data. We will need this for estimating civil registration completeness later today.



Births by age of the mother

- ❖ Women of childbearing age are considered to be women aged between 15-49 years
- ❖ Births however do occur to mothers below 15 or older than 49
 - ❖ It is important we capture these events, to better target interventions and service provision for these high-risk pregnancies
- ❖ Births per 1,000 women aged 15-19 is referred to as adolescent birth rate
 - ❖ Note that this does not include births to women under age 15 for comparability purposes.
 - ❖ The proportion of births to girls aged <15 and 15-19 should be computed separately.
- ❖ Age of mother at birth is important from a population growth perspective
 - ❖ If births occur at younger ages, the average interval between generations will be shorter.
 - ❖ A lower mean age of childbearing will increase the size of the future population.

Percentage distribution of births by age of mother, 2008-2017

Example drawn from Nauru Vital Statistics report 2015-2017

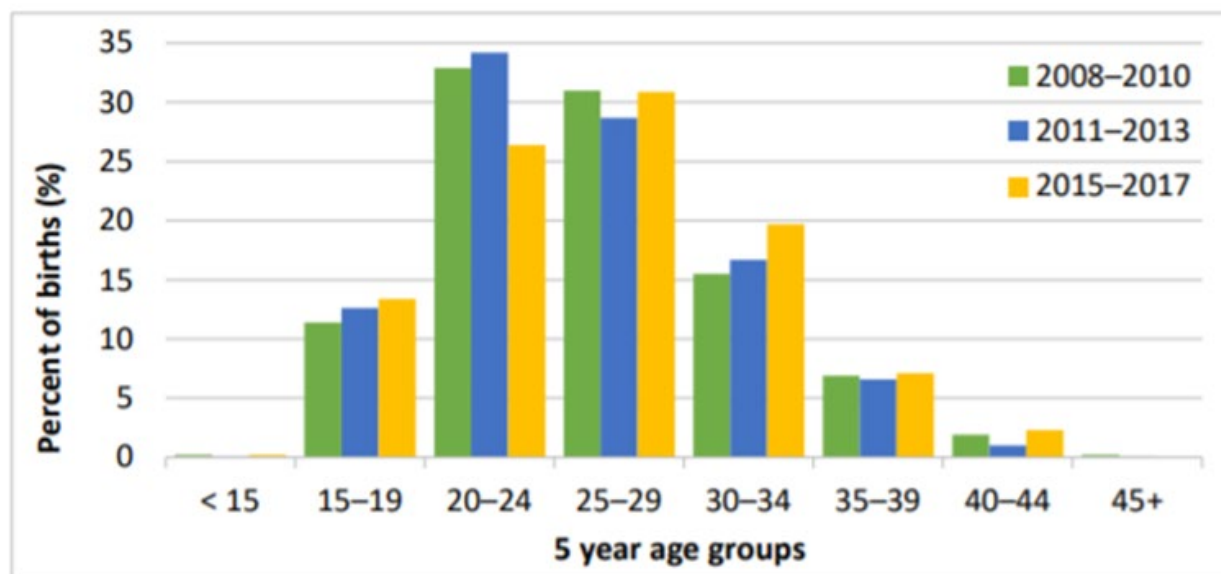


Figure 1: Percentage distribution of births by age of mother, 2008-2017

Note: Data for 2014 was not available during analysis.

Place of birth (facility type)

- ❖ Where are births occurring in your country?
 - ❖ hospitals, clinics, other health care centers, in the community etc.
- ❖ What percent were attended by a doctor or health care professional?
- ❖ Are births occurring overseas a significant factor to consider in your country?
 - ❖ See example from Niue on the next slide
- ❖ If the data supports it, how does this change over time?



Place of birth

Example drawn from Niue Vital Statistics Report 2012-2016

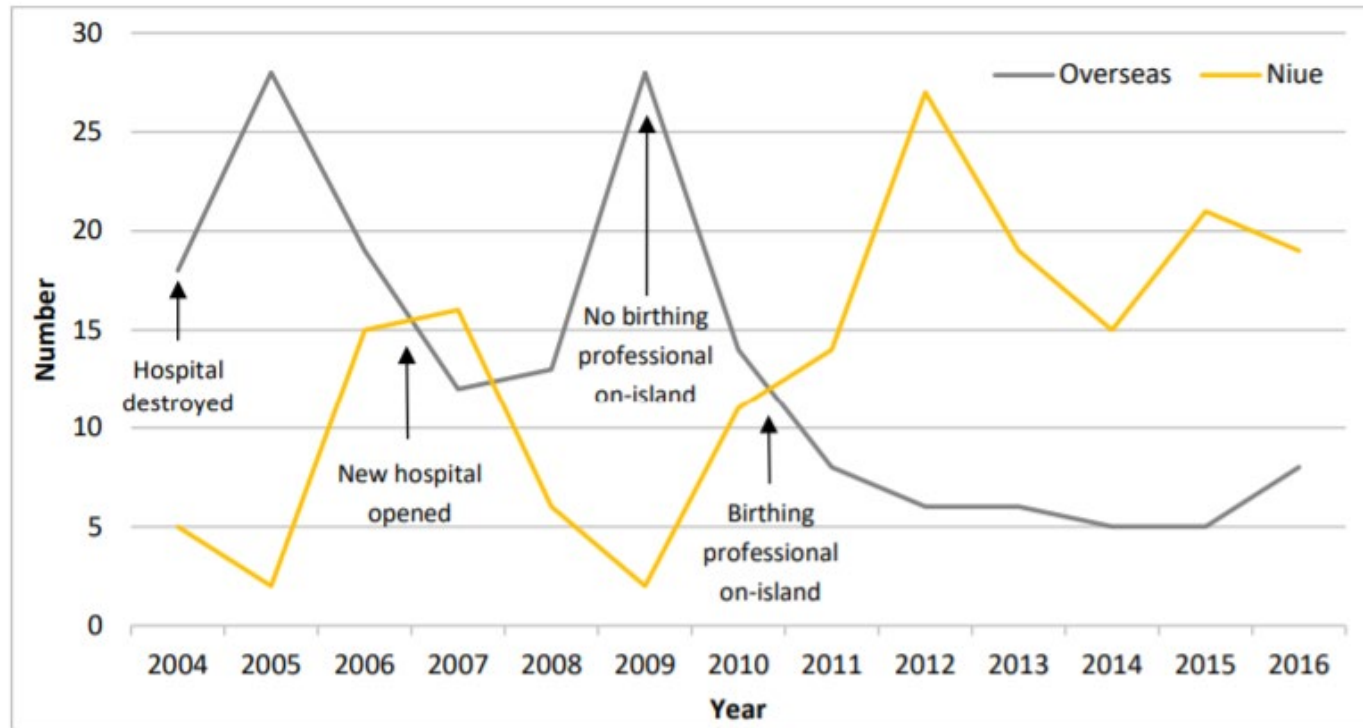


Figure 1.2: Total births by place of birth (Niue or overseas), 2004–2016

Recap: Managing birth data in small populations

- ❖ When examining vital events in small populations, the numbers of **births** and deaths are likely to “jump around” a lot over time.
- ❖ To smooth out some of this noise and to see more clearly what is going on over time, we:
 - ❖ Can calculate the average over a given period, or
 - ❖ Can calculate rolling averages.

Average over a given period:

- ❖ Calculate the average number of births over a 3- to 5-year period
- ❖ Sum up all the births over 5 years and divide by 5. For example, if we have 20 births occurring over 5 years (2008-2012), we divide 20 by 5 to get 4 births per year
- ❖ Do this separately for male and female babies

Example drawn from Tonga Vital Statistics report 2013-2018

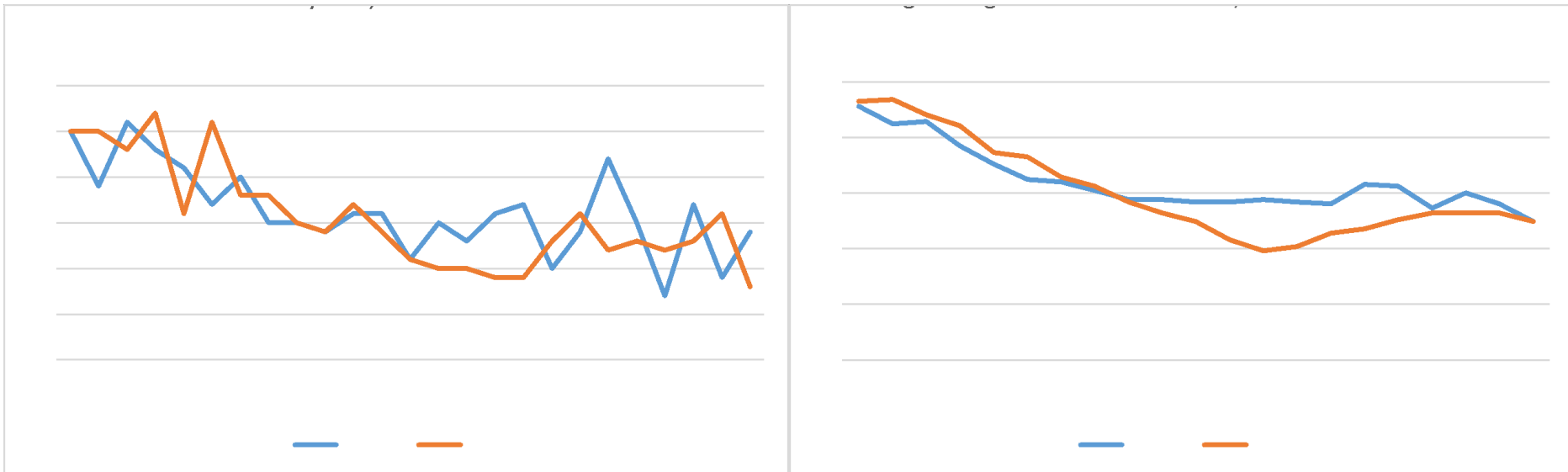
Table 1.2: Average number of births by sex, by 3-year period, 2013–2018.

Period	Female Average	Male Average	Total Average
2013–2015	1,341	1,495	2,836
2016–2018	1,173	1,230	2,403

Using a rolling average:

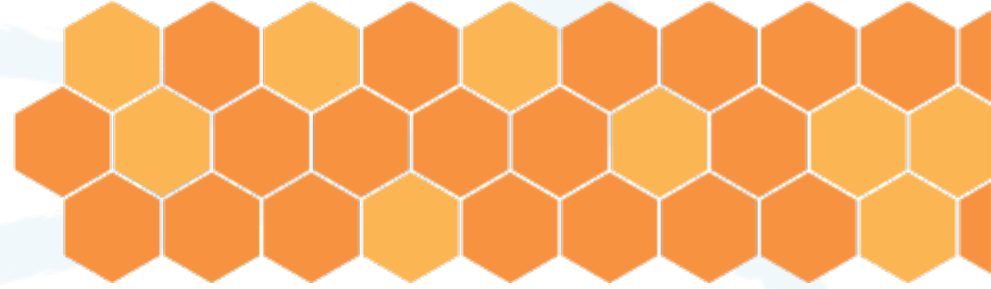
- ❖ Rolling averages (also known as moving averages) can smooth out some of the noise so that any given point that is unusually high or low, does not distort overall trends over time.
- ❖ We can average data points over 3 or 5 years and graph the midpoints of our data to see how things are changing.
- ❖ Helpful when policy makers request annual figures to understand changes in births or deaths over time.

Using a Rolling Average: Graph Comparison





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**Tabulations of deaths
(Chapter 5 – Vital Statistics Report
Template)**

Deaths and Causes of Death (CoD)

- Since cause of death is considered an important aspect of death registration, especially as a source for planning and policymaking, this guide suggests a division between the presentation of statistics on deaths (Chapter 5 of the VS report) and CoD (Chapter 6 of the VS report)
- Although we won't be looking into CoD during this 5-day workshop, our facilitators will be happy to support you in this analysis after the workshop



Importance of mortality data



- Mortality data is an indicator of:
 - Quality of life
 - Health
- The level of mortality is an essential measure of health outcomes
- We are interested in how old people are when they die and how this compares to patterns in other countries, as well as how this is changing over time
- Many governments have now recognised that a more complete source of COVID-19 mortality data is a well-functioning CRVS system that captures all deaths within their borders, disaggregated by age, sex and date and location of occurrence
- Their use in population projections

Importance of death data for the SDGs



3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births

3.1.1 Maternal mortality ratio

3.1.2 Proportion of births attended by skilled health personnel

3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births

3.2.1 Under-five mortality rate

3.2.2 Neonatal mortality rate

3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases

3.3.1 Number of new HIV infections per 1,000 uninfected population, by sex, age and key populations

3.3.2 Tuberculosis incidence per 1,000 population

3.3.3 Malaria incidence per 1,000 population

3.3.4 Hepatitis B incidence per 100,000 population

3.3.5 Number of people requiring interventions against neglected tropical diseases

Uses of mortality data

- A well-functioning CRVS system which generates a continuous stream of data on deaths can support planning and decision-making at national and subnational levels:
 - Population health
 - Health planning and resource allocation
 - To measure the success of a new treatment
 - To measure the success of health services



Parameters affecting mortality

- Demographic composition of the population, i.e. age and sex structure
- Quality and utilization of health services such as immunization programmes, maternal and child health care, primary health care, etc.
- Environmental conditions and availability of infrastructure, such as housing, water supply, sanitation, waste disposal
- Lifestyle related factors e.g. alcohol/tobacco use
- Work-related dangers
- Exposures to events such as natural hazards
- Socio-economic status e.g. income and education



Which tables to include?

- The tables and graphs to be presented on deaths will depend on the variables that are collected when registering a death
- When considering which tables on deaths to include in the vital statistics report, it is useful to look at the '**Priority List**' in the Annex of 'Production of a Vital Statistics Report: Guide'*
- Some of these tables may be more challenging to produce compared to births, since deaths are more commonly under-registered than births, and particularly so for women, young children and infants

* You can find this document in the Google Drive

Basic tables needed for analysis

- For deaths:
 - Total number of deaths by year
 - Total deaths by year, by sex
- Number of deaths by age and sex of decedent
- Number of deaths by place of usual residence and sex of decedent
- Deaths by place and site of occurrence (i.e. hospital/at home)
- Number of deaths by place of occurrence, place of usual residence and sex of decedent

These estimates should be computed for both your civil registration and HIS data. We will need this for estimating civil registration completeness later today.



Deaths by age and sex

- Understanding the age and sex distribution of registered deaths is an important quality check
- The age-sex distribution should look quite different depending on the overall level of mortality in a population, with more males generally dying at each age group (until the very oldest ages, when more females tend to die) and an increase in the number of deaths as age increases (after about ages 5-10 years)
- Departures from expected patterns can be an indicator of underreporting of deaths at certain ages for males or females
- There is also evidence in some settings that deaths of women are less likely to be registered than deaths of men due to fewer incentives

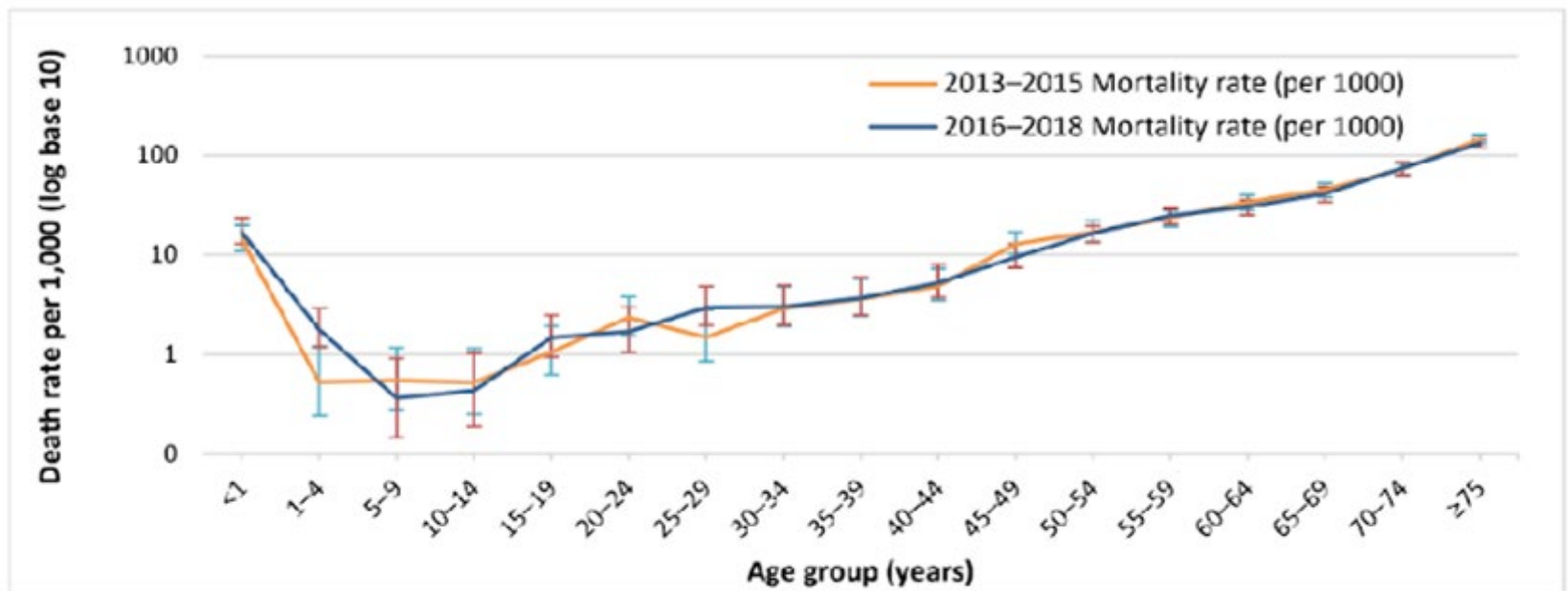


Figure 2.2: Male Age-Specific Mortality Rates (deaths per 1000 people), by 3-year period, 2013–2018.

Source: Tonga National Vital Statistics Report (2013-2018)

Deaths by place and site of occurrence (i.e. hospital/at home)

- This tabulation is useful for the analysis of the number of deaths occurring in hospitals, in other institutions, in public places, and at home for each geographical subdivision of the country.
- Such data are useful in planning for medical facilities and health staffing



Guidelines for tables for reports

Table 2.12 Birth registration of children under age five

Percentage of de jure children under five years of age whose births are registered with the civil authorities, according to background characteristics, Samoa 2009

Background characteristic	Percentage of children whose births are registered			Number of children
	Had a birth certificate	Did not have a birth certificate	Total registered	
Age				
<2	29.6	5.0	34.6	796
2-4	54.7	2.4	57.1	1,110
Sex				
Male	44.8	3.3	48.1	958
Female	43.7	3.7	47.4	949
Residence				
Urban	61.4	0.7	62.1	356
Rural	40.3	4.1	44.4	1,551
Region				
Apia Urban Area	61.4	0.7	62.1	356
North West Upolu	44.4	1.1	45.5	610
Rest of Upolu	32.8	8.2	41.0	494
Savaii	43.0	3.8	46.8	447
Wealth quintile				
Lowest	27.3	3.2	30.5	403
Second	44.9	1.9	46.8	391
Middle	41.3	3.3	44.7	372
Fourth	49.3	6.1	55.4	375
Highest	59.8	3.0	62.8	367
Total	44.2	3.5	47.7	1,907

Have a clear title

Have a reference to the table (such as a table number)

Provide the total to give summary information (especially the total number if showing percentages)

Space the table entries so that the table is easy to read

Guidelines for tables for reports

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Include the source of the

Use vertical and horizontal lines to separate the labels from the data themselves

Have rows and columns clearly labelled

Usually do not have the columns separated by vertical lines or rows by horizontal lines – this splits the table up too much

Guidelines for tables for reports

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Specify the units of the data in the table

Put numbers most likely to be compared with each other in adjacent columns

Do not use more than two decimal places with

Where practical, put columns with larger values at the left of the table, and columns with smaller values at the right of the

Percentages

- To change an amount to a percentage divide it by the total and multiply by 100.
- Do not show more than one decimal with percentages: you should **round the raw figures**.
- The total of the percentages should add up to 100 (rounding excepted)
- When showing all categories that add up to 100 percent, label your figure as a “Percent Distribution”
- You should report somewhere in your table what number was used for the total – i.e. how many cases = 100%



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Q&A