ASSESSING INEQUALITIES IN THE REGISTRATION OF BIRTHS IN SAMOA

Get every one in the picture

ESCAP
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DATA FOR HEALTH INITIATIVE

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Civil registration of births and deaths is a human right. The legal documents accompanying registration facilitate access to protections afforded by the State, as well as the benefits a person may be entitled to. Further, data collected by Civil Registration & Vital Statistics (CRVS) systems are critical for monitoring the health and well-being of the population, as well as informing population planning and policies. However, disparities exist in completeness of birth and death registration. Assessing inequalities in the registration of births and deaths is therefore critical to address disparities and ensure all persons have access to and full inclusion in the CRVS system. To that end, inequality assessments are a means of investigating such disparities and informing policy makers about the differentials in registration that may exist in their country. This report outlines the findings of such an assessment for inequalities in birth registration in Samoa, the methodology used as well as the available data, data quality considerations if known, and policy recommendations based on the findings.

The Samoa Inequality Assessment found that children under the age of one had the lowest rates of registration across all variables examined and that the residence of the child, specifically children living in districts farthest from the registration office in Upolu, and those living in Savai'i, were least likely to have their births registered. Children whose mothers have lower educational attainment, as well as children in the lowest wealth quintile also had disproportionately lower rates of birth registration. Other factors assessed that had no significant impact on birth registration included sex of the child, religion, sex of the household head, educational attainment of the household head, child's disability status (for children aged 2-4 years), and whether the mother or father were living in the household with the child. The impact of mother's age at birth on registration completeness could not be determined due to conflicting results from different data sources.

Given the above findings from this report, the following interventions should be considered to improve birth registration in Samoa: (1) Consider providing small economic incentives for families to register births by a child's first birthday; (2) Strengthen coordination with birthing centers and community birth attendants to better support parents in the registration process; (3) Partner with organizations that service poorer households or households in remote areas, village leaders, village women communities, and midwives to advocate for timely registration; (4) Consider mobile registration or yearly registration campaigns where registration services are taken to the people, especially in those areas farthest from registration offices; and (5) Consider autonomy, linkages and interoperability when replacing the *Life Data System*.

Few countries have undertaken an inequality assessment to understand differentials in completeness of registration of births and deaths.[1] While some countries do perform analysis of completeness of vital events by sex, and a handful have examined differentials by age, to our knowledge, this report is the third to examine differentials by sex, age, and region combined. While the data may not be fit for

1 https://www.unescap.org/projects/inequality-assessments

exercises such as calculating disaggregated age-specific fertility rates without adjustment for known errors, it is robust enough to pinpoint disparities between different populations in birth registration completeness. This information can then inform future research and policy interventions to bridge gaps in registration between different populations. We hope this report serves as an inspiration and a resource for other countries to assess inequalities in registration and determine who is most likely to be left behind.

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1 BACKGROUND

A well-functioning civil registration and vital statistics (CRVS) system helps ensure that every person has a legal identity, facilitating access to the benefits and protections of the nation. CRVS systems are also the preferred data source for many demographic statistics. The need for strong CRVS systems is well-recognized in the 2030 Sustainable Development Goal (SDG) Agenda to provide legal identity for all, including birth registration, a target in and of itself (16.9).[2] CRVS is critical for both achieving and monitoring the SDGs – 102 SDG indicators are dependent upon people's access to birth, death and marriage certificates; a service only CRVS systems can provide.[3] Another 16 SDG targets and 24 indicators require data that are best generated from a CRVS system,[3] and 7 of the 17 SDGs, and 17 of their corresponding indicators require cause-specific mortality data from CRVS systems for their measurement.[4] To truly ensure no one is left behind, disaggregated population data will be needed to monitor progress among the most marginalized groups. Data from CRVS systems will be critical to fulfill this need and monitor 106 of the 231 SDG indicators.[3]

However, there are often disparities in completeness of birth and death registration among certain populations. The magnitude of disparity is often unknown, with little or no data to inform who is being left behind and to what extent. Until we have better disaggregated data to understand who is being left behind, these populations will continue to remain largely invisible, and they will not benefit from the rights and protections civil registration provides. Assessing inequalities in the registration of births and deaths is therefore critical to ensure full inclusion so that disparities among different population groups can be addressed.

To ensure that registration is truly universal and fully inclusive, the Ministerial Declaration[5] to 'Get Every One in The Picture' in Asia and the Pacific recognized the need to address disparities in civil registration completeness and coverage of marginalized populations. Hence, the Regional Action Framework (RAF) for CRVS in Asia and the Pacific and the Asia-Pacific CRVS Decade 2015-2024 (ESCAP resolution 71/14)[6] calls upon countries to assess any CRVS-related inequalities experienced by population subgroups. Inequality assessments are also key to the realization of the 2030 Agenda for Sustainable Development in terms of both data and social protection.

Given the importance of inequality assessments and the demand from countries for support (see ESCAP resolution 71/14 and report of the 72nd Commission, for example[7]), ESCAP initiated a project to develop guidelines and technical support for inequality assessments. Country inputs highlighted the need for increased support in conducting CRVS inequality assessments and strengthening the production and use of inclusive vital statistics. This report is the culmination of a

2 https://sdgs.un.org/goals#goals

3 WHO civil registration and vital statistics strategic implementation plan 2021-2025. Geneva: World Health Organization; 2021. Licence: CC BY-NC-SA 3.0 IGO.

4 Richards N, Sorchik R, Brolan C. Why the sustainable development goal agenda needs strong civil registration and vital statistics systems. CRVS development series. Carlton, VIC: University of Melbourne, Civil Registration and Vital Statistics Improvement, Bloomberg Philanthropies Data for Health Initiative, 2018.

5 https://getinthepicture.org/resource/ministerial-declaration-get-every-one-picture-asia-and-pacific

6 https://getinthepicture.org/resource/escap-resolution-71-14-asian-and-pacific-civil-registration-and-vital-statistics-decade

7 https://getinthepicture.org/resource/escap-resolution-71-14-asian-and-pacific-civil-registration-and-vital-statistics-decade

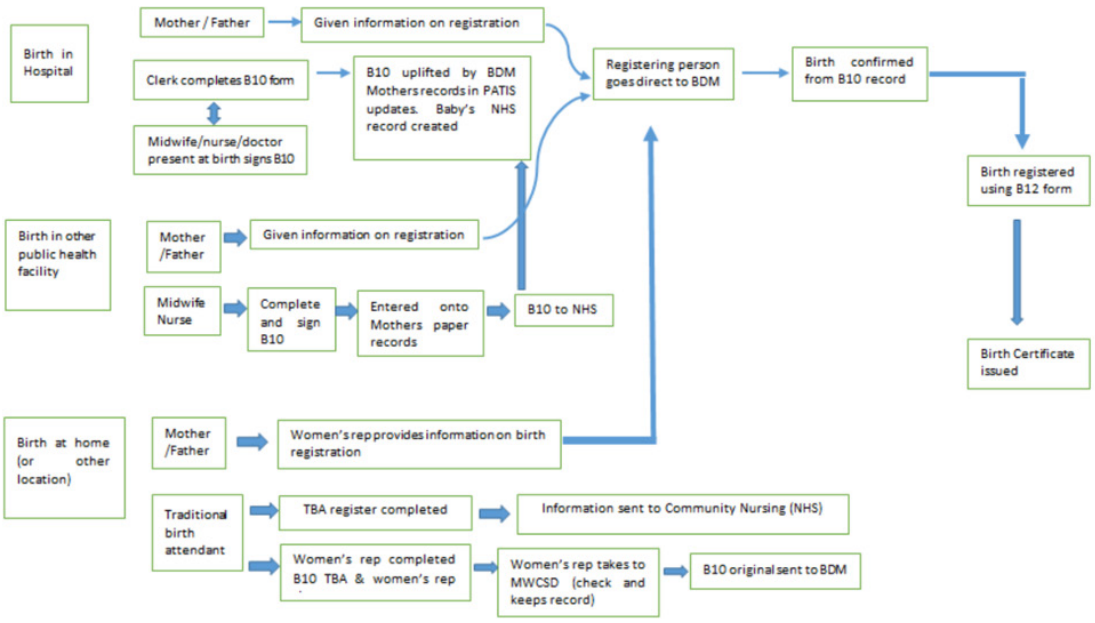
series of workshops, technical support and capacity strengthening provided by ESCAP to the Samoa Bureau of Statistics and other relevant national stakeholders to facilitate the implementation of CRVS inequality assessments using secondary data sources in Samoa.

Few countries have undertaken a quantitative inequality assessment of their CRVS system to understand differentials in completeness of registration of births and deaths. While some countries do perform analysis by sex, and a handful have examined differentials by age, to our knowledge this report is the third to examine differentials such as sex, age of mother, religion wealth quintiles, and area of residence for birth registration completeness. While the data may not be fit for exercises such as calculating disaggregated age-specific fertility rates without adjustment for known errors, it is robust enough to pinpoint disparities between different populations in registration completeness. This information can then inform future research and policy interventions to bridge gaps in registration between different populations. We hope this report serves as an inspiration and a resource for other countries to assess inequalities in registration and determine who is most being left behind.

2 THE SAMOA CIVIL REGISTRATION AND VITAL STATISTICS SYSTEM

Registration of births, deaths, marriages, and divorces occurs at the Births, Deaths and Marriages (BDM) Division under the Samoa Bureau of Statistics (SBS). The primary role of the BDM Division is to serve the public by registering vital events and providing birth, death, marriage, and divorce certificates, but they are also responsible for the publication of vital statistics from civil registration records. However, their primary role of serving the public often leaves little time for staff to perform data analysis or prepare publications of vital statistics.

Figure 1: Illustration of birth registration from the 2019-2020 Samoa MICS[8]



Key stakeholders in the Samoa CRVS system include the Registrar General's Office (under which the BDM Division falls), as well as the Census, Survey and Demography Division within the Samoa Bureau of Statistics, who are responsible for the production of various statistics including vital statistics based on the analysis of census and survey data. The Ministry of Health (MOH) is also a key stakeholder in the system, providing information on notification of births and deaths to BDM. Other key stakeholders include the Ministry of Women, Community and Social Development (MWCSD) who report home births and deaths in villages to BDM, and the Council of Churches where church ministers report deaths and marriages, as well as provide baptism certificates that can be used for registration of births when children are born at home. The Ministry of Education, Sports, and Culture (MESC) is also a key stakeholder; MESC provides support to families to obtain birth certificates because all children in Samoa require a birth certificate to enroll in school.

8 Samoa Bureau of Statistics. 2021. Samoa Demographic and Health – Multiple Indicator Cluster Survey 2019-20, Survey Findings Report. P. 338. Apia, Samoa: Samoa Bureau of Statistics.

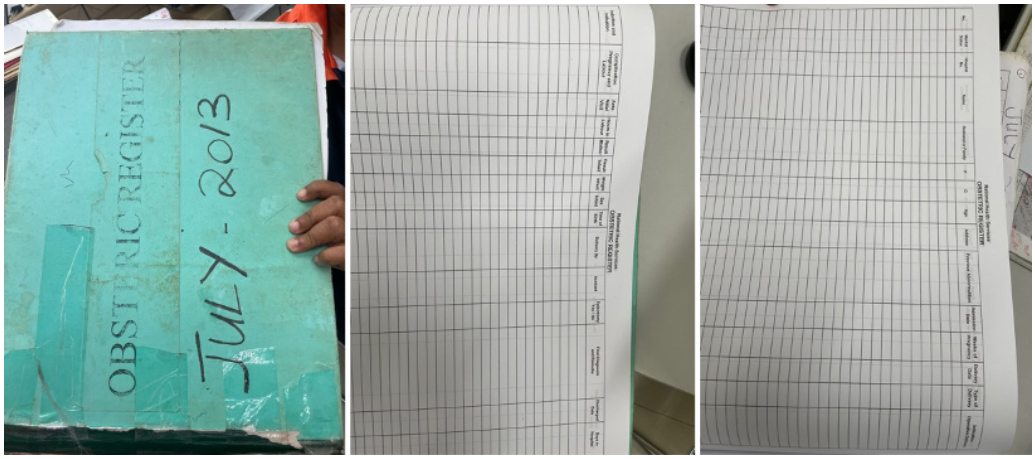
Management of notification of births

The MOH National Health Service provides paper copies of notification of births (NOBs - known as Form B10) and notification of deaths (NODs) to BDM from the main hospital, Moto'otua Hospital, on the 15th of every month which includes events from the previous month. Once BDM receives the paper forms, they digitize them and 'pre-register' events in the *Life Data System*, unless parents present first. 'Pre-registration' means the records are entered into the system but are not officially registered until the family presents at BDM. By law, families have three months to register a birth without a fee. NOBs and NODs are only collected from the main hospital, BDM doesn't collect forms from district hospitals.

Moto'otua Hospital uses the PATIS+ system for birth notifications, however, the Tamanu app is currently being rolled out, which automatically completes notifications along with other medical record information. The main hospital in Savai'i has its own PATIS+ system, which was once linked with Moto'otua Hospital, but that linkage is no longer interoperable. Data sharing between Moto'otua Hospital and district hospitals is challenging and both are managed by different entities.

For children born at home where the birth was attended by a midwife, midwives enter birth information into a medical record logbook. The medical records team at Moto'otua Hospital receives these logbooks and enters them into PATIS+, however, there is a long delay between birth and the digitization of information. For home births where no midwife is present, these births may get entered into PATIS+ if the baby comes into the main hospital at a later time.

Figure 2: Photograph of logbook for community midwives



There are more than 10 district hospitals, and birth notifications from these district hospitals are not entered into PATIS+. District hospitals may use Excel to track births, but each has their own record keeping system. The proportion or number of vital events that occur in district hospitals relative to all vital events is unknown. In Samoa, there is no law requiring mothers to give birth in a health facility, nor are they obligated to visit a facility after giving birth. Additionally, families are not legally required to bring the bodies of deceased individuals to a health facility after death. Therefore, health facilities only have data for events that occur within the facility or with the attendance of a midwife who reports in the logbook in the case of community/home births. There may be a possibility to link all district hospitals through the Tamanu app in the future.

Due to the fragmentation of data across many different entities, it would be challenging to use birth notifications to estimate the total number of births in Samoa. This would require getting data from Moto'otua Hospital, the main hospital in Savai'i, and 10+ district hospitals, resulting in a minimum of 12 data requests, and even then, data completeness may remain an issue.

The Multiple Indicator Cluster Survey (MICS) conducted in 2019-20 estimated that 89 per cent of births in Samoa occur in a health facility.[9] According to the United Nations World Population Prospects (UNWPP),[10] approximately 6,000 births occur each year, so one would expect 5,300 of these to occur in a health facility and have a birth notification. The number of records in PATIS+ were examined for the years 2015 to 2022 for the viability of estimating births. However, at best, these records were found to be just 75 per cent complete for births occurring in a health facility and represent only 67 per cent of total births in 2017 (Table 1). More recent years are even less complete, thus suggesting the use of this data to estimate the total number of births may be unreliable.

Table 1: Number of birth notifications in MOH PATIS+ records by year of birth, their representativeness of total births and births occurring in health facilities using UNWPP data[11] for birth estimates

Year of birth	Number of birth notifications in MOH PATIS+ records	UNWPP birth estimates	Per cent complete of total births	Per cent complete of facility births
2015	**1952**	6,031	32%	36%
2016	**3868**	5,990	65%	73%
2017	**4002**	5,974	67%	75%
2018	**3677**	5,957	62%	69%
2019	**2877**	5,946	48%	54%
2020	**3759**	5,952	63%	71%
2021	**3523**	5,975	59%	66%
2022*	**88**	6,024	1%	2%

* Data for 2022 not fully compiled at the time of data acquisition

9 https://mics-surveys-prod.s3.amazonaws.com/MICS6/East%20Asia%20and%20the%20Pacific/Samoa/2019-2020/Survey%20findings/Samoa%202019-20%20DHS-MICS%20Survey%20Findings%20Report_English.pdf

10 https://population.un.org/dataportal/

11 https://population.un.org/dataportal/home?df=1a6cf362-1285-4d1e-905c-b67c3f998878

Table 2 below outlines the variables that are captured in the PATIS+ system by MOH for future consideration. These variables may change once the Tamanu app is fully rolled out and may replace the current system for data collection.

Table 2: Notification of birth data from the Ministry of Health PATIS+ system: variables captured

Variable	Collected by MOH PATIS+ for births?
Date of birth	Present
Date of notification	Not Present
Facility name	Present – Place of delivery or home delivery
Place of usual residence	Present – village and urban/rural
Sex of baby	Present
Wealth quintile	Not collected
Mother's education	Not collected
Mother's age	Recorded as age at the time of birth; date of birth (DOB) not collected
Mother's marital status	Collected in recent system but not available in historical records
Mother's BRN	Not collected yet but may be included in the future.
Father's occupation	Collected in recent system using a drop-down menu, but not available in historical records
Mother's occupation	Collected in recent system using a drop-down menu, but not available in historical records
Ethnicity	Collected in recent system using a drop-down menu, but not available in historical records
Religion	Collected in recent system using a drop-down menu, but not available in historical records

The MOH Monitoring and Evaluation Health Information System (HIS) division travels to district hospitals and counts births by sex using the hospital logbooks. They combine this with information from PATIS+ and information from the Expanded Programme on Immunization (EPI) team to produce internal reports of births. The M&E team also requests data from the EPI team for births, which is believed to be highly accurate. The EPI coordinator (immunization nurse) collects monthly numbers of births in all facilities, but home births are only captured when mothers bring babies in for immunization within 24 hours of birth. EPI receives monthly reports of immunization and home births that present within 24 hours (but not, for example at 6-week vaccination appointments). Babies who are born in New Zealand, but come back to Samoa and receive their vaccinations at 6 weeks, are also not captured in EPI's birth records. Data requests for birth counts from the M&E team were challenging due to staff changeover. Further, no public data published by MOH on the number of births each year was found. The M&E team is newly established and should be engaged with going forward for future analyses. However, data requests require the CEO of SBS to send an official request to the CEO of MOH, which is a cumbersome process. Future MoUs for data sharing between the M&E MOH team and BDM should be investigated, to alleviate the burden of this process.

Community births and deaths

Village representatives of MWCSD are required to report births and deaths that occur within the community. They also use a form called B10 for births, but it differs from the form used by the main hospital. Village representatives are meant to report on a monthly basis to BDM. In practice, however, reporting is often delayed and coverage of events is not exhaustively inclusive.

Under the law, family members must notify BDM of deaths occurring at home. However, this often does not happen in practice. The Council of Churches assists in reporting community marriages and deaths. The Council of Churches have their own forms which differ from the official notification forms. When BDM receive forms from the Council of Churches, they transfer the information from these forms onto the official BDM forms and then input it into the *Life Data System*. Funeral parlors also report deaths to BDM which are then entered into the *Life Data System*. Community medicolegal deaths (road traffic accidents, drowning, homicides etc.) are notified by the police and coroner to BDM.

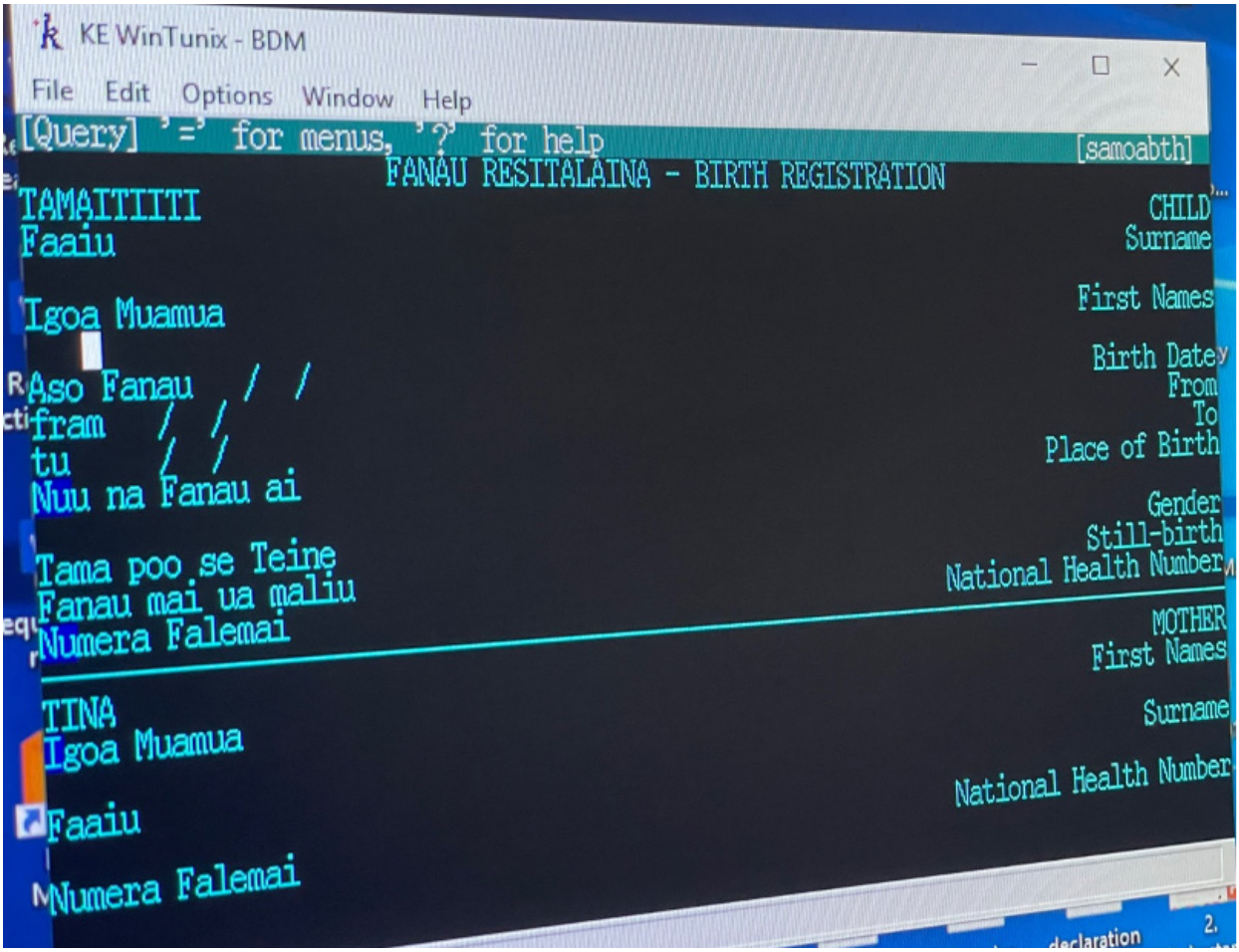
The notification of vital events from the main hospital and those being reported by village representatives of MWCSD are not likely to offer a complete picture of vital events. However, the extent of under-coverage is unknown for both births and deaths.

The Life Data System

The *Life Data System* is the system used by BDM to record and register births and deaths. It has several limitations, the first being that it does not allow Samoa sovereignty over its own data. The *Life Data System* is a 20-year-old system owned by a private company in Australia, where the database is stored and maintained. Operators in Samoa cannot extract data on their own.

Instead, SBS must submit a help ticket to a private company based in Australia and pay a fee for each extraction. The second limitation of the system is that there is no way to differentiate between records that have been officially registered, and those records that have been recorded (or pre-registered) based on NOBs and NODs from MOH, whereby the family is yet to officially present for registration.

Figure 3: Screenshot of Life Data System



The inability to extract data from the *Life Data System* has made it prohibitive to perform direct estimates of birth and death registration completeness in the past. Due to this limitation, a proxy was used for the analysis of registered records. As only registered records can be printed, and the majority of registered records were printed immediately upon registration, the print status of records was used as a proxy for registration. However, this proxy could result in an underestimation of registration as some records do not get printed upon registration for various reasons such as power outages, printer errors, lack of paper etc. Staff in the civil registry office estimate that these situations occur fairly rarely, and only affect approximately 5 per cent of cases. These cases likely cause a lengthy delay in the print status being converted to 'Printed' as the family must return and present at a later time to obtain the birth certificate.

Users must double-key an entry before it can be printed. In this way, even if the information already exists in the system from the birth notification, it must be re-entered when the family member comes for registration. Double-keyed and registered records require the child's name, sex, and date of birth, as well as the mother's name. 'NR' is used as a placeholder when these are unknown, but the record cannot be marked as completed or registered. As shown in the screenshot above, all variables are entered into the *Life Data System* via open text and there are no drop-down menus. However, during this assessment, data was assessed to be fairly consistent in terms of spelling and accuracy, and generally of high data quality. Other variables collected in the *Life Data System* are noted in Table 3 below.

Table 3: Variables collected in the *Life Data System* for registered births

Variable	Collected in the *Life Data System*?
Date of birth	Present
Date of registration	Present
Usual residence	Mother and father's village
Place of birth	Present by health facility and village for home births
Sex of baby	Present
Wealth quintile	Not collected
Mother's education	Not collected
Mother's age	Age present, mother's DOB collected
Mother's marital status	Collected but not always complete or accurate
Father's occupation	Collected: open text field
Mother's occupation	Collected: open text field
Ethnicity	Not collected
Religion	Not collected
Birth certificate number	Present
Nationality	Not collected

3 METHODOLOGY

This report draws on data sources identified during a data mapping exercise undertaken in 2023 with support from SBS. The exercise identified the recent 2019-2020 Multiple Indicator Cluster Survey (MICS) as a potential source of data and thus microdata sets were acquired for the 2019-2020 MICS via the UNICEF website.[12] It should be noted that the counts from the microdata set do not match the figures in the published report exactly, but they are generally within a small margin of error (+/- 0.3%). This data was used to further disaggregate by age and region, wealth quintile, religion, education level of the mother and household head, sex of head of household and if the mother and father were living in the household with the child.

The 2014 DHS was also identified as a potential data source, but data for the 2014 DHS were not publicly released and therefore not accessible for further analysis beyond what was published in the report. Furthermore, this data is 10 years old.

Administrative data and other data sources were assessed for usability. When using administrative data, completeness of birth registration by different sub-groups was calculated using the number of registered births (by sub-group) from BDM as the numerator, divided by estimated births (denominator) from several different data sources discussed below.

Example: Birth registration completeness

$$= \frac{\textit{Births registered by BDM in a certain time period}}{\textit{Births estimated from another data source from that same time period}}$$

As discussed in the previous section, it was determined that PATIS+ data was not complete enough to estimate births, and it was not possible to get birth counts from the MOH Monitoring and Evaluation HIS division. Therefore, the United Nations World Population Prospects (UNWPP) estimates of births for the years 2018 to 2022 were used,[13] along with the age 0 population enumerated in the 2021 census. UNWPP estimates can be disaggregated by age of the mother and sex of the child. The census data has multiple possibilities for disaggregation but also some limitations which are discussed below.

Using census data to estimate births

Population and housing censuses are excellent sources of demographic data as they can be disaggregated down to low-level geographies and also collect a wide range of information for both parents and children, such as the age and sex of a child (and their birth date), the age of the mother, district or village of residence. Censuses also contain information about mothers' marital statuses,

12 Application requests to download microdata can be submitted at: https://mics.unicef.org/surveys

13 https://population.un.org/dataportal/

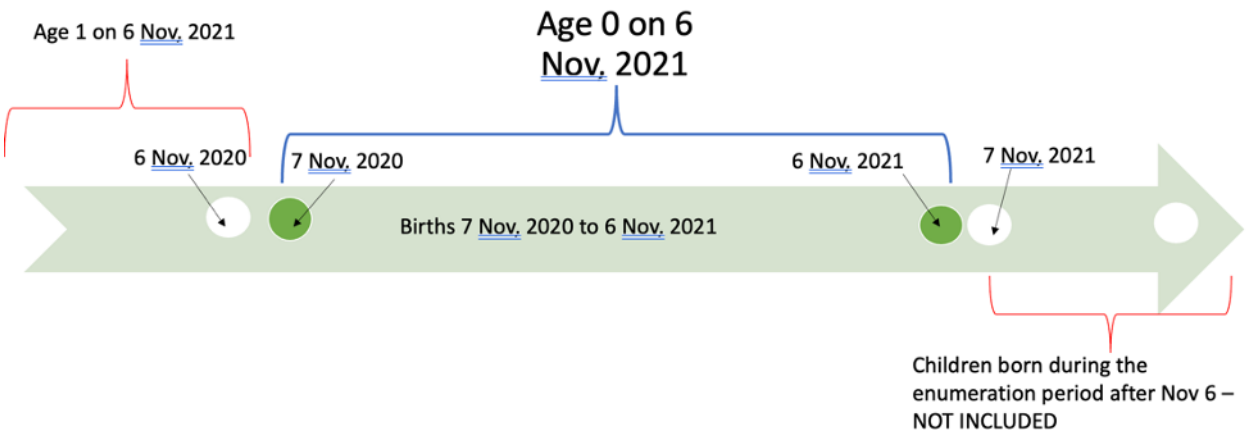
parents' and child's ethnicity, parents' occupation, parents' education, and parents' disability status. Information from the census about household structures and durable goods owned by household residents can also be used to develop wealth quintile proxies.

For this inequality assessment, the age 0 population at the time of the census was used to estimate births. The census enumeration reference day was November 6, 2021. Enumeration was carried out from October to November, but enumeration was referenced to household composition on the night of November 6, 2021.[14] Thus, children born between Nov. 7, 2020 and Nov. 6, 2021 would have been age 0 at the time of the census (see Figure 4 below) and were subsequently included in both the numerator (registered births) and denominator (estimated births from census population).

Birth registration completeness using age 0 census data =

$$\frac{\textit{Births occurring between Nov 7, 2020 to Nov. 6, 2021 that are registered by BDM}}{\textit{Children age 0 enumerated in the census Nov. 6, 2021}}$$

Figure 4: Children included in the age 0 population at the time of census



The age 0 population at the time of the census was used to estimate births due to the simplicity and availability of disaggregated data. However, there are some shortcomings of this methodology. Firstly, it is well understood that censuses worldwide tend to undercount children, particularly infants.[15] For example, the initial undercount in the 2020 US Census for the age 0 population was estimated to be 7 per cent.[16] Samoa did not perform a post-census enumeration survey, which is used to correct for undercounts among the different population and age groups. Thus, while a general adjustment could be applied to the age 0 population as a whole, adjustment at the district level by sex and ethnicity becomes more challenging.

14 Samoa Bureau of Statistics, 2021. Samoa Population and Housing Census 2021 Basic Tables. https://sbs.gov.ws/documents/census/2021/Census-2021-Final-Report_221122_051222.pdf

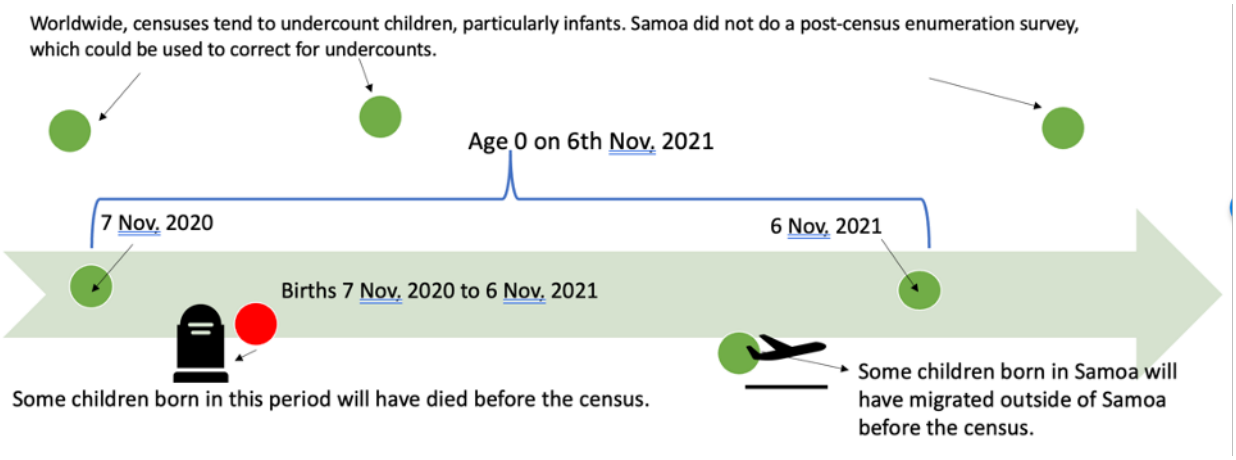
15 O'Hare, W.P. 2017. An international perspective on the undercount of young children in the U.S. Census. Statistical Journal of the IAOS 33 (2017) 289–304.

16 U.S. Census Bureau, 2020 Demographic Analysis Estimates of Net Coverage Error for children by single year of age. https://www.census.gov/library/stories/2022/03/despite-efforts-census-undercount-of-young-children-persists.html

Further, this methodology excludes children born during the specified time period (Nov. 7, 2020 – Nov. 6, 2021) who died before the enumeration day of the census. Their births should be included in the denominator estimating births, but only live persons in the household are enumerated and included in the final data set. Although neonatal and infant mortality rates could be used to reverse calculate the surviving children over this period, there is no disaggregated mortality data by district, sex, and ethnicity. Additionally, the lack of disaggregated migration data further complicates statistical techniques. Children included in the numerator as registered births may not appear in the denominator as they will have died after their birth was registered but before the time of the census. The infant mortality rate (IMR) in Samoa is 15 infant deaths per 1,000 live births.[17] With an estimated 6,000 births a year,[18] this would result in approximately 90 infant deaths in a year, some of which would not be enumerated in the census. However, the IMR is as high as 29 infant deaths per 1,000 live births in the poorest households.[19]

Another limitation to this methodology is the exclusion of children who were born in Samoa during the reference period but migrated outside of Samoa before the census. Very limited migration data is available for Samoa, and this data does not adequately break down migration characteristics by age, sex, ethnicity and district.

Figure 5: Limitations of using the age 0 population from the census to estimate births



While using age 0 census data to estimate births is not perfect, the purpose of the inequality assessment is to determine whose births are not being registered, not the absolute rate of birth registration completeness. Triangulated with other data sources, this is a useful exercise in this regard. It should be noted, however, that these unadjusted estimates will provide higher rates of registration completeness as there are some 'missing' births in the denominator, making the denominator smaller and thus, increasing the resulting completeness calculations.

The census was used as a data source because of the breadth and depth of data. However, having such a large amount of data makes extracting unit records and performing tabulations cumbersome. For this reason, over the duration of the inequality assessment project, data was only analyzed by district, mother's age, and age and sex of the child. Table 4 below outlines the variables investigated and their usability.

17 https://mics-surveys-prod.s3.amazonaws.com/MICS6/East%20Asia%20and%20the%20Pacific/Samoa/2019-2020/Survey%20findings/Samoa%202019-20%20DHS-MICS%20Survey%20Findings%20Report_English.pdf

18 https://population.un.org/dataportal/home?df=1a6cf362-1285-4d1e-905c-b67c3f998878

19 https://mics-surveys-prod.s3.amazonaws.com/MICS6/East%20Asia%20and%20the%20Pacific/Samoa/2019-2020/Survey%20findings/Samoa%202019-20%20DHS-MICS%20Survey%20Findings%20Report_English.pdf

Variables assessed for birth registration completeness and their limitations

As discussed above, the primary challenge was to differentiate which records in the *Life Data System* were registered births as opposed to those that were recorded by the hospital and fed into the system, waiting for the family to present for official registration. The challenge of not being able to differentiate registered records from non-registered records inhibited the use of the BDM data in the past. In this regard, a proxy was used for the analysis of registered records. As only registered records could be printed, and the majority of registered records were printed immediately upon registration, the print status of records was used as a proxy for registration. This proxy could result in an underestimation of registration as some records do not get printed upon registration for various reasons such as power outages, printer errors, lack of paper etc. Staff in the civil registry office estimate these situations to be fairly rare, and only occur in about 5 per cent of cases. These cases likely cause a lengthy delay in the print status being converted to 'Printed' as the family must return at a later time to obtain the birth certificate.

During the data mapping exercise, the first step was to understand by which variables registered births and deaths could be disaggregated. Once those were identified, the availability of those same variables from other data sources were investigated for the purpose of using in the denominator.

For this inequality assessment, it was found that inequalities in birth registration could be examined by sex, age of the child, age group of the mother, wealth quintile, religion, education level of the mother, education level of the head of household, sex of head of household, if the mother and father were living in the household with the child, and area and district of residence (Table 4). Death registration completeness could be assessed by the sex and age group of the decedent based on the data available.

Table 4: Variables investigated for disaggregation and their viability for analyzing birth and death registration completeness

Variable	Viable for analysis using MICS microdata	Available for registered births	Available for registered deaths
Sex	X	X	X
Age group		X	X
Ethnicity of child (or decendent)		X	
Mother's marital status			
Occupation			
Religion	X	X	
Region of residence	X	X	X
District of residence		X	X
Wealth quintile	X		
Education	X		
Sex of head of household	X		
Education level of head of household	X		
Disability status of child	X		

There are a few limitations associated with the data used for analysis. Estimates of birth registration completeness by district of residence should be treated with caution as many districts had a small number of births (50 or less) as reported by the census, which can give rise to yearly stochastic variation. District analysis was undertaken to understand if there were districts clustered together that produced similar results in the same region of the country, particularly with respect to distance to the registration office.

For analysis of birth registration by region and district of residence, mothers' addresses (usual place of residence) were used as a proxy for the child's residence for birth registration records. The *Life Data System* does not have a separate field for the child's address (if different from the parents). A Python script was used to map the mother's village of residence to districts and then to regions.[20]

The mother's age for registered birth records was calculated based on her birth date and the date of birth of her child as listed in the *Life Data System*. The mother's date of birth is acquired from the mother's birth record (birth registration of the mother is a pre-requisite for the birth registration of a child). However, mother's age did not align with the age listed in the *Life Data System* in approximately 25 per cent of records. The underlying cause for this discrepancy could not be determined.

Inequalities in birth and death registration by occupation were investigated but not deemed possible due to the open text field and challenges with recoding the data. Additionally, the marital status of mothers was neither complete nor of high enough quality to use for analysis from the *Life Data System*.

Census data was provided based on district and region of enumeration for the child. However, in approximately 20 per cent of cases, the biological mother of the child was not living in the household at the time of enumeration. In these cases, the mother's information such as her age, was not available. Records in the census missing mother's data were imputed using the per cent distribution of known mothers' ages and applied to all records so that all children aged 0 enumerated in the census were assigned a mother's age. This may create some bias as mothers in certain age groups may be more likely to be working abroad or living outside the home at the time of census enumeration.

Due to the double keying requirement in the *Life Data System* and the requirement to complete key fields such as birth date and sex of the child, data quality for most fields assessed was high and record completeness was generally above 90 per cent for those variables analyzed.

Death registration completeness

Indirect estimation of deaths using demographic techniques which compare the age structures of two population and housing censuses is not a viable technique for Samoa due to the high rates of international migration. Reliable data disaggregated by age and sex, and the number of international migrants is not available for adjusting such a model.

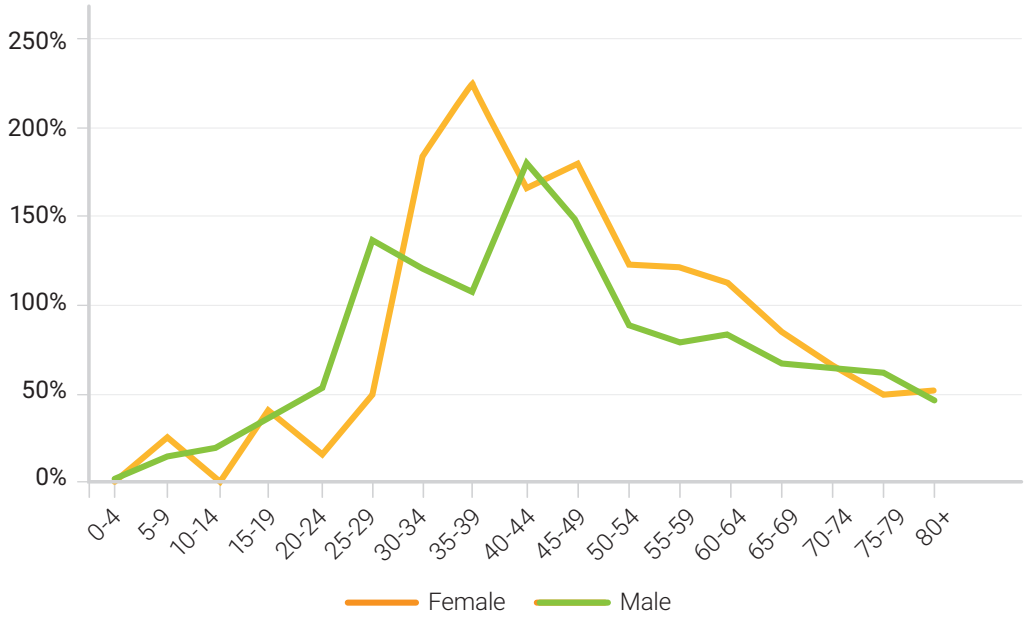
Direct estimation of death registration completeness using the UN World Population Prospects (UNWPP) estimated number of deaths by sex and age for 2018-2022[21] compared to registered deaths was performed. However, the results were implausible, resulting in erroneous death registration rates of above 100 per cent for most adult age groups (see Figure 6 for 2018 estimates). For many adult age

20 A partial ratio matching methodology was used in Python. To read more about the matching process see: https://anhaidgroup.github.io/py_stringmatching/v0.3.x/PartialRatio.html

21 https://population.un.org/dataportal/home?df=1a6cf362-1285-4d1e-905c-b67c3f998878

groups, UNWPP data underestimated the number of deaths occurring in Samoa. This could potentially be attributed to under-registration of infant and child deaths which is observed in many countries globally [22] or an overestimation of the number of deaths that occurred.

Figure 6: Death registration completeness by age group and sex using UNWPP for estimated deaths, 2018



Given that many deaths occur at home and are not recorded in the hospital system and are thus never officially registered, it is unlikely that death registration is complete. Upon the release of a new UNWPP data update, this analysis should be revisited.

The crude death rate in Samoa is estimated to be around 5 per 1,000.[23] With a population of around 205,550 at the time of the 2021 census,[24] one would expect around 1,028 deaths a year. The MOH recorded 774 notifications of death in 2021, suggesting that this estimate for deaths is approximately 75 per cent complete. Further disaggregation of this information by age, sex, and region of residence, raises the uncertainty of data quality for use in an inequality assessment. Using MOH data should be re-assessed and revisited for potential use in the future, especially as MOH data becomes increasingly digitized and better connected to the SBS system.

22 https://pophealthmetrics.biomedcentral.com/articles/10.1186/s12963-020-00231-2

23 https://data.worldbank.org/indicator/SP.DYN.CDRT.IN?locations=WS

24 https://sbs.gov.ws/documents/census/2021/Census-2021-Final-Report_221122_051222.pdf

4 RESULTS

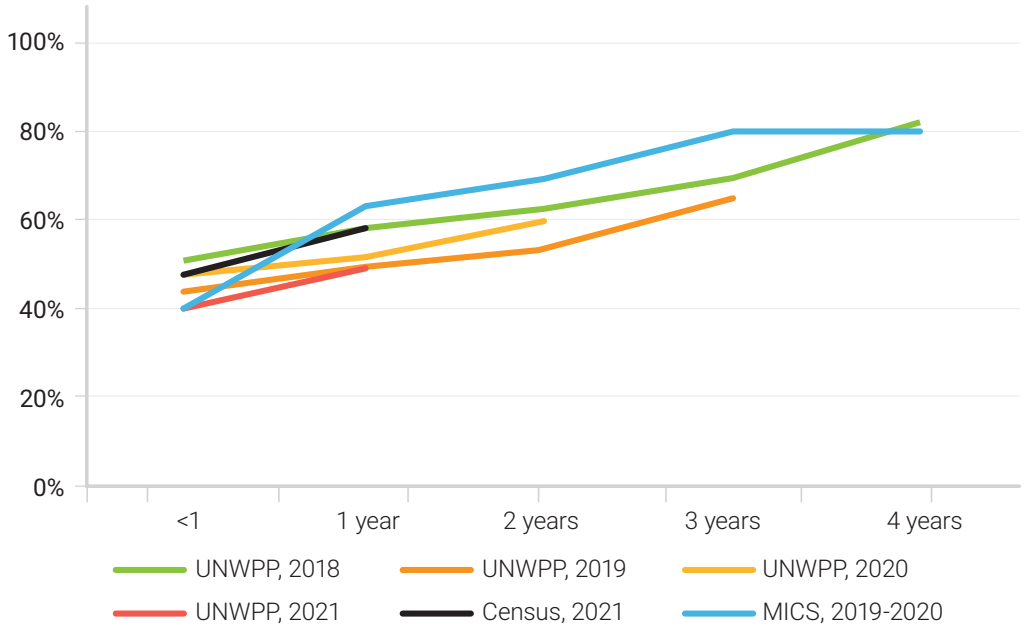
Factors associated with inequalities in birth registration

This section outlines those factors which were found to be most associated with inequalities in birth registration completeness. These include the age of the child, area of residence of the child (including the district of residence), wealth quintile, and mother's education level. Other factors that had lesser impacts or no impact are outlined in the subsequent section.

Child's age

Across all variables and all regions, one of the most consistent findings is that birth registration completeness is lowest among children under the age of one year. An estimated 41 per cent of children have their births registered by their first birthday. This estimate increases to around 80 per cent by age 5 years. While the MICS data suggested that the largest increase is observed between age 0 and age 1, other estimates suggest that registration increases gradually with time and age.

Figure 7: Birth registration completeness by age and source of estimated births



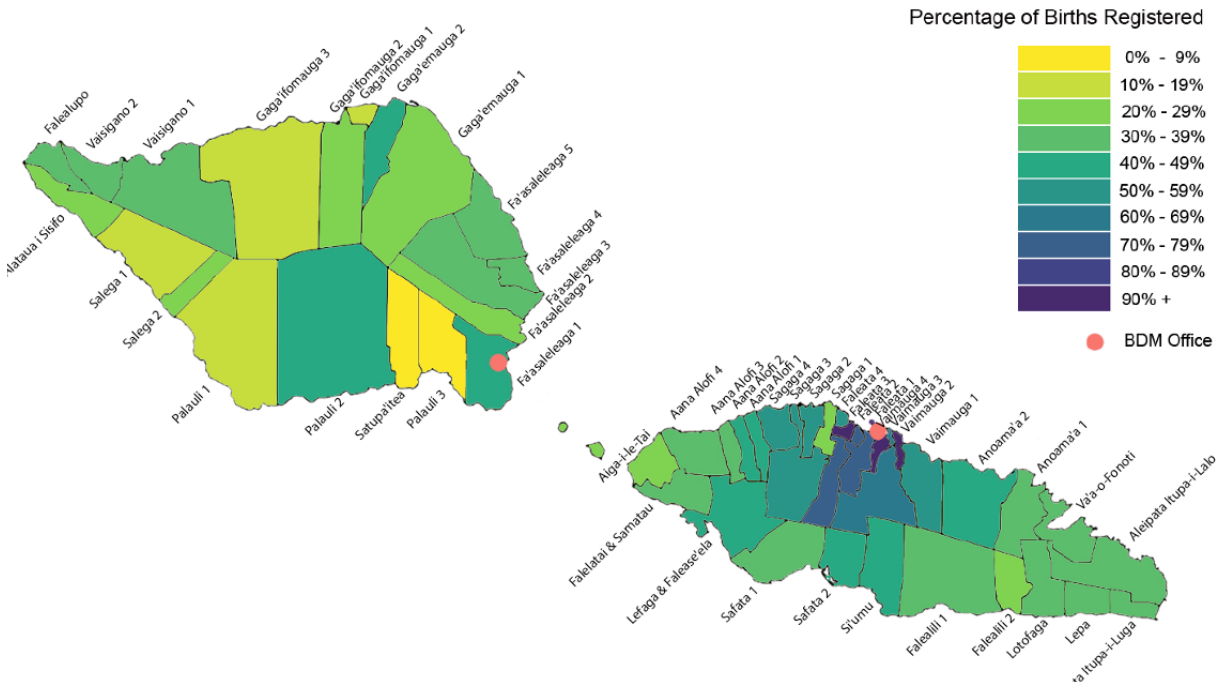
Note: Some ages cannot be displayed for all sources because some children in the cohort have not yet reached the listed age. For example, those children born in November 2021 at the time of the census would not have reached age 2 by the time period covering data analysis ending in June 2023.

Region and district of residence

The 2021 census age 0 population was used to estimate births in the 12 months prior to the census. From this information, birth registration completeness by age 1 year was calculated by district and region. It should be noted that there were 14 districts where the census found less than 50 births. These districts are noted in the table below with an asterisk and estimates should be interpreted with caution.

The map below shows that overall, Savai'i has the lowest rates of birth registration. On the main island of Upolu, districts farthest from the registration office have the lowest rates of registration. Interestingly, this is not the case for Savai'i, as some of the districts bordering the registration office had the lowest rates of registration such as Palauli 3 with just 4 per cent registration completeness. Birth registration in Savai'i was highest in Palauli 2 and Gagaemauga 2* at around 42 per cent. It should be noted that estimates for Vaimauga 2, the district where the Upolu registration office is located, produced erroneous rates of 110 per cent completeness. This is likely due to underestimates of the age 0 population in the census, or internal migration post-enumeration, but prior to registration.

Figure 8: Map of percentage of births registered by age 1 by district, for children age 0 in the 2021 census

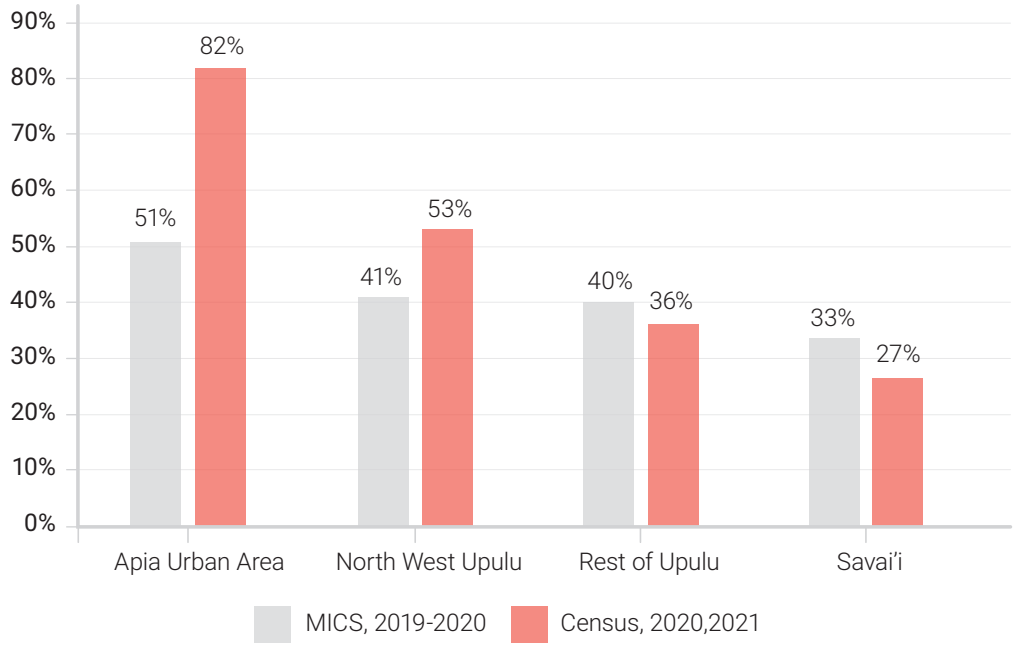


* *Disclaimer 1*: The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries.

Table 5: Birth registration completeness by district and area of residence, 2021

Area of residence	District of residence	Percent of births registered by age 1
APIA URBAN AREA (AUA)	Vaimauga 3	66%
	Faleata 1	75%
	Vaimauga 4	97%
	Vaimauga 2	110%
NORTH WEST UPOLU (NWU)	Sagaga 1	25%
	Aana Alofi 3	39%
	Aana Alofi 4	39%
	Aana Alofi 1	42%
	Aana Alofi 2	47%
	Sagaga 2	51%
	Sagaga 4	52%
	Vaimauga 1	54%
	Faleata 4	56%
	Sagaga 3	57%
	Faleata 2	72%
	Faleata 3	94%
REST OF UPOLU (RoU)	Aiga i le Tai	21%
	Falealili 2*	26%
	Lepa*	30%
	Lotofaga	32%
	Aleipata Itupa i Lalo	33%
	Safata 1	33%
	Falealili 1	33%
	Aleipata Itupa i Luga*	36%
	Anoamaa 1	37%
	Vaa o Fonoti*	38%
	Falelatai & Samatau	39%
	Siumu	41%
	Safata 2	44%
	Anoamaa 2	44%
	Lefaga & Faleaseela	48%
SAVAI'I	Palauli 3	4%
	Satupaitea*	6%
	Salega 1	12%
	Gagaifomauga 1*	16%
	Palauli 1	18%
	Gagaifomauga 3*	19%
	Faasaleleaga 2	22%
	Salega 2*	23%
	Gagaemauga 1	25%
	Alataua i Sisifo*	26%
	Gagaifomauga 2*	28%
	Vaisigano 1	30%
	Faasaleleaga 3	30%
	Faasaleleaga 5*	33%
	Falealupo*	33%
	Faasaleleaga 4	34%
	Vaisigano 2*	35%
	Faasaleleaga 1	40%
	Palauli 2	41%
	Gagaemauga 2*	42%
Total		48%

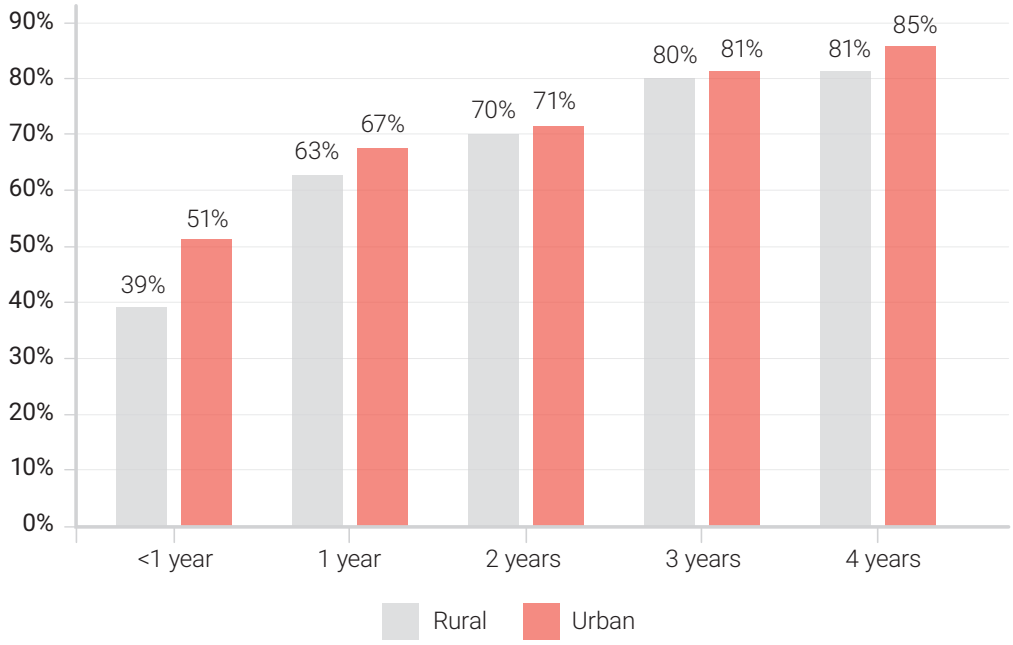
Figure 9: Percentage of births registered by age 1, by region



When examining birth registration at the regional level, both the MICS and direct calculation using census estimations for births suggest that registration is higher in the urban area of Apia, and decreases with remoteness of the region. The more remote areas of Upolu and the island of Savai'i have the lowest rates of registration. Across all four regions, children under age 1 have the lowest rates of registration. Across all age groups, children living in Savai'i have the lowest rates of registration compared to other regions.

According to the MICS microdata, the largest difference in registration between rural and urban areas occurs for children under age 1, with 51 per cent of children registered in urban areas compared to 39 per cent in rural areas. This gap narrows with age, and by age 4 years, 81 per cent of children residing in rural areas are registered, compared to 85 per cent of children residing in urban areas (Figure 10). The increase in registration by age 4 is likely due to the need for a birth certificate to enter school at age 5 years.

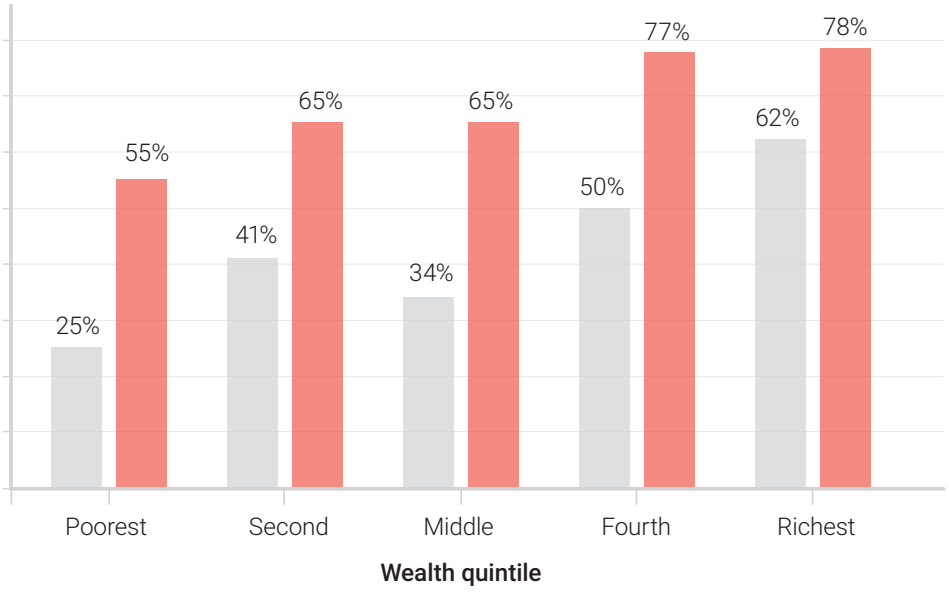
Figure 10: Estimated completeness of birth registration by age and area of residence, MICS 2019-2020



Wealth quintile

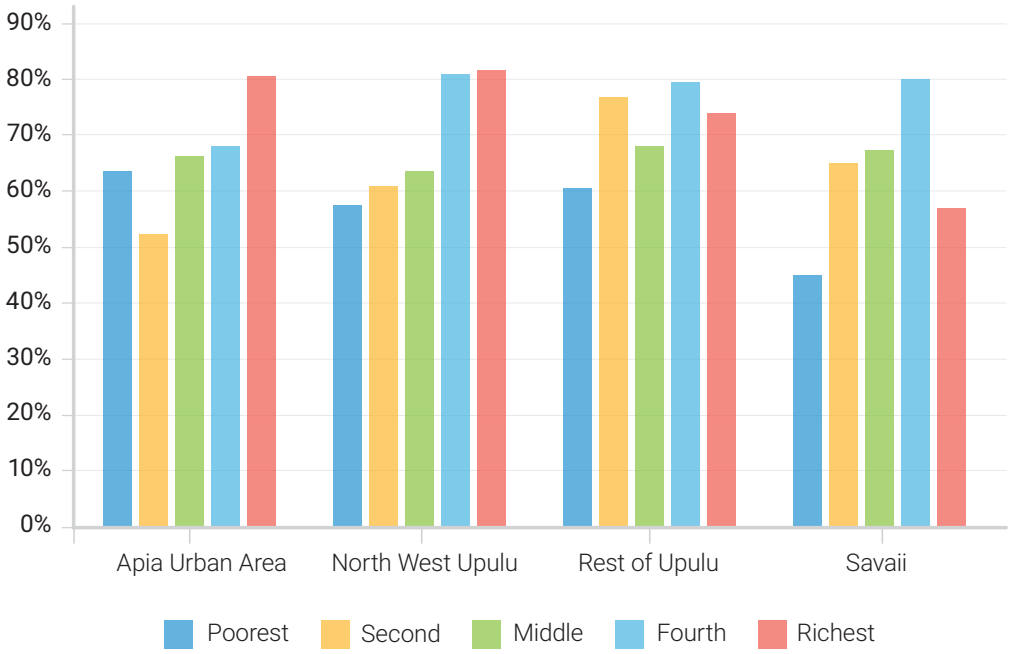
Birth registration by age 1 and by age 5 is lowest in the poorest wealth quintile compared to the fourth and richest quintile. There is a larger disparity between children registered by their first birthday compared to their 5th birthday for the poorest children. Just one in four poor children are registered by their first birthday compared to 55 per cent of poor children by age 5. There is a smaller gap for the richest children where 62 per cent are registered by their first birthday compared to 78 per cent by age 5 (Figure 11).

Figure 11: Estimated completeness of birth registration by age 1 and by age 5 by wealth quintile, MICS 2019-2020



Disparities in registration between the poorest wealth quintile and the richest appear to also exist by region, but it should be noted that the bottom three wealth quintiles in Apia and the richest quintile in Savai'i are comprised of less than 50 children (and should thus be interpreted with caution). There is no consistent trend within all five wealth quintiles by region (Figure 12).

Figure 12: Estimated completeness of birth registration by age 5 by region of residence and wealth quintile, MICS 2019-2020

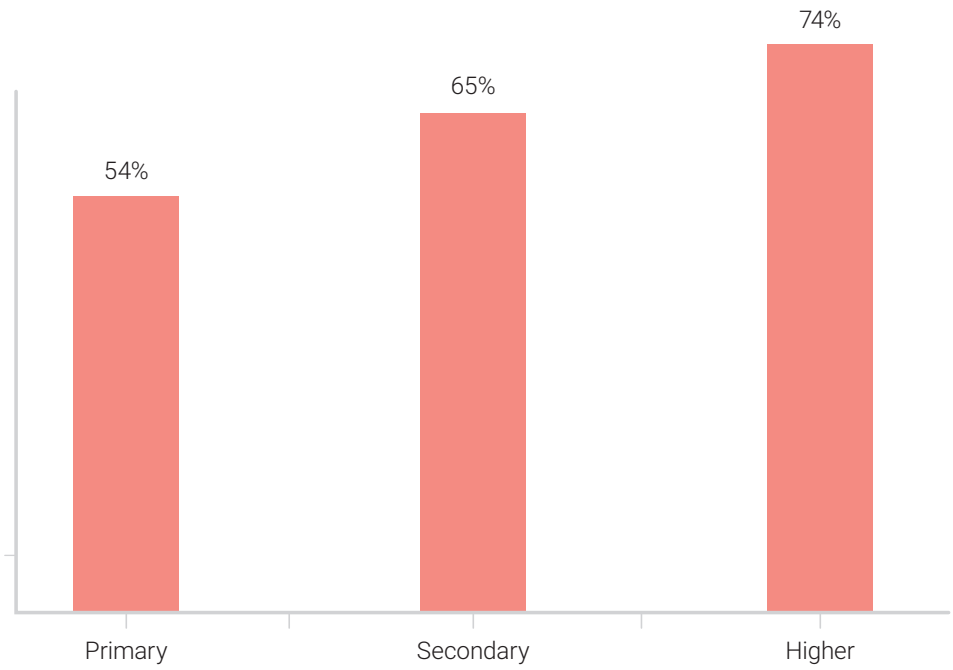


It was not possible to break down wealth quintile for registration by age 1 by region as the majority of children in Apia were in the upper wealth quintiles and the majority of children in Savai'i were in the lower wealth quintiles. The number of children in other quintiles was below 20 cases, making this variable not statistically viable for analysis at lower levels of disaggregation.

Mother's education

Birth registration by age 5 rises with increasing levels of mothers' education. Mothers with only primary level of education registered 54 per cent of their children's births by age 5, compared to 65 per cent for mothers with secondary level education and 74 per cent for mothers with higher education (Figure 13).

Figure 13: Estimated completeness of birth registration by age 5 by mother's level of education, MICS 2019-2020



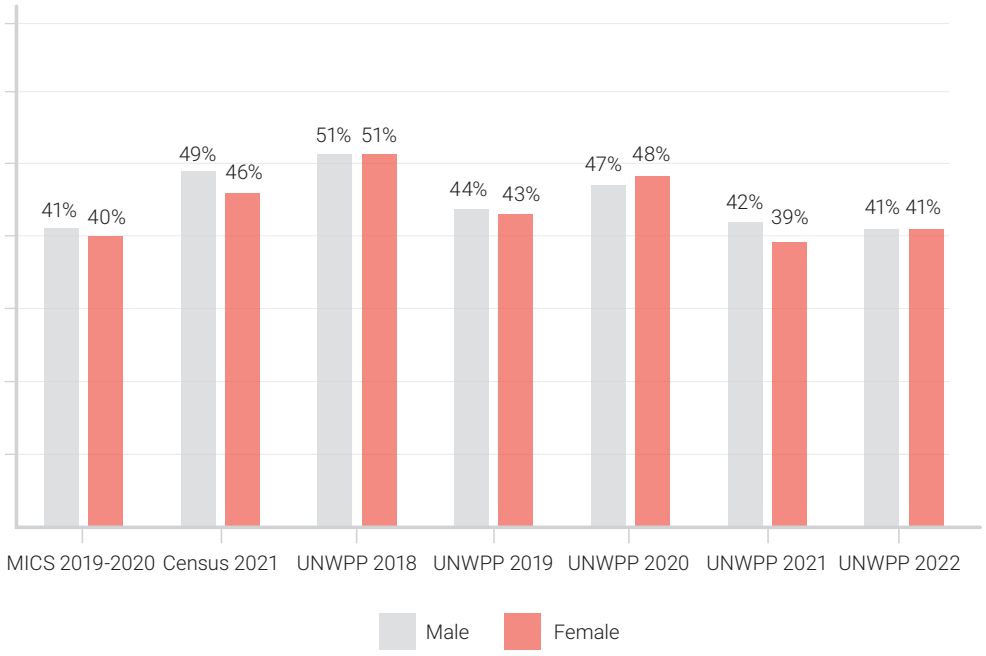
Factors with lesser impacts on birth registration completeness

Based on the availability of disaggregated data, other factors were analyzed such as the sex of the child, mother's age, religion, sex of the household head, education level of the household head, child's disability status, and if the mother and father reside in the household with the child. These factors were found to have a lesser or indeterminate impact on birth registration and are outlined below.

Sex of the child

Completeness of birth registration by sex of the child was very similar between males and females across most variables examined and between the different sources used to triangulate estimates (Figure 14). Similarly, across different age groups, there was essentially no difference by sex when examining the MICS microdata and UNWPP 2018 birth estimates (data not shown).

Figure 14: Percentage of births registered by age 1, by sex



Mother's age

Mother's age was examined, particularly to understand if teenage mothers were less likely to register the births of their children. Direct calculations using registration data and either the census or UNWPP for birth estimates by mother's age were performed, but the results were not consistent between the two sources.

Calculations using estimates from the 2021 census suggested that completeness of birth registration was relatively consistent among mothers between the ages of 15 and 34, hovering around 50 per cent. Registration rates declined with age of the mother after age 35, reaching a low of approximately 22 per cent for mothers aged 45 to 49 (Figure 15).

Calculations using birth estimates from UNWPP varied by year, but none are consistent with the results using census data. UNWPP data suggests that teenage mothers aged 15 to 19 years have the lowest rates of registration, but that rates remain relatively steady among other age groups. These estimates also suggest that registration for children born in 2018 was much higher than for children born in other years and that registration declined for mothers after age 45 for children born in 2021 and 2022. Older mothers are estimated to be small in number, with just 50 births estimated per year by UNWPP and 41 births from the census for the age group 45-49 years. In this regard, this oldest age group should be interpreted with caution. As the results from the two sources are not in alignment, no conclusion can be drawn at this time. The impact of mother's age should be examined going forward, to understand if there is a differential between teenage and older mothers.

Figure 15: Birth registration completeness by age 1, by mother's age for children age 0 in the 2021 census

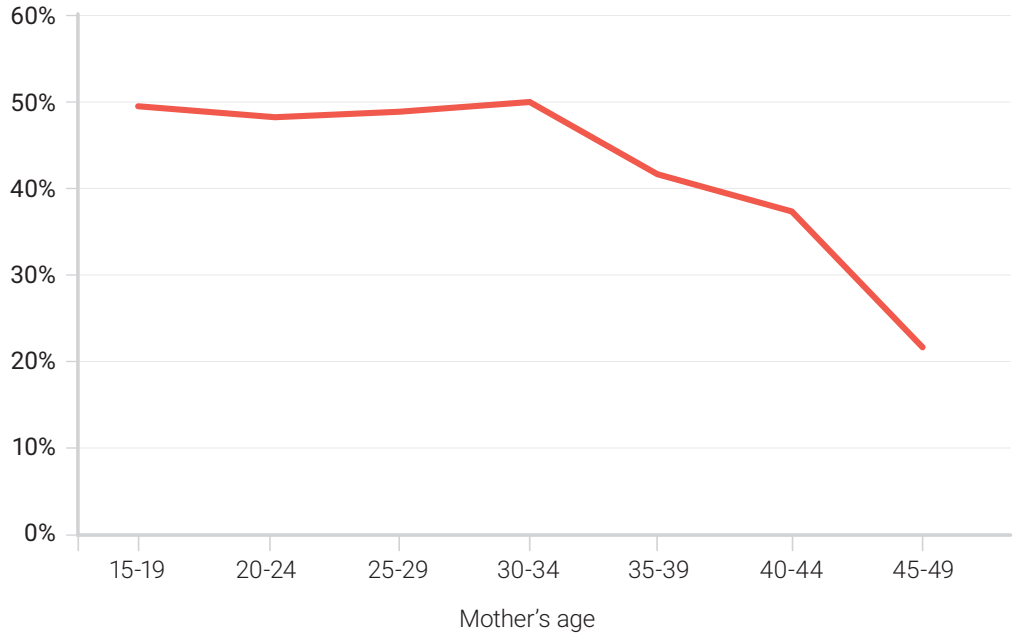
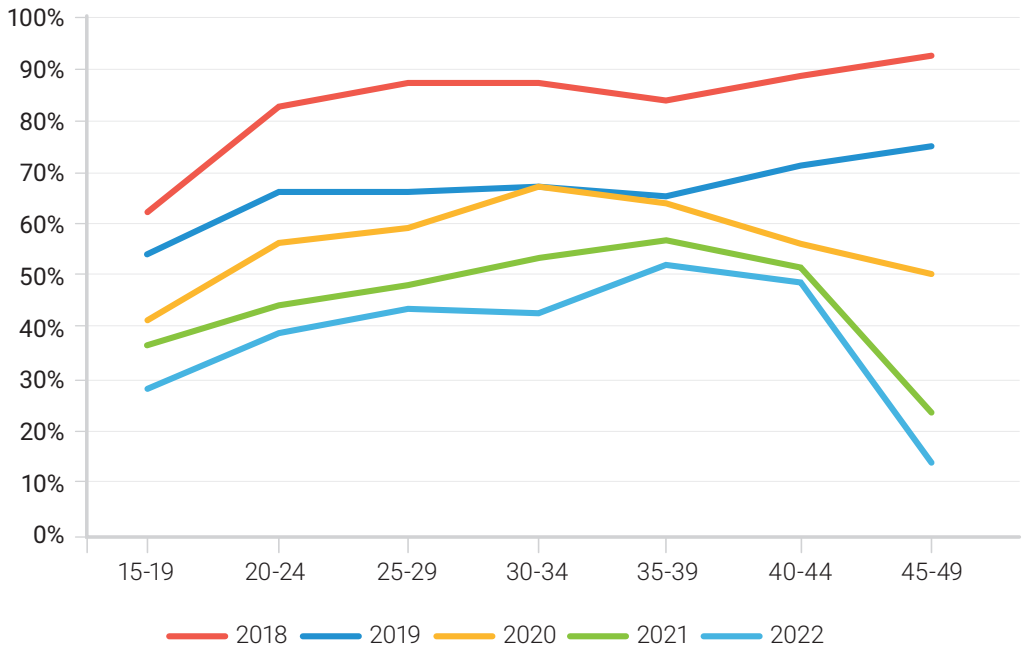


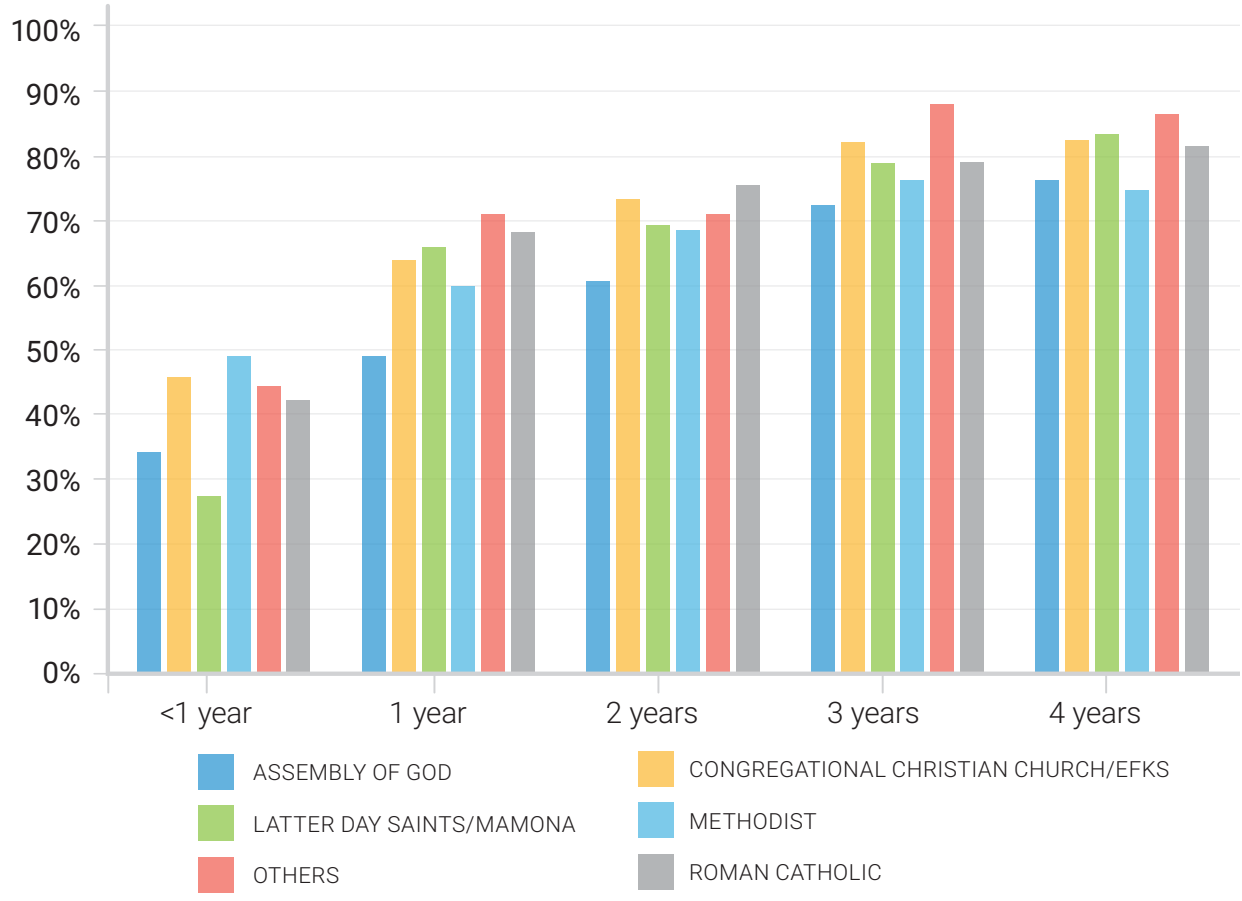
Figure 16: Birth registration completeness by age 1, by age of mother and year of birth, using yearly UNWPP birth estimates



Religion

Religion is a very central part of the culture in Samoa and for this reason, it was analyzed using the MICS microdata to understand if any religious groups experienced a differential in birth registration. Analyses found that across all religions, registration increases with age. Households who reported they were followers of the Church of Jesus Christ of Latter-day Saints/Mamona[25] had the lowest registration rates (28%) for children under age 1, followed by those who identified their religion as Assembly of God (34%). However, these rates increase by age 1 and children of parents who identified their religion as Latter-day Saints are on par with other religions by age 1. While partnerships with churches are important to improve birth registration, there is no specific church that should be targeted in particular for advocacy and further improvements.

Figure 17: Birth registration by age of child and religious affiliation, MICS microdata 2019-2020



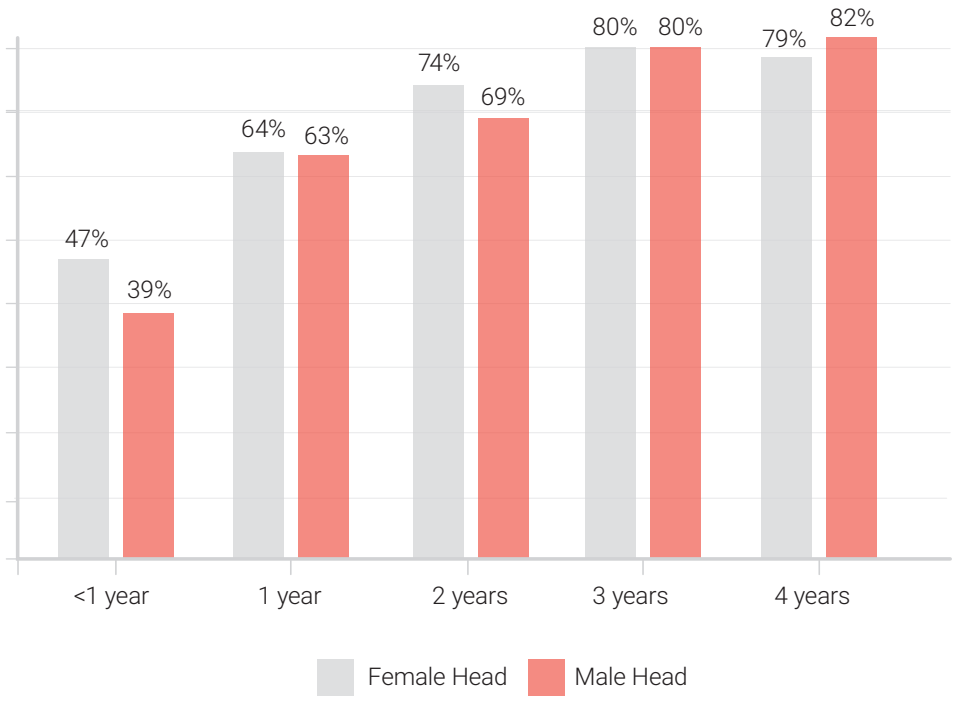
Sex and education level of head of household

Analysis was conducted using MICS microdata to understand if female-headed households had differing rates of birth registration compared to male-headed households. The highest level of education achieved by the household head was also examined, but this could not be disaggregated by sex and age due to the small sample sizes of female-headed households.

25 Mamona is the Samoan term for the Church of Jesus Christ of Latter-day Saints.

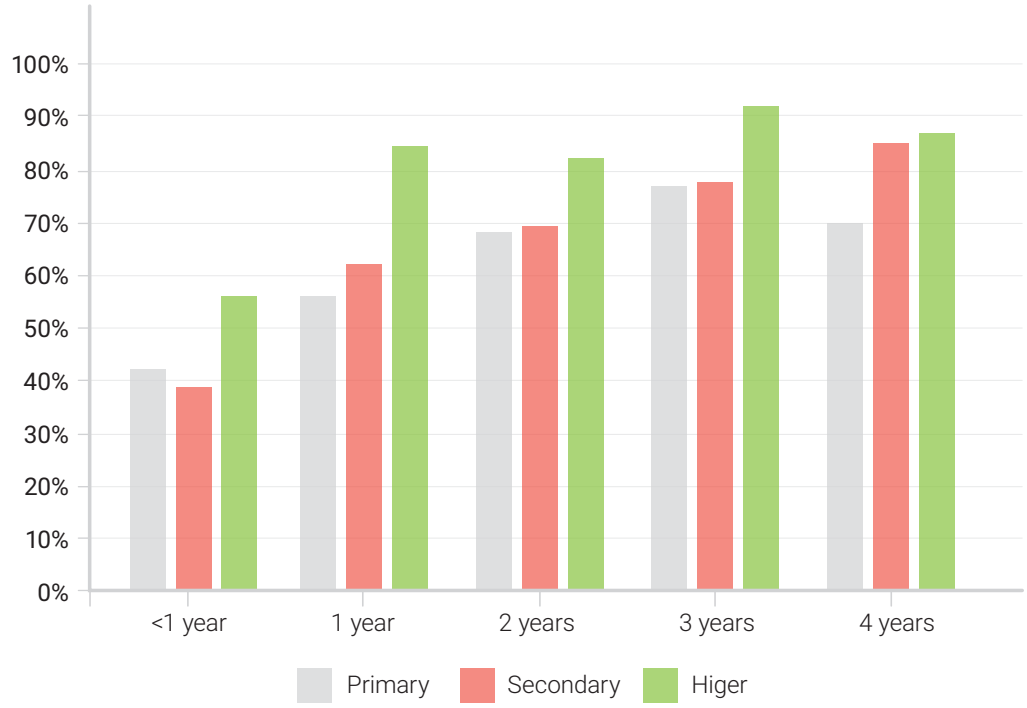
Female-headed households had higher rates of registration for younger children. Forty-seven per cent of female households registered the births of their children by age 1, compared to 39 per cent of male-headed households. These estimates were similar at age 1 (64% compared to 63%), but for two-year-old children, 74 per cent of female-headed households had registered the birth compared to 69 per cent of male-headed households. Birth registration rates reached 80 per cent by age 3 for both types of households, and then male-headed households slightly outpaced female-headed households with 82 per cent of children registered by age 5, compared to 79 per cent in female-headed households.

Figure 18: Birth registration by sex of household head and age of the child, MICS 2019-2020



Household heads with higher educational attainment demonstrated higher birth registration rates compared to household heads with primary or secondary education. This was especially apparent for children under age 4 (Figure 19). For all children under age 5, the household head's education level had a lesser impact than the mother's education; just 54 per cent of children born to a mother with primary education had their births registered, compared to 63 per cent with a household head with similar education levels.

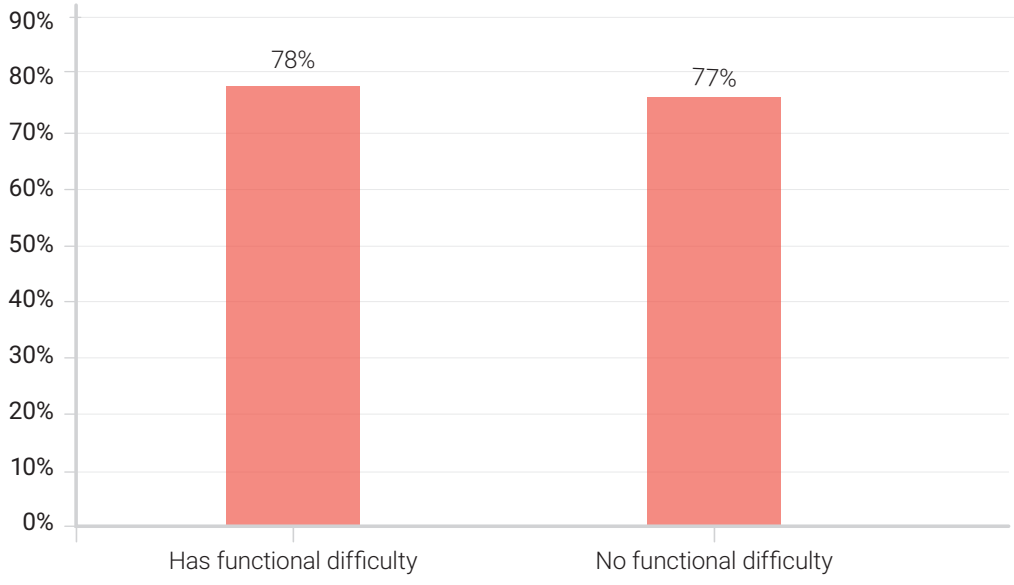
Figure 19: Birth registration by education level of household head and age of the child, MICS 2019-2020



Child's disability status

The MICS assessed functional disabilities for children aged 2-4 years (the MICS does not collect this information for children aged 1 year and under). The sample size was too low to analyze by individual ages, but among children aged 2 to 4 years, there was essentially no difference in birth registration rates between children with (78%) and without functional disabilities (77%).

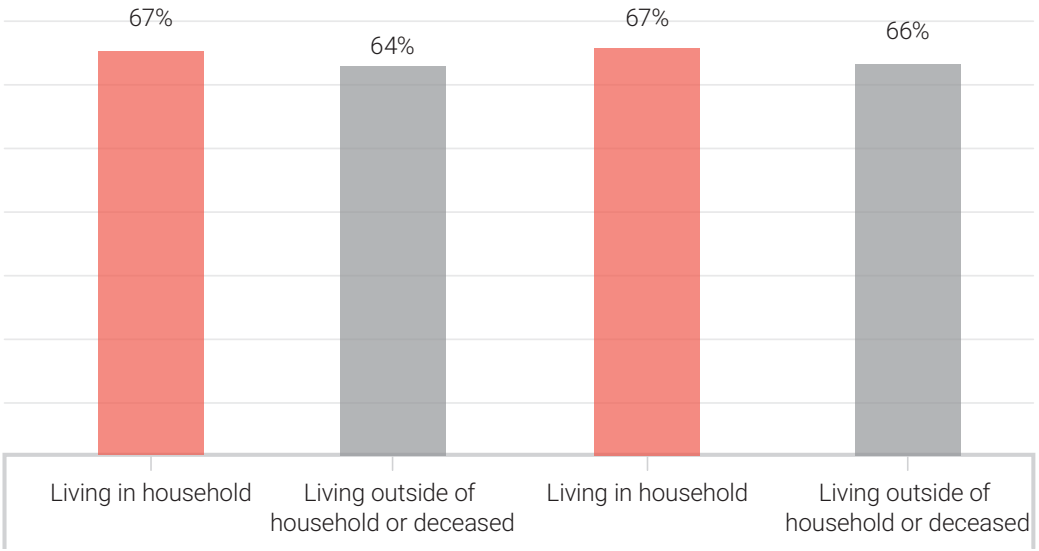
Figure 20: Birth registration completeness for children aged 2-4 years, by child's disability status, MICS 2019-2020



Parents residing in the household

Analysis of MICS microdata was performed to understand whether the mother and father residing in the household with the child impacted registration rates, compared to children whose parents were either living outside the household or whose parents were deceased. Analyses showed that there was a small increase in registration rates when parents resided in the household (Figure 21). When the mother was residing in the household, 67 per cent of children had had their birth registered by age 5, compared to 64 per cent for children whose mother was living outside the household or who was deceased. For fathers, the difference was much smaller, with 67 per cent of children with fathers living in the household having had their birth registered by age 5, compared to 66 per cent for those whose father was living outside the household or deceased.

Figure 21: Birth registration by age 5 by mother and father residing in the same household, MICS 2019-2020



5 POLICY RECOMMENDATIONS FOR IMPROVING BIRTH REGISTRATION

This report found that infants under age 1, children residing in poorer households, children living on the island of Savai'i and children in Upolu living in remote areas far from the registration office, had the lowest rates of birth registration. In this regard, the policy recommendations below are provided with these groups in mind, with the goal of improving birth registration completeness across Samoa.

1. **Provide free registration and free issuance of birth certificates** for children registered within three months of birth. Currently, the fee is $15 Tala for timely registration,[26] which when combined with travel costs to the registration office, may discourage poorer families from registering.
2. **Consider providing small economic incentives** for families to register births by a child's first birthday. This will help offset the transport and opportunity costs for poorer families to come to the registration office. As seen in Fiji, small cash incentives for registration greatly improved birth registration rates.[27]
3. **Continue mobile registration or yearly registration campaigns** where registration is taken to the people, and registration posts are established for a few days a year in the local district hospital. Strengthen partnerships with local district hospital staff so that they can continue to support the remote registration process. Increase awareness among local community workers of remote registration days and the importance of birth and death registration. Investigate the possibility of amending the legislature requiring the Registrar or Deputy Registrar's presence at the time of registration, so that more flexibility is built into the remote registration process.
4. **Strengthen coordination with birthing centers and community birth attendants** to better support parents in the registration process. For children born at home, the paperwork and registration process can be cumbersome. Consider ways to streamline the application process. For children born in the main hospitals, consider ways to advocate and support parents to register the birth immediately. Consider whether staff could be hired to work with parents while they are in the hospital, to perform duties such as assisting with the completion of registration forms and submitting the paperwork to the registration office on behalf of the parents. Efforts to make the registration process simpler and less burdensome for parents will likely improve timely registration. Investigate the possibility of establishing permanent decentralized registry offices in district hospitals.

26 https://www.sbs.gov.ws/bdm/

27 https://getinthepicture.org/resource/assessing-inequalities-registration-births-and-deaths-fiji

5. **Partner with organizations that service poorer households or households in remote areas**, village leaders, village women communities and midwives to advocate for timely registration. Religious or non-profit organizations that already provide services to lower-income households could help support the identification of such households. Once identified, advocacy could be targeted to such households, as well as facilitate further investigation of the type of support needed to increase birth registration rates through inclusive dialogues with such households. For instance, the newly established district councils could be leveraged to engage village representatives in the civil registration process. Women's village communities can also help to advocate for birth registration and secure support from village representatives and midwives who are inherent to the home birth registration process.
6. **Consider autonomy, linkages and interoperability when replacing the *Life Data System***. When tendering for a new civil registration software, take into consideration, the different variables that need to be collected and how best to link this platform with the MOH systems. Strengthened linkages between health and the civil registry would streamline registration and ease the burden on families coming to register. Continue integration of the Tamanu app for more accurate and timely data.
7. **Improve data accessibility** through strengthened partnerships and the development of MoUs within different departments and between ministries. This is especially important for departments within SBS and between SBS and MOH for sharing disaggregated birth and death data.

6

NEXT STEPS FOR INVESTIGATING INEQUALITIES IN BIRTH AND DEATH REGISTRATION

There remains a need for continued research into inequalities in birth and death registration in Samoa, as well as expanded and improved data collection for better-disaggregated data. It remains critical to continue collecting data disaggregated by sex, age, district of residence, mother's age at birth and marital status, in order to continue monitoring trends in inequalities over time and better understand who is being left behind.

More information is needed to understand why parents delay birth registration rather than registering within the first year of life. Reasons for delayed registration may differ among different population groups. Further, a better understanding is needed of why mothers in the lowest wealth quintile or those living in Savai'i or rural areas have lower registration rates. Depending on the cause, different interventions could be deployed to improve birth registration in these areas.

Continued examination of differentials in registration by mother's age should continue as this report found different results based on the source used to estimate births by mother's age. Continued research to confirm any trends over time is needed, to better understand the impact of mother's age on registration.

Similarly, it's important to understand if single mothers face barriers to registration, compared to married mothers. Better and more complete data on mother's marital status is needed from both the civil registry and other sources such as the MOH, in order to understand the impact of marital status on birth registration.

Areas where a clear differential was observed in birth registration completeness should continue to be monitored over time. For example, the impact of wealth quintiles, particularly by region, should continue to be assessed. It's also important to continue monitoring the differentials in registration by district. Since districts have such small numbers of births, there will likely be yearly variation. Trends over time will help inform which districts and/or regions are experiencing the largest inequalities in birth registration.

The lack of data to assess death registration completeness

As indirect estimation of deaths using demographic techniques which compare the age structure of the population using of two population and housing censuses is not a viable technique for Samoa, due to the high rates of international migration. Therefore, direct estimates for deaths are needed.

Direct estimation of death registration completeness using the UN World Population Prospects (UNWPP) resulted in implausible death registration rates of above 100 per cent for most adult age groups (see Figure 6 for 2018 estimates). For many adult age groups, UNWPP data underestimated the number of deaths occurring in Samoa. Given that many deaths occur at home and are not recorded

in the hospital system and are thus never officially registered, it is unlikely that death registration is complete and the fact that UNWPP has fewer deaths estimated than the civil registry registered, these estimates need to be revisited. Is it suggested when a new revision of the UNWPP is released, to repeat this exercise in the future.

There is a need to further investigate the potential for data sharing between MOH and SBS to facilitate the direct estimation of deaths. It might be possible to use recorded deaths in the MOH system once coverage of deaths recorded by MOH reaches at least 80 per cent. However, expanded data sharing will be needed for such an exercise.

Finally, it is recommended that SBS investigate the possibility of including questions in household surveys on death registration completeness (similar to birth registration in the MICS), in order to better understand whose deaths are not being registered.

7 CONCLUSION

This exercise found that children under age 1 had the lowest rates of registration across all variables examined and that the residence of the child, specifically children living in districts further from the registration office in Upolu, and those children living in Savai'i, resulted in the largest inequalities in birth registration completeness. Children in the lowest wealth quintile also had disproportionately lower rates of birth registration compared to children in the upper wealth quintiles. Policy interventions targeted at improving registration rates among children under age 1, especially those living in more remote areas and in poorer households, are needed.

Given the above findings from this report, the following interventions should be considered to improve birth registration in Samoa: (1) Consider providing small economic incentives for families to register births by a child's first birthday; (2) Strengthen coordination with birthing centers and community birth attendants to better support parents in the registration process; (3) Investigate the possibility of partnerships with organizations that service poorer households or households in remote areas, village leaders, village women communities and midwives, to advocate for timely registration; (4) Consider mobile registration or yearly registration campaigns where registration services are taken to the people, especially in those areas farthest from registration offices; and (5) Consider autonomy, linkages and interoperability when replacing the *Life Data System*.

Inequality assessments are designed to be an iterative process that can be repeated in the future, whereby inequalities can be identified to inform targeted policy interventions. Registration completeness should be assessed again in three to five years' time to understand the impact of interventions and to identify additional gaps in registration. The current assessment can inform improvements in both registration completeness and data quality and availability, which can be revisited in future assessments. Additionally, future inequality assessments should draw upon improvements in data availability and data quality. Further, opportunities for linking data sources and establishing a fully interoperable system should be investigated, to ensure that administrative data sources can be used in future assessments, allowing for improved granularity and timeliness. The use of UNWPP data should also be re-evaluated for estimating death registration completeness once an updated version is released for Samoa.

Few countries have undertaken an inequality assessment to understand differentials in the registration of births and deaths. While some countries do perform analysis by sex, and a handful have examined differentials by age, to our knowledge this report is the third to examine differentials by sex, age, and region combined. While the data may not be fit for exercises such as calculating disaggregated age-specific fertility rates without adjustment for known errors, it is robust enough to pinpoint disparities between different populations in birth registration completeness. This information can then be used to inform future research and policy interventions, to bridge gaps in registration between different populations. We hope this report serves as an inspiration and a resource for other countries to assess inequalities in registration to determine who is most being left behind.

8

ANNEX 1: SAMOA CRVS STAKEHOLDERS

Stakeholder	Role
Samoa Bureau of Statistics BDM[1,2,5,6]	BDM is the division responsible for the registration of births, deaths, marriages and divorces. Data producer, chair of steering committee and works collaboratively with MOH to produce mortality statistics and information on Cause of Death (CoD).
Ministry of Health (MoH), **National Institute of Health (NHS) (main health stakeholder)**[1,2,5,6]	Provides NOBs and NODs (paper copies monthly) from the main hospital to BDM. Works collaboratively with BDM to produce mortality statistics and information on CoD.
Ministry of Women, Community and Social Development (MWCSD)[1,2,5,6]	Report home births and deaths in villages (paper copies) to BDM.
Ministry of Justice and Courts Administration (MJCA)[1,2,5]	Coroner under MJCA, provides reports needed before registration. MJCA oversees adoptions and name changes. It also has a marriage office which provides marriage licenses. Divorce is sanctioned by MJCA and registered at BDM. They are also responsible for statutory declarations (e.g. removal of father's information from official documents).
Council of Churches[1,2]	Church Ministers report deaths and marriages. They also produce baptism certificates which can be used for registration of birth.
Samoa Bureau of Statistics – Census Division[2]	Release of data from the 2021 census.
Ministry of Education[1,2,5,6]	The law requires a birth certificate (BC) for school enrollment. The Ministry of Education helps families acquire a BC. Also the data users of birth records for registration.
Ministry of Police[1,2,5,6]	Sends reports to civil registry of community deaths. Also, a data user.

Annex 1: Samoa CRVS Stakeholders

Stakeholder	Role
Funeral Parlors[1,3]	Reports deaths, especially deaths occurring at home. BDM depends on their records for death registration.
Ministry of Prime Minister Cabinet – Immigration[1,2,5,6]	Data user. BC required for issuance of passport.
Nuanua o le Alofa – School for disability[1,3,5,6]	Law requires a BC for enrollment. Helps families acquire this document.
Accident Compensation Corporation (ACC)[3,5,6]	Data users: need BC, MC, DC.
National Provident Fund[3,5,6]	Data users: need BC, MC, DC.
National University of Samoa[3,5]	Need BC for enrollment.
University of South Pacific[5]	Need BC for enrollment.
Australia Pacific Technical College (APTC)[5]	Need BC for enrollment.
Secretary of Media Organization (TBD)[2,5,6]	Data users: support dissemination.
National ID under SBS[2,5]	Linked with CRVS system.
Ministry of Communications and Information Technology[2,5,6]	Data users: support dissemination.
Australian Immigration[5]	Data users.
New Zealand Immigration[5]	Data users.

Annex 1: Samoa CRVS Stakeholders

Stakeholder	Role
Ministry of Natural and Environmental Resources Disaster Management Organization Division (DMO)[3,5]	Data users.
UNDP (Accelerator Lab Project) ACCLab[2,5,6]	Partner supporting system strengthening. Testing district hospitals to understand amount of birth/death events and how to electronically link with BDM.
SPC[3,5,6]	Partner and data users.
Unit Trust of Samoa[3,5,6]	Data users for verification of records and BC etc.
Pacific Civil Registrars Network[3]	Brisbane Accord Group member[4] & data user

1 Members of the Samoa National Steering Committee
2 Stakeholders identified as being critical for attendance at the inequality assessment inception workshop
3 Stakeholders to be considered for attendance for the inequality assessment inception workshop
4 The Brisbane Accord Group (BAG) is a consortium of agencies with a principal aim of coordinating partner support and maximizing investments made towards supporting the improvement of civil registration and vital statistics systems in Pacific Island Countries and Territories. https://sdd.spc.int/brisbane-accord-group-bag
5 Data user of birth, death, marriage, or divorce records for validation or operational use
6 Data user of vital statistics for health or planning

For more information, please visit:

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