ASSESSING INEQUALITIES IN REGISTRATION OF BIRTHS AND DEATHS IN FIJI

Fiji Bureau of Statistics

MINISTRY OF HEALTH & MEDICAL SERVICES

MINISTRY OF JUSTICE

ESCAP Economic and Social Commission for Asia and the Pacific

Bloomberg Philanthropies

DATA FOR HEALTH INITIATIVE

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1 EXECUTIVE SUMMARY

Civil registration of one's birth and death is a human right. The legal documents accompanying registration facilitate access to protections afforded by the State as well as 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 within the population, with some population groups being marginalised as a result of being particularly susceptible to exclusion. 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. Inequality assessments are a means of investigating such disparities and informing policy makers about the differentials in registration that may exist in their country.

Fiji is the first country, to our knowledge, to embark upon an in-depth quantitative inequality assessment, examining differentials by sex, age, ethnicity, and mother's marital status. Information obtained from this assessment will be used to inform future research and policy interventions to bridge gaps in registration between different population groups in the country. This assessment primarily drew upon direct calculations of both registered and estimated births and deaths sourced from the Ministry of Health and Medical Services (MHMS) records and census enumeration data provided by The Fiji Bureau of Statistics (FBoS). Birth registration completeness disaggregated by various socioeconomic characteristics as outlined in the 2021 Fiji Multiple Indicator Cluster Survey (MICS), was also consulted.

The government of Fiji introduced the Parental Assistance Payment Programme (PAPP) to improve the registration of births by providing cash payments to parents upon registration. The PAPP was instituted from August, 2018 to July, 2020, and a definitive increase in registration was observed over this period, particularly among iTaukei population and single mothers, with the former experiencing a two-fold increase and the latter a three-fold increase over the PAPP period. The analysis in this report largely covers the time period of the PAPP. Thus, the absolute percentage of registration completeness should be taken with caution as the increase in registration likely did not continue into 2021 and beyond, given the lack of cash incentives. However, the disparities in registration among different groups likely reflects actuality considering that despite cash incentives, some groups of children were less likely to have had their births registered than others.

Ethnicity was found to have the largest impact on both birth and death registration completeness, with non-iTaukeis experiencing higher rates of registration compared to iTaukeis. Estimates for 2020 for birth registration completeness by age 1 showed registration among iTaukeis to be 76 percent compared to 96 percent among non-iTaukeis. This differential by ethnicity existed across mothers of all age groups. Estimates for 2020 also showed that for all ethnicities, teenage mothers were the least likely to register their child's birth.

Data from Lautoka Health Facility suggested that married mothers were more likely to register their child's birth compared to single mothers across all age groups, including teenage mothers. However, among mothers aged 25 years and above, ethnicity had a greater impact on registration completeness than marital status; single non-iTaukei mothers had higher rates of registration compared to married iTaukei mothers.

Examination of the Fiji MICS (2021) indicated that mothers in the lowest wealth quintile had the lowest rates of birth registration for children under age five years. Both the MICS and the Fiji 2017 Population & Housing census data reported that registration was the lowest for children under age one year, but increased by age four years.

Regarding death registration completeness, the largest inequalities were observed by ethnicity, with non-iTaukeis experiencing higher rates of registration (91%) compared to iTaukeis (58%) over the period 2018-2020. This disparity existed across all age groups, with the largest differential occurring at ages 1-4 years, with just 26 percent of child deaths among iTaukeis registered, compared to 71 percent of child deaths among non-iTaukeis.

While there was limited evidence to suggest a differential in birth registration by sex, a preference to register male deaths (78%) compared to female deaths (64%) was observed. This sex differential existed across ethnicities for adults aged 20 years and above. Death registration was the lowest among children under age five years (38%), with the lowest rates among 1-4 year old children (34%). However, as previously mentioned, a large disparity was seen by ethnicity, with child deaths among non-iTaukeis more than twice as likely to be registered compared to child deaths among iTaukeis. A decline in death registration completeness from age 70 years and above was also observed in both ethnicities. A better understanding of why this may be happening is needed, in order to implement interventions to improve registration for older decedents.

Policy interventions targeted to improve the birth and death registration of iTaukeis are highly necessitated. Economic incentives greatly improved birth registration among the iTaukei population and single mothers. Such incentives should be considered for continuation and possibly extended to death registration, to improve completeness in registration of deaths. Further, a better understanding of why death registration differentials exist by sex and age is needed, in order to target policies to improve registration of unregistered deaths.

While inequality assessments remain an iterative process which should be refined over time and continually monitored and reassessed, it is our hope that this first, in-depth undertaking will serve as an inspiration and a resource for other countries to embark on similar journeys.

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ACKNOWLEDGEMENTS

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This report was authored by Ms. Renee Sorchik (Independent Consultant, Statistics Division, ESCAP) in collaboration with The Fiji Bureau of Statistics (FBoS). The report received valuable inputs from Mr. Meli Nadakuca (Senior Statistician, The Fiji Bureau of Statistics), Mr. Neel Singh (Registrar-General at the Births, Deaths and Marriages (BDM) Office), representatives of the Ministry of Health and Medical Services (MHMS), Ms. Petra Nahmias (Chief of Population and Social Statistics, Statistics Division), Ms. Tanja Sejersen (Statistician, Statistics Division, ESCAP) and Ms. Chloe Harvey (Associate Population Affairs Officer, Statistics Division, ESCAP).

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BACKGROUND

A well-functioning civil registration and vital statistics (CRVS) system ensures that every person has a legal identity; facilitating access to the benefits and protections accorded by the State. CRVS systems are also the preferred data source for many demographic-related statistics. The 2030 Agenda for Sustainable Development recognizes the need for strong CRVS systems, specifically targeting the provision of legal identity for all, including birth registration, under SDG Goal 16 (16.9).[1] 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. Another 16 SDG targets and 24 indicators require data that are best generated from a CRVS system,[2] and 7 of the 17 SDGs, and 17 of their corresponding indicators require cause-specific mortality data from CRVS systems for their measurement.[3] To truly ensure that no one is left behind, disaggregated population data is needed to inform policy-making targeted at the most marginalized groups. Data from CRVS systems will be critical to fulfill this need as well as for monitoring 106 of the 231 SDG indicators.[4]

However, there are often disparities in completeness of birth and death registrations within a country's population. 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 reliable disaggregated data to understand who is being left behind, these populations will continue to remain largely invisible, thus not benefitting from the rights and protections accorded by the State. Assessing inequalities is therefore critical to address disparities in the registration of births and deaths among different population groups.

The Ministerial declaration to *Get Every One in The Picture*[5] initiative in Asia and the Pacific recognized the need to address disparities in civil registration completeness and coverage to ensure progress in registration is truly universal and fully inclusive. In line with the declaration, the Regional Action Framework (RAF) which guides the implementation of the Asia-Pacific CRVS Decade 2015-2024 (ESCAP resolution 71/14) 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 availability of data for monitoring and evaluation, as well as for ensuring social protection for everyone. Inequality assessments are also crucial from a gender perspective as they support the identification of disparities in civil registration based on gender and provide insights into underlying reasons for any gender-related barriers to registration, particularly among various sub-groups within the population. Further, gender-based vital statistics are relevant particularly for monitoring SDG indicators

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

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

3 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.

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

5 https://getinthepicture.org/

related to maternal and child mortality, adolescent fertility rates and age at first birth, as well as for understanding mortality differentials by age and sex including cause-specific mortality. Improving these statistics strengthens the evidence base for policies and programmes to address gender-specific issues and inform targeted interventions to improve the lives and well-being of marginalized populations.

Considering the importance of inequality assessments and the demand from countries for support (see ESCAP resolution 71/14 and report of 72nd Commission6 for example), ESCAP initiated a project to develop guidelines and technical support for CRVS inequality assessments. Inputs from countries highlighted the need for increased support to conduct CRVS inequality assessments and strengthen the production and use of inclusive vital statistics. This report is the culmination of a series of workshops, technical support and capacity strengthening provided by ESCAP to The Fiji Bureau of Statistics and other relevant national stakeholders to facilitate the implementation of CRVS inequality assessments using secondary data sources in Fiji.

Few countries have undertaken a quantitative inequality assessment of their CRVS system to understand differentials in 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 first to examine differentials by sex, age, ethnicity, and marital status of mothers combined. While the data may not be suitable for exercises such as calculating disaggregated life tables without adjustment for known errors, it is robust enough to identify disparities in registration completeness between different population groups. This information can then be used to inform future research and policy interventions to bridge gaps in registration between different populations. We hope that this report serves as an inspiration and a resource for other countries to assess inequalities in civil registration and determine who is being left behind and why.

6 ESCAP Resolution 71/14 Asian and Pacific Civil Registration and Vital Statistics Decade, 2015-2024 (https://getinthepicture.org/resource/escap-resolution-71-14-asian-and-pacific-civil-registration-and-vital-statistics-decade)

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FIJI'S CIVIL REGISTRATION AND VITAL STATISTICS SYSTEM

Fiji has a relatively robust CRVS system, with birth and death registration estimated to be more than 80 percent complete. A comprehensive vital statistics report[7] was published covering data from 2012-2017 for births and 2015-2017 for deaths, estimating birth registration completeness at 89 percent and death registration completeness at 93 percent. There is an active CRVS Committee which meets regularly. The committee has developed a draft CRVS Action Plan to improve the CRVS system in Fiji. However, timely birth registration (within one year) remains below 90 percent complete, and there are likely inequalities in whose vital events are registered.

The key stakeholders in the Fiji CRVS system include the Registrar General's Office within the Ministry of Justice (MOJ), the Ministry of Health and Medical Services (MHMS), and The Fiji Bureau of Statistics (FBoS). The MOJ is responsible for the administration of the Births, Deaths and Marriages Registration Act 1975 and maintaining records of all births, deaths and marriages occurring in Fiji. They are primarily responsible for all registration of births, deaths & marriages in Fiji and related changes and updates. The MOJ provides monthly updates on registration statistics and responds to ad-hoc data requests as needed. MHMS oversees Fiji's healthcare system. MHMS provides administrative data on the number of births and deaths occurring each year, disaggregated by key variables. Further, they are responsible for issuing correct and up-to-date notification of births and deaths, which are required for every birth and death occurring in Fiji, regardless of the place of the event's occurrence, under the Births, Deaths and Marriages Registration Act 1975. This law allows parents a period of one year to register a birth. Notifications of births and deaths are a necessary precursor to register the respective vital event with the MOJ. MHMS provides data for the publication of vital statistics by FBoS, and also provides data on causes of death. FBoS has a mandate to produce vital statistics and other relevant data products and improve public access to vital statistics. FBoS collates, analyzes, and produces such reports and data products for policy use. Other key stakeholders and their roles are provided in Annex 1: Fiji CRVS Stakeholders. More details about Fiji's CRVS system are provided in the methodology section below.

To ensure no one is left behind, further investigation is needed to understand whose vital events are least likely to be registered. Because the majority of available data is of high quality and able to be disaggregated, this assessment offers an excellent opportunity for Fiji to lead the way in examining inequalities in birth and death registration. This report outlines the findings of such an assessment, the methodology used as well as the available data, data quality considerations if known, and other sources that can be used for comparison to help gauge data quality.

7 Republic of Fiji Vital Statistics Report, 2012-2017. Government of the Republic of Fiji and the Pacific Community (SPC); 2019

5 METHODOLOGY

This report draws on data sources investigated during a data mapping exercise undertaken in 2022 with support from FBoS. For more information on the various sources of data and subsequent findings of the data mapping exercise, refer to Annex 2: Data mapping exercise key findings.

During the mapping exercise, the first step was to understand the variables by which registered births and deaths could be disaggregated. Once identified, the availability of the same variables from other data sources were investigated. Upon request, the MOJ provided datasets containing a variety of different variables, which allowed an understanding of how birth and death registration completeness could be reasonably disaggregated.

With the exception of data reported directly from the Fiji 2021 MICS report, the calculation of completeness in birth and death registration by different sub-groups was performed using direct calculation methods, as the administrative data sources in Fiji were found to be relatively robust and complete. The limitations are noted below, and in the results section, when relevant.

Direct calculations used the number of registered births or deaths (by sub-group), extracted from the Registrar General's Office at the MOJ, as the numerator, divided by the estimated number of births or deaths (denominator) from a variety of data sources as outlined below.

Example: Birth registration completeness

$$= \frac{\textit{Births occurring in a certain period registered by registrar general}}{\textit{Births estimated from another data source from the same time period}}$$

For this inequality assessment, it was found that inequalities in registration could be examined by sex, age group, and ethnicity. The inequalities by geographic location, occupation, education, and income were investigated, but not found to be viable options other than what was reported by the MICS. In some cases, additional metadata were needed to understand definitions and ensure variables were defined the same way in both the numerator and denominator or were re-coded to be in alignment. The sources considered to be complete and of high quality and which could be disaggregated were used in analysis.

Table 1:	Variables investigated for disaggregation and their viability for analysis of birth and death registration completeness

Variable	Investigated	Viable for analysis of births?	Viable for analysis of deaths?
Sex	X	X	X
Age group	X	X	X
Ethnicity of child (or decedent)	X	X	X
Mother's marital status	X	X	
Occupation	X		
Geographic location	X		
Income	X		
Education	X		

Methodology and Data Sources Used to Assess Inequalities in Birth Registration

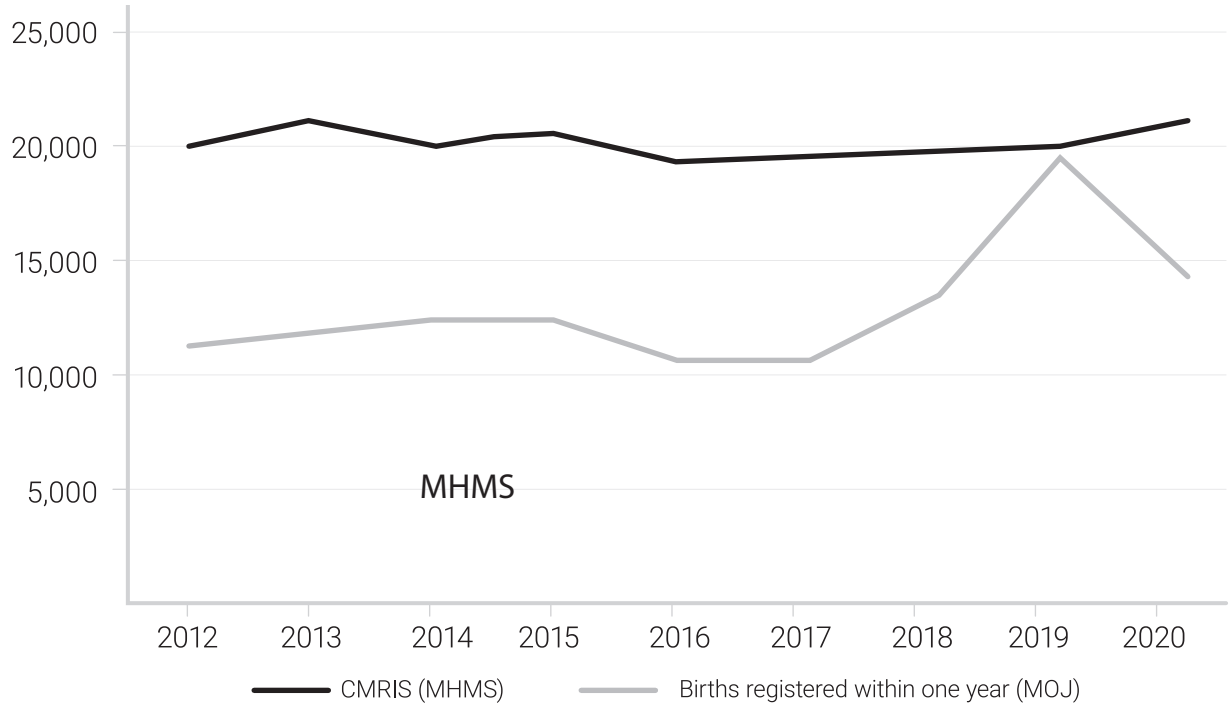
Some general findings were reported directly from the Fiji 2021 MICS. For direct calculations, data on registered births extracted from the MOJ were used in the numerator, and recorded births from MHMS, vaccination records from MHMS, FBoS enumeration data from the 2017 census, school enrollment data from the Ministry of Education (MoE) and United Nations World Population Prospects applying Beers' interpolation, were all considered for estimating birth data for use in the denominator. Each of the above is described below in more detail.

Birth Registration Data from the Ministry of Justice, Fiji

Birth registration data for the years 2010-2020 was provided by the MOJ. The variables assessed included timeliness of registration, age of the child at registration, sex of the child, child's ethnicity, age of mother at birth, mother's marital status, and facility where the birth occurred. Unfortunately, mother's usual place of residence is an open text field which is prone to reporting errors or omissions, and it was not feasible to re-code this data.

The registered birth data were assessed to be of good quality, with a high level of consistency over time (aside from an increase in 2018-2020 due to economic incentives for registration – see the section titled Birth Registration Incentives for more information). The MHMS's consolidated monthly reporting information system (CMRIS) records the number of births from each health facility by month. The recorded births have remained relatively flat between 2012 and 2020 at around 20,000 births per year, while births registered within a year of their occurrence have fallen far short of this number. The arrival of economic incentives in 2018 resulted in an increase in birth registration, but timely registration declined following the culmination of the economic incentives in 2020 (Figure 1).

Figure 1: Registered births within one year from the MOJ compared to recorded births from the MHMS CMRIS, (2012-2020)



Among the approximate 200,000 records assessed, less than 100 records were missing information or had erroneous information for mother's age, sex, or marital status. All records reported a date of birth and date of registration. The erroneous or blank records were removed from disaggregated analysis, under the assumption that the small number of missing or erroneous records would have little effect on the results.

The MOJ indicated that they were required to provide both birth certificates and death certificates for stillborn babies in cases where MHMS issues the Notification of Birth (NOB) for a stillborn baby. The registered birth and death databases did not include a flag to allow for the filtering of stillborn cases , thus, it is possible that some registered births were actually stillborn babies. The number of stillborn babies each year are estimated to be less than 300, which is not likely to inflate the rate of birth registration completeness by a significant amount.

Census Methodology and Limitations

Population and housing censuses are reliable sources of demographic data as they can be disaggregated down to low level geographies and collect a wide range of information on both parents and children, such as the age and sex of a child (and their birth date), the age of a mother at the time of the census, and mother's birth date, with the latter two used to calculate the age of the mother at the time of birth. Census data also contains information about mothers' marital status, parents' and child's ethnicity, parents' occupation, parents' education, and parents' disability status. The information from the census about household structures and durable goods owned by household residents can also be used to compute wealth quintile proxies.

For the purposes of the inequality assessment, the age 0 population at the time of the census was used to estimate births. The census enumeration reference day was 17 September, 2017. Enumeration was carried out from September to November, but enumeration was referenced to household composition on the night

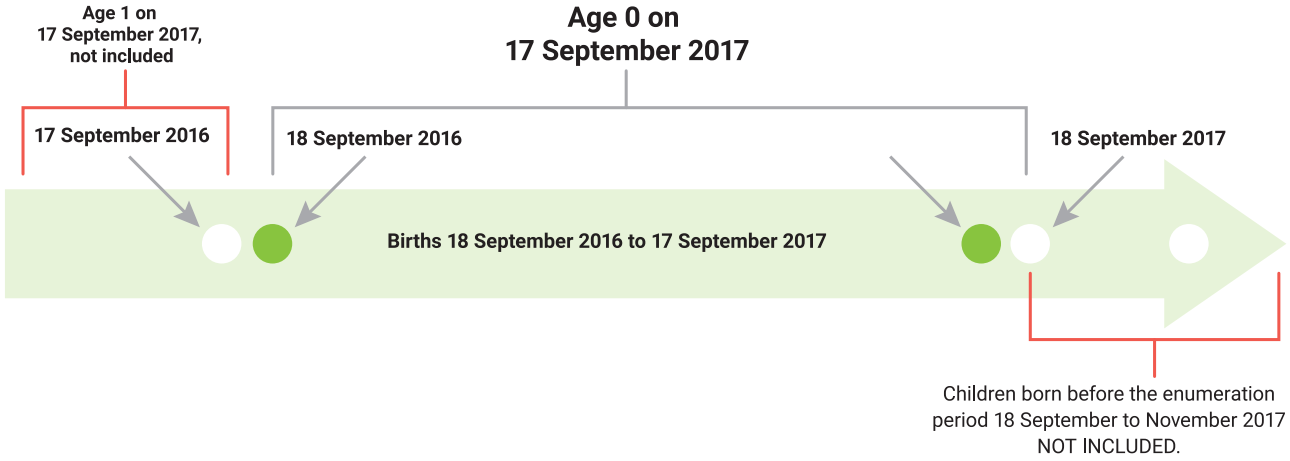
of 17 September, 2017.[8] Thus, children born between 18 September, 2016 and 17 September, 2017 would have been age 0 at the time of the census (see Figure 2 below) and were subsequently included in both the numerator (registered births) and denominator (estimated births from census population).

Birth registration completeness at age 0 using census data =

Births occurring between Sept 18, 2016 to Sept 17 2017 that are registered by Registrar General

Children aged 0 enumerated in the census Sept 17, 2017

Figure 2: 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 availability of accurate and nationally representative disaggregated data. However, there are a few shortcomings of this methodology. Firstly, it is well established that globally, censuses tend to undercount children, particularly infants.[9] For example, the initial undercount in the 2020 United States' Census for the age 0 population was estimated to be seven percent.[10] Fiji did not perform a post-census enumeration survey, which is used for the correction of undercounts among the different population and age groups. Thus, while a general correction could be applied to the age zero population as a whole, correction at the provincial level by sex and ethnicity becomes more challenging.

Further, this methodology excludes children born during the specified time period (Sept. 16, 2016 – Sept. 17, 2017) who died before the enumeration day of the census. Their births should be included in the births estimated for the denominator, but only live births in the household are enumerated and included in the final data set. While neonatal and infant mortality rates could be used to reverse survive children over this period, disaggregated mortality data by province, sex, and ethnicity is not available, and the lack of disaggregated migration data further complicates statistical techniques. It is possible that children included in the numerator as registered births will not appear in the denominator as they will have died after their birth was registered but before the time of the census.

8 2017 Fiji population and housing census: administration report. 2018. The Fiji Bureau of Statistics. Suva, Fiji: The Fiji Bureau of Statistics, 2018.

9 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.

10 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

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

Figure 3: 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 exercise was to determine whose births were 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, thus increasing resulting completeness calculations.

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 time period of inequality assessment, data was considered only by province, ethnicity, and age and sex of the child. Table 2 (below) outlines the variables investigated, their availability, and alignment between their respective sources. It should be noted that due to the absence of alignment between the administrative boundaries from the census and geographic boundaries used by the MHMS, only sex and ethnicity were retained as viable variables. Additionally, using the province of birth facility (according to the MHMS boundary) as a proxy for usual residence led to registration completeness rates exceeding 200 percent in provinces where the main birth facilities were located.

Table 2:	Alignment of variables used in the census to assess inequalities of birth registration

Variables	Births registered with MOJ (numerator)	Census age 0 (denominator)
Sex	Male/Female	Male/Female
Mother's Age	Single years of age, and 5-year age groups.	Information collected, but not available for this exercise.
Mother's marital status	Five categories.	Information collected, but not available for this exercise.
Ethnicity	Two categories (iTaukei and non-iTaukei)	Three categories collected, recoded into two categories to align.
Geography	Information on health facility of birth, re-coded into Province by location of facility. Does not align with usual residence.	Province of usual residence does not align with the location of birth.

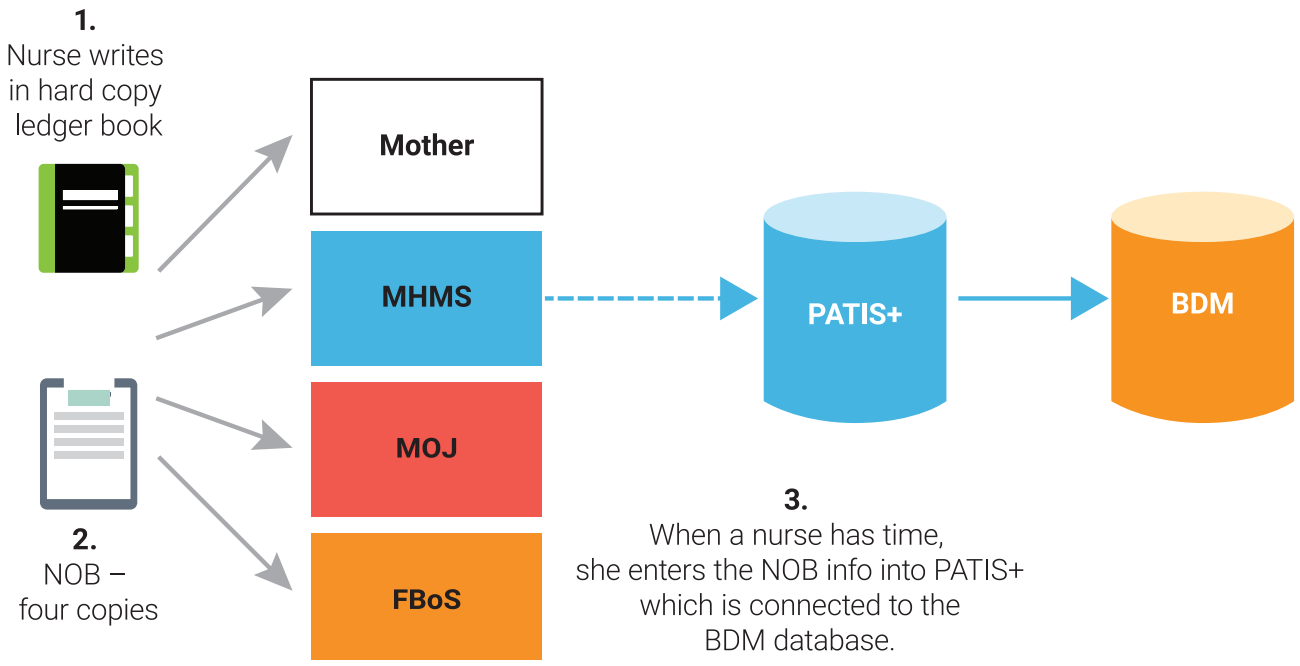
MHMS Recorded Birth Data, Methodologies and Limitations

According to the Fiji 2021 MICS, 99.7 percent of women who gave birth in the last two years did so at a health facility.[11] Each health facility has a hard copy ledger book where nurses record the details of the birth. Health facilities produce monthly birth totals to be included in the consolidated monthly reporting information system (CMRIS), based on the information in the facility's ledger book. Because the majority of births take place within health facilities and the nurses within those health facilities are expected to keep a timely and accurate record of the births in the ledger book, the CMRIS data is believed to be the best estimate of the number of births occurring in Fiji each year. However, the CMRIS only digitizes counts of births by facility, and does not provide disaggregated information needed for an inequality assessment. As a result, use of other data sources were necessary to analyze disaggregated data, namely notifications of birth (NOBs) in hard copy, and digitized NOBs stored in the PATIS+ system.

Seven of the largest health facilities record notifications of birth on a paper carbon copy system. The first copy is a white piece of paper given to the mother which is to be presented to the registrar's office when the family goes to register the child's birth. The blue copy is kept at the health facility, the pink copy obtained for MOJ records, and the yellow copy is given to FBoS for analysis purposes. In 2019, the PATIS+ system was rolled out in seven health facilities where nurses are meant to enter information from the blue copy into the PATIS+ system, which is connected to the Birth Death Marriage (BDM) database used by the registrar's office. In practice, however, nurses do not have time to enter all the NOBs into PATIS+, and thus when compared to CMRIS reports of births, the number of records in the PATIS+ system is incomplete.

11 The Fiji Bureau of Statistics. 2022. Fiji Multiple Indicator Cluster Survey 2021, Survey Findings Report. Suva, Fiji: The Fiji Bureau of Statistics. See indicator TM.8 p.13.

Figure 4: Process for recording births in the 7 MHMS facilities connected to PATIS+



Only six of the seven facilities had data both in the CMRIS reports and the PATIS+ system: Ba Sub Divisional Hospital, Labasa Divisional Hospital, Lautoka Divisional Hospital, Nadi Sub Divisional Hospital, Savusavu Sub Divisional Hospital, and Sigatoka Sub Divisional Hospital. Data was not found in PATIS+ system for the Taveuni Sub Divisional Hospital. Completeness of records for notifications of birth in the PATIS+ system ranged from 39 percent to 56 percent in 2019 (Table 3). This is understandable as the system was only rolled out in 2019, however, this renders 2019 data unsuitable for analysis. In 2020, completeness ranged from 81 percent to 98 percent, with an estimated overall completeness of 87 percent, making this year more suitable for analysis. Data was not yet available for 2021. Because Lautoka is one of the largest facilities and a large number of births are recorded there, this facility was the most appropriate to perform disaggregated analysis on, in order to have a sufficient sample size for disaggregated calculations.

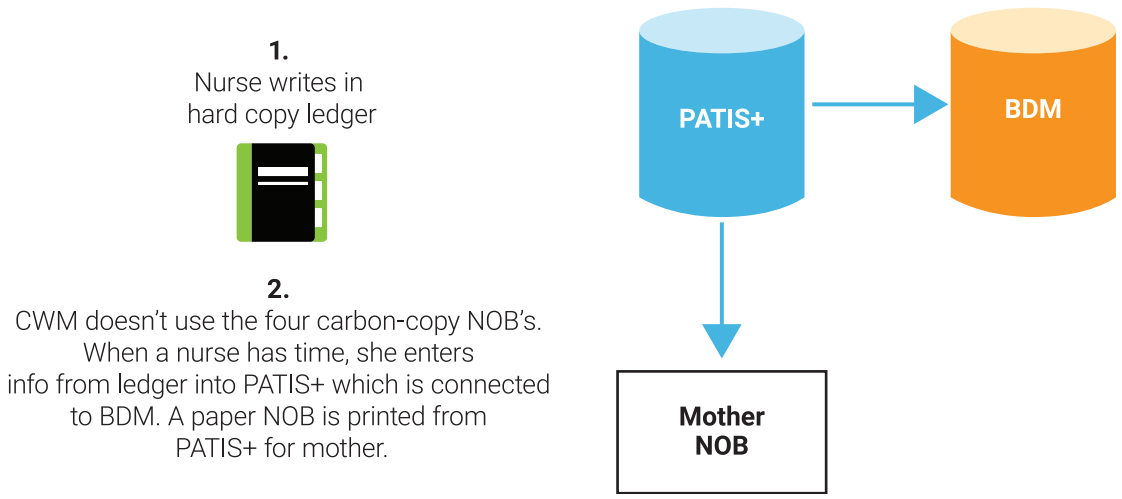
Table 3: Estimated completeness of notification of birth (NOB) records in 7 facilities in the MHMS PATIS+ system, 2019-2020

7 facilities connected to PATIS+	2019			2020		
	PATIS+	CMRIS	PATIS+ % complete	PATIS+	CMRIS	PATIS+ % complete
Ba Sub Divisional Hospital	229	406	56%	405	415	98%
Labasa Divisional Hospital	956	2124	45%	1853	2348	79%
Lautoka Divisional Hospital	2376	4492	53%	3695	4321	86%
Nadi Sub Divisional Hospital	436	944	46%	913	1115	82%
Savusavu Sub Divisional Hospital	156	397	39%	357	440	81%
Sigatoka Sub Divisional Hospital	289	603	48%	647	738	88%
Taveuni Sub Divisional Hospital	124	ND		253	ND	
Grand Total	**4566**	**8966**	**51%**	**8123**	**9377**	**87%**

ND = No data

The largest maternity facility in Fiji is Colonial War Memorial (CWM) hospital in Suva. However, this hospital does not use the four carbon copy NOB system as referenced above in Figure 4. As in all other facilities, the nurses record the events of births in hardcopy ledger books. Then, the nurses are meant to enter that same information directly into the PATIS+ system and subsequently, print copies of the NOB from the PATIS+ system to issue them to parents for registering births. However, similar to the other facilities, the data is not always entered into the PATIS+ system in a timely manner.

Figure 5: Process for recording births at Colonial War Memorial (CWM) hospital, the largest birth facility in Fiji



Because many NOBs are not being entered into the PATIS+ system, and smaller health facilities are not connected to the PATIS+ system, FBoS initiated a data collection exercise which was funded by Bloomberg Philanthropies Data for Health Initiative's Global Grants Programme, implemented by Vital Strategies. FBoS sent a team to visit all health facilities in Fiji to collect any paper copies of NOBs, and to digitize the ledger books from CWM. During this exercise in 2022, FBoS digitized over 60,000 NOBs for the years 2016-2021. These include ledger records from CWM, paper NOBs from the 7 facilities connected to PATIS+ and other smaller health facilities. In comparison to the CMRIS data, the NOBs digitized by FBoS do not contain all birth records for each year and are not complete enough for analysis. However, in combination with the MHMS data in PATIS+ system for the years 2019 and 2020, the combined data appears to be at least 80 percent complete (see Table 4 below).

Table 4: Birth data – comparison of records

Year	CMRIS	FBoS Digitized NOBs	MHMS PATIS+	FBoS + MHMS	FBoS + MHMS compared to CMRIS
2016	19,180	10,802	19	10,821	56%
	19,646	10,419	22	10,441	53%
	19,736	9,661	34	9,695	49%
	19,825	13,132	4,566	17,698	89%
	20,788	9,199	8,123	17,322	83%
	17,391	7,398	3,384	10,782	62%
Total	**116,566**	**60,611**	**16,148**	**76,759**	**66%**

In addition to the combination of FBoS and MHMS PATIS+ system records not being complete, there is the possibility that they also contain duplicates: it is possible that both PATIS+ system and the NOBs digitized by FBoS contain a small number of the same records (see Figure 6 below). Time did not permit a de-duplication assessment, but it should be noted that there is a possibility of duplicate records in each database. Because of this possibility, CWM, the largest maternity facility, was also analyzed individually using FBoS digitized NOBs.

Figure 6: Included, excluded, and possible duplicate notifications of birth from the combined FBoS and MHMS datasets

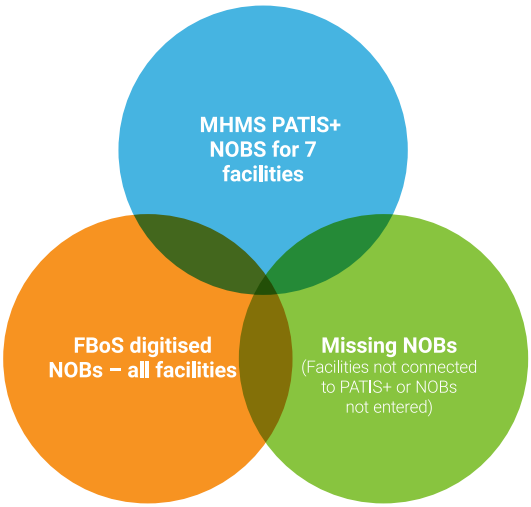


Table 5 below, suggests that FBoS collected the majority of NOBs for the years 2018-2020 from CWM during their field exercise. While there is an aberration in the number of digitized NOBs for 2019 (145% completeness rate), the years 2018 and 2020 have plausible birth counts and estimated completeness of NOBs at 95 percent or more.

Table 5: FBoS digitized NOBs from Colonial War Memorial Hospital compared to CMRIS estimates of births, 2016-2021

Years	2016	2017	2018	2019	2020	2021
FBoS digitized NOBs	6401	5959	8207	11919	8428	5938
CMRIS births	7939	8502	8608	8194	8820	8715
% complete	**81%**	**70%**	**95%**	**145%**	**96%**	**68%**

Thus, using the data sources described above, three separate analyses were performed, in order to triangulate data. Analysis of inequalities in birth registration completeness were performed for:

1. Lautoka health facility using PATIS+ system data for 2020 (no records for Lautoka were found in the FBoS digitized dataset).
2. CWM hospital using digitized NOBs from FBoS for 2020 (records for CWM were not available in PATIS+ data provided by MHMS).
3. Combined datasets of FBoS digitized NOBs, in addition to NOBs in the MHMS PATIS+ system.

The Births, Deaths and Marriages Registration Act of 1975 in Fiji allows parents one year to register after a birth. Thus, most analyses are performed with timely registration defined as registration within a year of birth. Late registrations undertaken at age 1, 2, 3, and 4 years are presented where possible.

Any adjustments for birth registration completeness are performed using the percent undercount of the denominator compared to CMRIS data (see Table 3 and Table 4 above), to determine the number of missing births. The percent distribution of other characteristics, such as age, sex, or ethnicity, are then applied to the missing births and then redistributed to the recorded births. As no information is available to understand which births are more likely to be missing than others (e.g., male vs female), the known percent distribution was used wherever data is presented. As little information is available to understand the demographics of missing births or deaths, and as the focus of inequality assessments is to understand whose vital events are less likely to be registered rather than the exact percentage of registration completeness, most disaggregated figures present unadjusted estimates of registration completeness unless otherwise specified.

Table 6 outlines the variables available for analysis in both the MOJ and MHMS datasets. Thus, completeness of birth registration was analyzed by sex of the baby, mother's age at birth, mother's marital status and ethnicity of the child, in addition to combined cross-tabulations of each of these. As mentioned above, the data was analyzed separately for several health facilities, notably Lautoka Health Facility and Colonial War Memorial Hospital. Data on usual residence of the mother was not available.

Table 6: Alignment of variables used to assess inequalities of birth registration from the MHMS data and births registered with MOJ

Variables	Births registered with MOJ (numerator)	MHMS recorded births (denominator)
Sex	Male/Female	Male/Female
Mother's Age	Single years of age, coded into 5-year age groups	Single years of age, coded into 5-year age groups
Mother's marital status	5 categories	5 categories
Child's Ethnicity	Two categories (iTaukei and non-iTaukei)	Three categories collected, recoded into two categories to align
Geography	Information only available on health facility of birth	Information only available on health facility of birth

The analysis of each of these datasets and the conclusions drawn about inequalities in registration are presented in the section on Inequalities in Birth Registration using MHMS recorded birth data.

Other Birth Data Sources Examined

Other data were considered for their feasibility to estimate births in a disaggregated manner. However, the sources below were not deemed suitable for analysis and are not presented in this report.

School Enrollment Data

School enrollment data was considered for children aged 6 years, with the intention of reverse surviving them and those who may have died between the present time and their year of birth. However, the only disaggregation possible for school enrollment data was by sex, and these estimates would have been for birth registration completeness for 6 years in the past. Most importantly, reverse survival assumes zero migration, which is not applicable in the context of Fiji. Fiji experiences moderate levels of out-migration, and children are likely to frequently migrate with their parents. However, migration data for children is not readily available and thus using school enrollment data to estimate previous births is not presented in this report.

Vaccination Data

Vaccination data is available for several major vaccines administered to young children in Fiji. However, disaggregation was only possible by clinic geographies and some uncertainties existed about which data counts applied to which age groups, and the extent to which duplicate records exist. For this reason, vaccination data were not used in the analysis.

United Nations World Population Prospects (UNWPP) Applying Beers' Interpolation

Professor Thomas Moultrie of the University of Cape Town, South Africa gave a series of lectures demonstrating how to use Beers' interpolation to derive single-calendar year estimates from 5- calendar year results for number of births by mother's age[12]. Applied to the United Nations World Population Prospects (UNWPP) dataset for Fiji,[13] this has the potential to provide an estimate of births by the age of mother for use in the denominator for birth registration completeness. However, the UNWPP data underestimated fertility and the number of births occurring in Fiji in the most recent update, which resulted in registration completeness of over 100 percent in the highest fertility age groups. Thus, this data could not be used for analysis, but should be revisited with updated UNWPP estimates for fertility.

Methodology Used to Assess Inequalities in Death Registration

Recorded notification of death data from MHMS was the primary source used to estimate deaths for the purpose of assessing inequalities in death registration completeness. Several other options were investigated, including indirect estimation and use of UNWPP data, but these were deemed unfit for purpose. More information is provided in the sections below.

Death Registration Data from the MOJ, Fiji

Death registration data for the years 2010-2020 was provided by the MOJ. Variables assessed included timeliness of registration, age, sex and ethnicity of the decedent. Unfortunately, usual residence of the decedent is an open text field which is prone to errors or omissions, and it was not feasible to re-code this data.

12 https://www.unescap.org/events/2022/regional-demographic-training-workshop-evaluation-age-and-sex-data

13 United Nations, Department of Economic and Social Affairs, Population Division (2019). World Population Prospects 2019, custom data acquired via website.

Registered death data were assessed to be of good quality, with a high level of consistency over time. There does seem to be a decreasing trend in registration of deaths, especially after 2016 (Figure 7), similar to that seen in registration of births (see Figure 1) in the above. This trend does not align with the actual number of deaths occurring in Fiji (Figure 8). Recorded deaths have slightly increased between 2017 to 2020, while registered deaths have continued to decline over this period. Delayed registration may have changed this trend with time, but more time is needed to understand the impact of delayed registration.

Figure 7: Number of deaths registered by the Ministry of Justice (MOJ), by year (2010-2020)

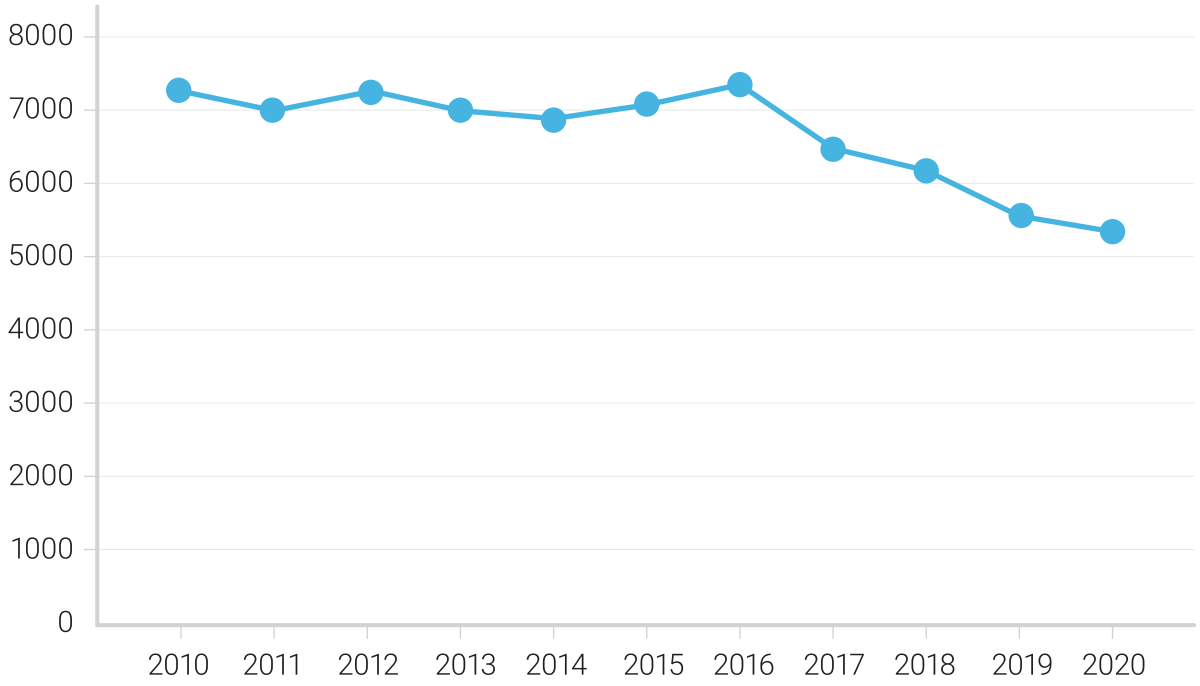
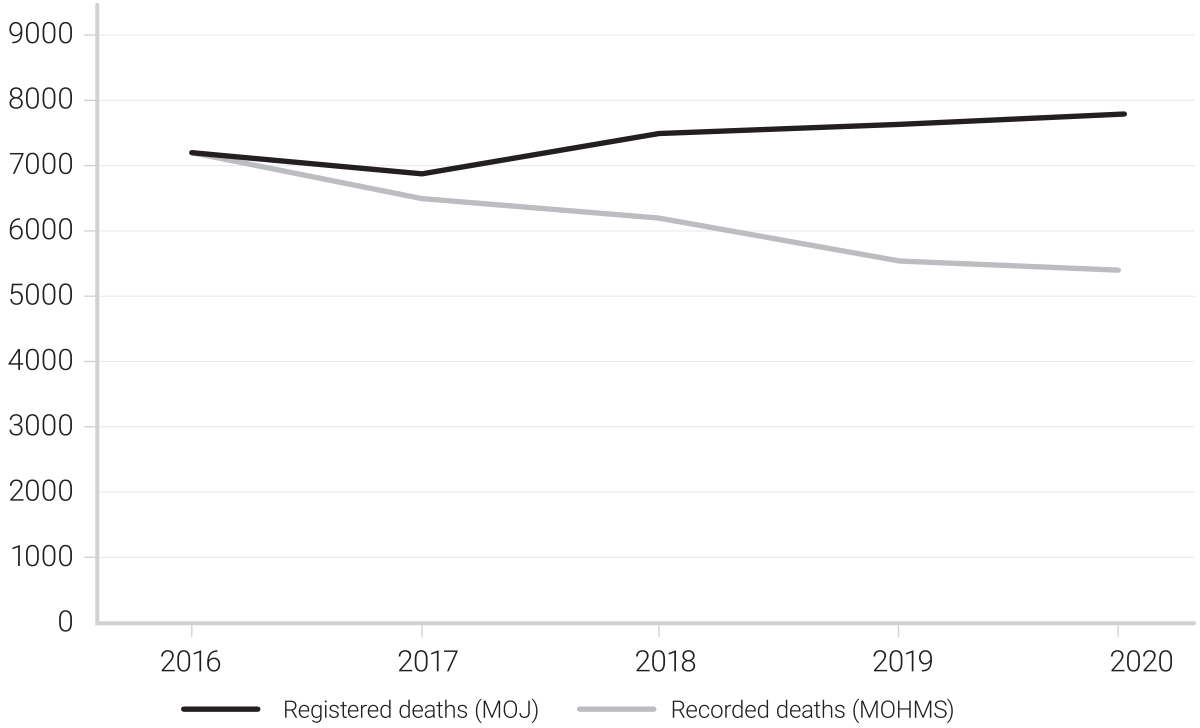


Figure 8: Ministry of Justice registered deaths compared to recorded deaths by MHMS, by year (2016-2020)

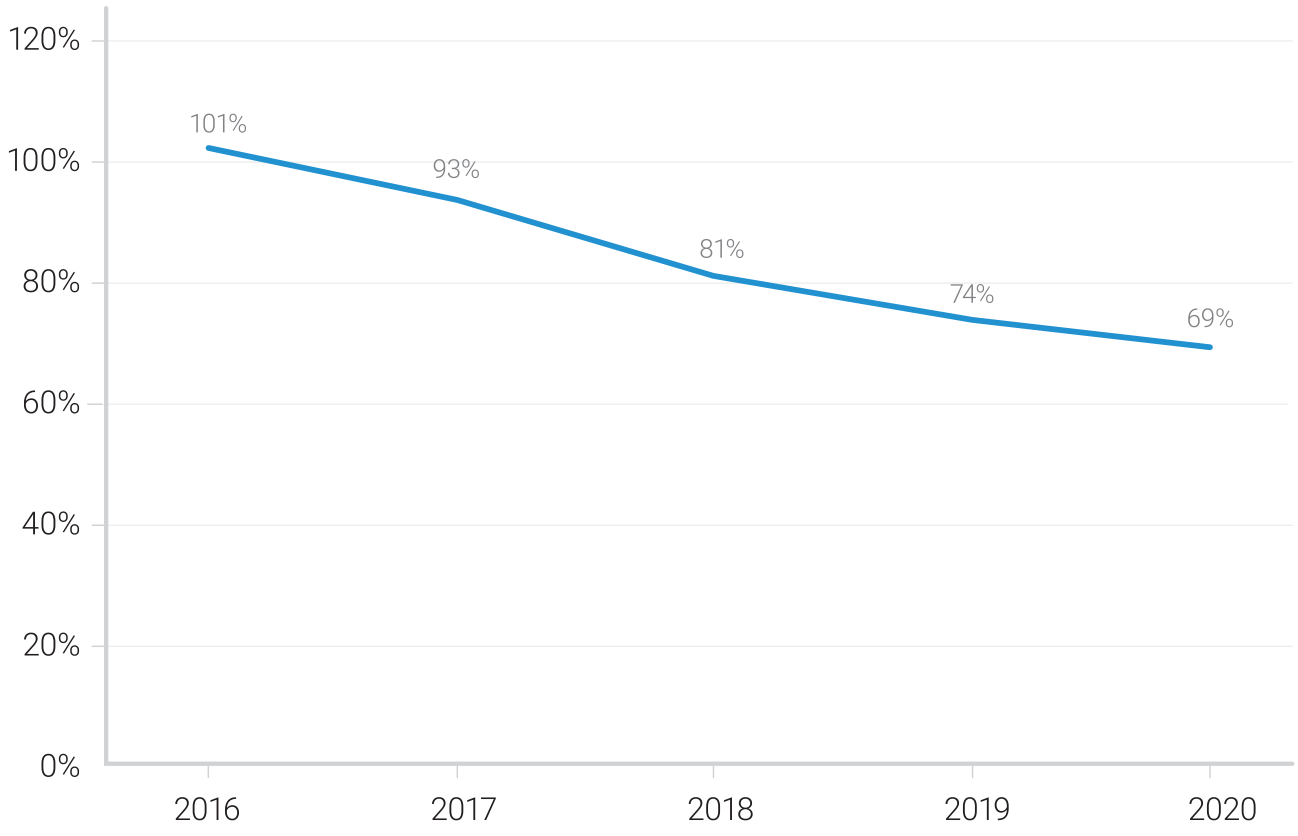


Among the roughly 73,000 records assessed, less than one hundred records were missing information or had erroneous information for age, sex, or ethnicity for the years 2016-2020. Records for earlier years had missing data on age in 14 percent or less of the cases. All records had a date of death and date of registration. Erroneous or blank records were removed from disaggregated analysis, under the assumption that removal of these records would have minimal effect on the results due to very small number of missing or erroneous records for the years analyzed. The highest rate of missing information was 1 percent for age data in 2016 records. When the data were disaggregated by age group, it was necessary to analyze the data over the 3-year period of 2018-2020 collectively, due to small sample sizes of less than 30 events in some of the child age groups. Further, the age groups 5-9 and 10-14 years had to be combined to reach a minimum of 30 events when disaggregated by sex and ethnicity.

The MOJ indicated that they were required to provide both birth and deaths certificates for stillborn babies in cases where MHMS issues the NOB to a stillborn baby. The registered birth and death databases did not include a flag to filter out these stillborn cases, thus, it is possible that some infant deaths were actually stillborn deaths, which would artificially inflate the rate of death registration completeness for these age groups. More information is needed to understand how death registration of stillborn babies can affect assessment of completeness for age groups below 9 years.

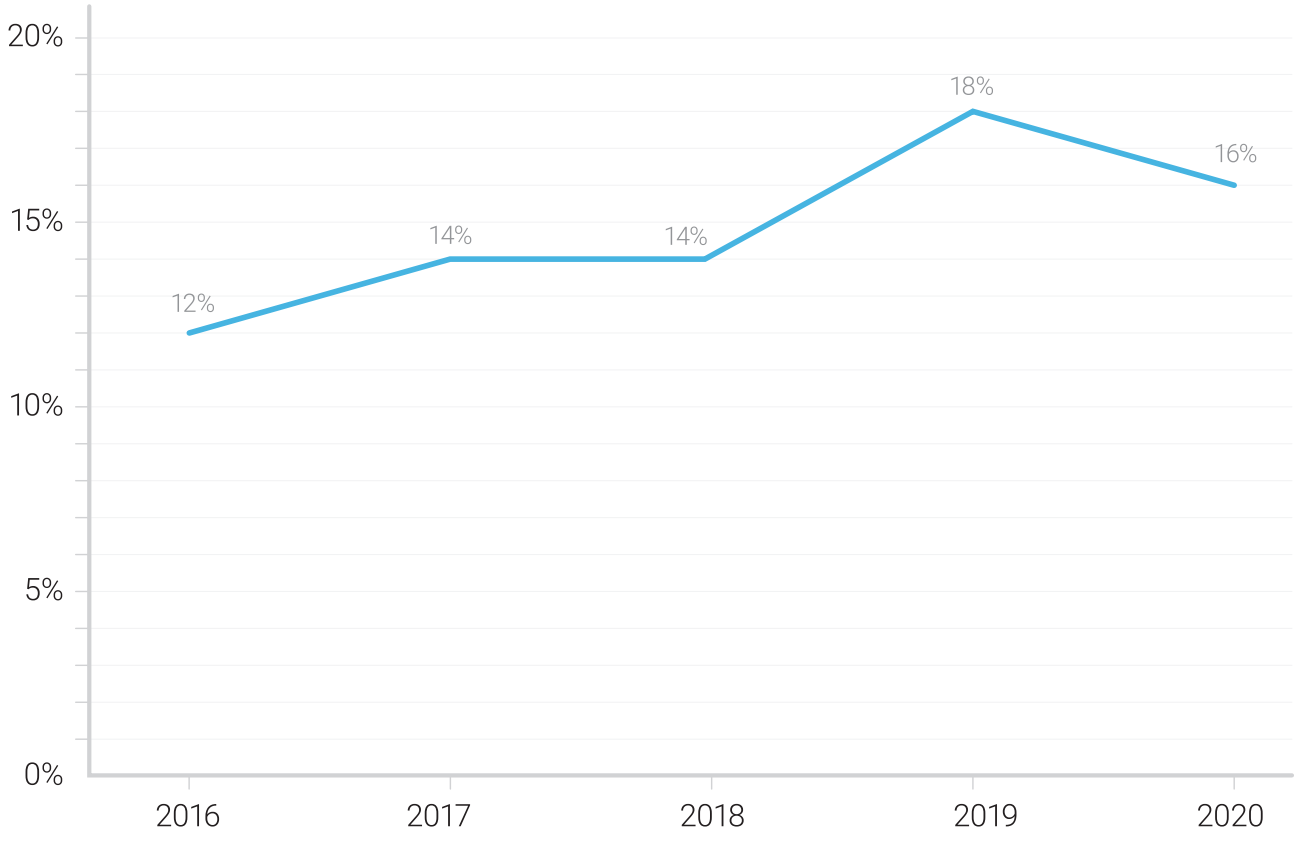
Death registration completeness was analyzed both by registration at any time, including delayed registration, and registration within one year of death for international comparison purposes. At first glance, it would appear that death registration completeness is decreasing over time (Figure 9), but there is likely delayed registration as well as improvements in the recording of deaths at the MHMS over time, resulting in later estimates being more accurate.

Figure 9: Death registration completeness, including delayed registration, by year (2016-2020)



By law, families are meant to register the deaths of their loved ones within 7 days of death. However, in 2020, less than 1 in 6 families were doing so (see Figure 10). For this reason, data was analyzed by registration within 1 year of death, which is a common international comparison. Delayed registration, defined hereon as registration that occurred more than a year after death, is also presented where applicable.

Figure 10: Percentage of deaths registered within 7 days of death, by year (2016-2020)



MHMS Recorded Death Data, Methodologies and Limitations

Recorded deaths data from MHMS was provided for the years 2016-2020. The data were analyzed by sex, age group, and ethnicity of the decedent. Similar to registered birth data, usual residence of the decedent was an open text field which was often blank and prone to error. It was not feasible to recode usual residence data.

MHMS provided a flag to remove stillborn babies. Recorded still-births ranged from 116 to 216 cases per year. Stillborn babies were removed from the denominator for analyses presented in this report. All records contained information for the decedent's age and ethnicity, with only 12 records over the five-year period missing information on the decedent's sex.

Figure 11 below shows recorded deaths in 2016 and 2017 to be lower than the proceeding years. Death registration completeness in 2016 was estimated above 100 percent (Figure 9), suggesting that the MHMS data is likely under-recorded. Comparison by age and sex to other years suggested 2017 data also suffered from under-reporting. One such comparison is shown below in Figure 12. For this reason, only the years 2018-2020 are presented in the results section.

Figure 11: MHMS recorded deaths, by year (2016-2021)

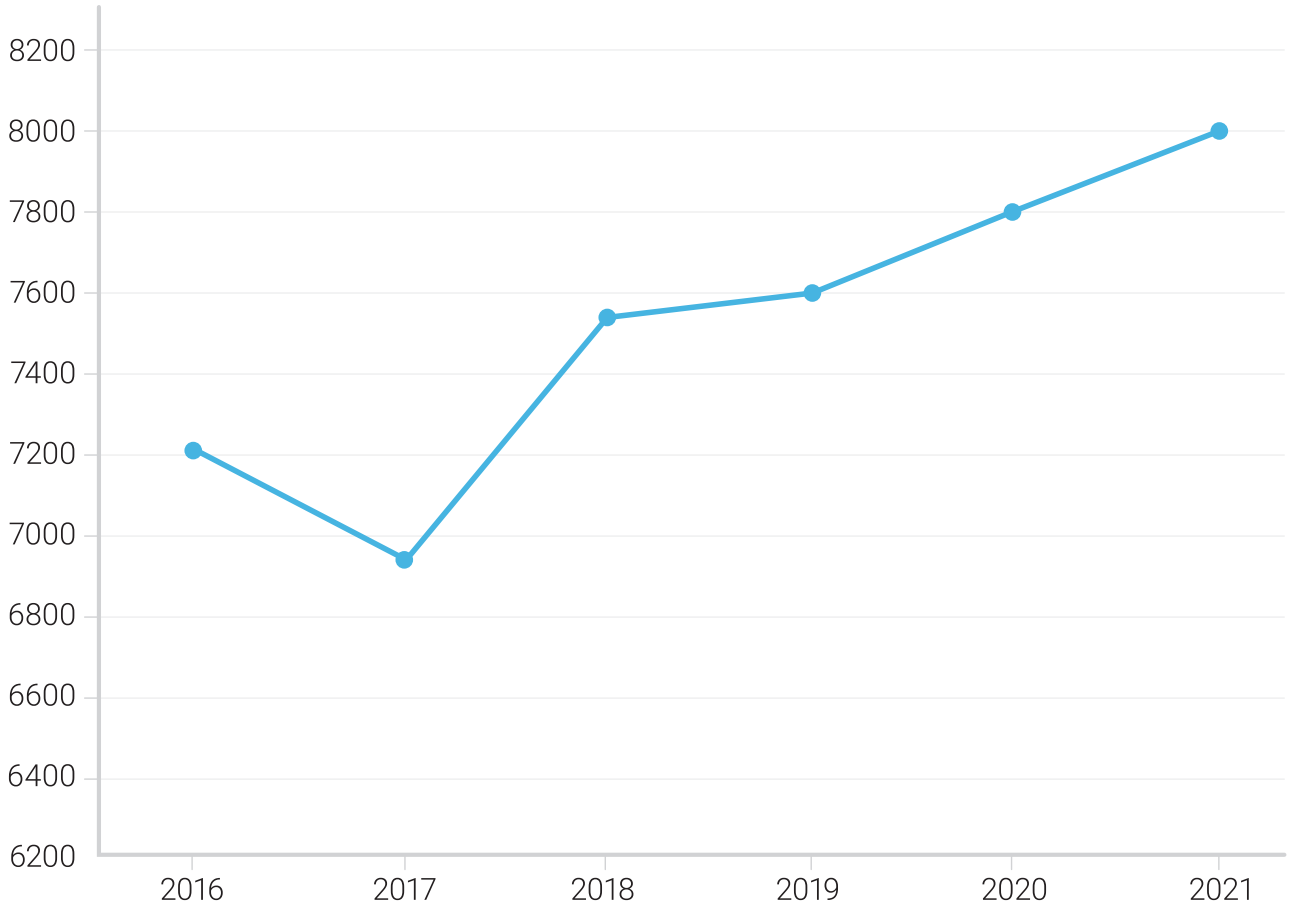
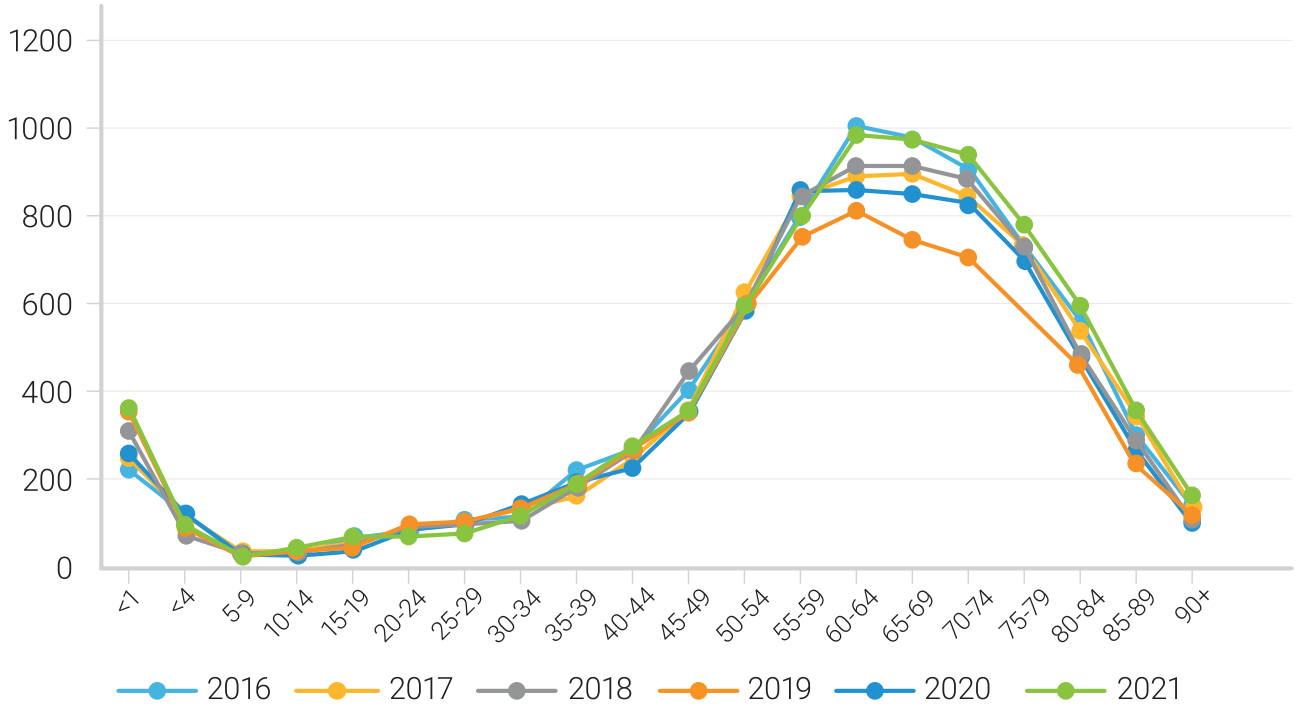


Figure 12: MHMS recorded deaths, by age group and year (2016-2021)



A previous comparison was estimated between the Secretariat of the Pacific Community's (SPC) projected number of deaths and the number of deaths recorded by MHMS. Based on this analysis for 2015 to 2017, recorded deaths were estimated to be 96 percent complete[14]. Further, in order to receive a burial or cremation permit from the police, a medical certificate of cause of death (MCCD) must be provided, even if the death did not occur at home. Thus, most families report to MHMS after a death has occurred, resulting in a relatively complete record of deaths in the MHMS database. In this way, MHMS recorded deaths were deemed to be a good estimate of deaths for the denominator.

$$\frac{\textit{Deaths occurring between Jan. 1, 2018 to Dec. 31 2018 that are registered by Registrar General}}{\textit{Death in MHMS system occurring between Jan. 1 2018 to Dec. 31, 2018.}}$$

Other Sources of Data on Death

Census Estimates Using Indirect Estimation of Deaths

Using complex demographic methods, it is possible to estimate the number of deaths at the midpoint between two censuses using age and sex information from these censuses. The 2007 and 2017 Fiji Population and Housing Censuses were considered for this technique. However, indirect estimation assumes that there is zero migration in between the two censuses. Migration is a key issue in Fiji, with many people migrating to New Zealand and Australia, but migration data by age and sex is not readily available. As indirect estimation assumes zero net migration, the reality of moderate out-migration flows from Fiji would result in an over-estimation of deaths. Further, this method requires mortality information for the different groups for which estimations are being derived. Mortality information disaggregated by age, sex, and ethnicity is not readily available, making indirect estimation unfeasible. Because administrative data was of higher quality, available for a recent five-year period, and easily disaggregated, analyses were not computed using indirect estimation.

Police and Cemetery Records

In order to bury or cremate a loved one, a permit from the police must first be presented to the cemetery or crematorium. However, in order to receive a permit from the police, a medical certificate of cause of death (MCCD) from MHMS must be provided, even if the death did not occur at home. Thus, most families report to MHMS after a death has occurred and go to the local police to obtain a burial or cremation permit. The Fiji Police Force retains paper records of these permits, but they are stored in a hard copy and in a decentralized manner at each individual police station. Data is not collated or used for analytical purposes, but strictly for administrative purposes. Therefore, it is not possible to use this data for the purposes of analysis in inequalities in registration.

The feasibility of collecting cemetery records was also investigated but deemed infeasible for similar reasons associated with using police records. The records would only be available in hard copy, stored in a decentralized manner, and are not believed to be of high quality. As the MCCD is the breeder document[15] for both police permits and thus cemetery records, MHMS was the preferable data source.

14 The Fiji Bureau of Statistics. 2019. Republic of Fiji Vital Statistics Report 2012-2017. See page 5.

15 According to a definition by UNICEF, a breeder document is "an identification document issued to support a person's identity and used to obtain another document or privilege of greater perceived value. The most important breeder document is the birth certificate." (https://www.unicef.org/protection/files/UNICEF_Birth_Registration_Handbook.pdf)

United Nations World Population Prospects Applying Beers' Interpolation

Professor Thomas Moultrie of the University of Cape Town, South Africa gave a series of lectures demonstrating how to use Beers' interpolation to derive single-calendar year estimates from 5- calendar year results for number of deaths by age group.[16] When applying this method to the United Nations World Population Prospects (UNWPP) dataset for Fiji,[17] there is potential to produce an estimate of deaths by age for the denominator to calculate death registration completeness. However, the UNWPP data underestimated mortality and the number of deaths occurring in Fiji in the most recent update, which resulted in registration completeness of over 100 percent in many adult age groups. Thus, this data could not be used for analysis, but should be revisited using updated UNWPP mortality estimates.

A Note about Linkages

Data linkage was investigated as part of the data mapping exercise to determine if further disaggregated data by income or wealth status was possible, as MOJ and MHMS administrative records did not contain this information. While the MOJ and MHMS records did not share a unique ID that could be used to link records in other databases, future linkage may be possible. For example, records from the MOJ could potentially be linked to databases from the Ministry of Women, Children and Poverty Alleviation using the decedent's or mother's (in the case of births) birth registration number (BRN). If the Ministry of Women, Children and Poverty Alleviation keeps records of social welfare benefits for low-income households, records that were receiving such payments could be flagged and coded as low-income.

If school enrollment data is used in the future to estimate births, Ministry of Education, Heritage and Arts (MEHA) has parents' Tax ID Number (TIN) which could also potentially be linked to other government databases such as the Ministry of Women, Children and Poverty Alleviation to assess for issuance of social welfare benefits.

DigitalFiji has the IT capabilities to link records over several databases and provide more disaggregated information. However, they currently have no data sharing agreements which allow access to data from Ministries other than MOJ, but this may change with time. The potential to link records across databases to analyze more disaggregated data needs to be investigated in future inequality assessments.

16 https://www.unescap.org/events/2022/regional-demographic-training-workshop-evaluation-age-and-sex-data

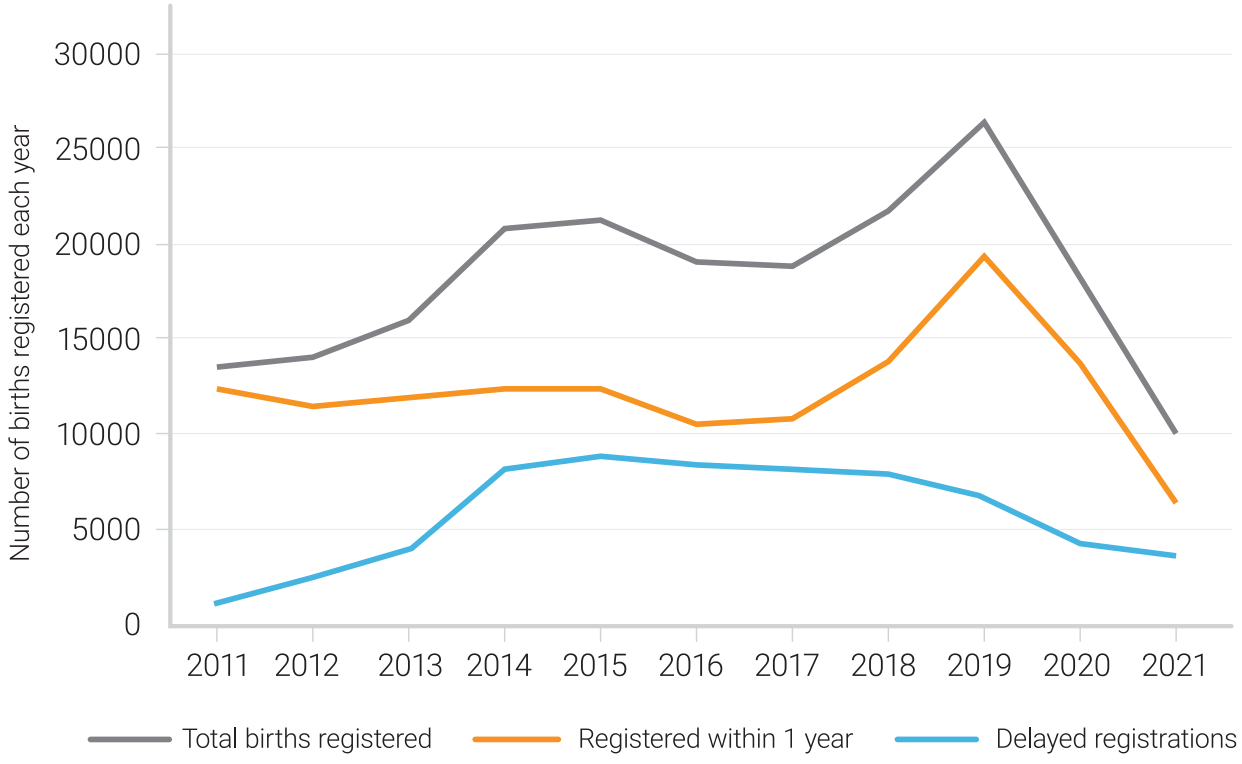
17 United Nations, Department of Economic and Social Affairs, Population Division (2019). World Population Prospects 2019, custom data acquired via website.

6
INEQUALITIES IN BIRTH REGISTRATION COMPLETENESS

Birth Registration Incentives

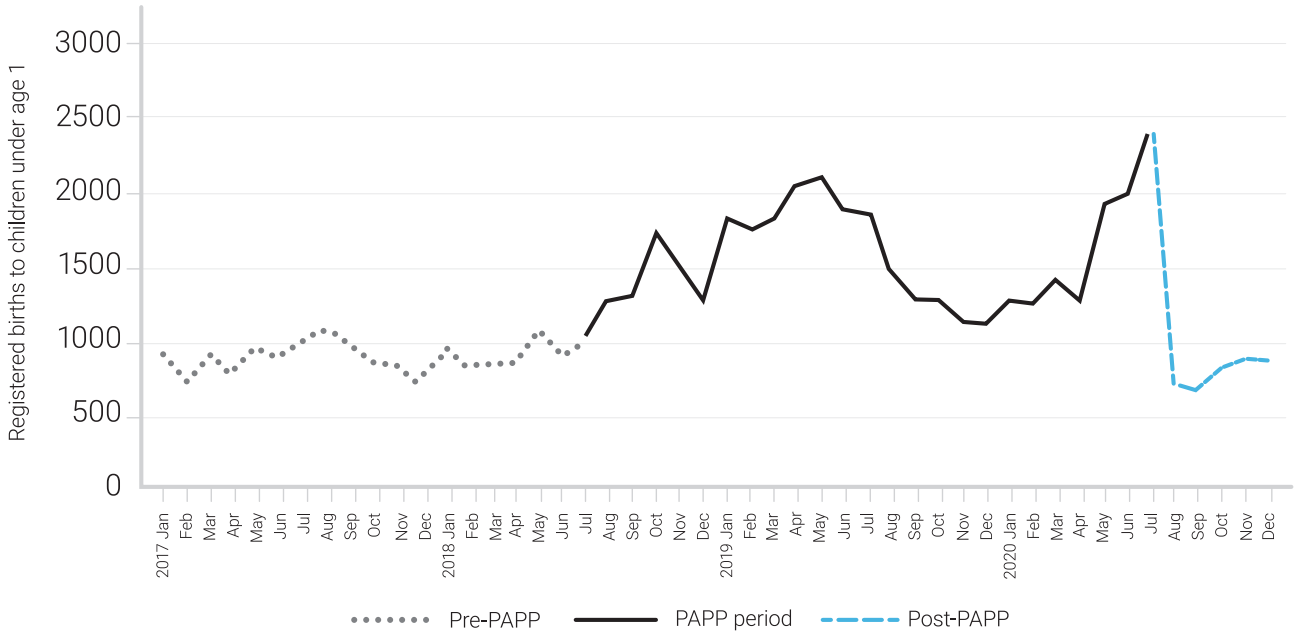
Before analyzing birth registration completeness over time, it is worth noting that in an effort to improve completeness, the Government of Fiji introduced the Parental Assistance Payment Programme (PAPP) from August 1, 2018 to July 31, 2020. Under this programme, parents receive two cash payments upon registration of a birth. The parents received $500 Fijian dollars at the time of birth registration and an additional $500 Fijian dollars when the child attends preschool around age five years, to support with school supplies, or other needs. This money is guaranteed to the parents, even if the child passes away.

Figure 13: Trends in birth registration in Fiji, by year (2011-2021)



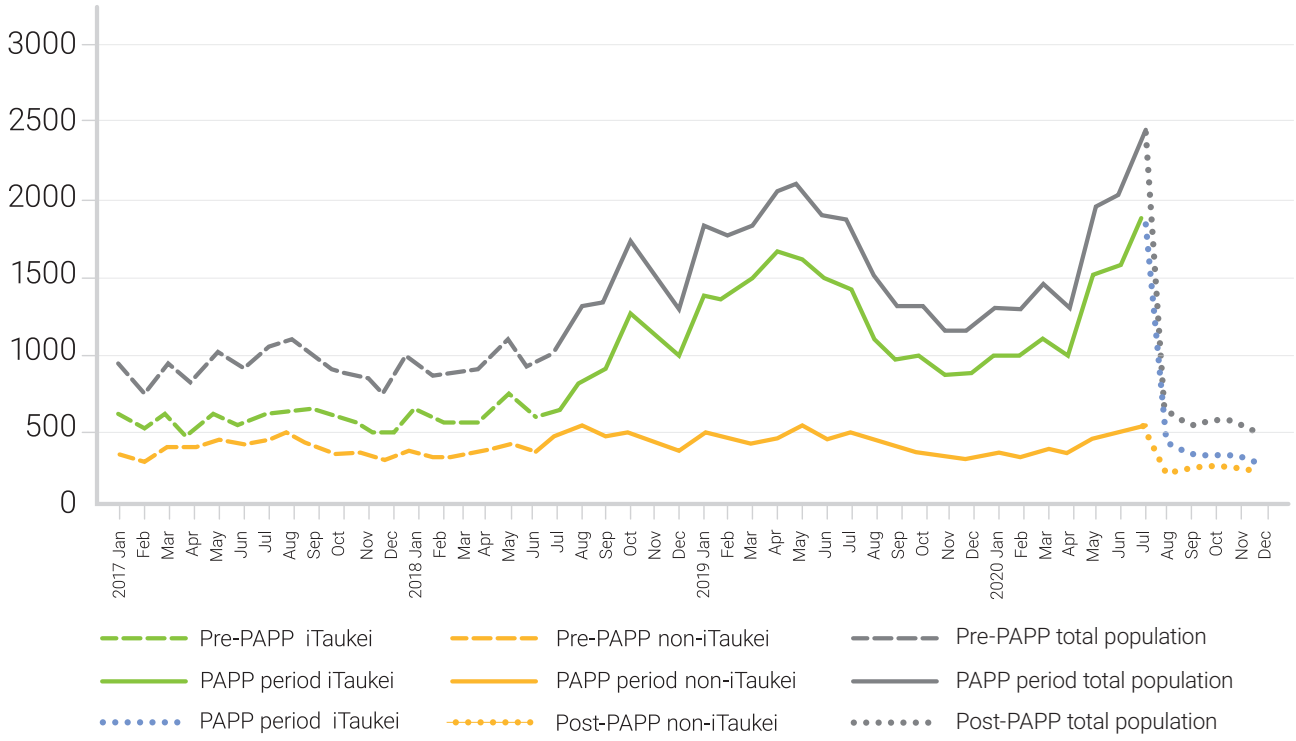
As can be seen in Figure 13 and Figure 14, this payment programme had a significant positive impact on timely birth registration, particularly in 2019. Birth registration of children under one year increased 77 percent across the PAPP period compared to the prior months in 2018 and 2017. Figure 14 illustrates that timely registrations were averaging around 900 a month prior to the PAPP. This increased to an average of 1600 a month during the programme, peaking at 2,500 in the final month in July 2020 (a 170% increase compared to before the PAPP). Unfortunately, the trend in increased registrations did not continue once the PAPP programme expired. The registrations of children under one years declined to 731 in August 2020, and remained in the range of 800 through the end of 2020.

Figure 14: Birth registrations by age one year by month of registration before, during, and after the Parental Assistance Payment Programme (PAPP), (2017-2020)



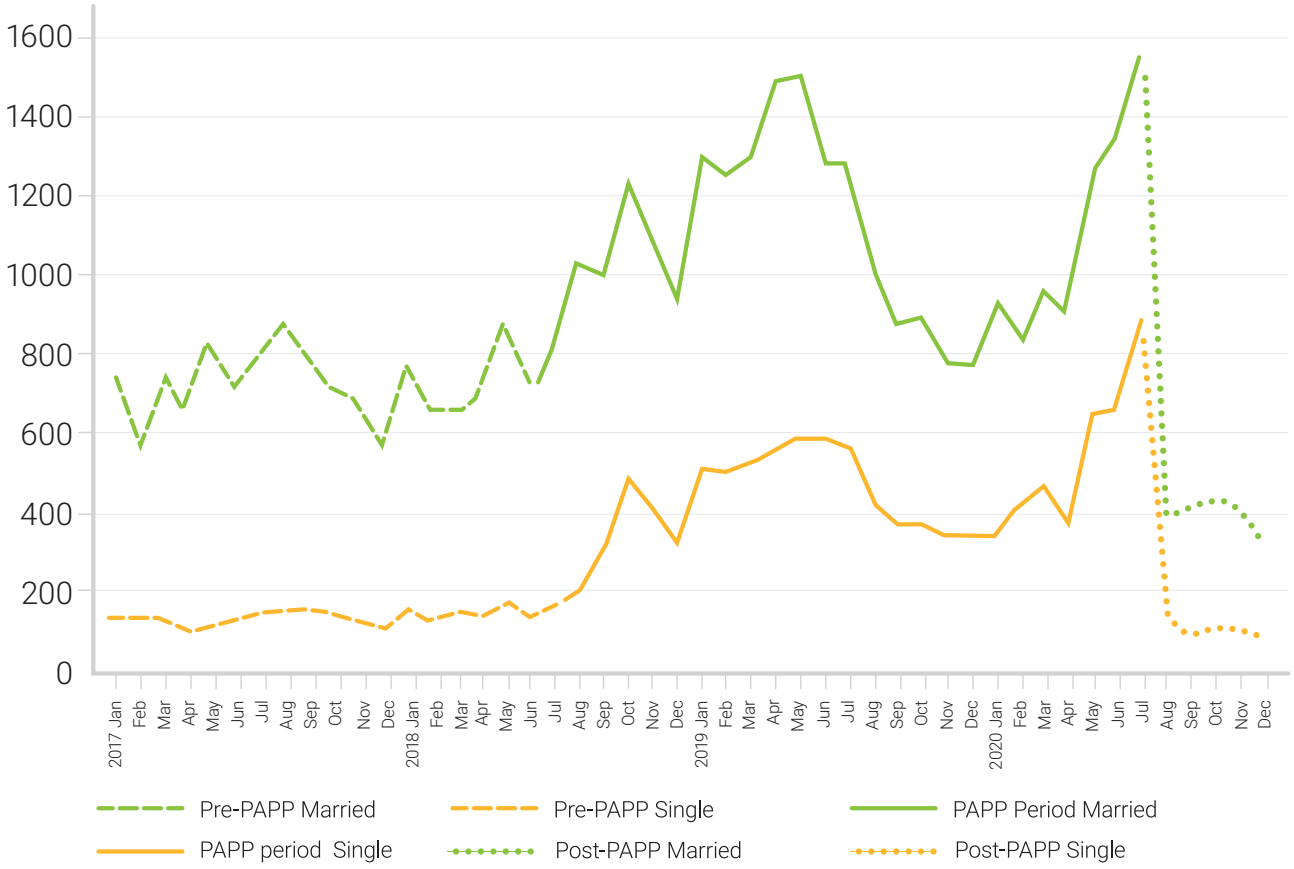
Perhaps what is most notable about the effect of the economic incentive is that it had a greater impact among the iTaukei population compared to the non-iTaukei population. Figure 15 below shows that the increase in registration seen in the general population is primarily due to increases in birth registration among iTaukeis. While there was a slight increase among the non-iTaukei population (14%), particularly at the end of the incentive period, birth registration among iTaukeis increased by 116 percent on average, and at its peak experienced an increase of 246 percent in July 2020, compared to the month prior to the PAPP. Whereas registrations of iTaukei children under age one year were averaging at around 550 a month prior to the PAPP, this number more than doubled to about 1,200 a month on average and peaked at 1,922 registrations in July 2020.

Figure 15: Birth registrations by age one year by month of registration and ethnicity, before, during, and after the Parental Assistance Payment Programme (PAPP), (2017-2020)



The impact of the PAPP was also seen both among married and single mothers. While the number of registrations among married mothers increased more than 50 percent on average, there was a 232 percent increase among single mothers. Further, there was more than a 500 percent increase among single numbers in July, 2020 compared to the period before the programme. This programme was particularly effective in increasing rates of registration of babies born to single mothers (Figure 16). It was also effective across all ages of mothers, and particularly among teenage mothers (data not shown).

Figure 16: Birth registrations by age one year by month of registration and mother's marital status, before, during, and after the Parental Assistance Payment Programme (PAPP), (2017-2020)



This information is provided, as much of the analysis in this report covers the year 2020 and the time period of the PAPP. Thus, the absolute percentage of registration completeness should be interpreted with caution as the increase in registration likely did not continue into 2020 and 2021 given the lack of cash incentives. However, the disparities in registration among different groups likely reflects actuality given that even with cash incentives, some groups of children were more likely to have had their births registered compared to others.

Results from Fiji 2021 MICS

The Fiji 2021 MICS[18] was consulted before performing any direct calculations. According to the Fiji 2021 MICS, 86.6 percent of children under five years had their births registered. However, only about 52 percent of mothers to children under five years could provide a birth certificate to substantiate this claim.

There was little difference in registration by sex, but children in urban areas (89%) were more likely to have had their births registered compared to children in rural areas (84%), likely due to challenges in accessing civil registry offices in rural areas.

18 The Fiji Bureau of Statistics. 2022. Fiji Multiple Indicator Cluster Survey 2021, Survey Findings Report. Suva, Fiji: The Fiji Bureau of Statistics.

Figure 17: Birth registration Table PR.1.1 from the Fiji 2021 MICS[19]

Table PR.1.1: Birth registration

Percentage of children under 5, by whether birth is registered and percentage of children not registered whose mothers/caretakes know how to register births, Fiji MICS, 2021

Children whose birth are registered with civil authorities / Have birth certificate

	Seen	Not seen	No birth certificate	Total registered	Number of children	Percent of children whose mothers/caretakers know how to register births	Number of children without birth registration
Total	**51.8**	**26.4**	**8.3**	**86.6**	**2,115**	**92.0**	**284**
Sex							
Male	52.5	25.4	9.0	86.8	1,139	90.5	150
Female	51.1	27.6	7.5	86.3	976	93.8	134
Area							
Urban	52.0	29.5	7.5	89.0	1,177	93.8	130
Rural	51.7	22.5	9.4	83.6	938	90.6	154
Division							
Central	49.8	28.2	8.7	86.7	925	91.7	123
Eastern	49.4	26.1	15.0	90.5	96	(*)	9
Northern	59.1	19.5	6.6	85.2	305	93.1	45
Western	51.8	27.0	7.7	86.4	789	92.5	107
Age (in months)							
0-11	38.7	16.3	15.7	70.6	437	89.5	128
12-23	60.4	28.1	5.3	93.7	407	(96.1)	25
24-35	57.7	28.8	4.7	91.2	405	(96.2)	36
36-47	51.5	27.3	9.4	88.2	449	90.1	53
48-59	52.0	32.0	5.9	90.0	417	(96.3)	42
Mother's education[C]							
Primary or lower	53.1	28.6	4.4	86.0	168	(*)	23
Secondary education	51.7	24.1	8.7	84.5	1156	90.4	180
Tertiary or vocational	52.0	29.1	8.7	89.7	788	96.6	81
Child's functional difficulties[A]							
Has functional difficulty	(36.6)	(33.1)	(15.1)	(84.8)	38	(*)	6
Has no functional difficulty	54.1	29.3	6.5	89.9	1233	94.2	124
Mother's functional difficulties[B]							
Has functional difficulty	(66.4)	(19.3)	(2.0)	(87.7)	48	(*)	6
Has no functional difficulty	51.6	26.6	8.5	86.7	1962	94.2	262
Wealth Index Quintile							
Poorest	46.6	22.2	9.1	77.9	549	89.8	121
Second	49.1	26.7	11.1	86.9	490	94.0	64
Middle	49.0	33.2	7.2	89.4	417	(90.0)	44
Fourth	57.8	24.1	7.8	89.6	372	(95.0)	39
Richest	62.9	27.0	4.6	94.5	287	(*)	16

[1]MICS Indicator PR.1–Birth registration; SDG Indicator 16.9.1

[A] Children aged 0- years are excluded, as functional difficulties are only collected for age 2-4 years

[B] The disaggregate of Mother's functional difficulties is shown only for respondents to the Adult Functioning Module i.e., individually interviewed women aged 18-49 years in selected households.

[C] The category of 'Don't know/Missing' in the background characteristic of 'Mother's Education' has been suppressed from the table due to small number of unweighted cases.

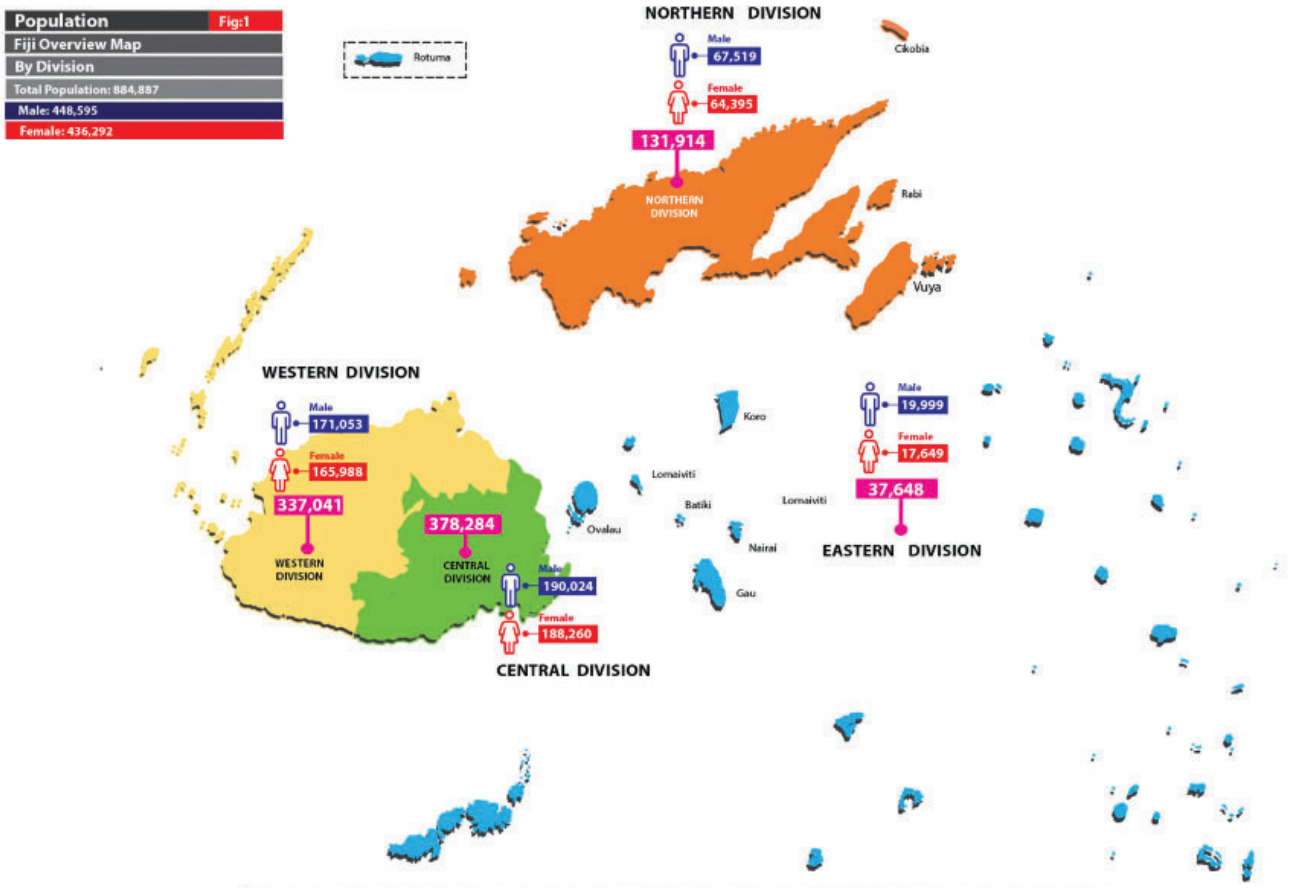
( ) Figures that are based on 25-49 unweighted cases.

(*) Figures that are based on fewer than 25 unweighted cases.

19 The Fiji Bureau of Statistics. 2022. Fiji Multiple Indicator Cluster Survey 2021, Survey Findings Report. Suva, Fiji: The Fiji Bureau of Statistics.

According to the MICS, the Northern division had the lowest rates of birth registration for children under five years, at approximately 85 percent. The Central Division, which includes Suva and the largest maternity hospital (Colonial War Memorial Hospital), and the Western Division, which includes Nadi, had registration rates of approximately 87 percent and 86 percent, respectively. However, the Eastern Division had the highest rate of birth registration, around 91 percent. This is unusual as the Eastern Division contains more rural areas and remote outer islands (see Figure 18 below), but it is hypothesized that most mothers in this Division travel to Suva to give birth, and thus may register in a timely manner while still on the main island.

Figure 18: Map of Divisions in Fiji from the 2017 Population and Housing Census[20]



Lack of education or low levels of mother's education does not appear to affect birth registration rates. Mothers with primary or lower (86%) or secondary education (85%) had similar rates of birth registration. However, among mothers with tertiary or vocational education, birth registration rates were at almost 90 percent, indicating that high level of education likely has a positive impact on birth registration. While education is important to promote in its own right, primary or secondary education is likely not a key policy intervention to increase birth registration, unless the focus is on completion of tertiary or vocational education.

Mothers' wealth quintiles appear to have the largest impact on birth registration. Mothers in the poorest wealth quintile experienced the lowest rates of birth registration of their children compared to all other variables analyzed, with just 78 percent of mothers in the lowest wealth quintile having registered their children's births by age five years. Registration increases with increasing wealth quintile, with mothers

20 The Fiji Bureau of Statistics.2018. Release No: 63, 21st September, 2018. 2017 Population and Housing Census Infographics Release

from the richest wealth quintile reporting a birth registration rate of almost 95 percent. It does not appear that knowledge about how to register a birth is a significant barrier, as it was reported that 90 percent of mothers in the lowest wealth quintile who have not yet registered a birth, possessed the knowledge of how to do so.

The impact of wealth quintiles suggests that there may be some barriers to registration such as lack of access (for example, no registration offices within 10km), cost of registration, and opportunity costs of registration, including missed wages, needing childcare for children when travelling to a registration office is required and travel costs to access registration offices. These barriers may make registration prohibitive to mothers in the lowest wealth quintile, and services such as mobile registration should be considered to reach low-income mothers.

Mothers with disabilities had similar rates of registration completeness compared to the general population (88% compared to 87% respectively). The number of children with functional disabilities surveyed was low and should be interpreted with caution, but they are presented as experiencing lower rates of registration (85%) compared to children without functional disabilities (90%). Children living with disabilities should be given special considerations for outreach, as they are more vulnerable and may be further left behind without access to a birth certificate.

Children under age one year had the lowest rate of birth registration completeness, at around 71 percent, compared to all other children under age five years. Registration completeness increased to 94 percent for children aged one and then hovers around 88 to 91 percent for children aged two, three, and four years. As the MICS performed fieldwork in 2021 after the PAPP ended, it appears the lack of economic incentive has a negative impact on registration for children under age one year, but those at age one who would have benefited from the incentive experienced the highest rates of registration. Children born before the incentive had lower rates of registration compared to those born during the PAPP period, indicating that economic incentives are an effective option to increase birth registration for children below the age of one year.

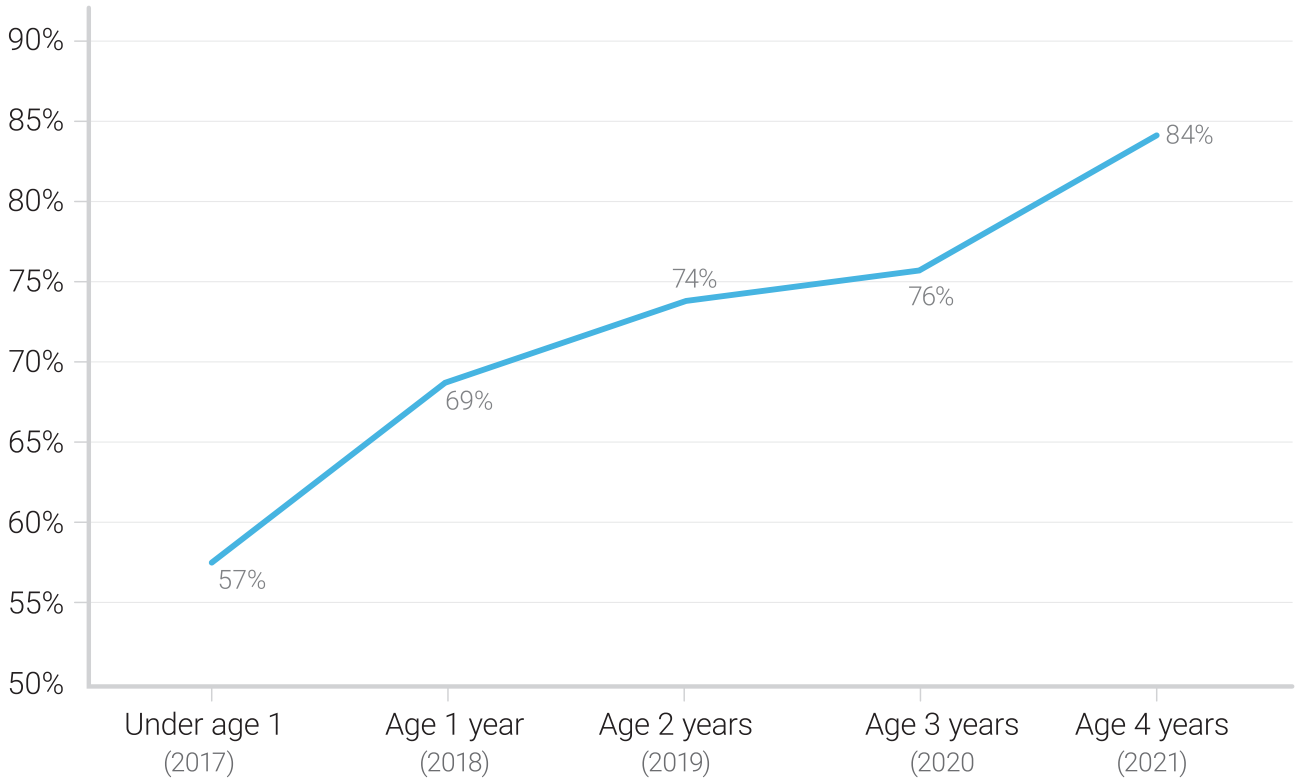
Unfortunately, the MICS only presents disaggregated data for children under age five years. It would be helpful to understand whose births are least likely to be registered among children under age one year. Direct calculations in the following sections examined this in more detail to the extent possible, based on the availability of disaggregated data.

Inequalities in Birth Registration using the 2017 Census Data

The age 0 population from the 2017 Population and Housing Census was used to estimate births for the purpose of finding inequalities in registration between different populations. Triangulated with other data sources, the census data can be useful in pinpointing inequalities in registration. It should be noted, however, that the unadjusted estimates presented below will provide higher rates of registration completeness than believed to be 'real,' as the denominator is deflated, resulting in higher calculations of registration completeness. More information on the methodology used and its limitations can be found in the methods section on the census.

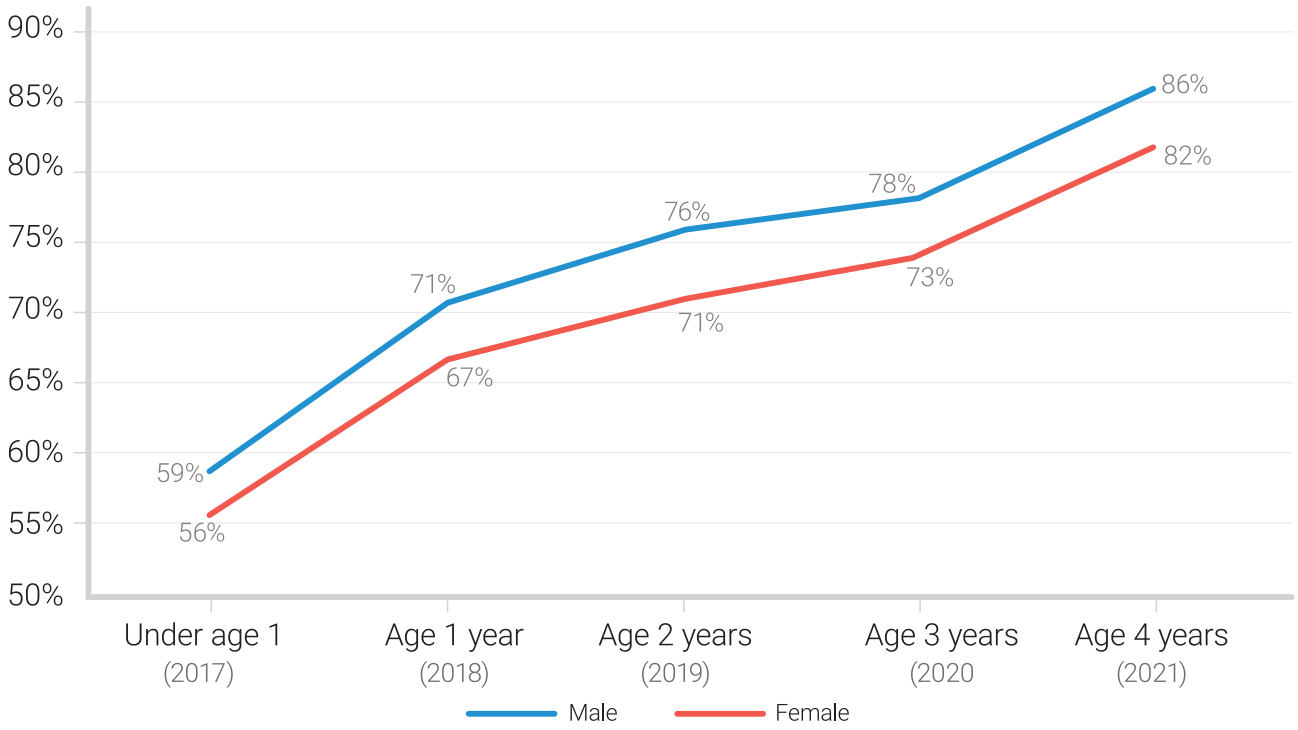
The census results were analyzed by age and sex of the child, ethnicity, and province. Figure 19 below follows over time, the cohort of children aged zero in the 2017 census. Figure 19 shows that birth registration completeness increased with age. Slightly over half (57%) of children aged zero in the 2017 census had their births registered by their first birthday. For these same children, the registration completeness increased to 69 percent at age one (before age 2), 74 percent at age two, 76 percent at age three, and registration completeness was 84 percent for children under age five as of 2021.

Figure 19: Birth registration completeness for the cohort of children aged 0 in the 2017 census



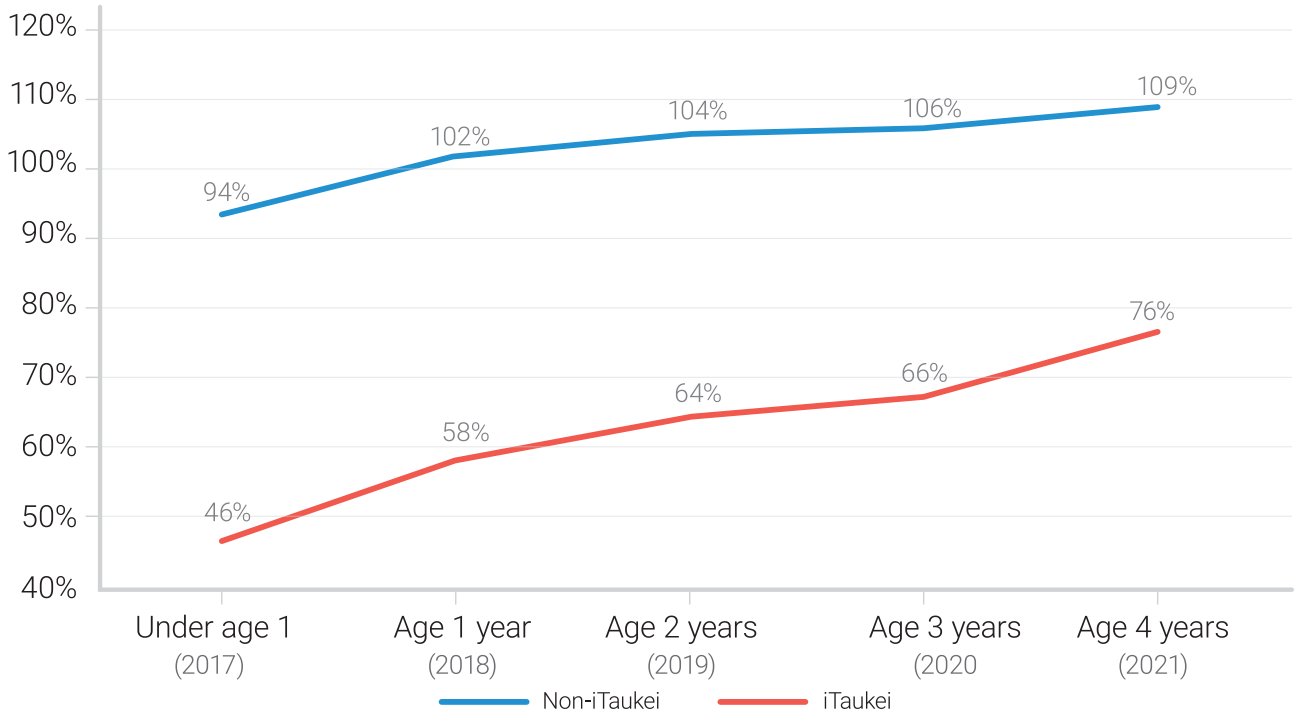
When examining registration by sex (Figure 20), it would appear there is a registration differential by sex, with a slight preference towards registering males, but the trend of increasing registration with age is consistent among both sexes. However, once further disaggregated by ethnicity, larger differences appear (see Figure 22 below).

Figure 20: Birth registration completeness for the cohort of children aged 0 in the 2017 census, by sex



When examining birth registration completeness by ethnicity, a stark differential begins to appear. Whereas 94 percent of non-iTaukei children were registered by age one, the registration of iTaukei children is almost half of the registration of non-iTaukei children, at just 46 percent (Figure 21). By age four, only 76 percent of iTaukei children have had their births registered.

Figure 21: Birth registration completeness for the cohort of children aged 0 in the 2017 census, by ethnicity



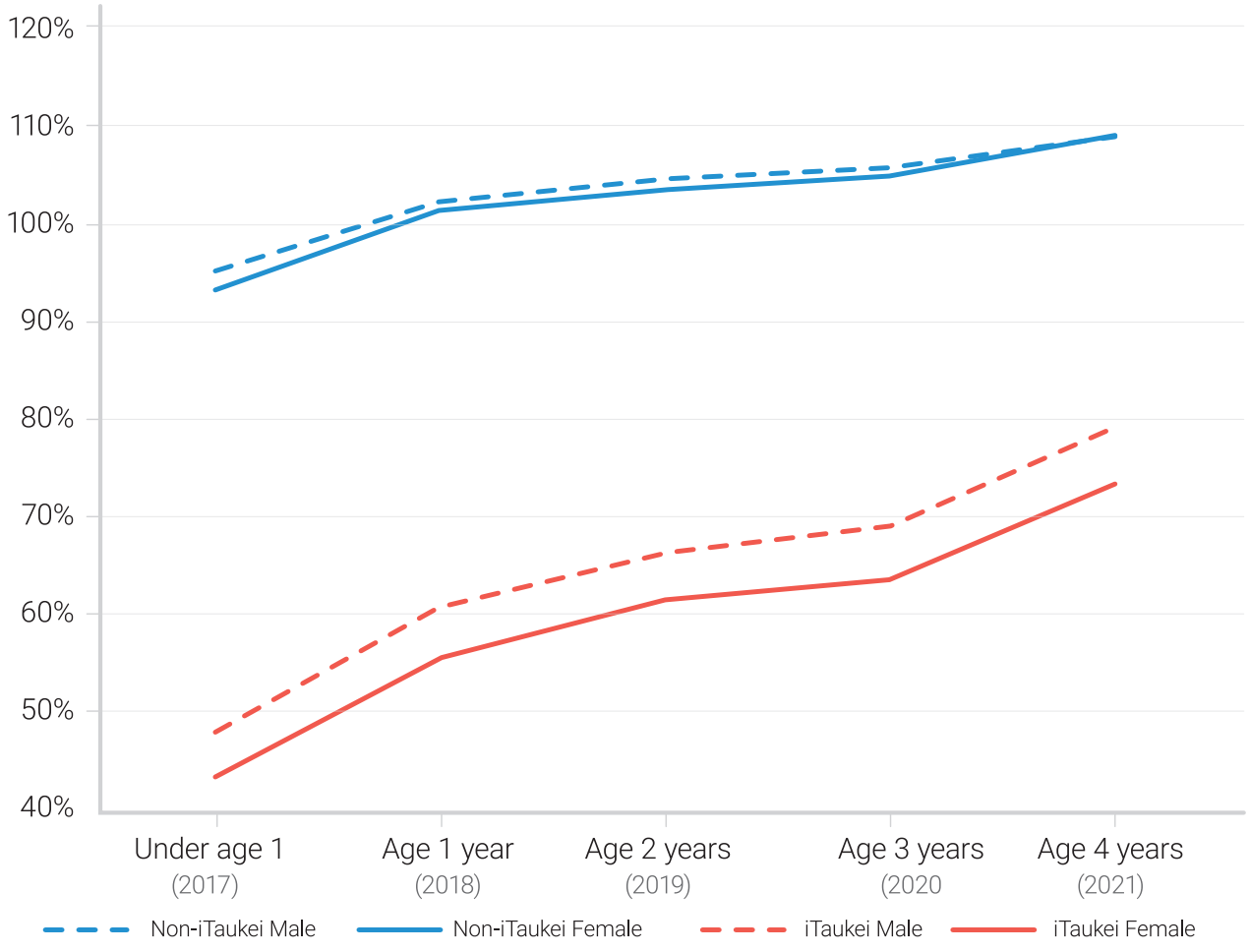
Registration rates for non-iTaukei children increased above 100 percent by age one year, which suggests a discrepancy with data on ethnicity. While it is very likely that there are disparities in registration between ethnicities, the reliability of the exact registration rates remains questionable. Recall, for ethnicity, the equation used was:

Non-iTaukei *births occurring between Sept. 8, 2016 to Sept. 17 2017 that are registered by Registrar General*

Non-iTaukei *children aged 0 enumerated in the census Sept.17, 2017.*

There are several sources from which the errors could be derived. In the numerator, duplicate records could cause over-registration. The MOJ has suggested that there have been cases of duplicate records, however, past examinations have indicated that it would not be to the magnitude of pushing the registration rate above 100 percent. Miscoding ethnicity would artificially increase non-iTaukeis in the numerator when iTaukeis are registered as non-iTaukeis. However, the ethnicity categories in the MOJ records are derived from the designated ethnicity, upon notification of birth at MHMS. Thus, miscoding of ethnicity would exist in both the numerator and the denominator when using recorded births as the denominator. This would essentially cancel each other out, but this was not found to be the case (see section Inequalities in Birth Registration using MHMS Recorded Birth Data below). Conversely, if the census missed non-iTaukei infants, this would make our denominator too small and inflate our calculation, but we would expect to see something similar for iTaukeis as well. The issues related to data quality concerning ethnicity require further investigation and are discussed in more detail in the sections below.

Figure 22: Birth registration completeness for the cohort of children aged 0 in the 2017 census, by ethnicity and sex



When examining birth registration completeness by sex and ethnicity, we see ethnicity has a much larger impact than sex (Figure 22). Both iTaukei males and females have lower rates of registration compared to non-iTaukei males and females, across all age groups. While the completeness rates for both non-iTaukei males and females are erroneous (more than 100 percent), the sex differential in registration completeness is very small among non-iTaukeis. The largest difference appears in the group of children aged less than one year, at 93 percent for females compared to 95 percent for males. Conversely, males have higher rates of registration compared to females among iTaukei children in all age groups. The iTaukei female infants under age one year have the lowest registration rates, at just 44 percent compared to 48 percent among iTaukei males.

The final examination using census data investigated whether birth facility provinces could be used as a proxy for provinces of usual residence. Given Fiji's unique situation with a multitude of remote outer islands without birthing facilities, this proxy did not prove to be appropriate as mothers come to the main birthing facilities in Suva and Nadi to give birth. Using this proxy resulted in a registration rate of 305 percent in Rewa Province, which houses the largest maternity hospital (Colonial War Memorial Hospital CWM) in Suva. This resulted in inaccurate rates of registration in other provinces, and thus the data could not be used for analysis at the provincial level.

Census Summary

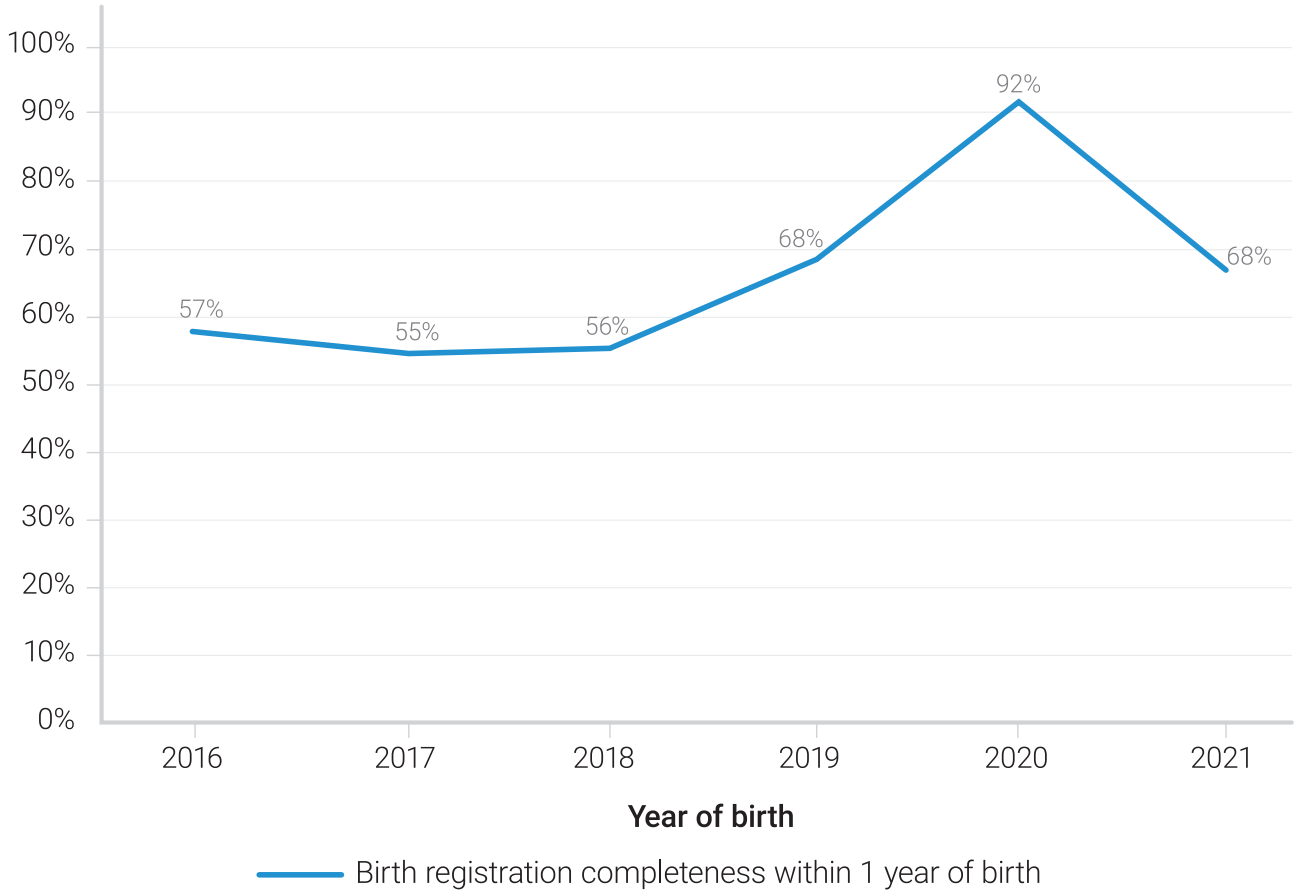
By examining the cohort of children aged zero in the 2017 census, we find that:

1. Ethnicity has the largest impact on registration with iTaukei children having the lowest rates of registration (46% by age one year compared to 94% of non-iTaukei children).
2. Birth registration completeness increased with age, with 57 percent of children registered by age one year and 84 percent of children registered before age five years.
3. Census data suggests a small registration differential by sex, with a slight preference towards registering boys compared to girls (59% compared to 56% by age one year).
4. Using the province of birth as a proxy of the province of usual residence is not viable in the case of Fiji, as many women travel to the main island to give birth.

Inequalities in Birth Registration Using MHMS Recorded Birth Data

Figure 23 below shows estimates of birth registration completeness within one year of birth based on the CMRIS data used to estimate the total number of births each year. Timely registration was low, hovering around 56 percent, up until the PAPP economic incentive programme, which began in August 2018. This programme appears to have significantly improved timely registration in 2019, driving it up to 92 percent completion, as well as having boosted registration in 2018 and 2020 for the portions of the year it covered. However, when the programme ended in July of 2020, timely registration decreased to 68 percent. This data is shown below for reference of comparison to the PATIS+ system data used for analysis of inequalities and registration.

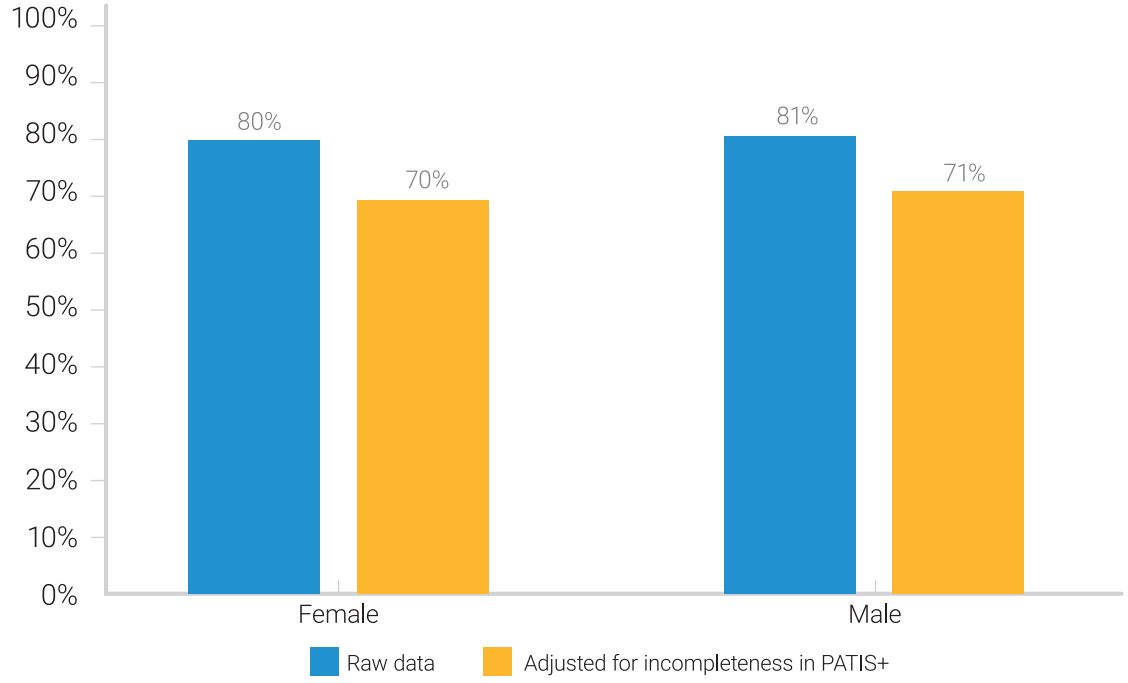
Figure 23: Birth registration completeness within one year of birth, (2015-2020)



Lautoka Health Facility

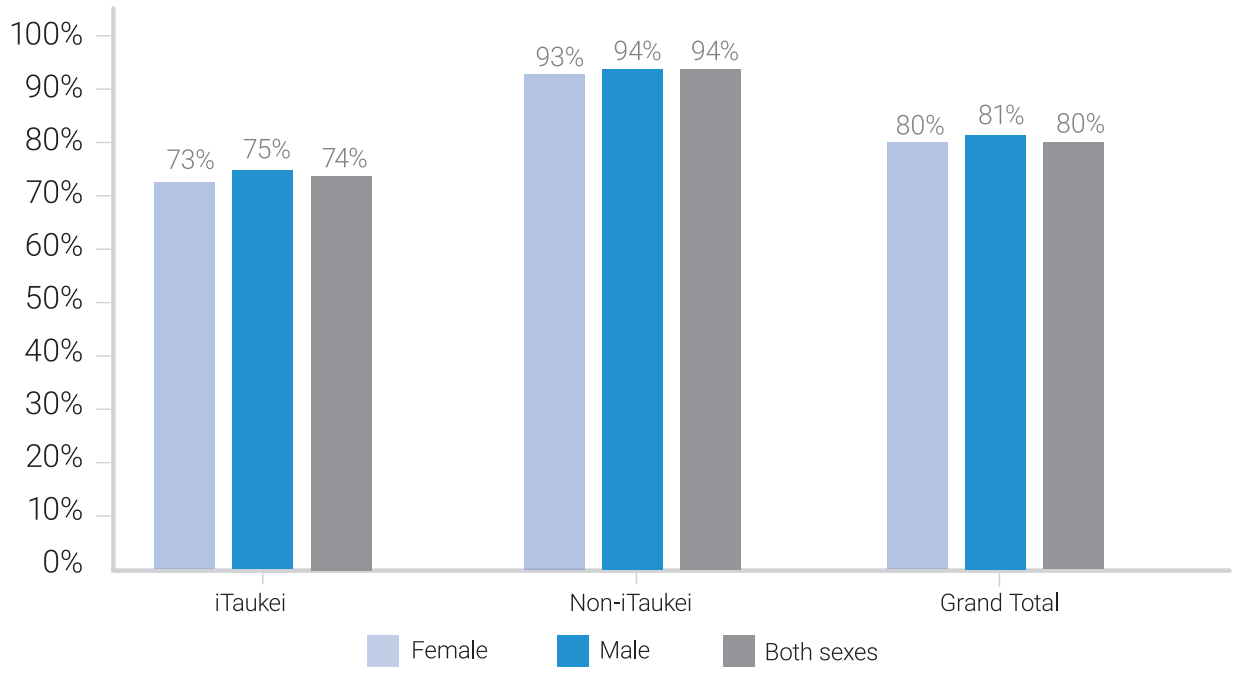
Registration data for births occurring in 2020 in Lautoka Health Facility and births registered by age one year were compared to notifications of birth in 2020 in the MHMS PATIS+ system. Based on comparisons to CMRIS data, the PATIS+ system data for Lautoka is believed to be 86 percent complete. Figure 24 below presents both raw and adjusted percentages for birth registration completeness for births occurring in the Lautoka Health Facility in 2020, by sex. The subsequent figures will only present the unadjusted data from this facility. For more information about the methodology using Lautoka data, please refer to the section: *MHMS Recorded Birth Data, Methodologies and Limitations*. There does not appear to be a differential in registration by sex among children born in Lautoka Health Facility in 2020. While there is a one percent difference, given that the data was only 14 percent complete, this is not likely to be statistically significant.

Figure 24: Raw and adjusted birth registration completeness by age one year for births occurring in Lautoka Health Facility in 2020, by sex



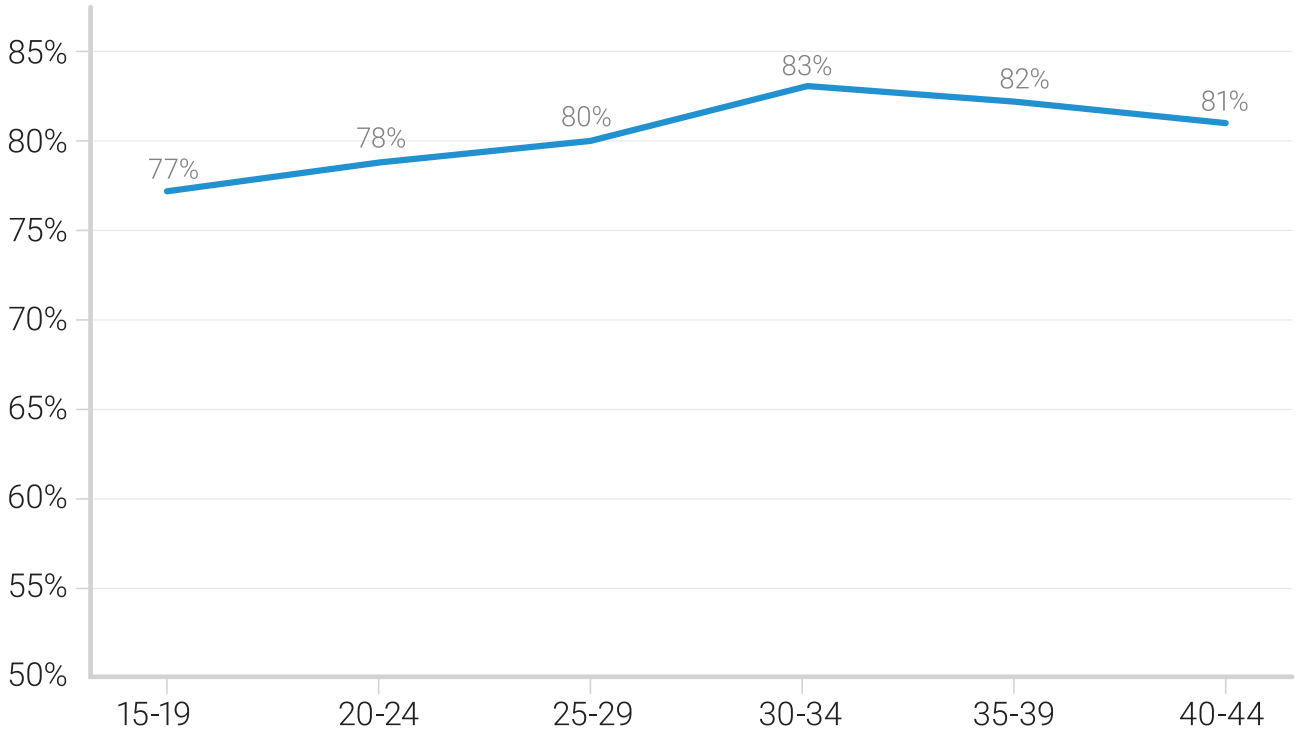
While a child's sex does not appear to be a contributing factor to birth registration completeness, there is a clear disparity by ethnicity. Approximately, only three-quarters of iTaukei children have their birth registered by age one year, compared to 94 percent of non-iTaukei children (Figure 25). There does not appear to be a large sex differential within ethnicities.

Figure 25: Birth registration completeness by age 1 for births occurring in Lautoka Health Facility, 2020, by sex and ethnicity



Young mothers aged 15-19 and 20-24 years had the lowest rates of birth registration at 77 percent and 78 percent, respectively. Registration increased to 83 percent among mothers aged 30-34 years and then slightly declined to 81 percent by age 40-44 years. Age groups with less than 30 cases are not shown in Figure 26 due to small sample sizes. Interestingly, the trends mentioned above, do not hold once disaggregated by ethnicity.

Figure 26: Birth registration completeness by age one year for births occurring in Lautoka Health Facility, 2020, by mother's age at birth



The trend by mother's age group (Figure 26) does not hold when disaggregated by ethnicity, as each ethnicity reports very different trends in registration completeness by age. However, it is clear that across all age groups, non-iTaukei mothers are more likely to register the births of their children compared to iTaukei mothers (Figure 27).

Among non-iTaukei mothers, younger mothers have lower rates of birth registration compared to older mothers, with teenage mothers having the lowest rate of birth registration, at 78 percent. This increases to 89 percent among mothers aged 20-24 years, and then reaches 96 percent and above for mothers aged 25 and older.

Among iTaukei mothers, birth registration is lowest among mothers aged 25 to 29 years, which, interestingly, is also the age group with the highest fertility rate. The iTaukei mothers aged 20 to 24 years had a registration completeness of 74 percent, while all other age groups had a registration completeness of 76 percent.

Figure 27: Birth registration completeness by age one year for births occurring in Lautoka Health Facility, 2020, by child's ethnicity and mother's age at birth

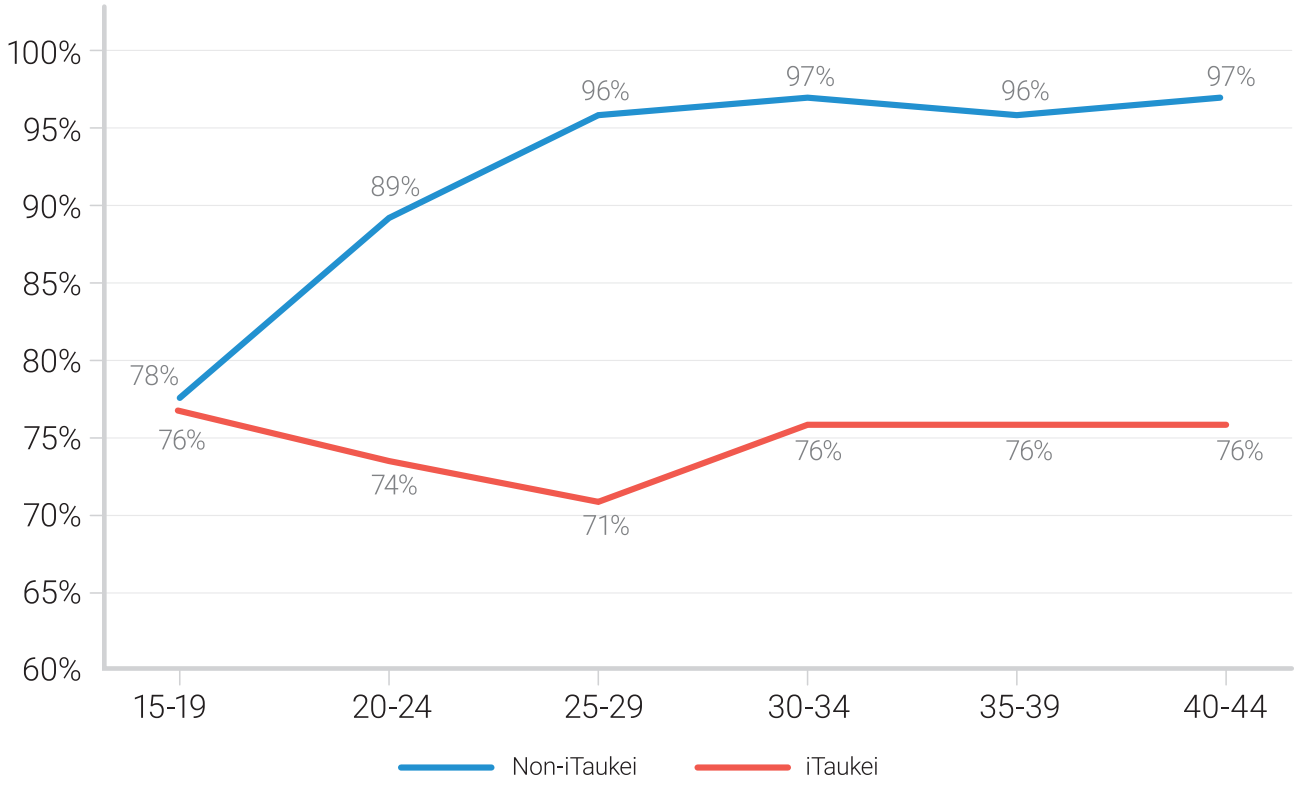


Figure 28 shows birth registration completeness by child's ethnicity and mother's marital status. Ethnicity appears to play a stronger role compared to marital status in terms of registration completeness. However, within both ethnicities, married mothers are more likely to register their child's birth than non-married mothers. Among the population as a whole, married mothers have a birth registration completeness rate of 84 percent compared to 72 percent for single mothers.

Figure 28: Birth registration completeness by age one year for births occurring in Lautoka Health Facility, 2020, by child's ethnicity and mother's marital status

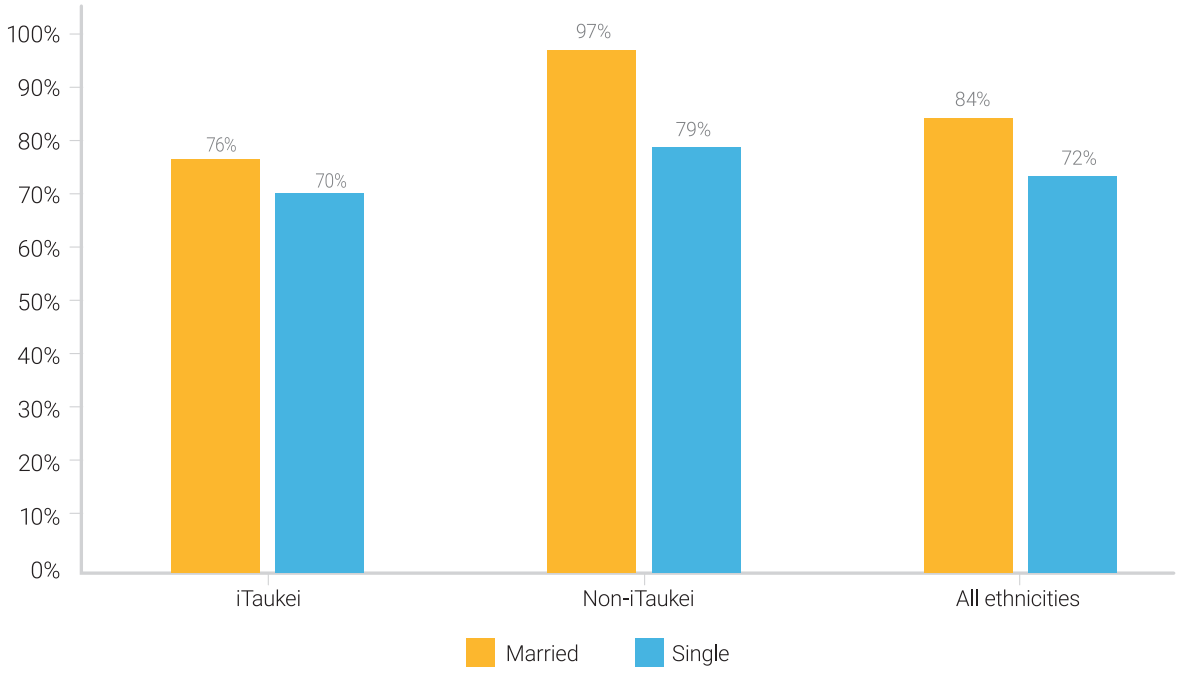
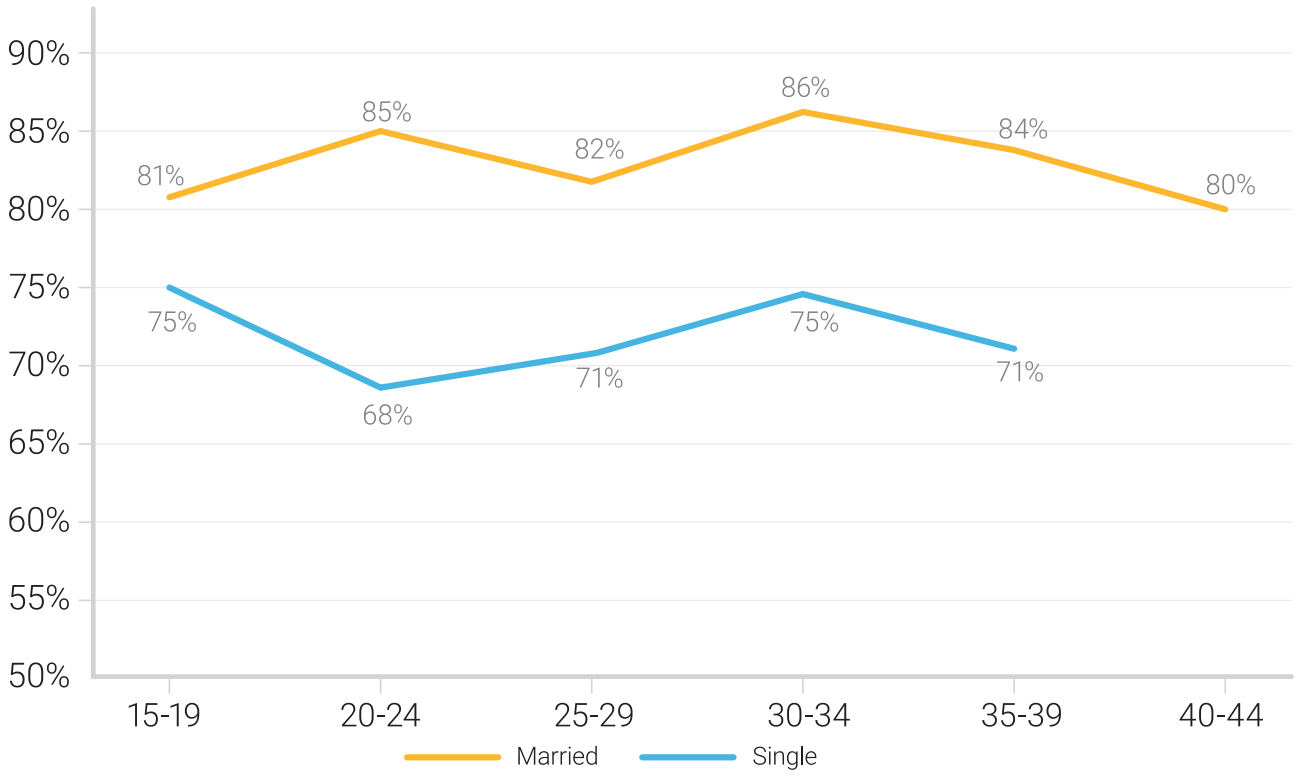


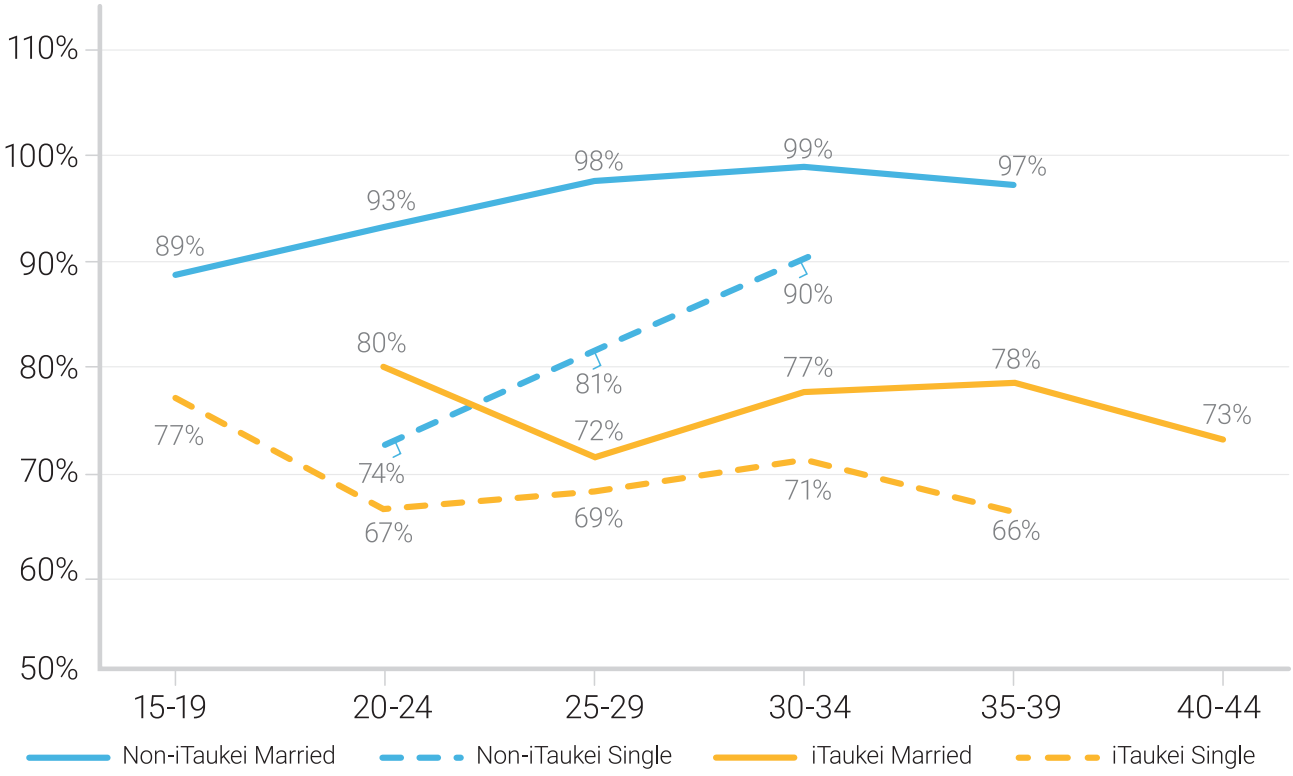
Figure 29 examines the impact of mother's age and marital status on birth registration completeness by age one year . While there does not appear to be a consistent trend across the age groups within marital status categories, it is clear that married mothers are more likely to register their child's birth compared to single mothers across all age groups. (Categories with less than 30 cases are not shown).

Figure 29: Birth registration completeness by age one year for births occurring in Lautoka Health Facility, 2020, by mother's age group and marital status



With the exception of young non-iTaukei single mothers aged 20 to 24 years, non-iTaukei mothers (including single mothers) have higher rates of registration compared to both married and single iTaukei mothers, indicating that ethnicity has a stronger impact on registration completeness than marital status among mothers aged 25 years and above (see Figure 30). Among non-iTaukei mothers, there is a large gap in registration completeness between single mothers aged 20 to 24 years and their married counterparts. The gap starts to close with age, with 90 percent of single non-iTaukei mothers in the age group 30 to 34 years registering births of their children compared with 99 percent of their married counterparts. Within ethnicities, married mothers are more likely to register their child's birth compared to non-married mothers, similar to the trend shown above.

Figure 30: Birth registration completeness by age one year for births occurring in Lautoka Health Facility, 2020, by mother's age group, ethnicity, and marital status



Lautoka Summary

The key findings from Lautoka Health Facility for babies born in 2020 are:

1. Ethnicity appears to have the largest impact on birth registration, with lower rates of registration among iTaukei mothers compared to non-iTaukei mothers (74% vs. 94%). This holds true across all age groups of mothers, and for mothers aged 25 years and above, non-iTaukei mothers have higher rates of registration regardless of marital status.
2. Marital status appears to be another factor impacting birth registration, with single mothers having lower rates of registration compared to married mothers (72% vs. 84%). Across all age groups, married mothers are more likely to register their child's birth than single mothers.

3. Married mothers were more likely to register their child's birth compared to single mothers for both ethnicities. However, the largest gap was among young single non-iTaukei mothers, where just 74 percent of single mothers aged 20-24 years registered the births of their children compared to 93 percent of their married counterparts.
4. There did not appear to be a differential in registration by sex of the child.

Colonial War Memorial Hospital

The notifications of birth collected during the FBoS field exercise and digitized at FBoS headquarters were used to estimate births in the analyses presented below. The year 2020 was selected because digitized NOBs by FBoS for this year were deemed to be close to 100 percent complete compared to CMRIS records.

Similar to the findings in Lautoka Health Facility, there does not appear to be a differentiation in birth registration by sex. However, there is a large disparity in registration among iTaukeis compared to non-iTaukeis, with 92 percent of non-iTaukei children registered by age one year compared to 66 percent of iTaukei children (Figure 31). Within the non-iTaukei population, there is a slightly higher registration rate for females (94%) compared to males (90%), but no differentiation by sex exists among the iTaukei population.

Figure 31: Birth registration completeness by age one year for births occurring in Colonial War Memorial Hospital, 2020, by sex and ethnicity

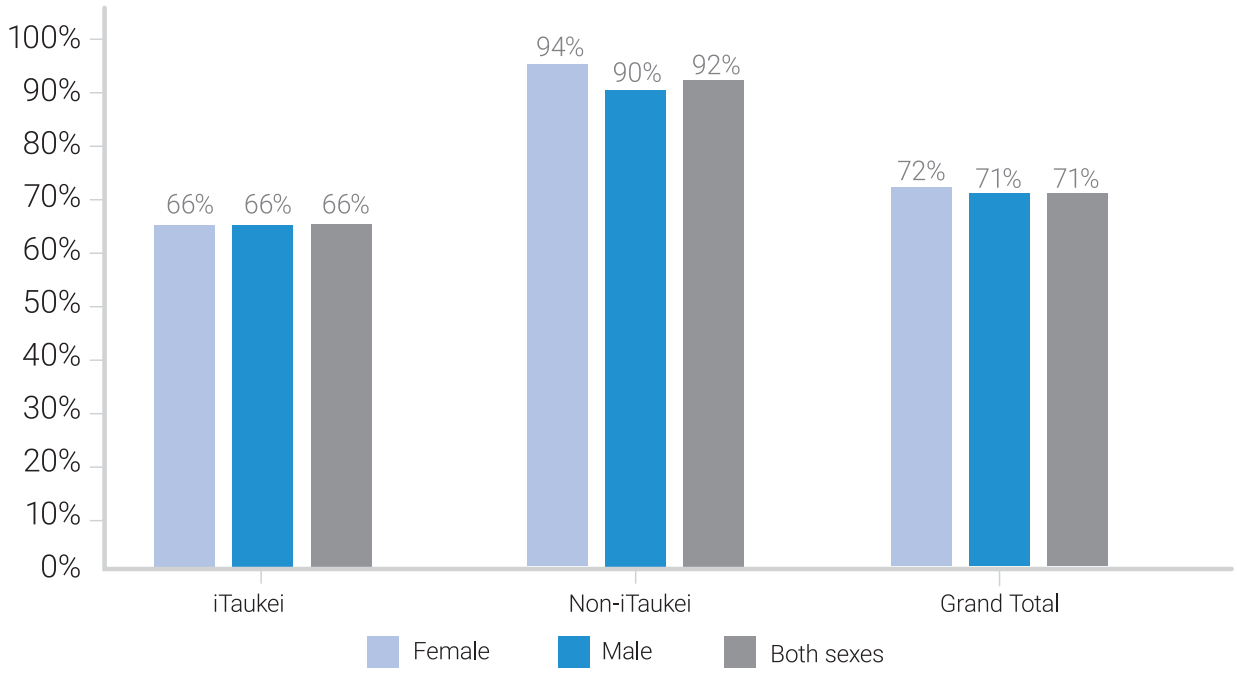
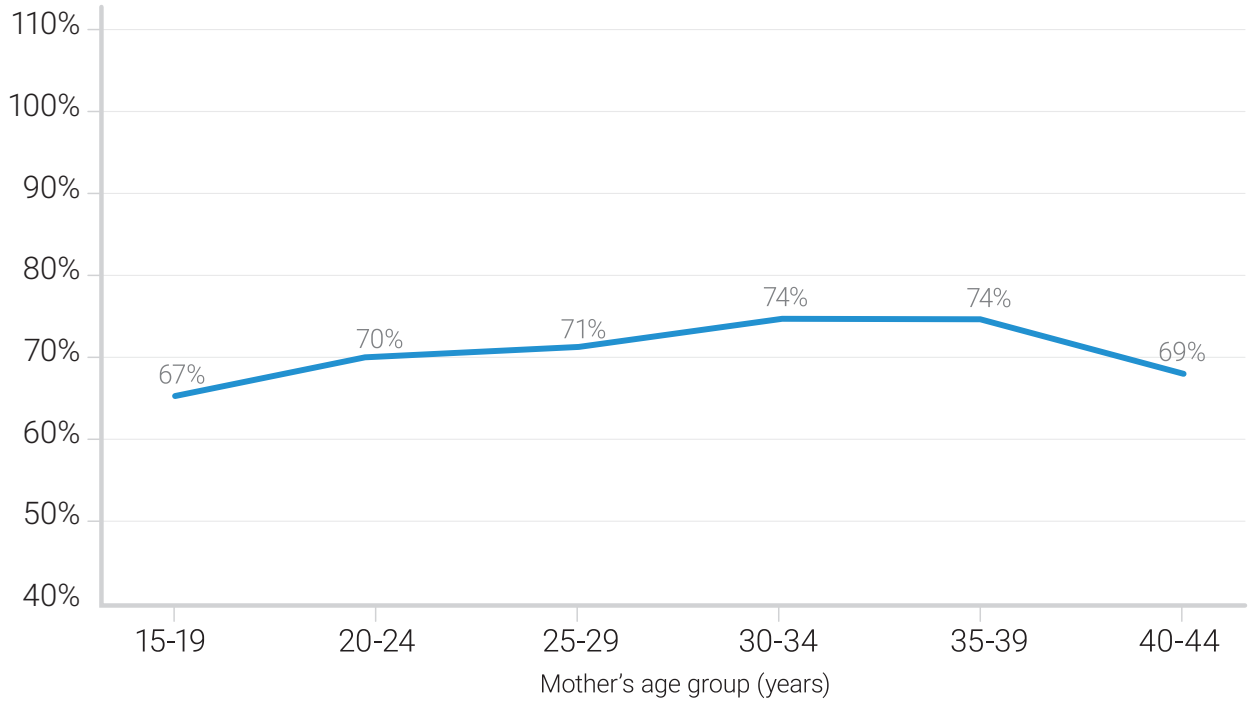
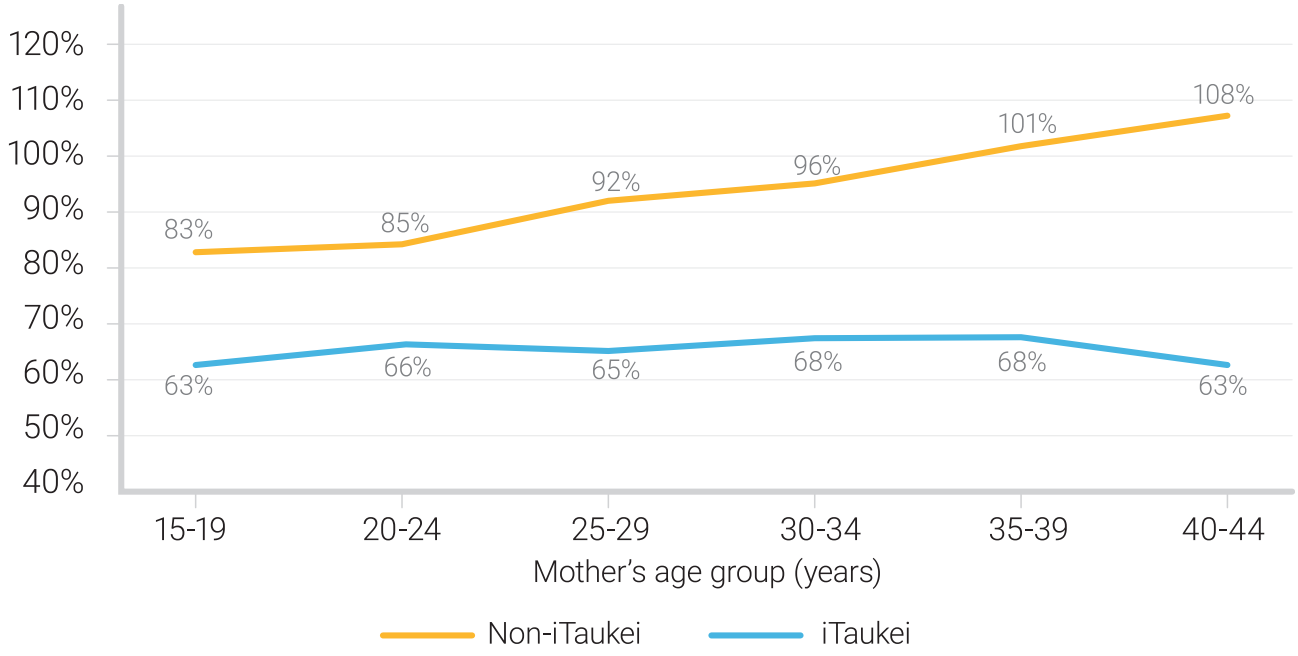


Figure 32: Birth registration completeness by age one year for births occurring in Colonial War Memorial Hospital, 2020, by age of mother at birth



Registration completeness by mother's age at birth appears to be the lowest among teenage mothers (67%), and then increases, peaking among mothers in their 30s (74%), before declining for mothers in their 40s (69%) – see Figure 32 above. However, this pattern does not hold when broken down by ethnicity. Among the non-iTaukei population, birth registration completeness is the lowest among teenage mothers (83%) and steadily increases to above 100 percent for the oldest age group of mothers. Among iTaukeis, teenage mothers have the lowest rate of birth registration completeness (63%), but the rate does not increase with mother's age, peaking at just 68 percent for mothers in their 30s. The completeness then falls back to 63 percent among mothers in their 40s. Birth registration is higher among non-iTaukeis compared to iTaukeis across all age groups of mothers (see Figure 33 below).

Figure 33: Birth registration completeness by age one year, for births occurring in Colonial War Memorial Hospital, 2020, by age of mother at birth and ethnicity of child



Birth registration completeness by mother's marital status is not presented for Colonial War Memorial Hospital due to data quality issues. Single mothers, regardless of age or ethnicity, showed registration completeness well above 100 percent, suggesting that there are data quality issues with coding. This error requires further investigation.

Colonial War Memorial Hospital Summary

The key findings from Colonial War Memorial Hospital for babies born in 2020 are:

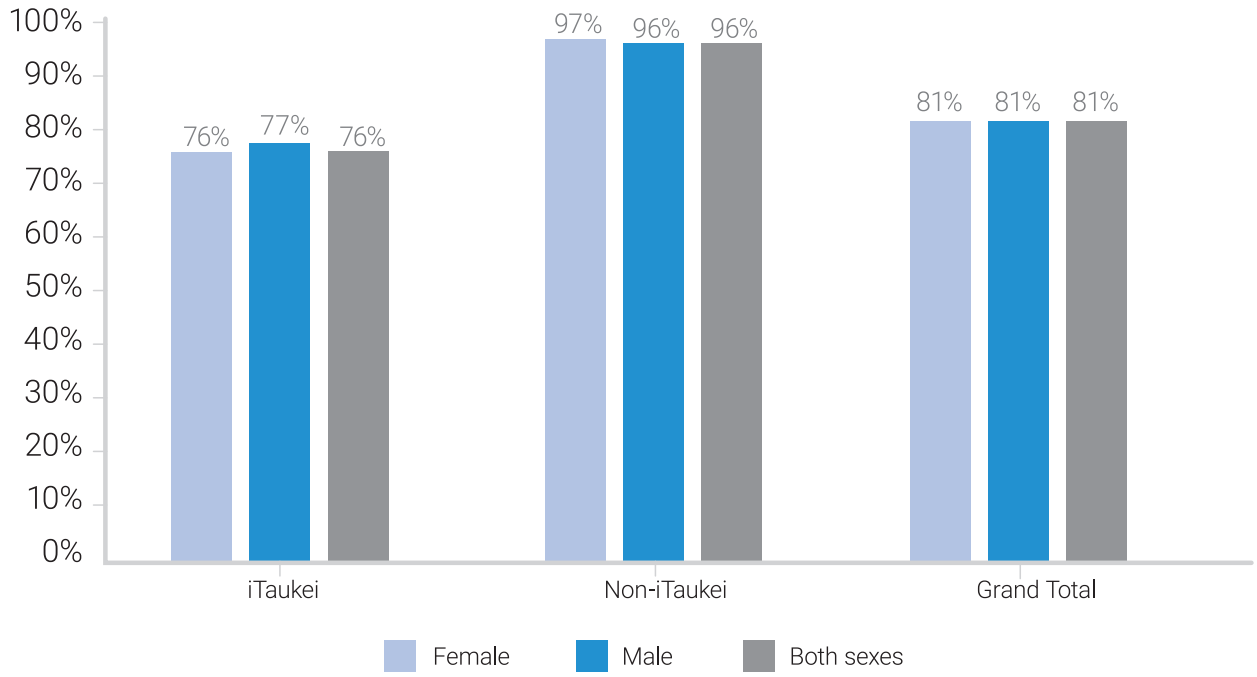
1. Ethnicity appears to have the largest impact on birth registration, with lower rates of registration among iTaukei mothers compared to non-iTaukei mothers (66% vs. 92%). This holds true across all age groups of mothers.
2. While there might be slightly higher registration for female births among the non-iTaukei population, there did not appear to be a strong differential in registration by sex of the baby.
3. Further research is needed to understand the data quality issues related to the coding of marital status for birth records digitized by FBoS.

NOBs Digitized by FBoS Combined with MHMS PATIS+ Records

An analysis of birth records digitized by FBoS, combined with electronic records in the PATIS+ system, is presented below. This combined data set is estimated to be only 83 percent complete; unadjusted estimates of completeness are presented below, as adjustment would have increased some disaggregated estimates to above 100 percent. Refer to the methodology section *MHMS Recorded Birth Data, Methodologies and Limitations* for more information.

Similar to the findings in Lautoka Health Facility and Colonial War Memorial Hospital, there did not appear to be a differentiation in registration by sex of the baby. However, there is a large disparity in birth registration among iTaukeis compared to non-iTaukeis, with roughly three-quarters (76%) of births among iTaukeis registered by age one year compared to 96% among non-iTaukeis.

Figure 34: Birth registration completeness by age one year by child's sex and ethnicity



Registration by mother's age at birth appears to be the lowest among teenage mothers (76%), and then increases, peaking among mothers in their 30s (83%), before declining for mothers in their 40s (78%) – Figure 35 below. However, this pattern does not hold when broken down by ethnicity. Among the non-iTaukei population, birth registration completeness is the lowest among teenage mothers (87%) and then steadily increases to above 100 percent for the oldest age group of mothers. Among iTaukeis, teenage mothers have the lowest rate of birth registration completeness (72%), but the rate does not increase with mother's age, peaking at just 78 percent for mothers in their 30s. Completeness falls to 73 percent among mothers in their 40s. Birth registration is higher among non-iTaukeis compared to iTaukeis across all age groups of mothers (Figure 36 below).

Figure 35: Birth registration completeness by age one year by age of mother at birth (2020)

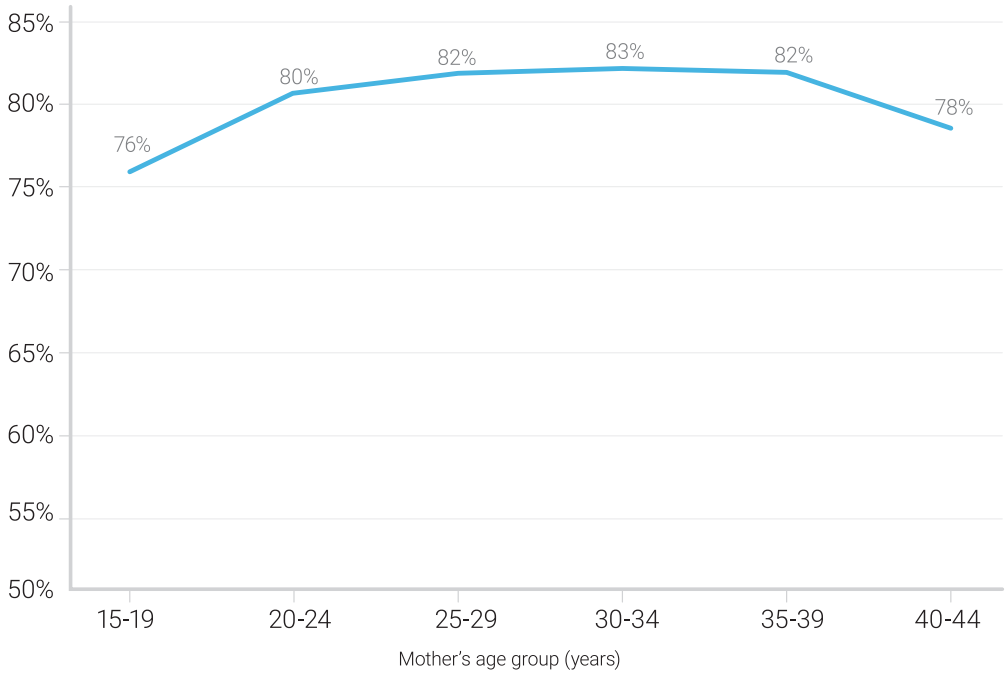
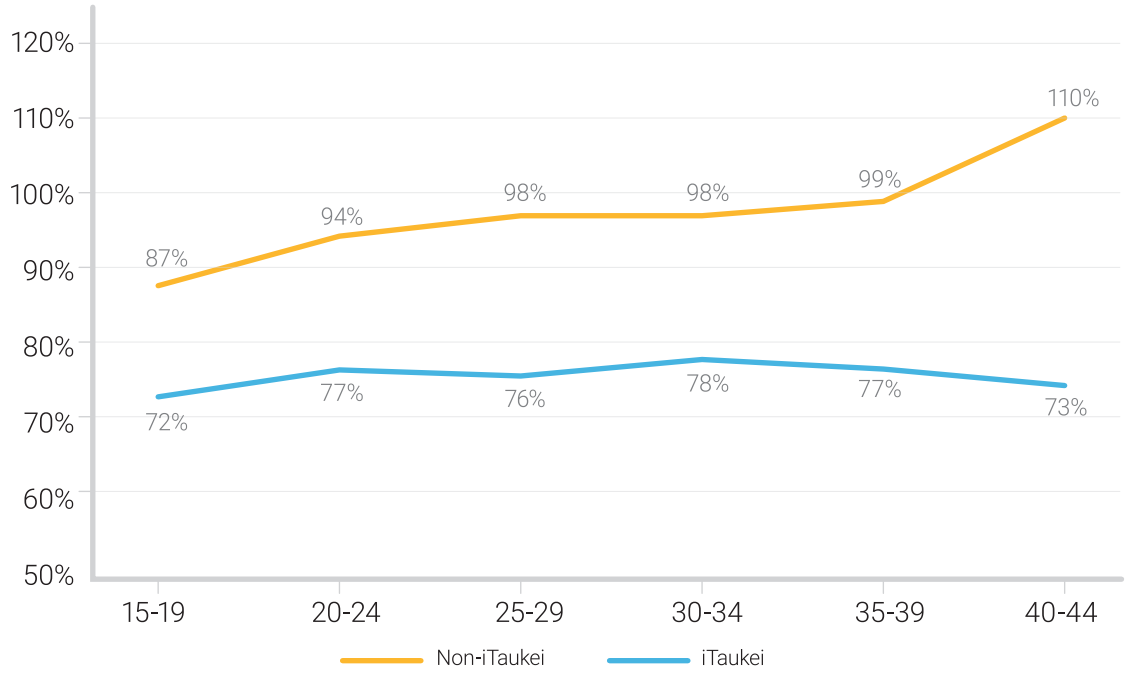


Figure 36: Birth registration completeness by age 1 by age of mother at birth and child's ethnicity (2020)



As this data is also from the records of Colonial War Memorial Hospital, the same data quality issues around marital status of mothers exist. Therefore, the birth registration completeness by mother's marital status is not presented due to data quality issues. This error requires further investigation.

Summary of NOBs Digitized by FBoS Combined with MHMS PATIS+ Records

1. Ethnicity appears to have the largest impact on birth registration, with lower rates of registration among iTaukei mothers compared to non-iTaukei mothers (76% vs. 96%). This holds true across all age groups of mothers.
2. There did not appear to be a differential in registration by sex of the baby.
3. Further research is needed to understand the data quality issues related to the coding of marital status for birth records.

Conclusion and Policy Implications of Inequalities in Birth Registration

The economic incentives provided through the PAPP had a significant, positive impact on increasing the number of registrations, particularly among the iTaukei population, and single mothers. The continuation of economic incentives should be considered to improve the rate of birth registration completeness for all sub-groups of the population. Consideration could also be given to implementing small economic incentives, such as in-kind newborn packages or coupons exchangeable for items such as diapers, which are likely to have a positive impact on registration.

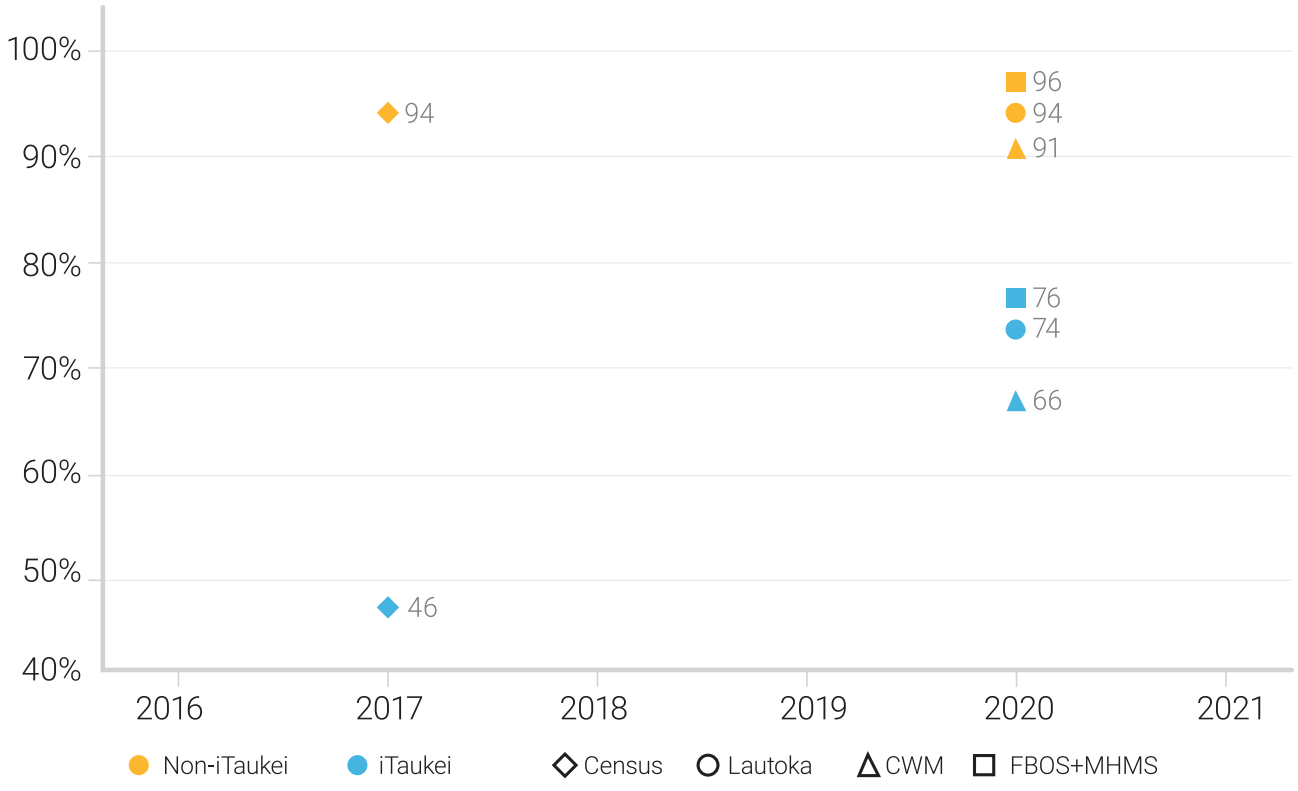
The findings derived from the MICS data corroborated with the findings derived from the census data, showing that the birth registration was the lowest for children under age one year, but increased with the age of the child. Therefore, the focus of policy needs to be on targeting registration of infants, within one year of birth (the stipulated legal timeframe for birth registration in Fiji). The economic incentives implemented between 2018 and 2020 positively impacted the birth registration of children under age

one year, making a case for further implementation of such incentives. Additionally, policies and processes to improve birth registration shortly after birth, such as registry office personnel being present in health facilities, can be considered.

The MICS found that mothers in the lowest wealth quintile were the least likely to register births, and that there was also a disparity in registration between urban and rural residents. A better understanding of the barriers to registration for low-income mothers is the key for improving registration among this population. Providing mobile access units could serve as a potential solution to overcome barriers of access and reduce the opportunity costs faced by low-income mothers or those residing in remote areas without convenient access to a nearby registration office. Further, providing small stipends for transport cost or bus tickets may help poorer families overcome some of the economic barriers to accessing registration offices. The Ministry of Women, Children and Poverty Alleviation has an outreach programme targeted at the poor and rural mothers. Any possible partnerships with this programme could be investigated to see if advocacy and support to register births could be included for disadvantaged mothers.

The greatest inequalities in birth registration were found by ethnicity. Using census data and administrative data from MHMS, all datasets displayed a large disparity in registration among iTaukeis compared to non-iTaukeis (see Figure 37 below). While the differential varied from 46 percent among iTaukeis to 94 percent among non-iTaukeis in 2017 based on census data, more recent estimates put the range at 66 -76 percent for iTaukeis in 2020 compared to 91-96 percent for non-iTaukeis. This differential existed among mothers across all age groups, and ethnicity had an even greater impact on registration compared to marital status, for mothers over age 25 years in the Lautoka Health Facility, where single non-iTaukei mothers also had higher rates of registration compared to married iTaukei mothers for aged 25 years and above (Figure 30).

Figure 37: Birth registration completeness by age one year by ethnicity



The intersection between wealth quintile and ethnicity is not well known due to lack of sufficient public data available in this area. It is possible that iTaukei mothers are more likely to be in the lower wealth quintile, and thus poverty has the greatest impact on registration compared to ethnicity. Geographic location is also likely to impact both of these factors, with iTaukei mothers being more likely to live in rural areas or remote outer islands that have less access to registration centers. More information is needed to understand the intersection between ethnicity, poverty, and geography, to inform policy interventions aimed at improving registration among iTaukeis.

When an iTaukei baby is born, the family is meant to register the child with the iTaukei Affair's Vola ni Kawa Bula (VKB) to preserve a record of culture heritage, lineage, and land rights and link the child to his or her ancestral village. If a child is registered in the VKB, this information is included in the birth registration record. The possibility of a 'one stop shop' for birth registration both with the VKB and the Civil Registrar should be investigated to improve timely registration and registration completeness among iTaukei infants. Further, providing documents in the native iTaukei language may make registration more accessible as well.

Possible support from provincial offices for follow-up should also be investigated. For example, the possibility of providing the provincial offices with copies of NOBs so that the ROKO (provincial level) Mata ni Tikina (MNT) (district level) or Turaga ni Koro (TNK) (village level headsman) may follow-up on pending registrations, should be considered further. However, at this time, NOBs do not have clear information on usual residence of the parents. A drop-down field with district or village information would need to be added, in order to collate unregistered NOBs and send them to the appropriate field staff in a timely and efficient manner.

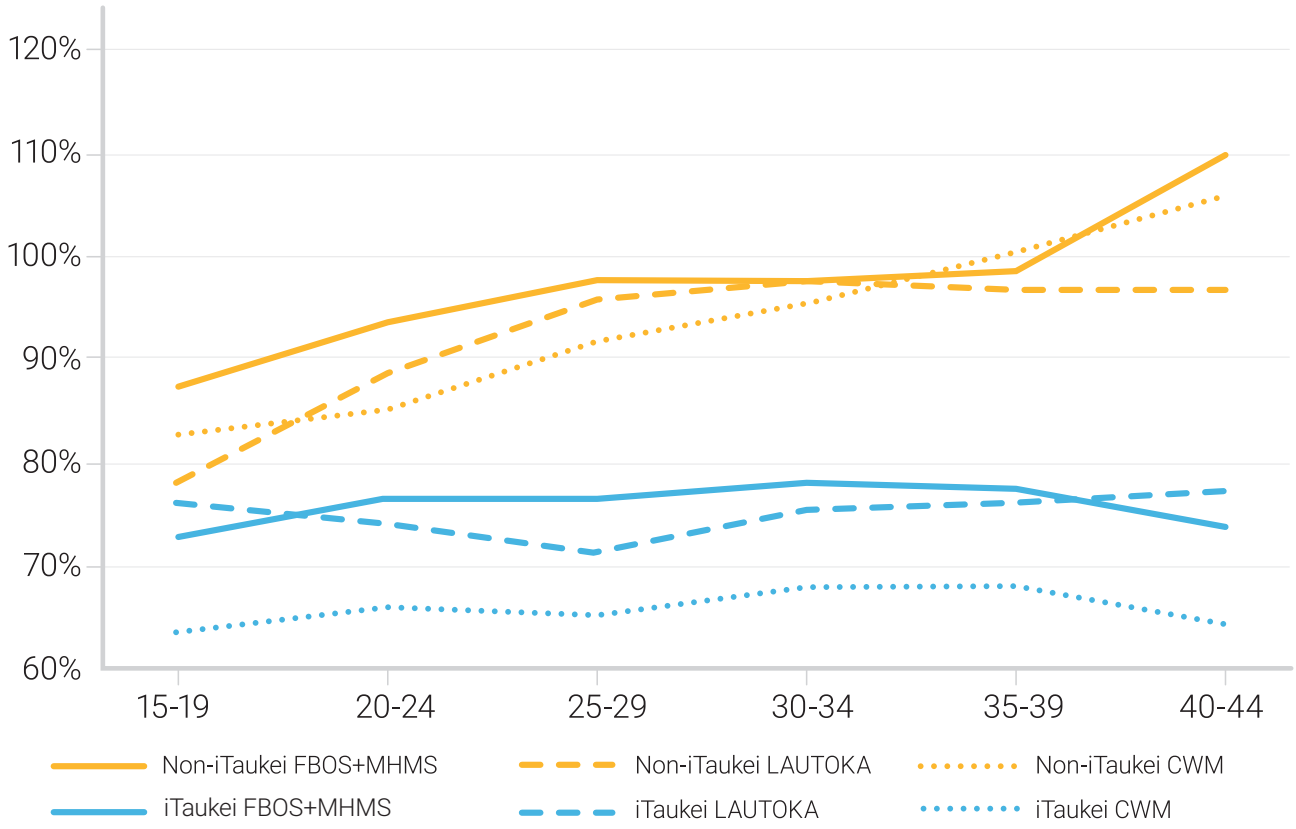
Partnerships with churches and religious leaders should be investigated to improve registration of births among iTaukeis. Requiring a birth certificate before baptism or working with provincial officials to cross-check registration and share the details of a child not yet registered could be explored.

Conducting advocacy and outreach campaigns is one way to raise awareness and encourage iTaukei parents to register the births of their children in a timely manner. A month of extensive advocacy encouraging registration is one possible modality. Further, cultural heritage groups or women's groups could be points of access for interventions or targeted education around the importance of birth registration for iTaukei parents, and mobile outreach would be useful for reaching remote and under-serviced communities. Implementing radio campaigns targeting remote areas educating and advocating on the importance of birth registration is another way to encourage iTaukei parents to register the birth of their children.

As alluded to above, a geographic analysis is needed to better understand inequalities in registration. Collecting data on usual place of residence of the mother and child is critical for such an analysis. To obtain accurate information on the province and district of usual residence, it would be beneficial to incorporate a drop-down box or a checklist within the NOBs collected by nurses or within the PATIS+ system. The information could then be confirmed with the parents and updated as needed upon registration. The absence of this information hampers the ability to perform geographic disaggregation of birth registration data, leading to a lack of knowledge about which births are going unregistered and their specific locations, thus impeding targeted efforts to improve registration.

Estimates from the year 2020 also showed that for all ethnicities, teenage mothers were the least likely to register their child's birth, and that among non-iTaukeis, registration increases with age (Figure 38). During the COVID pandemic, MEHA offered counseling services at schools to teenage mothers, encouraging them to finish their education. There is a need to conduct outreach and advocacy campaigns for birth registration for these teenage mothers. Any partnerships for such campaigns could be explored further.

Figure 38: Birth registration completeness by age one year by mother's age group and child's ethnicity (2020)



The data from Lautoka Health Facility suggested that married mothers were much more likely to register their child's birth compared to single mothers across all age groups, including teenage mothers (Figure 29). This data could not be corroborated by other sources due to data quality issues around coding of mother's marital status; the number of teenage mothers in Lautoka Health Facility was too small to disaggregate by marital status and ethnicity. The dual stigma attached to being a young and unmarried mother is likely preventing timely birth registration among these mothers. The registration processes need to be examined and re-designed, where necessary, to be inclusive, welcoming, and free of stigma regardless of a mother's age or marital status. Additional support through outreach programmes to young and single mothers is necessitated, and consideration has to be given for educating staff on how to create an inclusive and stigma-free registration environment. Social behavioral interventions are needed to eliminate stigma around unmarried and teenage women giving birth. These women have to feel empowered to register their child's birth despite the absence of a father to be listed on the birth certificate. Further investigations have to be done on how to encourage fathers to be part of the registration process and list themselves on the birth certificate in cases where they are not married to the mother of the child. Outreach and advocacy efforts for birth registration have to prioritize inclusivity for all individuals and educate the population about the importance of birth registration regardless of marital status.

Unmarried iTaukei mothers may not be aware of the possibility to register their child with iTaukei Affairs in the VKB under their village and family name. Outreach and education efforts are important to raise awareness among single mothers that they have the right to register their child's birth in the VKB under their family name. This may encourage more timely registration among unmarried iTaukei mothers.

Data from the census suggested that there was a slight preference in registering boys compared to girls, however, other sources did not corroborate this finding. Thus, given the limited resources for interventions, focusing on improving other disparities in registration would have a larger impact than narrowing any potential inequalities by sex.

Finally, a more streamlined, interoperable, and collaborative CRVS system would benefit the registration of all births. A detailed Business Process Improvement (BPI) would pinpoint bottlenecks and gaps in the system, as well as redundancies, and allow for a more efficient and user-friendly interface with the public. Ease of use is likely to increase timely registration as well.

Need for Further Research to Improve Inequalities in Birth Registration

The reasons behind inequalities in birth registration among iTaukeis could be various and need to be better understood. The intersection between wealth quintile and ethnicity is not well established. It is possible that iTaukei mothers are more likely to be in the lower wealth quintile, and thus poverty has the greatest impact on registration compared to ethnicity. More information is needed to understand the intersection between these two factors and thus, guide the policy interventions needed to improve registration among iTaukeis. While Fijians of Indian descent make up the majority of the non-iTaukei population, the composition of this population group comprises of various nationalities and ethnicities. It is likely that minorities among this group experience inequalities in registration, but due to lack of further disaggregated data, these disparities remain invisible.

Further, geography is likely to play a part in inequalities in registration between various population groups. It is critical to understand how rates of registration differ by ethnicity within different regions of the country. If no difference in registration is observed by ethnicity in remote or rural areas, it may be an issue of access or income of the local population rather than cultural awareness or practices. This information is helpful to inform interventions. Geographic analysis is needed to better understand inequalities in registration. Collecting data on usual place of residence of the mother and child is critical for such an analysis. To obtain accurate information on the province and district of usual residence, it would be beneficial to incorporate a drop-down box or a checklist within the NOBs collected by nurses or within the PATIS+ system. The information could then be confirmed with the parents and updated as needed upon registration. The absence of this information hampers the ability to perform geographic disaggregation of birth registration data, leading to a lack of knowledge about which births are going unregistered and their specific locations, thus impeding targeted efforts to improve registration.

More information is needed to understand why parents delay the registration of birth instead of registering it within the first year of a child's life. The reasons for delayed registration may differ by region and within different populations. Further, there is need for a better understanding of why mothers in the lowest wealth quintile or those living in the northern division or rural areas have lower registration rates. Depending on the cause, different interventions could be employed to improve birth registration in these areas.

Finally, the coding of marital status needs to be reviewed for the birth records provided by MHMS and digitized by FBoS. Similarly, the definition and coding of ethnicity in MHMS should be examined to address the problem of 'over-registration' among non-iTaukeis. Once the source or error is determined and corrected, this data can be examined by age of mother, ethnicity, and marital status to see which of these variables most impacts the registration of a child's birth.

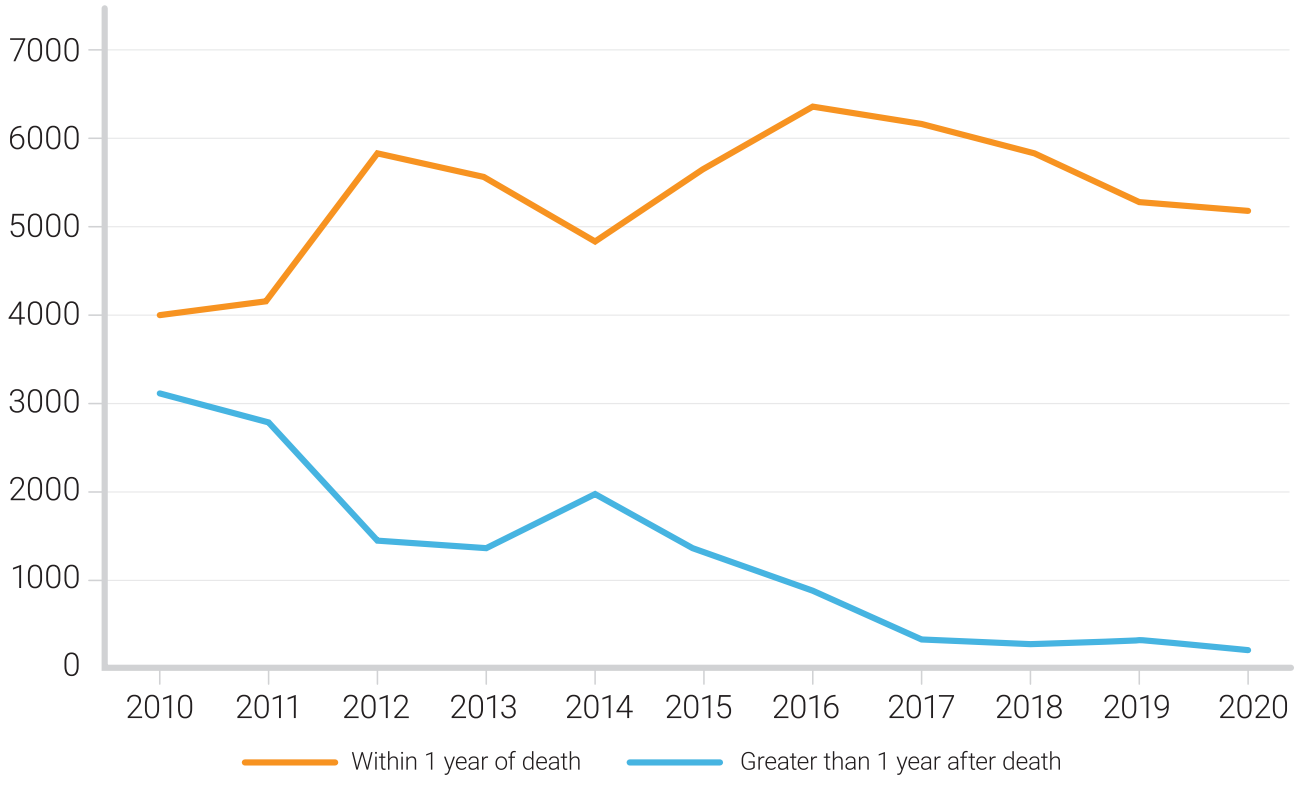
7
INEQUALITIES IN DEATH REGISTRATION COMPLETENESS

Recorded death data from MHMS was provided for the years 2016-2020. The records were analyzed by sex, age group, and ethnicity of the decedent. The years 2016-2017 are believed to suffer from an under-recording of deaths and are thus not presented in the analysis of inequalities (see the section *MHMS Recorded Death Data, Methodologies and Limitations* for more information). Inequalities in death registration for 2018-2020 are presented below.

Timeliness of Death Registration

The number of timely registrations (deaths registered within one year of occurrence) was the lowest during 2010-2011 but started to improve around 2012 (see Figure 39 below). Timely registration peaked around 2016 and has declined in the proceeding years but the number of recorded deaths has increased slightly during this same period (Figure 8), indicating that there has been a decline in timely registrations. The number of registered deaths with delayed registrations (blue line) may increase with time, but the orange line representing timely registrations will not change as the one-year period has already passed for those deaths occurring at the end of 2020.

Figure 39: Registered deaths by timeliness of registration, (2010-2020)



Inequalities in Death Registration

Across all three years examined, there was a differential in registration by sex, with a preference towards registering male deaths. Over the period 2018-2020, 78 percent of male deaths were registered within one year of death compared to 64 percent of female deaths (Figure 40). Completeness in registration did not greatly increase nor did the sex differential change when taking into consideration delayed registrations; 81 percent of male deaths compared to 67 percent of female deaths were registered over this period (Figure 41).

Figure 40: Death registration completeness within one year of death by sex, (2018-2020)

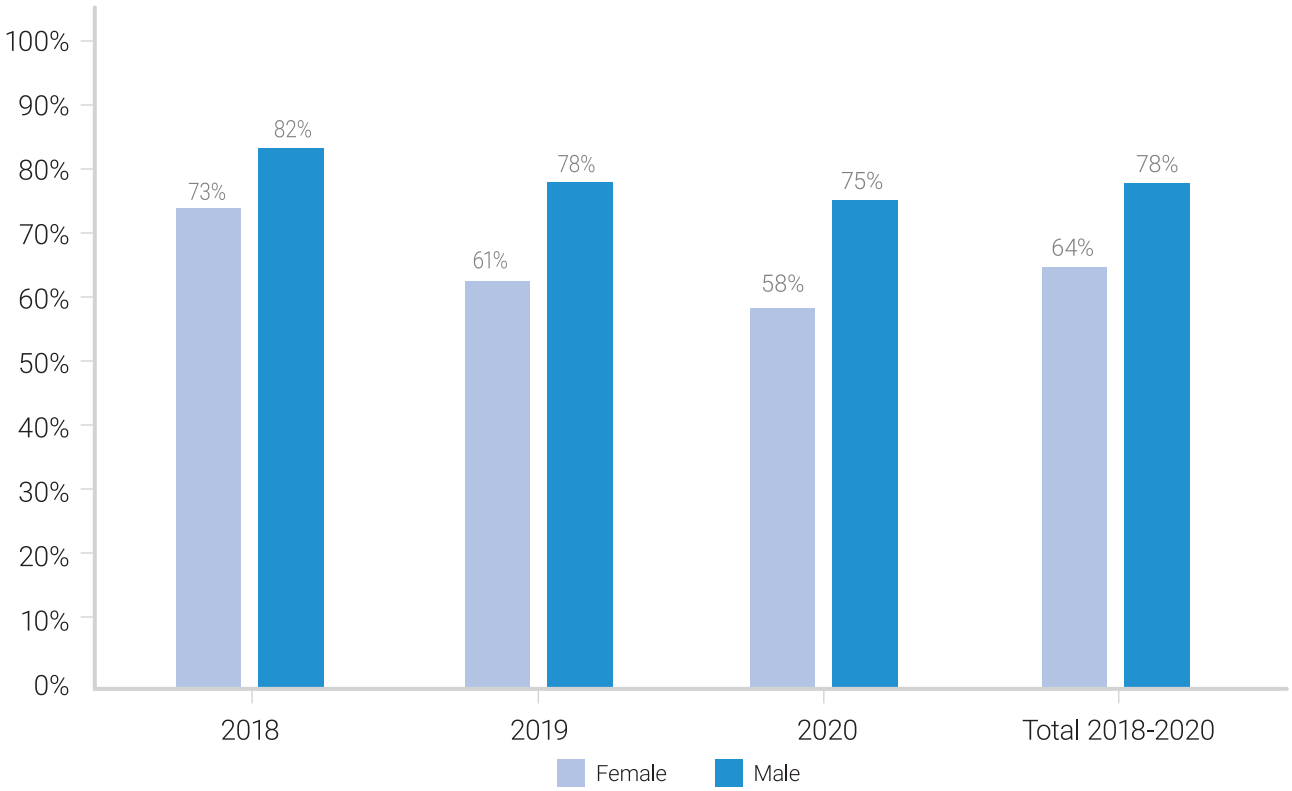
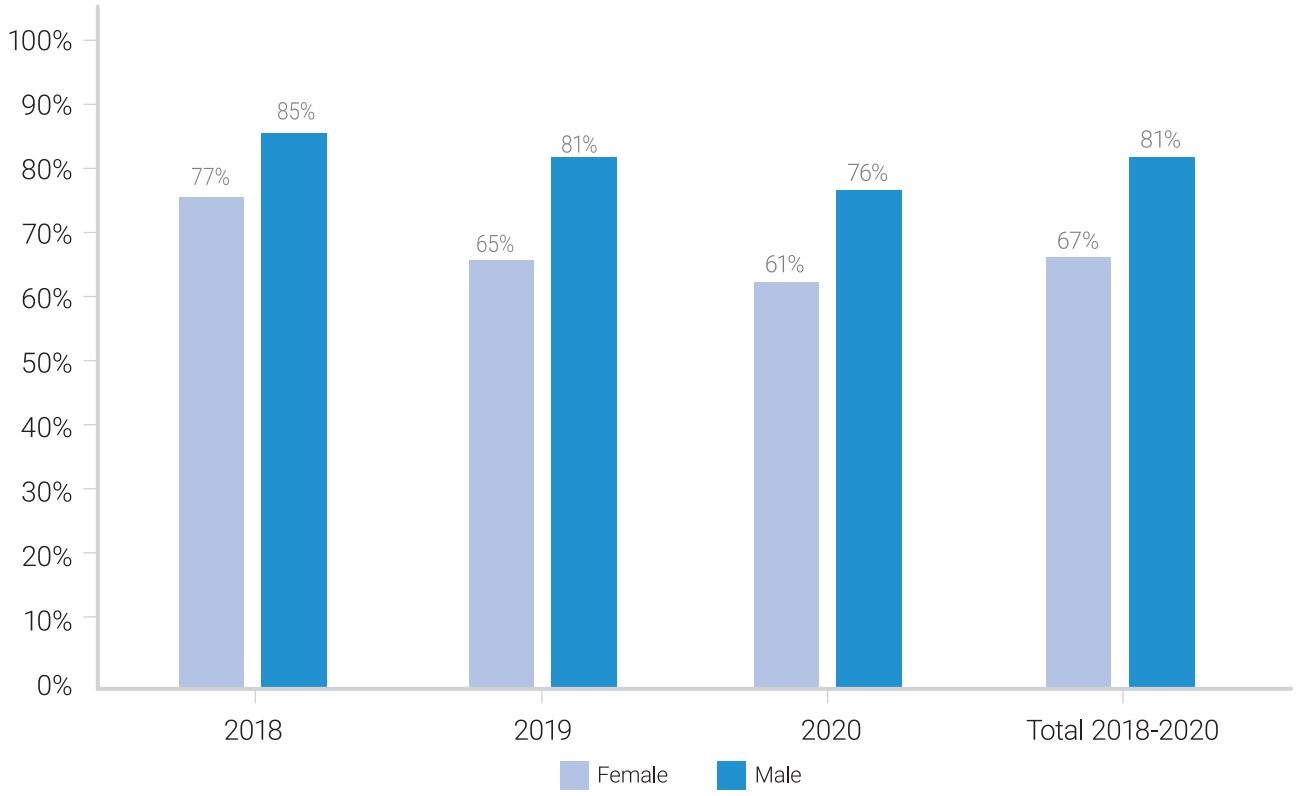
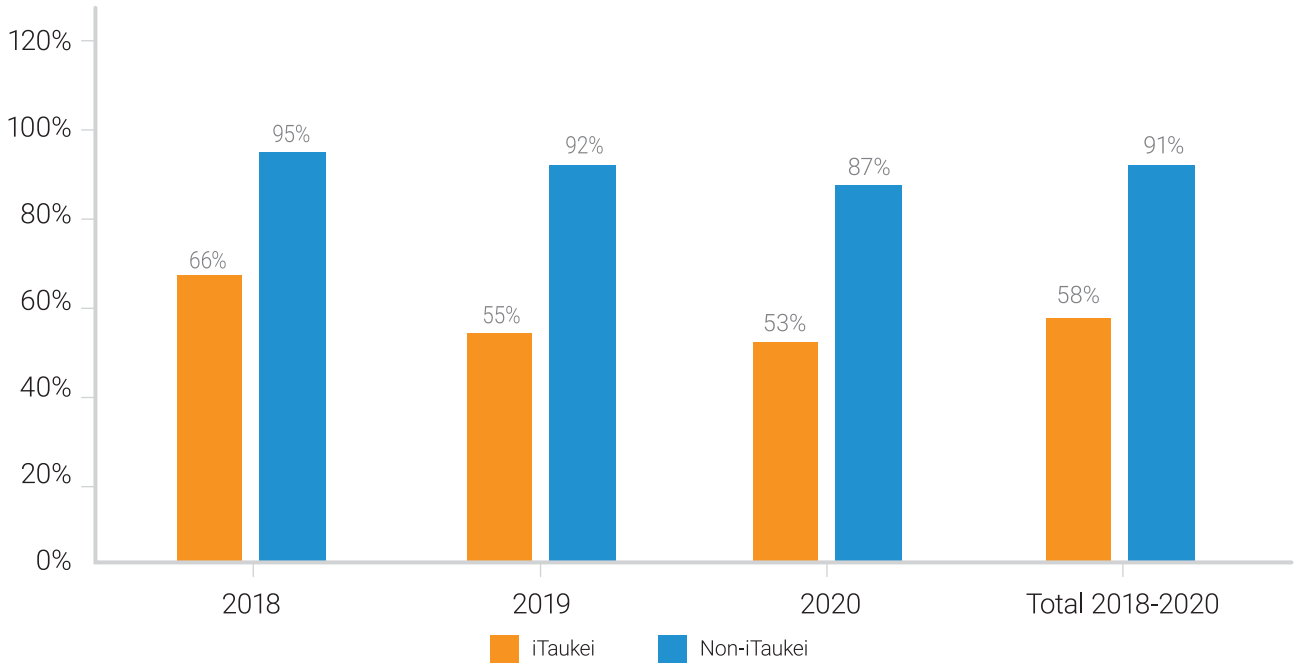


Figure 41: Death registration completeness, including delayed registration, by sex, (2018-2020)



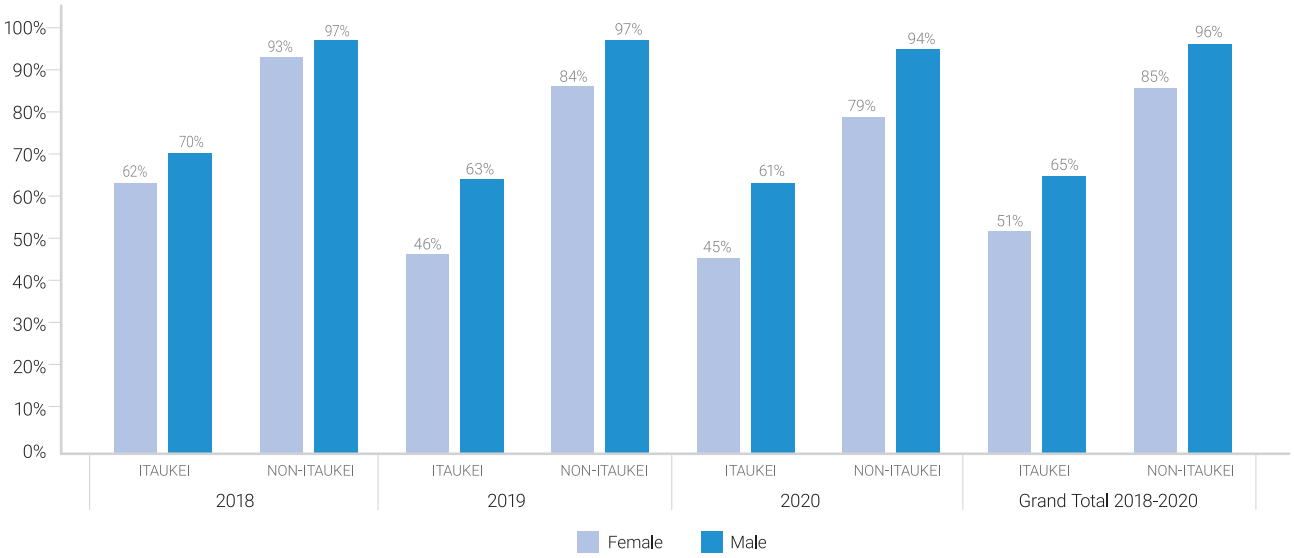
An even greater differential in registration was seen by ethnicity from 2018-2020, with 91 percent of deaths among non-iTaukeis compared to 58 percent of deaths among iTaukeis registered within one year of death (Figure 42).

Figure 42: Death registration completeness within one year of death by ethnicity, (2018-2020)



When the registration data was broken down by sex and ethnicity, within ethnicities, males had higher rates of registration compared to females, but regardless of sex, non-iTaukeis consistently had higher rates of registration compared to iTaukeis (Figure 43). For example, over the period 2018 - 2020, non-iTaukei females had a death registration completeness rate of 85 percent compared to 65 percent for iTaukei males. Thus, ethnicity appears to be playing a greater role than sex in determining the death registration completeness.

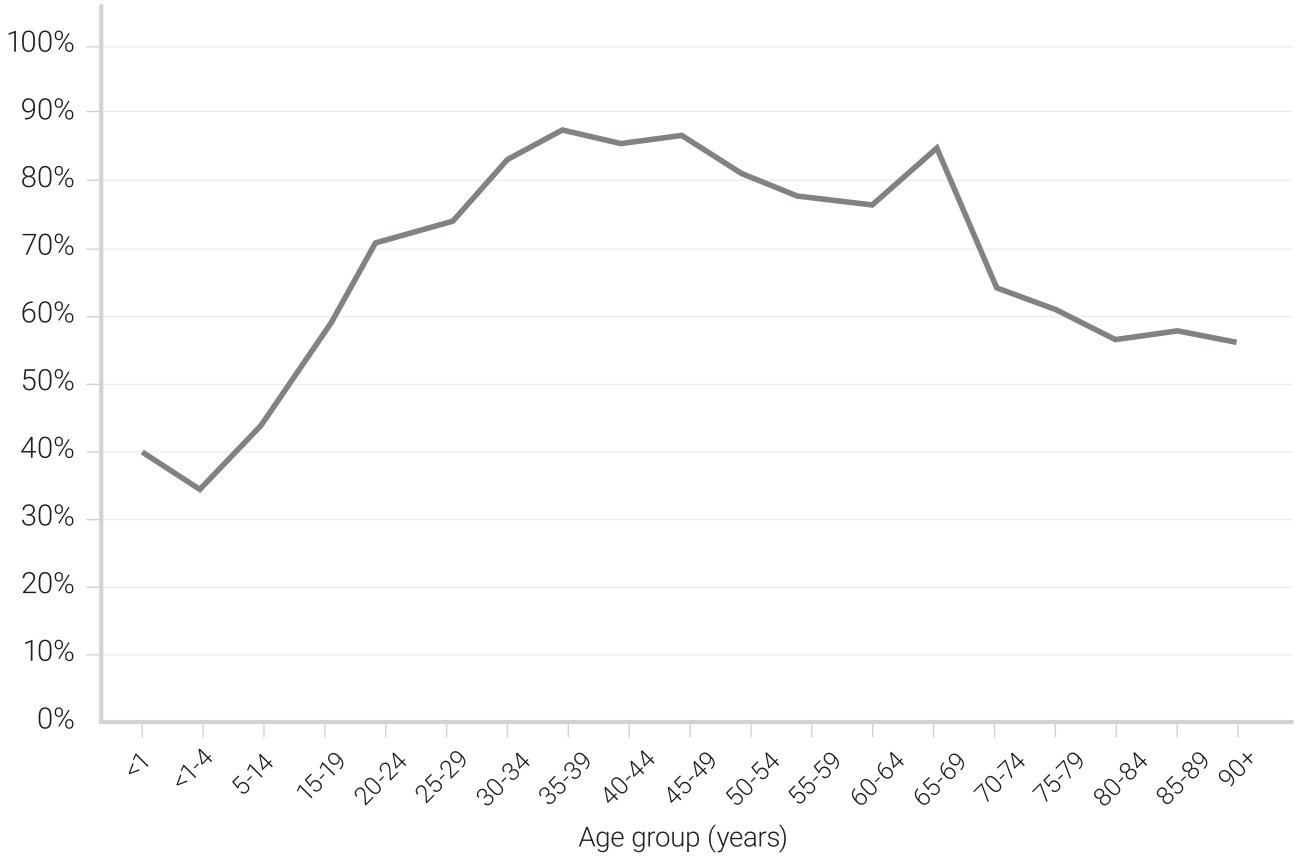
Figure 43: Death registration completeness within one year of death by sex and ethnicity, (2018-2020)



When the data were disaggregated by age group, it was necessary to analyze the data over the three year period of 2018-2020 collectively due to small sample sizes of less than 30 events in some of the age groups of children. Further, the age groups 5-9 and 10-14 years had to be combined to have a minimum of 30 events when disaggregated by sex and ethnicity.

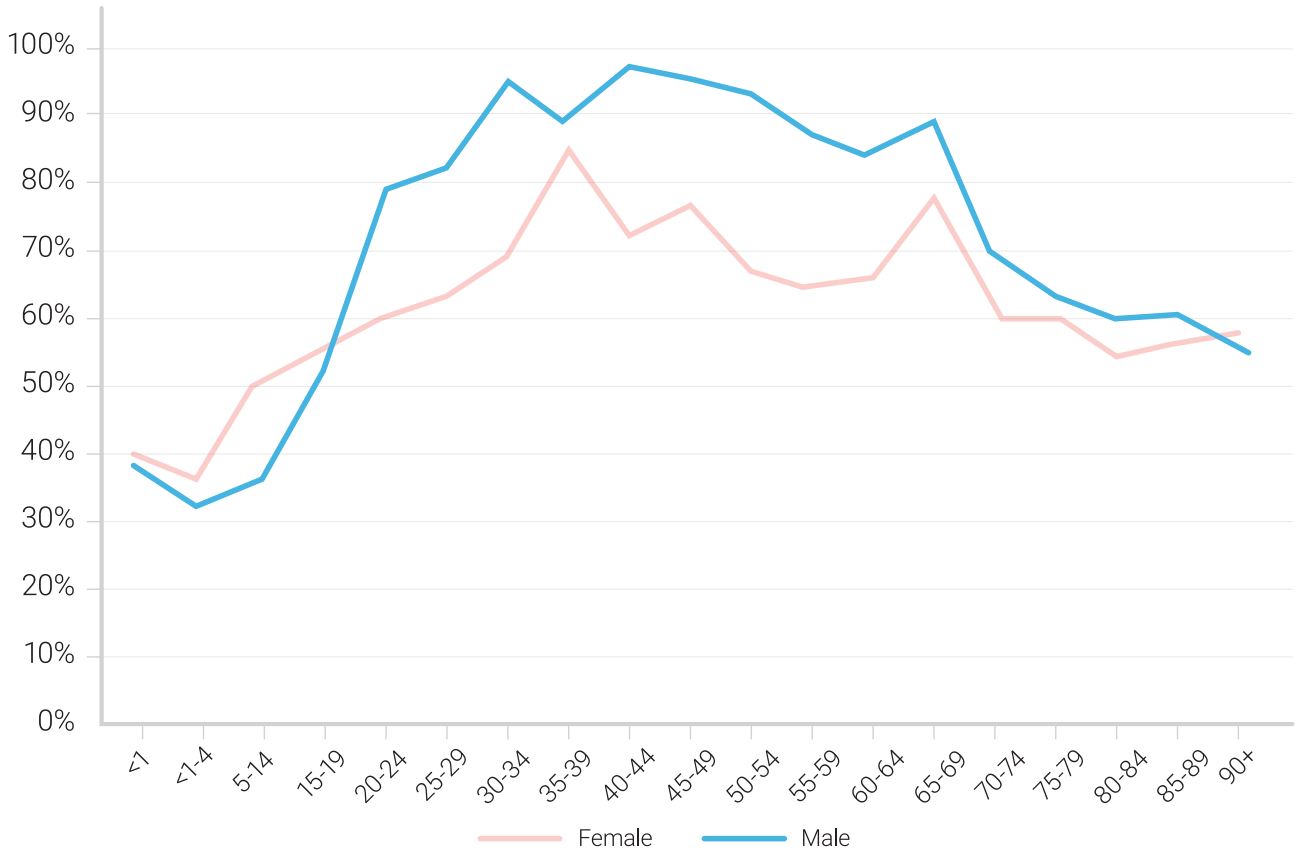
Children under age five years had the lowest rates of death registration completeness, with less than 40 percent of these deaths registered. Children aged 5-14 years experienced the next lowest rate of registration, at 47 percent. The death registration completeness was highest from ages 30-49, and then sees a decrease at age 70 years, leveling out around 60 percent from ages 80 years and above (Figure 44).

Figure 44: Death registration completeness within one year of death by age group, (2018-2020)



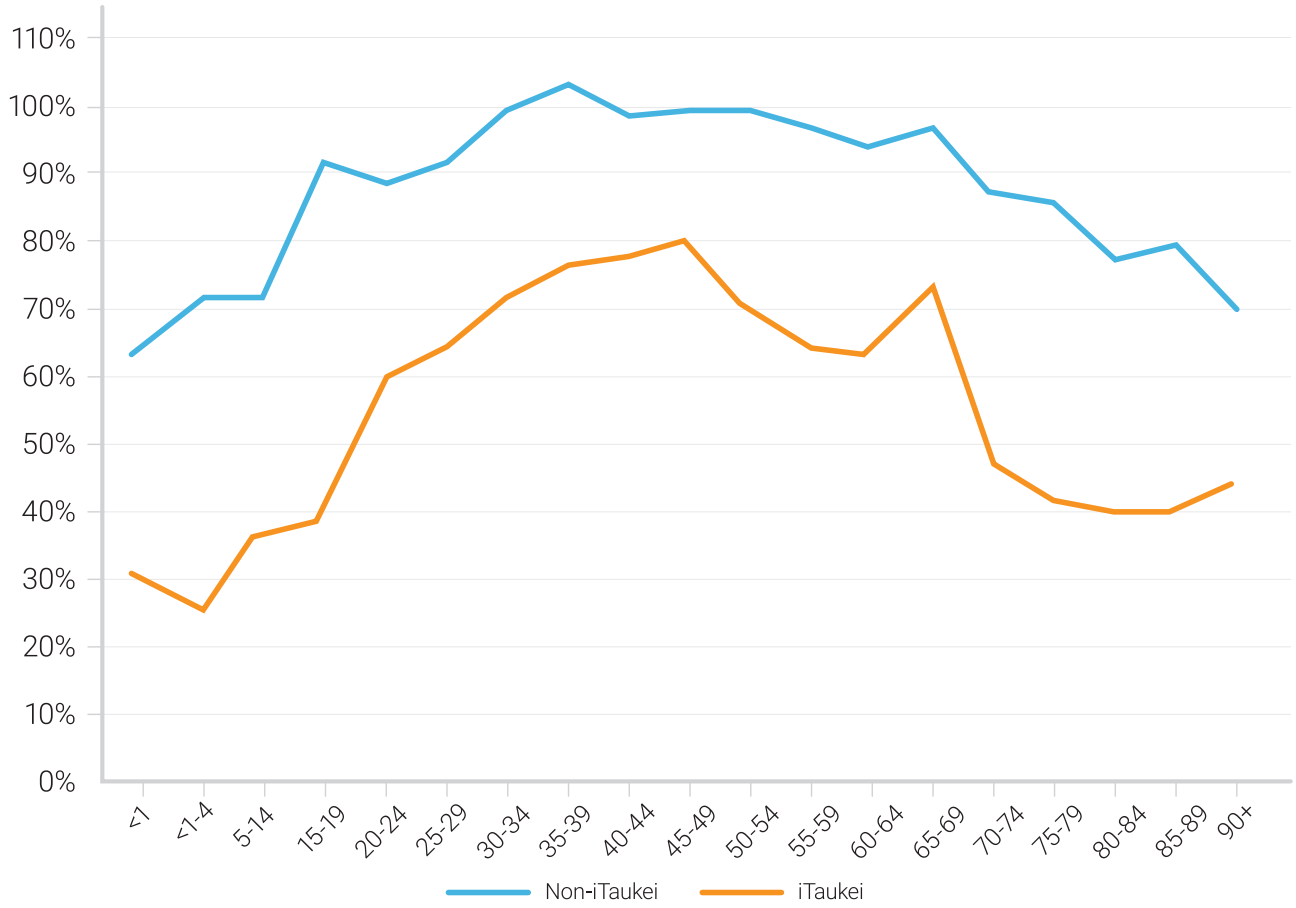
When disaggregated by sex and age group, adult deaths aged 20 years and above experienced higher registration among males compared to females (Figure 45). Both sexes saw a drop off at age 70 years and then registration rates levelled off slightly below 60 percent. Interestingly, among children, girls had higher registration rates compared to boys.

Figure 45: Death registration completeness within one year of death by sex and age group, (2018-2020)



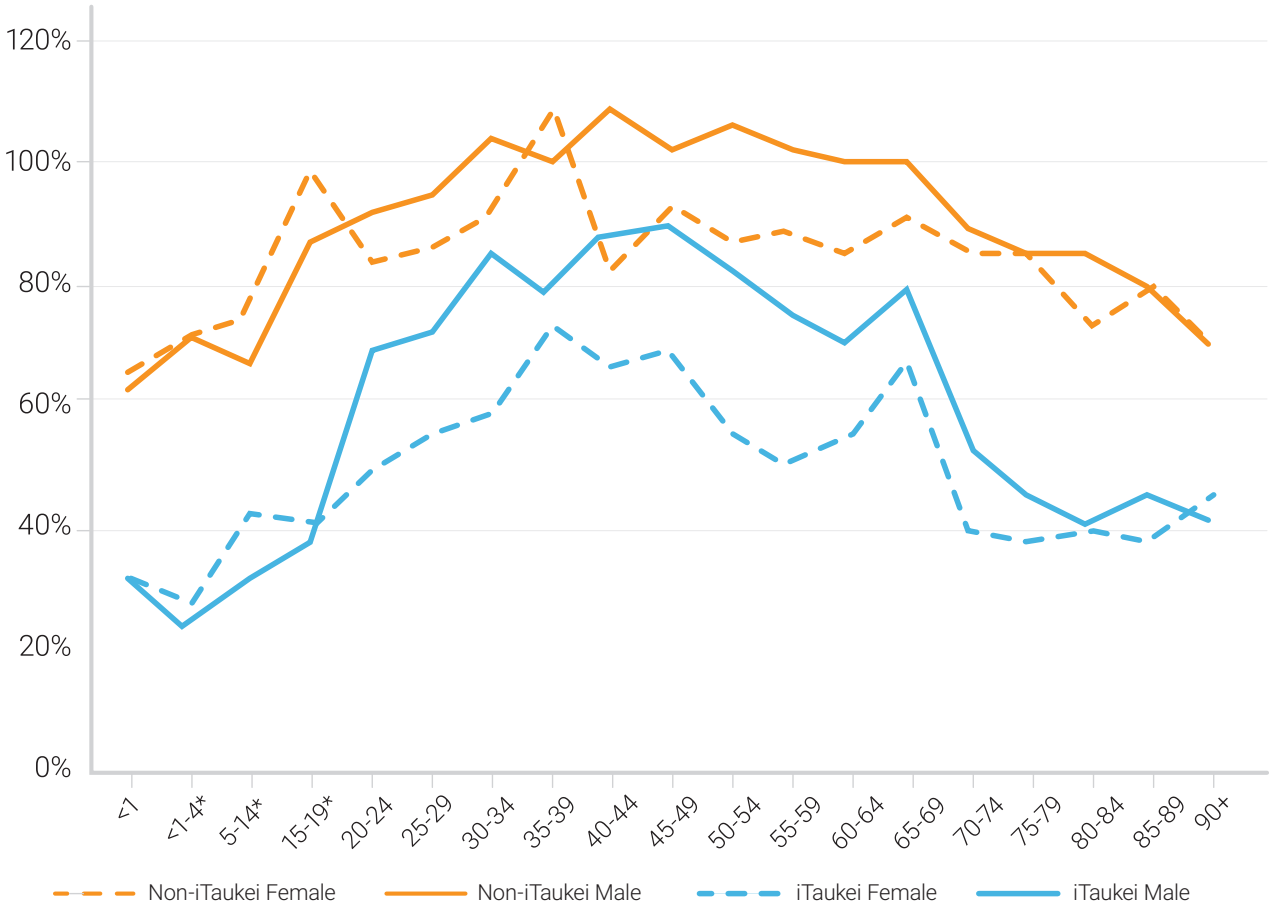
Across all age groups examined, non-iTaukeis had higher rates of death registration compared to iTaukeis by roughly 20 percentage points or more. The largest gap existed in the 1-4 year age group (71% among non-iTaukeis compared to just 26% among iTaukeis), and the smallest gap was in the age group 45-49 years (80% among iTaukeis compared to 99% among non-iTaukeis).

Figure 46: Death registration completeness within one year of death by ethnicity and age group, (2018-2020)



When further disaggregated by sex, non-iTaukei males and females had higher rates of registration across all age groups compared to iTaukeis of both sexes, with the exception of non-iTaukei females aged 40-44 years experiencing slightly lower registration rates than iTaukei males (83% compared to 88%). This reiterates the impact of ethnicity on death registration completeness. Among both ethnicities, children under five years had the lowest rates of registration, but rates of registration among non-iTaukeis was more than double that of iTaukeis (66% compared to 30%). Adults aged 30-69 years had the highest rates of registration among both population groups, and both experienced a decline at age 70 years and above. Within ethnicities, adult males generally had higher registration rates than women, and girls had higher rates compared to boys (Figure 47).

Figure 47: Death registration completeness within one year of death by sex, age group, and ethnicity, (2018-2020)



*Sample size less than 30 for: iTaukei females aged 15-19, non-iTaukei females ages 1-4, 5-14, and 15-19 and non-iTaukei males aged 1-4 and 5-14.

Similar to the findings seen in birth registration, there are some data quality issues with ethnicity data, particularly among adult male non-iTaukeis. Death registration completeness among non-iTaukei adults is often above 100 percent, with rates for males aged 40-44 years going as high as 109 percent and females aged 35-39 years going up to 108 percent. While it is very likely that there are disparities in registration between the ethnicities, the reliability of the exact registration rates remains questionable. Recall, for ethnicity, our equation is:

$$\frac{\textit{Non-iTaukei deaths occurring between Jan. 1, 2018 to Dec. 31 2020 registered by within 1 year}}{\textit{Non-iTaukei deaths occurring in MHMS system occurring between Jan.1, 2018. to Dec. 31. 2020}}$$

There are several sources from which the errors could come. The duplicate records in the numerator could cause over-registration. The MOJ has suggested that there have been cases of duplicate records, however, past examinations have indicated that it would not be to the magnitude of pushing registration rates above 100 percent. Miscoding ethnicity would artificially increase the numerator for non-iTaukeis when iTaukeis are registered as non-iTaukei. However, the ethnicity categories in the MOJ records are derived from ethnicities designated as part of notifications of birth (NOBs) at MHMS. Thus, miscoding of ethnicity would exist in both the numerator and the denominator when using recorded births as the

denominator. Conversely, MHMS may be more likely to miss deaths among non-iTaukeis in their system, making the denominator too small and inflating registration completeness, but there is no evidence to suggest that this is happening. The data quality issues around ethnicity require further investigation and are noted in the *Need for Further Research to Improve Inequalities in Death Registration* section below.

While it is clear that there are data quality issues around the coding of ethnicity, the analysis strongly suggests that there are large differentials in death registration completeness by ethnicity, especially among children under five years, with iTaukei children experiencing much lower rates than their non-iTaukei counterparts.

Similar to the issues noted with birth registration, information regarding the usual residence of the decedent is not available and thus geographic analysis could not be performed. It is strongly advised that data collection actors include drop-down fields to collect information on the usual province and district of residence of the deceased.

Summary

The following differentials in death registration completeness were found for the period 2018-2020:

1. The largest differential was between non-iTaukeis compared to iTaukeis. Non-iTaukeis had nearly complete rates of registration (91%) compared to iTaukeis (58%). This differential existed across all age groups.
2. Males (78%) had higher rates of registration compared to females (64%).
3. Children under age five years had the lowest rates of registration at just 38%, but there was a large differential when broken down by ethnicity, with two-thirds of non-iTaukei children registered compared to less than one-third (30%) of iTaukei children.
4. With the exception of non-iTaukei females aged 40-44 years, non-iTaukeis, including female non-iTaukeis, had higher rates of registration compared to both male and female iTaukeis, suggesting that ethnicity has a larger impact than sex on registration.
5. Both ethnicities and sexes saw a decline in registration from age 70 years and above.
6. Data quality issues exist for adult non-iTaukeis, as many age groups exhibited completeness rates above 100 percent. This requires further investigation to understand the underlying errors.

Conclusion and Policy Implications of Inequalities in Death Registration

The largest inequalities in death registration were found by ethnicity, with non-iTaukeis experiencing higher rates of registration (91%) compared to iTaukeis (58%) over the period of 2018-2020. This differential existed across all age groups, varying from 26 percent among iTaukei children aged 1-4 years, compared to 71 percent among non-iTaukei children,80 percent among iTaukeis aged 45-49 years and 99 percent among non-iTaukeis of the same age. Policy interventions are needed to improve death registration among the iTaukei population, however, a greater understanding of why the registration differential exists is needed, to put in place the appropriate interventions.

Among the rural iTaukei population, there is a collective ownership over lands in the villages. Thus, the need to register a death to gain property rights through inheritance of land does not exist. Further, because many iTaukeis reside in rural areas and remote and outer islands, they have less access to registration offices. It is quite possible that the opportunity costs of death registration are much higher for iTaukeis, and they cannot afford to miss wages as a result of leaving work during business hours, the cost of childcare, travel costs, or other opportunity costs associated with registration.

Similar to birth registration, small economic incentives for registration need to be investigated. For example, this could be a small stipend to help with funeral costs or reimbursements for transport or missed wages for traveling to registration offices. Other potential interventions could include targeted awareness campaigns for the iTaukei population, particularly those in remote areas or outer islands, as well as mobile registration and outreach to these communities. Cultural heritage groups or women's groups could be points of access for interventions or targeted education around the importance of registration, and mobile outreach would be useful for reaching remote and under-serviced communities. Campaigns need to cover the importance of death registration and the legal mandate to register a death within seven days of its occurrence under the current law in Fiji, as well as the social benefits that families or individuals may be entitled to with a death certificate. A partnership with the Fiji National Provident Fund needs to be investigated to educate remote populations about the benefits they are entitled to upon the death of a family member.

Children under the age of five years were the least likely to have their deaths registered among both populations examined. This is likely because there are few economic incentives to register a child's death. Generally, children do not possess a pension, and have little, if any, property to bequeath to their surviving family members. However, to prevent child and infant mortality, it is critical to know who is dying, where, at what age, and from what cause, in order to put in place interventions to prevent similar deaths in the future. This information is critical for improving the health and well-being of children in Fiji in the future. As many of the infant deaths occur in the first few days of life, families may still be present in the health facility at the time of occurrence. Processes to support family members to register deaths and to ease the process during their grieving period should be considered. However, as a birth certificate is necessary to register a death in Fiji, the process to register a child's death requires more paperwork from parents, making it more arduous and thus discouraging them to register both. Piloting the placement of civil registry staff in a health facility to support grieving parents and streamline the process of registration should be investigated further.

A decline in registration from age 70 years and above was also observed in both populations. A better understanding of why this may be happening is needed, in order to implement any interventions to improve registration for older decedents.

A differential was observed in the registration of deaths, with higher rates of registration for males (78%) compared to females (64%). This differential existed within ethnicities as well. Education around the importance of death registration may be one possible modality to overcome this differential. Cultural heritage groups or women's groups could be points of access for outreach, encouraging families to register the deaths of female family members despite a lack of economic incentive to do so. The data generated from death registration is critical for improving the health and well-being of women, increasing their longevity, and preventing similar deaths in the future.

For adult populations, encouraging people to establish a will which documents their assets and wishes for inheritance can be one way to both empower vulnerable populations and encourage surviving family members to register deaths so that property is distributed according to the wishes of the deceased.

Currently, in order to get a burial or cremation permit from the Police in Fiji, the MCCD from MHMS is presented to the local police station. Requiring the death to be registered with the MOJ before receiving a burial or cremation permit may be one way to improve death registration, particularly among the most marginalized populations such as young children. However, adding another bureaucratic step to the process may discourage those with the least resources (to access the registration offices) from

registering. Thus, streamlining the process (e.g., linking the MOJ and Police databases etc.) would be critical for the addition of another requirement for registration. A more streamlined, interoperable, and collaborative CRVS system would benefit the registration of all deaths. A detailed Business Process Improvement (BPI) would pinpoint bottlenecks and gaps in the system, as well as redundancies, and allow for a more efficient and user-friendly interface with the public.

Possible support from provincial offices for follow-up could also be investigated. For example, the possibility of providing the provincial offices with copies of NODs for enabling the ROKO (provincial level) MNT (district level) or TNK (village level headsman) to follow-up on the deaths not yet registered could be considered. However, at this time, NODs do not have clear information on the usual place of residence of the deceased. A drop-down field with district or village information would need to be added to the NODs in order to collate unregistered NODs and send them to the appropriate field staff in a timely and efficient manner.

Strategies specifically targeting the most vulnerable populations are needed to encourage family members to register deaths. Conducting advocacy and outreach campaigns are one way to raise awareness and encourage registration of deaths among the most marginalized populations in a timely manner. An extensive advocacy campaign covering a period of one month for encouraging registration is one possible modality. Mobile outreach is a useful way to reach populations that do not have easy access to registration in remote and under-serviced communities. Radio campaigns targeting remote areas for educating and advocating on the importance of death registration is another way to encourage registration among vulnerable populations.

Further Research Needed to Improve Inequalities in Death Registration

Before appropriate interventions can be put in place to improve inequalities in death registration, more research is needed to understand why some of the inequalities exist. For example, further research is needed to understand why iTaukei populations have lower rates of registration, and why parents are not registering the deaths of their young children. If under-registration is due to the opportunity costs of registration as opposed to lack of knowledge about the legal requirement to register, each of these underlying reasons would require different interventions to improve registration. As discussed in the birth registration section, the intersection between poverty and ethnicity is not well known, creating a need to understand the role of poverty in creating barriers to registration. Conducting focus group discussions or field interviews with families who have not registered the death of a deceased relative could provide valuable insights into the reasons behind the lack of registration of those deaths. The possibility of requiring death registration before burial or cremation needs to be investigated, along with considerations for better access to death registration within health facilities when families are present to receive their MCCDs.

A better understanding of why there is a decline in registration among the older population is also needed, as well as the reasons as to why male deaths are preferentially registered to female deaths.

There is a need for more examination into the coding of ethnicity data to understand the data quality issues around ‘over-registration’ among non-iTaukeis. This data is generated from the MCCD at MHMS and transferred to the BDM at MHMS. It is unclear why registration rates above 100 percent are being generated for the non-iTaukei population. Further, while Fijians of Indian descent make up the majority of the non-iTaukei population, non-iTaukeis also include a variety of other nationalities and ethnicities. It is likely that minorities among this group experience inequalities in registration, but due to lack of further disaggregated data, these disparities remain invisible.

Finally, geography is likely to play a part in inequalities in registration between various groups. It is critical to understand how rates of registration differ by ethnicity within different regions of the country. If no difference in registration is observed by ethnicity in remote or rural areas, it may be an issue of access or income of the local population rather than cultural awareness or practices. This information would be helpful to inform interventions. A geographic analysis is needed to better understand inequalities in registration, and collecting data on the usual place of residence of the decedent is critical for such an analysis. To obtain accurate information on the province and district of usual residence of the deceased, it would be beneficial to incorporate a drop-down box or a checklist for this information when completing NODs or MCCDs. The information could then be confirmed with the family and updated as needed upon registration. Geographic disaggregation of death registration data cannot be done without this information. Thus, we cannot understand health and mortality differentials and differing causes of death between geographic areas in Fiji without this information. It is likely that deaths to persons living in the capital of Suva are different from those living in remote outer islands (for example, who may be more impacted by road traffic accident deaths compared to drownings).

8 CONCLUSION

This assessment exercise found that ethnicity had the largest impact on both birth and death registration completeness, with non-iTaukeis experiencing higher rates of registration compared to iTaukeis. Policy interventions which are targeted towards improving iTaukei birth and death registration are critically needed.

While there was no strong evidence to suggest that a differential existed between sexes for birth registration, there does appear to be a preference to register male (78%) deaths compared to female (64%) deaths. Death registration was the lowest among children under age five years (38%) and highest among adults aged 30-69 years but decreased for ages 70 years and above. Policies to improve death registration among female decedents, young children, and older persons are needed to bridge the gap in registration.

For birth registration, teenage mothers and mothers in their 40s had the lowest rates of birth registration. Data from Lautoka Health Facility suggested that married mothers were much more likely to register their child's birth compared to single mothers across all age groups, including teenage mothers (Figure 29).

Given the above findings from this report, the following interventions should be considered to improve birth and death registration in Fiji:

1. **Economic incentives** significantly improved birth registration among the iTaukei population and among single mothers. Such incentives need to be considered for continuation, and possible extension to death registration to improve completeness in registration of deaths. Even modest amounts of money are likely to have a positive impact on registration. Other economic incentives such as stipends for travel costs or a bus fare to a registration office could be considered. 'Baby boxes' that provide essential supplies such as diapers could also be conferred to families upon birth registration, or stipends to support funeral costs could be given to bereaved family members to encourage timely death registration.
2. **Provincial office support** to follow up on unregistered births and deaths, or support from other municipal offices, needs to be investigated. The ROKO (provincial level), MNT (district level), or TNK (village level headsman), could be provided with a list of NOBs or NODs that have not yet been registered to follow-up with the families and support registration. However, this would require re-designing the NOBs and NODs, which do not currently collect information on usual place of residence in a usable manner. A drop-down field with district or village information would need to be added, in order to collate unregistered NOBs and NODs.
3. **Bring registration services to people** through more frequent mobile registration services in remote and hard to reach areas. There is a need to consider placing a BDM staff member in large health facilities to support both birth and death registrations. The staff could start the birth registration process, even if the child is not yet named, and educate families how to finalize the registration. Further, as many infant deaths occur in the first few days of life, families may still be present in the health facility at the time of occurrence and thus would benefit from the support of BDM staff to facilitate both birth and death registration. Finally, families of the deceased would benefit from a one-stop-shop for both receiving the MCCD and being able to register the death in the health facility.

4. **Leverage existing initiatives** such as The Ministry of Women, Children and Poverty Alleviation's outreach programme supporting poor and rural mothers. Potential partnerships with this programme should be investigated to see if advocacy and support to register births could be included for disadvantaged mothers. The Ministry of Women, Children and Poverty Alleviation, Fiji also provides financial support for mothers in outer islands to travel to Suva and Nadi to give birth; consideration could be given to an additional stipulation that births needs to be registered in order to benefit from full compensation, assuming that it does not discourage travel to give birth in a health facility. Immunization programmes could also serve as a point of contact, encouraging parents to register births and providing support for the process.

5. **Advocacy and awareness raising campaigns** particularly for poor, rural and remote families need to be considered to raise awareness about the importance of birth and death registration. Hosting an extensive month of advocacy, radio campaigns and advertisements could be considered to promote registration. Reducing stigma attached to teenage and unmarried mothers through cultural and behavioral change is also needed to encourage them to register their child's birth even when a father is not listed on the birth certificate. Educating unmarried iTaukei mothers on their right to register their child's birth under their family name in the VKB may help encourage such mothers to register in a timelier manner.

6. **Strengthen interoperability and linkages in the CRVS system**. For example, consider the requirement of a death certificate for burial and cremation permits. Similarly, consider a one-stop-shop where registration with iTaukei Affairs can also simultaneously support registration of a birth or death. Business Process Improvement (BPI) (below) could be used to re-engineer the process for receiving burial and cremation permits or for integration with the Ministry of iTaukei Affairs system.

7. **Undertake Business Process Improvement (BPI)** to improve efficiencies in the CRVS system. BPI helps to identify gaps, bottlenecks, and areas of duplication. Further, it can help design desired changes and improvements in the system.

8. **Strengthen CRVS data collection, sharing, and analysis**. One crucial issue that requires immediate attention is the collection of data on the usual place of residence for births and deaths, which can then be collated and analyzed. This information needs to be standardized with the country's administrative boundaries and be consistent across all databases. Further, data on parent's income and education needs to be considered for collection, or linkages with existing databases to store this information could be explored. Further, the process for entering NOBs into the PATIS+ system or for sharing the paper versions of NOBs with other stakeholders needs to be revisited. Memorandums of Understanding (MOUs) could be considered to ensure timely collection and complete collation and sharing of data. The coding of ethnicity needs to be investigated, while also exploring reasons behind duplicate registration records and over-registration among the non-iTaukei population.

Inequality assessments are designed to be an iterative process which can inform improvements both in civil registration, and quality and availability of data to be used in future assessments. Future inequality assessments should benefit from improvements in data availability and data quality. Further, it investigation is required to determine whether linkage opportunities are viable and whether richer information can be acquired by linking records across databases. The use of United Nations World Population Prospects (UNWPP) estimates also needs to be re-evaluated for its use in estimating births and deaths, when an updated version is available for Fiji.

Few countries have undertaken an inequality assessment to understand differentials in 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 first to examine differentials by sex, age, ethnicity and marital status of mothers. While the data may not be fit for exercises such as calculating disaggregated life tables without adjustment for known errors, it is robust enough to pinpoint disparities in registration completeness between different population groups in Fiji. This information can further be used to inform future research and policy interventions to bridge gaps in registration between these population groups. We hope that this report serves as an inspiration and a resource for other countries, to assess inequalities in registration and determine who is being left behind the most.

9
ANNEX 1: FIJI CRVS STAKEHOLDERS

#	STAKEHOLDERS	ROLE
1	**The Fiji Bureau of Statistics (FBoS)**[1,2]	Leading role. Collates, analyzes, and produces vital statistics for policy use. Uses vital statistics for other data products such as population projections. From CRVS Committee TOR: Collect, compile, extract and analyze vital statistics and to improve access to vital statistics data and reports and to: ✔ Create awareness ✔ Updates the committee on data gaps ✔ Provide feedback after analysis ✔ Provide assistance in fixing the data gaps through query gaps
2	**Ministry of Health and Medical Services (MHMS)**[1,2]	Ministry that oversees Fiji's healthcare system. Administrative data provider – number of births and deaths disaggregated by key variables. From CRVS Committee TOR: Provide correct and up-to-date notification of births and deaths required under the Act to parents so they can register correct births and capture complete data on causes of death. Where required and necessary, produce statistics of new births and deaths to the Bureau of Statistics ROLE OF MEMBERS ✔ Provide accessibility to The Fiji Bureau of Statistics for data auditing in view to build capacity in house ✔ Documentation on audit process. Further recommendations on how to fix the problem ✔ Increase staff capacity for data analysis and use ✔ Improve death certification quality and cause of death by age groups. ✔ Improve coding quality

#	STAKEHOLDERS	ROLE
3	**Registrar General's Office - Ministry of Justice (MOJ)**[1,2]	Primarily responsible for all registration of births, deaths & marriages in Fiji and related changes and updates. Key data provider of registered vital events. From CRVS Committee TOR: Responsible for the administration of the Births, Deaths and Marriages Registration Act 1975 and to maintain records of all births, deaths and marriages occurring in Fiji. Protect the records of persons born in Fiji and deaths of those who died in Fiji and provide accurate and reliable data for planning and research ROLE OF MEMBERS ✔ Update on registration statistics on monthly basis ✔ Provide regular update on registration ✔ Create awareness to encourage people to register births, deaths, and marriages in the BDM registry ✔ Partner with other organizations or Ministries to achieve the above
4	**Fiji Police Force**[1,2]	Ensure the safety and security of the people of Fiji and its visitors. The Fiji Police Force provides burial order permits so would have a record of the deceased that were later buried. They also collect number of deaths from suicide, suspicious deaths (possible homicides) and by accident – through post mortem reports to determine causes of death
5	**Ministry of Women, Children and Poverty Alleviation**[1,3]	Ministry that empowers the disadvantaged, children and women. Birth, death, and marriage certificates confer economic and other advantages and protections to owners such as ability to acquire a national ID or passport and gain access to a legal identity, ability to open a bank account, prevention of child marriage, proof of inheritance or other entitlements or pensions after death or divorce from spouse
6	**Digital Fiji**[2]	Collects the data from the line ministries and stores it into a database. They are the main data provider to FBoS, but can only provide what has been requested by a line ministry and what they have already digitized
7	**Ministry of Education, Heritage & Arts (MEHA)**[1,2]	Ministry of Education, Heritage & Arts has historically provided data as requested by FBoS. Custodian of the Education management information system (EMIS) which contains school enrollment data

#	STAKEHOLDERS	ROLE
8	**Ministry of iTaukei Affairs** [1,2]	Responsible for the preservation of Fijian culture and the economic and social development of the indigenous people. Indigenous peoples' affairs, land and birth rights, have their own register for Indigenous persons. Birth certificates are an important legal document that demonstrate proof of ancestry and lineage, which may allow document owner certain entitlements
9	**Ministry of Communications**[1,3]	Facilitate the provision of Information & Communications Technology (ICT) and Postal Services that are accessible and affordable User. Communicator of vital statistics, data user
10	**Fiji Immigration Department**[2]	Responsible for the processing of all citizenship applications, citizenship clearance and other Immigration duties. Data User.
11	**Fiji National Disaster Management Office**[2]	Aimed at strengthening the capacity of Government machineries to address and manage Disaster and Emergency activities in times of natural and emergency situations. Important stakeholder for ensuring the CRVS systems is robust in the time of emergencies, also a data User
12	**UNFPA**[3]	Brisbane Accord Group member,[4] Data User
13	**UNICEF**[3]	Brisbane Accord Group member,[4] Data User
14	**SPC**[3]	Brisbane Accord Group member,[4] Data User
15	**Australian Bureau of Statistics**[3]	Brisbane Accord Group member,[4] Data User
16	**University of Melbourne**[3]	Data User
17	**Australian National University (Christine Linhart)**[3]	Data User
18	**Ministry of Finance, Strategic Planning, National Development & Statistics)**[3]	Data User – uses population data for planning for roads, infrastructure etc.
19	**Prime Minister's Office**[3]	Data User for policy and planning

#	STAKEHOLDERS	ROLE
20	**Ministry of Rural & Maritime Development**[3]	Data User for policy and planning
21	**Fiji National University**[3]	Brisbane Accord Group member,[4] Consultant & Data User
22	**University of South Pacific**[3]	Data User
23	**University of Fiji**[3]	Data User – student use data for research purposes, have a demography programme for students
24	**Fiji Council of Social Services**[3]	Coordinates and collaborates with its regional and international partners on social issues, community development issues, good governance, social justice and social advancement within various sectors of Fiji
25	**UNECA – (Gloria Mathenge)**[3]	Consultant & Data User. Gloria was a key BAG member, supporting CRVS improvement in the Pacific prior to taking a position at UNECA
26	**Fiji Council of Churches**[3]	Assist the Government with the vetting of new churches. Could provide support for building awareness of the importance of CRVS
27	**Foundation for Rural Integrated Enterprises & Development**[3]	Uses integrated approaches to tackle Social, Economic and Health challenges in communities around Fiji. Could provide support for building awareness of the importance of CRVS
28	**Dr Martin Bakker – Demographer**[2,3]	Data User
29	**Queensland University of Technology**[3]	Brisbane Accord Group member,[4] Consultant & Data User
30	**WHO**[3]	Brisbane Accord Group member,[4] Consultant & Data User
31	**Vital Strategies**[3]	Brisbane Accord Group member,[4] Consultant & Data User

#	STAKEHOLDERS	ROLE
32	**University of New South Wales[3]**	Brisbane Accord Group member,[4] Consultant & Data User
33	**Pacific Health Information Network[3]**	Brisbane Accord Group member,[4] Consultant & Data User
34	**Pacific Civil Registrars Network[3]**	Brisbane Accord Group member,[4] Consultant & Data User

1 Members of the Fiji National CRVS Committee as identified in the draft Fiji CRVS Action Plan
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) 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**

10 ANNEX 2: DATA MAPPING EXERCISE KEY FINDINGS

Birth registration sources

Numerator: Registered births from Registrar General

- It should be noted that real time changes in births at MOJ are reflected in digital Fiji database (marriage and death not there yet)
- The birth registration number (a unique ID) could be a key factor in linking data for further disaggregation in the future.
- BRN is created at the point of NOB at MHMS. There are manual paper-based NOBs and e-NOBs. E-NOBs in 7 health facilities use the BDM system which automatically generates BRN.
- Paper NOBs sent to MOJ by the family, MOJ enters data and BRN generated. Since informants must send the NOB, some are missing and delayed.

Table 7: Registered birth data from the Registrar General at Ministry of Justice, variables captured, and associated data quality considerations

Variable	Collected by MOJ?
Date of birth	Present. There is a birth date but some birth dates occurred after the date of notification. Some data quality issues to investigate. Most likely introduced on MHMS side
Date of registration	Present
Geography	Hospital reference number present, can be mapped to geographic region of division or district but these boundaries are health system boundaries, not administrative boundaries. Birth reg place has city, would need to aggregate to high levels of geography

Variable	Collected by MOJ?
Place of usual residence	Informant's address collected which includes standard town/village and city which could be mapped to district and division for aggregate level geographies. Data quality concerns: May not be accurate if the address listed is the address of the family the mother stayed with before/after coming to a larger facility to give birth. FBoS would need to re-enter the data into usable geographic regions record by record. It is not possible to re-code this data as it is a blank field
Sex of baby	Present
Wealth quintile	Not collected
Mother's education	Not collected
Mother's age	Age present, mother's DOB collected, could check age by using notification date and mother's date of birth. Mother's age is in NOB from hospital, MOJ verifies her age using her birth certificate
Mother's marital status	Collected
Father's occupation	Collected if the child is registered under both parents. Fill in the blank free field, not coded. FBoS would require several months to code the data to FSIC
Mother's occupation	Collected. Fill in the blank free field, not coded. FBoS would require several months to code the data to FSIC
Ethnicity	Present but only collected as iTaukei vs non-iTaukei
iTaukei heritage	For iTaukei babies, village heritage information collected, but further investigation needed to better understand what data are collected

Denominator births from:

Health facilities Notification of Birth

Unfortunately, there is not one standardized system when it comes to birth notification.

- There are 4 ways of reporting NOBs: Paper based system, hospital system, integrated electronic system with BDM, and a mobile phone trial – all 4 systems report differently.
- There are 7 pilot sites which include some of the largest facilities delivering births. In these 7 facilities, they link NOBs to the BDM system in real time.
- 7 sites use PATIS+ and have disaggregated data sent to BDM.
- Electronic linkage of facilities to the BDM in real time is expected to be rolling out over time.
- Even within the electronic NOB cites, the system often goes down and staff have to revert back to paper birth registers.
- CWM (the main hospital with the Anderson and Morrison maternity wards) has had to rely on birth register books (note this is not the same as NOBs) when the BDM system is down and before the BDM system was in place. This has resulted in a backlog of ~47k birth registers. FBoS. Hopes to digitize ~28k of these by June and then go back for an additional 19k. This is a big gap for data availability and analysis
- Another ~19-20 facilities are using paper forms for NOBs. These sites only have total birth data in CMRIS and paper copies sent to MOJ to digitize, FBoS, and one stays in the clinic register book.
- At the end of each year, aggregated figures from each facility and the pink copy of the NOB is sent to BDM office, MOJ digitizes the pink copy
- Family are supposed to complete the NOB before leaving the hospital, but this does not always happen. If the mother leaves without completing the NOB, it's not clear if the birth is included in any dataset. More investigation is needed. The process may also vary by facility.
- In some facilities, if a mother leaves without the NOB, she needs to come to the health facility recorders in hospital to complete details in order to receive it and take it to MOJ to register the birth. Beginning of the school year there is a demand for NOB and mothers return for the papers.
- Incomplete NOBs are kept in a box - ~1000 NOB waiting, unclear if these are captured in any dataset, they span several years.
- Vital Strategies funded paper copy collection of NOBs, FBoS doing data entry and then will merge with dataset from MOJ
- Until linkage with BDM is rolled out to all facilities there will be a paper backlog to be entered, TBD who will digitize after funding runs out.
- FBoS has digitized the paper NOBs for 2016-2021 but a summary review of this data indicates it is not complete or usable for the purposes of an inequality assessment. More investigation is needed to understand where the problem lies.

Table 8:	Notification of birth data from the Ministry of Health and Medical Services, variables captured, and associated data quality considerations

Variable	Collected by MHMS for births?
Date of birth	Present. There is a birth date but some birth dates occurred after the date of notification. Some data quality issues to investigate. Most likely introduced on MHMS side
Date of notification	Present
Geography	Hospital reference number present, can be mapped to geographic region of division or district; MHMS indicated they can provide excel sheet mapping facility to district or division but this would likely be the health district boundaries
Place of usual residence	Have a temporary and residential address in form. Health Information System (HIS) has a residential address. Can link HIS and NOB by national health number. Need to confirm if Informant's address collected which includes standard town/village and city which could be mapped to district and division for aggregate level geographies. May not be accurate if the address listed is the address of the family the mother stayed with before/after coming to a larger facility to give birth. Accuracy/data quality issues. This is also an open blank field that will have to be re-entered manually to parse our province/district etc.
Sex of baby	Present
Wealth quintile	Not collected
Mother's education	Not collected
Mother's age	Age present, mother's DOB collected, could check age by using notification date and mother's date of birth
Mother's marital status	Collected
Mother's BRN	Started to collect this in 2022 in HIS system, not present in NOB
Father's occupation	Collected if child is indicated under both parents. Fill in the blank free field, not coded. FBoS would require several months to code the data to FSIC

Variable	Collected by MHMS for births?
Mother's occupation	Collected. Fill in the blank free field, not coded. FBoS would require several months to code the data to FSIC
Ethnicity	Present but only collected as iTaukei vs non-iTaukei in NOB. HIS has 3 fields including Indian population
iTaukei heritage	For iTaukei babies, village heritage information collected, but further investigation needed to better understand what data are collected. iTaukei village and ancestry, might not match what MOJ has, especially with single mothers, baby's name might change by time it comes to MOJ, in NOB no baby name just mother's

Census year data

Table 9: Birth data from census questionnaires for 2007 and 2017, variables captured, and associated data quality considerations

Variables	2007 Questionnaire	2017 Questionnaire
Child's birth date	Yes	Yes
Child's age	Yes	Yes
Sex of child	Yes	Yes
Ethnicity of child	Yes	Yes
Place of Residence of mother	Yes	Yes
Wealth quintile	Not calculated, durable goods collected, need to check if HH surveys calculate wealth quintiles	Not calculated, durable goods collected, need to check if HH surveys calculate wealth quintiles
Mother's education	Could be derived	Could be derived
Mother's age	Could be derived	Could be derived
Father's occupation	Could be derived, coded	Could be derived, coded
Mother's occupation	Could be derived, coded	Could be derived, coded

School enrollment data

MEHA has data for 2014-2022 for the variables below in the table. However, early childhood education (ECE) data for 2014-2018 are not as reliable, as ECE collection of data was not as complete during that time. Further, there are many ECE private centers in Fiji which do not report data to MEHA. Therefore, it is suggested to use data for children age 6 or 7 as this is more complete. MEHA lacks data for some private schools, but they do have data for public, faith-based, and 4 primary private schools. They estimate less than 2 percent of total students ages 6-7 are missing from their database. Their database includes 17 special education schools, most students with special needs do attend school and public schools have mainstreaming for special needs students.

Table 10: School enrollment data from the Ministry of Education, Heritage, and Arts, variables captured, and associated data quality considerations

Variable	Collected by MEHA?
Child's date of birth	Collected
Child's age	Calculated
Child's date at first enrollment	Collected (school starts mid-January except with COVID)
Location of school	District, division, rural/urban but don't align with FBoS, street or name of place, some have GPS coordinates
Child's usual address	Collected, parents and emergency, open field street address, need to be coded
Child's BRN	Collected
Sex	Collected
Wealth quintile	Age 5 data for wealth not strong, age 6+ have parents' income group range, not all complete, below a certain income, students receive free transport, and textbooks which is tracked in DB, need to check if age 5 have (ECE early childhood education)
Mother's education	Not collected
Mother's age	Not collected

Variable	Collected by MEHA?
Mother's marital status	Not collected
Mother's BRN	Not collected
Mother's TIN	Collected, tax ID #, could be used to link to other DB for info
Father's TIN	Collected tax ID #, could be used to link to other DB for info
Mother's DOB	Not collected
Father's occupation	Collected, open blank field
Mother's occupation	Collected, open blank field
Ethnicity	Collected, 4 categories
iTaukei heritage	Collected, open blank field

Vaccination data

Health service has only book registers in paper hard copy. These child Immunization Records are kept in the health facility with the child health card given to the families. Data is sent from the facilities to the central level monthly but there are often delays. There are no immediate plans to digitize vaccine data or develop an electronic system for vaccines. Data collected in hard copy is outlined below.

Table 11: Paper register vaccine data from the Ministry of Health and Medical Services, variables captured, and associated data quality issues

Variable	Collected by MHMS Paper registers?
Child's name	Collected
Mother's name	Collected
Date of birth	Collected
Age	Collected

Variable	Collected by MHMS Paper registers?
Child's BRN	Not collected (Give numbers in clinic according to area of residence they come from)
Date of vaccination	Recorded
Geography (vaccine)	Health facility location
Place of usual residence	Collected – ask if temporary or permanent
Sex of child	Collected at MMR 12 months
Wealth quintile	Ask but not recorded, do they need support to access
Mother's education	Not recorded, in mother's documentation for FP and other services
Mother's age	Not recorded, only teenage pregnancies
Mother's marital status	Collected
Mother's BRN	Not collected, just mother's national health number
Father's occupation	Not collected
Mother's occupation	Not collected, in maternal records
Ethnicity	Collected, 3 categories
iTaukei heritage	Not collected

At the national digitized level, data can be provided by Province and district by age of vaccine schedule and whether vaccine was on time or later. However, data are often delayed and thus not complete for more recent years. Provincial, divisional, and district geographies are related to health system matching and do not match the administrative boundaries used by the country. They would therefore have to be re-coded at the nursing station level to be used for geographical purposes. Further, because the date of birth of the child is not included, it may be challenging to try to extrapolate these records back to derive the number of births in a given year. This is because while late vaccination is recorded, it is not clear whether the vaccination was one day or one year late. Thus an 18-month-old could be recorded as receiving a 1-week-old vaccine. However, it is believed that 99 percent of 1 week old children go for their BCG vaccine. The data fluctuates a lot month to month but over time completeness improves.

Table 12:	Digital register vaccine data from the Ministry of Health and Medical Services, variables captured, and associated data quality issues

Variable	Available in MHMS digital register?
Vaccines by Health Geography	Available at many geographical levels, it would need to map to Fiji Administrative boundaries. Best to request nursing station level data
Age	Age groups of vaccine schedules available such as 1 week, under age 1, 12-18 months, up to age 5, 6-13 etc.
On-time vaccination	Recorded only as on-time or late, but extent of lateness not documented (e.g., 1 day vs 1 year late)

Death registration sources

Numerator: Registered deaths from Registrar General

Table 13:	Registered death data from the Registrar General at Ministry of Justice, variables captured, and associated data quality considerations

Variable	Collected by MOJ?
Date of death	Collected from NOD from MCCD from MHMS
Date of birth	Collected. Age at death available on the DC. MOJ should be able to provide both
Date of registration	Collected from NOD from MCCD from MHMS
Geography	Hospital reference number present on MCCD, but place of death not listed (e.g., if died in a road traffic accident, intersection not listed)
Place of usual residence	Informant's address collected which includes standard town/village and city and sometimes rural/urban which could be mapped to district and division for aggregate level geographies
Sex	Collected

Variable	Collected by MOJ?
Wealth quintile	Not collected
Education	Not collected
Marital status	Collected
Occupation	Collected. Fill in the blank free field, not coded. FBoS would require several months to code the data to FSIC
Ethnicity	Present but only collected as iTaukei vs non-iTaukei
iTaukei heritage	For iTaukei decedents, village heritage information collected, but further investigation needed to better understand what data are collected
Medical attendant	Collected. Medical attendant who attended to deceased before death
Type of death	Underlying COD collected from MCCD, but free hand, not ICD coded, no other field for COD or type of death (natural, accident, homicide, maternal, RTA etc. no present)
Place of burial or cremation	Collected. Official DC usually issued after burial or cremation
Date of burial or cremation	Collected. Official DC usually issued after burial or cremation

Notes:

- Police notified of the death but don't share additional information with MOJ or other entities
- MCCD from MHMS is paper, MOJ creates a new official legal DC and prints a copy for the applicant
- Unique Death registration number (DRN) created at time of registration

Denominator, deaths from:

Police records

The Fiji Police Force provides burial and cremation permits for families of the deceased. Families must bring in the MCCD from the MHMS. The Police keep paper records of these permits, but they are stored in a hard copy decentralized manner at each individual police station. Data is not collated or used for analytical purposes, but strictly for administrative purposes. Therefore, this data cannot be used for triangulation purposes at this time. It would also contain similar information as the NOD.

The police do keep records in excel spreadsheets of certain types of deaths. Road traffic accidents, other accidents, drownings, homicides, and suicides for example are collected. If a body is found in the community and cause of death is unknown and reported to the police, the police will send the body for autopsy and await an official COD from the coroner. If the death comes back as suspicious, it will be tracked in their records. If it is ruled a natural death, it is not clear if this information is in their excel sheet or the death is removed. More investigation is needed in this case.

For incidental deaths such as accidents and homicides etc. The table below outlines what information the Fiji Police Force keeps. However, this information, due to its sensitivity, has not been shared at a disaggregated level with the FBoS. Since the BRN is not collected, other identifying information such as name, address, age etc. would be needed to check data case by case against data in the BDM at the MOJ.

Next steps: Do not request data at this time.

Due to the sensitivity of the information and the lack of precedent for sharing and time-consuming nature to confirm cases, it is suggested to not pursue this type of data sharing at this time unless needed. Further, this would only inform if certain types of deaths are being left behind (e.g. suicides or accidents) and does not have the policy interventions that targeting certain regions or demographics of the population would have.

Table 14: Death data collected by the Police, variables captured, and associated data quality considerations

Variable	Collected by the Fiji Police Force?
Name of deceased	Collected when possible but not always correct. Only two fields for names but some names 3 fields long etc.
BRN	Not collected
Date of death	Collected
Date of birth	More investigation needed
Age	Collected

Variable	Collected by the Fiji Police Force?
Date of report	More investigation needed
Location of death	May be present in some cases
Place of usual residence	Not collected. Division and district of location of police office present
Sex	Collected
Wealth quintile	Not collected
Education	Not collected
Occupation	Collected. Fill in the blank free field, not coded. FBoS would require several months to code the data to FSIC
Ethnicity	Collected – 4 categories
Type of death	Collected for RTA, accidents, drownings, homicide, suicide

Health facilities

Table 15: Death data from notification of deaths and medically certified death certificates (MCCDs) from the Ministry of Health and Medical Services, variables captured, and associated data quality considerations

Variable	Collected by MHMS?
Date of death	Collected
Date of birth	Collected
Age	Collected
Date of notification	More investigation needed if collected (when different from date of death)
BRN	Not collected
Geography	Hospital reference number present on MCCD, but place of death not listed (e.g. if died in a road traffic accident, intersection not listed or location of a drowning)

Variable	Collected by MHMS?
Place of usual residence	Informant's address collected which includes standard town/ village and city and sometimes rural/urban which could be mapped to district and division for aggregate level geographies
Sex	Collected
Wealth quintile	Not collected
Education	Not collected
Marital status	Collected
Occupation	Collected. Fill in the blank free field, not coded. FBoS would require several months to code the data to FSIC.
Ethnicity	Collected by 3 categories: iTaukei, Fijian of Indian descent, Fijian of other decent
iTaukei heritage	Not collected
Medical attendant	Collected. Medical attendant who attended to deceased before death – open blank field for name of staff
Type of death	Underlying COD collected from MCCD ICD-10 coded, need to aggregate for analysis
Place of burial or cremation	Not collected
Date of burial or cremation	Not collected

Census data – direct estimation

Notes for 2007 census QRE:

- Asks if respondent's mother and father are still living
- Asks about births and deaths, see questions below:

FOR ALL WOMEN BORN IN 1992 OR BEFORE			
F1. How many children of each sex did this female give birth to that are alive and were staying on census night. a. In this household *(If none, write 0)* b. Elsewhere (In Fiji or overseas) *(If none, write 0)*	Male	Female	Total
F2. How many live born children of each sex, this female has given birth to have died? *(If none, write 0)*			
F3. How many live born children of each sex have in total been born to this female? *(If none, write 0)*			
F4. What is the date of birth of this female's last child born alive? (including child that may have died later)	Day ☐☐	Month ☐☐	Year ☐☐☐☐
F5. What is the sex of this last born child? *(Tick appropriate box)*	1. ☐ Male	2. ☐ Female	☐
F6. Is this last born chid still alive? *(Tick appropriate box)*	1. ☐ Yes	2. ☐ No	☐

Notes for 2017 census QRE:

- Asks if respondent's mother and father are still living.
- Asks if ever given birth to a child and if they are still alive, live in the household, and how many died. More questions and better detail than the 2007 census for infant deaths.
- However, analysis was not done by FBoS using death data from either census.
- Data on deaths in general was not asked in the 2017 HH QRE.

Indirect estimation of deaths between last 2 censuses by:

- It may be possible to perform indirect estimation of deaths from the 2007 and 2017 census for the following characteristics:
  - Geography
  - Sex
  - Ethnicity
- However, this would put the midpoint in 2012.
- Further, migration is a key issue in Fiji with many people migrating to New Zealand and Australia. Indirect estimation assumes zero net migration. Without factoring this in, you may obtain an overestimation of deaths using this method.

Data Linkage

None of the sources interviewed collected data on income or wealth status. However, there may be a possibility in the future to link data with sources from other databases to obtain more information for disaggregation. For example, records from the MOJ could potentially be linked to databases from the Ministry of Women, Children and Poverty Alleviation via using the decedents or mother's (in the case of births) birth registration number (BRN). If the Ministry of Women, Children and Poverty Alleviation keeps records of social welfare benefits for low-income households, records that were receiving such payments could be flagged and coded as low-income or lower wealth quintiles.

MEHA has parents' Tax ID Number (TIN) which could also potentially be linked to other government databases such as the Ministry of Women, Children and Poverty Alleviation to assess for issuance of social welfare benefits.

DigitalFiji believed if they had access to other Ministry's databases, they have the IT capabilities to link records over several databases and provide more disaggregated information. However, they currently have no agreement or data from other Ministries outside of MOJ. An appointment with the Ministry of Women, Children and Poverty Alleviation could not be made during the mapping period due to high staff turnover. It is suggested to try again next year or when the next inequality assessment is undertaken to re-assess what data the Ministry of Women, Children and Poverty Alleviation collects and what format it is in, and then the potential for future linkages.

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