

Vital Statistics Report

The First Synthesized Analysis of Available Vital Statistics LAO PDR

January 2024



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Canada

The First Synthesized Analysis of Available Vital Statistics LAO PDR

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civil registration, divorce registration, marriage registration, vital statistics.

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About the Centre of Excellence

The Centre of Excellence for Civil Registration and Vital Statistics (CoE-CRVS) is a global resource hub that actively supports national, regional and global efforts to develop, strengthen and scale up sustainable civil registration and vital statistics (CRVS) systems that work for all, especially women and girls. The CoE-CRVS facilitates technical assistance, global standards, tools, evidence, and good practice, with a strong commitment to gender equality, and strategic partnerships.

The CoE-CRVS was founded in 2015 at the International Development Research Centre (IDRC, Canada). In August 2021 the CoE-CRVS transitioned to UNFPA to expand the Centre's reach through UNFPA's global network with activities in over 150 countries. The CoE-CRVS is funded by Global Affairs Canada, IDRC and UNFPA.

UNFPA and the CoE-CRVS implement a life-course approach to CRVS support - from birth to death, including marriage and divorce - ensuring that a person's legal identity is progressively updated over the life-course. A life-course approach advances human rights principles and inclusive development strategies for official statistics and public accountability, as shown below. Civil registration and legal identity facilitate access to health care, primary and secondary education, and social support.

Foreword

Accurate, updated population data is the foundation for well-informed policy and planning decisions that are people-centered and responsive to communities. This report appraises civil registration data in Lao PDR with the aim of strengthening the civil registration and vital statistics (CRVS) system in the country. CRVS systems are widely recognized as the preferred source of data to produce vital statistics on fertility, mortality, and nuptiality. Data from well-functioning civil registration systems can be used to compile 67 of the 230 SDG indicators and the data can be a source of advancing Gender equality and the rights of women and girls. However, low coverage and incomplete registration limit the use of such data in many low- and middle-income countries, including Lao PDR, and the COVID-19 pandemic has disrupted registration processes. In this case, population censuses and/or household surveys are important, complementary data sources that can be used to periodically produce vital statistics and assess the registration completeness of vital events.

Several efforts to improve the CRVS system are ongoing in Lao PDR, including the establishment of the new digitized CRVS system with new registration forms to be implemented soon. It is therefore essential for the health and CRVS systems to work closely together in order to boost registration rates, promote timely event registration,

and streamline the registration process. A strengthened CRVS system is essential for promoting gender equality and women's empowerment. It provides women with legal identity and empowers them to access education, health services, and economic opportunities.

This brief report recommends that the new Lao CRVS registration forms be assessed against the minimum standards set out in the 3rd revision of the United Nations' Principles and Recommendations for a Vital Statistics System to advance the achievement of the SDGs, including those that promote gender equality. In addition, further analysis of birth and death data is necessary to understand data deficiencies and advise MoHA on such deficiencies for the improvement of civil registration in Lao PDR. However, the findings in this report will ensure to improve the CRVS system in the Lao PDR is continuous, permanent, compulsory and universal.

On behalf of the Lao Statistics Bureau, the Ministry of Planning and Investment, I would like to extend my sincere appreciation to all those of you who participated and contributed to this vital statistics report and in particular to the UNFPA - in particular the UNFPA Country Office in Lao PDR and the UNFPA Centre of Excellence for CRVS Systems - for their technical and financial support and we hope for their continued collaboration in the future.

Phonesaly Souksavath
Head of Lao Statistics Bureau,
Ministry of Planning and Investment

November 21, 2023
Vientiane, Lao PDR



Preface

The United Nations Population Fund (UNFPA) warmly congratulates the Lao Statistics Bureau on the publication and release of the first vital statistics report in Lao PDR. This marks a major milestone in advancing CRVS systems strengthening and modernization of official statistics in Lao PDR. Timely and high quality vital statistics, derived from civil registration data, are an important tool in understanding population dynamics in the country and tracking progress towards the realization of the 2030 sustainable development agenda.

UNFPA is proud to lead coordination of CRVS systems strengthening support to the Government of Lao PDR on behalf of the UN Country Team and Resident Coordinator's Office in Lao PDR. We thank all key government partners, including the Lao Statistics Bureau, Ministry of Home Affairs, Ministry of Health, that are supporting the strengthening of the CRVS system in Lao PDR. We also gratefully acknowledge the coordinated technical collaborations with our sister agencies including UNICEF, UNDP, WHO, World Bank Group and ESCAP.

We are grateful for financial support to the UNFPA Centre of Excellence for CRVS Systems from the International Development Research Centre (IDRC), Canada - through which this technical cooperation was convened.

Bakhtiyor Kadyrov
Representative
UNFPA, Lao PDR

November 21, 2023
Vientiane, Lao PDR



Executive Summary

This first vital statistics report in Lao PDR represents a crucial first step towards improving the quality and completeness of vital statistics data in the country. It provides an analysis of vital statistics spanning the 2005-2022 period. The report delves into a comprehensive assessment of civil registration data and provides an in-depth examination of mortality, fertility, and nuptiality trends within the country.

Key Insights from this vital statistics report include:

- The recent population dynamics in terms of fertility show a slight decrease in live births between 2016 and 2021 and a peak of age specific fertility rates for women aged 20 to 24. There is an upward trend of the number of registered deaths from 2014 to 2019, suggesting an improvement in death registration completeness in recent years. Regarding nuptiality, the registration of marriages and divorces displayed an upward trajectory from 2017 to 2020, followed by a decline in 2021. This is likely attributable to delayed registrations and pandemic-induced disruptions.
- There is a notable under-reporting of live births in both the civil-registration system and DHIS2, compared to projections based on the 2015 census and estimates from the 2022 World Population Prospects (WPP). This under-reporting was not influenced by sex-based disparities. However, this analysis's scope was limited by the absence of sex-disaggregated birth notifications, and the age of the mother from DHIS2 (MoH).
- Regarding mortality data, significant under-reporting in the civil-registration system was observed when contrasted with both Lao Statistics Bureau (LSB) projected deaths and WPP estimates. Notable disparities were also identified between enumerated deaths from the 2015 census and projections from LSB and WPP. An under-reporting of female deaths within the 2015 census data was also identified.
- Civil registration is the sole repository of marriage and divorce registration data in Lao PDR. Available data is disaggregated by province, year of registration and by type of marriage (Lao-Lao vs. Lao-Foreigner), yet notably lacks age disaggregation.
- To produce vital statistics in Lao PDR, the integration of data from multiple sources is imperative. The Ministry of Home Affairs' paper-based civil registration records must be complemented with data from other repositories, including the Lao Population and Housing Census (LPHC), the Lao Social Indicator Survey (LSIS), and the Ministry of Health's web-based District Health Information Software 2 (DHIS2) data.

Table of Contents

Executive Summary	7
<hr/>	
1. Introduction	13
<hr/>	
2. Preliminary analysis of available data on births in Lao PDR	17
<hr/>	
a. Section Highlights	17
b. Absolute number of live births by data source, Lao PDR 2005 -2021	18
c. Absolute number of births by sex and data source, Lao PDR 2005 - 2021	20
d. Estimated sex ratio at birth by data source, Lao PDR	22
e. Sex ratio at birth by province and data source, Lao PDR.	23
f. Age specific fertility rate by data source, Lao PDR.	24
3. Preliminary Analysis of available data on deaths in Lao PDR	25
<hr/>	
a. Section Highlights	25
b. Absolute number of deaths	26
c. Sex ratio of deaths.	27
d. Distribution of deaths by age and sex, 2015 Lao PDR Census and WPP estimates	28
e. Sex ratio of deaths by age, 2015 Census and WPP estimates.	29
f. Age specific death rates, 2015 Census and WPP estimates	29
g. Distribution of household deaths by single ages - 2015 Census.	30
h. Provincial distribution of deaths by sex and data source	31
i. Crude death rate by year and data source.	32
j. Crude death rate by province and data source, using projected population as denominator	33
k. Sex ratio of deaths by province, data source and year of occurrence	34
l. Under-five mortality rates by data source	35

4. Preliminary Analysis of available data on marriages and divorces in Lao PDR, 2017-2021	36
a. Section Highlights	36
b. Number of marriages and divorces by year of registration and nationality.	37
c. Number of Lao-Lao marriages and divorces by province and year of registration.	37
5. Potential for future vital statistics production using digitized civil registration data	39
a. Overview of CRVS digitization efforts in Lao PDR	39
b. Lao PDR proposed CRVS and Identity Management System	40
6. Conclusions and Next Steps	43
a. Suggested Next Steps	43

List of Figures & Tables

Figure 1	Live births by data source, Lao PDR, 2005–2021	18
Figure 2	Live births by province and data source, Lao PDR, 2017–2021	19
Figure 3	Absolute live births by sex and data source, Lao PDR, 2005–2021	20
Figure 4	Absolute live births by sex, province and data source, Lao PDR, 2005–2021[1]	21
Figure 5	Estimated sex ratio at birth by data source, Lao PDR, 1992–2021	22
Figure 6	Sex ratio at birth by province and data source, Lao PDR, 2017–2021	23
Figure 7	Age specific fertility rate by data source, Lao PDR, 2011–2018	24
Figure 8	Absolute number of deaths by data source	26
Figure 9	Sex ratio of deaths by data source	27
Figure 10	Distribution of deaths by age and sex, 2015 Lao PDR Census and WPP estimates.	28

Figure 11	Sex ratio of deaths by age, 2015 Census and WPP estimates	29
Figure 12	Age specific death rates, 2015 Census and WPP estimates	30
Figure 13	Distribution of household deaths by single ages - 2015 Census	31
Figure 14	Provincial distribution of deaths by sex and data source.	31
Figure 15	Crude death rate by year and data source.	32
Figure 16	Crude death rate by province and data source, using projected population as the denominator.	33
Figure 17	Sex ratio of deaths by province, data source and year of occurrence.	34
Figure 18	Under-five mortality rates by data source.	35
Figure 19	Number of marriages and divorces by year of registration and nationality	37
Figure 20	Number of Lao-Lao marriages and divorces by province and year of registration	38
Figure 21	The CMIS process and relevant stakeholders under the CRVS pilot project, 2017.	40
Figure 22	The e-CRVS process and relevant stakeholders, 2022	41
Figure 23	Minimum Required Vital Statistic outputs to be produced in a Vital Statistic Report.	42

Table 1	Sources for birth data, Lao PDR 2005-2021	14
Table 2	Sources for death data, Lao PDR 2005-2021.	14
Table 3	Sources for marriage and divorce data, Lao PDR 2014-2021	15

1

Introduction

Decision-makers at the national and subnational level across government, private sector, and civil society require timely and reliable data for making informed decisions regarding priority setting and policy and programme planning. Civil registration is widely recognized as the preferred source of data to produce vital statistics on fertility, mortality, and nuptiality (United Nations, 2014)¹. Data from a well-functioning CRVS system can also be used to compile 67 of the 230 indicators that are critical for the monitoring of progress in fulfilling the 2030 Sustainable Development Agenda (Mills et al., 2017)². However, low coverage and completeness of civil registration limits the use of such data for many low- and middle-income countries, including Lao PDR. In these countries, population censuses and/or household surveys are important complementary data sources that can be used to periodically produce vital statistics and assess the registration completeness of vital events. For example, birth registration questions that have been routinely included in Lao’s social indicator surveys can be used to assess the completeness of birth registration. Further, information about marital status collected in censuses can be used to compile vital statistics on nuptiality.

Evaluating the completeness of registration is crucial in monitoring the performance of the CRS. Improvement in the quality of the CRS relies on identifying and addressing problems in a timely fashion, and this can only be achieved through ongoing monitoring of the system. Such problems include “missed opportunities”

to register events, barriers to accessing registration systems, or a decline in public reporting of events.

In recent times, there has been increased recognition in Lao PDR of the importance of official civil registration and vital statistics (CRVS) systems for identity management, upholding human rights and access to services. This has coincided with international initiatives to strengthen CRVS systems to serve the purposes of establishing the civil status of citizens as well as generating timely and reliable statistics on fertility, mortality, and other vital events for policy and program purposes. For instance, the United Nations Economic and Social Commission for the Asia Pacific (UNESCAP) region launched the CRVS Decade 2015-2024 initiative that is being implemented through a comprehensive Regional Action Framework (RAF) that has been adopted by all regional Member States. This action framework includes a charter of activities and targets for coverage, completeness, and quality of CRVS systems with specific mid-term and decadal targets for performance achievement.

During the 2014 Ministerial Conference, Governments also adopted the Ministerial Declaration to “Get Everyone in the Picture” in Asia and the Pacific and committed to focusing their efforts on improving national CRVS systems by endorsing the RAF on CRVS in Asia and the Pacific³. Through the declaration of the CRVS Decade, governments marked 2015-2024 as a timeframe for realizing their shared vision that all people in Asia and the Pacific will benefit from universal and responsive CRVS systems facilitating

1 <https://unstats.un.org/unsd/demographic/standmeth/principles/M19Rev3en.pdf>

2 <https://jhpnp.biomedcentral.com/articles/10.1186/s41043-019-0184-2>

3 <https://getinthepicture.org/>

the realization of their rights and supporting good governance, health, and development.

As part of the UNESCAP CRVS Decade 2015-2024 monitoring framework Lao PDR submitted a response to the mid-term monitoring questionnaire⁴ in 2020 indicating an incomplete registration system with birth and death registration completeness of 43% (Female: 44% & Male: 42%) and 37% (Female: 34% and Male: 40%) for the year 2018 respectively. This data was derived from paper-based records compiled by the Ministry of Home Affairs, and there is no disaggregation of birth data by age and age of mother, for more detailed analysis. Similarly, death

data disaggregation by age at death, location of death and cause(s) of death is not available. The MoHA annual Yearbook provides information on marriages and divorces, but only as national and provincial aggregated numbers. Hence, available vital statistics data is not amenable for detailed analysis for UN SDG's.

This report produces possible vital statistics based on paper-based civil registration data from MoHA and all other available data sources and compares their consistency. It highlights the shortfalls and potential of the CRS for continuous strengthening of the Lao CRVS system.

Available Vital Statistics data Sources in Lao PDR

The production of a range of vital statistics and the comparison of their consistency have been done using the following data sources; Lao population and housing census (LPHC), Lao social indicator survey (LSIS), ministry of health's (MoH) web-based DHIS2 data, and ministry of home affairs' (MoHA) paper-based civil registration data. Tables 1-3

present a detailed analysis of these data sources regarding variable availability and whether the data are accessible, separately for 1) birth, 2) death, and 3) marriage and divorce vital events. To triangulate the results from Lao data sources, the United Nations' world population prospects (WPP) are also employed as an external source for the estimated vital statistics.

TABLE 1 | Sources for birth data, Lao PDR 2005-2021

Data source	Reference period	Disaggregated by			Data access
		Age of mother	Sex	Province	
LSIS I	2011-12	Yes	Yes	Yes	Full access
LSIS II	2017	Yes	Yes	Yes	Full access
Census	2005	No	Yes	Yes	Full access
Census	2015	Yes	Yes	Yes	Full access
LSB projections	2016-2021	No	Yes	Yes	Full access

⁴ <https://getinthepicture.org/resource/lao-pdr-crvs-decade-2015-2024-midterm-questionnaire>

Data source	Reference period	Disaggregated by			Data access
		Age of mother	Sex	Province	
CRVS (MoHA)	2014-2021	Yes	Yes	Yes	Full access Note: Age of mother is available for three pitot in Vientiane Capital, Luangprabang Province and Champasack Province.
MoH-DHIS2	2014-2021	Yes	Yes	Yes	Full access Note: Age of mother is available since 2018-Now in DHIS2.

TABLE 2 | Sources for death data, Lao PDR 2005-2021.

Data source	Reference period	Disaggregated by			Type of mortality data	Data access
		Age	sex	Province		
LSIS I	2011-12	Yes	Yes	Yes	Childhood, adult	Full access
LSIS II	2017	Yes	Yes	Yes	Childhood	Full access
Census	2005	Yes	Yes	Yes	Childhood, adult	Full access
Census	2015	Yes	Yes	Yes	Childhood, adult	Full access
LSB projections	2016-2022	No	Yes	Yes	General deaths	Full access
CRVS (MoHA)	2014-2021	Yes	Yes	Yes	General deaths	Full access Note: Age of death is available for three pitot in Vientiane Capital, Luangprabang Province and Champasack Province.

TABLE 3 | Sources for marriage and divorce data, Lao PDR 2014-2021

Data source	Reference period	Disaggregated by				Data access
		Age of spouse	Nationality	Year of reg	province	
CRVS (MoHA)	2014-2019	Yes	Yes	Yes	Yes	Full access Note: Age of spouse is available for three pitot in Vientiane Capital, Luangprabang Province and Champasack Province.



Quality of fertility and mortality data from the 2015 census

Several notable data quality issues were observed from the 2015 census data. First, as a denominator for fertility and mortality estimates, population distribution by age and sex showed mild problems relating to age heaping on ages ending in 0 and 5, age displacement of females between the 45-49 age group and the 50-54 age group, and a heavy under enumeration of children under the age of 5. Second, information on fertility, especially on the date of birth of the last child for the estimation of recent fertility, revealed some deficiencies. Particularly, the data showed that a significant proportion of women did not report valid dates of birth. As such, information from these women was excluded from tabulations on recent births, which understates the number of recent births. Finally, reported information on recent household deaths yielded inaccurate results as well. The number of reported household deaths was lower than expected. In particular, male deaths were almost double that of females, which is contrary to expectations despite the fact that men have higher

mortality than women in general. This is clearly depicted in our analyses that follow.

The implications of the above stated data deficiencies are that direct estimates of fertility and mortality will be biased, either because the numerator information is understated or population information in the denominator is under-enumerated or misplaced. Therefore, direct estimates of fertility and mortality will likely be inaccurate. For example, age specific fertility rates generated from these data will be biased because; - 1) the number of recent births is understated and 2) the number of women in the 45-49 age group is under-enumerated due to age displacement. Similarly, age specific death rates will be under-estimated due to under-reporting of household deaths that occurred in the 12 months before the 2015 census. Consequently, LSB used indirect methods to estimate fertility and mortality indicators from the 2015 census data. For instance, mortality indicators, both pertaining to child and adult mortality, were estimated via life table methods, where the household deaths data were adjusted for underreporting.

2

Preliminary analysis of available data on births in Lao PDR



Section Highlights

Data on births were available by district, province and year of registration. We use available data from the 2015 Lao PHC, projections derived from the 2015 census data, 2011/12 LSIS, 2017 LSIS and estimates from UN's WPP to appraise civil registration data. There is an under-reporting of births in the civil-registration system and the District Health Information Software 2 (DHIS 2), relative to births projected using the 2015 census and estimated by the World Population Prospects 2022. Census projections show

a slight decrease in live births between 2016 and 2021. Age specific fertility rates derived from LSIS I, LSIS II, WPP and the 2015 census show a similar pattern peaking at the age group of women aged 20 to 24. The analysis of birth data is limited by the lack of data about the age of the mother from DHIS 2 (MoH) and the civil registration system (MOHA), and the lack of sex disaggregation of birth notifications from DHIS 2 (MoH).



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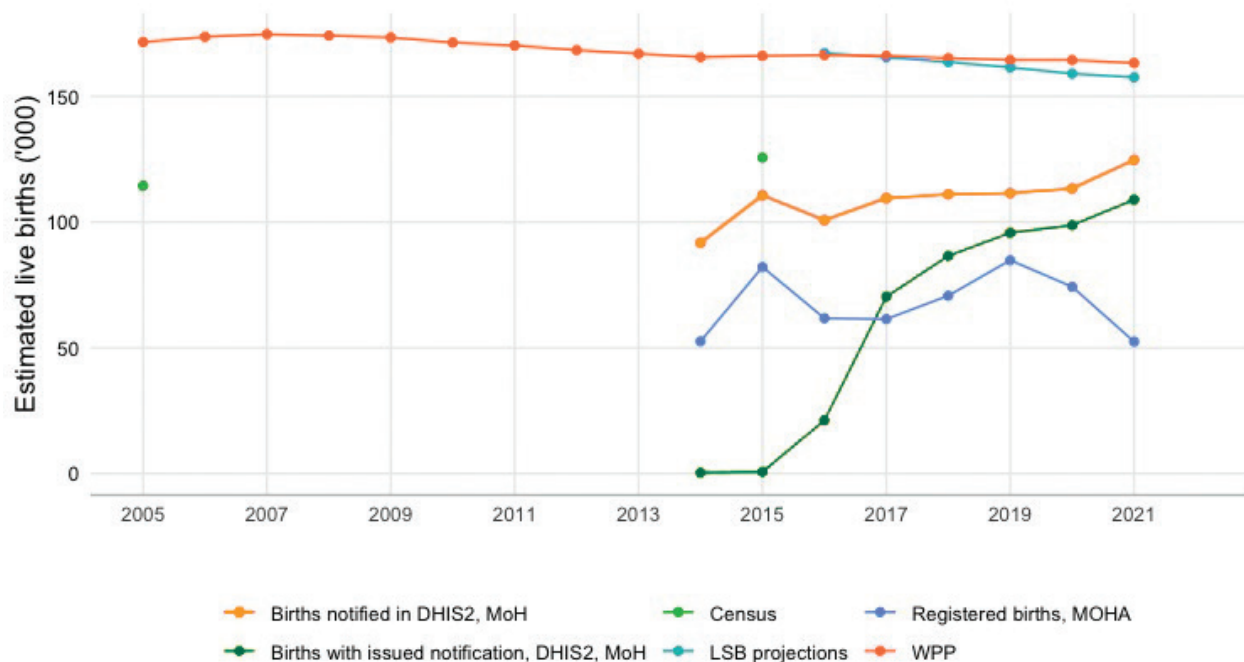


Absolute number of live births by data source, Lao PDR 2005 -2021

Figure 1 below shows live birth estimates in Lao PDR in the 2005–2021 period. We note an under-reporting of births in the civil-registration system, the District Health Information Software 2 (DHIS 2) and

the census enumeration, relative to births projected using the 2015 census and estimated by the World Population Prospects 2022.

FIGURE 1 | Live births by data source, Lao PDR, 2005–2021



The civil registration system (MOHA) captures less live births than DHIS 2 for the 2017-2021 period. Since 2020, birth registration (MOHA) has declined, increasing the difference in completeness between birth notification (DHIS 2) and birth registration (MOHA). This decline in birth registrations is probably due to the COVID-19 pandemic that disrupted registration processes.

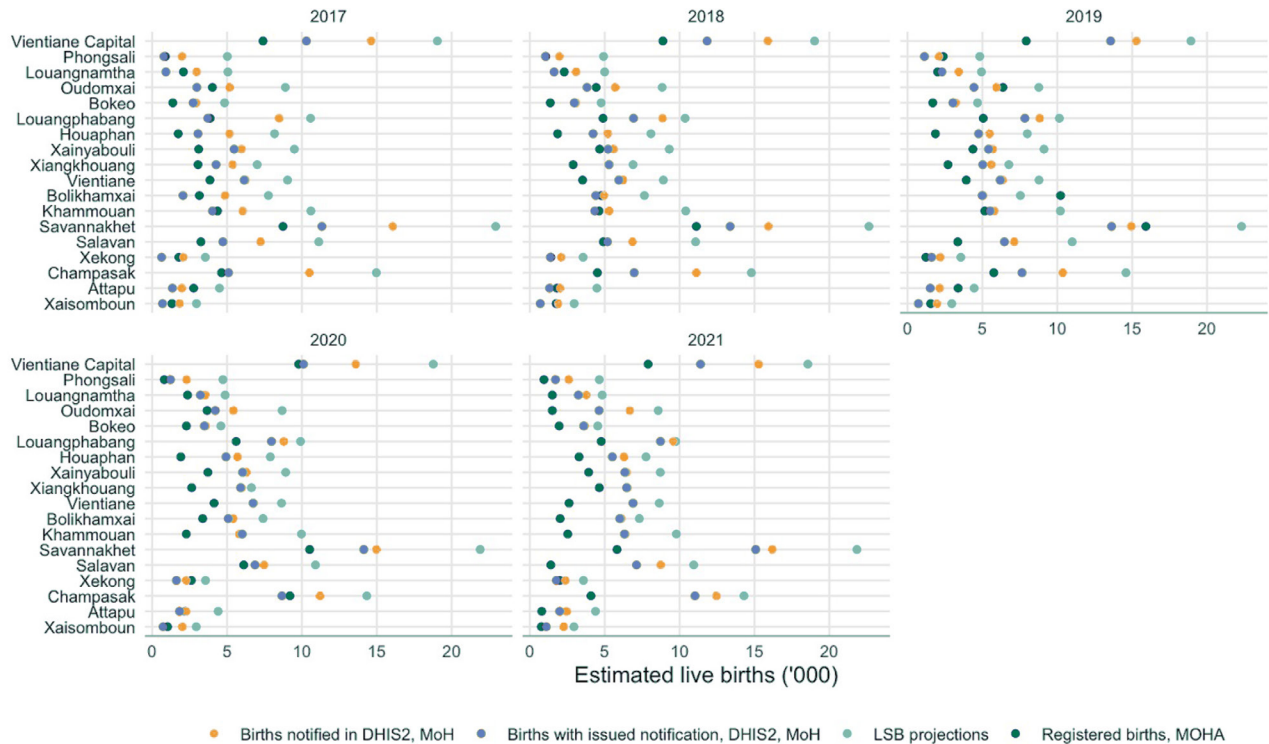
We observed in 2015 and 2019 temporary increases in the number of live births registered in the civil registration system (MOHA). Further research is

required to assess the nature of this temporary observed increase in registered births - whether it is driven by a temporary improvement in timely birth registration, a concerted effort to register births from previous years, or an actual yet unlikely temporary increase in fertility. It should be noted, however, that the number of births enumerated in the 2015 census is significantly lower than the immediate projected number of births. This is because 1) births were under-enumerated in the census and 2) that some records were dropped by LSB due to missing or incorrect information on the date of last birth.

The figure below shows the comparative analysis of the registered births by MOHA as compared to the LSB projected births, births notified to the DHIS 2, and

births issued with a birth notification for the years 2017 - 2021 disaggregated by province.

FIGURE 2 | Live births by province and data source, Lao PDR, 2017–2021



The differences between MOHA registered live births, births notified to MoH through DHIS 2 and census-based projected live births vary by province for the 2017-2021 period.

In nearly all the provinces there is a considerable improvement in the issued notifications for births notified in DHIS2 and worthy noting is DHIS2 captures more births than MOHA civil registration.

However, birth notifications captured by DHIS 2 are lower than LSB census projections for all provinces in the 2017-2019 period.

MOHA birth registrations are also lower than LSB projections for all observations except Bolikhamxai, 2019. In Bolikhamxai, 10217 live births were registered (MOHA) vs. 7533 projected by LSB (i.e., the percentage of MOHA birth registrations to LSB projections in Bolikhamxai in 2019 is 136%).

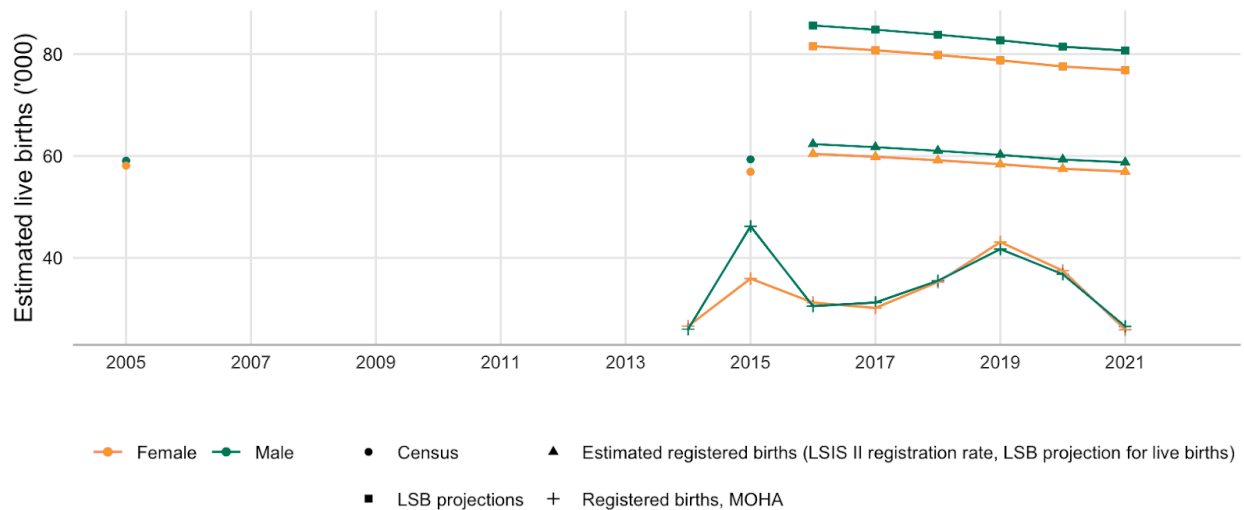


Absolute number of births by sex and data source, Lao PDR 2005 - 2021

Figure 3 below shows the disaggregated data by sex and data source. The available data sources with sex disaggregated births data available for Lao PDR

include the MOHA registered births, 2005 and 2015 census and LSB projections based on the 2015 census.

FIGURE 3 | Absolute live births by sex and data source, Lao PDR, 2005–2021⁵



Notes: Estimated birth registration from 2016 to 2021 is calculated by applying the LSIS II, 2017-18 birth registration rate estimate to LSB projections for live births.

Estimated live births for the 2005 census are estimated from the 10% sample in IPUMS. The sex ratio at birth from the extracted sample is 102 males per 100 females, whereas the sex ratio at birth from the census is 104 males per 100 females.

Figure 3 shows that the difference between male and female birth registration does not reflect the difference between male and female live births estimated through census enumeration or projections. The increase in registered births in 2015 (relative to 2014

and 2016) appears to be disproportionately driven by an increase in the registration of male births in 2015 according to the MOHA. This requires further investigation and cross-validation, as such a large increase in registration of births of a particular sex is unusual. Further validation of these data is not possible at this time, since the data disseminated from the DHIS2 system are not sex disaggregated.

MOHA birth registrations are lower than estimated birth registrations by applying the estimate of birth

⁵ As the estimates of DHIS 2 are not disaggregated by sex, the only data sources available are the civil registration system and the census data.

Source of the 2005 census data: Minnesota Population Center. Integrated Public Use Microdata Series, International: Version 7.3 [dataset]. Minneapolis, MN: IPUMS, 2020. <https://doi.org/10.18128/D020.V7.3>

registration rate (LSIS II, 2017-18) to LSB projections for live births. This means that either: a) birth registration rate estimated by LSIS II is higher than the occurring registration rate in 2016-2021, or b) LSB projected live births are higher than the occurring live births in the 2017-2021 period.

Figure 4 below shows the comparative analysis of the registered births (MOHA) disaggregated sex as compared to the LSB projected births for the years 2017 - 2021 for each of the 18 provinces. This analysis helps to show whether there is gender inequality in

each of the data sources. However, it is limited by the lack of sex disaggregated birth notifications from DHIS2, MoH.

In general, the data do not show any noticeable indication of sex differences in birth registration (MOHA) or census projections in 2017-2021. However, the difference between LSB projected live births and registered births (MOHA) highly varies by province. And we do not observe any improvements in birth registration (MOHA) within the studied period.

FIGURE 4 | Absolute live births by sex, province and data source, Lao PDR, 2005–2021[1]





Estimated sex ratio at birth by data source, Lao PDR

FIGURE 5 | Estimated sex ratio at birth by data source, Lao PDR, 1992–20216

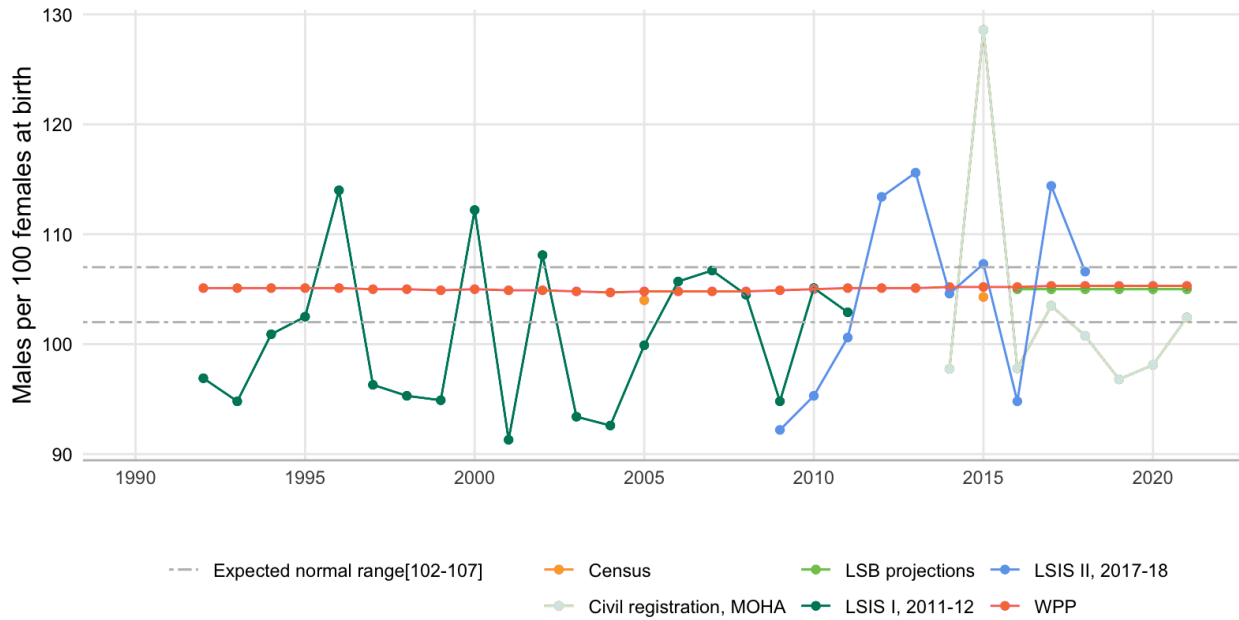


Figure 5 depicts the values of sex ratio at birth in Lao PDR between 1992 and 2021. For the 2014-2019 period, the estimates from the civil registration system, the census projections and LSIS II are overall generally consistent.

- Most of the civil registration estimates are below 102 males per 100 females with a noticeable increase in 2015 to 129 males per 100 females. While both census and LSIS estimates for the 2014-2019 period are above that mark. We also observe that the LSIS estimates for sex ratios at birth highly fluctuate throughout the studied period.

- Figure 5 also highlights that the understated number of births from the 2015 PHC does not vary by sex of the child, as the 2005 and the 2015 census sex ratios line up with the LSB projections and WPP sex ratios.
- In terms of period coverage, the full birth histories collected in the LSIS-I and LSIS-II surveys are the only available source of data for almost 20 years. However, the civil registration system data consistently provides birth registration by sex from 2014 to 2021 and the census provides point estimates in 2005 and 2015.

6 LSIS I estimated 68 male births per 100 female births in 2012, this can be explained by the fact that interviews only covered the months of January and February in 2012.

- To further understand the distortions in the sex ratio at birth we need to investigate the estimates at the subnational level. Unfortunately, LSIS I

and LSIS II only provide the sex ratio at birth at the national level.

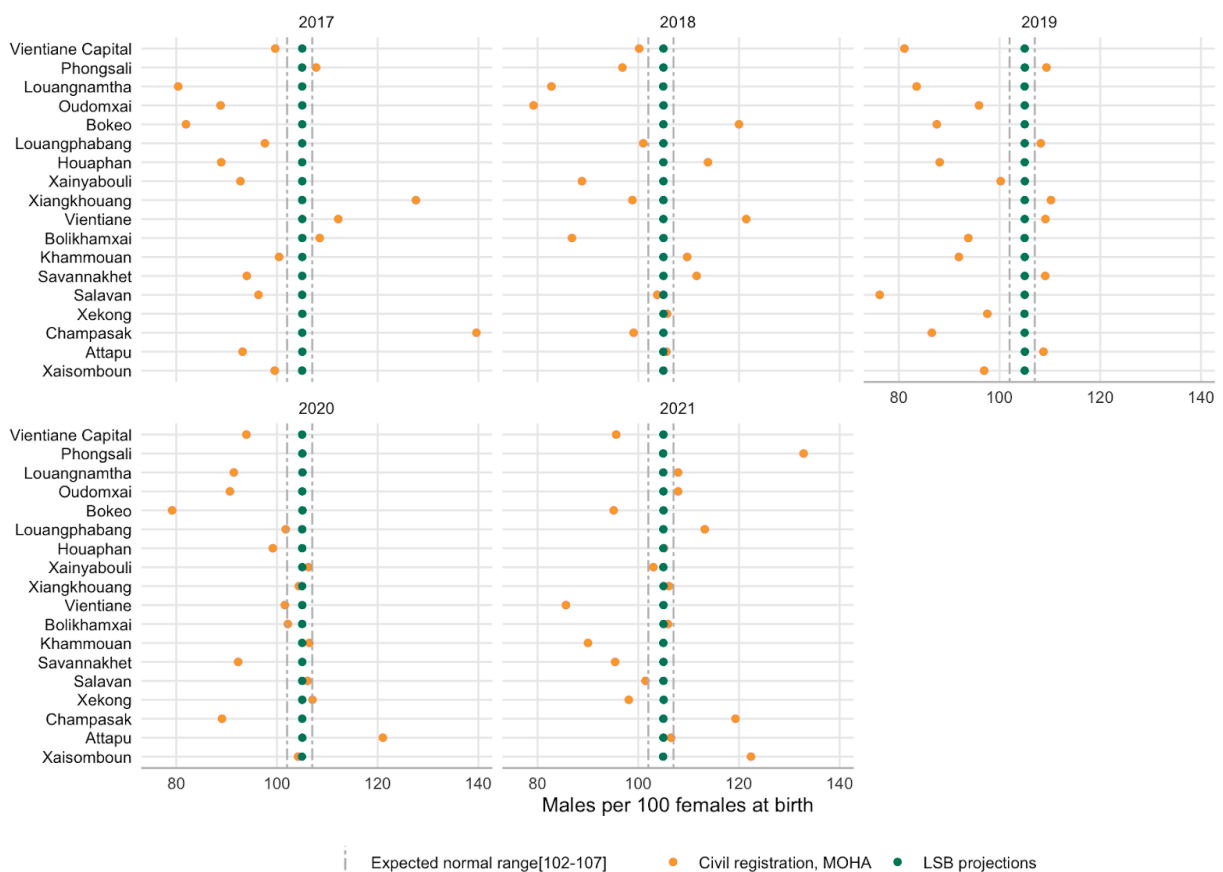


Sex ratio at birth by province and data source, Lao PDR

Figure 6 shows the estimated sex ratio at birth by province for the 2017-2021 period. The census projections estimate a stable sex ratio at birth at 105 males per 100 female births across all provinces. Whereas the civil registration estimates highly fluctuate throughout time and across provinces ranging from 76 males per 100 female births in

Salavan-2019 to 279 males per 100 female births in Xekong-2017. Most of the sex ratios at birth are outside the normal range of 103-107. However, there is no trend in terms of regions or years that shows a systemic under-registration for one sex compared to the other. This rather indicates a problem of data completeness of birth registration in Lao PDR.

FIGURE 6 | Sex ratio at birth by province and data source, Lao PDR, 2017–2021



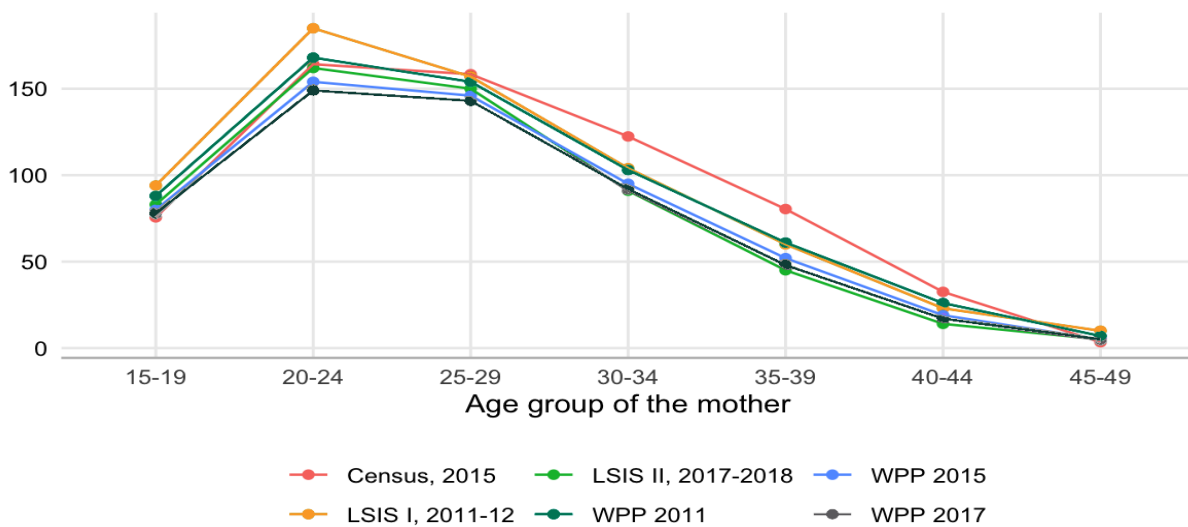


Age specific fertility rate by data source, Lao PDR

Age specific fertility rates derived from LSIS I, LSIS II, WPP and the 2015 census show a similar pattern peaking at the age group of women aged 20 to 24. Estimates from different sources are overall consistent with each other. Nonetheless, census

estimates are higher than other source estimates for age groups 30-34 and 35-49. This cross-validation is limited due to the lack of data about the age of the mother from DHIS 2 (MoH) and the civil registration system (MOHA).

FIGURE 7 | Age specific fertility rate by data source, Lao PDR, 2011–2018



3

Preliminary Analysis of available data on deaths in Lao PDR



Section Highlights

The analysis of deaths data aimed at appraising civil registration of death data in Lao PDR, which was only available in an aggregate format by province, year of registration and sex of decedents. For this purpose, we use data from the 2015 Lao PHC, projections derived from the 2015 census data, 2011/12 LSIS, 2017 LSIS and estimates from UN's WPP to appraise CR data. The 2015 census death data were made available, by LSB, in an aggregate format by age and sex and by province. WPP data are official estimates and projections produced by the United Nations' Statistics Division.

Key results from this analysis include

- The number of registered deaths is consistently lower than the numbers observed from other data sources.
- In particular, registered deaths are significantly lower than the projected deaths from LSB and estimates from WPP.
- The number of enumerated deaths from the 2015 census are also questionable as they are also significantly lower than LSB projections and WPP estimates
- The levels of registration for male and female deaths are consistent with expectation, except for a few data points (2015 and 2021).
- Rather, it is the level of death reporting from the 2015 census that is questionable; the sex ratio of over 180 is not within the expected range, and it points to under-reporting of female deaths.



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Absolute number of deaths

FIGURE 8 | Absolute number of deaths by data source

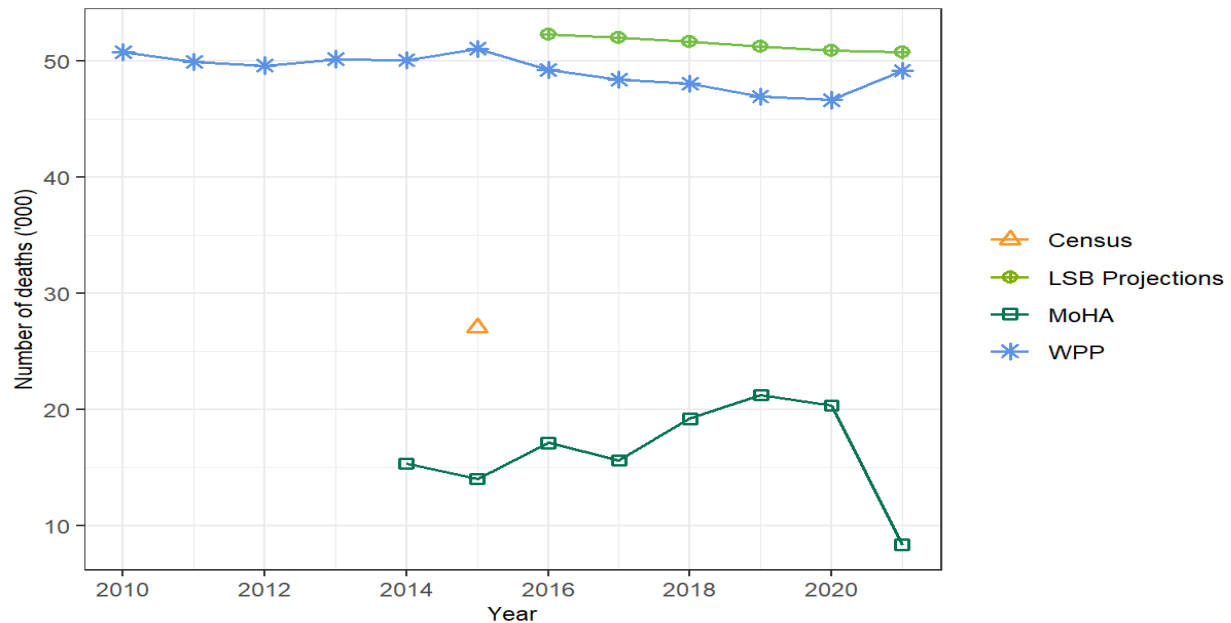


Figure 8 above suggests that there is consistency between LSB deaths projections and WPP estimated deaths, with LSB projections being slightly higher than WPP's estimates. The 2015 Census enumerated household deaths - occurring in the 12 months prior to the 2015 census - are lower than expected, especially when compared to post-censal number of deaths from national population projections by LSB and the United Nations (as part of the World Population Prospects).

- In fact, LSB noted that the number of children still alive were very close to the number of children ever born to mothers, which implies that mothers most likely omitted dead children from the children ever born number.
- There is large-scale under-registration of deaths by MoHA
- In 2015, for example, the number of registered deaths is below those that occurred in the 12 months period before the 2015 Census, which itself is subject to notable under-reporting. However, figure 8 shows an upward trend of the number of registered deaths from 2014 to 2019, suggesting an improvement in death registration completeness in recent years. The number of registered deaths in 2021 is on the lower side because During COVID-19 lockdown, the registration of death was not registered. Therefore, some registered deaths are underreported.



Sex ratio of deaths

The sex ratio of deaths reveals some details of male-female mortality differences obscured by absolute numbers of deaths. Sex ratios of deaths are normally greater than 100 and, depending on mortality patterns

in a particular population, may reach as high as 130. Sex ratios as high as 200 can only be explained by some major demographic event, such as a war.

FIGURE 9 | Sex ratio of deaths by data source

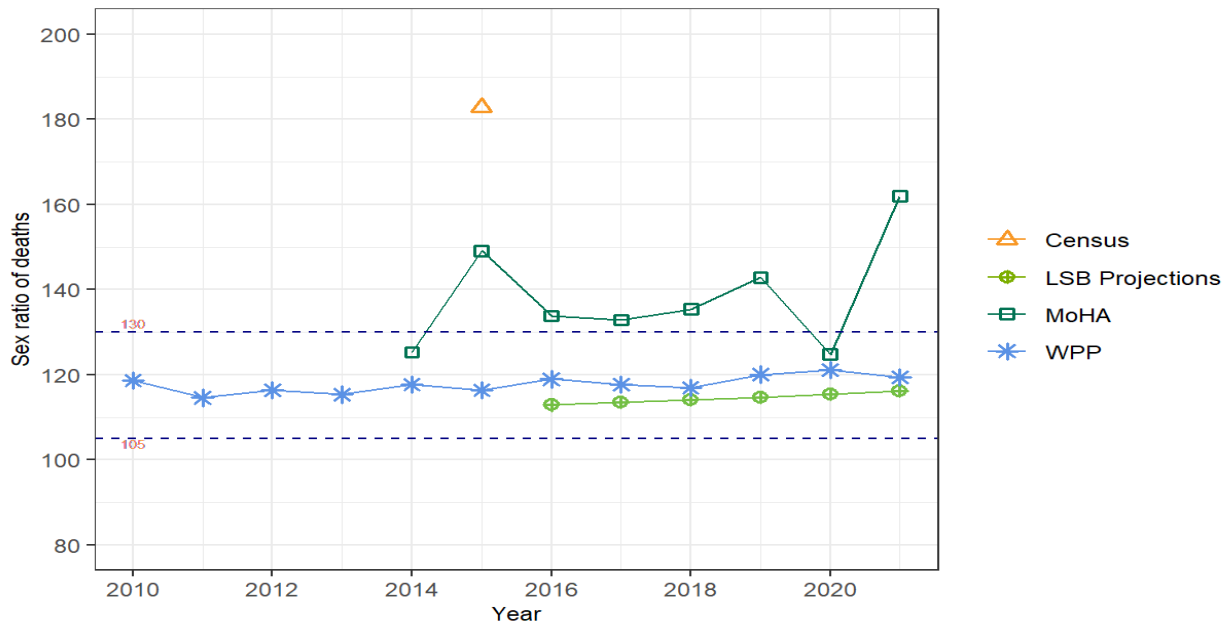


Figure 9 suggests that the registered deaths from MoHA are skewed by sex. Similarly, the reported number of household deaths in the 2015 census are highly skewed. Both are pointing towards systematic under-reporting and under-registration, respectively, of female deaths relative to male deaths. In particular, model-based projections by the Government of Laos after the 2015 census and by the UN (WPP, 2022) suggest that there is no major unexpected sex differential in reported deaths, whereas deaths reported in the 2015 census and those registered by MoHA suggest an unexpectedly higher number of male than female deaths. Thus, further examination of both the validity and quality of household deaths reported in the census and death registration data

by sex is required, particularly in light of the spikes in the MoHA data.

The under-reporting of household deaths in the 2015 census was noted by LSB. In particular, the male-female gap observed in the 2015 population and housing census is larger than that observed in the LSB projections and WPP estimates. In particular, LSB noted this in their Census report and, using death distribution methods, estimated that the proportion of deaths reported in the 2015 census was only 30% for females and 69% for males, suggesting heavy under-reporting of female deaths. Consequently, mortality estimates produced by LSB use adjusted deaths data and indirect methods for their computations.

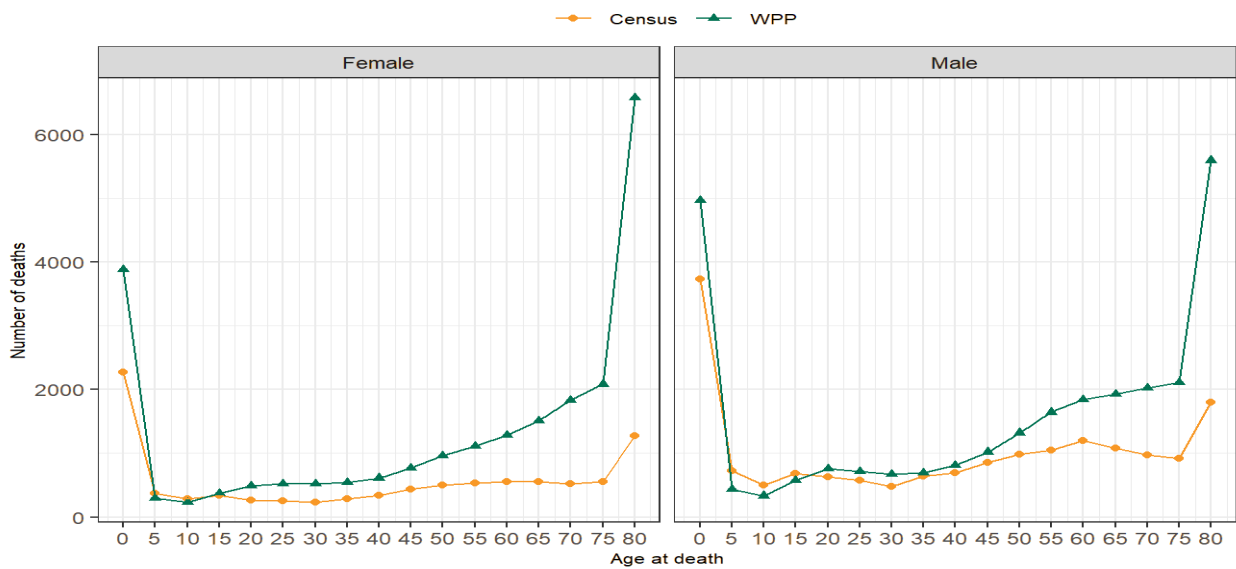
Distribution of deaths by age and sex, 2015 Lao PDR Census and WPP estimates



In Figure 10, we observe a notable age-sex differential in reported household deaths 12-months prior to the 2015 census. We observed from figure 9 that the number of male deaths in the households 12-months prior to the census exceeded female deaths by over

80%. The difference in the WPP estimates is 16%. In figure 10, we observe that these sex differentials are largest for children under the age of 5 but are also pronounced for older adults.

FIGURE 10 | Distribution of deaths by age and sex, 2015 Lao PDR Census and WPP estimates



For both sexes, compared to estimates from the UN (WPP, 2022), the number of household deaths are largely underestimated for ages under five. In addition, for females, deaths are consistently under-reported

across all ages starting from age 20. For males, high under-reporting can be observed from age 50 and above. Old age mortality is under-reported for both male and females.

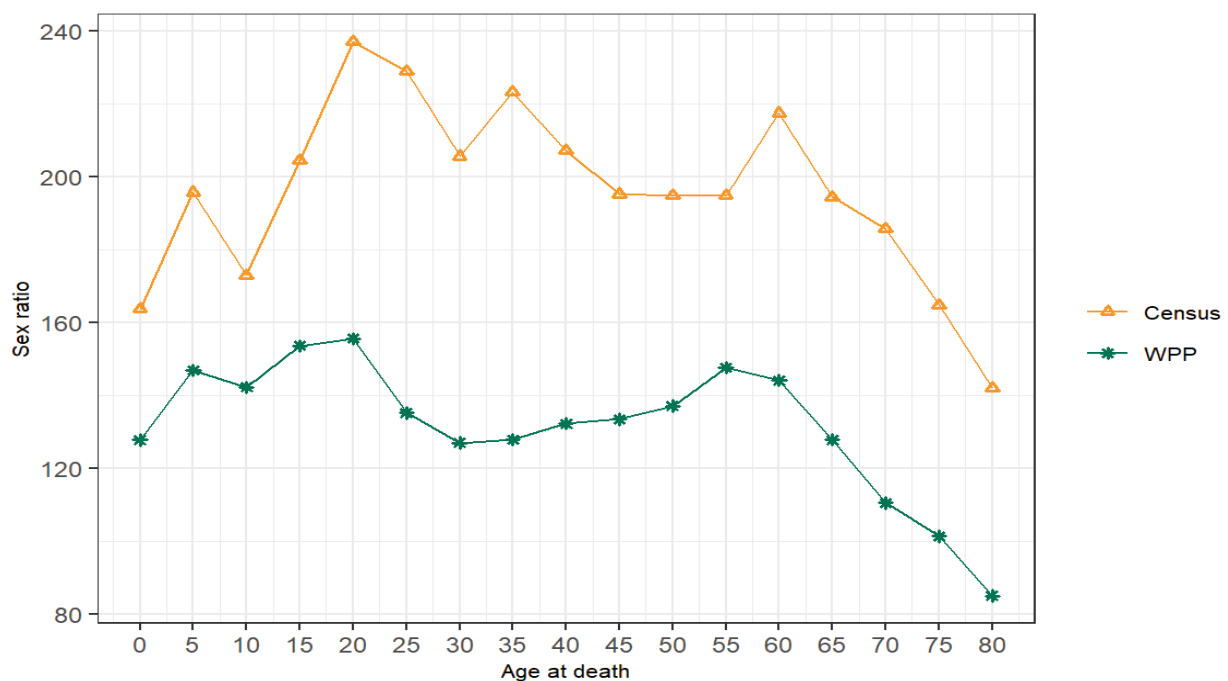
Sex ratio of deaths by age, 2015 Census and WPP estimates



Sex ratios by age at death are consistently lower for UN's WPP estimates than from 2015 census across all ages. This suggests that for each age, the enumerated household male deaths in 2015 were exceedingly

larger in number than the enumerated female deaths compared to male and female deaths estimated by the UN's WPP. The sex ratio gap is particularly large between the ages of 15 and 60.

FIGURE 11 | Sex ratio of deaths by age, 2015 Census and WPP estimates



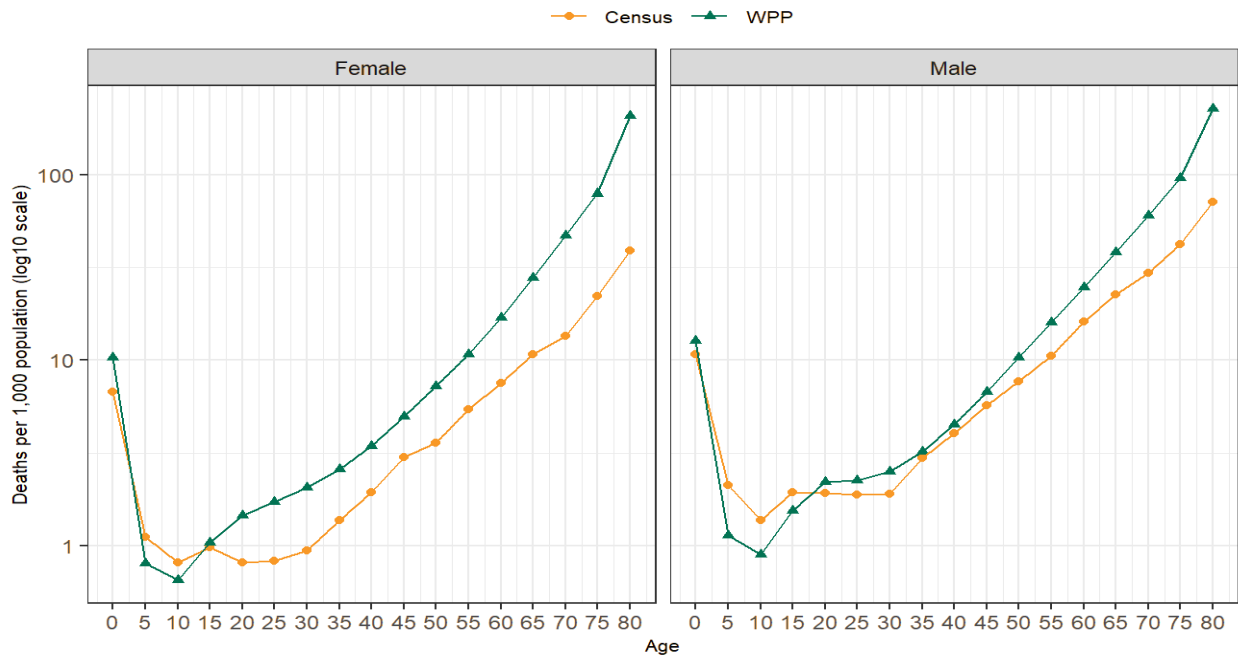
Age specific death rates, 2015 Census and WPP estimates



Figure 12 shows a normal J-shape of age mortality pattern for the 2015 enumerated deaths and estimated deaths from the UN's WPP. However, there appear to be an age-sex differences between estimates from the 2015 census and WPP. Large differences are observed for females than for males against the WPP estimates,

especially for ages 20 and above. For females there is a valley-like shape between ages 20-30, and for males there is a straight line. In contrast, such patterns are not observed from the WPP estimates. Teenage mortality is lower for WPP estimates than for 2015 census estimates.

FIGURE 12 | Age specific death rates, 2015 Census and WPP estimates



Distribution of household deaths by single ages - 2015 Census



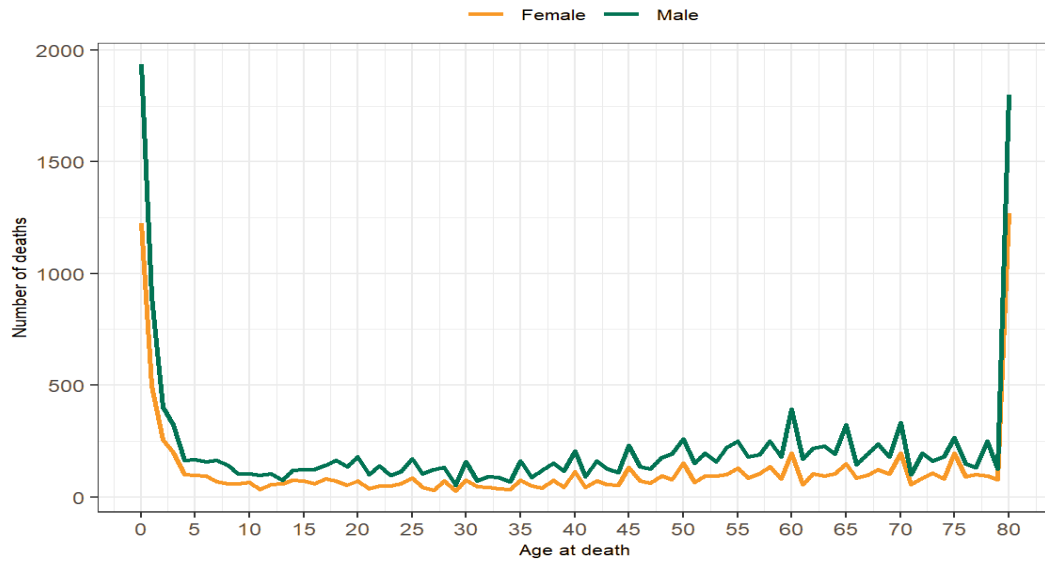
Age heaping of deaths, especially in ages ending in digits 0 and 5, is evident in Figure 13 below from the high concentration of reported deaths at an age that is a multiple of 5. We computed summary measures to check age heaping of deaths, including Whipple’s Index, Myer’s Index and the Spoorenberg specific index, the values are as follows;

- Myer’s index: Both sexes = 10.1;
Male = 9.7; Female = 10.9
- Whipple’s index: Both sexes = 149.5;
Male = 145.8; Female = 157
- Spoorenberg: Both sexes = 209;
Male = 192; Female = 248

These results suggest that reported deaths in the 2015 census were subject to substantial age heaping, particularly in ages ending in digits 0 and 5. The age heaping indices also suggest that the heaping problem is more pronounced for female deaths, despite being a problem for both sexes.

The UN rates the Whipple’s index as highly accurate if below 105, fairly accurate if between 105 and 110, approximate if between 110-125, rough if between 125-175, and very rough if above 175. Here, the age heaping problem for Lao PDR falls under the rough category.

FIGURE 13 | Distribution of household deaths by single ages - 2015 Census

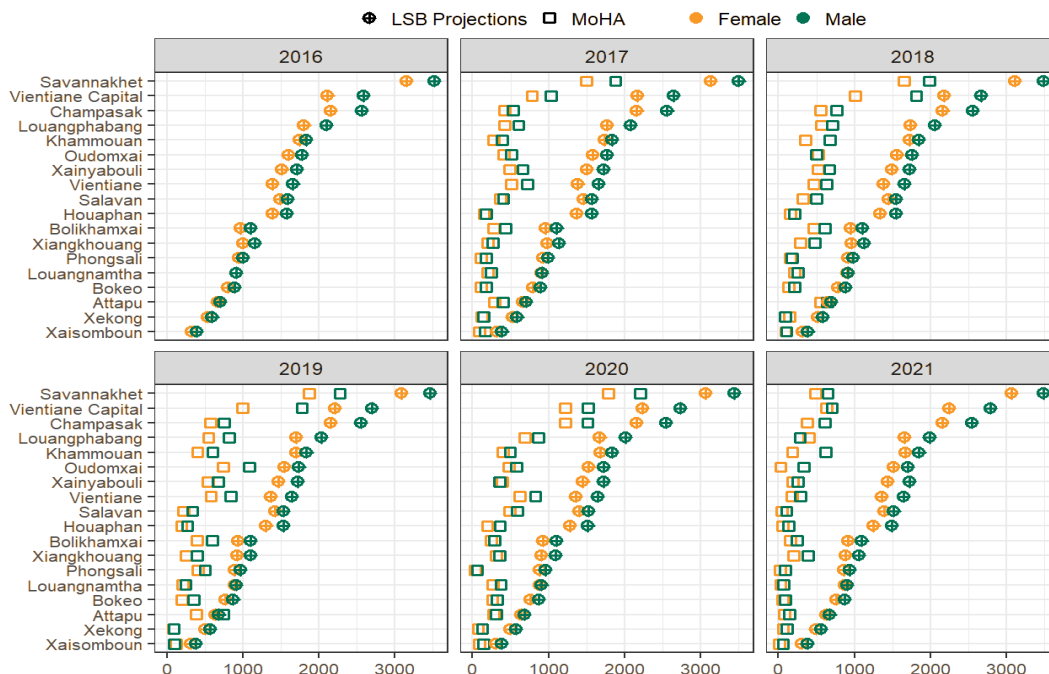


Provincial distribution of deaths by sex and data source

Registered deaths from MoHA are consistently lower than the projected deaths from LSB across all

provinces which could be attributed to the consistent under-registration of deaths across the provinces.

FIGURE 14 | Provincial distribution of deaths by sex and data source



In many provinces the number of registered deaths appear to increase over the 2017-19 period. Take Savannakhet province, for example, the number of deaths for males was below 2000 in 2017, just about 2000 in 2018 and over 2000 in 2019.

This could signal two things: 1) improved registration of deaths or 2) death allocation problems with respect to place of residence vs. place of occurrence

- deaths being allocated to provinces where they occurred rather than province of usual residence of the deceased.

The gaps between male and female deaths are larger in some provinces than others. For example, Vientiane Capital has large male-female death numbers in 2018 and 2019, where as in Bokeo, for example, the gap is small and consistent across the 2017-19 period

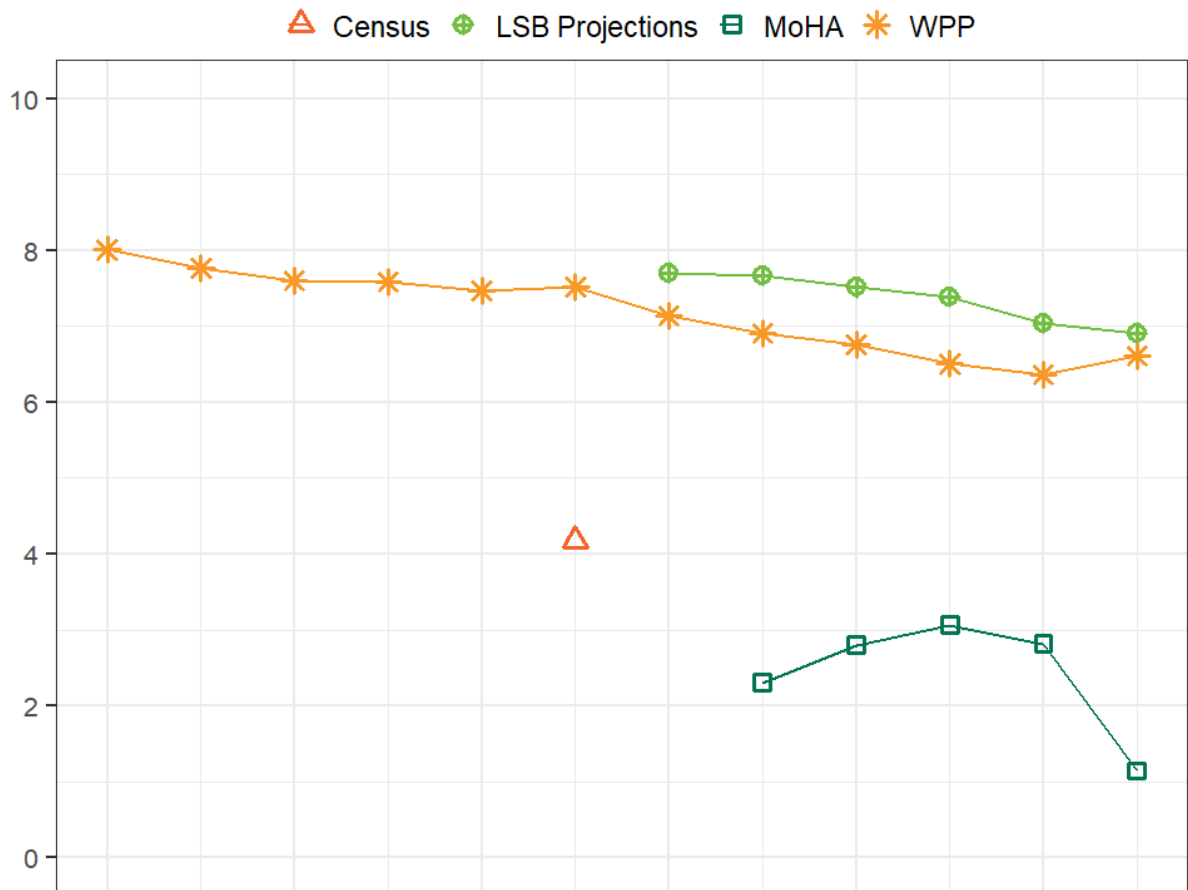


Crude death rate by year and data source.

Crude death rates (deaths per 1000 population) from WPP and LSB projections are consistently higher than CDR from civil registration data (MoHA). WPP and LSB projections show a declining trend. In contrast,

MoHA estimates show an increasing trend for the period 2017 to 2019 which could be attributed to improvements made in the registration of deaths and not necessarily an increase in the number of deaths.

FIGURE 15 | Crude death rate by year and data source



The CDR obtained from the 2015 census is also lower than the WPP 2015 estimate. This is consistent with the argument of under-reporting of deaths that occurred in the 12 months prior to the census, as so noted by LSB. In fact, the CDR estimated by LSB

after adjusting the data for under-reporting was 8.2 deaths per 1000 population, a sharp increase from the estimated 4 deaths per 1000 population obtained before the adjustment.

Crude death rate by province and data source, using projected population as denominator

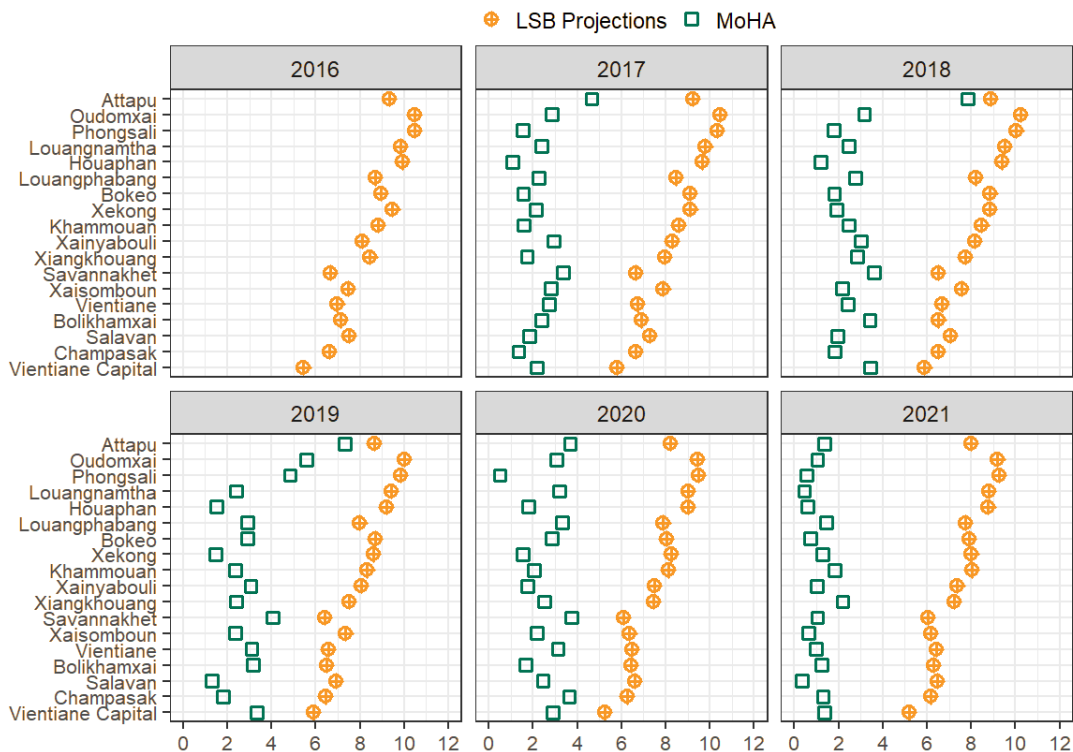


Crude death rates (deaths per 1000 population) are consistently lower for civil registration data than LSB projected data, across all provinces

- Under-registration of deaths across all provinces

While the gap between MoHA data estimates and LSB projection estimates is smaller in some provinces e.g., Savannakhet (2.3 deaths in 2019), it is bigger in others e.g., Champasak (4.4 deaths in 2019)

FIGURE 16 | Crude death rate by province and data source, using projected population as the denominator.



Sex ratio of deaths by province, data source and year of occurrence



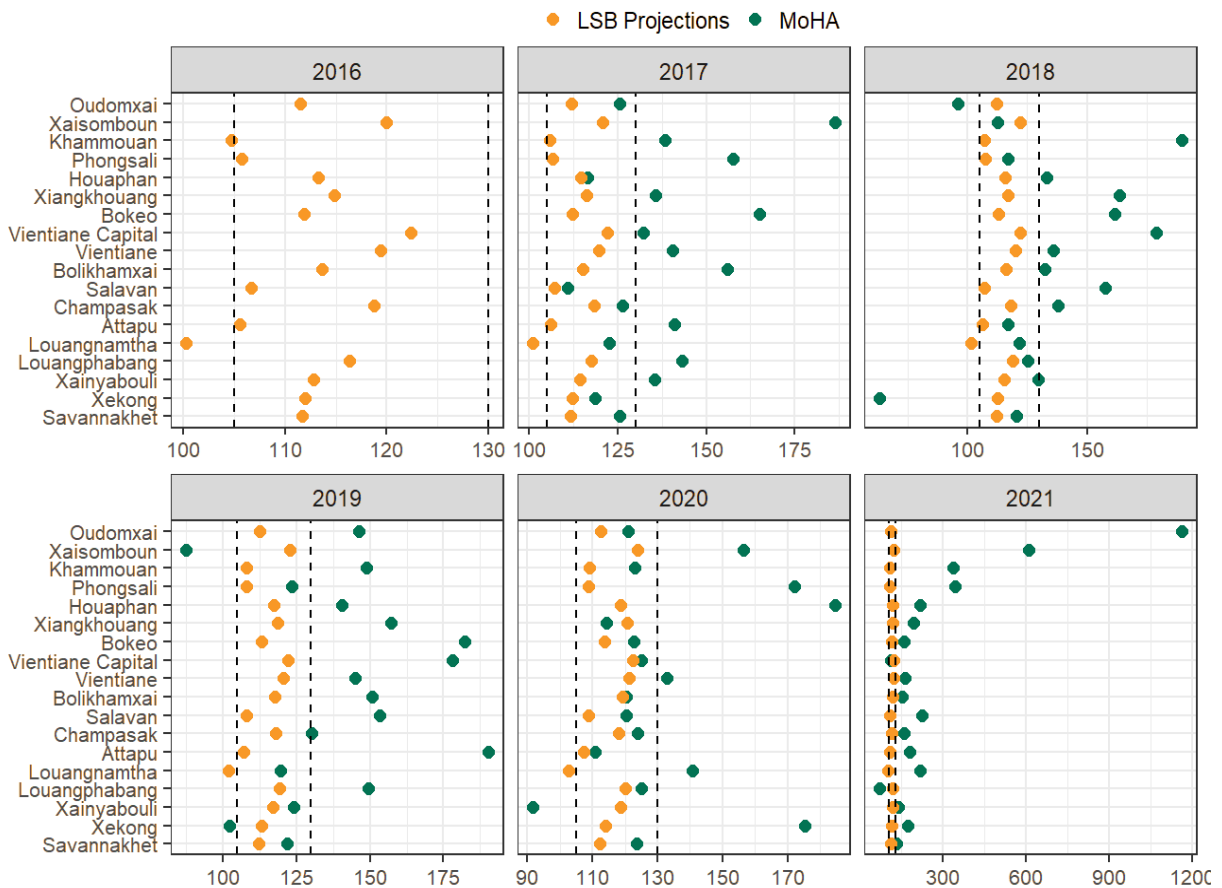
Overall, figure 17 suggests higher sex ratios for civil registration (MoHA) data than data from population projections, over the period 2017-2019 and across the provinces. For the MoHA data, there are fluctuations of sex ratios by year of registration across all provinces, this may suggest two things 1) potential migration between provinces 2) people dying in provinces that are not their usual place of residence.

Sex ratios from population projection are in the expected range (105-130/40) compared to sex ratios

from civil registration data, with sex ratios over 150 and below 100 in some provinces. Sex ratios below 100 suggest under-registration of male deaths in the provinces of Xekong in 2018 and Xaisomboun in 2019.

Sex ratios above 150 suggest serious under-registration of female deaths in provinces such as Vientiane Capital and Bokeo in 2018 and 2019. The under-registration of female deaths appears to increase in Vientiane Capital and Bokeo over the 2017-2019 period.

FIGURE 17 | Sex ratio of deaths by province, data source and year of occurrence



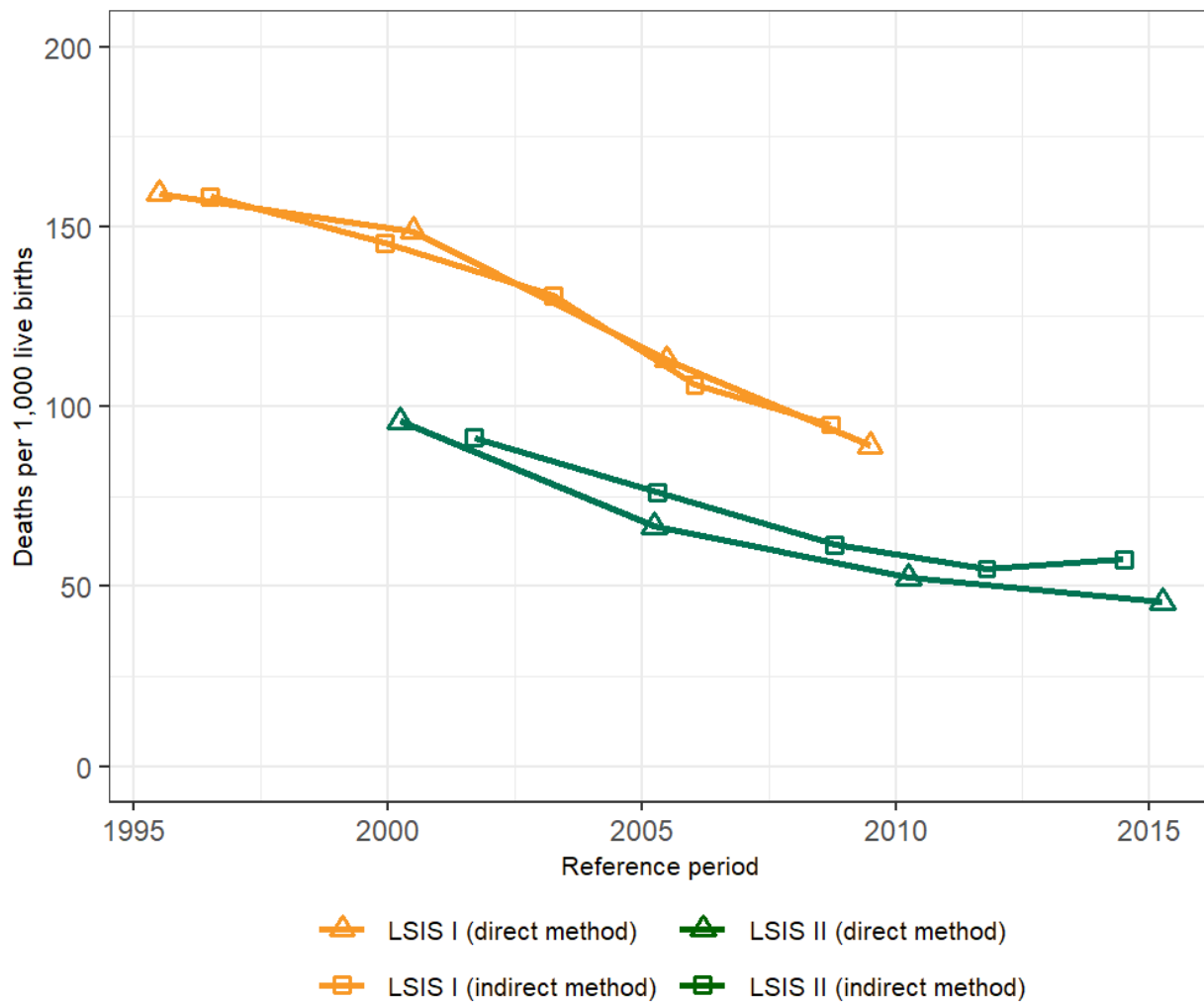


Under-five mortality rates by data source

Figure 18 shows the observed mortality trend for children under-five years from successive LSIS surveys. There is a notable inconsistency between both direct and indirect estimates of U5MR from the successive LSIS estimates for 2000-2009 - the LSIS-1-based estimates suggested U5MR estimates 50-90% higher than those derived from LSIS-II survey data

Further assessment of the consistency of U5MR estimates in recent years is not possible, since the data on registered deaths shared with LSB by MOHA and MOH are not disaggregated by age of the deceased and age of the mother.

FIGURE 18 | Under-five mortality rates by data source



4

Preliminary Analysis of available data on marriages and divorces in Lao PDR, 2017-2021



Section Highlights

The analysis of marriage and divorce data aimed at appraising civil registration of marriages and divorces in Lao PDR. The data are only available in an aggregate format by province, year of registration and by type of marriage (Lao-Lao vs. Lao-Foreigner). We did not find other secondary data sources to appraise the registration data against.

Key insights from our analysis include

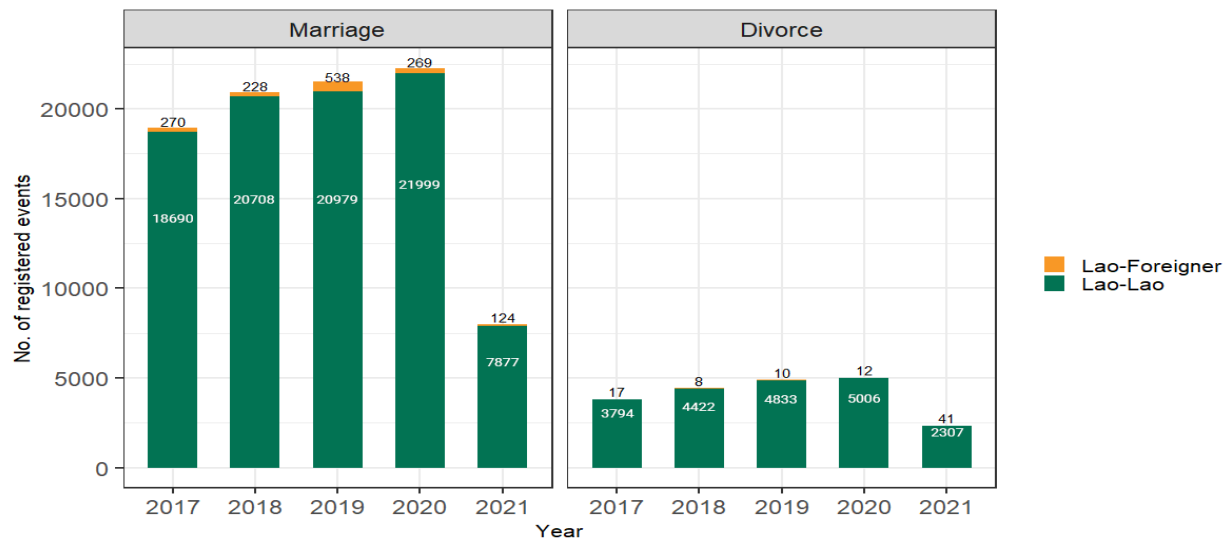
- Lao has a good practice of disaggregating registered marriages and divorces by type
- Registration of marriages and divorces has increased over the period 2017-2020
- Registered marriages and divorces declined in 2021, plausibly as a result of late registration or postponement of marriages due to COVID-19
- However, registration varies by province, with marriages and divorces somewhat proportional with a population size of the provinces





Number of marriages and divorces by year of registration and nationality

FIGURE 19 | Number of marriages and divorces by year of registration and nationality



Source: Ministry of Home Affairs (MoHA)

The number of annual marriages and divorces registered by MoHA has increased from 2017 to 2020. The number of marriages and divorces in 2021 is less

than the previous years. Lao-foreigner marriages and divorces comprise a small proportion of the total number of marriages and divorces, respectively.

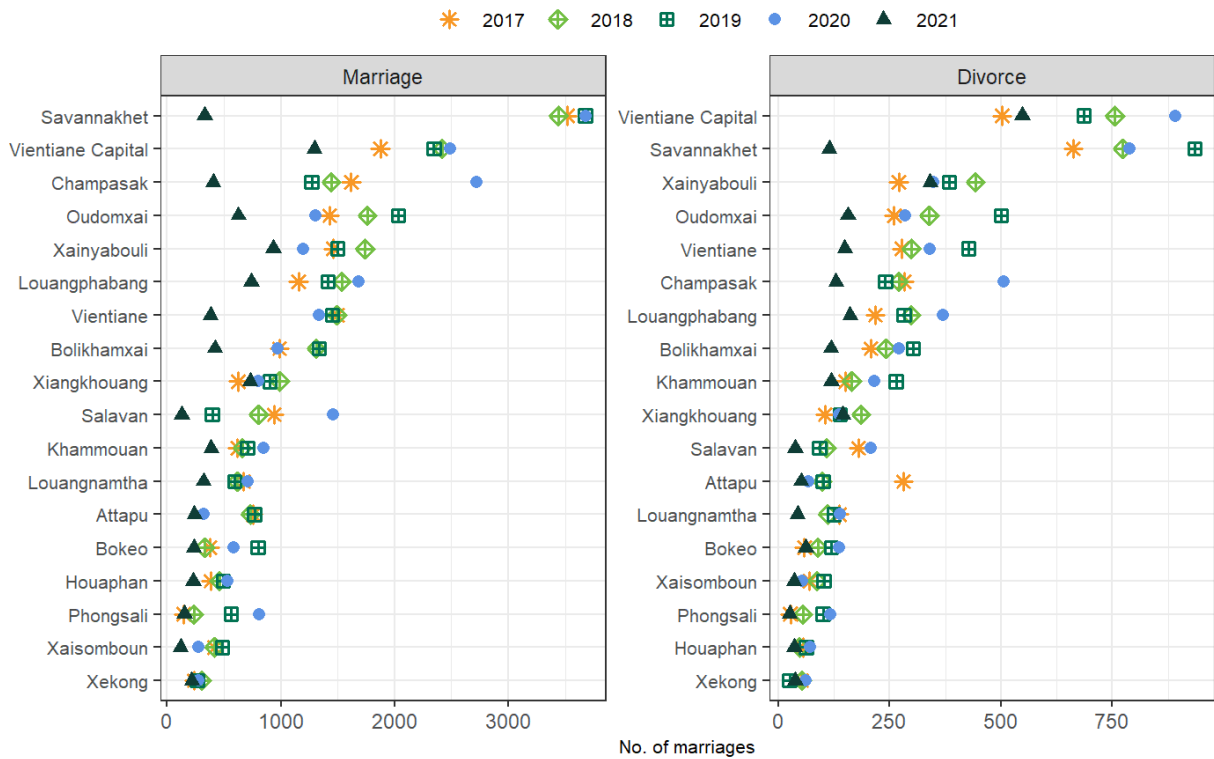


Number of Lao-Lao marriages and divorces by province and year of registration

Low numbers of registered marriages and divorces are visible across provinces, especially in large provinces such as Savannakhet, Vientiane capital and Champasak. However, the increase in the number

of marriages and divorces between 2017 and 2020, as depicted in figure 20 above, is not consistent across all provinces.

FIGURE 20 | Number of Lao-Lao marriages and divorces by province and year of registration



While there is a clear increase in registered marriages, for example, in Vientiane Capital, Oudomxay and Luangprabang, the number of marriages decreased for Champasak and Salavan between 2017 and 2019 and remained almost similar for provinces such as Khammouan and Luangnamtha.

Clear increases in registered divorces can be observed in the provinces of Savannakhet and Oudomxay. There is a large increase, between 2019 and 2020, in the number of registered marriages and divorces recorded in Champasak. In Attapeu, there was a large drop in the number of registered divorces from 2017 to 2019.

5

Potential for future vital statistics production using digitized civil registration data

Overview of CRVS digitization efforts in Lao PDR



Registration of births, deaths, and marriages has a long history in the Laos People’s Democratic Republic, in the form of a traditional Family Book system for each household, which precedes the official establishment of the CRVS system under the Ministry of Home Affairs in 2011. In the former system, citizens would report all vital events, including births, deaths, and marriages, to the village chief, who would make relevant entries in a family book, which was adequate documentation for civil purposes.

Civil registration functions were vested in the Ministry of Home Affairs (MOHA) in 2011, and through a recent World Bank-funded initiative, The Civil Registration and Vital Statistics Strategy (2016-2025) to strengthen CRVS is being implemented. Other key stakeholders include the Ministry of Health (MOH)—primarily responsible for the notification of births and deaths with causes of death for those that occur within health facilities; the Lao Statistics Bureau—responsible for producing vital statistics; the Ministry of Law and Justice—responsible for the legal framework governing civil registration; and the Ministry of Public Security—responsible for the registration of persons through the “family book”.

Most recently, the Lao PDR government launched a World Bank-supported CRVS Digitization project

from 2020 to 2025, with specific activities and targets for system strengthening. The key implementation element for the CRVS project is the electronic Citizen Management Information System (CMIS), see figures 19 and 20 below, which will be used to record and compile information on all the vital events that are reported through the revised legal and administrative CRVS frameworks developed as part of the National CRVS Strategy. Under the CRVS project, the electronic CMIS will be rolled out for implementation in four phases, starting with coverage of three provinces in Phase 1 in 2022 (delayed due to Covid -19), and expanding to cover all 18 provinces incrementally by 2024, as follows:

- **Phase One:** 3 provinces, 31 districts (Vientiane Capital, Luangprabang, and Champasak)
- **Phase Two:** 4 provinces, 31 districts, (Phongsaly, Oudomxay, Huaphanh and Xiengkhuang)
- **Phase Three:** 4 provinces, 37 districts (Bolikhamsai, Khammouan, Savannakhet and Bokeo)
- **Phase Four:** 7 provinces, 49 districts (Vientiane province, Xaysomboun, Luangnamtha, Xayaburi, Saravan, Attapeu and Sekong).

The project has established a target for birth registration completeness to improve to 70% in 2024 and for death registration completeness to improve to 47% in 2024. Currently, the framework and procedures

for CRVS implementation under the revised Family Registration Law of 2018 are being tested for implementation in Phase 1 of the CRVS project.



Lao PDR proposed CRVS and Identity Management System

FIGURE 21 | The CMIS process and relevant stakeholders under the CRVS pilot project, 2017

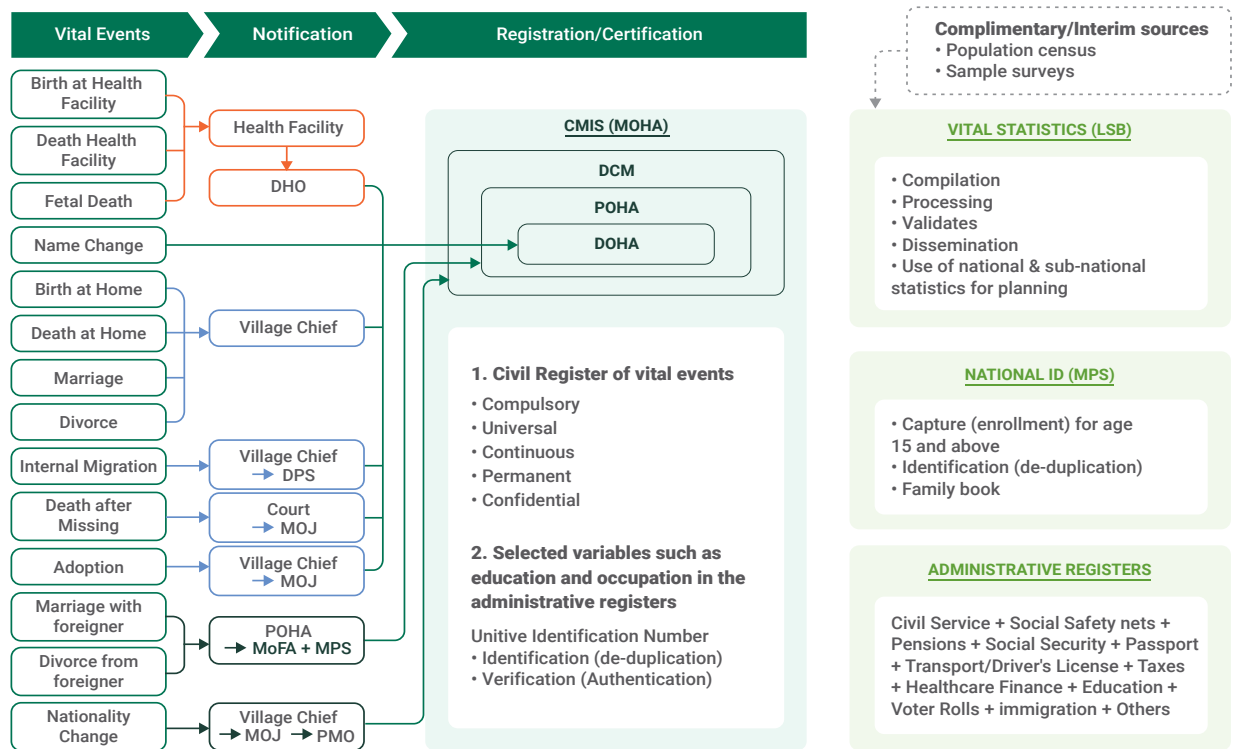
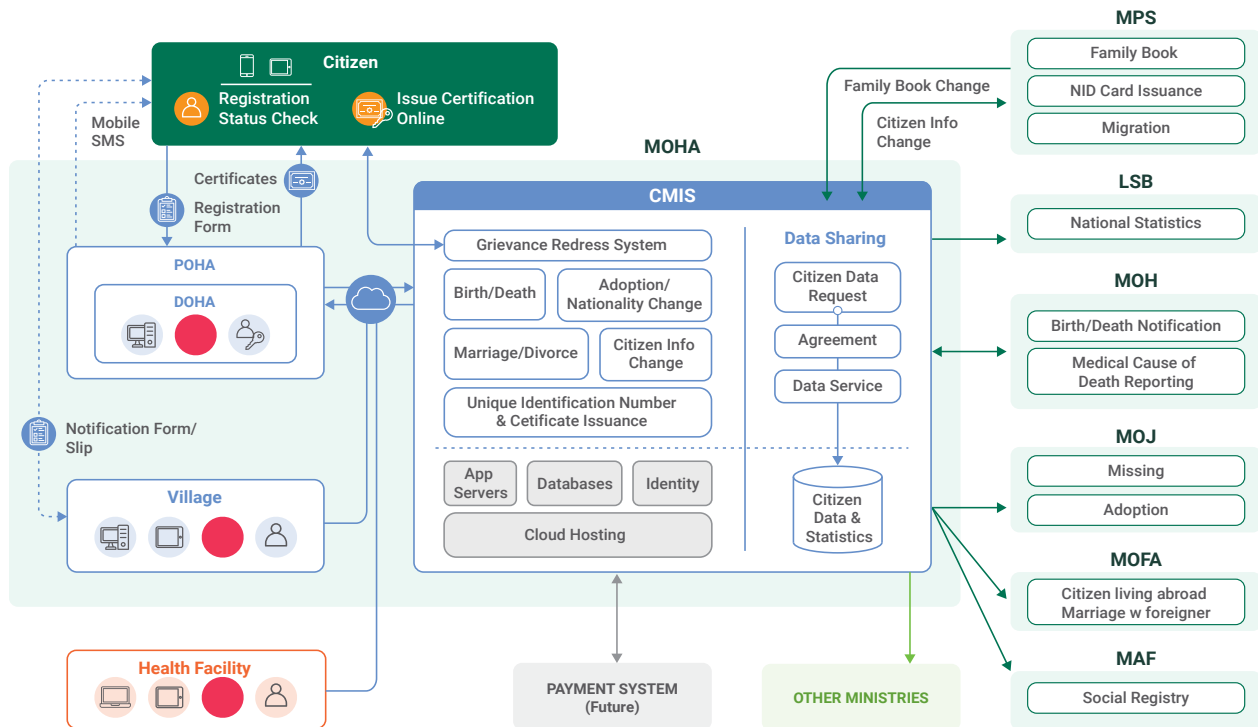


FIGURE 22 | The e-CRVS process and relevant stakeholders, 2022



Role of Health facilities in improving the coverage of birth and death notifications

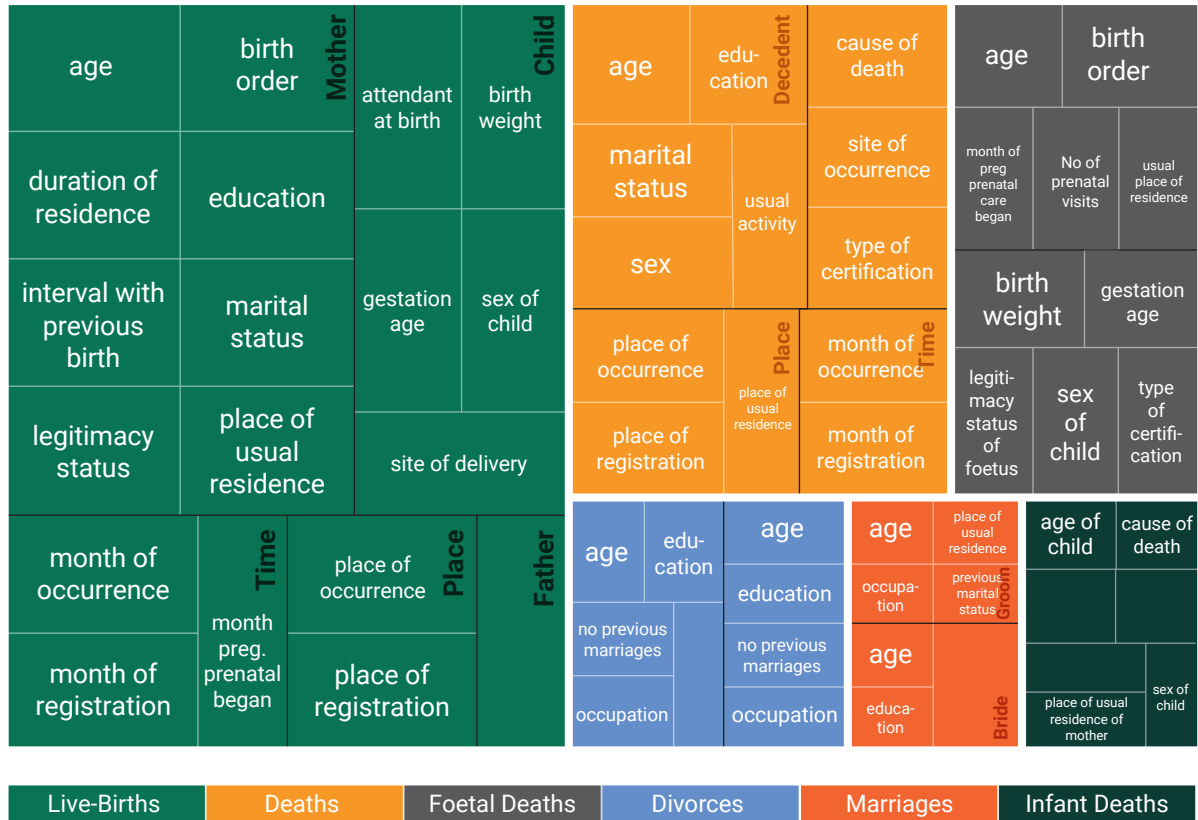
According to the LSIS II, about two-thirds of births occur at health facilities, whereas according to WHO, only 7% of deaths occur at health facilities. High levels of completeness in registration will only occur if there is an effective system for notification of vital events to the CRVS system. For events that occur in health facilities, the facility should issue a birth or death notification to notify the CRVS system of the event. Incomplete registration data can be caused if there is no legal obligation for hospitals and health facilities to notify births and deaths to the CRVS system. For example, although the two sources of birth data in Lao, thus the MoHA’s paper based CRVS system, and the MoH birth notification system show fewer births than expected. However, more births are captured in the MoH’s birth notification system than in the MoHA’s paper based CRVS system. Thus,

although births are being underreported in the Lao civil registration system, there is potential for improvement in the CRVS system.

Review of minimum vital statistics outputs, as per UN PRVS, Rev3, 2014

The UN Statistics Division recommends a minimum of 63 core VS outputs to be incorporated into a VS report. Below is a tree map showing the distribution of the core VS outputs organized by thematic area, i.e., live-births, deaths, infant deaths, fetal deaths, marriages, and divorces. Within each thematic area, the figure shows key demographic characteristics tables could be disaggregated upon. For example, live births can be tabulated by age and marital status of the mother; deaths can be tabulated by place of usual residence, place of occurrence, and sex of the decedent; among other variables.

FIGURE 23 | Minimum Required Vital Statistic outputs to be produced in a Vital Statistic Report



We assessed the newly digitized system, which is currently under development, against these minimum tabulations, based on the registration form shared by MOHA. Out of the recommended set of 63 core VS outputs, only 26 (41%) of the recommended VS table can be generated if the forms are programmed as they

are. Based on the registration form, we will be able to generate 8 of the 20 recommended live birth tables; 8 of the 13 recommended general deaths tables; 5 of the 5 recommended infant deaths tables; 10 recommended fetal deaths tables; 2 of 5 recommended marriage tables; and 3 of 7 recommended divorce tables.

6

Conclusions and Next Steps

This is the first vital statistics report released in Lao PDR by the Lao Statistics Bureau. It represents the best available data across the Lao PDR population data ecosystem. The data used primarily comes from the paper-based civil registration system, the population and housing censuses (PHC), census projections, the Lao Social Indicator Survey, and the District Health Information Software 2 (DHIS 2). This report identifies gaps in data quality pertaining to fertility, mortality, and nuptiality statistics, as well as the current limitations of the civil registration system. It provides insights into the evolving population dynamics of Lao PDR.

This pioneering report on vital statistics in Lao PDR represents a significant stride toward enhancing the quality and comprehensiveness of essential data in

the country. It underscores the imperative need for improved data integration to inform decision-making and strengthen public policy. By addressing the identified disparities and refining data collection and analysis methods, Lao PDR is poised to advance its vital statistics to inform policy making.

This report provides a robust foundation for further vital statistics reporting and dissemination in years to come. The findings of this report are used alongside other data to guide monitoring and review progress towards 2030 agenda in Lao PDR, provide insights into areas where further CRVS strengthening is needed, and complement ongoing preparation for the next population and housing census and the next Lao Social Indicator Survey (LSIS).



Suggested Next Steps

To further advance vital statistics in Lao PDR, in the coming years the Lao Statistics Bureau plans further technical collaboration, coordination and analysis, in including:

- Discussions with MOHA on emerging strengths and limitations of death registration data in Lao PDR,
- A systematic review the plausibility and quality of deaths data reported in the 2015 Population and Housing census, as LSB prepares for the next census, and
- A review of the plausibility and quality of reported (childhood) deaths in the LSIS-I and LSIS-II surveys, as LSB prepares for the LSIS-III survey.



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The Centre of Excellence for Civil Registration and Vital Statistics (CoE-CRVS) is a global resource hub that actively supports national, regional and global efforts to develop, strengthen and scale up sustainable civil registration and vital statistics (CRVS) systems that work for all, especially women and girls.

