Assessment of the quality and relevance of existing data to monitor the gender dimensions of CRVS in Asia and the Pacific

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Table of Contents

Annexes

    Annex 1. Analysis of 2012-13 Pakistan DHS

    Annex 2. Analysis of 2011 Bangladesh DHS

    Annex 3. Analysis of 2011 Nepal DHS

    Annex 4. Analysis of the Nepal Cash Grant Program

    Annex 5. Analysis of the 2011-12 Lao PDR DHS/MICS

    Annex 6. Analysis of the 2014 Cambodia DHS

    Annex 7. Analysis of the 2010 Afghanistan Mortality Survey

    Annex 8. Analysis of the 2010-11 Afghanistan MICS

Executive Summary

The purpose of this report is to review the available data, both quantitative and qualitative, on the type and magnitude of gender-related under-registration of vital events and non-possession of adult identity documents in Asian-Pacific (AP) countries, and their possible consequences. The report also includes secondary analysis of DHS and MICS household surveys in six developing Asian countries selected based on their relatively low levels of birth registration and on the availability of recent data (i.e., Afghanistan, Bangladesh, Cambodia, Lao PDR, Nepal and Pakistan). The report focuses mainly on birth registration, due not only to the paucity of data on other aspects of civil registration and vital statistics (CRVS) but also due to the key role of birth registration as the gateway both to the registration of other vital events and to obtaining adult identity documents.

Most DHS and MICS surveys have collected data on the registration of the births of children under 5 years of age since 1993 (DHS) and 1999 (MICS). Although the questions have changed to some extent over time, both surveys currently ask whether a child possesses a birth certificate. If yes, the interviewer asks to see it (MICS only). If no, the respondent is asked whether the child's birth was registered with the authorities. The usual practice is to interpret a "yes" response to either question as indicating that the child's birth has been registered. This is a strong assumption. In some cases (e.g., Afghanistan and Lao PDR), the percentage of children for whom birth certificates are seen amounts to only 25% or less of children whose birth has reportedly been registered. In the case of Lao PDR, the data on birth registration in the absence of a birth certificate appears particularly unreliable: whereas possession of a birth certificate is positively and significantly related to the wealth index and to the mother's years of schooling, registration in the absence of a birth certificate is just as strongly *negatively* related to the same variables.

Multivariate analysis of birth registration data in this report indicate that gender gaps at the national level are limited to Afghanistan and Nepal, where the gender gap disfavoring females is only about 2% at the national level but is larger in some sub-populations (e.g., 8% in the Western Development Region of Nepal and 5% in the South East Region of Afghanistan). However, there are no official data on birth registration for China where at least some observers believe that a substantial gender gap exists, particularly in the rural areas. A gender gap may also be masked by high rates of sex-selective abortion in 'missing girls' countries like China, India, Pakistan, and Vietnam. The more important gender gap in birth registration, however, is arguably that between current levels of coverage (which are only 20% in Bangladesh and 34% in Pakistan) and 100% coverage because absence of a birth certificate is much more problematic for women because it increases their risk of early marriage or of becoming a trafficking victim and because of the obstacles it creates for them and their children if they become widowed, divorced, single parents or refugees.

Birth registration coverage varies widely within countries due to both proximate and underlying factors. The proximate factors include the cost and complexity of registration, knowledge of the benefits of registration and of how and where to register, and access to registration services, while the underlying factors include the child's age, parents' schooling, the household's socioeconomic status, location, ethnicity and religion (with the last two factors sometimes

reflecting the effects of discrimination against minorities). Unfortunately, most DHS and MICS surveys do not collect data on the proximate factors. Efforts in the literature to link birth registration to variables that are in the DHS and MICS, including immunization and place of obstetric delivery are suspect because the observed relationships could be due to unobserved third factors. For example, birth registration coverage levels actually decreased in Cambodia between 2005 and 2010 despite an increase in the percentage of births delivered in health facilities from 22% to 55%. However, multivariate analysis in this report finds that possession of a birth certificate among the poor is negatively related to the cost of traveling to the sub-district where registration services are available in Bangladesh and to cluster altitude in Nepal and Cambodia (the only countries for which such data are available). Qualitative data collected in many countries point to the importance of cost, distance to the civil registry office, lack of awareness of the need to register and of where to do it as proximate constraints to birth registration.

Multivariate analysis of household survey data in this report provide consistent evidence of the importance of the child's age, parents' schooling, household socioeconomic status (as measured by the wealth index), location, ethnicity and religion as underlying factors in all six countries studied. However, the estimated magnitudes of the relationships and even their signs vary. For example, the child's age is a significant driver of birth registration in every country except Lao PDR (where it is negatively related to possession of a birth certificate that is seen and positively related to one that is not seen). The estimated percentage increase in the possession of a birth certificate of a child age 4 compared to a child age 0 ranges from 9% in Pakistan to 49% in Bangladesh, whereas it is a negative 4% in Afghanistan. Although the wealth index is positively and significantly related to the possession of a birth certificate in all six countries studied, the magnitude of the relationship varies considerably between countries: a one-standard deviation increase in the value of the wealth index is associated with a 5% increased likelihood of possession of a birth certificate in Afghanistan and Bangladesh, a 10% increase in Lao PDR, and with a 14% increase in Pakistan, other factors equal. Interestingly, the schooling of both parents is positively related to possession of a birth certificate in all six countries, even when both variables are included in the same model. However, there are some interesting gender differences: the mother's schooling is significant only for boys in Bangladesh only for girls in Nepal and significantly stronger for boys than for girls in Cambodia, whereas father's schooling is significant only for girls in Cambodia. Sharp urban-rural and regional differences are also observed in most countries. However, urban location is insignificantly related to possession of a birth certificate in Bangladesh and is negatively related to possession of a birth certificate in Nepal. Lastly, religion, caste and ethnicity are significant drivers of birth registration in all countries for which such data are available.

Although data on the registration of deaths, marriages, and divorces and access to adult identity documentation are quite limited, the report includes some evidence related to gender gaps in these areas as well. A few of the DHS surveys include verbal autopsy (VA) modules that collect data on the causes of deaths, place of death and on the availability of a death certificate. The most important example is the 2010 Afghanistan Mortality Survey (AMS), which collected VA data for all deaths at any age during the previous three years. Of the 3,913 deaths for which VA data were collected, only 12 death certificates were available, all for males. An important proximate constraint to the issuance of death certificates, with the underlying cause of death identified, is the high share of deaths occurring at home. In the 2010 AMS, 21.5% of reported deaths occurred in a hospital (including 10 of the 12 for which a death certificate was available),

including 23.9% of deaths to children under 5 and 19.9% of deaths to persons aged 5 and above. Multivariate analysis in this report found that the likelihood of dying in a hospital (and therefore the likelihood of being able to issue a death certificate) is not related to the sex of children under 5, whereas females aged 5 and above are 7% more likely to die in a hospital, other factors equal. However, the latter gender difference is partly due to gender differences in the causes of death. If maternal deaths (occurring exclusively to females) and deaths from external causes (occurring mainly to males) are excluded from the analysis, the gender gap favoring females decreases to 4%.

None of the DHS or MICS surveys collect data on the registration of marriages or divorces. However, some analysis is done in this report under the assumption that distinctions in the survey data between women's marital status of "married" versus "living together" or between "divorced" versus "separated" can serve as proxy indicators of the registration of marriages or divorces. Analysis of the data on "married" status versus "living together" in Afghanistan, Lao PDR and Cambodia (the only countries with such data) defy any general conclusions. However, the analysis of "divorced" versus "separated" status in the five countries for which data are available found that "divorced" status is positively related to the household wealth index in Bangladesh, Cambodia, and Nepal and to the woman's age in Bangladesh, Cambodia, and Lao PDR. Surprisingly, "divorced" status is not significantly related either to the woman's years of schooling or to tested literacy (i.e., ability to read a randomly selected sentence correctly).

Data on access by sex to adult identity documentation is limited to only a few countries. The main exception is Pakistan, where household survey data on possession of an identity card by adults 18 and above were collected in the 2012-13 Pakistan DHS. These data indicate that women are about 6% less likely to have an ID card until about age 40, other factors equal, after which possession of an ID card is effectively universal (most likely reflecting their use in establishing eligibility to access certain types of government transfers). Moreover, the gender gap is wider in the three poorest wealth quintiles (8-11%), whereas it is only 2% in the richest quintile.

There is considerable discussion in the literature of the potential benefits of birth registration. For example, it is sometimes suggested that birth registration improves children's access to schooling and health services. However, most of the quantitative evidence is based on simple bivariate correlations in data from a single survey, while the qualitative evidence questions whether absence of a birth certificate is actually a barrier to access. This report utilizes data from several household surveys in Nepal to assess the effects of its Cash Grant Program (CGP), which has been in effect since 2009. The CGP provides cash grants to all households in the Karnali subregion and to poor Dalit households nationally based on the number of children under 5 in the household, with a birth certificate required to establish eligibility. The analysis finds that birth registration coverage increased quickly and sharply in the targeted population, compared to the rest of the population, eliminating a pre-program gender gap that persisted in the rest of the population. However, it found no evidence of any improvement in children's nutritional status or in preschool enrollment as the result of the program. On the other hand, the report obtained evidence consistent with a positive effect of birth registration on immunization in Bangladesh, using the sharp age gradients in birth registration observed in that country to identify the effect.

Reliable evidence on the effectiveness of interventions designed to increase CRVS coverage levels is sparse. However, there is some evidence that financial incentives can be effective in

increasing birth registration coverage levels, as in the Nepal CGP. A randomized controlled trial in Zimbabwe (the only RCT conducted to date with birth registration part of the treatment) found that making access to a cash transfer conditional on registering a child's birth increased birth registration coverage from 45% to 62%. However, much more rigorous experimental data are needed on the costs and effectiveness of CRVS interventions to learn which ones are cost-effective under various conditions. Experiments to test such interventions would be relatively inexpensive because experimental outcomes could be measured using data from existing registration systems (i.e., expensive household surveys would not be necessary).

The report recommends setting priorities for CRVS that reflect women's needs. Closing the gap between current and complete coverage of birth registration should receive the highest priority, followed closely by efforts to ensure universal access to adult identity documentation. Second priority should be given to universalizing access to marriage, divorce and death registration. Work should also begin to develop systems for transferring existing vital registration data (even if coverage is incomplete) from local sites to a central data processing site, including use of mobile phone technology where feasible. Such data are needed now to identify local areas with large gender gaps in birth and death registration and to provide data economically on local registration outcomes to measure the effects of pilots designed to increase coverage.

The report calls for modest improvements in the DHS and MICS questionnaires in order to improve the usefulness of the data for CRVS monitoring and evaluation. Specifically, the question on birth registration should be expanded to include other forms of national identity documentation and completed for all household members (as in the 2012-13 Pakistan DHS). The question on women's marital status should also be followed up with a question whether married, divorced or widowed women have the appropriate certificate(s).

The report also recommends use of a birth registration coverage indicator that adequately reflects the pattern of increased coverage with age that is observed in many countries (current reliance on an average coverage rate for all children under 5 can be quite misleading in countries sharp age gradients in birth registration coverage).

The report also recommends collecting more qualitative data on gender-related constraints to registering vital events and to accessing adult identity documents (e.g., the role of intra-household decision making). Qualitative data can be helpful in clarifying the causal linkages between the underlying constraints to registration and the proximate constraints. For example, why does coverage vary so much with location and cultural factors (e.g., ethnicity, religion)? Qualitative data can also be helpful in establishing causal linkages between registration and other outcomes, including the proximate constraints to registration and the ultimate effects of non-registration. With regard to the latter, the report also calls for more research to obtain credible estimates of the longer-term effects of non-registration. Rigorous experiments are probably not economical for this purpose, given the considerable time lag between registration and some of the expected outcomes (e.g., birth registration and early marriage). However, the existence of multiple household surveys over an extended period in several countries (particularly in the presence of important policy changes that have affected registration coverage) is a largely unexploited resource capable of yielding useful and credible insights into the longer-term effects of non-registration.

List of Acronyms

AMS	Afghanistan Mortality Survey
AP	Asian and Pacific
CCT	Conditional cash transfer
CGP	Cash Grant Program (Nepal)
CRVS	Civil registration and vital statistics
DHS	Demographic and Health Survey
IBS	Indonesia Baseline Study
ICD	International Classification of Diseases
MICS	Multiple Indicator Cluster Survey
PSM	Propensity score matching
RAF	Regional Action Framework
RCT	Randomized controlled trial
SRB	Sex ratio at birth
UCT	Unconditional cash transfer
VA	Verbal autopsy

1. Introduction and background

The purpose of this report is to review the available data, both quantitative and qualitative, on the type and magnitude of gender-related under-registration of vital events and non-possession of adult identity documents in Asian and Pacific (AP) countries, and their possible consequences, and the availability and dissemination of sex-disaggregated vital statistics by country or groups of AP countries. In addition, the report analyzes recent sex-disaggregated quantitative data in selected AP countries with a view to making recommendations on how monitoring the selected targets in the Regional Action Framework (RAF) on CRVS in Asia and the Pacific can be more effective from a gender perspective. The report also includes analysis designed to support the setting of RAF national targets that reflect gender "inequalities related to CRVS experienced by subgroups of the population, including among hard-to-reach and marginalized populations and particular geographic areas and administrative subdivisions…" (UN ESCAP 2015). The report focuses mainly on birth registration due not only to the paucity of data on other aspects of CRVS but also due to the key role of birth registration as the gateway both to the registration of other vital events and to obtaining adult identity documents.

The report is organized into five sections, including this introductory section. Section two reviews the findings of existing quantitative and qualitative studies on (i) the gender dimensions of CRVS under-coverage of births, deaths (including causes of death), marriages, divorces, and non-possession of adult identity documents, and (ii) the availability and dissemination of gender-disaggregated vital statistics. Section three presents the main findings of the data analysis done for this report in six AP countries (i.e., Afghanistan, Bangladesh, Cambodia, Lao PDR, Nepal, Pakistan), including a description of the data sources used and their strengths and weaknesses, the criteria used for selecting countries and data sets, and the methodology used in the analysis. Section four discusses the implications of the report's main findings for CRVS monitoring, including information that can be used to establish subnational targets for vulnerable population sub-groups. Section five presents the report's conclusions and recommendations, including prospects for an evidence-based roadmap focused on gender issues in CRVS. In addition to the main text, eight stand-alone annexes provide detailed information on the individual country analyses of household survey data.

2. The gender dimensions of CRVS

2.1 Birth registration

2.1.1 Data

Data on the registration of births comes mainly from both civil registration systems and household surveys. Unfortunately, the two sources do not always yield consistent information. In Indonesia, for example, data from the large 2012 SUSENAS national household survey indicate that 29% of children/youth aged 0-17 do not have a birth certificate (increasing to 47% if children whose parents are unable to produce the birth certificate are assumed not to have one), whereas data from the Ministry of Home Affairs indicate that as many as 76% of children aged 0-18 do not have a birth certificate (Sumner 2015).[1] In India, data from the 2005/06

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[1] By comparison, data from the 2012 Indonesia DHS indicate that 43% of children *aged 0-4* do not have a birth certificate.

National Family Life Survey (a DHS survey) found that only 41% of the births of children under 5 had been registered, compared to the estimate of 60% reported by the Office of the Registrar General over the same period (Abouzahr et al. 2014b). An intensive effort to register all births in Cambodia by 2005 was reported to have been 90% successful, based on Government estimates (Ministry of the Interior 2014). However, the 2005 Cambodia DHS indicates that only 56% of births occurring during the previous two years had been registered (with or without a birth certificate).

Due to the way questions are asked in the DHS and MICS surveys, the main sources of household data on birth registration, it is unclear how many births are actually registered or when they were registered. Surveys usually ask if a child under 5 has a birth certificate. If the response is "yes," the respondents may be asked to show the birth certificate (MICS only). If the response is "no," they are asked if the birth has been "registered with the authorities." The standard interpretation of a "yes" response to the second question (as reflected in both the MICS and DHS final reports and in the UNICEF-compiled data in Table 5) is that the birth has been registered, even in the absence of a birth certificate. However, data from the Baseline Study in Indonesia found that 73% of parents who indicated that their child had a birth certificate but could not show it never actually obtained a birth certificate for their child (Sumner and Kusumaningrum 2014).[2] The secondary analysis of MICS/DHS data from Lao PDR in this report suggests that affirmative answers to the second question are not always reliable (Annex 5).

According to UNICEF (2015), birth registration data are highly sensitive to the way in which questions are formulated. Respondents may not always be clear on the identity of the civil authorities in charge of recording births and may misinterpret notifying a church or village chief of a birth or receiving a birth notification from a health facility as "formal registration." Household surveys generally customize questionnaires by naming the specific national authority responsible for registration. But even then, confusion about the birth registration process may result. Similarly, questions regarding the possession of a birth certificate may also be the source of erroneous data, since respondents may confuse a birth certificate with a health card, birth notification, house book or other document.

2.1.2 Factors related to the under-registration of births

There is a subtantial literature on birth registration that focuses on the factors that are believed to be responsible for the wide disparities in birth registration coverage that are observed both between and within countries as well as their possible effects (UNICEF 2005, Duryea et al. 2006, UNICEF 2013, Plan International 2014). Most studies find that male-female differentials in birth registration are small or nonexistent at the national level both in most AP countries (Table 5) and worldwide, including in several "missing girls"[3] countries (i.e., Pakistan, India, Vietnam).

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[2] However, it is noted that their child's birth may still be officially registered even if they do not have a birth certificate.

[3] The Nobel Prize winner Amartya Sen first drew attention to the deficit of women in many parts of Asia (UNFPA 2014b). This "missing girls" phenomenon, as it was termed, was initially attributed to excess female mortality, particularly in children under 2 (which is still estimated to exist in Afghanistan, Bangladesh, China, India, Nepal and Pakistan), but statisticians began to notice that the proportion of boys was increasing over time to an extent that could not be explained by early childhood mortality alone. Surveys and in-depth statistical analyses subsequently demonstrated that the increasing sex imbalances were caused by the selective abortion of female fetuses. Although the sex ratio at birth (SRB) can vary due to a variety of causes (typically, between 104 and 106 in Asia), an SRB value of 110 or higher is

The main exception may be China, where, in the absence of household survey data, some observers believe that a large gender gap exists in birth registration (particularly in rural areas), due to such factors as traditional son preference, its Hukou household registration system and its one-child family policy (Li, Zhang and Feldman 2010). Although important recent policy changes have affected the last two factors, the current situation in China is unclear, given the absence of official data. Apart from China, Nepal has a small gender gap of about 2% at the national level and larger gender gaps of 6-9% among some population groups. Gender gaps may also be effectively masked by sex-selective abortion in some 'missing girls' countries and regions within countries.

It has also been observed that gender differentials in birth registration, when they do exist, tend to disappear as overall coverage increases (UNICEF 2005, 2013). This is what occurred among certain groups in Nepal, for example, when birth registration increased sharply in the groups targeted by the Cash Grant Program (Box 2). However, little attention has been given to the possibility that significant gender differences may still exist in vulnerable population sub-groups with relatively low levels of registration. Examples include single mothers, ethnic and religious minorities, low castes, the poor, mobile populations (including migrants, refugees and stateless persons), those living in remote rural areas, and persons with disabilities (both parents and children) (Goméz et al. 2014, Duong, Linh and Thao 2011). In the Philippines, for example, where an estimated 93.5% of births are registered, coverage rates are much lower among certain ethnic groups and in remote and mountainous areas (Abouzahr et al. 2014b). Even in Vietnam, where overall coverage is 95%, birth registration coverage is significantly lower among ethnic minority children (87%) than among the majority Kinh/Hoa children (UNICEF 2013). There is no reason to presume that low overall coverage rates necessarily signal the presence of a gender gap. However, it is important to investigate this possibility (as was done in this study).

Although male/female differences in the percentage of births registered is important, arguably the more important gender gap in birth registration is the gap between current coverage levels and 100% coverage. This gap remains very large in several AP countries (e.g., 80% in Bangladesh, 66% in Pakistan, and 42% in Nepal). Although non-possession of a birth certificate is a problem for both women and men, it is more of a problem for women due to the differential risks they face from sex trafficking and early marriage and because of their vulnerability to discrimination in the event they become single mothers, widowed or divorced. Children without a birth certificate tend to be poorer, to reside in remote areas and to belong to ethnic or religious minorities and therefore are more likely to belong to vulnerable groups as adults.

The literature suggests that both "proximate" factors (e.g., the cost and complexity of registration, knowledge of the benefits of registration and of how and where to register, access to registration services) and underlying socio-economic factors (e.g., income, education, location, religion, ethnicity, caste) account for much of the observed disparities (with unobserved

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generally interpreted to suggest the presence of sex-selective abortion. Recent national estimates during the period 2008-2011 include: China (117.8), India (110.5), Pakistan (109.9), Vietnam (111.2). However, considerably higher SRB estimates are observed within some countries (e.g., 125.5-128.7 in Anhui, Fujian and Hainan provinces of China, 120.3 in Punjab province of India, and 116.2 in the Red River Delta region of Vietnam). Demographers suspect that the phenomenon exists in other countries (e.g., Afghanistan, Bangladesh, Nepal), but it is difficult to document reliably in the absence of a recent population census or an effective civil registration system.

individual, household and community-level factors presumably explaining the rest).[4] In the Indonesia Baseline Study, for example, the under-registration of births is closely related to poverty status, residence in a rural area, to parents' civil registration status, and to parents' disabilities. A child's family situation may also affect the likelihood of birth registration (UNICEF 2005). For example, children living with both parents may have higher levels of birth registration than children living with neither parent or with the mother or father only. In many cases, however, conclusions are based only on bivariate tables or charts showing how birth registration coverage is related to a single factor (UNICEF 2005, 2013, Duryea et al. 2006, Sumner and Kusumaningrum 2014). Such inferences can be very misleading because many of the proximate and underlying factors are closely correlated (e.g., income and education). Multivariate analysis has been used in a few studies to identify partial correlations (e.g., UNICEF 2005, Duryea et al. 2006, Plan International 2014). These studies point to income (or income proxies), mother's education (father's education is usually ignored), location and the utilization of maternal/child health care (e.g., antenatal care, obstetric delivery, immunization) as important correlates. However, there is no information in these studies about whether these relationships vary with the sex of the child.

Some of the observed relationships between birth registration and proximate factors may not be causal, but may instead reflect the effects of unobserved third factors (e.g., individual "motivation" or "modernity") on both birth registration and the proximate factor in question. Economists refer to such variables as "endogenous;" and their presence in a regression model will generally bias the estimates of all coefficients unless special estimation methods are used.[5] The literature on constraints to birth registration is often based on regression models that include likely endogenous variables as explanatory variables. Examples include: utilization of prenatal care, type of obstetric delivery care, possession of a vaccination card, whether the child received vitamin A, whether the child's caretaker knows two signs of illness, knowledge of HIV, the nutritional status of the child, age of the mother, her civil registration status, birth order, and number of children in the household (UNICEF 2005).[6] When an endogenous variable is specified on the right-hand side of a regression model, special estimation methods (e.g., instrumental variable estimation) can sometimes be used to obtain unbiased estimates in large samples. Unfortunately, however, suitable "instruments" are not usually available in surveys such as the MICS and DHS, while true "natural experiments" that provide suitable instruments are rare.[7] Randomized controlled experiments (RCTs) could provide reliable information about the factors and policies that affect under-coverage (Civil Registration Centre for Development 2011). Unfortunately, only one RCT (in Zimbabwe) has been conducted to date in which the treatment included birth registration (Box 1).

Box 1. The use of cash transfers to promote birth registration in Zimbabwe

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[4] The distinction between "proximate" and "underlying" factors is made in UNICEF (2005).

[5] An endogenous variable is one that is correlated with the disturbance term of the equation in which it is included as an explanatory variable. The presence of even one endogenous variable in a regression model is sufficient to bias the estimates of all the regression coefficients, even in large samples. See, for example, William H. Greene, *Econometric Analysis*, Fifth Edition, Upper Saddle River, NJ: Pearson Education, Inc., 2003, pp. 85-86.

[6] Similarly, in a study at about the same time in five Latin American countries, the regression model includes three variables that are very likely endogenous in this context, i.e., delivery not attended by a health specialist, teenage mother, no prenatal care (Duryea et al. 2006).

[7] A true "natural experiment" mimics a randomized controlled experiment in which the treatment variable is uncorrelated with both observed and unobserved factors.

A randomized controlled experiment was conducted in Zimbabwe to estimate the effects of both conditional and unconditional cash transfers on the level of birth registration and complete vaccination coverage among children under 5 and on school attendance among children ages 6-17 (Robertson et al. 2013). Thirty predominantly rural clusters containing a total of 4,043 eligible households were randomly assigned (10 clusters each) to receive either a cash transfer without conditions (UCT), to receive a cash transfer with conditions (CCT), or to a control group. Both UCT and CCT households received $18 + $4 per child for up to three children every 2 months for one year. In addition, CCT households were expected to apply for a birth certificate for any child under 18 without a birth certificate (or within 3 months for a newborn child), to keep vaccinations up to date and to attend two growth monitoring sessions for children under 5, and to ensure that their children ages 6-17 attended at least 90% of school days per month. Both baseline and endline data were collected from all households. According to the endline data, the level of birth registration was 62% for children under 5 in the CCT households, 47% in the UCT households, and 45% in the control households, indicating that the CCT intervention (but not the UCT intervention) was successful in increasing birth registration levels. Although neither intervention was successful in increasing vaccination coverage, both interventions were also successful in increasing school attendance among children ages 6-17.

Some surveys ask parents why their children's births are not registered, and the responses to this question provide an important source of qualitative data that is not subject to the same limitations as the quantitative data discussed above. In the Indonesian Baseline Study, for example, the most frequently cited reasons were: (i) legal identity documents are too expensive to obtain (41%), (ii) the distance to civil registry offices is too far (15%), (iii) lack of knowledge of how to obtain legal identity documents (12%), and (iv) the processes are too complicated (Sumner and Kusumaningrum 2014). In one cross-country study, the largest number of countries (20) also cited cost as the most important barrier to birth registration (UNICEF 2005). Not knowing that the birth should be registered was the second most commonly cited reason, followed by not wanting to incur a late fee and lack of knowledge about where to register. In Cambodia, one-third of focus group participants in one study reported that the main obstacle to acquiring a birth certificate is that "registration requires money" (Vandenabeele and Lao 2007). Officials are often accused in focus groups of requesting bribes and other unofficial payments to speed up the normal process of issuing a birth certificate.

Government policies and laws may also affect registration coverage in some countries. The case of China has already been cited. However, some government policies can encourage birth registration. One example is the Nepal cash grant program, which required a child to have a birth certificate to establish eligibility (Box 2). On the other hand, some government policies designed in part to encourage birth registration (e.g., requiring a birth certificate to enroll in school) may not have any positive effect due to lack of enforcement and may even have negative effects in discouraging school enrollment in marginalized population groups (Vandenabeele and Lao 2007). Laws may also discriminate against single women, refugees and other vulnerable groups and prevent them from obtaining a birth certificate (Vandenabeele and Lao 2007, Wallace et al. 2009, Cody 2009, Apland et al. 2014, Sumner 2015).

2.1.3 Consequences of the non-registration of births

The main consequence of not having a birth certificate is that it greatly complicates the process of registering other vital events (e.g., deaths, marriages, divorces) and of gaining access to adult identity documentation (e.g., a national ID card). Birth registration is rightly viewed as the gateway to all other forms of civil registration. In addition, possession of a birth certificate may facilitate access to child health services and schooling in some countries.

Many studies cite the positive correlations between birth registration and key education and health outcomes as evidence of the effects of under-registration. For example, the Indonesia Baseline Study (IBS) cites a strong positive association between birth registration and schooling among the poorest 30% of households, i.e., 36% of women aged 19-29 with a birth certificate completed 12 years of schooling compared to only 10% among those without a birth certificate (Sumner and Kusumaningrum 2014). Hossain (2010) concludes that the under-registration of births in Bangladesh contributes to high rates of age-grade incongruence in primary schooling. The IBS also cites a strong positive relationship between absence of a birth certificate and girls' marriage before the legal age of 18, age at first birth, and adverse health outcomes among teen mothers and their children. Apland et al. (2014) cite positive correlations between birth registration and child weight and immunization rates in the DHS data for India (from Maharastra and Uttar Pradesh States), Kenya and Sierra Leone. However, these associations may again not be causal but may instead reflect the effects of unobserved third factors (e.g., motivation, modernity) on both birth registration and the outcome in focus (Vandenabeele and Lao 2007).

The currently available survey data on birth registration are limited in most countries to children under 5, which effectively prevents looking directly at gender-specific correlations between birth registration and subsequent outcomes such as formal schooling and early marriage. Exceptions are the 2006-07 and 2012-13 Pakistan DHS, which collected data on the civil registration of all persons. However, most DHS surveys (including the two Pakistan DHS cited) do not include variables that can be used as "instruments" to obtain credible estimates of a causal relationship between birth registration and other outcomes.[8] Apland et al. (2014) analyze Plan International's own panel data from India for three years (2007-2009) to see whether birth registration is related to education outcomes (i.e., current enrollment, age-grade congruency, and initial enrollment at the compulsory age). The results indicate that a Plan-sponsored child whose birth is registered is 37% more likely to be currently enrolled in formal education, is 130% more likely to be attending age-appropriate schooling, is 71% less likely to discontinue schooling, and is 38% more likely to enroll in school at age 6. However, the study noted numerous problems with the data.[9]

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[8] The 2007 Dominican Republic DHS recorded the GPS coordinates of all sample clusters, and these data were linked to the locations of registration points in order to analyze the impact of birth registration on schooling outcomes in urban areas, using distance to the nearest registration point and whether the mother has an identity document as "instruments" (Corbacho et al. 2012). The study found that children without a birth certificate have significantly lower chances of graduating from primary school and complete fewer grades overall (through age 17, which was the last age group for which birth registration information was collected). However, they did not find any evidence that possession of a birth certificate affects children's entrance into school or school enrollment, and the validity of the instruments used in the study is questionable.

[9] Apland et al. (2014) also used propensity score matching (PSM) to estimate the effects of birth registration on a wide array of outcomes using DHS data from India, Kenya and Sierra Leone. However, PSM does not control for the possible effects of unobservables on the outcomes studied.

Apland et al. (2014) also provide qualitative evidence from four countries (i.e., India, Sierra Leone, Kenya and Vietnam) on whether legal requirements to possess a birth certificate in order to obtain education and health services actually impede access to these services in many cases. The study concludes that the legal requirements are not rigorously enforced in all countries and therefore do not actually impede access to education and health services (an argument that is also made in Vandenabeele and Lao 2007 and in Ladner et al. 2014). Similarly, the Indonesia Baseline Study (Sumner and Kusumaningrum 2014) reports that, while 74% of children who have never attended school do not have a birth certificate, very few respondents (0.8%) cite not having a birth certificate as the reason for their children not having ever attended school or for their having been enrolled previously but not currently (2%). In the 2010/11 Nepal Living Standards Survey (Central Bureau of Statistics 2011), the leading reasons given by persons aged 6-24 who never attended school (8.7% of the total and 12.0% of females) were "parents did not want" (30.0% overall and 35.3% of females), "had to work at home" (25.5% overall and 29.6% of females), and "not willing to attend (17.2% overall and 12.7% of females)."[10]

Even if some regulations requiring a birth certificate for gaining access to schooling are frequently relaxed in the rural areas, as several studies indicate, they are less often overlooked in urban areas, where participation in the modern economy requires possession of a birth certificate (Apland et al. 2014). For example, a birth certificate or other identity documents is often required to enroll in post-primary schooling, to gain access to examinations or a diploma, to obtain a formal sector job in both the public and private sectors, or to obtain a passport for overseas travel or employment; and there are typically important gender gaps in most of the outcomes associated with these activities.

2.1.4 Promising interventions to increase coverage

The literature identifies several possible interventions to increase birth registration coverage, including:

- Remove cost of birth registration to parents (including the elimination of penalties or higher fees for late registration)
- Use financial incentives to encourage parents to register their children's births and/or to motivate registrars
- Provide mobile registration services at the village level in remote areas
- Integrate birth registration into health services (with or without financial incentives) and use health policies (e.g., social health insurance, free obstetric delivery care) to encourage mothers to deliver their children where such services are available
- Make increased use of ICT technology (e.g., mobile phones, web-based registration) to make registration services more accessible

Removing all fees for birth registration (including late fees and informal fees) is often recommended as a first step. However, if such a policy is introduced, it is important to verify that it is being implemented. Despite a 2013 legal amendment eliminating fees for all CRVS documents in Indonesia, for example, many parents continue to pay hidden fees, while the

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[10] Other reasons including "Not allowed admission" were cited by 6.4% of respondents and 5.5% of females.

parents of children whose births are not registered continue to identify cost as the main reason for non-registration (Duff, Kusumaningrum and Stark 2016).

Positive financial incentives may be needed to offset other costs, such as transportation costs and the opportunity cost of parents' time. Although financial incentives have not yet been widely used to encourage birth registration, they were used in the Majoni scheme in the State of Assam in India (Baruah et al. 2013). In that scheme, all girls born after February 1, 2009 received a fixed deposit of Rs 5,000 into a bank account under the following conditions: (i) the child was institutionally delivered, (ii) the child's birth was registered, (iii) the family adhered to the two-child norm, and (iv) the child did not marry before her 18th birthday. If these conditions are met, the female child will be allowed to withdraw the accumulated savings on her 18th birthday. The effects of the scheme were evaluated using hospital records in one tertiary care health center in which 6,000-7,000 births occurred each year over a two-year period (i.e., one year prior to the scheme and one year after the scheme went into effect). Although all births occurring in this facility are registered, a birth certificate is provided only to parents who formally request one. During the year prior to the scheme, formal requests for a birth certificate were received for 24.5% of births (with a female to male ratio of 1.06), whereas in the year following implementation of the scheme, formal requests were received for 39.1% of births (with a female to male ratio of 1.34).

Financial incentives for birth registration have also been provided in connection with some cash grant programs, such as the Nepal cash grant program (Box 2) and the cash transfer program in Zimbabwe (Box 1). Both programs required eligible children under 5 to have a birth certificate in order to receive a cash grant, and the available evidence indicates that cash grants provided a powerful incentive for parents to register their children's births.

Box 2. The Nepal cash grant program

The Nepal cash grant program was established in October, 2009 with the objective of improving nutritional outcomes among the poor (Adhikari et al. 2014, Rabi et al. 2015, and Hagen-Zanker et al. 2015). It was intended to cover the entire country, but fiscal constraints limited its implementation to (i) the entire population of five districts in the Karnali subregion and (ii) poor Dalit households nationally. The program provides a cash grant of 200 Nepalese Rupees per month (equal to about $2.60 in mid-2009, but currently equal to less than $2.00) directly to eligible households for up to two children under 5. The program's features have remained unchanged over time, including the Rupee amount of the cash grant, which has not been adjusted to reflect regional (or even national) inflation. The program's targeting accuracy has been evaluated to be reasonably effective. Complementary outreach programs were established to encourage parents to use their grant to provide nutritious food to their children. A survey conducted in 2012/13 indicated that the program covered a total of 551,916 children, or about one in five children under five years of age (including 90,349 in the Karnali subregion, with the rest in poor Dalit households nationwide). As a direct result of the program, birth registration coverage increased quickly and dramatically in the targeted population, compared to the rest of the population. A significant pre-program gender gap in birth registration was eliminated in the targeted population, while it persisted in the rest of the population.

2.2 Death registration and cause of death

2.2.1 Registration of deaths

The registration of deaths is essential for claims of inheritance, insurance, survival and spousal benefits and for claiming citizenship by descent (Abouzahr et al. 2014a). In Nepal, for example, widows are entitled to a widowhood pension, but only if they can provide proof of their previous relationship, as well as the death and citizenship certificates of their deceased husband (Vandenabeele and Lao 2007).

In many developing countries, deaths are rarely registered. Only about 10% of deaths are currently being registered in Cambodia, despite that some communes offer 5,000 Riel ($1.25) as an incentive to register a death (Ministry of Interior, 2014). In Pakistan, there are no estimates of the proportion of deaths that are registered (Abouzahr et al. 2014b). Deaths are usually less likely to be registered than births because there are fewer incentives to do so apart from the need to establish inheritance rights or to claim social benefits (Abouzahr et al. 2014a). Demographic techniques are available to estimate the extent of under-reporting of deaths. In 2012 WHO estimated that two-thirds of all deaths are not registered, with the highest rates observed in low-income countries (World Bank and WHO 2014).

When children's births are not registered by age 5, it is less likely that their deaths will be registered (ESCAP 2015, Yang et al. 2005). In addition, many of the same factors as with birth registration are believed to be responsible for the under-registration of deaths and births (e.g., access to civil registration points, presence of registration sites in hospitals and other health facilities where deaths occur, incentives and disincentives). Burial customs and practices are also important. Some countries require deaths to be registered before burials can take place. However, such regulations are usually not strictly enforced. In the Philippines, for example, where birth registration rates are estimated to be about 93.5%, only about 66% of deaths are

registered, despite a requirement that a death certificate must be obtained prior to burial (Abouzahr et al. 2014b).

Information on gender gaps in death registration is limited. Very few household surveys collect data on the registration of deaths, even among children under 5 (the small number of DHS surveys with VA modules are the main exception). Consequently, there is little information on whether a gender gap exists in death registration. However, death registration data from the state of Rajasthan in India for 2010 suggest that the deaths of females of all ages and of children under 5 are under-registered (Abouzahr et al. 2014b). Death registration data from China indicate that 14.1% of female deaths are under-reported overall (compared to 12.1% of male deaths), with larger under-reporting of female deaths at ages below 60 (Rao et al. 2005).

2.2.2 Cause of death

Information on the cause of death, when disseminated through vital statistics, can (i) improve the allocation of resources in health services, (ii) provide early insights into trends in disease prevalence so that health officials can design prevention or intervention strategies, (iii) provide more accurate estimates of maternal mortality than are available from other sources, and (iv) reveal unusual patterns of deaths by cause that point to the need for timely interventions. The International Classification of Diseases (ICD) is endorsed by the World Health Assembly (WHA) as the standard used to classify deaths and diseases using death certificates and health records (UNESCAP 2015). The most recent revision of ICD (ICD-10) was endorsed by the WHA in May 1990 and came into use by member states from 1994. A medical certificate of death is a death certificate completed by a medically trained person listing the cause of death in accordance with ICD certification standards.

Many developing countries do not routinely collect information on the causes of death. In India, for example, only a small proportion of deaths in the country have a medically certified cause, and most of these are in urban areas (Abouzahr et al. 2014b). In Pakistan, causes of death are not registered at any level. Even in hospitals, the standard international death certificate is rarely used and there is limited use of ICD-10 for coding causes of death (Abouzahr et al. 2014b). In the Philippines, it was estimated that in 2010 only 35% of registered deaths had a medically certified cause and of these, about 15% of the causes were ill-defined, making the information of little use for public health policy or planning (Abouzahr et al. 2014b). Ideally, all deaths occurring in health facilities or attended by a medical practitioner will have a medical certificate with the underlying cause of death according to the ICD standards. Cause of death codes are usually assigned subsequently on the basis of the information in the medical certificate. However, the existence of a medical certificate with the cause of death in the prescribed format does not guarantee the quality of information on the underlying cause of death (Viroj et al. 2006).[11] Training medical practitioners to identify correctly the underlying cause of death and coding it correctly are essential to ensure the quality of the information on causes of death.

It is unclear whether there is a gender gap in certifying the cause of death. Most household surveys do not collect information on the cause of death (the few household surveys with a VA module are the exception). However, because information on the cause of death is most often available only in hospitals, it may be possible to infer whether a gender gap exists in certifying

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[11] One problem noted in the cited study is sensitivity about listing the cause of death as HIV/AIDS in Thailand.

the cause of death by examining whether there is a gender gap in obtaining hospital care immediately prior to death. Clearly, increasing the proportion of births that are medically attended is critical to obtaining accurate data on maternal deaths.

2.3 Marriage registration

Legal proof of marriage is particularly important for widowed female heads of household and the families they support in terms of accessing public services, such as education, health and social protection services (Abouzahr et al. 2014a). Legal proof of marriage can also be important in protecting the rights of widows to prove entitlement to inheritance, spousal benefits and to nationality or legal residence under the law. In some countries, a marriage certificate is required to register children's births. In Indonesia, for example, regulations link legal recognition of paternity to the existence of a legal marriage (Sumner 2015). If parents do not already have a marriage certificate, the process of obtaining a standard birth certificate involves three separate steps that are complex, time-consuming and costly. Without a marriage certificate, children can only receive a birth certificate with the name of the mother, and these children are discriminated against. For these reasons, marriage registration should also be an important gender focus in CRVS.

There is relatively little quantitative information available on marriage registration because most household surveys (including the MICS and DHS) do not ask whether couples have a marriage certificate. One exception is a household survey conducted in Indonesia in 2012 as part of the Indonesia Baseline Study. This survey found that 55% of married couples in the poorest 30% of households lacked marriage certificates, and 75% of children from these couples did not have birth certificates (Sumner and Kusumaningrum 2014).[12] Among all sample households in 17 provinces, only 36% of couples had a marriage certificate. The same survey found marked geographical differentials in the possession of a marriage certificate. In two outlying provinces (NTT and NTB), only one in ten couples had a marriage certificate, compared to 8 in 10 in predominantly urban Jogjakarta. The cost and distance to the nearest service providers were most often cited as reasons for not having a marriage (or divorce) certificate. The average distance to the nearest civil registration office was reported to be 26 kilometers (e.g., 18 kilometers in West Java province and 200 kilometers in NTB and NTT provinces). Middlemen were frequently used to obtain marriage (and even birth) certificates at a cost ranging from $5-$30.

The qualitative data on marriage and marriage registration suggest that many couples, particularly in rural areas, do not register their marriages. In South Asia, women often marry before the legal age in customary or religious services. In Bangladesh, for example, where the legal age of marriage for females is 18, two-thirds of women marry earlier (UNFPA 2012). In such cases, marriages may not be registered because this would be discovered when they are required to produce a birth certificate as part of the registration process (a standard requirement for marriage registration). In Southeast Asia, marriages often proceed in stages, and a certificate may not be obtained until the marriage has been formalized (Choe et al. 2002).

The Indonesia Baseline Study (IBS) reports that women with a marriage certificate were more likely to obtain both prenatal and postnatal care (Sumner and Kusumaningrum 2014). The IBS

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[12] The same survey also found that women in non-polygamous marriages were three times more likely to have a marriage certificate compared to non-first wives in polygamous relationships.

also found that, in NTB province, female heads of household with a marriage certificate were 74% more likely to have health insurance and 84% more likely to access rice subsidy assistance. However, as discussed above, these relationships may not be causal.

2.4 Divorce and annulment registration

Legal proof of divorce is particularly important for divorced female heads of household and the families they support in terms of accessing public services, such as education, health and social protection services (Abouzahr et al. 2014a). Legal proof of divorce can also be important in protecting the right of divorced women to have access to their children and in helping them to prove entitlement to inheritance, spousal benefits and to nationality or legal residence under the law. For these reasons, divorce registration should also be an important gender focus in CRVS. Unfortunately, there is not much information available on the registration of divorces or the possession of a divorce certificate, apart from the Indonesia Baseline Study (Box 3).

Box 3. Divorce in Indonesia

Under Indonesian law, if a couple does not obtain a divorce certificate, subsequent marriages are not legal and a marriage certificate cannot be issued (Sumner 2015). Divorced women also need a divorce certificate in order to establish that they are a head of household in order to gain access to government-financed health insurance or to obtain a Social Protection Card (KPS). The Indonesia Baseline Study (IBS) indicates that among the poorest 30% of households only 24% of female heads of household who indicated that they were divorced had a divorce certificate (Sumner and Kusumaningrum 2014). Regional disparities were large. For example, only 5% of divorced women in remote NTB province had a divorce certificate, compared to 72% in Jogjakarta. Among all sample female heads of households who reported that they were divorced (N=3,270), only 30% had a divorce certificate. The IBS found that the cost of a marriage legalization case or a divorce case initiated by the wife in the Religious Courts can be as high as 1-10 times the monthly income of a person living on the Indonesian poverty line, depending on how far the parties live from the court house. Divorce cases are the single largest group of cases in the Indonesian court system; 93% of the 430,000 cases received by the Religious Courts in 2013 were divorce and marriage legalization cases. In the same year, divorce cases accounted for 40% of the 24,568 civil cases in the General Courts.

2.5 Adult identity documentation

Many countries issue identity (ID) cards to adults (e.g., persons aged 18 and older). In some countries, legal identity can also be established using other means of identification, e.g., birth certificates, house books, ration cards, voter registration cards (Apland et al. 2014). These ID cards (or other documents establishing legal identity) are frequently needed for a range of important activities, including: (1) obtaining a passport, (2) registering a marriage, (3) obtaining admission to educational institutions, (4) obtaining a formal sector job, (5) opening a bank account and taking out loans, (6) purchasing property, (7) registering land ownership, (8) obtaining a utility connection, (9) registering a business, (10) obtaining a driver's license, (11) registering a car, (12) obtaining access to social protection and social assistance programs (e.g., social health insurance, pensions), and (13) voting or standing for electoral office (Vandenabeele and Lao 2007, Abouzahr et al. 2014a, Lopéz et al. 2014, Malik 2014, Dahan and Hanmer 2015, Coney et al. 2015). Because significant gender gaps exist in several of these activities (e.g., education, formal sector employment, business ownership, access to credit, land

ownership), possession of adult identify documentation should also be an important gender focus in CRVS. For example, Global Findex data show that worldwide 42% of women are unbanked, compared to 35% of men (Hanmer 2015). In Pakistan, because women were under-represented in the national ID card data base, they accounted for only 43.5% of registered voters in the 2013 election (NDI 2013).

Although data on the percentage of women included in national ID programs are available for only a few countries, the available data indicate that women are disadvantaged in access to national identity documentation in at least some countries. In Pakistan, for example, women accounted for only 44% of ID card holders in 2014, while they accounted for 48% of ID card holders in India in 2015 (Coney et al. 2015). In Indonesia, the Baseline Study (Sumner and Kusumaningrum 2014) found that only about half of women in the poorest 30% of households had an identity card (no information was provided on the percentage of men with ID cards). There are many reasons for this, including the greater difficulty women have in physically accessing registration services, due to time constraints or limitations on mobility. In Pakistan, for example, a national survey in 2012 (N=2,504) on barriers to women in obtaining national ID cards (CNICs) found that only 79% of women aged 18 and above had a CNIC, compared to 90% of men and that the gender gap was higher among youth aged 18-24, i.e., 20% versus only 2% among those aged 45-54 (IFES 2013). The survey's other findings include:

- 55% of those with a CNIC had to travel 1-2 times to the national registration office (NADRA) to obtain their CNIC, while 25% had to travel 3-4 times and 8% had to travel more than 4 times and that the poor had to make more trips than the rich (i.e., 46% of the poorest 20% had to make 3 or more trips versus only 21% of the richest 20%)
- 64% of those with a CNIC reported having paid some amount of money to NADRA when they applied for their CNIC, although it is supposed to be free if delivered on a normal schedule
- 73% of women with a CNIC reported that they were accompanied by someone when they sent to the NADRA office, compared to only 31% of men
- 53% of women (versus 36% of men) cited "to vote or stand for election" as a reason for obtaining their CNIC, while 22% of women (versus 9% of men) cited "access to social support programs" as a reason for obtaining their CNIC. Men were more likely to cite "applying for a job" or "applying for a driving license" as reasons for obtaining a CNIC.
- Those without a CNIC cited "no need" (27%) or "lack of time" (24%) most frequently as the reasons for not obtaining a CNIC. Only 8% and 5% respectively cited "lack of required documents" and "high cost" as reasons for not having a CNIC. However, 17% of women (versus only 2% of men) cited "lack of support from relatives" as a reason for not obtaining a CNIC, and women were far less likely than men to cite time, cost or lack of documentation as reasons.
- 65% of women (and 85% in large cities) were unaware that NADRA had designated Fridays exclusively for women to apply for a CNIC

Discrimination is also a barrier to women obtaining an ID card in some countries. This often takes the form of requiring different actions from women and men (Dahan and Hanmer 2015). Examples include:

- Married women must provide marriage certificates, but married men are not required to do so

- Married women require an additional signature, such as a father's or guardian's, while married men do not
- Married women must indicate the name of their spouse, but married men are not required to do so
- Identity cards are optional for women but required for men

Although legal identity can confer many benefits, it is not always the case that these benefits can be secured in practice (Vandenabeele and Lao 2007). The services, benefits and opportunities to which legal identity provides access may only exist for a small privileged minority in many developing countries. The general population may also face other fundamental economic, political and social obstacles to accessing such services, benefits and opportunities. The demand for legal identify may also be low if laws, policies or actual practices do not make access strictly contingent on the possession of legal identity documents, or if there are easily available alternatives to obtaining such access. The Baseline Study also found that although provincial and district laws stated that these legal documents were a prerequisite for accessing government services, they were not for the most part required in fact (although the Baseline Study cites some examples where exclusion from services did in fact occur because people lacked the necessary legal identity documents).

2.6 Vital statistics

The civil registration system is potentially the most efficient source from which to produce accurate, complete, timely and continuous information on vital events, including most notably, births and deaths (Abouzahr et al. 2014a). Many (mostly developed) countries are able to publish vital statistics based on civil registration data on an annual or more frequent basis down to the smallest administrative levels (e.g., districts or sub-districts). No other data source (e.g., censuses, surveys) can provide comparable information (United Nations 2014a). However, in developing countries where the civil registration system is not yet well developed, vital statistics are sometimes based on other administrative data (e.g., national census, health information systems) or household survey data.

The United Nations recommends that a basic set of tables be reported by all vital statistics systems (UN 2014a). Many of these tables include separate tabulations by sex. Examples include:

- Live births by place of occurrence and sex of child
- Deaths by place of usual residence, age and sex of decedent
- Infant deaths by month of occurrence and by age and sex of the child
- Marriages by place of usual residence of groom and month of occurrence
- Divorces by place of usual residence of husband

However, many Asian and Pacific countries have only limited ability to report such tables on a regular basis. The most recent, comprehensive inventory of country capacity to report vital statistics, whether based on vital registration data, censuses or large national surveys, is provided in the UN report, *The World's Women 2005* (UN 2006). Although the information is ten years old, more recent information is not available.[13] According to these data, 39 of 50 countries in Asia (accounting for 60% of the region's population) were able to report the total number of

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[13] Although *The World's Women 2015* is available (UN 2015), it does not provide similar information.

births at least once during the period 1995-2003.[14] However, only 30 of these 50 countries (accounting for only 19% of the region's population) were able to report the number of births by sex. Only 33 of the 50 Asian countries were able to report the number of deaths by sex at least once during this period. The number of marriages were reported at least once by only 36 of 50 Asian countries, while the number of divorces were reported at least once by only 32 of 50 Asian countries.

In many developing countries, registration data are not processed at all and remain (often in paper form) in the local registration offices. This can be a serious problem if the records become lost or damaged as the result of a civil conflict or natural disaster. In addition, without processing and disseminating registration data, even when coverage is low, there are no data on the gender profile of death, marriage and divorce registration in the absence of household survey data. It is also important to begin processing existing civil registration data, even if coverage is still low, to provide an economical source of data on the outcome of piloted interventions designed to increase registration coverage.

3. Data analysis

3.1 Description of the data

The main data sets analyzed for this report are: (i) recent Multiple Indicator Cluster Surveys (MICS) surveys; and (ii) recent Demographic Health Surveys (DHS). The main advantages of these surveys are that (i) most collect data on the birth registration at least of children under 5, (ii) they also collect data on a wide range of individual and household characteristics, (iii) the data are fairly uniform across a large number of Asian and Pacific Countries; and (iv) multiple MICS and/or DHS surveys have been conducted in the same country over the years. In addition, a few of the surveys (particularly the DHS) collected data on other variables of interest. For example, the 2012-13 Pakistan DHS collected data on the civil registration of all persons (not only children under 5), while the 2011 Bangladesh DHS includes a verbal autopsy (VA) module (with some questions on death registration) that was administered to any household that reported the death of a child under 5 during the previous 5 years. The 2010 Afghanistan Mortality Survey (a special DHS survey) administered a VA for all deaths occurring at any age during the previous three years. A few DHS surveys have also collected community-level data on access to health, education and other services (e.g., distance to the district headquarters), although the data are not always publicly accessible.

Data on birth registration have been collected by the MICS since 1999 in almost 130 surveys conducted in 50 low- and middle-income countries. The DHS has collected data on birth registration in more than 90 surveys around the world since 1993. The data on birth registration in the MICS are currently collected using the three questions in Table 1.[15]

Table 1. Standard birth registration module used in the MICS

BIRTH REGISTRATION, Questionnaire for Children Under 5		
BR1. Does (name) have a birth certificate? If yes, ask: May I see it?	Yes, seen………………………..1 Yes, not seen……………….…..2 No…………………………………..3 DK…………………………………..8	1→Next module 2→Next module

[14] Higher population coverage was achieved in Oceania due to the inclusion in that region of Australia and New Zealand with relatively large populations.
[15] http://data.unicef.org/files/MICS-Birthregistration_module_Eng.pdf

BIRTH REGISTRATION, Questionnaire for Children Under 5		
BR2. Has (name)'s birth been registered with the civil authorities?	Yes…………………………………1 No……………………………….2 DK……………………………….8	1→Next module
BR3. Do you know how to register your child's birth?	Yes…………………………………1 No……………………………….2	

DK=Don't know

The standard DHS Household Questionnaire currently includes the two questions on birth registration for all children under 5 years of age in Table 2.

Table 2. Standard birth registration module used in the DHS

BIRTH REGISTRATION, Household Schedule (Q. 20, all children under 5)		
Does (NAME) have a birth certificate?	Yes…………………………1 No…………………………..2 DK…………………………8	1→Next module
Has (NAME)'s birth ever been registered with the civil authority?	Yes…………………………1 No…………………………..2 DK…………………………8	
	The responses to both questions are coded as follows: 1 = Has certificate 2 = Registered 3 = Neither 4 = Don't know	

The main difference between the MICS and DHS is that the DHS does not ask to see a reported birth certificate.

There are at least two important data issues with respect to birth registration. One is how to interpret the various responses to questions on birth registration. International comparisons generally accept the response that the birth has been registered with the civil authorities as indicating that the birth has indeed been registered, even if a birth certificate has not been obtained. In many countries, such responses account for a high share of the total coverage. In Lao PDR, for example, the percentage of children under 5 whose births were registered at the time of the 2011-12 Lao Social Indicator Survey is considered to be 75% (Table 5). However, 43% of this total is accounted for by responses indicating that although a birth certificate was not obtained, the birth was registered with the civil authority. Moreover, of the 33% of respondents who indicated that the child had a birth certificate, only 17% were actually able to show the certificate to interviewers. The analysis done for this report uses possession of a birth certificate (whether seen or not seen) as the main dependent variable, based on the reasoning that possession of a birth certificate is necessary in most cases to obtain the benefits from birth registration and that birth registration in the absence of a birth certificate may be based on data of limited reliability (as documented in the case of Lao PDR in Annex 5).[16] However, other dependent variables (e.g., reported birth registration with or without a birth certificate) are also analyzed for comparison purposes.

The second data-related issue is how to treat non-reporting of information on birth registration. Although this is generally under 5% of all births, it is unlikely to be random. In the context of the present study, the possibility arises that non-reporting may be gender-biased. Consequently, in

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[16] Unfortunately, information on whether a reported birth certificate was seen by interviewers is only available in the MICS.

cases where non-responses account for more than 2-3% of all responses, the same multivariate models are estimated with non-response (instead of possession of a birth certificate) as the dependent variable in order to see whether non-response is significantly related to the sex of the child, other factors equal (see, for example, Annex 5).

3.2 Criteria for selecting countries and data sets

It is not possible to analyze MICS or DHS data for all of the countries listed in Table 5 because 14 of the countries do not have such data.[17] Seven additional countries have either MICS or DHS data, but with reported registration rates of 99-100% (Table 3), which implies that there are no differentials to observe in these countries. That still leaves 25 countries with MICS or DHS data. The analysis in this report focuses on countries that have relatively low birth registration coverage rates (i.e., overall coverage rates of 75% or lower, according to the data in Table 5). There are twelve such countries (i.e., Afghanistan, Bangladesh, Cambodia, Indonesia, Lao PDR, Myanmar, Nepal, Pakistan, Samoa, Timor-Leste, Tuvalu, and Vanuatu).[18] Although some countries with high coverage rates in the general population may include sub-populations with significantly lower coverage rates (e.g., Vietnam's minority groups, as cited in UNICEF 2015), multivariate analysis is impractical if the sample size is too small. The analysis in this report is also limited to surveys conducted in 2011 or later (with the exception of the extensive VA data 2010 Afghanistan Mortality Survey). The six surveys analyzed in this study are indicated in boldface in Table 3. Although it also satisfies the criteria for inclusion, data from the 2012 Indonesia DHS were not analyzed in this study because so much information was already available from the Indonesia Baseline Study.

Table 3. Twelve countries with recent household surveys and relatively low rates of birth registration

Country	Survey	Coverage	Sample size (number of households)	% of births registered among children under 5
Afghanistan	**2010-11 MICS**	**Partial***	**13,116**	**37.4**
Bangladesh	**2011 DHS**	**National**	**17,141**	**30.5**
Cambodia	**2014 DHS**	**National**	**15,825**	**73.3**
Indonesia	2012 DHS	National	43,852	66.6
Lao PDR	**2011-12 MICS/DHS**	**National**	**18,843**	**74.8**
Myanmar	2009-10 MICS	National	29,238	72.4
Nepal	**2014 MICS**	**National**	**12,405**	**58.1**
Pakistan	**2012-13 DHS**	**Partial****	**12,943**	**33.6**
Samoa	2009 DHS	National	2,247	47.7
Timor-Leste	2009-10 DHS	National	11,463	55.2
Tuvalu	2007 DHS	National	739	49.9
Vanuatu	2007 MICS	National	2,632	25.6

* Excludes 67 of 516 EAs in insecure areas. It is noted that the 2010 Afghanistan Mortality Survey did not collect any data on birth registration.
** Excludes Azad Kashmir, Jammu & Kashmir and Federally Administered Tribal Areas

[17] i.e., Brunei Darussalam, China, Cook Islands, Fiji, Malaysia, Federated States of Micronesia, Niue, Palau, Papua New Guinea, Republic of Korea, Singapore, Solomon Islands, Tonga and Turkmenistan. Although not indicated in Table 5, India has DHS data for 2005/06, and the Philippines has DHS data for 2013 (but without any data on birth registration).
[18] It is noted that these countries are in only three of ESCAP's five sub-regions (i.e., South and West Asia, Southeast Asia and the Pacific). Not represented are any countries from the East and Northeast Asia or North or Central Asia sub-regions, most of which have almost universal birth registration coverage.

3.3 Methodology

The first step in the data analysis is to assess the quality and reliability of the data on birth registration, in terms of the two issues discussed above, and to adapt the analysis as appropriate for each country. The data in Table 5 suggest that sex is not an important determinant of the under-registration of births in the general population (except possibly in Nepal). However, there may still be significant gender gaps in birth registration in vulnerable population sub-groups.

The published survey reports and Table 5 are limited to bivariate relationships. Because most of the socioeconomic covariates are highly correlated (e.g., education with income or income with urban-rural location), it is not possible to determine from the bivariate tables alone which of the covariates are most strongly associated with a given outcome when the other covariates are held constant. Although even partial correlation does not imply the presence of a causal relationship, it is still informative to use multivariate analysis to disentangle the relationships between the covariates and to see how they interact with gender (for example, by interacting gender with different socioeconomic characteristics in the regression analysis).

The covariates available in most MICS and DHS data sets include: sex of the child, age of the mother and child, birth order of the child, type of antenatal and obstetric delivery care (e.g., place of birth), parents' education, employment, marital status, parents' presence in the household, ethnicity and/or religion, household size and composition (including the sex of the HH head), location of residence (region, urban-rural), the household's socioeconomic status (as measured by a wealth index), as well as some additional covariates that are available in some DHS data sets (e.g., parents' registration status, cluster altitude, distance to the district or sub-district headquarters, parents' migrant status). However, as discussed above, many of these covariates are likely endogenous and would lead to biased estimates and/or misleading conclusions if they were specified in the regression models. Consequently, the regression models are limited to exogenous and pre-determined variables (e.g., age and sex of the child, the child's relationship to the head of household, parents' schooling, migrant status, religion and ethnicity, the number of male and female adults in the household, female headship, and location of residence).[19]

3.4 Findings

3.4.1 Birth registration

This section presents the findings of the data analysis of birth registration done for this report for six countries (i.e., Afghanistan, Pakistan, Bangladesh, Nepal, Lao PDR and Cambodia). Table 4 identifies the main predictors of possession of a birth certificate among children under 5. The rows refer to the individual predictors, while the columns refer to countries/data sets. Numerical values within a cell are reported only for relationships that are statistically significant at the 0.10 level or higher (* denotes significance at the 0.05 level, while ** denotes significance at the 0.01 level). The numerical values indicate not only the direction of the relationship (positive or negative), with the other predictors held constant, but also the magnitude of the relationship.

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[19] However, even some of the pre-determined variables (e.g., parents' schooling) may also be endogenous if unobserved factors (ambition, motivation) are correlated over time.

Most of the predictors are dummy variables, and the reported numerical values indicate the estimated change at the sample means in the likelihood of possessing a birth certificate if the value of the dummy variable changes from zero to one. Variables with multiple values are converted to standardized values (i.e., values with a mean of zero and a standard deviation equal to one) prior to estimation (as indicated in the variable label). For these variables, the reported numerical value indicates the estimated change at the sample means in the likelihood of possessing a birth certificate for a one-standard deviation change in the variable. Unless otherwise indicated, the numerical values refer to estimates obtained for both sexes combined. However, in cases where the variable is only statistically significant for one sex or when the difference in the sex-specific estimates is statistically significant, the numerical values refer to only one sex (i.e., M for boys or F for girls).

The summary findings in Table 4 indicate that there is little evidence of a gender gap at the national level in the countries studied, even with other factors held constant (with the possible exceptions of Afghanistan and Nepal, where the estimated gender gaps are less than 2% at the national level and are only statistically significant at the 0.10 level). Instead, they indicate that the strongest and most consistent predictors of possession of a birth certificate are: (i) the wealth index, (ii) both mother's and fathers' schooling, (iii) ethnicity/caste, and (iv) region/province of residence. The numerical estimates indicate, for example, that a one standard deviation-increase in the value of the wealth index predicts an increased likelihood of possession of from 5% (Afghanistan and Bangladesh) to 14% (Pakistan), other factors equal. Other predictors that are almost as strong and/or consistent are: (i) the child's age (except in Afghanistan and Lao PDR), (ii) neither parent in the household (not available in Bangladesh or Lao PDR), and (iii) urban residence (not significant in Bangladesh, and with varying signs in the other countries). The finding with respect to the wealth index is perhaps not surprising, given the extent of qualitative evidence suggesting that the cost of birth registration is the most frequently cited reason for non-registration. The finding in Bangladesh (Annex 2) that travel cost to the district headquarters, although not significant in the general population, is negatively associated with the likelihood of possessing a birth certificate in the three poorest wealth quintiles (and significantly, in the poorest quintile) is at least consistent with the idea that cost is an important proximate constraint to birth registration.

Table 4. Summary findings from the multivariate analysis with respect to predictors of possession of a birth certificate by children under 5 in four countries

Predictor	Afghanistan 2010-11	Pakistan 2012-13	Bangladesh 2011	Nepal 2011	Lao PDR 2011-12	Cambodia 2014
Child's age (age 4 compared to age 0)	-0.038*	+0.094**	+0.488**	+0.357**		+0.186**
Female child	-0.015			-0.023		
Neither parent in the household[a]		-0.109 (M)*	NA	-0.100*	NA	-0.083 (F)*
Mother only in the household[a]			NA	-0.047*	NA	-0.064 (M) -0.151 (F)**
Mother living					+0.204**	
Father only in the household[a]		+0.276 (M)**	NA	NS	NA	-0.279 (M)**
Mother's years of schooling (standardized)	+0.018**	+0.028**	+0.024 (M)**	+0.043 (F)*	+0.039**	+0.052 (M)** +0.023 (F)
Father's years of schooling (standardized)	+0.027**	+0.016*	NA	+0.044**	+0.024**	+0.040 (F)**
Mother married, husband present					e	
Ethnic group/caste[b]	+0.093** (Uzbek/Turkmen)	+0.173 (Punjabi-Urdu)**	NA	+0.183 (low-caste, M)** +0.270 (low-caste, F)** NS (high-caste)	+0.055 (Mon-Khmer)** -0.113 (Hmong-Mien)** -0.050 (Chinese-Tibetan)	NA
Religion	NA	NA	NA	-0.064 (non-Hindu)*	-0.032 (non-Buddhist)	-0.280**
Household wealth index (standardized)	+0.050**	+0.143**	+0.051**	+0.075**	+0.095**	+0.075**
Number of adult males in the household (standardized)			-0.020 (M)		-0.026**	
Number of adult females in the household (standardized)	-0.023**	-0.033 (M)**				
Female head of household	-0.144*	+0.085		+0.067 (M)*		+0.044*
Urban residence	+0.076**	+0.044**		-0.077**	+0.099**	-0.074 (M)*
Region/province of residence[c]	-0.103** (Central Highlands) +0.178** (East) -0.158** (North) -0.102** (North East) -0.052* (South) -0.223** (South East) -0.168** (West)	-0.108 (Sindh)** -0.160 (Khyber Pakhtunkhwa)** -0.153 (Balochistan)* NS (Gilgit Baltistan region, Islamabad ICT)	-0.070 (Dhaka division)** -0.054 (Rajshahi division)** -0.064 (Rangpur division, F)** +0.055 (Sylhet division)* NS (Chittagong and Khulna divisions)	-0.071 (Central region, M)* -0.097 (Western region, F)** +0.083 (Mid-western region)** NS (Far-western region)	NS (North region) -0.080 (South region)**	
Travel cost to sub-district headquarters	NA	NA		NA	NA	NA

Predictor	Afghanistan 2010-11	Pakistan 2012-13	Bangladesh 2011	Nepal 2011	Lao PDR 2011-12	Cambodia 2014
Ecological zone[d]	NA	NA	NA	+0.143 (Mountain)** NS (Hill)	NA	NS (Plains zone) -0.170 (Tonle-Sap zone)** NS (Coastal zone) -0.114 (Plateau Mountains, M)*
Altitude (standardized)	NA	NA	NA	-0.054 (F)**	NA	-0.058 (M)** -0.026 (F)**
N	13,437	9,040	8,225	4,954	9,605	6,254

Source: Annexes 1-3, 5, 6, 8.

Notes:

* statistically significant at the 0.05 level; ** statistically significant at the 0.01 level.

NS=not statistically significant at even the 0.10 level; NA=indicator not available in the survey;

M=boys only; F=girls only

[a] Fathers' presence in the household is not reported in the 2011 Bangladesh DHS or in the 2011/12 Lao LSIS.

[b] Omitted ethnic group/caste is Middle caste (Nepal) and Lao-Tai ethno-linguistic group (Lao PDR).

[c] Omitted region/province is Central (Afghanistan), Punjab province (Pakistan), Barisal division (Bangladesh), Eastern region (Nepal), Central region (Lao PDR).

[d] omitted ecological zone is Terai

[e] Indicator refers only to the woman's marital status

Afghanistan is an interesting country in the context of this study because of the generally unfavorable treatment that women receive. For example, Afghanistan is considered likely to be a 'missing girls' country although the data necessary to establish this are not currently available.[20] In fact, an overall gender gap of about 2% was observed, which further analysis revealed is mainly concentrated in the urban population, in the Dari ethnic group, in the richest wealth quintile, and in the Central and South East regions. However, it is generally limited to 2-3%, except in the two regions mentioned, where it is equal to 4-5%. Unusual features of Afghanistan include the negative relationship between birth registration and the age of the child and the relatively large number of non-responses to questions on the possession of a birth certificate (6%) or on the registration of a child's birth, with or without a birth certificate (8%). However, there is no evidence that the non-responses bias estimates of the gender gap in the remaining data. Another unusual feature of Afghanistan is the negative relationship between female household headship and birth registration. Regional differences in birth registration are particularly sharp in Afghanistan, as in Pakistan.

3.4.1.2 Pakistan

The 2012-13 Pakistan DHS is a particularly interesting data set because (i) it includes data on the civil registration status of all household members; (ii) like Afghanistan, it is probably a "missing girls" country; and (iii) it has a relatively low overall level of birth registration accompanied by sharp socio-economic differentials. The analysis of the 2012-13 Pakistan DHS (Annex 1) finds no evidence of a significant gender gap in possession of a birth certificate either in children under 5 or among children ages 5-17. In both age groups, moreover, the relationships between birth registration and the covariates do not vary significantly with the sex of the child, either as a group or (in most cases) individually, including the covariates that are the most important predictors of birth registration (Table 4), i.e., the wealth index, mothers' and fathers' schooling, province/region of residence, and ethnicity.[21] The analysis of the 2012-13 Pakistan DHS also found no evidence of a gender gap in birth registration in vulnerable population sub-groups (e.g., in provinces with relatively low rates of registration, in the poorest rural wealth quintile, or in non-Punjabi/non-Urdu ethnic groups).

Still, there are some interesting gender differences in birth registration in the 2012-13 Pakistan DHS. Male children in households in which only the child's father is present are significantly more likely to have a birth certificate, whereas the same relationship is statistically insignificant for female children. Residence in any province/region outside of Punjab province (with about 60% of the population) is negatively associated with the probability of birth registration, and uniformly (but not significantly) more so for girls than for boys. In the case of the Gilgit Baltisan region, in which the gender gap is relatively large (-4%) but not statistically significant at even the 0.10 level, the negative relationship is only significant for girls. In the age group 5-17, the father's status as a lifetime migrant (i.e., born in a different village from the current village of

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[20] As discussed in footnote 3.
[21] Possession of a birth certificate by children is positively and significantly related to the possession of an identity document by the mother, but this variable is not specified in the models reported in Annex 1 because statistical tests indicated that it is an endogenous variable.

residence) is positively associated with the probability of birth registration for sons, but not for daughters.

3.4.1.3 Bangladesh

Analysis of the 2011 Bangladesh DHS (discussed in detail in Annex 2) also found no systematic evidence of a gender gap in possession of a birth certificate among children under 5, although it too is considered a likely 'missing girls' country.[22] However, rural girls under 5 in the poorest wealth quintile were about 3% less likely to have a birth certificate than rural boys and 4% less likely to have their births registered (with or without a birth certificate). As in Pakistan, there was no evidence of a gender gap within the country's seven administrative divisions. Also as in Pakistan, possession of a birth certificate is positively related to household wealth, although not as strongly as in Pakistan. However, unlike in Pakistan, possession of a birth certificate increases sharply with age, reaching 54% of the children age 4 (an increase of 49% over the coverage in age 0, other factors equal) and is not significantly related to urban residence. Although possession of a birth certificate varies significantly by administrative division in Bangladesh, as in Pakistan, the differentials are not as large.

3.4.1.4 Nepal

Unlike Pakistan and Bangladesh, multivariate analysis of the 2011 Nepal DHS (Annex 3) found a significant gender gap favoring boys even at the national level. However, the magnitude of the relationship is relatively small, indicating that a female child under 5 is only about 2% less likely than boys to have a birth certificate, other factors equal. However, the gender gap is larger in some sub-populations, including children residing in the Terai or Mountain ecological zones (female children are 4-5% less likely to have a birth certificate), children residing in the Western development region (female children are 8% less likely), children of middle-caste parents (female children are 6% less likely), and children in either the next poorest or next richest wealth quintile (female children are 8-9% less likely). The absence of a significant gender gap in the poorest wealth quintile may be due to the effects of the Nepal cash grant program (Box 2), which targeted poor Dalit children nationwide. Gender also plays an important role in the relationships of other key predictors of birth registration, including the positive relationship with mothers' schooling (significant only for girls)[23] and the positive relationship with female headship (significant only for boys).

3.4.1.5 Lao PDR

Analysis of the 2011-12 Lao PDR DHS/MICS (Annex 5) found no evidence of a gender gap either at the national level or within vulnerable sub-populations. Although only 17% of the total reported birth registration coverage of 76% is accounted for by possession of a birth certificate that was seen by the interviewer, there is no evidence of a gender gap in any of the individual

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[22] Demographers suspect that the 'missing girls' phenomenon also exists in Bangladesh and Nepal, but it is difficult to document in the absence of a recent population census or an effective civil registration system (UNFPA 2014b)

[23] Fathers' schooling was not included in the basic model for Nepal because more than one-third of fathers were not residing in the households so that information on their characteristics was unavailable. However, when fathers' schooling is included in the model, it has an even stronger relationship with possession of a birth certificate than mothers' schooling (as indicated in Table 4).

components of the overall coverage rate (i.e., birth certificate seen, birth certificate not seen, registration in the absence of a birth certificate). However, the Lao data on birth registration are unusual in several respects. First, possession of a birth certificate (whether seen or not seen) is a fairly constant 33% at all ages, whereas the reported registration of births without a birth certificate increases sharply with age, from 28% at age 0 to 53% at age 4. Second, whereas possession of a birth certificate (whether seen or not seen) is strongly positively related to the household wealth index and to the mother's schooling, registration in the absence of a birth certificate is just as strongly *negatively* related to the same variables (Annex 5). Under these circumstances, the data on birth registration in the absence of a birth certificate in Lao PDR are of doubtful reliability.

3.4.1.6 Cambodia

Analysis of the 2014 Cambodia DHS found no evidence of a gender gap in birth registration, whether at the national level or within vulnerable sup-populations (Annex 6). However, some of the important predictors of birth registration, including the presence of parents in the household and parents' schooling do vary significantly with the sex of the child. The 2014 Cambodia DHS collected detailed data on disabilities. However, the analysis found no evidence that disabilities of either parent are a significant predictor of birth registration, other factors equal.

The 2014 DHS data from Cambodia in Figure 1 indicate that 80% of children under 5 who are born in a hospital and 74% who are born in another type of health facility have their births registered, compared to only 60% of children born at home. These are the kind of data that encourage the view that policies designed to shift obstetric deliveries into health facilities would likely lead to higher levels of birth registration.

Figure 1. Percentage of children under 5 whose births have been registered by place of birth, Cambodia 2014
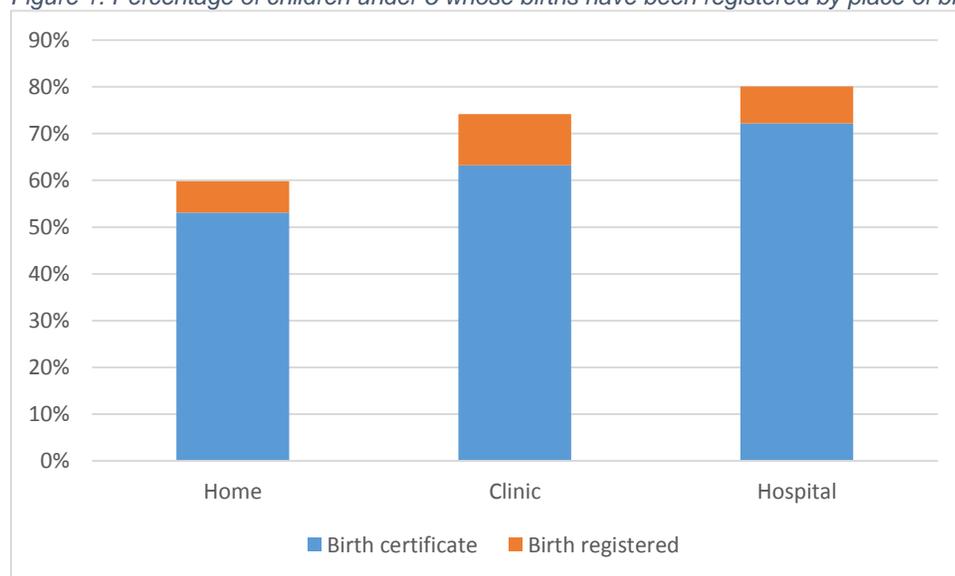
Source: 2014 Cambodia DHS

However, Cambodia has been very successful in moving births out of homes into health facilities during the past 10 years. The data in Figure 2 from three successive DHS rounds show that the percentage of births occurring at home decreased from almost 80% in 2005 to less than 20% in 2014. However, the data also indicate that there is almost no relationship between these changes and the percentage of children under 5 reported to have had their births registered. In fact, the percentage of births registered actually decreased between 2005 and 2010, while the percentage of births occurring at home decreased sharply from 78% to 45%. These data suggest that the cross-sectional relationship depicted in Figure 1 may be misleading in this case. That said, the reduction in birth registration coverage between 2005 and 2010 may be a special case (failure to sustain gains made during registration campaigns in 2005). Another explanation may be the incomplete integration of birth registration services into health services in Cambodia (Ministry of Interior 2014).

Figure 2. Percentage of births occurring at home during the previous 5 years versus the percentage of children under 5 whose births have been registered, Cambodia 2005-2014
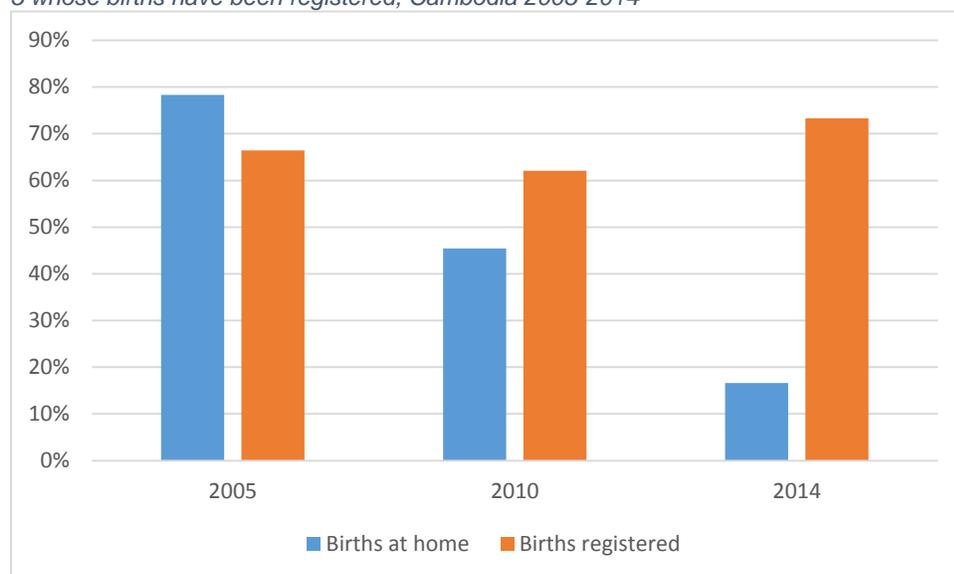
Source: 2005, 2010 and 2014 Cambodia DHS

3.4.2 Death registration

There is very little information on the registration of deaths. The limited data available, however, indicate that gender gaps exist in at least some countries. For example, registration data from China and from the Indian state of Rajasthan indicate that female deaths are less likely to be registered than male deaths (Rao et al. 2005, Abouzahr et al. 2014). In fact, very few deaths are registered in many developing countries (World Bank and WHO 2014, Abouzahr et al. 2014), and household survey data on death registration are also very limited. A few of the DHS surveys have included verbal autopsy (VA) modules that include a question on the availability of a death certificate. In the 2011 Bangladesh DHS, for example, a death certificate was available for only 5 of 490 reported child deaths (4 males and 1 female). The 2010 Afghanistan Mortality Survey (AMS), a special DHS survey, collected VA data for all household deaths at any age occurring up to three years prior to the date of interview.[24] Of the 3,913 deaths for which VA data were collected in the AMS, only 12 death certificates (all males) were available.

An important proximate constraint to the issuance of death certificates in many developing countries is the high share of deaths occurring at home. Death certificates require a medically certified underlying cause of death, which is usually only possible to obtain in a hospital. In the 2011 Bangladesh DHS, for example, 64% of the deaths occurred at home, with only 32% occurring in a hospital (including 4 of the 5 of the certified deaths). Multivariate analysis of the VA data (N=487) found that female children are about 8 percent less likely to die in a hospital ,

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[24] The 2006-07 Pakistan DHS was even larger, but it collected VA data only on the deaths of children under 5 and of women in childbearing ages (12-49).

other factors equal (statistically significant at the 0.10 level). Data from the 2010 Afghanistan Mortality Survey indicate that 21.5% of reported deaths occurred in a hospital, including 23.9% of the deaths of children under 5 and 19.9% of the deaths of persons aged 5 and above. However, multivariate analysis of the VA data for children under 5 (N=1,914) found that the likelihood of dying in a hospital is not significantly related to the child's sex, whereas multivariate analysis of the VA data for persons aged 5 and above (N=1,927) found that females have a 7.2% higher likelihood of dying in a hospital, other factors equal. However, this difference is partly due to gender differences in the causes of death (Annex 7). If maternal deaths (occurring exclusively in females) and deaths from external causes (occurring mainly in males) are dropped from the sample, the estimated difference decreases to 4.2%.

3.4.3 Marriage registration

Questions on marital status are not followed up in either the MICS or the DHS by asking whether a reported marriage has been registered. It may be the case, however, that women in union who report being currently "married" are more likely to have their marriages registered than those reported to be "living together." Some exploratory analysis of the marital status data based on this conjecture was done in this study. However, because marriages tend to be formal in most South Asian countries (Choe and others 2002), questions on the marital status of ever-married women in the 2012-13 Pakistan DHS and in the 2011 Bangladesh DHS do not distinguish between the status of "married" and "living together." Although the question on the marital status of ever married women in the 2011 Nepal DHS does make such a distinction, only one woman (age 18) is recorded as "living with a partner." However, the situation is different in Afghanistan, where 1,067 of women aged 15-49 reported their marital status as "cohabiting," compared to 13,454 who reported that they were "married." Multivariate analysis (Annex 8) found that they are significantly more likely to be from the Uzbek/Turkmen ethnic group (only about 14% of the population) and residents of the North East and South East regions and marginally more likely to be literate and urban residents.

The less formal status of marriages in Southeast Asian countries is also reflected in the data for Lao PDR and Cambodia. In the 2011-12 Lao PDR DHS/MICS, for example, the question on the marital status of ever-married women (or women in union) distinguishes between the status of "married" and "living together" (Annex 5). A total of 16,550 women reported their current marital status as "married" (97.0%) or "living together" (3.0%). Multivariate analysis found that women reported as "married" (as compared to women reported to be "living together") are significantly older, tend to be in poorer households, and are less likely to be in the Mon-Khmer ethno-linguistic group, other factors equal. The question on the marital status of women (including single women) in the 2014 Cambodia DHS also distinguishes between the status of "married" and "living with partner." A total of 11,668 women reported their status as "married" (99.2%) or "living with partner" (0.8%). Multivariate analysis found that "married" women tend to be significantly older, better educated, more likely to reside in either the Plains or Tonle-Sap ecological zones than in Phnom Penh, and more likely to be in a poorer household.

3.4.4 Divorce registration

The question on the marital status of ever married women in the 2012-13 Pakistan DHS distinguishes between the status of "divorced" and "separated" or "no longer living together."[25] A total of 166 women reported their status as "divorced" (44.9%) or "separated/no longer living together" (55.1%) (Annex 1). Based on bivariate comparisons, "divorced" women are in wealthier households, are more likely to reside in an urban area and less likely to reside in a disadvantaged province. However, they are also less likely to be literate (although there is no difference in years of schooling). However, none of these differences are statistically significant at conventional levels in a multivariate probit analysis (due in part to the small sample size).

The question on the marital status of ever-married women in the 2011 Bangladesh DHS also distinguishes between the status of "divorced" and "separated/abandoned" (Annex 2). A total of 494 ever married women reported their status as "divorced" (56.5%) or "separated/abandoned" (43.5%). Multivariate analysis found that the significant predictors of "divorced" status are household wealth (positive), women's age (positive) and women's religion (i.e., non-Muslim women are significantly less likely to be "divorced"). However, neither a woman's literacy nor the number of years of schooling she has completed is significantly related to "divorced" status, other factors equal.

The question on the marital status of ever-married women in the 2011 Nepal DHS (Annex 3) also distinguishes women who are "divorced" from those who are "separated" or "no longer living together." However, the number of such women is very small (N=109), with only 15.6% reporting that they are "divorced" and 84.4% reporting that they are "separated/no longer living together." Multivariate analysis (albeit with a small sample) indicates that "divorced" women tend to be higher-caste and wealthier and more likely to reside in the *Terai* zone (i.e., the flat plains bordering India) and in the relatively remote Mid-western and Far-western development regions. Also, as in Bangladesh, "divorced" status is not significantly related to women's literacy or years of schooling, other factors equal (despite larger bivariate differences in both variables than in Bangladesh).

The question on the marital status of ever-married women in the 2011-12 Lao PDR DHS/MICS also distinguishes between the status of "divorced" and "separated/no longer living together" (Annex 5). A total of 664 women reported their current marital status as "divorced" (82.5%) or "separated/no longer living together" (17.5%). Multivariate analysis found only that "divorced" women are significantly older and that they are significantly more likely to be in the relatively small Chinese-Tibetan ethno-linguistic group, other factors equal.

The question on the marital status of all women in the 2014 Cambodia DHS also distinguishes between the status of "divorced" and "separated/no longer living together" (Annex 6). A total of 697 women reported their current marital status as "divorced" (90.8%) or "separated/no longer living together" (9.8%). Multivariate analysis found that "divorced" women are significantly older and wealthier and more likely to reside outside of Phnom Penh or the Coastal zone).

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[25] The question on the marital status of women aged 12-49 in the 2010-11 Afghanistan MICS also distinguishes between "divorced" and "separated." However, there are only 11 "divorced" women and 10 "separated" in the data set.

3.4.5 Adult identity documentation

The 2012-13 Pakistan DHS collected data on the civil registration status of the entire population, including adults aged 18 and over.[26] Unlike possession of a birth certificate, possession of an ID card differs importantly by sex up to about age 40, beyond which possession of an ID card becomes essentially universal (Annex 1). It has been suggested that the requirement of an ID card in order to access certain types of government transfers (e.g., pensions, social welfare payments) provides an important incentive to obtain an ID card in Pakistan, particularly among older persons (Khan and Qutub 2010, Malik 2014). Among adults aged 18-40, the overall percentage with an ID card is 84%, whereas it is 91% among males and 79% among females. Even after adjusting for gender differences in educational attainment and other important covariates (e.g., marital status, migrant status, household headship), females aged 18-40 are about 6% less likely to have an ID card, other factors equal. Moreover, there are significant gender differences in some of the important factors predicting possession of an ID card, including household wealth and province/region of residence. For example, the gender gap is widest (9-10%) in Punjab and Khyber Pakhtunkhwa provinces and practically nonexistent in the Gilgit Baltistan region and in Islamabad (ICT), which also have the highest rates of registration.[27] The gender gap is also widest in the three poorest wealth quintiles (8-11%) and is only 2% in the richest quintile.

One important difference in the regional patterns in possession of an ID card from the patterns observed with birth registration is that residence in most provinces/regions other than Punjab province (with about 60% of the total population) is *positively* associated with possession of an ID card, whereas residence in most of these other provinces/regions is negatively associated with possession of a birth certificate. This difference may reflect the role played by ID cards in accessing cash transfers, which are more widely available in the relatively poor provinces/regions outside the Punjab (Nayab and Farooq 2014).

3.4.6 Effects of birth registration

As previously explained, the DHS and MICS data do not usually provide credible instruments that can be used to obtain unbiased estimates of the effect of birth registration on other outcomes. However, the large increases in birth registration that occurred after the establishment of the Nepal cash grant program in 2009 (Box 2) provide an unusual opportunity to see whether and how selected child outcomes (i.e., children's height for age and preschool enrollment) changed after the program was established. Data from four surveys were analyzed for this purpose (Annex 4): the 2006 Nepal DHS, the 2010 Nepal MICS (conducted in only two development regions), the 2011 Nepal DHS, and the 2014 Nepal MICS. Birth registration coverage increased dramatically in the targeted groups compared to the rest of the population, i.e., the percentage of children under 5 with a birth certificate increased from 24% in 2006 (pre-program) to 79% in 2014 in the targeted groups, compared to an increase of from 34% to 53% during the same period in the rest of the population. The analysis also found:

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[26] Similar data were also collected in the 2006-07 Pakistan DHS.

[27] However, it is important to note that the 2012-13 Pakistan DHS sample does not include the Federally Administered Tribal Areas (FATA). Data on voter registration, which is based on the ID card data base, indicate that women accounted for only 34% of those registered to vote in FATA in the 2013 elections, compared to 43-46% in the other provinces/areas (NDI and ANFREL 2013).

- That the significant pre-program gender gap favoring boys in birth registration continued to be observed in the total population, but disappeared post-program in the program-eligible population;
- That there is no evidence that the substantial increases in birth registration led to increased height for age among either boys or girls under 5 or to increased preschool enrollment among either boys or girls aged 3-4. The fact that birth registration is positively related to both outcomes in each survey (and very significantly so, in the case of preschool enrollment) suggests that interpreting such relationships as causal (even after controlling for other observable factors) may be misleading; and
- That there is evidence of significant non-gender-related heterogeneity in the effects of the program in the two different population sub-groups targeted by the program, both of which are severely disadvantaged, suggesting that it would be inappropriate to extrapolate these findings to population groups other than the severely disadvantaged groups targeted by the program.

Still, it is important to recognize that the Nepal cash grant program is not a "natural experiment" inasmuch as the intervention group was selected by policy makers because of its extreme deprivation. Nevertheless, one might expect to find some evidence of improved nutritional status or increased preschool enrollment in the targeted population in the wake of such dramatic increases in birth registration coverage if birth registration does in fact have the positive effects attributed to it in much of the literature reviewed in this report. However, it is possible that evidence of the effects of the Nepal cash grant program on longer-term outcomes (e.g., secondary schooling, age at marriage) may be found in future Nepal household surveys.

The positive relationship between possession of a birth certificate and children's immunization in many countries has led to a belief that this may also be a positive effect of birth registration. However, it is unclear whether the observed relationship is in fact causal or due to unobserved third factors affecting both birth registration and immunization. Unfortunately, distinguishing between these two hypotheses is complicated by the fact that the date of birth registration (unlike the date of immunizations) is not recorded in the DHS or MICS surveys.[28]

However, in settings where possession of a birth certificate increases sharply with age, it should be possible to distinguish empirically between the two hypotheses. The reasoning is as follows. In developing countries, most immunizations are provided to children at age 0 (i.e., 0-11 months of age). When possession of a birth certificate increases sharply with age, children observed at age 1 are more likely to have had a birth certificate prior to immunization than children at age 2, 3 or 4. Accordingly, if the relationship between birth registration and immunization is causal, one would expect to observe a stronger positive relationship between measles vaccination and possession of a birth certificate at age 1 than at ages 2, 3 or 4. Moreover, given the assumed steep age gradient in birth registration, the likelihood of having had a birth certificate prior to immunization should decrease with the age of the child. On the other hand, if the positive

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[28] If information on the date of birth registration were available it would be possible to compare the relationship between birth registration and immunization under two alternative conditions: (1) when birth registration had preceded immunization, and (2) when birth registration had occurred after immunization. If the relationship between birth registration and immunization is causal, one would expect to observe a stronger positive relationship in (1) than in (2), whereas if the relationship between birth registration and immunization is due to unobserved third factors affecting both variables, one would expect to find similar relationships in (1) and (2).

relationship between birth registration and immunization is due to unobserved factors (and assuming that these are not age-specific[29]), one would not expect the relationship between birth registration and immunization to vary much with the age of the child.

Bangladesh is a country in which the reported possession of a birth certificate increases sharply with the child's age (i.e., the percentage of children age 4 with a birth certificate is 40%, compared to only 6% among children age 0). Analysis of data from the 2011 Bangladesh DHS for different age groups of children under 5 obtained results that are consistent with a positive effect of birth registration on measles immunization (Annex 2). Children age 1 with a birth certificate were found to be 4.4% more likely to have received measles vaccine, other factors equal, while children age 2 are 3.1% more likely to have been vaccinated. In contrast, there is no significant relationship between possession of a birth certificate and measles immunization among children ages 3 or 4. Although this pattern is similar for both boys and girls, the estimated effect is only statistically significant for boys age 1.

4. Implications for CRVS monitoring

The questions on birth registration for children under 5 are the only questions on civil registration in most MICS and DHS surveys. There are no direct measures in most MICS or DHS surveys of the registration of marriages, divorces, adoptions, deaths (except when a verbal autopsy module is included) or of possession of an ID card (or other form of adult identity document). However, it is encouraging to note that some national surveys plan to collect broader vital registration data. In Indonesia, for example, the household survey that targets the poorest 40% of the population[30] plans to include questions on the possession of birth, marriage and divorce certificates.

Even modest improvements to the MICS and DHS questionnaires would provide much more useful information for monitoring progress on CRVS coverage targets from a gender perspective. The question on birth registration that is currently asked only for children under 5 should be expanded to cover other forms of identity documentation and be asked for all household members (as in the 2012-13 Pakistan DHS). It would also be useful to add a question on the age at which a child's birth was registered in order to facilitate tests to establish a causal link between birth registration and other outcomes (e.g., immunization). Women reporting that they are "widowed," "married" or "divorced," should be asked (as relevant) if they have a death, marriage or divorce certificate. Interviewers should then ask to see the certificate and record the date of issuance, if one is reported, or if not, ask whether the death, marriage or divorce was registered with the authorities (and if so, which authority). Respondents indicating that the event was not registered should be asked for the main reason it was not registered.

The most commonly used indicator to monitor birth registration coverage is the percentage of children under 5 whose births are reported to have been registered, whether or not they possess a birth certificate.[31] Even setting aside issues related to the reliability of responses indicating registration in the absence of a birth certificate, this indicator can be quite misleading

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[29] For example, that the same unobserved factors that affect vaccination rates also affect the age at which children's births are registered.

[30] The *Pemutakhiran Basis Data Terpadu* (PBDT), or "Unified Data Base Updating."

[31] As evidenced by its use in Table 5 and by its inclusion as Target 1.B in the CRVS Regional Action Framework (UN ESCAP 2015).

in countries like Bangladesh (Annex 2), Nepal (Annex 3) or Lao PDR (Annex 5), where the percentage of children reported to be registered increases sharply with age. Some would argue that the percentage of children under one year of age whose births are registered is a better indicator, given the objective of registering all births within 28 days of delivery. However, it might be more informative to monitor two separate indicators, i.e., the percentages of children whose births are registered before age one and at age four. This issue is important both for monitoring progress under the CRVS Regional Action Framework and for Target 16.9 of the Sustainable Development Goals.

5. Conclusions and recommendations

5.1 Conclusions

This paper focuses on the gender dimensions of CRVS in the Asia-Pacific region. DHS and MICS household surveys are the main data sources and are mainly limited to data on birth registration among children under 5. Data on the registration of other vital events (deaths, marriages, divorces) and on the possession of identity documents by adults are generally lacking, despite their importance to women and children—and particularly to poor or otherwise vulnerable widows, divorced/separated women, unmarried women with children, or refugees.

Analysis of recent household survey data finds that a child's sex is not a significant predictor of birth registration in most Asia-Pacific countries, whether at the national level or within vulnerable sub-populations in which overall birth registration rates are relatively low. The main exceptions are Afghanistan and Nepal, where girls are about 2% less likely to have a birth certificate overall, other factors equal, and where gender gaps as large as 5% in Afghanistan and 8% in Nepal are observed in some sub-populations. Although the absence of a gender gap in birth registration is the general pattern in the Asia-Pacific region, this finding should be tempered with recognition that a large gender gap in birth registration may exist in China and that sex-selective abortion may be masking the under-registration of girls in China and in some other large Asian countries. Moreover, given the disproportionate burden that non-registration places on women and their children, the more important gender gap in birth registration is arguably that between current low levels of coverage in several Asian countries and complete coverage.

Although data on the registration of marriages, divorces and deaths and the possession of identity documents by adults are very limited, the paper finds that registration of these vital events is also very important for women. For example, widowed or divorced women can face many obstacles to securing their rights and the rights of their children if they do not have the relevant marriage, divorce and death certificates. The limited available data indicate that poor women and women in remote rural areas are less likely to have these types of documents. Data from Pakistan on the possession of identity documents by adults indicate that women 18-40 are significantly less likely to have identity documents, other factors equal, with larger gender gaps observed among poor women.

 The absence of CRVS experimental data in the Asia-Pacific region, as well as the inherent limitations of the behavioral data in the DHS and MICS, make it difficult to identify the kinds of policies that would be effective in increasing registration rates among women and girls or in assessing the effects of under-registration. For example, whereas correlations based on data from individual surveys suggest that moving births out of women's homes into health facilities would increase birth registration coverage, data from several DHS rounds in Cambodia indicate

that a rapid shift to delivering in health facilities had no discernible effect on birth registration coverage. Qualitative data indicate that "cost" is the main proximate constraint to birth registration, followed by lack of information about how to register a birth.

The paper cites some credible evidence suggesting that cash incentives may be effective in increasing registration rates. For example, in the Nepal cash grant program, which used birth certificates to establish children's eligibility, analysis of data from several DHS and MICS surveys indicates that the program led quickly both to increased overall coverage and to eliminating a pre-program gender gap that continued to exist in the population not targeted by the program. However, the same data show no evidence of any effect of the program on either girls' or boys' nutritional status or preschool enrollment. In contrast, careful analysis of data from Bangladesh suggest that birth registration has a positive effect on measles immunization, particularly among boys. However, more credible evidence on the immediate and longer-term effects of CRVS-related interventions is needed.

5.2 Recommendations

5.2.1 Gender priorities in CRVS

Even on the basis of the limited information currently available on the role of gender in CRVS and adult identity documentation coverage, it is possible to set some priorities that reflect women's needs. Closing the gap between current and complete coverage of birth registration should probably receive the highest priority, followed closely by efforts to ensure universal access to adult identity documentation. Second priority should be given to universalizing access to marriage, divorce and death registration. Work should also begin to develop systems for transferring existing vital registration data (even if coverage is incomplete) from local sites to a central data processing site, including use of mobile phone technology where feasible. Such data are needed to identify local areas with large gender gaps in birth and death registration and to provide data economically on local registration outcomes for use in monitoring the results of pilots designed to increase coverage.

Increasing coverage of cause of death and vital statistics should also be a priority in countries that have already achieved complete registration of births, deaths, marriages and divorces and complete access to adult identity documentation. In the meantime, reliable data on cause of death can also be collected at the national level through sample registration systems, as in India and China, if the necessary resources are available. However, continuous, complete and reliable local area data on gender-specific causes of death (e.g., maternal mortality, breast cancer) can only be obtained economically when most deaths are medically attended and when the medical profession is able to identify correctly the underlying cause of death. Similarly, vital statistics are only useful when they are based on vital registration data that are continuous, complete and reliable and when government agencies have the capacity to use such information effectively in planning.

5.2.2 Improving the data.

Although household survey data on the registration of births in children under 5 are currently available for many countries, the data are incomplete and difficult to interpret in some cases (e.g., when a birth has reportedly been registered without a birth certificate). There are almost no data on the registration of other vital events or on access to adult identity documentation

despite their importance to women. Consideration should be given to expanding the depth and breadth of CRVS data collected in the DHS and MICS surveys, as discussed in Section 4.

More qualitative data are needed on gender-related constraints to registering vital events and to accessing identity documents (e.g., the role of intra-household decision making). Qualitative data can be helpful in clarifying the causal linkages between the underlying constraints to registration and the proximate constraints. For example, why does coverage vary so much with location and cultural factors (e.g., ethnicity, religion)? Qualitative data can also be helpful in establishing causal linkages between registration and other outcomes, including the proximate constraints to registration and the ultimate effects of non-registration.

5.2.3 Documenting what works

Although there has been considerable piloting of interventions designed to improve CRVS coverage and access to adult identity documentation, there is little reliable information on their cost effectiveness. Rigorous experimental data on the costs and effectiveness of such interventions are needed to determine which interventions are cost-effective under different conditions. However, none are currently available in the AP region. This is surprising given the political resolve to increase coverage rates to near universal levels by 2025. Moreover, experiments to test such interventions would be relatively inexpensive because experimental outcomes could be measured using data from existing registration systems (i.e., expensive household surveys would not be necessary).

Lastly, it is important to obtain credible estimates of the longer-term effects of non-registration. Rigorous experiments are probably not economical for this purpose, given the considerable time lag between registration and some of the expected outcomes (e.g., birth registration and early marriage). However, the existence of multiple household surveys over an extended period in several countries (particularly in the presence of important policy changes that have affected registration coverage) is a largely unexploited resource capable of yielding useful and credible insights into the longer-term effects of non-registration.

List of References

Abouzahr, Carla, John Cleland, Francesca Coullare, Sarah B. Macfarlane, Francis C. Notzon, Philip Setel, and Simon Szreter. 2007. "The way forward," *The Lancet*, Published online, October 29.

Abouzahr, Carla, Claudia Stein, Nigel Chapman, Daniel Toole, Christophe LeFranc, Kaushal Joshi and Rikke Munk Hansen. 2014a. "A development imperative: civil registration and vital statistics systems in the Asia-Pacific region," *Asia Pacific Population Journal*, 29(1):9-38.

Abouzahr, Carla, Said Yaqoob Azimi, Lisa Grace S. Bersales, Chandrasekaran Chandramouli, Lourdes Hufana, Khalid Khan, Gulnara Kulkayeva, Jonathan Marskell, and Lyaziza Sauyekenova. 2014b. "Strengthening civil registration and vital statistics in the Asia-Pacific region: learning from country experiences," *Asia Pacific Population Journal*, 29(1):39-74.

Abouzahr, Carla, Mia Harbitz, Haishan Fu and Raj Gautam Mitra. 2014c. "Towards a research agenda for civil registration and vital statistics in the Asia-Pacific region," *Asia Pacific Population Journal*, 29(1):99-136.

Adhikari, T. et al. 2014. "How does Social Protection Contribute to Social Inclusion in Nepal?" London: ODI.

Apland, Kara, Brad K. Blitz, Carolyn Hamilton, Mary Lagaay, Rajith Lakshman and Elizabeth Yarrow. 2014. *Birth Registration and Children's Rights: A Complex Story*. Plan International.

Arudo, John and others. 2003. "Comparison of government statistics and demographic surveillance to monitor mortality in children less than five years old in rural Western Kenya." *American Journal of Tropical Medicine and Hygiene* 68(Supplement 4):30-37.

Barua, Jenita, Anjan Rajonwar, Shobhana Medhi, and Giriraj Kusre. 2012. "Effect of conditional cash transfer schemes on registration of the birth of a female child in India." *Southeast Asia Journal of Public Health* 3(1):30-35

Booth, Heather and Patrick Gerland. 2015. "Demographic Techniques: Data Adjustment and Correction." In *International Encyclopedia of the Social & Behavioral Sciences*, second edition, volume 6:126-137.

Brewer, Megan, Nicholas Menzies and Jared Schott. 2015. "Making Identification Systems Work for the Bottom 40%." World Bank Just Development Policy Paper. Washington DC.

Brito, Steve, Ana Corbacho, and René Osorio. 2013. "Birth Registration: The Key to Social Inclusion in Latin America and the Caribbean." Washington DC: Inter-American Development Bank.

Buvinic, Mayra, Rebecca Furst-Nichols and Gayatri Koolwal. 2013. Data2X: Mapping Gender Data Gaps (www.data2x.org).

Central Bureau of Statistics. 2011. "The Nepal Living Standards Survey 2010/11." National Planning Commission Secretariat, Kathmandu (November).

Choe, Minja Kim, Sidney B. Westley, and Robert D. Wetherford. 2002. "Tradition and Change in Marriage and Family Life," in Robert D. Wetherford and Sidney B. Westley, eds., *The Future of Population in Asia*. East-West Center.

Civil Registration Centre for Development (CRC4D). 2011. "Civil Registration Support in Cameroon: Evaluation of UNICEF-support 2002-2011." The Hague, Netherlands.

Cody, Claire. 2009. *Count every child: The right to birth registration.* Woking: Plan Ltd.

Coney, Sarah, Eugenia Ho, Brian Hutchinson, Mia Neidhardt, Pierre Biscayne, Travis Reynolds, and C. Leigh Anderson. 2015. "Review of National Identity Programs." Evans School Policy Analysis and Research. Seattle: University of Washington.

Corbacho, Ana and René Osorio Rivas. 2012. "Traveling the Distance: A GPS-Based Study of the Access to Birth Registration Services in Latin America and the Caribbean." IDB Working Paper Series No. IDB-WP-307. Washington DC: Inter-American Development Bank.

Corbacho, Ana, Steve Brito and René Osorio Rivas. 2012. "Birth Registration and the Impact on Educational Attainment." IDB Working Paper Series No. IDB-WP-345, Inter-American Development Bank, Washington DC (August).

Corbacho, Steve Brita and René Osorio. 2013. "Does Birth Under-registration Reduce Childhood Immunization? Evidence from the Dominican Republic." IDB Working Paper Series No. IDB-WP-448. Washington DC: inter-American Development Bank.

Dahan, Mariana and Lucia Hanmer. 2015. "The Identification for Development (ID4D) Agenda: Its Potential for Empowering Women and Girls." Background Paper. Washington DC: the World Bank.

Duff, Putu, Santi Kusumaningrum, Lindsay Stark. 2016. "Barriers to birth registration in Indonesia." *Lancet* 4:234-235.

Duong, Le Bach, Tran Giang Linh, and Nguyen Thao. 2011. "Social protection for rural-urban migrants in Vietnam: current situation, challenges and opportunities." CSP Research (January 2014)

Dunning, Casey, Alan Gelb, and Sneha Raghavan. 2014. "Birth Registration, Legal Identity and the Post-2015 Agenda." CDG Policy Paper 046, Center for Global Development, Washington DC (September).

Duryea, Suzanne, Analia Olgiati and Leslie Stone. 2006. "The Under-Registration of Births in Latin America." Working Paper #551, Research Department, Inter-American Development Bank (January).

Edmonds, Eric and Carrie Turk. 2002. "Child Labor in Transition in Vietnam." Policy Research Working Paper 2774. Washington DC: The World Bank.

Gelb, Alan and Julia Clark. 2013. "Identification for Development: The Biometrics Revolution." Working Paper 315, Center for Global Development. Washington DC.

Gerland, Patrick. 2014. "UN Population Division's Methodology in Preparing Base Population for Projections: Case study for India." *Asian Population Studies.*

Glennerster, Rachel and Kunzai Takavarasha. 2013. *Running Randomized Evaluations: A Practical Guide*. Princeton, NJ: Princeton University Press.

González López, Lucía, Tanja Brendsted Sejersen, Nicholas Oakeshott, Gaspar Fajth, Taimur Khilji and Nicoleta Panta. 2014. "Civil registration, human rights and social protection in Asia and the Pacific," *Asia Pacific Population Journal*, 29(1):75-98.

Greene, William H. 2003. *Econometric Analysis*, Fifth edition. Upper Saddle River, NJ: Pearson Education, Inc.

Hagen-Zanker, Jessica, Richard Mallett and Anita Ghimire. 2015. "How does Nepal's Child Grant work for Dalit children and their families?" London: ODI (September).

Harbitz, Mia and Maria del Carmen Tamargo. 2009. "The Significance of Legal Identity in Situations of Poverty and Social Exclusion." Technical Note, Inter-American Development Bank, Washington DC (November).

Harbitz, Mia and Kendra Gregson, eds. 2015. "Toward Universal Birth Registration: A Systemic Approach to the Application of ICT." UNICEF and Inter-American Development Bank.

High Level Panel of Eminent Persons on the post-2015 Development Agenda. 2013. *A New Global Partnership: Eradicate Poverty and Transform Economics Through Sustainable Development* (http://www.un.org/sg/management/pdf/HLP_P2015_Report.pdf).

Hill, Kenneth, Alan D. Lopez, Kenji Shibuya, Prabhat Jha (on behalf of the Monitoring of Vital Events (MoVE) writing group). 2007. "Interim measures for meeting needs for health sector data: births, deaths, and causes of death." The Lancet (published o line October 29, 2007).

Hossain, Altaf. 2010. "Age in Grade Congruence and Progression in Basic Education in Bangladesh." Research Monograph No. 48, Create Pathways to Success. Dhaka (October).

Independent Expert Review Group on Information and Accountability for Women's and Children's Health (iERG). 2013. *Strengthening Equity and Dignity through Health*. Geneva.

International Foundation for Electoral Systems (IFES). 2013. "Survey Assessing Barriers to Women Obtaining Computerized National Identity Cards (CNICs)." Washington, DC (February).

Jensen, Robert and Rebecca Thornton. 2003. "Early female marriage in the developing world," *Gender and Development* 11(2):9-19.

Khan, Shanza N. and Sara Qutub. 2010. "The Benazir Income Support Programme and the Zakat Programme." Overseas Development Institute, London, U.K. (November).

Ladner, Debra, Erik G. Jensen and Samuel Saunders. 2014. "A Critical Assessment of Legal Identity: What It Promises and What It Delivers." *Hague Journal on the Rule of Law* 6:47-64.

Leitao, Jordana et al. 2013. "Revising the WHO verbal autopsy instrument to facilitate routine cause-of-death monitoring." Global Health Action.

Li, Shuzhuo, Yexia Zhang, and Marcus W. Feldman. 2010. "Birth Registration in China: Practices, Problems and Policies," *Population Research Policy Review* 29(3):297-317.

Lopez et al. 2014. "Civil registration, human rights and social protection in Asia and the Pacific," *Asia-Pacific Population Journal* 29(1):75-99.

Mahapatra, Prasanta, Kenji Shibuya, Alan D. Lopez, Francesca Coullare, Francis C. Notzon, Chalapati Rao, and Simon Szreter. 2007. "Civil registration systems and vital statistics: successes and missed opportunities." *The Lancet*, Published on line, October 29.

Malik, Tariq. 2014. "Technology in the Service of Development: The NADRA Story." Center for Global Development, Washington, DC (November)

MEASURE Evaluation. 2009. "SAVVY: A Toolset for Counting Every Person." University of North Carolina, Chapel Hill, NC.

Ministry of Interior (Kingdom of Cambodia). 2014. "Assessing the quality and use of birth death and cause-of-death information in Cambodia." Phnom Penh (May).

Mudenda, Sheila, Stanley Kamocha, Robert Mswia, Martha Conkling, Palver Sikanyiti, Dara Potter, William C. Mayaka, and Melissa Marx. 2011. "Feasibility of using a World Health Organization-standard methodology for Sample Vital Registration with Verbal Autopsy (SAVVY) to report leading causes of death in Zambia: results of a pilot in four provinces, 2010." *Population Health Metrics* 9:40.

Nayab, Durr-E, and Shujaat Farooq. 2014. "Effectiveness of Cash Transfer Programmes for Household Welfare in Pakistan: The Case of the Benazir Income Support Programme." *The Pakistan Development Review* 53:1:75-104.

National Democratic Institute for International Affairs (NDI) and Asian Network for Free Elections (ANFREL). 2013. "The 2013 National and Provincial Assembly Elections in Pakistan: Final Report." Washington, DC.

Okubo, Tomoo et al. 2014. "Identifying the Nutritional Impact of the Child Grant in Nepal: Evidence from the Karnali Zone, Nepal." Working paper No. WP/2014/003, UNICEF Nepal, Kathmandu.

Open Working Group. 2014. "Introduction and Proposed Goals and Targets on Sustainable Development for the Post-2015 Development Agenda (http://sustainabledevelopment.un.org/owg.html).

Plan Limited. 2009. "Why birth registration matters: How discrimination prevents women registering the birth of their child." U.K.

Rabi, Amjad and others. 2015. "Strategies and Options for Scaling Up and Enhancing the Child Grant Nationally in Nepal." Working Paper No. WP/2015/002, UNICEF, Kathmandu.

Rao, Chalapati, Alan D. Lopez, Gonghuan Yang, Stephen Begg and Jiemin Ma. 2005. "Evaluating national cause-of-death statistics: principles and application to the case of China," *Bulletin of the World Health Organization* 83(8): 618-625.

Robertson, Laura and others. 2013. "Effects of unconditional and conditional cash transfers on child health and development in Zimbabwe: a cluster-randomised trial." *The Lancet* 381:1283-92.

Setel, Philip W., Sarah B. Macfarlane, Simon Szreter, Lene Mikkelsen, Prabhat Jha, Susan Stout, and Carla Abouzahr. 2007. "A scandal of invisibility: making everyone count by counting everyone." *The Lancet*, Published on line, October 29.

Setel, Philip W., David R. Whiting, Yusuf Hemed, Daniel Chandramohan, Lara J. Wolfson, K.G.M.M. Alberti, and Alan D. Lopez. 2006a. "Validity of verbal autopsy procedures for determining cause of death in Tanzania, *Tropical Medicine and International Health* 11(5):681-696.

Setel, Philip W., Chalapati Rao, Yusuf Hemed, David R. Whiting, Gonguan Yang, Daniel Chandramohan, K.G.M.M. Alberti, and Alan D. Lopez. 2006b. "Core Verbal Autopsy Procedures with Comparative Validation Results from Two Countries," *PLoS Medicine* 3(8):1282-1291.

Singh, Kavita and Lauren Hart. 2015. "A Guide on Conducting a Post-Census Verbal Autopsy to Estimate Maternal Mortality." MEASURE Evaluation, University of North Carolina, Chapel Hill, NC (April).

Soto, Eliana, Kim-Huong Nguyen, Zoe Dettrick, Andrew Hodge, and Alan D. Lopez. 2013. "An economic evaluation of data collection methods for vital statistics." Working Paper Series No. 28, School of Population Health, Queensland University, Australia (June).

Sumner, Cate. 2015. "Indonesia's Missing Millions: Erasing Discrimination in Birth Certification in Indonesia." CGD Policy Paper 064. Center for Global Development. Washinton DC (June).

Sumner, Cate and Santi Kusumaningrum. 2014. Baseline Study on legal identity: Indonesia's Missing Millions. DFAT, PEKKA and PUSKAPA (http://bit.ly/1eyBeLf).

UN ESCAP. 2015. "Guidelines for setting and monitoring the goals and targets of the Regional Action Framework on Civil Registration and Vital Statistics in Asia and the Pacific." Version 1, Bangkok (10 September 2015).

UNFPA. 2012a. *Marrying Too Young: End Child Marriage*. New York.

UNFPA. 2012b. *Sex Imbalances at Birth: Current Trends, Consequences and Policy Applications*. New York.

UNICEF. 2002. "Birth Registration Right from the Start." *Innocenti Digest* No. 9. Florence

UNICEF. 2005. "The 'Rights' Start to Life—A Statistical Analysis of Birth Registration 2005." New York.

UNICEF. 2007. "Birth Registration and Armed Conflict." New York.

UNICEF. 2013. *A Passport to Protection: A Guide to Birth Registration Programming*. New York.

UNICEF. 2013. *Every Child's Birth Right: Inequities and Trends in Birth Registration*. New York.

UNICEF. 2014. Birth Registration (http://www.unicef.org/protection/57929_58010.html)

UNICEF. 2015a. *Get Everyone in the Picture*. New York.

UNICEF. 2015b. *State of the World's Children 2015*. New York.

United Nations High Commission for Refugees. 2013. *Conclusion on Civil Registration*. No. 111 (LXIV)-2013. EXCOM Conclusions. 17 October.

United Nations. 2006. *The World's Women 2005: Progress in Statistics.* Depart of Economic and Social Affairs. New York.

United Nations. 2014a. *Principles and Recommendations for a Vital Statistics System: Revision 3* (United Nations publication, Sales No. E.13.XVII.10), annex I.

United Nations. 2014b. *World Population Prospects: The 2012 Revision: Methodology of the United Nations Population Estimates and Projections*. New York.

United Nations. 2015. *The World's Women 2015: Trends and Statistics*. Department of Economic and Social Affairs. New York.

Vandenabeele, Caroline and Christine Lao, editors. 2007. *Legal Identify for Inclusive Development*. Asian Development Bank, Manila.

Viroj Tangcharoensathien et al. 2006. "A critical assessment of mortality statistics in Thailand: potential for improvements," *Bulletin of the World Health Organization* 84(3): 233-239.

Wallace, Rebecca, Ann Audsley, Nicole McCoy, and Karen Wylie. 2009. "Mother to Child: How Discrimination Prevents Women Registering the Birth of their Child." Plan International and UHI Centre for Rural Childhood, Perth College, UK.

Whiting, David R., Philip W. Setel, Daniel Chandramohan, Lara J. Wolfson, Yusuf Hemed, Alan D. Lopez. 2006. "Estimating cause-specific mortality from community- and facility-based data sources in the United Republic of Tanzania: options and implications for mortality burden estimates," *Bulletin of the World Health Organization* 84(12):940-948.

Wooldridge, Jeffrey M., 2010. *Econometric Analysis of Cross-Section and Panel Data*, Second edition. Cambridge, MA: MIT Press.

World Bank. 2016. *Legal Basis Report: ID Cards and Citizenship*. Washington DC.

World Bank and WHO. 2014. *Global Civil Registration and Vital Statistics: Scaling Up Investment Plan 2015-2024*. Washington DC and Geneva.

World Health Organization. 2011. *Every Woman Every Child: Commission on Information and Accountability for Women's and Children's Health*. Geneva.

World Health Organization. 2013. "WHO Reference Group on Global Health Statistics: Report of the 1sr Meeting." December 9-10, Geneva.

World Health Organization. 2014. "Every Newborn: An Action Plan to End Preventable Deaths." Geneva.

World Health Organization and the University of Queensland Health Information Systems Knowledge Hub. 2010a. *Rapid assessment of national civil registration and vital statistics system*. Geneve.

World Health Organization and the University of Queensland Health Information Systems Knowledge Hub. 2010b. *Improving the Quality and Use of Birth, Death and Cause-of-death information: Guidance for a Standards-based Review of Country Practices*. Geneva.

Yang, Gonghuan, Jianping Hu, Ke Quin Rao, Jeimin Ma, Chalapati Rao and Alan D. Lopez. 2005. "Mortality registration and surveillance in China: History, current situation and challenges," *Population Health Metrics* 3(3).

Table 5. Birth registration (% registered[a]) in selected Asia-Pacific countries (November 2014)

Country	Total	Male	Female	Urban	Rural	Poorest	Second	Third	Fourth	Richest	Reference Year	Data Source
Afghanistan	37	38	37	60	33	31	34	30	37	58	2010-2011	MICS
Armenia	100	100	99	99	100	100	100	99	99	100	2010	DHS
Azerbaijan	94	93	94	96	92	92	92	95	94	97	2006	DHS
Bangladesh*	20	20	20	23	19	15	19	18	20	28	2014	DHS
Bhutan	100	100	100	100	100	100	100	100	100	100	2010	MICS
Brunei Darussalam	–	–	–	–	–	–	–	–	–	–		
Cambodia**	73	74	73	84	72	59	70	75	81	87	2014	DHS
China	–	–	–	–	–	–	–	–	–	–		
Cook Islands	–	–	–	–	–	–	–	–	–	–		
Democratic People's Republic of Korea	100	100	100	100	100	–	–	–	–	–	2009	MICS
Fiji	–	–	–	–	–	–	–	–	–	–		
India	84 y	–	–	–	–	–	–	–	–	–	2011	Vital registration
Indonesia	67	66	67	76	58	41	60	70	79	88	2012	DHS
Iran (Islamic Republic of)	99 y	99 y	99 y	99 y	98 y	–	–	–	–	–	2010	MIDHS
Kazakhstan	100	100	100	100	100	100	100	100	100	100	2010-2011	MICS
Kiribati	94	95	93	95	93	93	91	95	95	94	2009	DHS
Kyrgyzstan	98	98	99	99	98	99	98	98	97	99	2012	DHS
Lao People's Democratic Republic	75	74	75	88	71	66	69	76	81	93	2011-2012	MICS
Malaysia	–	–	–	–	–	–	–	–	–	–		
Maldives	93	93	92	93	92	92	94	94	90	94	2009	DHS
Marshall Islands	96	96	96	96	96	92	95	98	95	98	2007	DHS
Micronesia (Federated States of)	–	–	–	–	–	–	–	–	–	–		
Mongolia	99	99	99	99	99	99	99	99	100	99	2010	MICS

Country	Total		Sex		Place of residence		Household wealth quintile					Reference	Data
			Male	Female	Urban	Rural	Poorest	Second	Third	Fourth	Richest	Year	Source
Myanmar	72		73	72	94	64	50	64	75	87	96	2009-2010	MICS
Nauru	83		79	86	–	–	71	83	95	75	88	2007	DHS
Nepal***	58		59	57	57	58	8	55	58	62	58	2014	MICS
Niue	–		–	–	–	–	–	–	–	–	–		
Pakistan	34		34	33	59	23	5	19	34	53	71	2012-2013	DHS
Palau	–		–	–	–	–	–	–	–	–	–		
Papua New Guinea	–		–	–	–	–	–	–	–	–	–		
Philippines	90		–	–	–	–	–	–	–	–	–	2010	Census
Republic of Korea	–		–	–	–	–	–	–	–	–	–		
Samoa	48		48	47	62	44	31	47	45	55	63	2009	DHS
Singapore	–		–	–	–	–	–	–	–	–	–		
Solomon Islands	–		–	–	–	–	–	–	–	–	–		
Sri Lanka	97		97	97	97	98	97	98	98	97	98	2006-2007	DHS
Tajikistan	88		89	88	88	89	86	87	89	91	90	2012	DHS
Thailand	99	y	100	y	99	y	99	y	100	y	100	y	100	y	99	y	99	y	100	2012	MICS
Timor-Leste	55		55	56	50	57	50	54	59	57	56	2009-2010	DHS
Tonga	–		–	–	–	–	–	–	–	–	–		
Turkey	94		95	93	95	92	89	92	96	96	99	2008	DHS
Turkmenistan	–		–	–	–	–	–	–	–	–	–		
Tuvalu	50		49	51	60	38	39	43	38	60	71	2007	DHS
Uzbekistan	100		100	100	100	100	100	100	100	100	100	2006	MICS
Vanuatu	43	y	44	y	43	y	51	y	37	y	33	y	34	y	40	y	49	y	59	y	2013	DHS (prelim)
Viet Nam	95		95	95	97	94	87	96	97	98	98	2011	MICS

Source: UNICEF (2015). * Updated to reflect the 2014 Bangladesh DHS. **Updated to reflect 2014 Cambodia DHS. ***Updated to reflect 2014 Nepal MICS.

[a] Percentage of children under age five whose births are registered at the moment of the survey. The numerator of this indicator includes children whose birth certificate was seen by the interviewer or whose mother or caregiver says the birth is registered.

y Data differ from the standard definition or refer to only part of the country. If they fall within the noted reference period, such data are included in the calculation of regional and global averages.