Birth registration inequalities: a case study of Pakistan

Ulysse Boiteau—Montéville¹

¹ UNESCAP, Statistics Division

Abstract
Civil registration of vital events such as births and deaths is key to good governance and planning, allowing inclusive and equitable development. In Asia and the Pacific, there are still over 65 million children under five who have never been recorded, leaving many vulnerable to potential exclusions. To address this situation, countries in Asia and the Pacific adopted the Ministerial Declaration to ‘Get Every One in the Picture’ in 2014 and proclaimed the ‘Asian and Pacific Civil Registration and Vital Statistics (CRVS) Decade’ for 2015–2024. Guided by this framework and with ambitious national targets, countries in the region have made substantial progress in registering their population. However, even when included in CRVS policies, inequalities in registration within country are rarely assessed. This paper proposes to assess these inequalities by using an innovative method elaborated by the Social Development Division of UNESCAP with data from Demographic and Health Surveys (DHS). The method is based on the classification tree analysis to assess inequalities in access to opportunities. It allows to identify those furthest behind. This study will therefore analyze the factors affecting children’s birth registration in Pakistan. The aim is to identify the groups most at-risk of not being registered, in order to help reduce the gap and Get Every One in the Picture. As the basis of legal identity, itself a key to many opportunities, civil registration plays a crucial role in the pledge to leave no one behind. As such, evaluating inequalities with this method, even in countries where overall high registration rates have already been achieved, could be a fruitful way to help meet this pledge.

Keywords: Birth Registration, Inequalities, Leave no one behind, Civil Registration

Introduction
Civil registration is defined as “the continuous, permanent, compulsory and universal recording of the occurrence and characteristics of vital events pertaining to the population”.¹ Civil registration is essential for accessing many services and benefits. Birth registration is especially paramount, since it is usually the first official document recognizing a person’s legal identity and is often used as a basis for issuing following identification documents. Without a legal identity, individuals are never granted formal recognition by the State, and they are thus barred entry to countless social and economic opportunities.¹¹ Providing universal registration is therefore decisive in the fight against other inequalities. Despite recent progress, 166 million children under 5 in the world remain unregistered.¹³ These unregistered children are unequally spread, between countries but also depending on social characteristics.

This paper will predominantly focus on socio-economic and demographic factors of inequality, like sex, household wealth, residence type (urban-rural) or mother’s education. Global research has shown that these factors are often linked to highly unequal registration rates. In many countries poor and rural households are least likely to have their children registered.¹⁶ The sex of the child appears to be less of a determinant of registration.¹¹ More geographically specific studies allow the impact of conditions of a certain country or region to be studied, for example belonging to a religious or ethnic minority.¹⁷,¹⁸ Countries with middle to low rates of birth registration also experience higher levels of inequality.¹⁸ The completeness rates have increased for most countries in recent years,¹³ showing the efficiency of action programs and international initiatives in the fight to “leave no one behind”. But many are still left unregistered.

In Pakistan, an estimated 57.8% of children under 5 have not had their birth registered.¹⁴ Studying the birth registration inequalities between different population groups can help understand the deficiencies of registration systems and address these shortfalls.
Methodology
The most recent two waves of the Pakistan DHS, conducted respectively in 2012-2013 and 2017-2018, were selected to examine not only a still picture of inequalities but also map the changes. However, the geographical coverage of the two surveys was different. The administrative territory of Gilgit-Baltistan cannot be included in the main analysis for 2017-2018 because of a differing sampling methodology. Additionally, Federally Administered Tribal Areas were included only in 2017-2018. To allow comparison, these territories have therefore been removed from the analysis. The results presented below are thus not representative of Pakistan as a whole, as they include only five territories: Balochistan, Islamabad (ICT), Khyber Pakhtunkhwa, Punjab and Sindh, and should only be interpreted in comparison between the surveys.

In the DHS, a question is asked to the mother of children to know if their birth have been registered or not. For Pakistan, the possible answers are: "Name on bay form and have birth certificate", "Name on bay form and have no birth certificate", "Only birth certificate", "Neither of above", "Don't know". The “bay-form” is delivered by the National Database and Registration Authority, whereas the birth registration certificate is issued by union councils. Both are considered as forms of registration, and therefore children belonging to any of the first three categories are here counted as registered and the rest as unregistered. This is the dependent variable for all subsequent analysis, which will be studied for children under 18.

This study examines which are the most important factors in registration rates. Variables recognized in international literature, such as wealth, sex, age, place of residence, mother’s education and the sex of the household head are included. Focusing solely on Pakistan also made it possible to include local characteristics which may impact registration levels, such as language spoken in the household, province, and the possession by the mother of a national identity card (NIC).

To assess inequalities, the methods used are inspired by those developed by the Social Development Division of UNESCAP measures inequalities of opportunities, based upon the classification tree and logistic regression.

The classification tree is an algorithm aiming at information reduction. It does so by creating subgroups of the population depending on categories of variables in the model which present the highest homogeneity for the variable of interest, here the registration status. It is a step-by-step process, which starts with the whole population and splits it into two subgroups if it achieves a significant reduction of the heterogeneity, and continues the same process with all subsequent groups, until no significant reduction can be performed.

This analysis is completed by using logistic regressions with the registration status as a dependent variable. It allows a more detailed comparison of the respective effects of the explanatory variables, and the difference between the two studied survey waves.

Results
In the five provinces studied, the overall registration rate for children under 5 has increased from 32.9% to 43.2% between the two surveys, and from 39.1% to 50.7% for children under 18.

Fitting classification tree with the explanatory variables, it appears that for both surveys the only variables creating a split in the models are language and wealth. This means only these variables’ categories created significantly more homogenous subgroups, with registration rates differing from the general population’s average. The presence of only language and wealth cannot be interpreted as a causal relation, meaning that these are the variables causing the most inequality, but they create the largest and most homogenous subgroups.
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Figure 1: Classification tree of birth registration, 2012-2013

![Classification tree of birth registration, 2012-2013](Insert Image)

Note: This graph should be read from top to bottom, each box representing a group, with the whole sample in the top box and subsequent groups created by the different splits below. The bottom line boxes cover the whole sample divided in groups, in this case five. Color (blue for registered, red for unregistered) and label represent the dominant status in each group; percentage is the weighted size of the sample represented by the group; the proportions inbetween represent respectively the rate of unregistered (left) and registered (right) children. The variables and categories represent for each step which categories were used to split the data in two subgroups with a more homogenous registration status. Here the subgroup at the bottom left, constituted from children in Baluchi, Pushto, Sariaki, Sindhi or Other speaking households and belonging to “Poorest” or “Poorer” households represent 34% of the children in the sample and are mostly (93%) unregistered.

Figure 2: Classification tree of birth registration, 2017-2018

![Classification tree of birth registration, 2017-2018](Insert Image)

In 2012-2013 like in 2017-2018, the furthest behind were children belonging to household in the bottom 40% for wealth and whose household language was Baluchi, Pushto, Sariaki, Sindhi or other. In 2012-2013, the registration rate among this group was around 7%, while it rose to 15% in 2017-2018. While
this progress is encouraging, comparing the registration rates of the other groups appearing in both 2012-2013 and 2017-2018 trees puts it in perspective. The children from households with the same languages, but in the top 60% for wealth have seen their registration rate increase from 36% to 51%, while the children from Punjabi or Urdu-speaking households registration rate went from 64% to 79%. This shows that the recent overall progress in registration has not profited equally to everyone, partially leaving some groups of the population behind. A similar picture can be observed by plotting the registration rate of categories of some of the variables studied.

Figure 3: Registration rate by Wealth quintile, 2012-2013 and 2017-2018

![Registration rate by Wealth quintile](image)

The progress has been the highest for the three middle quintiles, while both the poorest and richest quintiles have seen lower progress. This calls for further examination of the drivers of the progress that Pakistan has seen in birth registration in the past years, for which logistic regression will be used.

Table 1: Logistic regression models, children whose birth is registered as dependent variable, for 2012-2013 and 2017-2018 respectively

<table>
<thead>
<tr>
<th>Variable (reference category)</th>
<th>Category</th>
<th>2012-2013 (N = 37,675)</th>
<th>2017-2018 (N = 33,308)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td></td>
<td>-4.38 **</td>
<td>-3.28 **</td>
</tr>
<tr>
<td>Sex (Female)</td>
<td>Male</td>
<td>0.05</td>
<td>0.1 **</td>
</tr>
<tr>
<td>Residence type (Rural)</td>
<td>Urban</td>
<td>0.61 **</td>
<td>0.03</td>
</tr>
<tr>
<td>Age of the child (0)</td>
<td>Continuous variable</td>
<td>0.06 **</td>
<td>0.01</td>
</tr>
<tr>
<td>Wealth (Poorest)</td>
<td></td>
<td>1.13 **</td>
<td>0.79 **</td>
</tr>
<tr>
<td>Middle</td>
<td>1.6 *</td>
<td>1.19 **</td>
<td></td>
</tr>
<tr>
<td>Richer</td>
<td>1.8 **</td>
<td>1.59 **</td>
<td></td>
</tr>
<tr>
<td>Richest</td>
<td>2.3 **</td>
<td>1.85 **</td>
<td></td>
</tr>
<tr>
<td>Mother’s educational attainment (Primary)</td>
<td>No education</td>
<td>-0.5 **</td>
<td>-0.55 **</td>
</tr>
<tr>
<td>Secondary or higher</td>
<td>0.2 *</td>
<td>0.26 *</td>
<td></td>
</tr>
<tr>
<td>Not in household</td>
<td>-0.22</td>
<td>-0.5 **</td>
<td></td>
</tr>
<tr>
<td>Language (Sindhi)</td>
<td>Other</td>
<td>0.95 **</td>
<td>0.94 **</td>
</tr>
<tr>
<td>Punjabi</td>
<td>1.74 **</td>
<td>0.79 **</td>
<td></td>
</tr>
<tr>
<td>Pashto</td>
<td>0.48</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td>Sariaki</td>
<td>0.31</td>
<td>-1.02 **</td>
<td></td>
</tr>
<tr>
<td>Baluchi</td>
<td>0.48</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Urdu</td>
<td>1.43 **</td>
<td>0.97 **</td>
<td></td>
</tr>
<tr>
<td>Province (Khyber Pakhtunkhwa)</td>
<td>Islamabad (ICT)</td>
<td>1.8 **</td>
<td>2.18 **</td>
</tr>
<tr>
<td></td>
<td>Balochistan</td>
<td>-0.07</td>
<td>1.33 **</td>
</tr>
</tbody>
</table>
The logistic regression for both waves show that most of the factors considered as potential drivers of inequality are associated with significant variations of registration rates. Everything else equal, the higher the wealth quintile, the more chances children have to be registered. Higher mother’s educational attainment appears to be associated with higher registration chances for the child. The possession of an NIC card by the mother is also positively associated with birth registration. These results are in line with the expectation of households from higher social classes having an easier access to birth registration and being more conscious of its benefits. By contrast, it highlights the need for authorities to initiate specific actions to make registration procedures more accessible to the groups left out.

For languages and province, some groups experience higher registration chances, like territories Islamabad Capital Territory and Punjab, or languages such as Punjabi and Urdu. On the other hand, Sindhi and Sariaki speakers, or residents of Khyber Pakhtunkhwa, face significantly lower chances than the rest. It is however not a hopeless situation, since Balochistan, where the registration rate has greatly increased between the two survey waves, changed from being one of the provinces with the least chances of registration to have among the highest ones in 2017-18.

Interaction factors between age and some of the most prominent inequality factors identified in prior analysis were added to see if the increase of registration rates with age, due to late registration, is similar across these subgroups. For 2017-18, it is interestingly not: most categories with higher registration rates also have significantly higher registration progress rate with age than the reference categories. For example, the interaction coefficient for the top three wealth quintiles are significantly superior to the poorest wealth quintile one. It is also the case for urban residents compared to rural ones. More fragile categories like poor or rural households appear to face a lower registration rate increase between young children and teenagers. This observation does not hold true for 2012-13, where no interaction coefficient is significant.

There can be several interpretations to this observation for 2017-18. Inequalities could be mild shortly after birth but develop as the registration completeness increases more for the more privileged groups of the population with late registration. But this could also be the sign of generational progress for the most excluded categories, of which those born recently have benefitted the most. This second interpretation would mean there is a progress in equality of access for newborns, but that there has been little backlog registration, with older children from excluded categories still being left behind. A third interpretation could be that there has been generational progress in backlog registration for the most privileged categories, with similar inequalities for newborns.

These hypotheses could have intertwined effects but were tested to see if one stood out. Although no final picture can be drawn, several observations can be made pointing at a generational inequality decrease for newborns. First, the fact that interaction factors do not play an important role in 2012-13
rules out the first hypothesis, as it shows a homogenous age progress rate of registration among social groups occurred then. Secondly, it should be noted that the main age factor for 2017-18 is not significantly different from 0. Associated with the interaction factors of the unprivileged categories being not different from 0 as well, it means that children from many groups have an overall null age factor. It is the case for children from poor households in rural areas, non-Punjabi or Sariaki-speaking. This seems contradictory with the widespread practice of late registration in Pakistan, which should, without generational progress, lead to positive age factors across groups. Finally, the changes between 2012-13 and 2017-18 in the coefficients for wealth and residence type, which because of the inclusion of interaction factors represent the differences in chances across these categories for children under 1, should also be noted. If they indicate that children under 1 from privileged categories still experience higher registration chances than the rest, the magnitude of these differences appear to have decreased between the two survey waves, hinting at reduced inequalities for newborns in the meantime. However, this question would need further investigation to better grasp the different phenomena at play.

Discussion, Conclusion and Recommendations
Pakistan has made great progress in its birth registration completeness in the past years. It remains, however, critical to pursue efforts in order to close the numerous gaps remaining. The existence of large groups with very low registration rates emphasizes the need for outreach birth registration policies, specifically targeting segments of the population. In particular, children from the wealth bottom 40% households, and non-Punjabi or Urdu-speaking, who represent a third of the population under 18, still face very low registration rates. The overall increase of completeness should not mask the fact that some of the groups furthest behind are partially left out of this progress. The fact that older children appear to have gained less from the recent decrease in inequality should also be accounted and further monitored to avoid closing the gap for newborns while not addressing the still widespread practice of late registration. Although late registration is not ideal, it is paramount that the fight against inequalities also focuses on this aspect of birth registration considering all classes of society still rely on it.

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