Trends and Inequalities in Maternal Health in Cambodia, 2000-2014

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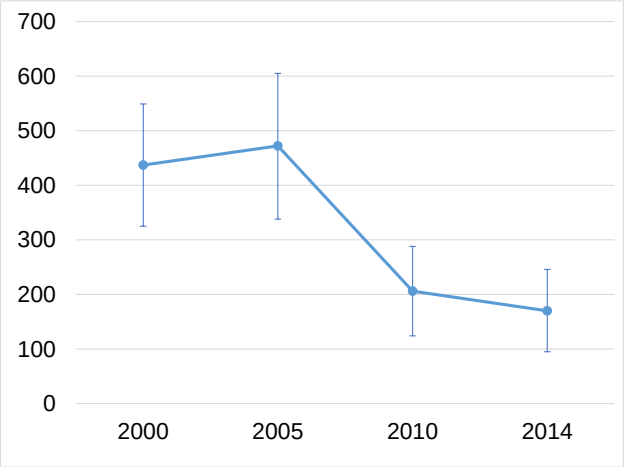
Abstract:

This report examines the trends and sociodemographic inequities in maternal health over a 14-year period (2000-2014) in Cambodia. The analysis draws from four nationally representative household surveys conducted by The Demographic and Health Surveys Program in 2000, 2005, 2010, and 2014. We examined estimates of indicators of antenatal care, delivery, and postnatal care for women. We tested the significance of the change of these estimates at the national level as well as by sociodemographic characteristics. The results revealed significant improvement in a number of indicators, although the greatest changes appeared between 2000 and 2010, with fewer gains seen between 2010 and 2014. For many indicators, significant disparities continued over time, most notably among regions, wealth quintiles, and levels of mothers' education. Overall, the trends in maternal health care in Cambodia are positive, though continued efforts are needed to ensure that there is equitable access to health services for all women.

Introduction

Over the past 2 decades, The Demographic and Health Surveys (DHS) Program has conducted four nationally representative surveys in Cambodia to assess the health of the population, including maternal and child health. These surveys indicate that reproductive health outcomes in Cambodia have improved substantially since 2000. By the end of 2014, Cambodia had achieved several of the health-related Millennium Development Goals (MDGs). For example, the pregnancy-related mortality ratio (PRMR) declined significantly between 2000 and 2014. Figure 1 presents PRMR for the 7 years preceding each survey, expressed per 100,000 live births, calculated as the age-adjusted pregnancy-related mortality rate times 100 divided by the age-adjusted general fertility rate. Between the first two surveys (2000 and 2005) in which the DHS measured PRMR, the trend was discouraging. Subsequently, efforts were made to reduce pregnancy-related deaths and to halt and reverse the trend. After 2005, PRMR began to improve, eventually reaching the MDG target by 2014, to reduce maternal mortality by three-quarters from 1990 to 2015.

Figure 1. Pregnancy-related mortality ratio, Cambodia 2000, 2005, 2010, and 2014 DHS



Note: Maternal mortality ratios obtained from the The DHS Program STATcompiler: https://www.statcompiler.com. Point estimate includes the lower and upper bounds of the 95% confidence intervals.

Cambodia has experienced rapid economic growth in the last 2 decades. Through dedicated government resources, as well as international donor funding, access to good-quality health care has improved with the implementation of health equity funds, vouchers, and community-based health insurance schemes (Dingle, Goodman, and Powell-Jackson 2013; Van de Poel et al. 2014; WHO n.d.). Much of the improvement in childhood and maternal morbidity and mortality may be attributed to the general increase in provision and use of maternal and child health services, while other socioeconomic indicators such as universal primary education and eradication of extreme poverty have also shown substantial improvement. Nonetheless, Cambodia's health sector still faces many challenges, such as disparities and inequities within socioeconomic sub-groups (Dingle, Goodman, and Powell-Jackson 2013) and lack of improvement in some health indicators.

The objective of the present analysis is to describe trends in several key maternal and child health indicators from 2000 to 2014, using data from the Cambodia Demographic and Health Surveys (CDHS) Surveys. This report addresses the prevailing maternal and child health situation in Cambodia and the trends in antenatal care (ANC), delivery, postnatal care (PNC), birth size, and breastfeeding, as well as immunization, care and treatment of illness, and nutritional status among children. The report also examines the interventions and practices that may contribute to reducing maternal and child health mortality. The primary objective is to provide information for policymakers and program administrators to help assess the current situation and to design future maternal and child health programs.

Data

This analysis used data from the four CDHS surveys in 2000, 2005, 2010, and 2014. Data collected by the CDHS surveys are comparable over time because the surveys use the same sampling design, model questionnaires, data collection techniques, measures, and methods of analysis. The 2000, 2010, and 2014 surveys were implemented by the Cambodian National Institute of Statistics (NIS) of the Ministry of

Planning and the Directorate General for Health (DGH) of the Ministry of Health. The 2005 survey was carried out by the NIS and the National Institute of Public Health and Research (NIPH) of the Ministry of Health. Table 1 presents information on dates of fieldwork and sample sizes for the households and women interviewed in the CDHS.

Table 1. Description of the Cambodia Demographic and Health Surveys (CDHS) included in the analysis

Year	Date of fieldwork	Implementing organization	Number of households interviewed	Number of women aged 15-49 interviewed
2000	February-July 2000	NIS[1] & DGH[2]	12,236	15,351
2005	September 2005-March 2006	NIS & NIPH[3]	14,243	16,823
2010	July 2010-January 2011	NIS & DGH	15,667	18,754
2014	June-December 2014	NIS & DGH	15,825	17,578

[1] NIS: National Institute of Statistics (Ministry of Planning); [2] DGH: Directorate General for Health (Ministry of Health); [3] NPH: National Institute of Public Health and Research (Ministry of Health)

For each survey in Cambodia, the DHS used a complex, two-stage sample design first to select clusters and then to select households resulting in a nationally representative sample. The interviewers collected data from members of the selected households, including women age 15-49, about their health attitudes, behavior, and outcomes. If a woman had a live birth in the 5 years preceding the survey, her survey included questions about the care she received during pregnancy, birth, and in the postnatal period. Additional questions also asked about the health of and care for her children. This study examines women with a live birth in the 5 years preceding each survey. This includes 5,714 women in the 2000 CDHS, 5,865 women, 6,472 women in 2010, and 5,973 women in 2014.

Measures

The indicators assessed in this report provide a snapshot of the health and the care received among mothers during and after pregnancy and birth, and for their children up to age 5. However, the definitions of some of these key indicators changed over the survey period. In order to ensure comparability across surveys, the definitions of some variables are standardized. For example, earlier surveys only assessed PNC among women who delivered at home, versus all women in more recent surveys. Additionally, in more recent surveys this indicator is only presented for women with a birth in the 2 years preceding the survey. Therefore, we do not analyze PNC for women interviewed in the 2000 CDHS. We present results only among women with a birth in the most recent 2 years preceding the survey (versus 5 years).

Table 2. Maternal health indicators included in the analysis

Indicator	Definition	Population Base	Sample Size			
			2000	2005	2010	2014
Four or more antenatal care visits (ANC)	Percentage of women with four or more antenatal care visits for their most recent pregnancy	Women age 15-49 with a live birth in the 5 years preceding the survey	5,714	5,865	6,472	5,973
Timing of first ANC	Percentage of women who received ANC in the first 4 months of pregnancy	Women age 15-49 with a live birth in the 5 years preceding the survey	5,714	5,865	6,472	5,973
Mother took iron syrup/tablets during pregnancy	Percentage of women who were given iron syrup/tablets during their most recent pregnancy	Women age 15-49 with a live birth in the 5 years preceding the survey	5,714	5,865	6,472	5,973
Mother took deworming medication during pregnancy	Percentage of women who consumed deworming medication during their most recent pregnancy	Women age 15-49 with a live birth in the 5 years preceding the survey	5,714	5,865	6,472	5,973
Blood pressure checked during ANC	Percentage of women who had their blood pressure checked during an ANC visit during their most recent pregnancy	Women age 15-49 with a live birth in the 5 years preceding the survey who had at least one ANC visit	2,543	4,213	5,804	5,704
Informed of pregnancy complications during ANC	Percentage of women who were informed of pregnancy complications during an ANC visit during their most recent pregnancy	Women age 15-49 with a live birth in the 5 years preceding the survey who had at least one ANC visit	2,543	4,213	5,804	5,704
Birth delivered in a facility	Percentage of births that were delivered in a facility	Children born in the 5 years preceding the survey	8,715	7,789	8,200	7,253
Births assisted by a skilled birth attendant (SBA)	Percentage of births that were assisted by an SBA	Children born in the 5 years preceding the survey	8,715	7,789	8,200	7,253
Births delivered by Caesarean section	Percentage of births that were delivered by caesarean section	Children born in the 5 years preceding the survey	8,715	7,789	8,200	7,253
Postnatal care for the mother	Percentage of women who received a postnatal check-up within 2 days of delivering their most recent birth	Women age 15-49 with a live birth in the 2 years preceding the survey	n/a	3,083	3,187	2,944
Continuum of care	Percentage of women who received any combination of ANC (4 or more visits), skilled birth attendant, and postnatal care	Women age 15-49 with a live birth in the 2 years preceding the survey	n/a	3,083	3,187	2,944

Analysis

We used data from the four CDHS surveys to investigate the changes in indicators of maternal and child health over time. We conducted tests of association to identify significant changes between each survey, as well as between the first survey (2000 CDHS) and the most recent survey (2014 CDHS). For selected indicators, we performed additional tests of associations to assess the significance of relationships between these indicators and sociodemographic and health covariates within each survey and across surveys. These variables included place of residence (urban or rural), region, wealth quintile, and mother's education (none, primary, or secondary and higher). We grouped the 19 provinces of Cambodia into five regions: Phnom Penh, Plain, Great Lake, Coastal, and Plateau . Depending on the indicator, we also included maternal age at birth, parity or birth order, birth interval, ANC, facility delivery, and assistance at birth. We used Stata 15 for all calculations, weighting our estimates and adjusting our analysis for the complex sample design using the svy command.

This report presents the results of the trends in indicators of maternal health in line graphs, which demonstrate the percentage at each time point, the change between successive surveys and between the first and the last survey, and the significance of the change between surveys. In each figure, a solid line between 2 time points represents a significant change from one survey to the next, and a dotted line indicates no significant change. Significant differences between the first survey (2000 CDHS) and the last survey (2014

CDHS) are marked with asterisks in the legend for each indicator or subgroup. The number of asterisks seen denotes the p-value: * is a p-value <0.05, ** is <0.01, and *** is <0.001. No asterisks indicate no significant changes.

Results

Table 4 presents the background characteristics of women with a live birth in the 5 years preceding each survey. In all four surveys the majority of these women were rural residents and about two in every five lived in the Plain region. The majority in each survey had a primary education, though the percentage of women with secondary or higher education increased over the survey period. Among these women, most were age 20-34 and had three children or fewer. The proportion of women with four, five, or six or more children decreased over the survey period. Appendix Table 1 contains the national-level trends and the results of the significance tests of changes over time.

Table 4. Distribution of women age 15-49 with a live birth in the 5 years preceding the survey, according to background characteristics, Cambodia 2000, 2005, 2010, and 2014 DHS

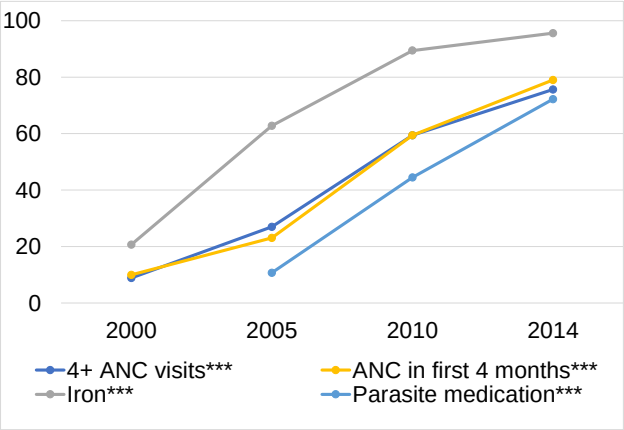
	2000		2005		2010		2014	
	%	N	%	N	%	N	%	N
Place of residence								
Urban	13.6	779	14.1	827	16.2	1,050	14.7	876
Rural	86.4	4,935	85.9	5,039	83.8	5,421	85.3	5,096
Region								
Phnom Penh	5.9	336	8.1	476	8.3	538	9.0	535
Plain	41.9	2,393	39.7	2,329	40.0	2,587	36.7	2,193
Great Lake	31.8	1,819	31.0	1,816	30.3	1,958	29.9	1,785
Coastal	7.9	451	7.4	437	6.8	440	6.3	378
Plateau	12.5	715	13.8	807	14.7	948	18.1	1,081
Wealth quintile								
Lowest	25.1	1,436	25.2	1,477	24.5	1,585	22.8	1,359
Second	22.2	1,269	22.5	1,320	21.3	1,380	20.3	1,215
Middle	20.2	1,152	18.4	1,077	19.0	1,229	19.0	1,133
Fourth	18.3	1,043	17.1	1,003	17.9	1,155	17.9	1,069
Highest	14.3	814	16.9	988	17.4	1,123	20.0	1,196
Education								
None	32.0	1,827	23.1	1,356	17.5	1,133	13.5	805
Primary	53.7	3,069	59.4	3,482	56.2	3,635	51.9	3,100
Secondary+	14.3	818	17.5	1,028	26.3	1,703	34.6	2,068
Mother's age at birth								
<20	8.1	465	9.2	540	8.6	555	10.4	620
20-34	68.6	3,921	70.2	4,118	76.0	4,917	79.5	4,749
35-49	23.3	1,329	20.6	1,206	15.4	999	10.1	603
Parity								
1	17.1	975	24.4	1,430	30.6	1,980	35.3	2,109
2-3	35.9	2,053	40.5	2,378	45.3	2,931	47.4	2,828
4-5	22.7	1,296	20.5	1,200	15.5	1,001	12.7	760
6+	24.3	1,391	14.6	857	8.7	560	4.6	276
Total	100.0	5,714	100.0	5,865	100.0	6,472	100.0	5,973

Antenatal Care

Figure 2 shows the national-level percentage of women in each survey with a live birth who obtained key ANC services during their most recent pregnancy. Specifically, this figure shows the trends in receiving four or more ANC visits, receiving ANC in the first three months of pregnancy, consumption of iron supplementation, and consumption of intestinal parasite medication. The 2000 survey did not collect data on consumption of parasite medication.

Overall, the trend is positive for each indicator. There were significant improvements for each indicator at the national level between successive rounds of surveys and also between the first and last surveys. The levels and trends are similar for receipt of four or more ANC visits and for early initiation of ANC. Results on both indicators show that about 10% of women received coverage in 2000, rising to almost 80% in 2014. Consumption of intestinal parasite medication also rose about 70 percentage points between 2005 and 2014. By 2014, nearly 100% of women with a pregnancy in the 5 years preceding the survey consumed iron supplements, compared with 20% in 2000.

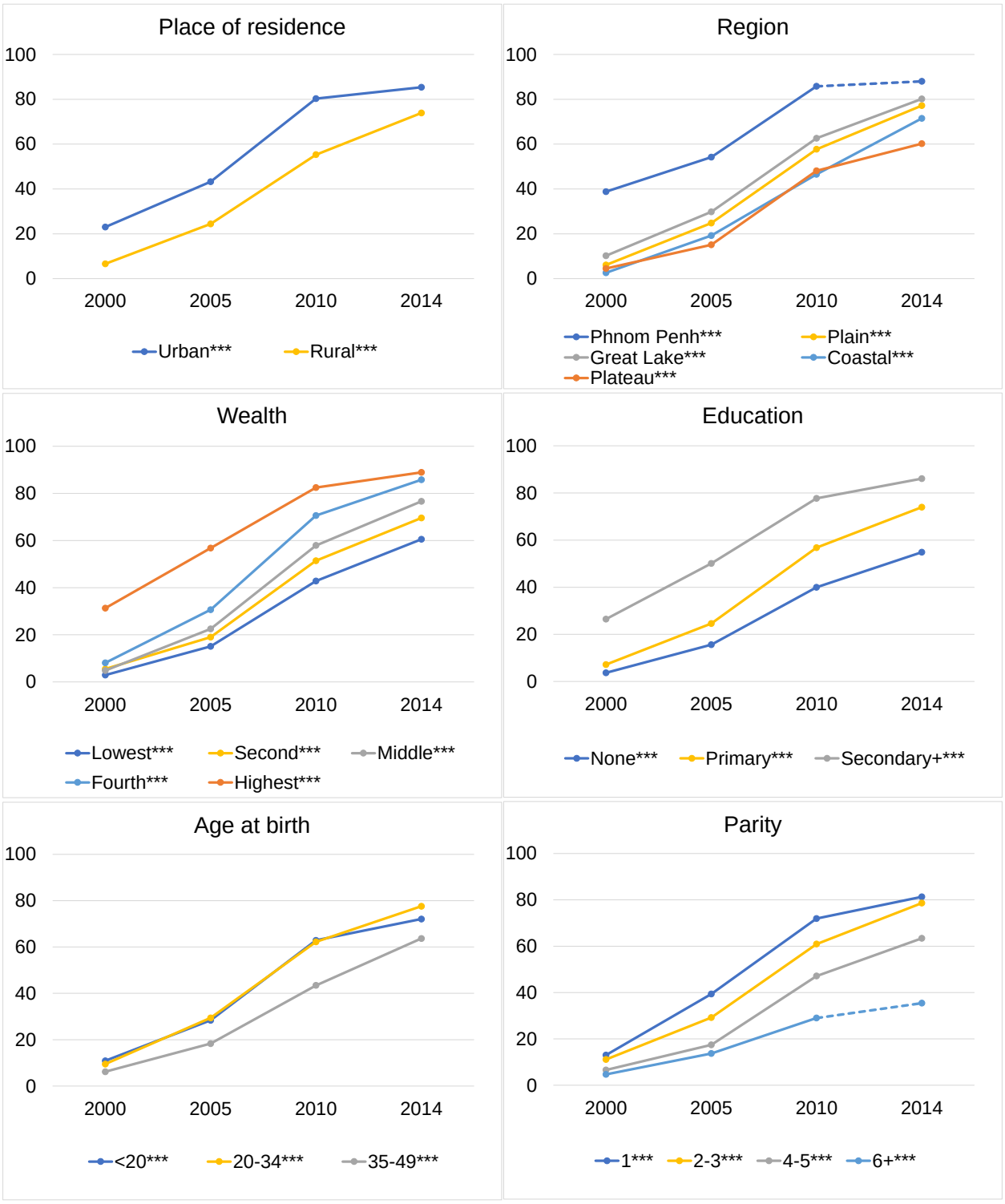
Figure 2. Indicators of antenatal care for the most recent birth of women with a live birth in the 5 years preceding the survey, Cambodia 2000, 2005, 2010, and 2014 DHS



Note: A solid line indicates a significant change between two surveys. Significant change between 2000 and 2014 is indicated in the legend with asterisks to represent the p-value: *<0.05, **<0.01, ***<0.001.

Figure 3 shows the percentage of women making four or more ANC visits in their last pregnancy, by background characteristics, including place of residence, region, wealth, education, age at birth, and parity. Appendix Table 2 includes the corresponding percentages, confidence intervals, differences, and significance levels, as well as the significance of the difference for each background characteristic. Between the first and the last surveys, each demographic group showed significant improvement. Between each of the surveys, each category of women also significantly improved, with the exception of women in Phnom Penh and women with six or more births between 2010 and 2014. Each demographic group demonstrated significant differences by receipt of four or more ANC visits for each survey. The disparities were smallest between urban and rural residence and by age at birth. For region, wealth, and education, the disparities between the lowest and highest categories were approximately 30 percentage points. By region, women in Phnom Penh were the most likely to make four more ANC visits while the lowest coverage appeared to be women in the Plateau region. The gap by parity widened over time. Women with any children similarly obtained the recommended four or more visits in 2000 (between 5% and 15%) regardless of their number of births. The proportion of women who made the recommended number of ANC visits increased more over the survey period among lower parity women compared with higher parity women. By 2014, less than 40% of women with six or more births made four or more ANC visits, compared with over 80% of primiparous women.

Figure 3. Percentage of women with four or more antenatal care visits for their most recent pregnancy among women age 15-49 with a live birth in the 5 years preceding the survey, according to background characteristics, Cambodia 2000, 2005, 2010, and 2014 DHS

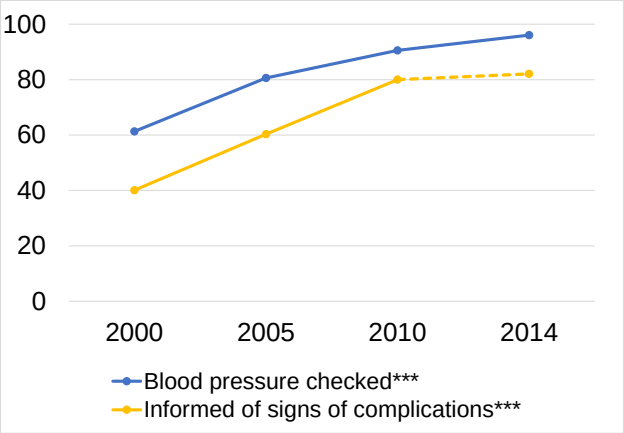


Note: A solid line indicates a significant change between two surveys, while a dotted line indicates no significant change. Significant change between 2000 and 2014 is indicated in the legend with asterisks to represent the p-value: *<0.05, **<0.01, ***<0.001.

Components of Antenatal Care

Figure 4 shows the trend in selected components of ANC for women who had any ANC visits during their most recent pregnancy resulting in a live birth in the 5 years preceding each survey. Coverage of both indicators—blood pressure measurement and being informed of signs of complications—significantly increased from 2000 to 2014, by 35 percentage points and 42 percentage points respectively. The greatest change for both indicators was between 2000 and 2014, with only a small change between 2010 and 2014; the increase in the percentage of women informed of complications is not significant between 2010 and 2014. Figure 6 disaggregates this indicator by women's background characteristics.

Figure 4. Indicators of components of antenatal care for the most recent birth of women with a live birth in the 5 years preceding the survey among women who received antenatal care, Cambodia 2000, 2005, 2010, and 2014 DHS

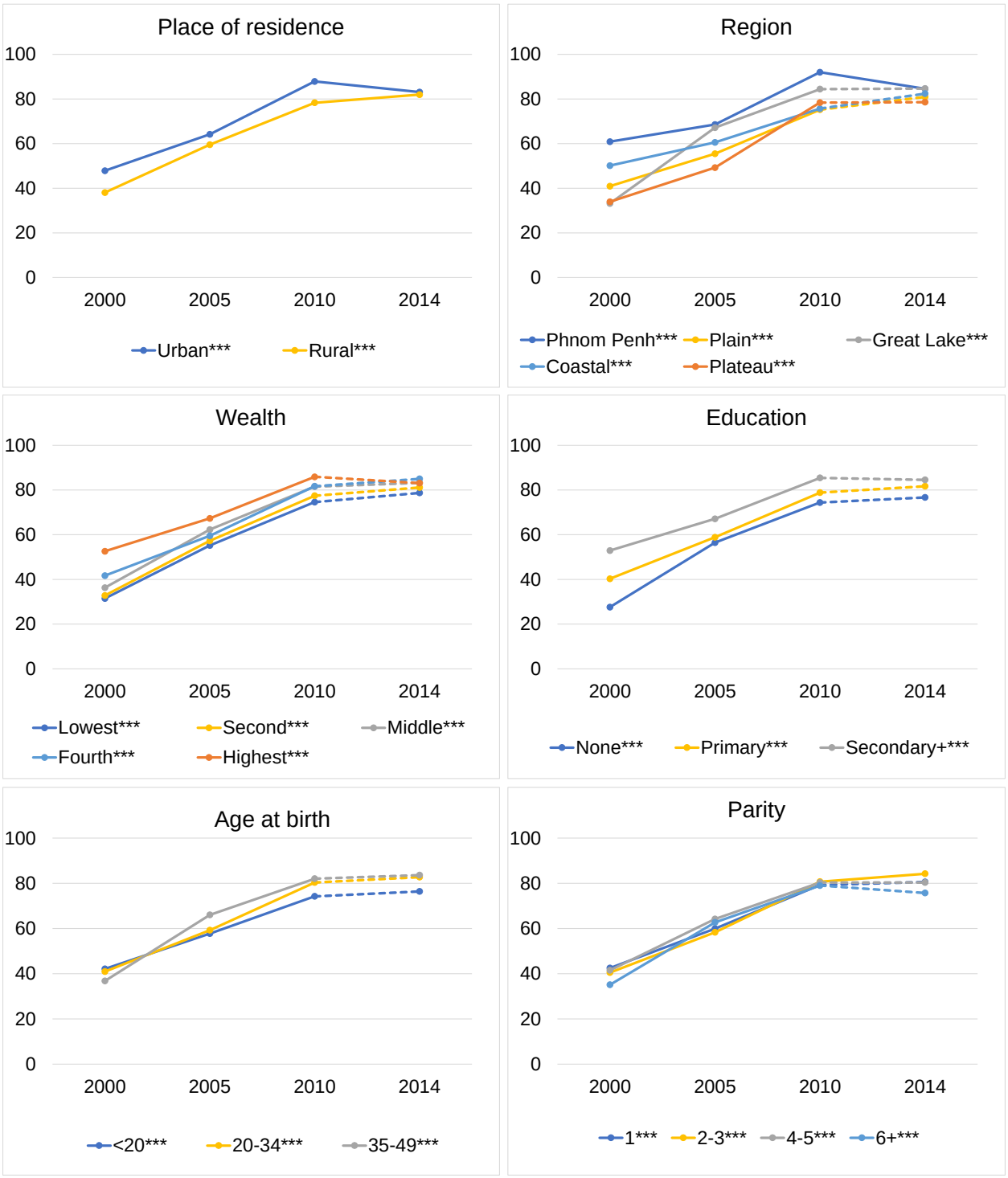


Note: A solid line indicates a significant change between two surveys, while a dotted line indicates no significant change. Significant change between 2000 and 2014 is indicated in the legend with asterisks to represent the p-value: *<0.05, **<0.01, ***<0.001.

Figure 5 shows that for almost all categories, the change between 2010 and 2014 is also not significant, while the overall trend between the first and the last surveys is highly significant. The trend over time is unique by region. In Phnom Penh there was a sharp increase (23 percentage points) from 2005 to 2010, but a significant decrease of 7 percentage points from 2010 to 2014, with a net increase of 24 percentage points from 2000 to 2014. In the Great Lake region, the percentage of women who were informed of signs of pregnancy complications during ANC increased by 50 percentage points from 2000 to 2014.

The disparities within each background characteristic have also narrowed over time. In 2000, significant differences existed between demographic categories. In contrast, in 2014, significant differences appear by category only for education, age at child's birth, and parity. This suggests that, once women obtain care, providers do not give unequal treatment by place of residence, region, and wealth. Appendix Table 3 contains supplementary information.

Figure 5. Among women age 15-49 with a live birth in the 5 years preceding the survey who received antenatal care for their most recent birth, the percentage who were informed of signs of complications, Cambodia 2000, 2005, 2010, and 2014 DHS

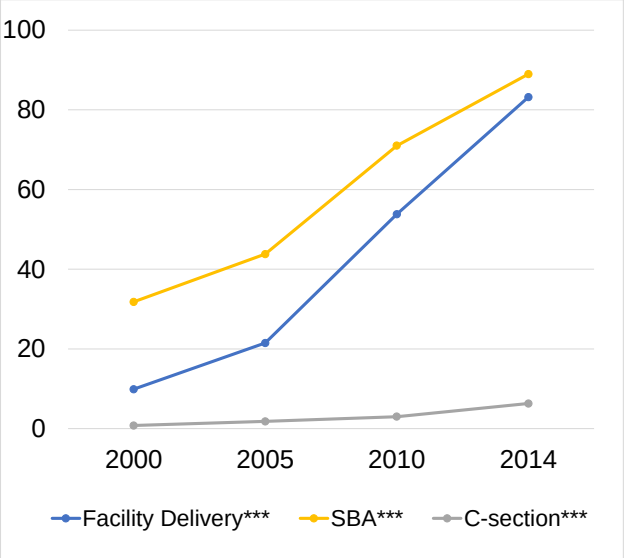


Note: A solid line indicates a significant change between two surveys, while a dotted line indicates no significant change. Significant change between 2000 and 2014 is indicated in the legend with asterisks to represent the p-value: *<0.05, **<0.01, ***<0.001.

Delivery Care Indicators

Figure 6 demonstrates the trend in delivery care received for all births in the 5 years preceding each survey, from 2000 to 2014. All of the indicators of care at birth, including delivery in a health facility, skilled birth attendance (SBA), and caesarian section (C-section), demonstrate significant increases between each survey, and between the first and the last surveys. Facility delivery increased by 73 percentage points, to 83% in 2014, and SBA increased by 57 percentage points, to almost 90% in 2014. The biggest change in these two indicators occurred between 2005 and 2010. Few births were delivered by C-section; the proportion increased from 1% in 2000 to 3% in 2014.

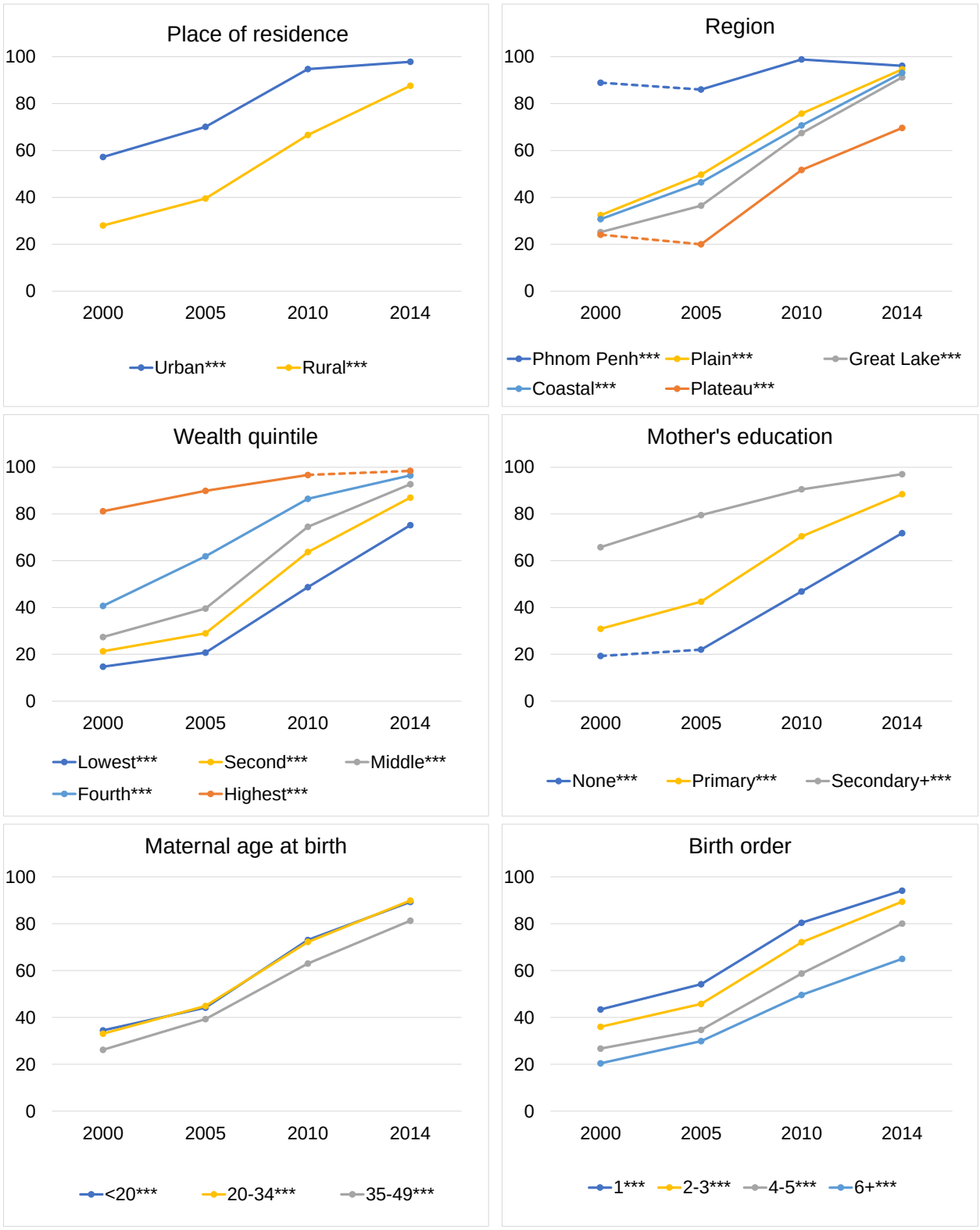
Figure 6. Indicators of delivery care for all births in the 5 years preceding the survey, Cambodia 2000, 2005, 2010, and 2014 DHS

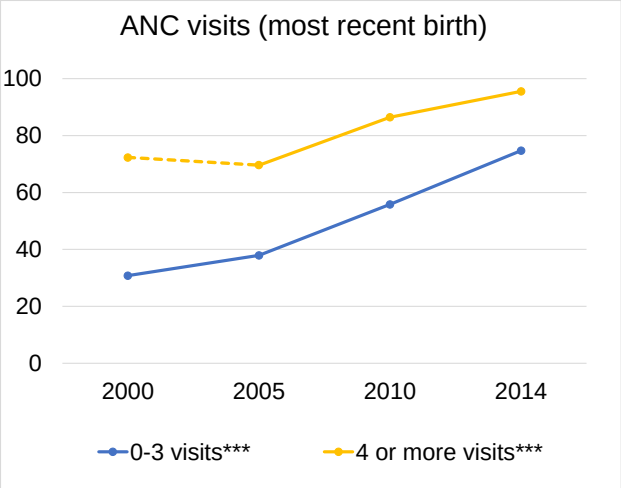


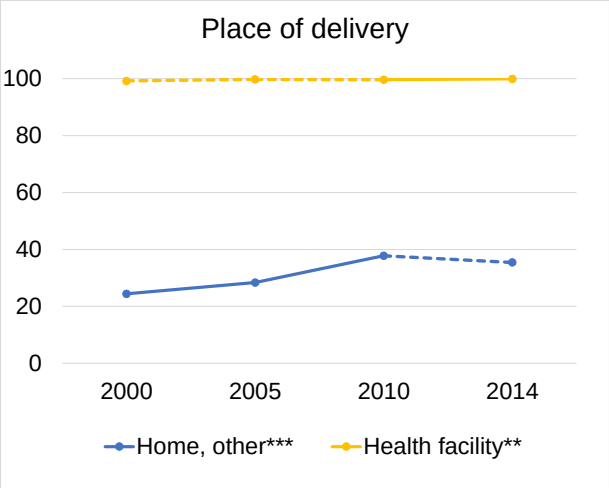
Note: A solid line indicates a significant change between two surveys, while a dotted line indicates no significant change. Significant change between 2000 and 2014 is indicated in the legend with asterisks to represent the p-value: *<0.05, **<0.01, ***<0.001.

Figure 7 presents, for each survey, the proportion of births in the preceding 5 years delivered by a skilled birth attendant, for each background characteristic of women. In addition to the demographic characteristics for the birth, including place of residence, region, wealth, education, maternal age at birth, and birth order, we present the proportions of births by number of ANC visits (for the most recent birth only) and whether or not the birth occurred in a health facility. (See Appendix Table 4 for additional information.)

Figure 7. Percentage of births that were assisted by a skilled birth attendant, among all births in the 5 years preceding the survey to women age 15-49, according to background characteristics, Cambodia 2000, 2005, 2010, and 2014 DHS







Note: A solid line indicates a significant change between two surveys, while a dotted line indicates no significant change. Significant change between 2000 and 2014 is indicated in the legend with asterisks to represent the p-value: *<0.05, **<0.01, ***<0.001. Births with don't know or missing responses are included with the category "0-3 visits" for ANC and the "home, other" category for place of delivery.

For most characteristics, the largest changes occurred between 2005 and 2010. Among demographic characteristics, including place of residence, region, wealth, and education, the disparities diminished over time. For example, in 2000 the difference in having a skilled attendant at birth ranged from 15% in the lowest wealth quintile to 81% in the highest quintile—over 60 percentage points. With substantial improvements among women in the lower wealth quintiles, the gap between lowest and highest declined to just over 20 percentage points by 2014. However, the differences within groups remain significant, with a p-value <0.001 for each demographic characteristic.

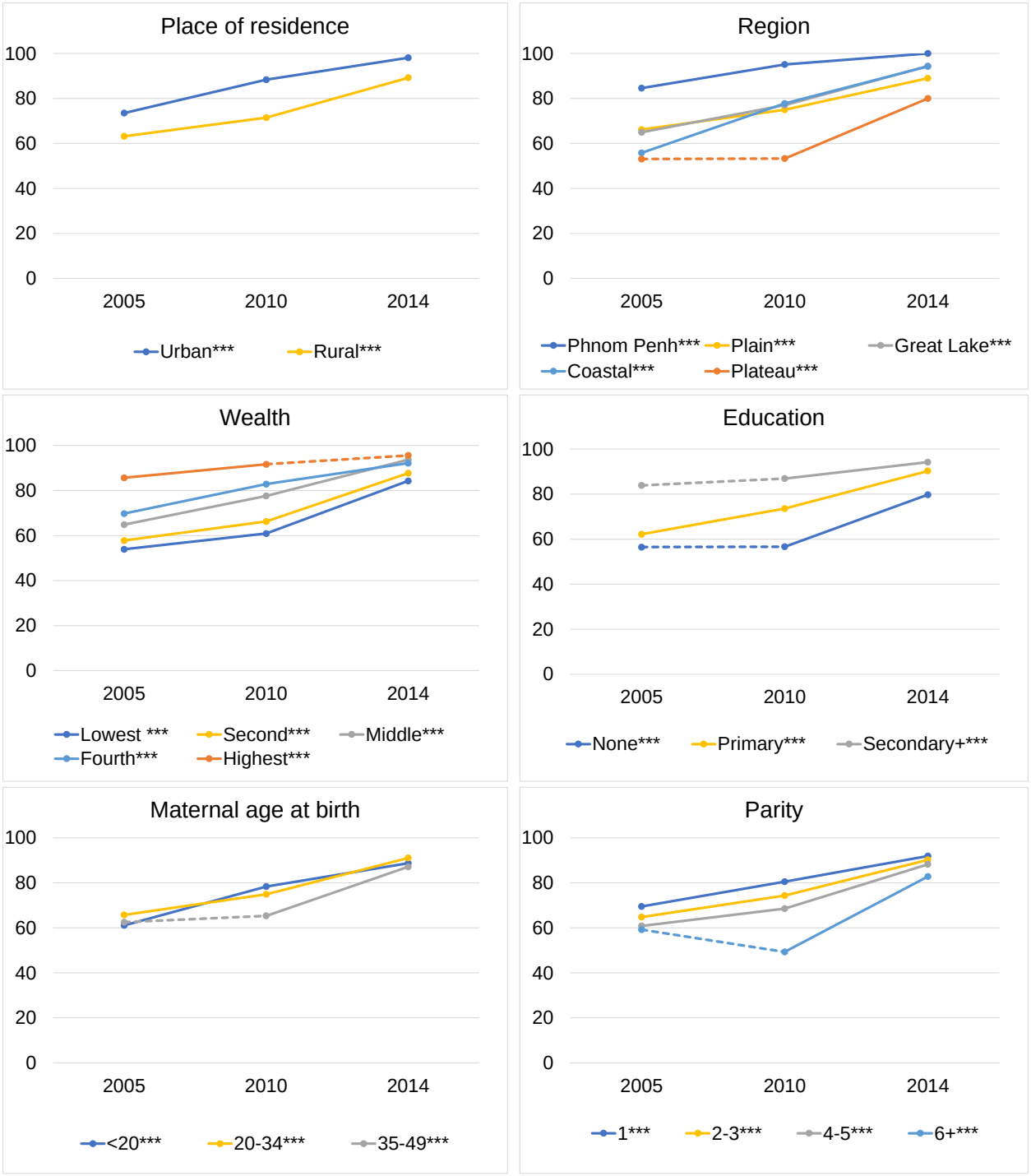
This analysis also presents the proportion of births delivered by a skilled birth attendant (SBA) by the number of ANC visits and whether the delivery was in a health facility or not. The disaggregation by ANC includes only the most recent birth to the interviewed mother. Births to women who made four or more ANC visits during their pregnancy were significantly more likely to be delivered by an SBA, though by 2014 having an SBA was common for both groups. In all four surveys, births were almost universally delivered by an SBA if they were delivered in a health facility, while less than 40% of home births had an SBA present. Among home births, however, the proportion assisted by an SBA increased significantly over the survey period.

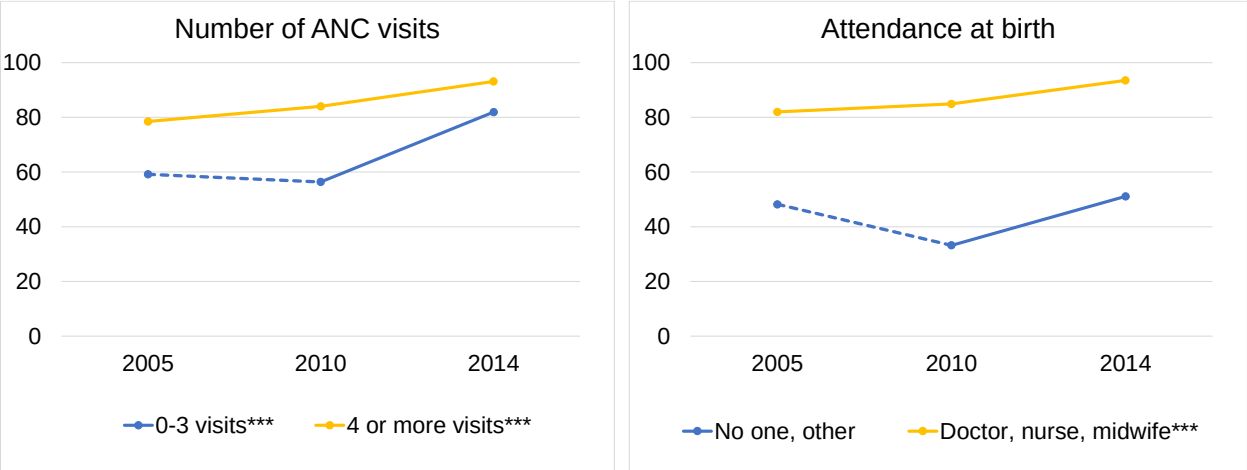
Postnatal Care

Figure 8, complemented by Appendix Table 5, displays the proportion of women who received a postnatal check-up (PNC) within 2 days of delivery among women with a birth in the 2 years preceding each survey. Data from the 2000 CDHS are not comparable and thus are not included. The proportion of women who received PNC increased significantly, from 65% in 2005 to 90% in 2014; however, the rate of change was not consistent across sociodemographic indicators. For example, the percentage of women with PNC in the Plateau region increased significantly, by 27 percentage points from 2005 to 2014, though almost none of this change occurred between 2005 and 2010. There was no significant change among women in the highest wealth quintile between 2010 and 2014. By region, wealth, and education, the disparities diminished over time. By 2014 there were no significant differences by maternal age at birth and only marginally significant

differences by parity. The most notable disparity was by skilled attendance at birth: 94% of women with skilled attendance at birth had PNC, whereas only 51% of women without a birth attendant received PNC. Further, the proportion of women receiving PNC among women who did not have an SBA did not significantly increase from 2005 to 2014.

Figure 8. Percentage of women who received a postnatal check-up within 2 days of delivering their most recent child among women age 15-49 with a live birth in the 2 years preceding the survey, according to background characteristics, Cambodia 2005, 2010, and 2014 DHS



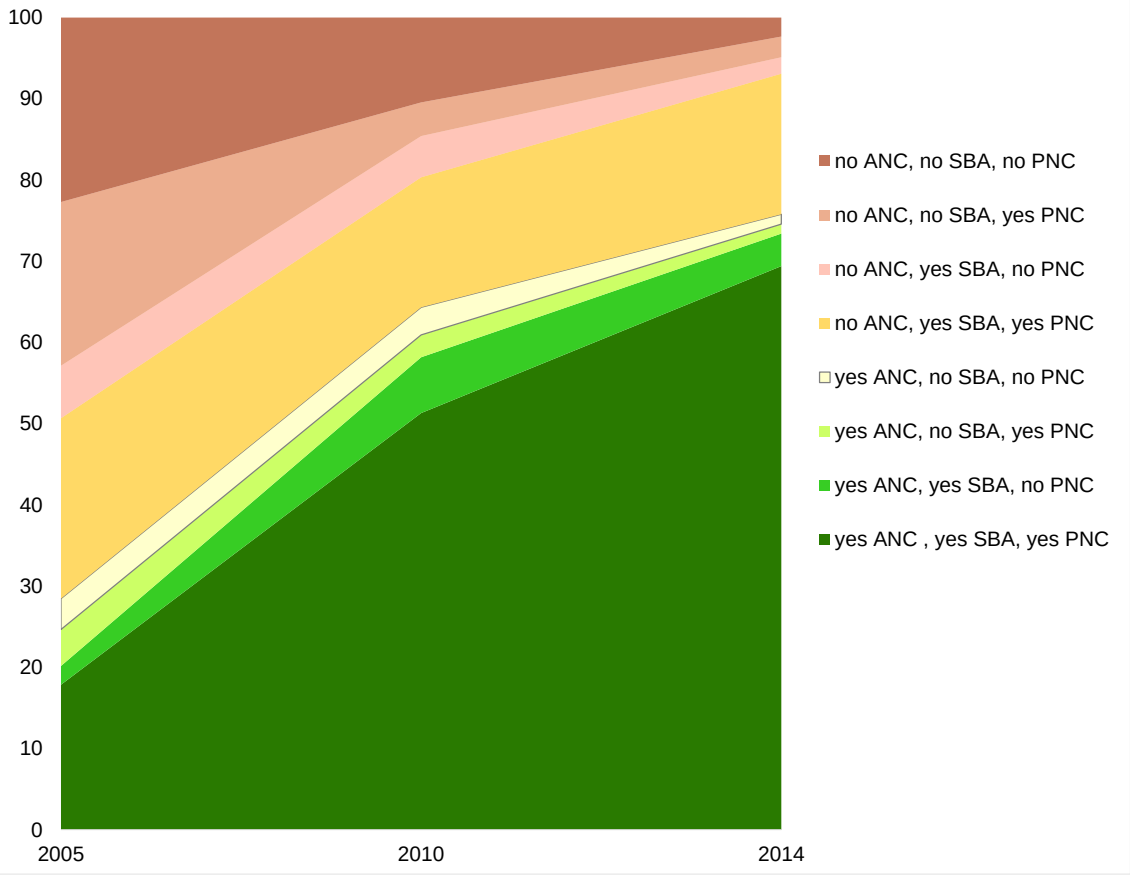


Note: A solid line indicates a significant change between two surveys, while a dotted line indicates no significant change. Significant change between 2005 and 2014 is indicated in the legend with asterisks to represent the p-value: *<0.05, **<0.01, ***<0.001.Women with don't know or missing information are included with the category "0-3 visits" for ANC and the "home, other" category for attendance at birth.

The Continuum of Maternal Health Care

The continuum of care refers to three key services a woman can receive from pregnancy to birth and in the postpartum period. Ensuring that women receive maternal health interventions throughout this cycle is a critical strategy for reducing maternal and child mortality and morbidity (Kerber et al. 2007). The first service, ANC, may be the time a women begins using health care regularly; ANC visits can help women learn about the importance of receiving delivery and postnatal services. Use of ANC has a positive effect on continued use of maternal services (Adjiwanou and LeGrand 2013; Wang and Hong 2015). Figure 9 shows the proportion of women with a birth in the 2 years preceding each of three Cambodia surveys (2005, 2010, and 2014) who made four or more ANC visits at last pregnancy, had an SBA present at delivery, and received PNC within 2 days after delivery. This figure clearly shows not only that the proportion of women receiving each indicator of maternal health service has increased but also that the proportion of women receiving the continuum of all three services has increased. In 2014, 69% of women received all three services compared with just 18% in 2005—a three-fold increase in nine years. Moreover, the proportion of women receiving none of the three maternal services decreased, from 23% in 2005 to 2% in 2014. The proportion of women who did not receive the recommended four or more ANC visits but who had an SBA at delivery and received PNC remained near 20% over the survey period. Appendix Table 6 includes the percentages for each category and the significance of change for each category over time.

Figure 9. Among women with a live birth in the 2 years before the survey, the percent distribution of the maternal health services received during the most recent birth and pregnancy, Cambodia 2005, 2010, and 2014 DHS



Discussion

Overall, the trends in maternal and child health in Cambodia are encouraging. The results show a significant improvement in all maternal and child health indicators from the first CDHS survey in 2000 to the most recent in 2014, despite some stagnation or modest decline between 2010 and 2014 in certain indicators and among some subgroups. Indicators of ANC showed substantial improvement, with an increase of 70-80 percentage points in coverage, mostly before 2010. Disparities in coverage between regions, wealth quintiles, and education levels persisted over the survey period. Among women who sought maternal care, the quality of care also improved; however, these improvements leveled off between 2010 and 2014. Disparities in one of the components of good maternal care—discussing signs of complications with a provider—diminished over time. This suggests that once women obtain care, providers are giving less unequal treatment by place of residence, region, and wealth.

In Cambodia, indicators of care at birth and immediately after birth have also improved, including facility delivery, SBA, C-section, and PNC, with delivery in a health facility demonstrating the most impressive improvements. C-section rates have increased, although they are rare, performed for only 3% of all births in 2014. When needed and properly performed, C-sections can help avert mortality and morbidities that

would otherwise accompany complications during delivery. WHO suggests that a C-section may be medically indicated for 10% to 15% of births; however, the surgery itself poses additional maternal and perinatal risks, particularly in facilities with sub-standard readiness to perform the surgery safely (Betran et al. 2016). For both SBA and PNC, there are pronounced disparities by sociodemographic groups, although these diminished from the first survey in 2000 to the most recent in 2014.

The continuum of care, beginning with ANC, is an instrumental factor in improving later health outcomes for both mother and child. The education and support a mother receives during ANC visits are critical to identifying early warning signs and encouraging use of health services later in the reproductive life cycle. Use of ANC services can influence more proximate outcomes during pregnancy and birth as well as child health outcomes, such as nutritional status (Alexander and Korenbrot 1995). This report shows the importance of receiving ANC to the continuum of maternal health care services—from ANC in pregnancy to skilled assistance in delivery and check-ups in the postpartum period. Women in Cambodia who had four or more ANC visits were more likely to have an SBA at most recent birth. Women who had four or more ANC visits or who had an SBA at birth were also more likely to receive PNC for the most recent birth in the previous 2 years. The percentage of women with four or more ANC visits, SBA, and PNC—the full continuum of care—increased substantially over the survey period, while the percentage with none of those services fell to negligible proportions by 2014.

These findings highlight the effects of Cambodia's efforts toward improving maternal health. In the mid-2000's, the Government of Cambodia launched a number of initiatives aimed at increasing use of maternal health services. These included Health Equity Fund (HEF) schemes to waive fees for the poor with reimbursement paid to health facilities by the HEF, voucher schemes to cover the cost of fees for ANC, assisted delivery, and PNC services in public health facilities, and the Midwife Incentive Scheme, which incentivized SBAs (Flores et al. 2013; Van de Poel et al. 2014). The Midwife Incentive Scheme allocated payment to trained professionals for live births delivered in health facilities. These were largely joint initiatives between the Ministry of Health and the Ministry of Economy and Finance (Cambodia (MOH) and WHO 2014), with sponsorship by both the government and multiple international donor organizations. These efforts have contributed to the increasing use of maternal health services (Ir et al. 2010).

Maternal and newborn mortality is largely preventable. The Sustainable Development Goals (SDGs) aim to end these preventable deaths by 2030 through universal access to good-quality health care (UNGA 2015). To meet these goals, monitoring trends in coverage of key indicators of healthcare interventions is critical for policymakers and program managers to decide where to concentrate resources. This report shows significant improvement in Cambodia's maternal health indicators over the past 2 decades, as evidenced by CDHS data. These positive changes reflect Cambodia's focused efforts in improving women's access to critical health services. Signs of stagnation in some indicators in recent years, however, suggest a possible loss of momentum. In order to meet the SDG targets, revitalized efforts may be required.

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Appendix Tables

Appendix Table 1. National-level trends for maternal health indicators, Cambodia 2000, 2005, 2010, and 2014 DHS

	2000		2005		2010		2014		Difference[1]			
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	2000-2005	2005-2010	2010-2014	2000-2014
Four or more antenatal care visits (ANC)	8.9	[7.7,10.1]	27.0	[24.9,29.2]	59.4	[57.0,61.7]	75.6	[73.6,77.5]	18.1***	32.4***	16.2***	66.7***
Timing of first ANC (before 4 months)	10.0	[8.8,11.3]	23.1	[21.4,25.0]	59.4	[57.3,61.4]	79.0	[77.0,80.8]	13.1***	36.3***	19.6***	69.0***
Mother took iron syrup/tablets during pregnancy	20.7	[18.9,22.7]	62.8	[60.3,65.2]	89.4	[88.1,90.5]	95.6	[94.6,96.4]	42.1***	26.6***	6.2***	74.9***
Mother took deworming medication during pregnancy	n/a		10.7	[9.6,11.8]	44.5	[42.5,46.5]	72.2	[70.3,73.9]	n/a	33.8***	27.7***	61.5***
Blood pressure checked during ANC	61.3	[58.5,64.0]	80.6	[78.8,82.3]	90.6	[89.4,91.6]	96.1	[95.2,96.8]	19.3***	10.0***	5.5***	34.8***
Informed of pregnancy complications during ANC	40.1	[37.6,42.7]	60.3	[58.2,62.4]	80.0	[78.3,81.6]	82.1	[80.1,84.0]	20.2***	19.7***	2.1	42.0***
Birth delivered in a facility	9.9	[8.8,11.2]	21.5	[19.6,23.5]	53.8	[51.1,56.4]	83.2	[80.9,85.2]	11.6***	32.3***	29.4***	73.3***
Births assisted by a skilled birth attendant (SBA)	31.8	[29.0,34.8]	43.8	[41.1,46.5]	71.0	[68.6,73.4]	89.0	[87.1,90.7]	12.0***	27.2***	18.0***	57.2***
Births delivered by Caesarean section	0.8	[0.6,1.2]	1.8	[1.5,2.3]	3.0	[2.5,3.6]	6.3	[5.6,7.1]	1.0***	1.2***	3.3***	5.5***
Postnatal care for the mother	n/a		64.7	[62.2,67.1]	74.2	[71.9,76.4]	90.4	[88.5,92.0]	n/a	9.5***	16.2***	25.7***

[1] Percentage point difference between two surveys and between 2000 and 2014 with significant tests for the difference in proportions, p-values *<0.05, **<0.01, ***<0.001.

Appendix Table 2. Percentage of women with four or more antenatal care visits for their most recent pregnancy among women age 15-49 with a live birth in the 5 years preceding the survey, according to background characteristics, Cambodia 2000, 2005, 2010, and 2014 DHS

	2000			2005			2010			2014			Difference[1]			
	%	95% CI	p-value	%	95% CI	p-value	%	95% CI	p-value	%	95% CI	p-value	2000-2005	2005-2010	2010-2014	2000-2014
Total	8.9	[7.7,10.1]		27.0	[24.9,29.2]		59.4	[57.0,61.7]		75.6	[73.6,77.5]		18.1***	32.4***	16.2***	66.7***
Place of residence			***			***			***			***				
Urban	23.0	[19.3,27.1]		43.2	[38.6,48.0]		80.3	[77.4,82.9]		85.4	[82.8,87.7]		20.2***	37.1***	5.1**	62.4***
Rural	6.6	[5.5,8.0]		24.4	[22.1,26.8]		55.3	[52.6,58.0]		73.9	[71.6,76.1]		17.8***	30.9***	18.6***	67.3***
Region			***			***			***			***				
Phnom Penh	38.8	[32.1,46.1]		54.2	[44.3,63.8]		85.8	[81.7,89.1]		88.0	[83.7,91.2]		15.4*	31.6***	2.2	49.2***
Plain	6.1	[4.4,8.4]		24.8	[21.1,29.0]		57.7	[53.3,62.0]		77.2	[73.4,80.6]		18.7***	32.9***	19.5***	71.1***
Great Lake	10.2	[8.4,12.5]		29.8	[26.5,33.4]		62.6	[58.6,66.5]		80.2	[76.9,83.1]		19.6***	32.8***	17.6***	70.0***
Coastal	2.6	[1.2,5.5]		19.2	[15.6,23.3]		46.5	[40.1,53.1]		71.5	[65.8,76.5]		16.6***	27.3***	25.0***	68.9***
Plateau	4.5	[3.0,6.7]		15.1	[12.7,18.0]		48.1	[43.0,53.2]		60.2	[55.4,64.9]		10.6***	33.0***	12.1***	55.7***
Education			***			***			***			***				
None	3.7	[2.7,5.1]		15.6	[13.3,18.3]		40.0	[36.0,44.1]		54.9	[49.5,60.2]		11.9***	24.4***	14.9***	51.2***
Primary	7.2	[6.0,8.8]		24.6	[22.6,26.9]		56.8	[53.9,59.7]		74.0	[71.7,76.1]		17.4***	32.2***	17.2***	66.8***
Secondary+	26.5	[22.8,30.5]		50.1	[45.4,54.7]		77.7	[74.9,80.2]		86.1	[84.3,87.8]		23.6***	27.6***	8.4***	59.6***
Wealth quintile			***			***			***			***				
Lowest	2.9	[2.0,4.3]		15.1	[12.6,17.9]		42.8	[38.9,46.9]		60.5	[55.8,65.0]		12.2***	27.7***	17.7***	57.6***
Second	5.5	[4.1,7.4]		19.0	[16.5,21.8]		51.4	[47.4,55.5]		69.6	[65.5,73.4]		13.5***	32.4***	18.2***	64.1***
Middle	4.8	[3.4,6.6]		22.5	[19.4,25.8]		57.9	[54.0,61.8]		76.6	[73.0,79.9]		17.7***	35.4***	18.7***	71.8***
Fourth	8.1	[5.9,10.9]		30.6	[26.5,35.1]		70.6	[66.3,74.6]		85.8	[83.2,88.0]		22.5***	40.0***	15.2***	77.7***
Highest	31.3	[27.4,35.5]		56.8	[52.4,61.1]		82.5	[79.7,84.9]		88.9	[86.7,90.8]		25.5***	25.7***	6.4***	57.6***
Mother's age at birth			**			***			***			***				
<20	10.9	[7.9,15.0]		28.4	[23.8,33.4]		62.9	[57.8,67.8]		72.1	[67.4,76.4]		17.5***	34.5***	9.2*	61.2***
20-34	9.5	[8.3,10.9]		29.4	[27.1,31.8]		62.2	[59.8,64.6]		77.6	[75.6,79.5]		19.9***	32.8***	15.4***	68.1***
35-49	6.2	[4.7,8.1]		18.3	[15.7,21.2]		43.4	[38.9,48.0]		63.7	[58.4,68.7]		12.1***	25.1***	20.3***	57.5***
Birth order			***			***			***			***				
1	13.0	[10.5,15.9]		39.4	[35.8,43.2]		71.9	[69.0,74.6]		81.3	[78.9,83.5]		26.4***	32.5***	9.4***	68.3***
2-3	11.1	[9.4,13.1]		29.2	[26.5,32.1]		60.9	[58.2,63.5]		78.6	[76.4,80.6]		18.1***	31.7***	17.7***	67.5***
4-5	6.6	[4.8,8.9]		17.4	[14.8,20.2]		47.1	[42.3,51.9]		63.4	[58.0,68.4]		10.8***	29.7***	16.3***	56.8***
6+	4.7	[3.3,6.8]		13.7	[10.9,17.1]		29.0	[24.2,34.2]		35.4	[28.7,42.7]		9.0***	15.3***	6.4	30.7***
Total	5,714			5,865			6,472			5,973						

[1] Percentage point difference between two surveys and between 2000 and 2014 with significant tests for the difference in proportions, p-values *<0.05, **<0.01, ***<0.001.

Appendix Table 3. Among women age 15-49 with a live birth in the 5 years preceding the survey who received antenatal care for their most recent birth, percentage who were informed of signs of complications, Cambodia 2000, 2005, 2010, and 2014 DHS

	2000			2005			2010			2014			Difference[1]			
	%	95% CI	p-value	%	95% CI	p-value	%	95% CI	p-value	%	95% CI	p-value	2000-2005	2005-2010	2010-2014	2000-2014
Total	40.1	[37.6,42.7]		60.3	[58.2,62.4]		80.0	[78.3,81.6]		82.1	[80.1,84.0]		20.2***	19.7***	2.1	42.0***
Place of residence			**						***							
Urban	47.9	[41.7,54.2]		64.2	[60.0,68.2]		87.9	[85.6,89.9]		83.1	[80.5,85.4]		16.3***	23.7***	-4.8**	35.2***
Rural	38.1	[35.3,41.0]		59.6	[57.2,61.9]		78.3	[76.3,80.2]		82.0	[79.6,84.1]		21.5***	18.7***	3.7*	43.9***
Region			***			***			***							
Phnom Penh	60.9	[51.3,69.8]		68.6	[60.1,75.9]		92.0	[87.8,94.8]		84.6	[80.4,88.0]		7.7	23.4***	-7.4**	23.7***
Plain	41.0	[36.2,45.9]		55.5	[51.9,59.0]		75.2	[71.7,78.4]		80.9	[76.2,84.9]		14.5***	19.7***	5.7	39.9***
Great Lake	33.2	[29.7,36.9]		67.2	[63.9,70.4]		84.4	[82.0,86.5]		84.7	[82.3,86.8]		34.0***	17.2***	0.3	51.5***
Coastal	50.2	[40.3,60.1]		60.6	[54.2,66.7]		75.7	[68.6,81.7]		82.4	[78.1,86.1]		10.4	15.1**	6.7	32.2***
Plateau	34.0	[28.2,40.4]		49.3	[43.8,54.7]		78.4	[75.0,81.5]		78.6	[74.9,81.9]		15.3***	29.1***	0.2	44.6***
Wealth quintile			***			**			***							
Lowest	31.5	[26.8,36.6]		55.2	[50.4,59.9]		74.6	[70.8,78.1]		78.7	[73.2,83.3]		23.7***	19.4***	4.1	47.2***
Second	32.8	[28.1,37.8]		57.3	[53.2,61.4]		77.4	[73.7,80.7]		81.1	[77.7,84.1]		24.5***	20.1***	3.7	48.3***
Middle	36.3	[30.7,42.4]		62.3	[57.8,66.5]		81.5	[78.1,84.4]		83.2	[79.8,86.1]		26.0***	19.2***	1.7	46.9***
Fourth	41.7	[36.1,47.6]		59.5	[55.4,63.4]		81.7	[78.3,84.6]		85.0	[82.0,87.7]		17.8***	22.2***	3.3	43.3***
Highest	52.6	[47.1,57.9]		67.3	[62.9,71.4]		85.9	[82.7,88.5]		83.1	[79.5,86.2]		14.7***	18.6***	-2.8	30.5***
Education			***			**			***			**				
None	27.6	[23.9,31.6]		56.5	[51.3,61.5]		74.4	[69.8,78.5]		76.7	[71.3,81.4]		28.9***	17.9***	2.3	49.1***
Primary	40.3	[37.0,43.7]		58.9	[56.4,61.3]		78.8	[76.6,80.8]		81.7	[79.3,83.9]		18.6***	19.9***	2.9	41.4***
Secondary+	52.9	[47.7,58.0]		67.1	[62.8,71.2]		85.4	[83.0,87.6]		84.5	[82.0,86.7]		14.2***	18.3***	-0.9	31.6***
Mother's age at birth						*			**			*				
<20	42.1	[34.6,50.0]		57.7	[51.9,63.3]		74.2	[69.2,78.6]		76.4	[70.5,81.5]		15.6**	16.5***	2.2	34.3***
20-34	40.9	[37.9,43.9]		59.2	[56.8,61.6]		80.3	[78.4,82.1]		82.7	[80.8,84.5]		18.3***	21.1***	2.4	41.8***
35-49	36.8	[31.6,42.3]		66.0	[61.5,70.2]		82.0	[78.6,85.0]		83.6	[78.3,87.8]		29.2***	16.0***	1.6	46.8***
Birth order												*				
1	42.5	[37.3,48.0]		59.9	[56.3,63.4]		79.2	[76.4,81.7]		80.6	[77.4,83.4]		17.4***	19.3***	1.4	38.1***
2-3	40.5	[36.4,44.6]		58.3	[55.0,61.4]		80.7	[78.4,82.8]		84.2	[82.1,86.1]		17.8***	22.4***	3.5*	43.7***
4-5	41.5	[36.8,46.4]		64.2	[60.0,68.3]		80.3	[76.2,83.8]		80.3	[75.4,84.4]		22.7***	16.1***	0.0	38.8***
6+	35.1	[30.3,40.4]		62.7	[57.1,67.9]		79.0	[73.5,83.6]		75.7	[65.3,83.8]		27.6***	16.3***	-3.3	40.6***
Total	2,543			4,213			5,804			5,704						

[1] Percentage point difference between two surveys and between 2000 and 2014 with significant tests for the difference in proportions, p-values *<0.05, **<0.01, ***<0.001.

Appendix Table 4. Percentage of births that were assisted by a skilled birth attendant, among all births in the 5 years preceding the survey to women age 15-49, according to background characteristics, Cambodia 2000, 2005, 2010, and 2014 DHS

	2000			2005			2010			2014			Difference[1]			
	%	95% CI	p-value	%	95% CI	p-value	%	95% CI	p-value	%	95% CI	p-value	2000-2005	2005-2010	2010-2014	2000-2014
Total	31.8	[29.0,34.8]		43.8	[41.1,46.5]		71.0	[68.6,73.4]		89.0	[87.1,90.7]		12.0***	27.2***	18.0***	57.2***
Place of residence			***			***			***			***				
Urban	57.2	[49.7,64.4]		70.1	[64.2,75.4]		94.7	[92.9,96.1]		97.8	[96.5,98.6]		12.9**	24.6***	3.1**	40.6***
Rural	28.0	[25.0,31.2]		39.5	[36.5,42.5]		66.6	[63.8,69.3]		87.6	[85.4,89.5]		11.5***	27.1***	21.0***	59.6***
Region			***			***			***			***				
Phnom Penh	88.9	[81.7,93.5]		86.0	[73.2,93.2]		98.8	[97.3,99.4]		96.1	[92.3,98.1]		-2.9	12.8***	-2.7*	7.2*
Plain	32.4	[27.1,38.2]		49.7	[44.6,54.8]		75.7	[72.0,79.2]		94.6	[91.7,96.5]		17.3***	26.0***	18.9***	62.2***
Great Lake	25.2	[21.4,29.5]		36.5	[32.0,41.3]		67.4	[62.5,72.0]		91.2	[88.8,93.1]		11.3***	30.9***	23.8***	66.0***
Coastal	30.7	[22.6,40.3]		46.4	[39.2,53.9]		70.7	[62.2,78.1]		93.1	[87.7,96.3]		15.7*	24.3***	22.4***	62.4***
Plateau	24.1	[19.7,29.2]		20.0	[16.2,24.3]		51.7	[45.1,58.1]		69.6	[62.7,75.7]		-4.1	31.7***	17.9	45.5***
Wealth quintile			***			***			***			***				
Lowest	14.7	[11.9,17.9]		20.7	[17.7,24.1]		48.7	[44.6,52.8]		75.2	[69.9,79.8]		6.0**	28.0***	26.5***	60.5***
Second	21.3	[17.8,25.2]		29.0	[25.5,32.8]		63.7	[59.8,67.4]		87.0	[84.1,89.5]		7.7**	34.7***	23.3***	65.7***
Middle	27.4	[23.5,31.7]		39.6	[35.9,43.5]		74.5	[70.5,78.1]		92.7	[90.2,94.6]		12.2***	34.9***	18.2***	65.3***
Fourth	40.7	[36.2,45.4]		61.9	[57.6,66.1]		86.5	[83.6,89.0]		96.5	[94.6,97.7]		21.2***	24.6***	10***	55.8***
Highest	81.2	[76.5,85.1]		89.9	[86.4,92.6]		96.7	[94.9,97.9]		98.4	[97.1,99.1]		8.7***	6.8***	1.7	17.2***
Mother's education			***			***			***			***				
None	19.3	[16.3,22.7]		22.0	[18.9,25.5]		46.9	[42.5,51.4]		71.8	[65.5,77.3]		2.7	24.9***	24.9***	52.5***
Primary	30.9	[27.8,34.2]		42.5	[39.7,45.4]		70.4	[67.6,73.0]		88.5	[86.5,90.3]		11.6***	27.9***	18.1***	57.6***
Secondary+	65.8	[61.0,70.4]		79.5	[76.0,82.6]		90.5	[88.6,92.2]		97.0	[96.0,97.8]		13.7***	11.0***	6.5***	31.2***
Mother's age at birth			**			*			***			***				
<20	34.5	[29.1,40.2]		44.2	[39.4,49.1]		73.1	[68.7,77.2]		89.3	[85.9,92.0]		9.7**	28.9***	16.2***	54.8***
20-34	33.1	[30.1,36.2]		44.9	[41.9,47.9]		72.2	[69.7,74.6]		89.9	[88.0,91.5]		11.8***	27.3***	17.7***	56.8***
35-49	26.2	[22.6,30.2]		39.3	[35.6,43.0]		63.0	[58.7,67.1]		81.3	[76.8,85.1]		13.1***	23.7***	18.3***	55.1***
Birth order			***			***			***			***				
1	43.4	[39.5,47.4]		54.2	[50.8,57.5]		80.4	[78.0,82.6]		94.1	[92.6,95.3]		10.8***	26.2***	13.7***	50.7***
2-3	36.0	[32.5,39.7]		45.8	[42.5,49.3]		72.1	[69.2,74.8]		89.4	[87.6,91.0]		9.8***	26.3***	17.3***	53.4***
4-5	26.7	[23.4,30.3]		34.7	[31.3,38.3]		58.7	[54.1,63.1]		80.1	[75.1,84.2]		8.0**	24.0***	21.4***	53.4***
6+	20.4	[17.3,24.0]		29.9	[25.8,34.3]		49.6	[44.1,55.0]		65.0	[56.8,72.4]		9.5***	19.7***	15.4**	44.6***
Number of ANC visits[2, 3]			***			***			***			***				
0-3 visits	30.8	[27.9,33.7]		37.9	[35.0,40.8]		55.8	[52.3,59.2]		74.7	[70.1,78.8]		7.1***	17.9***	18.9***	43.9***
4 or more visits	72.3	[65.9,78.0]		69.6	[66.0,73.0]		86.4	[84.4,88.1]		95.5	[94.2,96.4]		-2.7	16.8***	9.1	23.2***
Place of delivery[3]			***			***			***			***				
Home, other	24.4	[21.8,27.2]		28.4	[25.7,31.3]		37.8	[34.4,41.3]		35.4	[29.0,42.3]		4.0*	9.4***	-2.4	11.0**
Health facility	99.2	[97.9,99.7]		99.7	[99.2,99.9]		99.6	[99.2,99.8]		99.9	[99.8,100.0]		0.5	-0.1	0.3*	0.7**
Total	8,715			7,789			8,200			7,253						

[1] Percentage point difference between two surveys and between 2000 and 2014 with significant tests for the difference in proportions, p-values *<0.05, **<0.01, ***<0.001. [2] Number of ANC visits is calculated among most recent births only. [3] Births with don't know or missing information are included with the category "0-3 visits" for ANC and the "home, other" category for place of delivery.

Appendix Table 5. Percentage of women who received a postnatal check-up within 2 days of delivering their most recent child among women age 15-49 with a live birth in the 2 years preceding the survey, according to background characteristics, Cambodia 2005, 2010, and 2014 DHS

	2005			2010			2014			Difference[1]		
Background characteristic	%	95% CI	p-value	%	95% CI	p-value	%	95% CI	p-value	2005-2010	2010-2014	2000-2014
Total	64.7	[62.2,67.1]		74.2	[71.9,76.4]		90.4	[88.5,92.0]		9.5***	16.2***	25.7***
Place of residence			**			***			***			
Urban	73.5	[67.5,78.8]		88.4	[84.7,91.3]		98.1	[97.0,98.8]		14.9***	9.7***	24.6***
Rural	63.2	[60.5,65.9]		71.5	[68.8,74.0]		89.2	[87.0,91.0]		8.3***	17.7***	26.0***
Region			***			***			***			
Phnom Penh	84.6	[73.1,91.8]		95.1	[90.0,97.6]		100.0			10.5*	4.9***	15.4***
Plain	66.2	[61.7,70.5]		75.0	[70.6,78.9]		89.0	[84.6,92.2]		8.8**	14.0***	22.8***
Great Lake	65.0	[60.5,69.2]		77.0	[73.1,80.5]		94.4	[92.1,96.1]		12.0***	17.4***	29.4***
Coastal	55.8	[50.2,61.4]		77.8	[70.2,83.9]		94.3	[89.8,96.8]		22.0***	16.5***	38.5***
Plateau	53.1	[47.5,58.7]		53.3	[47.8,58.7]		80.0	[75.2,84.1]		0.2	26.7***	26.9***
Wealth quintile			***			***			***			
Lowest	53.9	[49.1,58.6]		60.9	[56.2,65.3]		84.3	[79.9,88.0]		7.0*	23.4***	30.4***
Second	57.8	[53.0,62.4]		66.3	[61.6,70.8]		87.7	[84.4,90.4]		8.5*	21.4***	29.9***
Middle	64.9	[60.3,69.3]		77.6	[72.6,81.9]		93.7	[90.4,96.0]		12.7***	16.1***	28.8***
Fourth	69.8	[64.4,74.7]		82.9	[78.4,86.7]		92.2	[87.9,95.1]		13.1***	9.3**	22.4***
Highest	85.7	[81.2,89.2]		91.7	[88.2,94.2]		95.6	[90.2,98.1]		6.0*	3.9	9.9***
Education			***			***			***			
None	56.5	[51.5,61.3]		56.6	[50.8,62.2]		79.8	[73.7,84.8]		0.1	23.2***	23.3***
Primary	62.2	[59.2,65.0]		73.6	[70.6,76.4]		90.3	[87.7,92.3]		11.4***	16.7***	28.1***
Secondary+	83.9	[80.0,87.1]		86.9	[83.8,89.5]		94.2	[92.1,95.7]		3.0	7.3***	10.3***
Mother's age at birth						**						
<20	61.1	[54.3,67.6]		78.3	[72.7,83.1]		88.7	[83.9,92.2]		17.2***	10.4**	27.6***
20-34	65.7	[62.8,68.5]		74.9	[72.5,77.2]		91.0	[88.9,92.7]		9.2***	16.1***	25.3***
35-49	62.5	[57.5,67.2]		65.3	[58.7,71.4]		87.1	[80.6,91.7]		2.8	21.8***	24.6***
Birth order			**			***			*			
1	69.5	[65.7,73.1]		80.5	[77.6,83.1]		91.9	[89.7,93.6]		11.0***	11.4***	22.4***
2-3	64.8	[61.4,68.0]		74.3	[71.0,77.4]		90.2	[87.5,92.4]		9.5***	15.9***	25.4***
4-5	60.8	[55.9,65.4]		68.5	[62.4,74.0]		88.2	[83.5,91.7]		7.7*	19.7***	27.4***
6+	59.2	[52.8,65.4]		49.3	[40.9,57.8]		82.8	[71.2,90.3]		-9.9	33.5***	23.6***
Number of ANC visits[2]			***			***			***			
0-3 visits	59.2	[56.3,62.0]		56.4	[52.7,60.1]		81.9	[77.8,85.4]		-2.8	25.5***	22.7***
4 or more visits	78.5	[75.2,81.5]		84.0	[81.8,86.1]		93.1	[91.1,94.7]		5.5**	9.1***	14.6***
Place of delivery[2]			***			***			***			
Home, other	56.8	[53.9,59.7]		41.9	[38.0,45.9]		57.1	[49.4,64.5]		-14.9***	15.2***	0.3
Health facility	87.8	[84.6,90.4]		90.6	[89.1,92.0]		94.6	[93.0,95.9]		2.8	4.0***	6.8***
Assistance at delivery[2]			***			***			***			
No one, other	48.2	[44.4,52.0]		33.2	[28.2,38.5]		51.1	[41.6,60.4]		-15.0***	17.9***	2.9
Doctor, nurse, midwife	82.0	[79.3,84.5]		84.9	[82.9,86.8]		93.5	[91.7,95.0]		2.9	8.6***	11.5***
Total	3,083			3,187			2,944					

[1] Percentage point difference between two surveys and between 2005 and 2014 with significant tests for the difference in proportions, p-values *<0.05, **<0.01, ***<0.001. [2] Women with don't know or missing information are included with the category "0-3 visits" for ANC and the "home, other" category for place of delivery and the “no one, other” category for assistance at delivery.

Appendix Table 6. Distribution of women with antenatal care (four or more visits), a skilled birth attendant at delivery, or postnatal check-up within 2 days of delivering their most recent child among women age 15-49 with a live birth in the 2 years preceding the survey, according to background characteristics, Cambodia 2005, 2010, and 2014 DHS

	2005		2010		2014		Difference[1]		
	%	95% CI	%	95% CI	%	95% CI	2005-2010	2010-2014	2000-2014
No ANC4, no SBA, no PNC	22.7	[20.6,25.0]	10.5	[9.1,12.1]	2.4	[1.8,3.2]	-12.2***	-8.1***	-20.3***
Yes ANC4, no SBA, no PNC	3.8	[3.1,4.7]	3.4	[2.7,4.3]	1.2	[0.7,2.0]	-0.4	-2.2***	-2.6***
Yes ANC4, yes SBA, no PNC	2.3	[1.7,3.1]	6.9	[5.8,8.1]	4.0	[2.9,5.5]	4.6***	-2.9**	1.7*
Yes ANC4, yes SBA, yes PNC	17.9	[15.7,20.2]	51.3	[48.4,54.1]	69.4	[66.4,72.2]	33.4***	18.1***	51.5***
Yes ANC4, no SBA, yes PNC	4.5	[3.6,5.6]	2.7	[2.0,3.7]	1.2	[0.7,1.9]	-1.8**	-1.5**	-3.3***
No ANC4, yes SBA, no PNC	6.5	[5.4,7.7]	5.1	[4.1,6.3]	2.0	[1.4,3.0]	-1.4	-3.1***	-4.5***
No ANC4, no SBA, yes PNC	20.2	[17.7,22.8]	4.1	[3.2,5.4]	2.6	[1.7,3.9]	-16.1***	-1.5	-17.6***
No ANC4, yes SBA, yes PNC	22.2	[20.0,24.6]	16.0	[14.4,17.8]	17.3	[15.5,19.3]	-6.2***	1.3	-4.9**
Total	3,083		3,187		2,944				

[1] Percentage point difference between two surveys and between 2005 and 2014 with significant tests for the difference in proportions, p-values *<0.05, **<0.01, ***<0.001.