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**The Role of Conditional Cash Transfer Programs  
in Improving Access to Professional Attendance  
at Birth in Indonesia**

An Honors Thesis submitted in partial fulfillment of  
the requirements of Honors Studies in Economics

By

Kaitlin Murray

Spring 2023

Economics

Fulbright College of Arts and Sciences,

**The University of Arkansas**

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## Introduction

Initiatives to improve the access to and quality of maternal healthcare have been of increased importance to world economic development organizations and governments for the last few decades. The United Nations highlighted the importance of maternal health in the creation of the Millennium Development Goals, a set of eight goals intended to guide governments on common initiatives to improve quality of life and reduce poverty and its collateral effects (United Nations, n.d.). “Improve Maternal Health” was designated as Goal #5 with the primary targets being to reduce the maternal mortality ratio (MMR) and achieve universal access to reproductive healthcare (United Nations, n.d.). There was some success within the timeline of the Millennium Development Goals, which ran from 1990 to 2015, with a reduction of maternal deaths from 523,000 in 1990 to 289,000 in 2013 (World Health Organization, 2018). However, there was still much work to be accomplished in order to meet the targets established by the Millennium Development Goals and further reduce the global maternal mortality ratio.

After the timeline for the Millennium Development Goals ended in 2015, the United Nations developed the Sustainable Development Goals, a set of 17 goals intended to both close the gaps left unaddressed in the Millennium Development Goals and expand the initiatives in an era when climate change and growing depletion of environmental resources require increased attention (United Nations, n.d.). The targets to reduce the global maternal mortality ratio to less than 70 deaths per 100,000 live births and achieve universal healthcare remain in the Sustainable Development Goals, now incorporated more broadly into Goal #3 “Good Health and Well-Being” (United Nations, n.d.). The United Nations also states increasing healthcare workforce financing, recruitment, and training in least developed countries and small island developing states as a target under Goal #3 (United Nations, n.d.). The addition of this target, as well as the

continuation of reducing the maternal mortality ratio and improving access to universal healthcare, highlight the importance of improving maternal health outcomes and access to maternal healthcare during the last few decades.

Maternal mortality is an issue of global concern, however, the majority of deaths following pregnancy and childbirth occur in low-income developing countries. According to the World Health Organization (2023), around 87% of the 287,000 women who died following pregnancy and childbirth in 2020 lived in Sub-Saharan Africa and Southern Asia, with approximately 16% of the 287,000 deaths recorded in Southern Asia. In Indonesia, the 2020 maternal mortality ratio was 173 per 100,000 live births compared to the average of 74 per 100,000 live births in Eastern and Southeastern Asian countries and the global average of 223 per 100,000 live births (United Nations Maternal Mortality Estimation Inter-Agency Group, n.d., 2023).

The World Health Organization (2023) cites inadequate access to healthcare services and poverty as contributing factors to the high maternal mortality ratios present in low-income developing countries. These factors are observed in Indonesia, where the maternal mortality ratio in 2015 was more than three times higher among the poorest of the population than the wealthiest (Kusuma et al., 2016). Inadequate access to maternal healthcare services partially accounts for the higher prevalence of maternal mortality among Indonesia's poorest households. A paper by Kusuma et al. (2016) writes that inadequate maternal healthcare access in Indonesia is affected by significant numbers of unequipped delivery facilities as well as "limited access to and financial support for referral to obstetric emergency centers," which are critical to reducing maternal mortality (p. 11). There have been attempts to reduce the inequities experienced by those living in poverty through the use of conditional cash transfer programs. Conditional cash

transfer programs, which provide cash transfers to poor households on the condition that they engage in specified health-seeking or education-seeking behaviors, have become increasingly popular in developing countries such as Mexico, Nicaragua, and Bangladesh (Son, 2008).

This paper will examine the impact of an Indonesian conditional cash transfer program, named Program Keluarga Harapan, on households' use of institutional delivery facilities at childbirth. In order to analyze the effectiveness of Program Keluarga Harapan at addressing inequities in access to maternal healthcare services, this paper will conduct an empirical analysis of the relationship between receipt of Program Keluarga Harapan cash transfers, use of institutional delivery facilities, and accessibility to both institutional and traditional delivery facilities. Accessibility will be defined in terms of trip time and transportation cost to institutional or traditional delivery facilities. The empirical analysis will utilize data from the fifth wave of the Indonesia Family Life Survey (2014-2015), an extensive dataset that allows careful examination of Indonesian mothers' health-seeking behavior and access to maternal healthcare services (Strauss et al., 2016). This paper will seek to close a gap in existing literature through examination of Program Keluarga Harapan's effectiveness in increasing the use of institutional delivery facilities among households with disadvantaged access to formal healthcare facilities. This study will contribute to the existing literature about Program Keluarga Harapan in three ways: (1) by focusing specifically on the program's impact on increasing use of institutional delivery facilities, (2) by examining the relationship between use of an institutional delivery facility and accessibility to delivery facilities, and (3) by utilizing the most recent wave of the Indonesia Family Life Survey to conduct an empirical analysis.

## Literature Review

Program Keluarga Harapan (hereafter called “PKH”) is a household conditional cash transfer program intended to have an “immediate impact on household vulnerability while encouraging investment in long-term household productivity that may disrupt the intergenerational cycle of poverty” (The World Bank, 2012, p. 6). Households must qualify as “very poor” to receive PKH, with this determined using Indonesian Badan Pusat Statistik data to generate an expected household expenditure cut-off point and then surveying potentially eligible households in PKH targeted areas (The World Bank, 2012, p. 17). In addition, households must meet demographic requirements beyond household income to be eligible for PKH. Households must have pregnant women, lactating mothers, and/or school-aged and/or younger children as household members (The World Bank, 2012). Households chosen to receive PKH from the list of eligible households during the program’s pilot in 2007 shared a similar set of demographic characteristics – they were often “younger, with more members, more often female-headed, more often working in agriculture, less educated, with fewer assets” (The World Bank, 2012, p. 17).

PKH was first piloted in 2007 to 500,000 household beneficiaries in 7 Indonesian provinces (Asian Development Bank, 2018). The program gradually expanded to all 34 Indonesian provinces by 2014 and a total of 2,798,000 household beneficiaries (Asian Development Bank, 2018). PKH intervenes at the household level to address the demand-side of healthcare related expenditures. This means that the program does not address supply-side inadequacies, such as inaccessible healthcare facilities or scarcity of medical professionals, but rather works within Indonesia’s existing healthcare system (The World Bank, 2012). PKH is a relatively cost-effective conditional cash transfer program when compared to other Indonesian cash transfer programs as well as conditional cash transfer programs in other countries (The



World Bank Office Jakarta, 2011). This cost-effectiveness is due to the “limited leakage of benefits and reasonable overhead costs” with 2008-2009 administrative costs “averaging approximately Rp 200,000 per beneficiary per year” (The World Bank Office Jakarta, 2011, p. 7). The administrative costs were expected to further decrease over time as PKH was implemented across Indonesia (The World Bank Office Jakarta, 2011).

The receipt of cash transfers is conditioned on households meeting certain healthcare and education related requirements (The World Bank Office Jakarta, 2011). The conditions for households with pregnant or lactating mothers to receive cash transfers are: “(1) attend four antenatal care visits, (2) take iron tablets during pregnancy, (3) have a trained professional assist at birth, (4) lactating mothers must attend two postnatal care visits” (The World Bank, 2012, p. 15). The quarterly cash transfers range in amount from Rp 600,000 to Rp 2.2 million per year, dependent on a mother’s pregnancy status and/or their children’s school level, with cash transfers collected by mothers through the post office (Kusuma et al., 2016). The amount of the cash transfer is intended to be “approximately 15-20% of the estimated consumption of poor households,” helping alleviate the financial burden of impoverished households as there are no restrictions on how the cash transfers must be spent (Kusuma et al., 2016, p. 11.).

As discussed above, receipt of PKH cash transfers is conditioned in part on the beneficiary pregnant woman having professional attendance at delivery. Evaluations of PKH’s effectiveness in inducing health-seeking behavior have examined the rates of assisted deliveries for both PKH beneficiary and non-PKH beneficiary households. Research has found that “the share of assisted deliveries (either by midwives, nurses, doctors, or at medical facilities) increased by approximately 5 percentage points” in PKH beneficiary and PKH eligible households (The World Bank Office Jakarta, 2011, p. 33). A study comparing the impacts on

health-seeking behavior between PKH and Indonesian community cash transfer program Generasi found that “PKH increases delivery preference at community-based facilities (including polindes/village midwives and private practices of doctor/midwife) by 4.1 percentage points,” or in other words, a 17% increase when compared to control areas (Kusuma et al., 2016, p. 16).

However, the increase in assisted deliveries was not universal across all PKH beneficiary households, with certain demographic factors increasing the impact of PKH on assisted deliveries. There was a greater impact of PKH on health-seeking behavior, including assisted delivery, on beneficiary households in urban areas, specifically in Java versus non-Java locations (The World Bank, 2012). The World Bank found that PKH beneficiary households where the head of household was employed in the non-agricultural sector, or in other words an urban household, were 15% more likely to have an assisted delivery and a delivery at a health facility than an agricultural based household (The World Bank Office Jakarta, 2011). This disparity is underscored when examining urban versus rural Indonesian households’ access to public facilities and their affordability. Urban, non-agricultural employed PKH beneficiary households tend to live in areas with greater access to public delivery facilities at a lower cost, whereas rural, agricultural employed households often face more significant transportation and cost barriers (The World Bank Office Jakarta, 2011).

Household income level also impacted whether a PKH beneficiary was more likely to obtain an assisted delivery, with wealthier households showing large increases in facility deliveries (The World Bank Office Jakarta, 2011). The relationship between geographic area, household income level, and increases in assisted delivery indicate that some households face additional challenges to obtaining an assisted delivery, with PKH benefits not sufficient to eliminate the higher costs of transportation and delivery faced by rural, poor households. The

head of household status of PKH beneficiary households also had a significant effect on increases in assisted deliveries, with female-headed households demonstrating a 25% increase in assisted deliveries compared with a 0% increase for male-headed households (The World Bank Office Jakarta, 2011).

Household wealth and parental education level also impacted the likelihood of PKH beneficiary households using village midwives and other trained delivery attendants for home deliveries (Titaley et al., 2011). The likelihood of assisted home deliveries increased along with greater household wealth and higher parental education level (Titaley et al., 2011). Beneficiary households that reported access and transportation to health facilities as a significant obstacle to receiving care were significantly less likely to use any trained delivery attendants at home delivery, with this being noted as a “significant predictor of utilization of delivery attendants” (Titaley et al., 2011, p. 1412). This indicates that regardless of beneficiary status, households with cost or transportation barriers are significantly less likely to obtain an assisted delivery either at home or in a healthcare facility.

An alternative to facility delivery and home delivery assisted by trained delivery attendants is the use of traditional midwives and/or traditional birth attendants. The World Health Organization (1992) defines a traditional birth attendant (TBA) as a “person who assists the mother during childbirth and initially acquired her skills by delivering babies herself or through the apprenticeship to other traditional birth attendants” (p. 4). A study that conducted focus group discussions and interviews with Indonesian mothers in West Java Province found that “cost was one of the main reasons stated by participants in all villages for using the services of traditional birth attendants” (Titaley et al., 2010, p. 6). Challenges such as increased distance and travel time to healthcare services, as well as relative unavailability, were also cited as factors

contributing to some mothers' preference for traditional birth attendants over trained village midwives (Titaley et al., 2010). This again indicates that issues of accessibility, namely transportation and cost, have a significant impact on Indonesian women's decision to have an assisted delivery either at home or in a healthcare facility. This paper will seek to expand upon current literature and examine the relationship between accessibility to institutional delivery facilities and use of institutional delivery facilities among PKH beneficiary households. This paper will examine two hypotheses through empirical analysis: (1) that receipt of PKH cash transfers will increase the use of institutional delivery facilities and (2) that a lack of accessibility to institutional delivery facilities, demonstrated by a longer one-way trip time, will reduce PKH's effectiveness at increasing use of institutional delivery facilities.

### **Data & Methodology**

This study utilized data from the Indonesia Family Life Survey (IFLS) in order to examine the relationship between receipt of PKH cash transfers, use of an institutional delivery facility, and access to institutional delivery facilities. The Indonesia Family Life Survey is a longitudinal survey of over 30,000 individuals in 13 of the 27 Indonesian provinces, representing a sample of 83% of the Indonesian population (RAND, n.d.). The IFLS has been conducted in five survey waves with the first wave in 1993-1994 to the last wave in 2014-2015. The IFLS is an extensive dataset that collects information at the household and community level, ranging from household assets, consumption expenditure, demographic information, health history, family history, and other metrics. This study utilizes the fifth survey wave (IFLS 5) that was conducted from 2014-2015, and focuses on variables regarding family demographics, pregnancy history, health planning, and consumption expenditure (Strauss et al., 2016).

The empirical analysis of this study utilized a difference-in-differences (DD) regression to examine the impact of PKH on the use of institutional delivery facilities, and how accessibility to institutional and traditional delivery facilities affects the PKH impact. I define the use of an institutional delivery facility to be an assisted birth at a public hospital, private hospital, delivery hospital, community health center, village delivery post, the clinic/office of a physician, and the clinic/office of a trained midwife.<sup>1</sup> I define the use of a traditional delivery facility to be an assisted birth at an individual's home, a family member's home, and the office/house of a traditional midwife.<sup>2</sup> I define an assisted birth to be when a mother received additional care beyond herself during childbirth.<sup>3</sup> The accessibility to delivery facilities was controlled for through the minimum one-way trip time and minimum one-way transportation cost to any institutional delivery facilities and traditional delivery facilities. The regression equation also controlled for the amount of PKH cash transfers in the past one year, marital status, parental education level, and household wealth through a household assets index.

The difference-in-differences estimation method takes the difference between the before and after outcomes for the treatment and control groups and then takes the difference of the differences to obtain an unbiased estimate of the causal impact of a regressor  $X$  on the dependent variable  $Y$  (Cunningham, 2021). The first and second differencing in the DD method removes the impact of fixed effects and time on the outcomes (Cunningham, 2021). The coefficient found through DD estimation can be interpreted as an unbiased estimate of the causal impact of a

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<sup>1</sup> A mother was determined to have used an institutional delivery facility if she answered one of the above listed institutional delivery facilities in response to a question about where she had given birth. She also must not have answered that she had no care at delivery in response to a question about who provided care during childbirth.

<sup>2</sup> A mother was determined to have used a traditional delivery facility if she answered one of the above listed traditional delivery facilities in response to a question about where she had given birth. She also must not have answered that she had no care at delivery in response to a question about who provided care during childbirth.

<sup>3</sup> A mother was determined to have an assisted birth if she did not answer that nobody provided care at delivery in response to a question about who provided care during childbirth.

regressor  $X$  on the dependent variable  $Y$  because of the removal of fixed effects and time variance on the outcome (Cunningham, 2021). The DD estimation method relies on the assumption of parallel trends, or in other words, the assumption that there is no unobservable time-dependent variation within the dataset that could impact the dependent variable (Cunningham, 2021). This study did not test the parallel trends assumption due to the utilization of data from one survey wave, IFLS 5, and the lack of any real differences in trends between PKH beneficiary and non-PKH beneficiary households. The difference-in-differences (DD) regression equation used to examine the relationship between receipt of PKH cash transfers and use of an institutional delivery facility is as follows:

$$instbirth = \beta_0 + \beta_1 post2007 + \beta_2 receivedpkh + \beta_3 post2007xreceivedpkh + Xy + \varepsilon.$$

In the above equation, the dependent variable *instbirth* is the use of an institutional delivery facility. The significant regressors are receipt of PKH cash transfers (*receivedpkh*), birth post-2007 (*post2007*), and the interaction between a post-2007 birth and receipt of PKH cash transfers (*post2007xreceivedpkh*). The primary interest in the DD regression is the coefficient on *post2007xreceivedpkh* which is interpreted as the impact of PKH cash transfers on the use of institutional delivery facilities. The *receivedpkh* variable is interacted with *post2007* because PKH was piloted in 2007, and the interaction allows analysis of PKH beneficiary and non-PKH beneficiary households' use of institutional delivery facilities before and after the implementation of PKH.  $X$  represents a set of control variables that includes the following: minimum one-way trip time to institutional (*minTripInst*) and traditional (*minTripTrad*) delivery facilities, minimum one-way transportation cost to institutional (*minCostInst*) and traditional (*minCostTrad*) delivery facilities, marital status (*married*), parental education level (*yrseduc*), and household asset index (*assets*). The epsilon,  $\varepsilon$ , is the error term. The same regressors as

above were also used to run a regression with *tradbirth*, or the use of a traditional delivery facility, as the dependent variable and *nocare*, or delivery where nobody provided care during childbirth regardless of use of any delivery facility, as the dependent variable. In order to further examine the regression results obtained from above, two fixed effects regressions were conducted to control for any unobserved variation among households in the dataset that was not explicitly controlled for in the primary DD regression. The fixed effects regressions used *instbirth* and *tradbirth* as dependent variables and *post2007* and *post2007xreceivedpkh* as regressors, with the fixed effect on the household ID variable (*hhid14\_9*).

In order to examine how accessibility to delivery facilities affects the PKH impact on the use of an institutional or traditional delivery facility, three fixed effects regressions were conducted to analyze the impact of PKH on households who have a longer one-way trip time to institutional and traditional delivery facilities. The median minimum one-way trip time to institutional and traditional delivery facilities was determined and then a dummy variable was constructed to represent if the household's minimum one-way trip time was greater than the median or not. The minimum one-way trip time above median (*minTripInstAboveMedian* & *minTripTradAboveMedian*) was then interacted with *post2007* and *receivedpkh*. The fixed effects regressions used *instbirth* and *tradbirth* as dependent variables with *post2007*, *post2007xreceivedpkh*, and the interaction variables *TripInstAboveMedxpost2007xrecpkh* and *TripTradAboveMedxpost2007xrecpkh* as the regressors. Missing observations of the variables *TripInstAboveMedxpost2007xrecpkh* and *TripTradAboveMedxpost2007xrecpkh* were dropped prior to performing the fixed effects regressions. These missing observations resulted from missing observations of the household *minTripInst* and *minTripTrad* variables. The fixed effect was on the household ID variable (*hhid14\_9*) to control for any unobserved variation within

households in the dataset. The fixed effects regressions with above median minimum one-way trip times will allow analysis of PKH's effectiveness at increasing use of institutional delivery facilities in households with less accessibility to institutional delivery facilities. The coefficient on the interaction variables *TripInstAboveMedxpost2007xrecpkh* and *TripTradAboveMedxpost2007xrecpkh* can be interpreted as the impact of an above median minimum one-way trip time on PKH beneficiary and non-PKH beneficiary households' use of an institutional or traditional delivery facility before and after the implementation of PKH.

## Results

Table 1 shows the DD regression results with *nocare*, *instbirth*, and *tradbirth* as the dependent variables. The *nocare* regression results show a coefficient on the *post2007xreceivedpkh* interaction variable that is not statistically significant, which suggests that PKH had no impact on the likelihood that mothers had no care during childbirth. The *instbirth* regression results show a coefficient of -0.138 on the *post2007xreceivedpkh* interaction variable that is statistically significant at the 1% significance level, indicating that receipt of PKH cash transfers reduced the use of institutional delivery facilities. The minimum one-way trip time to institutional delivery facilities (*minTripInst*) has a coefficient of -0.001 that is statistically significant at the 1% significance level, indicating that a longer one-way trip time reduces the likelihood of use of an institutional delivery facility. The minimum one-way transportation cost to institutional delivery facilities (*minCostInst*) has a similar negative relationship to the use of institutional delivery facilities. This indicates that households with less access to institutional delivery facilities, through greater one-way trip time and one-way transportation cost, are less likely to utilize institutional delivery facilities. Furthermore, the household assets index (*assets*) that controls for income level has a coefficient of 0.014 that is statistically significant at the 1%



Table 1: DD Regression Results for Unassisted Delivery, Institutional Delivery Facilities, and Traditional Delivery Facilities			
	(1) nocare	(2) instbirth	(3) tradbirth
post2007	0.00436*** (4.47)	0.664*** (93.27)	0.195*** (32.90)
receivedpkh	0.00109 (0.07)	0.128 (1.19)	-0.135 (-1.50)
post2007xreceivedpkh	-0.00398 (-0.85)	-0.138*** (-4.05)	0.0808*** (2.86)
minTripInst	0.000333*** (8.09)	-0.000884*** (-2.95)	0.000760*** (3.05)
minTripTrad	-0.0000107 (-0.97)	-0.0000402 (-0.50)	0.00000863 (0.13)
minCostInst	-0.000000330** (-2.58)	-0.00000287*** (-3.07)	0.00000215*** (2.77)
minCostTrad	-0.000000333 (-0.84)	-0.00000538* (-1.85)	0.00000848*** (3.51)
lastyrtransfer	-5.23e-11 (-0.03)	-4.53e-09 (-0.38)	9.47e-10 (0.09)
married	0.00144 (0.70)	0.0221 (1.47)	-0.00265 (-0.21)
yrseeduc	-0.000202 (-1.53)	0.0125*** (12.95)	-0.00854*** (-10.64)
assets	-0.000335 (-0.97)	0.0136*** (5.39)	-0.0162*** (-7.73)
Constant	-0.00233 (-0.16)	-0.262** (-2.40)	0.239*** (2.64)
Observations	12187	12187	12187
Notes: The DD regressions controlled for missing observations of the minTripInst, minTripTrad, minCostInst, minCostTrad, and lastyrtransfer. The following control variables were excluded from this table: missingTripInst, missingTripTrad, missingCostInst, missingCostTrad, missinglastyrtransfer. The <i>t</i> statistics are in parentheses. * p<0.1, ** p<0.05, *** p<0.01.			

significance level, indicating that as household wealth increases the likelihood of using institutional delivery facilities increases as well.

The *tradbirth* DD regression results in Table 1 show that the interaction variable *post2007xreceivedpkh* has a coefficient of 0.081 that is statistically significant at the 1% significance level, which indicates that receipt of PKH cash transfers increased the use of traditional delivery facilities. Traditional delivery facilities include the mother's own home, a family member's house, and the office/house of a traditional midwife. The minimum one-way trip time to traditional delivery facilities (*minTripTrad*) has a coefficient that is not statistically significant and the minimum one-way transportation cost to traditional delivery facilities (*minCostTrad*) has a coefficient of 0.000 that is statistically significant at the 1% significance level. This suggests there is relatively no relationship between access to and use of traditional delivery facilities. However, the minimum one-way trip time to institutional delivery facilities (*minTripInst*) has a coefficient of 0.001 that is statistically significant at the 1% significance level, indicating that a longer one-way trip time to institutional delivery facilities increases the likelihood of a mother using a traditional delivery facility. In addition, the household assets index (*assets*) has a coefficient of -0.016 that is statistically significant at the 1% significance level. This indicates that as household wealth increases, households are less likely to use traditional delivery facilities. The increased likelihood of use of traditional delivery facilities among households with a longer one-way trip time to institutional delivery facilities corresponds to the result that a longer one-way trip time to institutional delivery facilities reduces the likelihood of use of institutional delivery facilities. These relationships indicate that a lack of accessibility to institutional delivery facilities has an impact on PKH beneficiary households' use of institutional and traditional delivery facilities.

Table 2 shows the fixed effects regression results for the PKH impact on the use of institutional and traditional delivery facilities, as well as the effect of accessibility to delivery facilities on PKH's impact on the use of institutional and traditional delivery facilities. Table 2 Regression 1 shows the fixed effect regression results for the PKH impact on the use of institutional delivery facilities (*instbirth*) with the fixed effect on the household ID variable (*hhid14\_9*). This fixed effect regression controlled for any unobserved variation among the households in the dataset that was not explicitly controlled for in the DD regression and was used to confirm the results obtained in the DD method. Table 2 Regression 2 shows the fixed effects regression results for the PKH impact on the use of traditional delivery facilities (*tradbirth*) with the fixed effect on the household ID variable (*hhid14\_9*), again controlling for any unobserved variation among the households in the dataset not controlled for in the DD regression. The *tradbirth* fixed effects regression results show a coefficient of 0.064 on the *post2007xreceivedpkh* interaction variable that is statistically significant at the 10% significance level. This indicates that receipt of PKH cash transfers increased the use of traditional delivery facilities. This confirms the positive relationship between receipt of PKH cash transfers and use of traditional delivery facilities obtained in the *tradbirth* DD regression presented in Table 1.

In order to examine the relationship between accessibility to delivery facilities and use of institutional and traditional delivery facilities among PKH beneficiary households, the households with an above median minimum one-way trip time were compared to those households with a minimum one-way trip time below the median. Table 2 Regression 3 shows the fixed effects regression results for institutional delivery facilities (*instbirth*) as the dependent variable with *post2007*, *post2007xreceivedpkh*, and the interaction of the above median minimum one-way trip time to institutional delivery facilities with post-2007 birth and receipt of

	(1) instbirth	(2) tradbirth	(3) instbirth	(4) tradbirth	(5) tradbirth
post2007	0.621*** (58.89)	0.205*** (24.66)	0.621*** (58.90)	0.205*** (24.65)	0.205*** (24.67)
post2007xreceived pkh	-0.0698 (-1.60)	0.0635* (1.85)	-0.00363 (-0.07)	0.0606 (1.64)	0.00258 (0.06)
TripInstAboveMedx post2007xrecpkh			-0.165* (-1.91)		0.152** (2.24)
TripTradAboveMedx post2007xrecpkh				0.0205 (0.22)	
Constant	0.0133** (2.17)	-0.00762 (-1.58)	0.0131** (2.14)	-0.00763 (-1.58)	-0.00741 (-1.53)
Observations	7713	7713	7713	7713	7713
r2	0.763	0.631	0.763	0.631	0.631
Fixed Effects	Yes	Yes	Yes	Yes	Yes
Notes: Regressions (1) and (2) analyze the PKH impact on the use of institutional and traditional delivery facilities. Regressions (3), (4), and (5) analyze the effect of accessibility on the PKH impact on the use of institutional and traditional delivery facilities. The <i>t</i> statistics are in parentheses. * $p < 0.1$ , ** $p < 0.05$ , *** $p < 0.01$ .					

PKH cash transfers (*TripInstAboveMedxpost2007xrecpkh*) as the regressors. The fixed effect is again held on the household ID variable (*hhid14\_9*) to control for any unobserved variation among the households in the dataset. The *TripInstAboveMedxpost2007xrecpkh* variable has a coefficient of -0.165 and is statistically significant at the 10% significance level. This indicates that PKH beneficiary households with an above median minimum one-way trip time to institutional delivery facilities were less likely to use an institutional delivery facility than PKH beneficiary households who had a below median, or shorter, minimum one-way trip time. The

interaction variable *post2007xreceivedpkh* has a coefficient that is not statistically significant, suggesting that receipt of PKH cash transfers had no impact on the use of institutional delivery facilities among households with a shorter one-way trip time to institutional delivery facilities.

Table 2 Regression 4 shows the fixed effects regression results for the effect of accessibility to traditional delivery facilities on the PKH impact. The variable *TripTradAboveMedxpost2007xrecpkh* is the interaction between households who had an above median minimum one-way trip time to traditional delivery facilities, post-2007 birth, and receipt of PKH cash transfers. The fixed effect is again held on the household ID variable (*hhid14\_9*) to control for any unobserved variation among the households in the dataset. The interaction variable *TripTradAboveMedxpost2007xrecpkh* has a coefficient that is not statistically significant, suggesting that a longer one-way trip time to traditional delivery facilities had no impact on the use of traditional delivery facilities. Table 2 Regression 5 shows the fixed effects regression results for *tradbirth* as the dependent variable; however, the interaction variable includes the above median minimum one-way trip time to institutional delivery facilities. This fixed effects regression was used to identify if households with a longer one-way trip time to institutional delivery facilities were more likely to use traditional delivery facilities instead, while controlling for any unobserved variation among the households in the dataset. The *TripInstAboveMedxpost2007xrecpkh* interaction variable has a coefficient of 0.152 and is statistically significant at the 5% significance level. This indicates that a longer one-way trip time to institutional delivery facilities increases the likelihood of use of traditional delivery facilities. The *post2007xreceivedpkh* interaction variable has a coefficient that is not statistically significant, which suggests that receipt of PKH cash transfers had no impact on the use of traditional delivery facilities among households with a shorter one-way trip time to institutional

delivery facilities. The Table 2 results considered together suggest that the PKH impact of reduced use of institutional delivery facilities and increased use of traditional delivery facilities is driven by the effect of accessibility, or longer one-way trip time, to institutional delivery facilities.

### **Discussion of Results**

This paper proposed two hypotheses to be examined through the empirical analysis discussed above: (1) that receipt of PKH cash transfers will increase the use of institutional delivery facilities and (2) that a lack of accessibility to institutional delivery facilities, demonstrated by a longer one-way trip time, will reduce PKH's effectiveness at increasing use of institutional delivery facilities. The DD regression results presented in Table 1 do not confirm the hypothesis that receipt of PKH cash transfers will increase the use of institutional delivery facilities. The results instead indicate that receipt of PKH cash transfers reduced the use of institutional delivery facilities. The hypothesis is further contradicted by the results of the DD regression with *tradbirth* as the dependent variable, which indicate that receipt of PKH cash transfers increased the use of traditional delivery facilities. In addition, the DD regression with *nocare* as the dependent variable produced a statistically insignificant coefficient on the *post2007xreceivedpkh* interaction variable, suggesting that PKH had no impact on whether mothers had no care during childbirth. These results contradict evidence presented in existing literature that PKH had a positive impact on increasing beneficiary households' use of formal delivery facilities (Kusuma et al., 2016; The World Bank, 2012; The World Bank Office Jakarta, 2011).

A possible interpretation for these results can be found in existing literature surrounding the relationship between PKH facilitator involvement and PKH's impact on increasing use of

assisted deliveries. PKH utilizes facilitators to educate, support, encourage, and monitor PKH beneficiary mothers in their completion of PKH conditioned behavior (The World Bank, 2012). The World Bank (2012) wrote that “interviews with beneficiaries and communities note that where the program was successful in changing behavior, facilitators were the main reason” (p. 8). This is due to PKH beneficiary mothers relying on facilitators for education on PKH goals and conditions as well as for crucial mentorship and emotional support (The World Bank, 2012). However, the effectiveness of facilitators was not universal across all PKH beneficiary areas. Beneficiary households in rural areas experienced less facilitator support due to facilitators in rural communities having increased responsibility for larger ground areas (The World Bank, 2012).

The impact of PKH facilitator support on increasing the likelihood of PKH inducing health-seeking behavior, combined with the challenges experienced by facilitators in rural areas, could be used to interpret the results presented in Table 1. Perhaps the reduced likelihood of use of institutional delivery facilities among households with a longer minimum one-way trip time to these facilities is also impacted by the weakened facilitator support in rural areas. Table 1 indicates that a longer one-way trip time to institutional delivery facilities increases the likelihood of use of traditional delivery facilities. The lack of facilitator support and encouragement in rural areas could have impacted more PKH beneficiary mothers to choose to deliver at traditional delivery facilities, considering PKH beneficiary households in rural areas are further challenged by longer distances to institutional delivery facilities. Future research could explore the relationship between PKH beneficiary areas with greater facilitator involvement and the use of institutional delivery facilities, while controlling for the accessibility challenges faced by rural beneficiary households.

The results in Table 2 suggest that less accessibility to institutional delivery facilities, demonstrated by a longer minimum one-way trip time, reduces the likelihood of use of institutional delivery facilities. This is consistent with evidence presented in existing literature that poor, rural households with greater obstacles to formal healthcare services, either through greater travel time or transportation costs, are less likely to obtain an assisted delivery (The World Bank, 2012; The World Bank Office Jakarta, 2011; Titaley et al., 2010). Table 1 *instbirth* regression results indicate that a greater minimum one-way trip time and minimum one-way transportation cost to institutional delivery facilities reduces the likelihood of use of institutional delivery facilities. The *tradbirth* regression results in Table 1 show that a longer minimum one-way trip time to institutional delivery facilities increases the likelihood of use of traditional delivery facilities. Furthermore, the Table 2 Regression 3 fixed effects regression results suggest that a longer one-way trip time to institutional delivery facilities reduces the likelihood of use of institutional delivery facilities. These results support the hypothesis that a lack of accessibility to institutional delivery facilities reduces PKH's effectiveness at increasing use of these facilities. This interpretation is underscored by the fixed effects regression results in Table 2 Regression 5, which indicate that a longer one-way trip time to institutional delivery facilities increases the likelihood of use of traditional delivery facilities. These results considered together confirm the second hypothesis that a lack of accessibility to institutional delivery facilities, demonstrated by a longer one-way trip time, reduces PKH's effectiveness at increasing use of institutional delivery facilities.

## **Conclusion**

The empirical analysis conducted for this paper had three significant findings: (1) that receipt of PKH cash transfers reduced the use of institutional delivery facilities, (2) that receipt



of PKH cash transfers increased the use of traditional delivery facilities, and (3) that a longer one-way trip time to institutional delivery facilities reduces the likelihood of use of institutional delivery facilities. These findings failed to confirm the first hypothesis that receipt of PKH cash transfers would increase the use of institutional delivery facilities. However, the findings confirmed the second hypothesis that a lack of accessibility to institutional delivery facilities, demonstrated by a longer one-way trip time, reduces PKH's effectiveness at increasing use of institutional delivery facilities. This paper is limited in its exploration of the relationship between PKH facilitator involvement and use of institutional delivery facilities in rural areas. Future research could explore this relationship as an interpretation for the PKH impact of increased use of traditional delivery facilities.

This paper expands the existing literature surrounding the role of conditional cash transfer programs in improving maternal health outcomes. The result that receipt of PKH cash transfers reduced the use of institutional delivery facilities opens the scholarly dialogue for further investigation into PKH's effectiveness at increasing use of assisted deliveries. In addition, the result that a longer one-way trip time to institutional delivery facilities reduces the likelihood of use of these facilities highlights the importance of addressing inequities in access to maternal healthcare. This could demonstrate the need for conditional cash transfer programs like PKH to have additional policies or benefits for households that face additional challenges due to poor infrastructure and inaccessibility to formal healthcare services. This paper's findings contribute to the existing literature on conditional cash transfer programs and maternal health outcomes and aid in the international mission to reduce the global maternal mortality ratio and ensure universal access to professional attendance at birth.

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