The Effects of an ID Requirement for Health Insurance on Infants' Health Care Utilization and Health Outcomes: Evidence from Peru's *Seguro Integral de Salud*

Sebastian Bauhoff and Roxanne Oroxom

Abstract

Many governments require individuals to prove their identity to qualify for public programs, which risks excluding beneficiaries who lack identification documents. We examine the effects of an ID requirement introduced in 2011 for Peru's national health insurance program *Seguro Integral de Salud*. Using a difference-in-differences design and repeated cross-sectional data from a national household survey covering births between 2008 and 2014, we find no measurable effect on service utilization or health outcomes among infants despite significant variation in ID ownership when the requirement went into effect. Possible reasons for the lack of effect include imperfect enforcement of the requirement and various government stop-gaps.

Keywords: Identification; Peru; Latin America; health insurance

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The Effects of an ID Requirement for Health Insurance on Infants' Health Care Utilization and Health Outcomes: Evidence from Peru's *Seguro Integral de Salud*

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1 Introduction

Many governments require individuals to prove their identity to qualify for public programs (World Bank, 2018a). Such requirements have potential costs and benefits. On the one hand, the ability to reliably confirm an individual's identity could improve targeting and decrease fraud by facilitating the removal of false or duplicate entries in program registers (Gelb and Metz, 2018; World Bank, 2018b). On the other hand, identification (ID) requirements can obstruct access to public services by reducing participation directly among those lacking documentation and indirectly by making enrollment more onerous (Angus and DeVoe, 2010; Marton et al., 2016; Sommers, 2010). ID requirements can also generate new administrative and compliance costs (Sommers, 2010).

Despite broader interest in the trade-offs of different eligibility criteria for public programs, few studies evaluate the effects of ID requirements on intended beneficiaries in low- and middle-income countries. Evidence from the Dominican Republic suggests that a proof-of-identity prerequisite to register with the social security system, which provides access to and reimburses for health care services, resulted in undocumented children receiving relatively fewer recommended vaccinations (Brito et al., 2017). Similarly, a directive requiring Kenyan schoolchildren to present their birth certificate to register for national exams may have exacerbated the effects of low birth registration rates and excluded some students from exams (Apland et al., 2014). Problems with the authentication of biometric information in Rajasthan, India also prevented beneficiaries of a food-subsidy program from accessing their allotted rations and required them to return on other days or send another family member for authentication (Microsave and Center for Global Development, 2017).

We examine the effects of a law requiring that people possess a national ID card before gaining coverage through Peru's national health insurance program *Seguro Integral de Salud* (SIS) on the health care utilization and health outcomes of infants. Eligibility for the subsidized version of SIS prior to 2011 depended on the results of a proxy-means test and lack of health insurance.[1] From 2011 onward, new applicants also had to possess Peru's national identification card, the *Documento Nacional de Identidad* (DNI). Since not everyone had DNIs when they became mandatory, the DNI requirement may have prevented some otherwise eligible individuals from gaining SIS coverage. That, in turn, may have influenced those individuals' use of health care services and, ultimately, health outcomes.

We focus our analysis on infants (children younger than 12 months old) because SIS confers coverage for several years (Bernal et al., 2017). Under that policy, individuals already insured through SIS in 2010 could have retained their coverage when the DNI requirement went into effect, regardless of whether they possessed a DNI at the time. In contrast, infants' eligibility for SIS could only be newly determined after their birth, potentially making them vulnerable to any consequences of lacking a DNI.

The range of initiatives introduced to narrow Peru's "identification gap" have made it a commonly cited example of a robust ID system (Melhem, 2018; ID4D, nd; World Bank, 2016; South-South Learning Forum, 2014). At the same time, many reports have flagged that Peru's DNI requirement may have had unintended, but negative side-effects (Reuben and Carbonari, 2017; World Bank, 2016; MEF, 2013; SIS, 2012). A Ministry of Economics and Finance (MEF) report, for example,

[1] Almost all SIS affiliates (greater than 99.5 percent in 2011) had coverage through *SIS Gratuito* (Vermeersch, 2016). We use SIS and *SIS Gratuito* interchangeably.

shows that the proportion of infants who obtained SIS affiliation within 30 days of birth in the poorest districts of the Apurímac, Ayacucho, and Huancavelica departments significantly declined between 2010 and 2012 (MEF, 2013). The proportion fell in all three departments from above 50 percent in December 2010 to around 0 percent in Apurímac and 10 percent in the other departments by mid-2012. The MEF report points to the DNI requirement as a likely cause.

Staff at the national identification and civil registration agency (*Registro Nacional de Identificación y Estado Civil*, RENIEC) have also noted that they and the MEF knew of an associated decline in nutrition related outcomes (N.Z. Huamaní Huamaní, personal communication, April 6, 2018). Similarly, a review of Peru's national ID program attributed to the DNI requirement a sudden increase between 2011 and 2012 in chronic malnutrition among infants from the poorest households in the department of Amazonas, which had particularly low DNI penetration. The review argued that "mothers might have opted out of taking their children to the health centers for their timely nutrition checks, because they were not covered by health insurance" (Reuben and Carbonari, 2017, pp. 23).

National trends in SIS administrative data suggest that the DNI requirement may indeed have affected utilization, but also, as intended, reduced over-registration. In particular, Figure 1 shows a sharp decline in the number of children aged 0-4 that SIS insured or registered as patients after the DNI requirement went into effect.[2] There is a smaller decline (in relative terms) in the number of visits for children aged 0-4. There is a similar but less pronounced pattern when considering all ages (Appendix Figure D.1.1). These patterns together suggest that at least some of the decline in SIS coverage for young children in 2011 may reflect the cleaning of enrollment and patient lists rather than real effects on utilization.[3] There is also a positive correlation between DNI penetration among 0-4 year olds and visit counts at the department level, at least from 2012 onward (see Appendix C). Together this suggests that the decline and rebound of SIS visits among children may be related to the DNI requirement.

In this paper, we formally examine the effects of the DNI requirement on infants' health care utilization and health outcomes using a difference-in-differences design and repeated cross-sectional household survey data. We compare changes in the use of health services by infants who were eligible versus ineligible for SIS, before and after the DNI requirement went into effect. We also examine whether the effect of the requirement varies with local DNI penetration. Finally, we document the government's response to the drop-off and list policy considerations for other programs seeking to implement similar requirements.

Our results do not indicate detectable effects of the DNI requirement on service utilization or health outcomes using our data. We speculate that this could be the result of limited enforcement of the requirement, as well as stop-gap measures the government implemented once problems became apparent.

[2]The 0-4 age group is the youngest for which a time series of SIS administrative data extending back to at least 2010 is publicly available.

[3]The uptick in the number of people insured by SIS after 2012 may stem from other policies, such as the expansion of SIS to non-poor independent workers (OECD, 2017), rather than over-registration since the number of SIS affiliates validated by RENIEC increased to around 90 percent by December 2012 (SIS, 2018).

2 Background

2.1 The *Seguro Integral de Salud* health insurance program

The Peruvian government launched SIS in 2002 to improve healthcare access among the uninsured poor and vulnerable (Francke, 2013). SIS purchases services from public providers using various mechanisms, such as advance budgets and fee-for-service payments to departments (Giedion et al., 2014; Vermeersch et al., 2014). SIS also began using capitation to partially pay for primary care services in specific departments before applying that approach nationally in 2013 (OECD, 2017). Capitation applied in the department of Huancavelica starting in July 2011; Ayacucho, Apurímac, and Callao in April 2012; and Amazonas in October 2012 (Espejo Fernandez, nd).

The services SIS covers have changed over time. SIS used the *Listado Priorizado de Intervenciones Sanitaria* (LPIS) as its health benefits package early on and fully transitioned to the *Plan Esencial de Aseguramiento en Salud* (PEAS) in 2012. Both benefits packages covered some of the same key services, such as immunization, treatment for anemia, and preventive care for malnutrition. Appendix A contains a description of similar services covered by LPIS and PEAS.

Individuals can enroll in SIS at various locations, including public health facilities (Bernal et al., 2017). Coverage begins as soon as eligibility is confirmed, often within a few days. Coverage is valid for three years in urban areas or four years in rural areas unless a trigger event occurs, e.g., the individual obtains alternative coverage or changes address (Bernal et al., 2017).

To access the fully subsidized version of SIS (called *SIS Gratuito*) individuals must not be covered through another health insurance program (e.g., through an employer or the military), must be registered by the household targeting system (*Sistema de Focalización de Hogares*, SISFOH), and must be classified as poor or extremely poor by SISFOH. Richer individuals can also receive coverage through SIS, but they must enroll in contributory versions and pay a monthly fee.

2.2 Eligibility for SIS

Peru uses a two-step approach to determine the eligibility of households for government programs, including SIS. In the first step, the household targeting system SISFOH determines eligibility for all public social programs. In the second step, social programs can impose additional criteria.

The methodology SISFOH uses to determine eligibility has evolved over time (see Appendix B for details). SISFOH initially used a proxy-means test and geographic targeting before approving the use of an income threshold and a proxy-means test in September 2010 to categorize households as not poor, poor, and extremely poor. A relatively complex formula transforms the means test variables into a summary score (hereafter referred to as the "SISFOH score"), and applicants are categorized based on eligibility cutoffs that vary by region (see SISFOH (2010) and Bernal et al. (2017) for details). SISFOH also requires that household expenditures on electricity and water fall below region-specific cutoffs. Applicants only learn whether they are eligible, not where they stood relative to the cutoff.

Social programs had to use SISFOH's eligibility determination using the 2010 methodology starting in July 2010 in Lima and Callao (World Bank, 2010). By 2012, it had to apply for the rest of Peru (Bernal et al., 2017). SIS was among the first social programs required to account for new applicants' eligibility determinations (Carranza Ugarte, 2007).

2.3 Introduction of the DNI requirement for SIS coverage

As of 2011 all government-run social or subsidy programs must identify new beneficiaries – including infants – with their DNI.[4] Programs also had to identify at least 50 percent of their existing beneficiaries using their DNI by mid-2011 and 100 percent by the end of 2011.[5] The DNI requirement implemented in 2011 even applied to families seeking healthcare for their newborns: early on, SIS considered newborns insured up to 90 days after their birth, by which time parents should have procured their newborn's DNI (Government of Peru, 2010b, 2011).

Though roughly 95 percent of Peruvians had a DNI when the requirement went into effect in 2011 (RENIEC, nd), rates of possession varied by geography and age. Overall rates in 2011 ranged from around 86 percent (in the departments of Loreto and Ucayali) to 98 percent (Moquegua and Tacna) (RENIEC, nd). In contrast, possession rates among infants ranged from 52 percent (in Loreto) to 88 percent (Callao). Furthermore, only 28 percent of infants in Loreto's rural areas possessed a DNI (RENIEC, nd).

With regards to SIS coverage, the DNI requirement was particularly binding for infants, as they were subject to the requirement in 2011. Older individuals could have obtained - and retained - SIS coverage prior to January 2011 and social programs like SIS were allowed to phase in the requirement for existing beneficiaries over the year 2011. Indeed, administrative data at the department level suggests a weak positive correlation between DNI penetration among infants in 2011 and the change in the number of insured children from 2010 to 2011 and 2012, although there is substantial heterogeneity (Figure 2).

2.4 Government actions to mitigate negative effects of the DNI requirement

Several initiatives operational by 2011 could have mitigated the effects of the DNI requirement by targeting utilization and DNI possession. For example, the results-based budgeting program *Presupuestos por Resultados* (PpR) established in 2007 created a financial incentive for progress on health- and identification-related indicators. The health indicators focused on a range of issues, including chronic malnutrition among children younger than 5 and births in rural areas attended by trained personnel in a health facility (MEF, nd). Similarly, an incentives program created in 2009, the *Plan de Incentivos a la Mejora de la Gestión Municipal* (PIMGM), allocated resources

[4] Budget law 29626 states that "A partir del año 2011, para la incorporación de nuevos beneficiaries en todos los programas sociales o de subsidios del Estado que se vengan ejecutando en el marco de las disposiciones legales vigentes, es necesario que se identifiquen con el Documento Nacional de Identidad (DNI) y se seleccionen tomando en cuenta la evaluación de elegibilidad realizada por el Sistema de Focalización de Hogares" (Government of Peru, 2010c, pp. 11).

[5] Directive 001–2011–EF/65.01 states that "En el caso de los beneficiarios que vienen siendo atendidos al amparo de las normas vigentes, se aplican las siguientes medidas: [...] programas sociales y de subsidios del Estado, al 30 de junio del 2011, deberán haber identificado al menos al 50% de sus beneficiarios por su Documento Nacional de Identidad (DNI) y al 31 de diciembre de 2011 deberán haber identificado con dicho documento al 100% de sus beneficiarios, además de haber solicitado la evaluación de la elegibilidad." (Government of Peru, 2010a, pp. 7)

based on the achievement of certain targets (MEF, 2018). Targets included increased affiliation of children younger than 5 in SIS and improving DNI penetration among children younger than 5 in each district.

The government also launched a national campaign in 2010 to provide DNIs free of charge to children up to 14 of age, allocating 20 million Soles (roughly USD 7 million) to RENIEC to reduce the number of children without DNIs in 2010 and 2011 (World Bank, 2016, 2010). Additionally, it provided free DNIs to other vulnerable groups, including residents of 880 designated high-poverty districts (Gallo, 2010; MEF, 2009).

After realizing that the DNI requirement may have negatively affected SIS coverage, RENIEC and SIS took steps to mediate the effects. For example, in November 2012 SIS expanded the length of time it considered newborns insured from 90 days to 180 days (Government of Peru, 2012; Cabrera et al., 2014). RENIEC also implemented auxiliary registration offices in hospitals and health centers with a large number of antenatal visits (N.Z. Huamaní Huamaní, personal communication, April 6, 2018). Furthermore, at the end of 2014, the Ministry of Health mandated that all children, regardless of whether they possessed a DNI, could affiliate to SIS (N.Z. Huamaní Huamaní, personal communication, April 6, 2018).

2.5 Prior research on SIS

Prior research suggests that SIS has positively affected health care utilization and out-of-pocket spending. Neelsen and O'Donnell (2017) examine the impact of a 2007 reform that expanded SIS coverage to poor adults, using a difference-in-difference analysis comparing poor adults insured through SIS versus insured through employment, before and after the expansion. Their results suggest that SIS coverage increased the use of ambulatory care, medications and formal care, and decreased the likelihood that patients are unable to afford treatment. SIS coverage did not affect inpatient care utilization and average out-of-pocket spending, although there is suggestive evidence of a decline in the upper parts of the expenditure distribution. Bernal et al. (2017) evaluate the impact of SIS in Lima in 2011 using a cross-sectional regression discontinuity based on the sharp SISFOH eligibility cutoff. They find an increase in the use of curative care, as well as increases in vaccinations (all ages) but no effects on other preventive care services. They also find an increase in average medical expenditures and in the probability of catastrophic expenditures, possibly because patients paid out-of-pocket to overcome the limited supply of (inpatient) care and medicines in public sector facilities.

3 Data

3.1 Survey data on health care utilization and health outcomes among infants

We use successive waves, from 2009 to 2016, of the nationally representative survey *Encuesta Demográfica y de Salud Familiar* (ENDES) to assess changes in health care utilization and health outcomes. The ENDES are essentially Demographic and Health Surveys (DHS) with a country-specific name (Short Fabic et al., 2012).[6] Accordingly, the surveys collect commonly used measures of health care utilization and health outcomes among women ages 15-49 and their children under age 5. Such measures cover antenatal, delivery, postnatal, and well-child care. The ENDES also contains z-scores for children's height-for-age, weight-for-age, weight-for-height, and body-mass index (BMI).

Our analyses focus on the first year of life for children born between January 2008 and December 2014. We consider children exposed if they were born in or after January 2011, when the DNI requirement for new beneficiaries went into effect. In our primary analysis sample, we exclude households from the 880 high-poverty districts automatically eligible for SIS based on geography, irrespective of their SISFOH score (Neelsen and O'Donnell, 2017). We apply the SISFOH eligibility rules to households in the high-poverty districts as part of the sensitivity analyses. Following Neelsen and O'Donnell (2017), we always exclude people with insurance through an employer, through the military or police, or who have a commercially purchased policy. In our sample, fewer than 0.5 percent of SIS-eligible observations have such insurance in any given year.

The ENDES consistently report birth and interview dates, but report dates for only certain health care services, such as immunizations and vitamin A supplementation. Therefore, we cannot distinguish between postnatal care provided within the first three months of life (when the infant was covered under the mother's policy (Government of Peru, 2010b, 2011)) and postnatal care provided afterward when the infant could have been exposed to the DNI requirement. We consider all postnatal care for infants as exposed. This reduces the likelihood that we detect a negative impact of the requirement if, in fact, some postnatal care was covered by the mother's policy.

Table 1 shows the three sets of dependent variables from the ENDES that we examine, along with summary statistics for 2010, the year before the DNI requirement went into effect. Dependent variables in the first set cover infant health outcomes that could be affected by reduced access to basic preventive and curative services: stunting, being underweight, wasting, and anemia. We define binary measures for stunting, being underweight, and wasting (based on height-for-age or, alternatively, BMI) as z-scores less than -2 standard deviations. We also construct measures of severe stunting, being underweight, and wasting, which we define as z-scores less than -3 standard deviations. We also examine whether a child had a fever, a cough or diarrhea in the two weeks prior to the interview.

The second set of dependent variables includes services that could have been affected by the inability of infants to obtain SIS coverage due to the DNI requirement. This set includes vitamin A supplementation, postnatal child development and growth checkups, and timely treatment of fever for those afflicted.

The third set of dependent variables covers services less likely to be affected by the DNI requirement since they were available through the mother's SIS membership or vertical programs that were independent of SIS (Neelsen and O'Donnell, 2017). It is still possible that the DNI requirement affected these measures, e.g., as parents may have misunderstood the distinct rules for different services. This set of dependent variables covers antenatal care for the mother, the place of delivery, and birth weight.

[6] Since the DHS website does not post ENDES/DHS data for 2013 and 2014, and instead links to the micro-data website of Peru's national statistics agency, we identify the data as ENDES data.

An aggregate indicator in the third set of dependent variables covers vaccinations that were - in principle - available through vertical programs irrespective of SIS coverage. Our measure of full immunization for children younger than 12 months is based on Peru's recommended schedule and includes: BCG, hepatitis B, polio 1-3, pentavalent 1, pneumococcal 1, influenza and rotavirus 1 (Mendoza, nd; Government of Peru, 2013). We construct this measure for children who have a vaccination card that shows the date when the vaccine was received.

To reduce the number of statistical tests, we also create indices for health outcomes and the services likely to be unaffected. The indices are the equally-weighted binary measures in each variable set. We maximize the sample size for the indices by omitting dependent variables that are conditional (e.g., whether the postnatal check was performed at a public facility) and those with relatively small sample sizes (e.g., anemia). We do not create an index for potentially affected services because of the small combined sample for the postnatal baby check (available for all children) and child development visit (which we restricted to infants, see above). The variables in the indices are marked with an "(I)" in Table 1.

For most dependent variables, we can use data on children age 5 and younger because the timing of the services of interest (e.g., antenatal, delivery, and postnatal care) only depends on the child's birth date. We can thus use birth date information to identify whether and when those services were delivered, irrespective of the child's age at the interview. For dependent variables measured relative to the interview date (e.g., whether a child had diarrhea within the last two weeks), we subset the data to only infants. This applies to acute health outcomes (anemia, fever/cough, diarrhea) and child development visits "in the last six months." Anthropometric measures (stunting, wasting, underweight) are measured at the interview date. For these variables, marked with "(Y)" (for "young" children) in Table 1, we restrict the analysis sample to those who were infants at the time of the interview. Conversely, we subset the data to children aged 12 months or older at the interview date for the indicator of whether the recommended immunization schedule was completed by age 12 months. This variable is marked with "(O)" for "older" children in Table 1.

Table 1 also shows the covariates we use in the analyses, including the SISFOH score which we use as continuous measure of socio-economic status and to identify the treatment and control groups. We compute the SISFOH score following the process described in detail by Bernal et al. (2017). Specifically, we assign the SISFOH weight for each component of the proxy means test (e.g., type of cooking fuel) and then sum these weights to create a raw score. We account for the differences in components and weights used in SISFOH's three geographic areas: Lima, other urban, rural. We then scale the raw score to the range 0-100 within each of SISFOH's 15 geographic clusters. Finally, we apply the cluster-specific thresholds and generate a binary indicator of whether a household is eligible for SIS based on SISFOH.

3.2 Survey data on DNI penetration among infants

Since the DNI requirement went into effect in 2011, we require data on DNI penetration among infants by department from that year onward. The ENDES do not clearly record whether a child possesses a DNI, asking only whether a child has a "DNI or birth certificate" without distinguishing further. SIS only accepts the DNI. Peru's national identification agency, RENIEC, posts data on DNI penetration among children aged 0-5, but administrative data for infants by department are only available from 2012.

We therefore construct a measure of DNI penetration among infants using another household survey, the *Encuesta Nacional de Programas Estratégicos* (ENAPRES). The ENAPRES are nationally representative down to the department level and, unlike the ENDES, have asked since 2011 whether individual infants have a DNI. We use this information to calculate the weighted average DNI penetration at the department×urban/rural×year level.

4 Methods

We use a series of difference-in-difference analyses to evaluate the effect of the DNI requirement on infants' health care utilization and health outcomes. We examine annual changes, which also allows us to differentiate effects immediately after the DNI requirement went into effect from those that occurred later and may have been affected by the government's mitigation efforts.

First, we compare changes in the binary dependent variables for infants eligible for SIS with those of infants who are ineligible for SIS, before and after the ID requirement went into effect in January 2011 (see Bhalotra et al. (2018) for a similar approach). Our categorization of infants as eligible or ineligible may be subject to error because of data limitations and there may be some misclassification (see below). We also do not observe which individual infants had a DNI. Our results are therefore intent-to-treat estimates. We estimate the following specification for the dependent variable y_{iht} for infant i in household h in department c at time t:

$$\begin{aligned} y_{iht} = &\beta_0 + \beta \sum (Eligible_h \times Period_t) + \delta Eligible_h \\ &+ \gamma Period_t + \lambda Covariates_{ih} + \theta Department_c + \epsilon_{ihc} \end{aligned} \tag{1}$$

The vector β estimates the difference between eligible and ineligible infants in each time period before and after the requirement became effective. We use 2010, the year immediately before the requirement, as the omitted category so that the estimates of β can be interpreted as relative to the immediate pre-requirement period. The main coefficient of interest is β on the interaction $Eligible_h \times Period_t$ in 2011. This coefficient captures the change from the period immediately before the requirement became effective to the period immediately afterward. The coefficient δ captures the time-constant effect of being eligible while the coefficient γ is a time fixed-effect. The coefficient vector λ captures the effects of individual and household-level covariates. The vector θ represent fixed-effects for Peru's 25 departments. Standard errors are clustered at the same geographic level.

We estimate Equation 1 using yearly data for our sample period, as well as using half-year periods in case the requirement's effect was short-lived. In addition to investigating individual β coefficients, we also apply a joint F-test on the β coefficients for all periods before the requirement went into effect to probe the "parallel trends" assumption underlying the difference-in-difference design. Tables D.2.1-D.2.4 in Appendix D.2 show the full results from these regressions for the full-year periods while Tables D.2.5-D.2.8 show the full results for the half-year periods.

Second, we augment the above analyses by incorporating the time-varying DNI penetration for infants at the department×urban/rural×birth-year level as measure of exposure. Since the DNI data are only available after the requirement went into effect in 2011, the added interaction terms are only estimated from 2011 to 2014 and the estimation uses yearly data:

$$\begin{aligned} y_{iht} = & \beta_0 + \beta \sum (Eligible_h \times Period_t) + \delta Eligible_h \\ & + \mu \sum_{t=2011}^{2014} (Eligible_h \times IDPenetration_{ct}) + \nu IDPenetration_{ct} \\ & + \gamma Period_t + \lambda Covariates_{ih} + \theta Department_c + \epsilon_{ihc} \end{aligned} \tag{2}$$

The vector μ captures the effect of an additional percentage-point increase in the DNI penetration in the birth year on the dependent variable, after the DNI requirement became active and for children who were eligible for SIS. These effects are in addition to any changes for eligible children over time, which is measured by the β coefficients, as above. Tables D.2.9-D.2.12 in Appendix D.2 show the full results from these regressions.

Finally, we conduct several sensitivity analyses for the models in Equations 1 and 2. First, we include the 880 high-poverty districts in the analysis sample. Second, we omit data from five departments after they introduced capitation payments. Third, we restrict our primary sample to only rural areas. Figures D.3.1-D.3.3 in in Appendix D.3 depict the results from these analyses.

5 Results

Figures 3, 4 and 5 graphically summarize our key findings from the regression models for the period immediately after the DNI requirement became active. Specifically, the Figures show the estimated coefficients and 95 percent confidence intervals on the interaction term of interest in Equations 1 and 2 for the year 2011. Each coefficient is estimated by a separate regression.

Across all three Figures, neither of the indices are statistically significant, while few of the estimated coefficients are statistically significant and those that are tend to be substantively small.

Figures 3 and 4 show the main coefficient of interest from Equation 1: the coefficient β on the interaction term $Eligible_h \times Period_t$ for the yearly and half-yearly analyses, respectively, comparing eligible infants with ineligible infants. Neither Figure shows a clear pattern of results.

Figure 5 shows the main coefficient of interest from Equation 2: the coefficient on the interaction of the *Eligible* indicator with the DNI penetration in 2011, the first year when the requirement was in effect. The coefficients capture the percentage point change in the dependent variable for a 1 percentage point increase in the DNI penetration in 2011. While the results suggest that DNI penetration may have positively affected the rate of vitamin A supplementation, they also indicate a negative relation with child growth monitoring. Similarly, among services that were likely unaffected, DNI penetration appears to have had a positive effect on the rate of three or more antenatal care visits, delivery in a public facility and, possibly, postnatal care for the baby within two months of birth.

Table 2 shows the results from estimating Equation 2 for individual vaccinations. The results suggest that a percentage point increase in the DNI penetration in 2011 may have improved vaccination rates for hepatitis B, polio 1 and pentavalent 1 by 0.15 to 0.27 percentage points.

The detailed estimation results in Appendix D suggest that DNI requirement also did not have a statistically significant effect in subsequent years. As described above, the effects in the later periods could have been mitigated by government actions, such as the extension, from November 2012, of the period that newborns are covered by SIS. In addition, the detailed tables in Appendix D show that the joint F-fests cannot reject the hypothesis that pre-period coefficients are statistically significantly different. These results also show that most models have low explanatory power (overall R-squared values of 0.1 or lower).

Our approach shares limitations with other research that uses administrative rules to construct eligibility (Miller et al., 2013; Bernal et al., 2017). First, our eligibility measure is likely subject to measurement error, as the timing of the ENDES household surveys we use to compute eligibility does not exactly align with the date of the actual eligibility determination. Likewise, the ENDES do not contain all elements needed to construct eligibility. Specifically, the surveys do not capture one component (drainage type) SISFOH applies to Lima and other urban areas, although that component is not applied to rural areas. Since we follow the SISFOH process and re-scale the raw scores to the range used by SISFOH (0-100), the eligibility thresholds remain valid but the missing component could introduce error for households that are not in rural areas. We also do not observe data for two additional eligibility criteria: expenditure on water and electricity. However, Bernal et al. (2017) find that water and electricity consumption do not change discontinuously at the eligibility threshold for Lima, suggesting that - at least in Lima - some households with sufficiently low SISFOH scores may nonetheless deemed ineligible for SIS. Second, as described, we cannot link DNI possession and health care utilization and outcomes at the level of individual infants. Instead, the exposure variable (DNI penetration) is at the department×urban/rural×birth-year level. Third, we do not observe which services were provided under SIS, other payers, or fully paid for by the household.

6 Discussion

Requirements that recipients of social assistance possess identification documents are common across the world, but risk excluding those who lack such documents. Peru's requirement that applicants for the *Seguro Integral de Salud* health insurance program have a *Documento Nacional de Identidad* starting in 2011 had the potential to disrupt the utilization of health care services and, ultimately, health outcomes, especially among infants.

Using a differences-in-differences design and repeated cross-sectional data from a national household survey for births between 2008-2014, we find no measurable impact on service utilization or health outcomes. Specifically, we find no systematic effects in the first or subsequent years, either overall or in relation to the (geographically varying) DNI penetration among infants.

Administrative data at the national and department level show a drop in SIS enrollment and visit counts among infants as the requirement became active, but our analysis does not find effects on the utilization of key health care services or health outcomes. There are several possible explanations that could reconcile these patterns. First, our study design may not be sufficiently powered to detect small effects. Second, the requirement may have not been strictly enforced. SIS facilities may have continued to provide services to eligible infants even if they were not enrolled in SIS because of the lack of an identification card. If the facilities did not report these encounters to SIS, it would also explain the drop-off in SIS patients aged 0-4 shown in Figure 1. Third, and similarly, various government stop-gaps could have alleviated the negative impacts of the requirement. This includes opening registration offices in higher-volume health facilities, expanding the period in which newborns are covered under their mother's SIS policy from late 2012 and, affiliating children without identification cards in 2014. A final possibility is that parents whose infants did not have SIS may have paid out-of-pocket for the services we examine, i.e., they may have not benefited from SIS despite being eligible.

7 Conclusion

Requiring legal documentation for applicants to social programs can impose important barriers and disrupt access to critical services. Although our evaluation did not find statistically significant negative effects of Peru's requirement to possess a national identification card on health care services and outcomes among infants, it points to the need for governments to be well-prepared (e.g., ensuring adequate coverage of identification cards in the target population), to meticulously and rapidly track any problems that arise in the implementation, and to react quickly to alleviate any bottlenecks that could, ultimately, imperil the goals of social programs.

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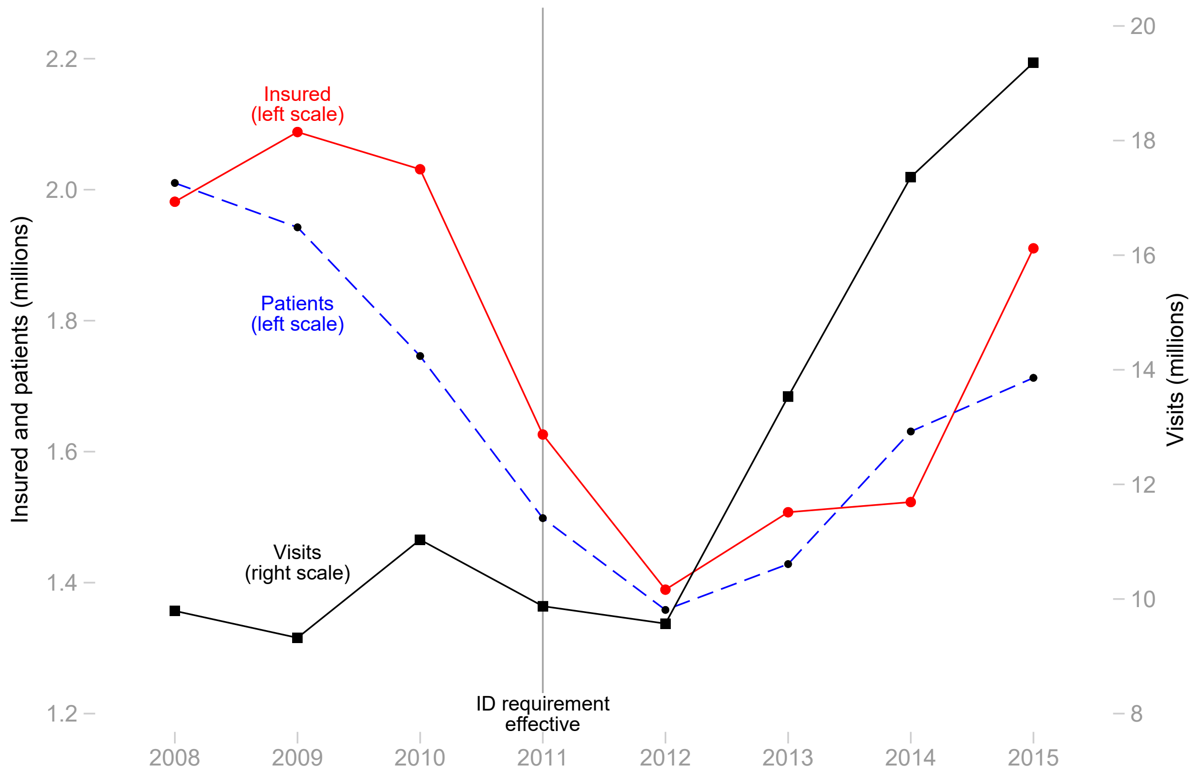
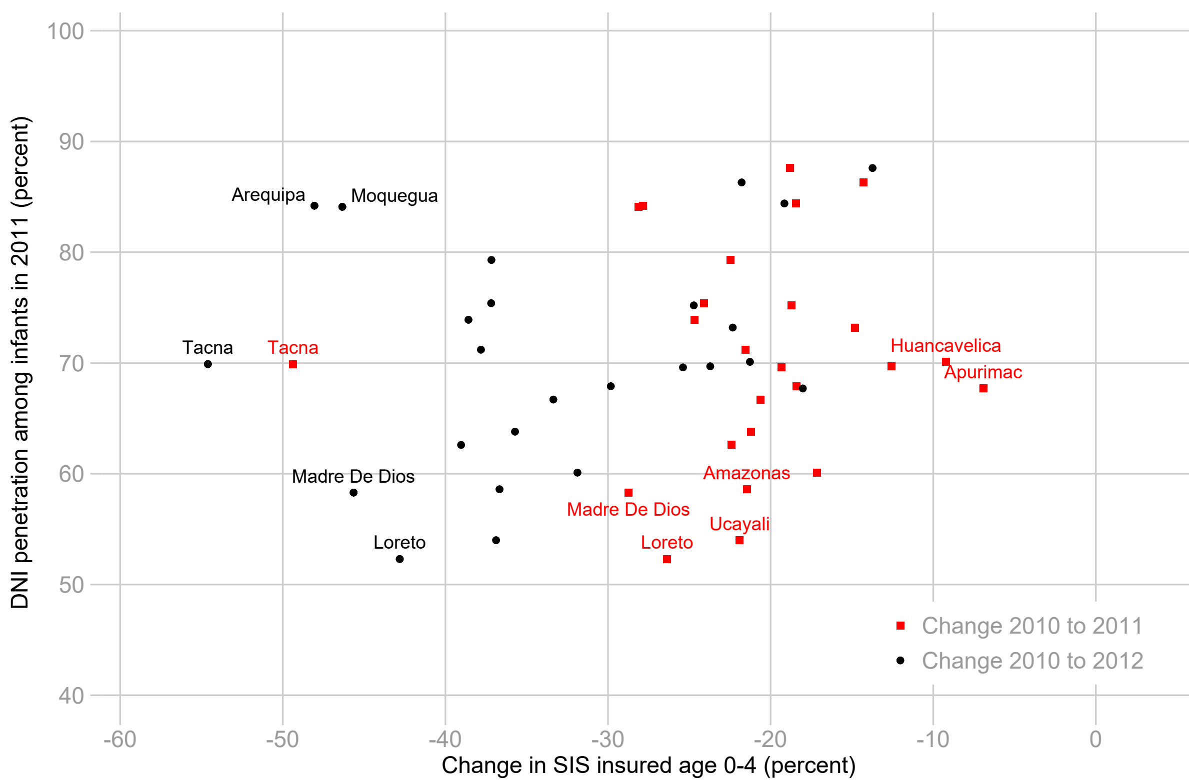
8 Figures and Tables

Figure 1: Trends in SIS insured, patients and visits for children aged 0-4 years



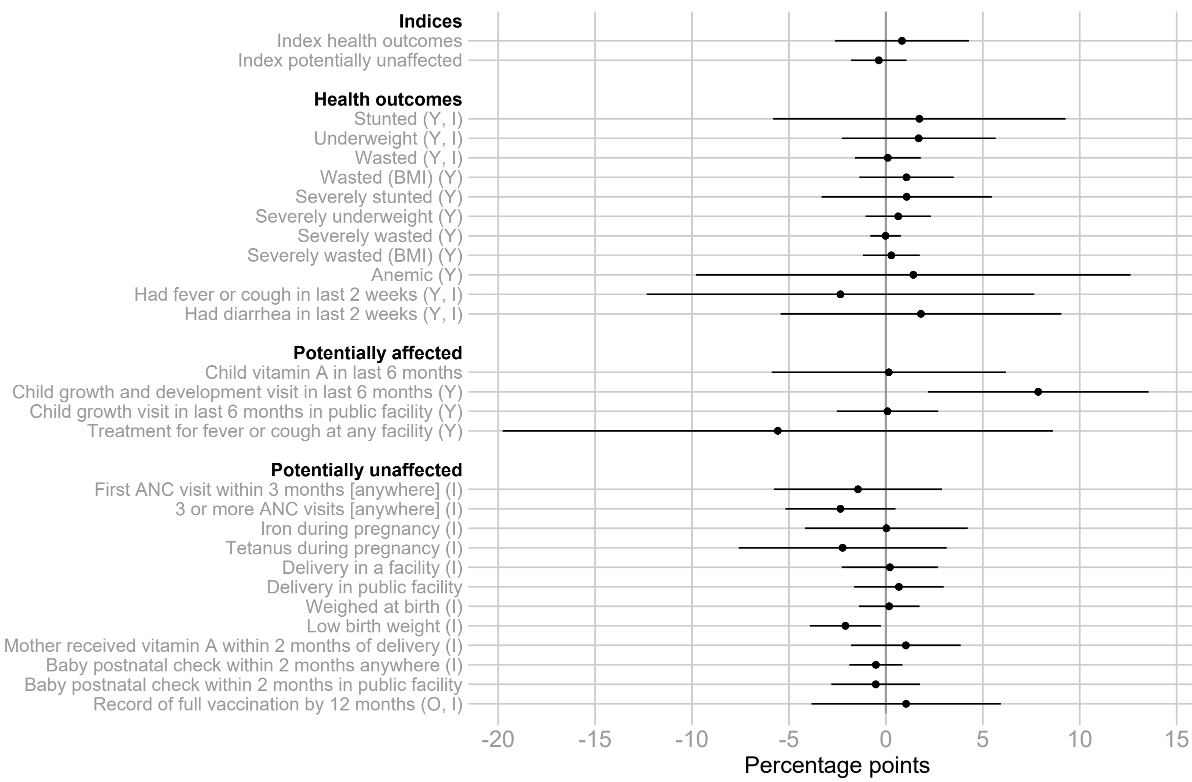
Source: Data from the *Boletines Estadísticos* published by SIS for 2008 and 2010-2016.
Note: Data reflect totals for the contributory and non-contributory versions of SIS.

Figure 2: Change in SIS insured age 0-4 by department, 2010-2012



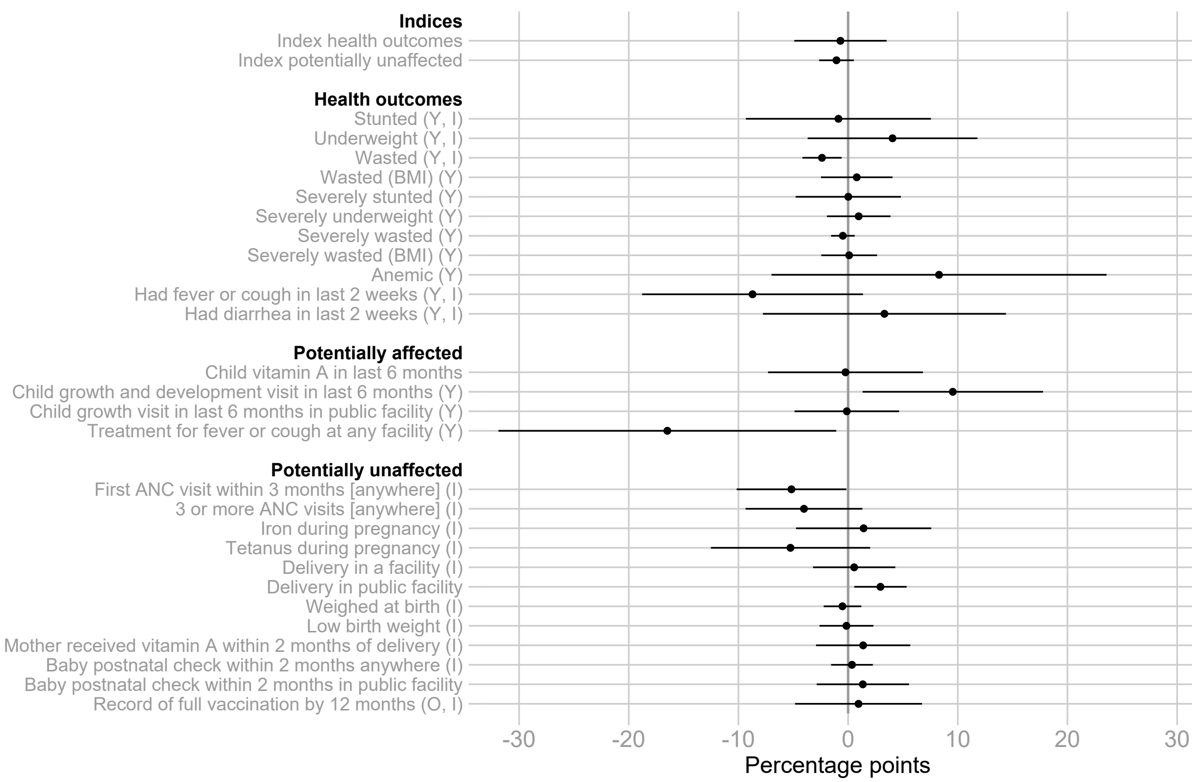
Source: SIS data from the *Boletines Estadísticos* published by SIS for 2010-2012. DNI data from the 2011 ENAPRES.
Note: SIS data reflect totals for the contributory and non-contributory versions of SIS.

Figure 3: Estimated effects of ID requirement in first year (eligible vs ineligible infants)



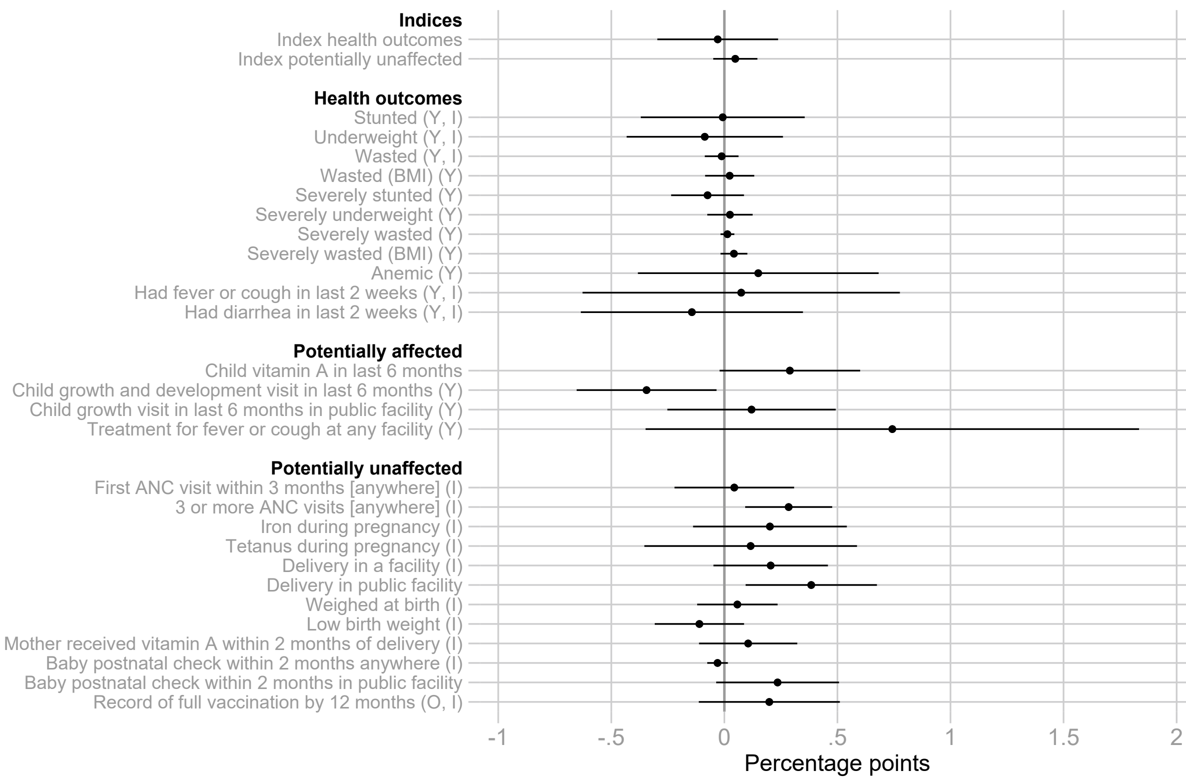
Coefficients and 95% confidence intervals of interaction term $Eligible \times Period$ for 2011, the period immediately after the ID requirement became effective. Results from separate OLS regressions. (O) are subset to children older than 12 months at the time of the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included in the summary indices.

Figure 4: Estimated effects of ID requirement in first half-year (eligible vs ineligible infants)



Coefficients and 95% confidence intervals of interaction term $Eligible \times Period$ for 2011,, the period immediately after the ID requirement became effective. Results from separate OLS regressions. (O) are subset to children older than 12 months at the time of the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included in the summary indices.

Figure 5: Estimated effects of a percentage-point increase in the DNI penetration in first year (eligible vs ineligible infants)



Coefficients and 95% confidence intervals of interaction term $Eligible \times Period$ for 2011, the period immediately after the ID requirement became effective. Results from separate OLS regressions. (O) are subset to children older than 12 months at the time f the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included n the summary indices.

Table 1: Summary statistics in year prior to requirement (percent)

	Not eligible		Eligible		Total	
	Mean	Count	Mean	Count	Mean	Count
Exposure to DNI requirement						
Eligible for SIS	0.0	[2,397]	100.0	[1,417]	37.2	[3,814]
DNI penetration infants in 2011 (%, aggregate)	71.9	[2,397]	73.9	[1,417]	72.7	[3,814]
Indices						
Index health outcomes	13.6	[386]	15.7	[279]	14.5	[665]
Index potentially unaffected	66.4	[1,592]	67.9	[903]	66.9	[2,495]
Health outcomes						
Stunted (Y, I)	11.9	[386]	15.1	[279]	13.2	[665]
Underweight (Y, I)	2.8	[386]	4.7	[279]	3.6	[665]
Wasted (Y, I)	0.5	[386]	0.7	[279]	0.6	[665]
Wasted (BMI) (Y)	0.5	[386]	0.7	[279]	0.6	[665]
Severely stunted (Y)	2.6	[386]	2.2	[279]	2.4	[665]
Severely underweight (Y)	0.5	[386]	0.7	[279]	0.6	[665]
Severely wasted (Y)	0.3	[386]	0.0	[279]	0.2	[665]
Severely wasted (BMI) (Y)	0.5	[386]	0.4	[279]	0.5	[665]
Anemic (Y)	68.4	[206]	66.2	[148]	67.5	[354]
Had fever or cough in last 2 weeks (Y, I)	35.9	[395]	41.3	[283]	38.2	[678]
Had diarrhea in last 2 weeks (Y, I)	15.7	[395]	15.9	[283]	15.8	[678]
Potentially affected						
Child vitamin A in last 6 months	11.2	[685]	11.2	[403]	11.2	[1,088]
Child growth and development visit in last 6 months (Y)	92.7	[395]	88.0	[283]	90.7	[678]
Child growth visit in last 6 months in public facility (Y)	95.1	[366]	98.4	[249]	96.4	[615]
Treatment for fever or cough at any facility (Y)	69.0	[142]	65.8	[117]	67.6	[259]
Potentially unaffected						
First ANC visit within 3 months [anywhere] (I)	80.5	[2,004]	74.4	[1,177]	78.2	[3,181]
3 or more ANC visits [anywhere] (I)	82.1	[2,397]	81.8	[1,417]	82.0	[3,814]
Iron during pregnancy (I)	86.5	[2,022]	88.1	[1,196]	87.1	[3,218]
Tetanus during pregnancy (I)	63.0	[2,022]	72.5	[1,196]	66.5	[3,218]
Delivery in a facility (I)	92.8	[2,377]	91.0	[1,406]	92.2	[3,783]
Delivery in public facility	84.4	[2,377]	87.2	[1,406]	85.5	[3,783]
Weighed at birth (I)	97.2	[2,397]	96.2	[1,417]	96.8	[3,814]
Low birth weight (I)	4.8	[2,330]	7.1	[1,363]	5.7	[3,693]
Mother received vitamin A within 2 months of delivery (I)	11.2	[2,022]	11.4	[1,196]	11.3	[3,218]
Baby postnatal check within 2 months anywhere (I)	98.6	[2,022]	98.7	[1,196]	98.6	[3,218]
Baby postnatal check within 2 months in public facility	87.5	[1,978]	92.0	[1,177]	89.2	[3,155]
Record of full vaccination by 12 months (O, I)	20.7	[2,036]	22.4	[1,161]	21.3	[3,197]
Covariates						
Girl	49.9	[2,397]	47.5	[1,417]	49.0	[3,814]
Age (months)	34.4	[2,397]	32.7	[1,417]	33.8	[3,814]
Mother smokes	2.5	[2,397]	1.3	[1,417]	2.0	[3,814]
SISFOH score (0-100)	64.5	[2,397]	31.6	[1,417]	52.3	[3,814]
Rural	33.0	[2,397]	14.5	[1,417]	26.1	[3,814]

Binary variables unless otherwise specified. Unweighted averages. Pre-period average for children born from Jan 2010 to Dec 2010. Excludes an additional 5,337 children in the 880 high-poverty districts in this time period, of which 3,058 had SISFOH scores above the cutoff (i.e., they would be considered ineligible if not for their district of residence). DNI penetration at the department×/rural level. (O) are subset to children older than 12 months at the time of the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included in the summary indices.

Table 2: Vaccinations for infants using year periods (percentage point changes)

	(1) BCG (O)	(2) Hepatitis B (O)	(3) Polio 1 (O)	(4) Polio 2 (O)	(5) Polio 3 (O)	(6) Pentavalent 1 (O)	(7) Neumococo 1 (O)	(8) Flu (O)	(9) Rotavirus 1 (O)
Eligible × ID penetration in 2011 (%)	0.15	0.23*	0.16*	0.18	0.12	0.27*	0.24	0.23	0.25
	(0.10)	(0.11)	(0.09)	(0.11)	(0.13)	(0.14)	(0.15)	(0.14)	(0.18)
Eligible × ID penetration in 2012 (%)	0.14	0.25	-0.06	0.03	0.12	-0.02	0.14	0.06	0.12
	(0.13)	(0.18)	(0.05)	(0.08)	(0.13)	(0.08)	(0.11)	(0.08)	(0.08)
Eligible × ID penetration in 2013 (%)	-0.05	0.04	0.05	0.21	0.20	0.13	0.33***	0.67***	0.26**
	(0.09)	(0.15)	(0.14)	(0.21)	(0.17)	(0.12)	(0.08)	(0.13)	(0.10)
Eligible × ID penetration in 2014 (%)	0.10	0.49***	0.07	0.41**	0.54***	-0.05	0.03	0.36**	-0.15
	(0.09)	(0.15)	(0.09)	(0.18)	(0.13)	(0.13)	(0.12)	(0.14)	(0.14)
Eligible × Birth year=2008	-4.04**	-1.48	-1.67	-3.46*	-2.50	6.19	-2.98	2.78	-2.13
	(1.90)	(2.94)	(1.16)	(1.80)	(1.93)	(4.68)	(2.44)	(2.58)	(3.76)
Eligible × Birth year=2009	-2.06	-4.45	-0.80	-0.92	2.89	4.03	2.52	3.02	0.19
	(2.06)	(3.01)	(1.26)	(1.79)	(2.35)	(3.85)	(2.33)	(2.34)	(3.50)
Eligible × Birth year=2011	-11.60	-18.52*	-13.50*	-14.61*	-9.40	-18.81*	-20.32*	-14.74	-19.21
	(8.19)	(10.03)	(6.66)	(8.13)	(8.47)	(10.28)	(11.03)	(10.67)	(12.90)
Eligible × Birth year=2012	-12.03	-24.34*	3.97	-3.03	-10.71	1.46	-12.58	-2.45	-8.96
	(10.61)	(13.98)	(3.99)	(5.44)	(9.71)	(6.38)	(8.74)	(5.67)	(6.83)
Eligible × Birth year=2013	4.83	-5.71	-6.97	-18.03	-15.72	-10.56	-29.32***	-56.84***	-20.87**
	(6.57)	(12.39)	(11.24)	(16.89)	(13.14)	(10.26)	(6.16)	(10.96)	(7.79)
Eligible × Birth year=2014	-8.10	-42.23***	-7.45	-37.85**	-47.63***	3.34	-3.39	-29.38**	12.84
	(7.68)	(11.50)	(8.07)	(16.45)	(11.74)	(10.35)	(10.23)	(11.95)	(11.45)
ID penetration (%)	-0.11**	-0.09	-0.02	-0.10*	-0.05	0.11	-0.09*	-0.04	-0.03
	(0.04)	(0.10)	(0.02)	(0.05)	(0.06)	(0.15)	(0.04)	(0.07)	(0.07)
Eligible	1.29	2.19	1.28*	1.32	0.80	-1.13	1.28	-0.52	-0.19
	(1.18)	(2.42)	(0.74)	(1.84)	(2.21)	(1.46)	(1.54)	(1.83)	(2.31)
Girl	0.00	-0.00	0.00	0.01**	0.01*	0.00	-0.00	0.01	-0.00
	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)
Age (months)	-0.06***	0.08**	-0.06***	-0.06***	-0.10***	-0.01	-0.32***	-0.12***	-0.32***
	(0.02)	(0.03)	(0.01)	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Mother smokes	-0.02*	-0.05**	-0.02	-0.04**	-0.08***	-0.02	-0.08***	-0.08***	-0.07***
	(0.01)	(0.03)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)
SISFOH score (0-100)	0.08***	-0.04	0.06***	0.13***	0.18***	-0.02	0.03	0.04	0.05**
	(0.02)	(0.04)	(0.01)	(0.02)	(0.03)	(0.04)	(0.02)	(0.04)	(0.02)
Rural	-0.05***	-0.02	-0.01***	-0.03**	-0.05***	0.01	-0.03**	-0.03*	-0.02**
	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean (y) in pre-period	92.5	80.2	96.7	92.5	80.2	90.4	69.6	29.0	67.3
P-value F-test†	0.122	0.337	0.356	0.157	0.163	0.401	0.114	0.394	0.657
N observations	19,183	19,252	19,384	19,901	21,448	20,032	25,466	25,453	25,475
N clusters	25	25	25	25	25	25	25	25	25
R-squared within	0.012	0.020	0.010	0.021	0.022	0.116	0.198	0.102	0.174
R-squared between	0.123	0.089	0.123	0.104	0.006	0.130	0.144	0.074	0.092
R-squared overall	0.015	0.018	0.010	0.019	0.018	0.111	0.195	0.100	0.169

* p<0.10, ** p<0.05, *** p<0.01 OLS, s.e. clustered within IFH eligibility area. Fixed effects for IFH eligibility area. Excludes children in the 880 high-poverty districts. † F-test of joint significance of coefficients on interaction term Eligible × t, for t<0. (O) are subset to children older than 12 months at the time of the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included in the summary indices.

Appendices

Appendix A Relevant benefits covered by LPIS and PEAS

Ministerial Resolution N° 193-2008/MINSA (2008) describes the benefits covered by LPIS, including:

- **Vaccines for infants younger than 1**: Hepatitis B, BCG, diphtheria, pertussis, tetanus, pentavalent, polio, rotavirus, pneumococcal, and influenza
- **Vaccines for infants age 1**: measles, mumps, and rubella (MRR) and yellow fever
- **Comprehensive growth and development care for children**: consults to evaluate weight and height at birth, weight/height gains, and other health-affecting factors, such as mothers' breastfeeding practices; early stimulation sessions; and home visits
- **Screening, counseling, and prevention of infectious diseases that affect the course of gestation and the nutritional state of children younger than 5**: screening of urinary infections, HIV, and syphilis in pregnant women, and the elimination of intestinal parasites in children
- **Prevention of micro-nutrient deficiencies in children under 5 years old and pregnant women**: micro-nutrient supplementation to prevent illnesses brought on by deficiencies of iron and vitamin A; all households that receive a home visit should use iodized salt
- **Diagnostic and treatment of deficiencies**: anemia in children and pregnant women

Supreme Decree N° 016-2009-SA (2009) approves the benefits covered by PEAS, including:

- **Conditions affecting the newborn**, such as low-birth-weight/preterm birth and neonatal infections (e.g., whether newborns have been exposed to HIV or syphilis)
- **Conditions affecting children under age 12**, such as acute respiratory infection, vaccine-preventable diseases, fever of unknown origin in children under 36 months, diarrheal disease, intestinal parasitosis, malnutrition, and nutritional anemia
- **Respiratory tract infections**, such as community-acquired pneumonia
- **Other conditions**, such as malaria, classic dengue fever, yellow fever, hepatitis, varicella, cavities, pulpitis, gingivitis

Appendix B Changes to SISFOH's methodology for determining eligibility

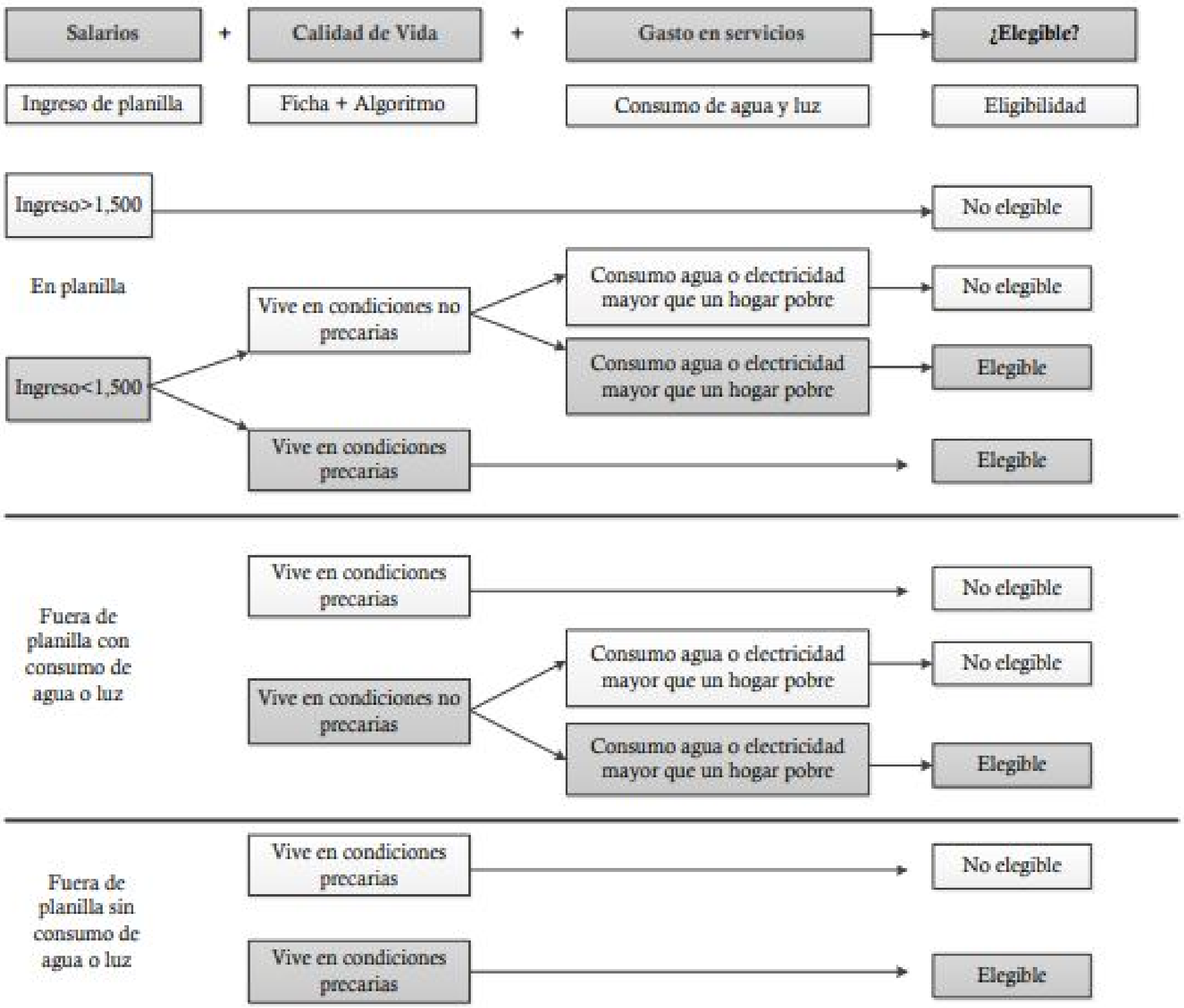
Ministerial Resolution 399-2004-PCM created the System of Household Targeting (*Sistema de Focalización de Hogares*, SISFOH) in 2004 to aid social assistance programs with the identification and selection of beneficiaries (Government of Peru, 2004a). SISFOH determines whether individuals qualify for government assistance at all. Each social assistance program can then assess people deemed eligible by SISFOH against their own criteria. For example, informal workers and the poor can only participate in the subsidized version of *Seguro Integral de Salud* if they do not have health insurance.

The methodology used by SISFOH to determine eligibility has changed numerous times. Ministerial Resolution 399-2004-PCM established the use of two criteria to assign public resources to beneficiaries: a socioeconomic index classifying districts by poverty level, and household data submitted via the Sole Socioeconomic Form (*Ficha Socioeconómica Única*, FSU) (Government of Peru, 2004a). Ministerial Resolution 400-2004-PCM, also passed in 2004, outlined a formula for analyzing FSU data and identified exemptions (districts among the two top quintiles in the national Map of Poverty or districts with 100 percent urban populations) (Government of Peru, 2004b). Decree of Urgency 048-2010, passed July 2010, further established that the affiliation of new beneficiaries to the subsidized component of SIS should account for SISFOH's eligibility determination in Lima Metropolitan and Callao (World Bank, 2010).

In September 2010, Ministerial Resolution 320-2010-PCM approved the use of data on individuals' income, household characteristics, and spending on electricity and water to assign socioeconomic classifications (*Clasificación Socioeconómica*, CSE) of "not poor", "poor", or "extremely poor" (Government of Peru, 2015). Figure B.1 shows how each of the three data points—income, household characteristics, and spending on basic services—fed into SISFOH's eligibility calculation prior to 2014. SISFOH automatically classified individuals with incomes above 1,500 Nuevos Soles as "not eligible." It generated Index for Household Targeting (*Índice de Focalización de Hogares*, IFH) scores for individuals with incomes below that threshold. By applying an algorithm to data on individuals' respective household characteristics, IFH scores aimed to measure "quality of life." SISFOH then examined whether individuals below a certain quality threshold spent more than the typical impoverished household on water and electricity. SISFOH solely considered the IFH score when determining eligibility for individuals without payroll information or electricity and water consumption data.

Ministerial Resolution 277-2014-MIDIS, approved in September 2014, authorized an update to the algorithm used to calculate the IFH scores (Government of Peru, 2014). More recent resolutions, including Ministerial Resolution 107-2015-MIDIS, Ministerial Resolution 052-2016-MIDIS, and Ministerial Resolution 151-2016-MIDIS, have approved further updates.

Figure B.1: Eligibility determination according to Ministerial Resolution 320-2010-PCM



Fuente: Resolución Ministerial N° 320-2010-PCM
Nota: En el documento original se observa la frase "consumo agua o electricidad mayor que un hogar pobre" en los cuadros señalados. Al tratarse de un error material, se implementó como "consumo agua o electricidad menor que un hogar pobre".

Source: Government of Peru (2015)

Appendix C Changes in visit counts in administrative data for children aged 0-4

In this Appendix, we formally investigate changes in visit counts for children aged 0-4 and their relation to DNI penetration for the same age group, at the department level. SIS provides these data for the period 2008-2015 in its annual Statistical Bulletins (*Boletines Estadísticos*). To our knowledge, SIS has not publicly posted data on the number of infants insured via SIS or their visit counts in 2010.

We merge the administrative data on visit counts at the department level with time-varying information on DNI penetration for children aged 0-4. We then regress the log of the departments' annual visit count on DNI penetration with department and year fixed-effects, for the years 2008-2015:

$$\begin{aligned} ln(visitcount_{ct}) = &\beta_0 + \nu IDPenetration_{ct} \\ &+ \gamma Period_t + \theta Department_c + \epsilon_c \end{aligned} \tag{3}$$

The coefficient ν captures the effect of an additional percentage-point increase in DNI penetration on the dependent variable, after the DNI requirement went into effect. Specifically, a one percentage point change in DNI penetration is associated with a 100*ν percent change in SIS visits. We also estimate a related regression in which we show the coefficient on DNI penetration for every year from 2011-2015.

We estimate this regression on two samples: all departments from 2008-2015 and all departments from 2008-2015 but omit data from five departments after they introduced capitation payments.[7]

Table C.1 shows the results from this analysis. The estimates suggest that a one percentage point increase in the DNI penetration rate is associated with a 1.8 percent increase in the SIS visit count. The results in column 3 suggest that the effect sets in after 2012, possibly because the share of infants born after the DNI requirement went into effect make up more of the 0-4 age group over time. As time passes some older children who had SIS coverage could also have been unable to renew their status because they did not have a DNI.

There are several important limitations to this analysis that, in the main analysis, we resolve by using survey data and a difference-in-difference research design. First, it does not account for trends in utilization that would have occurred even in absence of the DNI requirement. This complicates the attribution of causal effects. Second, this analysis is at an aggregate level of geography and for a larger age group. This could mask effects at the lower and individual levels, and for infants, who are most at risk. Third, although visit counts may be more reliable than administrative data on the number of people insured and number of patients, there could still be reporting errors that may have changed over time. This could bias the estimates. Finally, the department-level visit data do not distinguish between type of visit (e.g., visits for vaccinations or curative care). That prevents us from observing potentially differential effects on service utilization caused by the DNI

[7] We omit data from Huancavelica, Ayacucho, Apurímac, Callao, and Amazonas in model 2 since capitation payments can generate incentives to reduce utilization.

requirement. Reports have previously noted a difference in visit trends by type of visit: for example, the number of curative visits fell by roughly 3.7 million between 2010 and 2011 before increasing by approximately 1.1 million in 2012 (Fidel Grillo Rojas et al., 2012). Preventive visits, on the other hand, rose by almost 1 million every year.

Table C.1: SIS visits for chilren aged 0-4 at the department level (percent change)

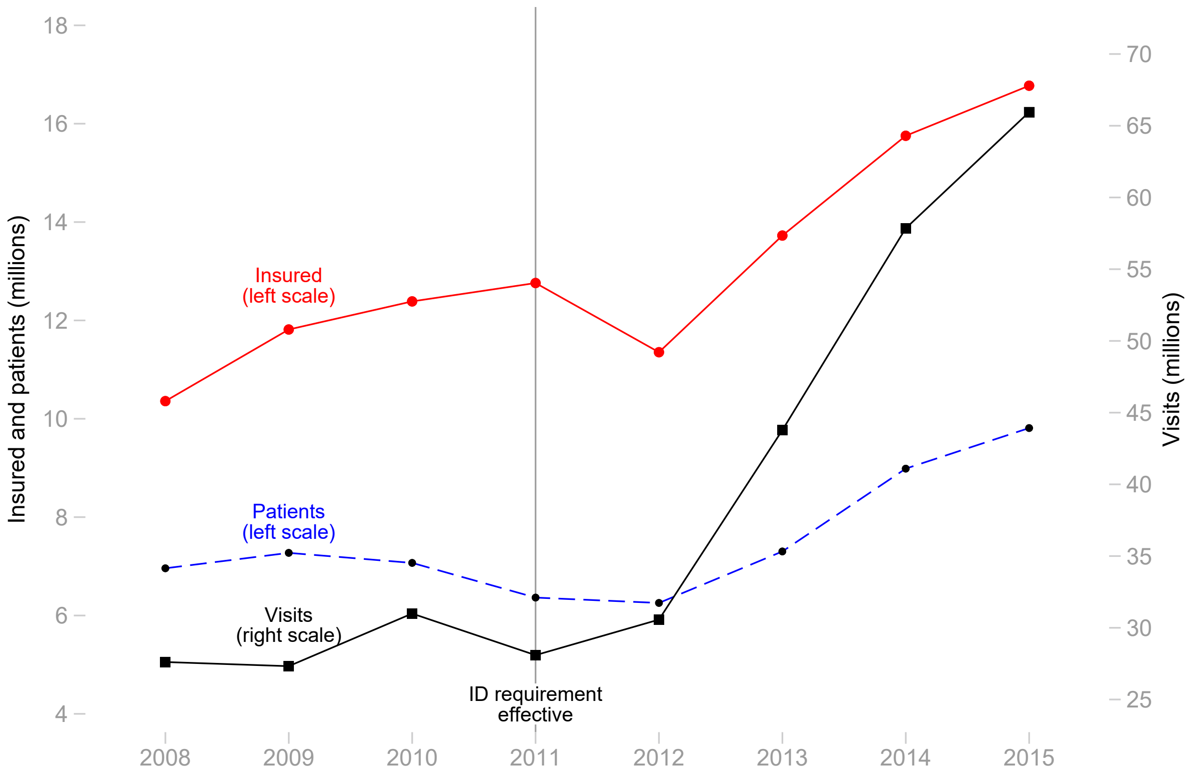
	(1) All departments	(2) Without capitation areas	(3) Year-by-year
ID penetration ages 0-4 (%)	1.81***	1.29**	
	(0.52)	(0.47)	
ID penetration in 2011 (%)			0.49
			(0.44)
ID penetration in 2012 (%)			3.63***
			(0.53)
ID penetration in 2013 (%)			3.69***
			(1.24)
ID penetration in 2014 (%)			3.63
			(2.24)
ID penetration in 2015 (%)			1.49
			(2.56)
Year FE	Yes	Yes	Yes
Mean (y) in pre-period	441,405	456,623	441,405
N observations	200	160	200
N clusters	25	20	25
R-squared within	0.675	0.661	0.702
R-squared between	0.025	0.027	0.038
R-squared overall	0.097	0.078	0.109

* p<0.10, ** p<0.05, *** p<0.01 OLS regression of log of SIS visits ages 0-4 from 2008 to 2015 on DNI penetration using department-level data from 2011 onward, unless otherwise specified. Department fixed effects; s.e. clustered by department. SIS visits from administrative data.

Appendix D Additional Figures and Tables

D.1 Trends in SIS administrative data for all ages

Figure D.1.1: Trends in SIS insured, patients and visits for all ages



Source: Data from the *Boletines Estadísticos* published by SIS for 2008 and 2010-2016.
Note: Data reflect totals for the contributory and non-contributory versions of SIS.

D.2 Detailed results

Table D.2.1: Indices using year periods (percentage point changes)

	(1) Index health outcomes	(2) Index potentially unaffected
Eligible × t-3	-0.13	-0.81
	(2.27)	(0.61)
Eligible × t-2	-0.30	-1.32***
	(1.62)	(0.45)
Eligible × First effective	0.83	-0.36
	(1.67)	(0.69)
Eligible × t+1	1.33	-0.92**
	(1.41)	(0.42)
Eligible × t+2	-0.17	-0.35
	(1.82)	(0.44)
Eligible × t+3	0.46	-0.88
	(1.12)	(0.62)
Eligible	-0.33	1.31**
	(1.26)	(0.58)
Girl	-0.02***	0.00*
	(0.00)	(0.00)
Age (months)	0.76***	0.03***
	(0.07)	(0.01)
Mother smokes	0.03*	-0.00
	(0.02)	(0.00)
SISFOH score (0-100)	-0.06***	0.03***
	(0.02)	(0.01)
Rural	0.01	-0.01**
	(0.01)	(0.00)
Year FE	Yes	Yes
Mean (y) in pre-period	14.5	66.9
P-value F-test†	0.980	0.023
N observations	4,930	20,958
N clusters	25	25
R-squared within	0.042	0.045
R-squared between	0.448	0.038
R-squared overall	0.049	0.041

* $p<0.10$, ** $p<0.05$, *** $p<0.01$ OLS, s.e. clustered within IFH eligibility area. Fixed effects for IFH eligibility area. Excludes children in the 880 high-poverty districts. † F-test of joint significance of coefficients on interaction term Eligible × t, for $t<0$. (O) are subset to children older than 12 months at the time of the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included in the summary indices.

Table D.2.2: Health outcomes using year periods (percentage point changes)

	(1) Stunted (Y, I)	(2) Underweight (Y, I)	(3) Wasted (Y, I)	(4) Wasted (BMI) (Y)	(5) Severely stunted (Y)	(6) Severely under-weight (Y)	(7) Severely wasted (Y)	(8) Severely wasted (BMI) (Y)	(9) Anemic (Y)	(10) Had fever or cough in last 2 weeks (Y, I)	(11) Had diarrhea in last 2 weeks (Y, I)
Eligible × t-3	-2.67	-0.46	0.53	0.58	2.16*	0.53	-0.23	-0.37	8.99	-2.85	6.43
	(3.33)	(1.54)	(1.47)	(1.46)	(1.26)	(1.12)	(0.53)	(0.71)	(6.24)	(8.37)	(4.23)
Eligible × t-2	2.89	-1.14	-1.18	-1.43	1.72	-0.49	-0.31	-0.39	0.14	-0.37	-2.10
	(3.32)	(1.56)	(0.88)	(0.87)	(1.83)	(0.85)	(0.47)	(0.78)	(5.48)	(5.98)	(4.01)
Eligible × First effective	1.73	1.69	0.10	1.06	1.07	0.64	-0.02	0.28	1.42	-2.35	1.81
	(3.65)	(1.92)	(0.82)	(1.18)	(2.13)	(0.82)	(0.38)	(0.71)	(5.43)	(4.85)	(3.51)
Eligible × t+1	-2.19	0.28	-0.08	-0.06	0.14	-0.17	-0.03	0.07	2.47	4.45	4.13
	(3.52)	(1.65)	(0.75)	(0.94)	(1.26)	(1.25)	(0.38)	(0.95)	(9.82)	(5.64)	(4.06)
Eligible × t+2	3.17	-2.04	-1.62	-0.96	0.44	0.08	-0.56	-0.67	7.58	-0.15	-0.70
	(4.70)	(1.40)	(1.09)	(0.90)	(1.82)	(0.76)	(0.48)	(0.75)	(8.00)	(5.42)	(4.72)
Eligible × t+3	-0.30	-0.50	0.22	-0.03	0.53	0.29	0.76*	0.64	7.76	-0.24	3.57
	(2.52)	(1.04)	(0.70)	(0.76)	(1.36)	(0.74)	(0.42)	(0.67)	(6.43)	(5.17)	(3.31)
Eligible	-0.63	0.90	0.22	0.02	-0.89	0.13	-0.44	-0.24	-4.95	-0.93	-1.07
	(2.61)	(1.32)	(0.50)	(0.52)	(1.45)	(0.65)	(0.33)	(0.56)	(6.21)	(4.52)	(2.64)
Girl	-0.05***	-0.02***	-0.01***	-0.01**	-0.02***	-0.00*	-0.00*	-0.00	-0.05**	-0.03**	-0.02*
	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)	(0.01)	(0.01)
Age (months)	0.19	-0.29***	-0.22***	-0.24***	-0.06	-0.13***	-0.08***	-0.11***	0.39	2.74***	1.41***
	(0.15)	(0.09)	(0.05)	(0.04)	(0.05)	(0.04)	(0.03)	(0.03)	(0.49)	(0.16)	(0.13)
Mother smokes	0.05	0.01	-0.01***	-0.01***	0.02	-0.00	-0.00***	-0.00***	0.01	0.05	0.03
	(0.05)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.07)	(0.06)	(0.03)
SISFOH score (0-100)	-0.09***	-0.01	0.00	-0.00	-0.01	-0.00	-0.00	-0.00	-0.18**	-0.15**	-0.06
	(0.03)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.00)	(0.01)	(0.08)	(0.06)	(0.05)
Rural	0.04*	0.00	0.00	0.00	0.01	0.00*	0.00	0.00	0.08***	0.00	0.01
	(0.02)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.02)	(0.02)	(0.02)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean (y) in pre-period	13.2	3.6	0.6	0.6	2.4	0.6	0.2	0.5	67.5	38.2	15.8
P-value F-test†	0.431	0.766	0.172	0.075	0.248	0.515	0.783	0.856	0.251	0.912	0.134
N observations	4,930	4,930	4,930	4,930	4,930	4,930	4,930	4,930	2,823	5,062	5,062
N clusters	25	25	25	25	25	25	25	25	25	25	25
R-squared within	0.017	0.008	0.009	0.009	0.008	0.005	0.006	0.006	0.024	0.044	0.025
R-squared between	0.334	0.669	0.026	0.146	0.112	0.407	0.037	0.006	0.227	0.025	0.496
R-squared overall	0.022	0.010	0.009	0.009	0.009	0.006	0.006	0.006	0.030	0.047	0.027

* $p<0.10$, ** $p<0.05$, *** $p<0.01$ OLS, s.e. clustered within IFH eligibility area. Fixed effects for IFH eligibility area. Excludes children in the 880 high-poverty districts.
† F-test of joint significance of coefficients on interaction term Eligible × t, for $t<0$. (O) are subset to children older than 12 months at the time of the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included in the summary indices.

Table D.2.3: Potentially affected using year periods (percentage point changes)

	(1) Child vitamin A in last 6 months	(2) Child growth and development visit in last 6 months (Y)	(3) Child growth visit in last 6 months in public facility (Y)	(4) Treatment for fever or cough at any facility (Y)
Eligible × t-3	-3.56**	3.49	3.21*	-5.99
	(1.62)	(2.45)	(1.81)	(8.05)
Eligible × t-2	1.43	1.44	-1.85	3.68
	(3.16)	(2.81)	(1.17)	(5.56)
Eligible × First effective	0.15	7.86***	0.08	-5.58
	(2.93)	(2.76)	(1.27)	(6.88)
Eligible × t+1	-2.36	0.83	2.63	-4.88
	(2.01)	(3.73)	(1.90)	(7.26)
Eligible × t+2	0.50	1.60	1.10	1.84
	(2.93)	(2.84)	(2.41)	(7.09)
Eligible × t+3	-1.08	3.51	1.00	3.99
	(3.29)	(2.56)	(1.57)	(6.10)
Eligible	-0.49	-2.78	-2.19	-3.94
	(2.00)	(3.14)	(1.84)	(5.22)
Girl	0.00	-0.00	-0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.02)
Age (months)	-0.32***	1.53***	0.18*	-0.29
	(0.05)	(0.22)	(0.10)	(0.30)
Mother smokes	-0.02	0.02	-0.06	-0.03
	(0.02)	(0.02)	(0.04)	(0.11)
SISFOH score (0-100)	-0.07**	0.07**	-0.21***	0.03
	(0.03)	(0.03)	(0.06)	(0.06)
Rural	0.03**	-0.01	0.03*	0.01
	(0.01)	(0.01)	(0.01)	(0.02)
Year FE	Yes	Yes	Yes	Yes
Mean (y) in pre-period	11.2	90.7	96.4	67.6
P-value F-test†	0.048	0.377	0.100	0.505
N observations	10,423	5,062	4,654	1,979
N clusters	25	25	25	25
R-squared within	0.018	0.048	0.041	0.007
R-squared between	0.009	0.081	0.112	0.078
R-squared overall	0.017	0.047	0.043	0.005

* $p<0.10$, ** $p<0.05$, *** $p<0.01$ OLS, s.e. clustered within IFH eligibility area. Fixed effects for IFH eligibility area. Excludes children in the 880 high-poverty districts. † F-test of joint significance of coefficients on interaction term Eligible × t, for t<0. (O) are subset to children older than 12 months at the time of the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included in the summary indices.

Table D.2.4: Potentially unaffected using year periods (percentage point changes)

	(1) First ANC visit within 3 months [any-where] (I)	(2) 3 or more ANC visits [any-where] (I)	(3) Iron during preg-nancy (I)	(4) Tetanus during preg-nancy (I)	(5) Delivery in a facility (I)	(6) Delivery in public facility	(7) Weighed at birth (I)	(8) Low birth weight (I)	(9) Mother received vitamin A within 2 months of delivery (I)	(10) Baby postnatal check within 2 months anywhere (I)	(11) Baby postnatal check within 2 months in public facility	(12) Record of full vacci-nation by 12 months (O, I)
Eligible × t-3	-0.59	-1.00	2.10	-2.28	-1.16	-0.88	-0.45	-1.68	1.50	-0.59	1.75	-1.34
	(1.70)	(1.51)	(1.39)	(2.18)	(1.30)	(1.35)	(1.02)	(1.38)	(1.46)	(0.84)	(1.27)	(1.51)
Eligible × t-2	-0.10	-3.69*	0.15	-4.82**	-1.44	-1.66	-0.46	-1.20	-0.59	-0.53	-1.00	-1.28
	(2.31)	(2.10)	(1.45)	(1.75)	(1.21)	(1.49)	(0.72)	(1.25)	(0.84)	(0.52)	(1.34)	(2.23)
Eligible × First effective	-1.44	-2.35	0.02	-2.23	0.21	0.67	0.17	-2.09**	1.03	-0.52	-0.52	1.04
	(2.10)	(1.38)	(2.03)	(2.60)	(1.21)	(1.12)	(0.76)	(0.89)	(1.37)	(0.66)	(1.11)	(2.37)
Eligible × t+1	0.19	0.01	-2.32	0.81	0.27	0.93	1.44**	-1.47	0.51	-0.49	0.68	-1.00
	(1.69)	(1.76)	(1.73)	(2.45)	(1.31)	(1.94)	(0.56)	(1.04)	(1.19)	(0.42)	(1.79)	(1.37)
Eligible × t+2	1.58	-1.90	-0.12	-1.03	0.97	3.78**	0.88*	-1.29	2.35	-0.06	2.32**	-2.12
	(1.53)	(1.53)	(1.32)	(2.20)	(1.17)	(1.36)	(0.48)	(1.01)	(1.57)	(0.42)	(0.98)	(1.86)
Eligible × t+3	2.49	0.79	1.19	-1.71	1.01	2.89*	0.44	-1.94	0.73	0.06	2.46*	-5.22**
	(1.95)	(1.52)	(1.53)	(2.18)	(1.44)	(1.62)	(0.81)	(1.21)	(1.67)	(0.38)	(1.24)	(2.53)
Eligible	0.94	0.82	1.06	2.56	1.98*	-0.04	0.76	1.06	0.49	0.45	-1.00	0.84
	(2.26)	(1.29)	(1.24)	(2.53)	(1.15)	(2.10)	(0.68)	(0.72)	(0.93)	(0.43)	(1.70)	(2.01)
Girl	0.00	0.00	0.01**	0.01	-0.00	-0.01*	0.00	0.01***	-0.00	0.00	-0.01*	0.00
	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
Age (months)	0.20***	-0.60***	0.03*	0.25***	0.00	0.03*	-0.02**	0.03***	0.05***	0.01**	0.03*	-0.09***
	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
Mother smokes	-0.02**	0.02*	-0.01	-0.02	-0.00	-0.03*	0.00	0.02**	0.03*	0.00	-0.04**	-0.07***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.00)	(0.01)	(0.02)	(0.00)	(0.01)	(0.01)
SISFOH score (0-100)	0.29***	0.10***	0.09***	-0.12**	0.17***	-0.17**	0.08***	-0.03*	-0.00	0.01***	-0.27***	0.00
	(0.03)	(0.02)	(0.02)	(0.06)	(0.03)	(0.06)	(0.01)	(0.01)	(0.02)	(0.00)	(0.05)	(0.03)
Rural	-0.06***	-0.04***	-0.01	0.03**	-0.12***	-0.05**	-0.05***	0.00	0.03***	-0.01***	0.02	-0.03*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.02)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean (y) in pre-period	78.2	82.0	87.1	66.5	92.2	85.5	96.8	5.7	11.3	98.6	89.2	21.3
P-value F-test†	0.926	0.166	0.330	0.028	0.435	0.546	0.805	0.459	0.432	0.587	0.135	0.666
N observations	26,064	30,096	26,324	26,324	29,851	29,851	30,096	29,273	26,322	26,324	25,918	25,559
N clusters	25	25	25	25	25	25	25	25	25	25	25	25
R-squared within	0.025	0.079	0.008	0.012	0.053	0.019	0.018	0.002	0.003	0.003	0.027	0.108
R-squared between	0.392	0.380	0.010	0.072	0.519	0.009	0.522	0.126	0.310	0.226	0.033	0.122
R-squared overall	0.024	0.079	0.006	0.017	0.076	0.012	0.026	0.002	0.005	0.004	0.018	0.107

* $p<0.10$, ** $p<0.05$, *** $p<0.01$ OLS, s.e. clustered within IFH eligibility area. Fixed effects for IFH eligibility area. Excludes children in the 880 high-poverty districts. † F-test of joint significance of coefficients on interaction term Eligible × t, for t<0. (O) are subset to children older than 12 months at the time of the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included in the summary indices.

Table D.2.5: Indices using half-year periods (percentage point changes)

	(1) Index health outcomes	(2) Index potentially unaffected
Eligible × t-6	-3.89	-1.01
	(4.40)	(0.93)
Eligible × t-5	-2.04	-1.80**
	(2.22)	(0.72)
Eligible × t-4	-5.26***	-1.65**
	(1.83)	(0.71)
Eligible × t-3	0.05	-2.34***
	(1.46)	(0.69)
Eligible × t-2	-4.54*	-1.06
	(2.39)	(0.73)
Eligible × First effective	-0.70	-1.06
	(2.04)	(0.77)
Eligible × t+1	-2.05	-0.77
	(1.83)	(0.96)
Eligible × t+2	-0.43	-1.32
	(2.50)	(0.86)
Eligible × t+3	-1.51	-1.78***
	(1.99)	(0.57)
Eligible × t+4	-1.79	-1.41**
	(2.42)	(0.60)
Eligible × t+5	-2.87	-0.52
	(1.84)	(0.86)
Eligible × t+6	-2.44	-1.39
	(1.48)	(0.82)
Eligible × t+7	-1.32	-1.61
	(1.63)	(0.97)
Eligible	1.90*	1.93***
	(0.99)	(0.65)
Girl	-0.02***	0.00
	(0.00)	(0.00)
Age (months)	0.76***	0.03***
	(0.06)	(0.01)
Mother smokes	0.03	-0.00
	(0.02)	(0.00)
SISFOH score (0-100)	-0.06***	0.03***
	(0.02)	(0.01)
Rural	0.01	-0.01**
	(0.01)	(0.00)
Half-year FE	Yes	Yes
Mean (y) in pre-period	15.3	68.2
P-value F-test†	0.004	0.012
N observations	4,930	20,958
N clusters	25	25
R-squared within	0.047	0.052
R-squared between	0.390	0.041
R-squared overall	0.053	0.047

* p<0.10, ** p<0.05, *** p<0.01 OLS, s.e. clustered within IFH eligibility area. Fixed effects for IFH eligibility area. Excludes children in the 880 high-poverty districts.
† F-test of joint significance of coefficients on interaction term Eligible × t, for t<0. (O) are subset to children older than 12 months at the time of the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included in the summary indices.

Table D.2.6: Health outcomes using half-year periods (percentage point changes)

	(1) Stunted (Y, I)	(2) Underweight (Y, I)	(3) Wasted (Y, I)	(4) Wasted (BMI) (Y)	(5) Severely stunted (Y)	(6) Severely under-weight (Y)	(7) Severely wasted (Y)	(8) Severely wasted (BMI) (Y)	(9) Anemic (Y)	(10) Had fever or cough in last 2 weeks (Y, I)	(11) Had diarrhea in last 2 weeks (Y, I)
Eligible × t-6	-4.61	-1.63	-0.05	0.01	-3.13	-2.98	-2.10	-2.31	25.35**	-1.82	-8.86
	(5.74)	(3.96)	(3.83)	(3.81)	(2.36)	(2.24)	(2.02)	(2.21)	(12.04)	(9.40)	(9.57)
Eligible × t-5	-4.93	-0.61	-0.03	-0.01	2.39	0.75	0.07	-0.17	0.47	-12.62	9.54*
	(3.67)	(2.04)	(1.38)	(1.37)	(1.57)	(1.50)	(0.08)	(0.91)	(5.79)	(10.07)	(4.77)
Eligible × t-4	-0.59	-3.79*	-2.09	-3.28**	-1.61	-1.62	-0.92	-1.10	-5.37	-13.36	-5.13
	(4.33)	(2.00)	(1.38)	(1.26)	(1.56)	(1.23)	(0.62)	(1.29)	(6.64)	(7.84)	(4.74)
Eligible × t-3	1.87	0.71	-1.36	-0.68	3.01	-0.61	0.02	-0.16	2.03	-1.84	-0.47
	(3.86)	(2.37)	(0.89)	(1.12)	(2.65)	(1.70)	(0.09)	(0.90)	(8.60)	(6.76)	(5.29)
Eligible × t-2	-4.31	-0.71	-1.27	-1.31	-1.85	-1.21	-0.39	-0.59	-5.09	-14.10	-1.41
	(3.99)	(1.92)	(0.85)	(0.86)	(3.51)	(1.20)	(0.49)	(0.98)	(6.76)	(8.26)	(5.32)
Eligible × First effective	-0.89	4.05	-2.38**	0.79	0.01	0.97	-0.48	0.10	8.29	-8.71*	3.31
	(4.09)	(3.75)	(0.87)	(1.58)	(2.32)	(1.40)	(0.52)	(1.23)	(7.40)	(4.88)	(5.37)
Eligible × t+1	-0.13	-1.55	1.44	0.08	0.34	-0.75	0.10*	-0.04	-6.93	-9.51	-0.70
	(4.33)	(2.45)	(1.44)	(1.46)	(2.86)	(1.14)	(0.05)	(0.92)	(8.71)	(7.37)	(4.16)
Eligible × t+2	-7.15*	-0.57	-1.40*	-2.07**	-0.66	-0.90	-0.38	-1.05	-0.36	2.67	4.05
	(4.11)	(2.33)	(0.74)	(0.85)	(1.34)	(1.72)	(0.42)	(1.31)	(9.09)	(7.98)	(7.66)
Eligible × t+3	-1.00	0.53	0.12	0.88	-0.90	-0.61	-0.05	0.76	1.06	-8.72	2.57
	(4.63)	(3.09)	(1.28)	(1.66)	(2.02)	(1.61)	(0.07)	(1.38)	(13.29)	(6.86)	(6.14)
Eligible × t+4	4.12	1.16	-1.87	-1.20	-2.17	-1.01	-1.17	-0.80	9.42	-7.09	-4.11
	(6.02)	(2.60)	(1.61)	(1.80)	(2.02)	(1.13)	(0.69)	(0.99)	(9.11)	(10.06)	(7.41)
Eligible × t+5	-1.64	-5.52**	-2.53**	-1.92**	0.98	-0.05	-0.40	-1.08	3.14	-6.91	1.16
	(3.32)	(2.25)	(1.20)	(0.81)	(2.10)	(1.31)	(0.45)	(1.27)	(10.19)	(5.82)	(6.36)
Eligible × t+6	-3.73	-0.27	0.29	1.03	-0.41	1.55	1.10	1.24	1.92	-8.08	0.70
	(3.91)	(2.21)	(1.53)	(1.61)	(2.25)	(1.72)	(0.90)	(1.48)	(8.51)	(6.32)	(5.42)
Eligible × t+7	-1.54	-1.26	-0.84	-1.75*	-0.37	-1.47	0.20	-0.22	7.61	-6.59	4.40
	(2.79)	(1.76)	(0.93)	(0.97)	(1.63)	(1.13)	(0.40)	(1.01)	(8.96)	(7.38)	(4.29)
Eligible	1.54	1.31	0.85	0.68	-0.01	0.70	-0.25	0.05	-2.76	6.10	-0.51
	(2.89)	(1.81)	(0.68)	(0.70)	(1.91)	(1.11)	(0.16)	(0.89)	(7.19)	(5.30)	(3.32)
Girl	-0.05***	-0.02***	-0.01***	-0.01**	-0.02***	-0.00*	-0.00*	-0.00	-0.05**	-0.03**	-0.02*
	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)	(0.01)	(0.01)
Age (months)	0.20	-0.29***	-0.22***	-0.24***	-0.06	-0.13***	-0.08***	-0.12***	0.66	2.75***	1.40***
	(0.15)	(0.10)	(0.05)	(0.04)	(0.06)	(0.03)	(0.03)	(0.03)	(0.52)	(0.15)	(0.12)
Mother smokes	0.05	0.01	-0.01***	-0.01***	0.02	-0.00	-0.00***	-0.00**	-0.00	0.04	0.03
	(0.05)	(0.02)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.07)	(0.06)	(0.03)
SISFOH score (0-100)	-0.09***	-0.01	0.00	-0.00	-0.01	-0.00	-0.00	-0.00	-0.17*	-0.14**	-0.07
	(0.03)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.00)	(0.01)	(0.08)	(0.06)	(0.05)
Rural	0.04*	0.00	0.00	0.00	0.01	0.00*	0.00	0.00	0.07***	0.00	0.01
	(0.02)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.02)	(0.02)	(0.02)
Half-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean (y) in pre-period	14.2	3.6	0.9	0.9	1.8	0.9	0.0	0.6	65.7	38.4	18.6
P-value F-test†	0.760	0.459	0.206	0.045	0.010	0.198	0.123	0.295	0.070	0.312	0.054
N observations	4,930	4,930	4,930	4,930	4,930	4,930	4,930	4,930	2,823	5,062	5,062
N clusters	25	25	25	25	25	25	25	25	25	25	25
R-squared within	0.020	0.011	0.013	0.012	0.012	0.010	0.009	0.009	0.032	0.050	0.028
R-squared between	0.273	0.541	0.051	0.006	0.137	0.124	0.045	0.036	0.181	0.001	0.424
R-squared overall	0.025	0.013	0.012	0.012	0.013	0.011	0.009	0.009	0.038	0.052	0.029

* $p<0.10$, ** $p<0.05$, *** $p<0.01$ OLS, s.e. clustered within IFH eligibility area. Fixed effects for IFH eligibility area. Excludes children in the 880 high-poverty districts. † F-test of joint significance of coefficients on interaction term Eligible × t, for t<0. (O) are subset to children older than 12 months at the time of the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included in the summary indices.

Table D.2.7: Potentially affected using half-year periods (percentage point changes)

	(1) Child vitamin A in last 6 months	(2) Child growth and development visit in last 6 months (Y)	(3) Child growth visit in last 6 months in public facility (Y)	(4) Treatment for fever or cough at any facility (Y)
Eligible × t-6	-5.20	4.55**	3.93	3.44
	(3.06)	(2.16)	(4.20)	(12.79)
Eligible × t-5	-4.47	2.15	2.97	-22.47***
	(3.19)	(2.84)	(2.68)	(7.49)
Eligible × t-4	1.26	1.72	-2.53	-13.14
	(3.13)	(2.46)	(2.37)	(7.95)
Eligible × t-3	-0.95	-0.56	-0.82	-4.79
	(3.93)	(4.27)	(2.83)	(8.24)
Eligible × t-2	-2.67	-1.86	0.06	-22.85**
	(3.05)	(3.39)	(3.20)	(8.27)
Eligible × First effective	-0.24	9.55**	-0.12	-16.48**
	(3.42)	(3.98)	(2.31)	(7.46)
Eligible × t+1	-1.81	4.60	0.48	-17.84**
	(3.36)	(3.28)	(3.34)	(7.77)
Eligible × t+2	-2.46	-1.99	4.03	-16.86
	(2.22)	(4.07)	(3.56)	(13.33)
Eligible × t+3	-4.85**	2.02	1.11	-14.79
	(2.21)	(4.92)	(2.35)	(12.30)
Eligible × t+4	-2.04	0.01	4.04	-10.42
	(2.93)	(3.55)	(4.83)	(10.02)
Eligible × t+5	0.61	1.17	-1.44	-9.28
	(3.89)	(3.27)	(2.86)	(9.00)
Eligible × t+6	-2.82	1.35	1.66	-15.13**
	(3.14)	(4.01)	(3.04)	(6.97)
Eligible × t+7	-1.60	3.40	0.64	-2.86
	(3.75)	(2.51)	(2.42)	(6.92)
Eligible	0.78	-1.90	-2.22	7.58
	(2.38)	(2.96)	(1.91)	(5.26)
Girl	0.00	-0.00	-0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.02)
Age (months)	-0.32***	1.55***	0.18*	-0.37
	(0.05)	(0.24)	(0.10)	(0.31)
Mother smokes	-0.01	0.02	-0.07	-0.03
	(0.02)	(0.01)	(0.04)	(0.11)
SISFOH score (0-100)	-0.07**	0.07**	-0.21***	0.04
	(0.03)	(0.03)	(0.06)	(0.06)
Rural	0.03**	-0.01	0.03*	0.02
	(0.01)	(0.01)	(0.01)	(0.02)
Half-year FE	Yes	Yes	Yes	Yes
Mean (y) in pre-period	11.3	91.3	96.5	65.2
P-value F-test†	0.108	0.204	0.140	0.019
N observations	10,423	5,062	4,654	1,979
N clusters	25	25	25	25
R-squared within	0.018	0.050	0.043	0.017
R-squared between	0.011	0.092	0.120	0.064
R-squared overall	0.017	0.049	0.045	0.013

* p<0.10, ** p<0.05, *** p<0.01 OLS, s.e. clustered within IFH eligibility area. Fixed effects for IFH eligibility area. Excludes children in the 880 high-poverty districts. † F-test of joint significance of coefficients on interaction term Eligible × t, for t<0. (O) are subset to children older than 12 months at the time of the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included in the summary indices.

Table D.2.8: Potentially unaffected using half-year periods (percentage point changes)

	(1) First ANC visit within 3 months [any-where] (I)	(2) 3 or more ANC visits [any-where] (I)	(3) Iron during preg-nancy (I)	(4) Tetanus during preg-nancy (I)	(5) Delivery in a facility (I)	(6) Delivery in public facility	(7) Weighed at birth (I)	(8) Low birth weight (I)	(9) Mother received vitamin A within 2 months of delivery (I)	(10) Baby postnatal check within 2 months anywhere (I)	(11) Baby postnatal check within 2 months in public facility	(12) Record of full vacci-nation by 12 months (O, I)
Eligible × t-6	-2.39	-1.97	3.96*	-0.60	-1.68	-0.06	-0.26	2.83	1.55	-0.10	4.36*	-4.75*
	(2.94)	(2.80)	(2.06)	(3.29)	(1.73)	(2.24)	(1.55)	(2.06)	(1.69)	(1.07)	(2.15)	(2.62)
Eligible × t-5	-1.55	-0.16	2.14	-4.35	-1.85	-0.73	-1.86	-3.57***	2.39	-0.31	1.82	-2.76
	(2.54)	(2.33)	(2.09)	(3.86)	(2.17)	(2.46)	(1.55)	(1.10)	(2.18)	(1.00)	(2.40)	(2.19)
Eligible × t-4	-1.48	-1.80	2.86	-7.09**	-1.93	-1.06	-0.97	-0.90	2.11	0.01	0.22	-3.13
	(2.45)	(3.01)	(2.21)	(2.80)	(1.57)	(2.02)	(1.04)	(1.42)	(1.49)	(0.76)	(1.97)	(3.61)
Eligible × t-3	-1.38	-5.58**	-0.87	-3.13	-2.19	-1.36	-1.32	0.59	-2.37	-0.33	0.16	-5.03*
	(2.37)	(2.52)	(2.27)	(2.94)	(1.71)	(2.23)	(1.34)	(1.85)	(1.95)	(0.70)	(2.39)	(2.84)
Eligible × t-2	-2.93	0.10	1.70	-0.96	-1.31	1.06	-1.50	2.27	0.94	0.83	2.62	-2.53
	(2.33)	(1.85)	(2.41)	(2.47)	(2.10)	(2.15)	(1.16)	(1.57)	(2.07)	(0.84)	(2.49)	(2.45)
Eligible × First effective	-5.16**	-4.02	1.42	-5.25	0.55	2.95**	-0.51	-0.15	1.37	0.35	1.34	0.95
	(2.42)	(2.58)	(2.99)	(3.52)	(1.82)	(1.16)	(0.83)	(1.19)	(2.08)	(0.92)	(2.04)	(2.80)
Eligible × t+1	-0.57	-0.76	0.47	0.04	-1.30	-0.55	-0.55	-1.88	1.69	-0.60	0.04	-2.43
	(2.08)	(1.61)	(2.69)	(3.65)	(1.70)	(1.39)	(0.90)	(1.63)	(1.99)	(0.71)	(1.38)	(3.84)
Eligible × t+2	-2.18	-0.28	-2.85	1.71	-0.40	-0.45	0.84	0.16	1.00	0.18	0.01	-1.27
	(2.38)	(2.13)	(2.80)	(3.50)	(1.58)	(1.59)	(0.71)	(1.39)	(2.04)	(0.57)	(2.23)	(2.47)
Eligible × t+3	-0.10	0.41	-0.03	-0.98	-0.31	3.30*	0.64	-1.05	1.02	-0.43	3.83	-5.66**
	(1.76)	(2.41)	(2.28)	(3.62)	(1.34)	(1.89)	(1.06)	(0.85)	(1.27)	(0.67)	(2.30)	(2.54)
Eligible × t+4	-1.13	-2.88	0.20	-1.91	0.14	3.66**	0.19	-1.55	2.63	0.03	3.16*	-4.94**
	(2.10)	(2.53)	(1.95)	(3.07)	(1.50)	(1.40)	(0.82)	(1.30)	(2.23)	(0.50)	(1.66)	(2.15)
Eligible × t+5	1.69	-0.77	1.34	-0.94	0.58	4.83***	0.20	1.12	3.06	0.61	3.87**	-4.28
	(2.30)	(1.85)	(2.39)	(3.13)	(1.49)	(1.72)	(0.89)	(1.77)	(2.06)	(0.52)	(1.79)	(3.31)
Eligible × t+6	1.83	0.06	2.32	0.27	0.31	3.01*	-0.95	-0.43	0.24	-0.11	3.42	-10.16***
	(2.04)	(2.33)	(2.77)	(3.66)	(1.56)	(1.47)	(1.06)	(1.18)	(2.62)	(0.52)	(2.03)	(2.95)
Eligible × t+7	0.35	1.81	1.80	-4.98*	0.50	3.81**	0.66	-1.52	2.43	1.08*	3.96**	-2.91
	(2.40)	(1.56)	(2.13)	(2.61)	(2.04)	(1.52)	(1.08)	(1.47)	(2.18)	(0.62)	(1.68)	(5.09)
Eligible	2.25	0.79	0.20	2.93	2.59*	-0.49	1.43*	0.04	-0.02	0.08	-2.19	3.32
	(2.16)	(1.51)	(1.85)	(2.88)	(1.44)	(2.03)	(0.72)	(1.04)	(1.16)	(0.53)	(1.74)	(2.72)
Girl	0.00	0.00	0.01*	0.01	-0.00	-0.01*	0.00	0.01***	-0.00	0.00	-0.01*	0.00
	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
Age (months)	0.20***	-0.60***	0.03*	0.25***	0.00	0.03*	-0.02*	0.03***	0.05***	0.01**	0.03*	-0.10***
	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
Mother smokes	-0.02**	0.02*	-0.01	-0.02	-0.00	-0.03*	0.00	0.02**	0.03*	0.00	-0.04**	-0.07***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.00)	(0.01)	(0.02)	(0.00)	(0.01)	(0.01)
SISFOH score (0-100)	0.29***	0.10***	0.09***	-0.12**	0.17***	-0.17**	0.08***	-0.03*	-0.00	0.01***	-0.26***	0.01
	(0.03)	(0.02)	(0.02)	(0.06)	(0.03)	(0.06)	(0.01)	(0.02)	(0.02)	(0.00)	(0.05)	(0.03)
Rural	-0.06***	-0.04***	-0.01	0.03**	-0.12***	-0.05**	-0.05***	0.00	0.03***	-0.01***	0.02	-0.03*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)
Half-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean (y) in pre-period	78.5	81.0	86.1	65.7	92.8	86.1	97.0	5.8	10.4	98.9	89.5	35.5
P-value F-test†	0.806	0.170	0.387	0.085	0.759	0.716	0.591	0.004	0.106	0.812	0.258	0.271
N observations	26,064	30,096	26,324	26,324	29,851	29,851	30,096	29,273	26,322	26,324	25,918	25,559
N clusters	25	25	25	25	25	25	25	25	25	25	25	25
R-squared within	0.025	0.079	0.009	0.014	0.053	0.019	0.019	0.003	0.003	0.003	0.027	0.133
R-squared between	0.390	0.369	0.009	0.073	0.523	0.008	0.521	0.140	0.296	0.232	0.034	0.082
R-squared overall	0.024	0.079	0.007	0.019	0.077	0.012	0.027	0.003	0.005	0.005	0.019	0.131

* $p<0.10$, ** $p<0.05$, *** $p<0.01$ OLS, s.e. clustered within IFH eligibility area. Fixed effects for IFH eligibility area. Excludes children in the 880 high-poverty districts. † F-test of joint significance of coefficients on interaction term Eligible × t, for $t<0$. (O) are subset to children older than 12 months at the time of the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included in the summary indices.

Table D.2.9: Indices for infants using year periods (percentage point changes)

	(1) Index health outcomes	(2) Index potentially unaffected
Eligible × ID penetration in 2011 (%)	-0.03	0.05
	(0.13)	(0.05)
Eligible × ID penetration in 2012 (%)	0.01	0.08*
	(0.10)	(0.04)
Eligible × ID penetration in 2013 (%)	-0.09	0.12***
	(0.10)	(0.04)
Eligible × ID penetration in 2014 (%)	-0.14*	0.09***
	(0.07)	(0.03)
Eligible × Birth year=2008	-0.13	-0.80
	(2.28)	(0.61)
Eligible × Birth year=2009	-0.27	-1.32***
	(1.62)	(0.45)
Eligible × Birth year=2011	2.88	-3.99
	(10.58)	(3.72)
Eligible × Birth year=2012	0.25	-6.72*
	(7.44)	(3.26)
Eligible × Birth year=2013	6.52	-10.00***
	(8.01)	(2.86)
Eligible × Birth year=2014	11.97**	-8.26***
	(5.78)	(2.55)
ID penetration (%)	0.04	-0.01
	(0.04)	(0.02)
Eligible	-0.25	1.26**
	(1.31)	(0.57)
Girl	-0.03***	0.00*
	(0.00)	(0.00)
Age (months)	0.76***	0.03***
	(0.07)	(0.01)
Mother smokes	0.03*	-0.00
	(0.02)	(0.00)
SISFOH score (0-100)	-0.06***	0.03**
	(0.02)	(0.01)
Rural	0.01	-0.01**
	(0.01)	(0.00)
Year FE	Yes	Yes
Mean (y) in pre-period	14.5	66.9
P-value F-test†	0.984	0.023
N observations	4,930	20,958
N clusters	25	25
R-squared within	0.043	0.046
R-squared between	0.397	0.056
R-squared overall	0.049	0.042

* $p<0.10$, ** $p<0.05$, *** $p<0.01$ OLS, s.e. clustered within IFH eligibility area. Fixed effects for IFH eligibility area. Excludes children in the 880 high-poverty districts. † F-test of joint significance of coefficients on interaction term Eligible × t, for $t<0$. (O) are subset to children older than 12 months at the time of the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included in the summary indices.

Table D.2.10: Health outcomes for infants using year periods (percentage point changes)

	(1) Stunted (Y, I)	(2) Underweight (Y, I)	(3) Wasted (Y, I)	(4) Wasted (BMI) (Y)	(5) Severely stunted (Y)	(6) Severely under-weight (Y)	(7) Severely wasted (Y)	(8) Severely wasted (BMI) (Y)	(9) Anemic (Y)	(10) Had fever or cough in last 2 weeks (Y, I)	(11) Had diarrhea in last 2 weeks (Y, I)
Eligible × ID penetration in 2011 (%)	-0.01	-0.09	-0.01	0.02	-0.07	0.02	0.01	0.04	0.15	0.07	-0.14
	(0.18)	(0.17)	(0.04)	(0.05)	(0.08)	(0.05)	(0.01)	(0.03)	(0.26)	(0.34)	(0.24)
Eligible × ID penetration in 2012 (%)	0.12	-0.08	-0.06	-0.04	-0.07	0.01	0.01	0.03	-0.10	0.09	-0.00
	(0.15)	(0.10)	(0.06)	(0.06)	(0.04)	(0.04)	(0.01)	(0.03)	(0.37)	(0.40)	(0.23)
Eligible × ID penetration in 2013 (%)	-0.18	-0.16*	-0.04	-0.02	0.00	0.04	0.03	0.02	0.49*	0.17	-0.22
	(0.21)	(0.09)	(0.10)	(0.10)	(0.03)	(0.03)	(0.02)	(0.02)	(0.25)	(0.41)	(0.21)
Eligible × ID penetration in 2014 (%)	-0.20	-0.03	-0.05	-0.09	-0.08	-0.05	0.03	0.02	0.35	-0.20	-0.25
	(0.13)	(0.12)	(0.04)	(0.08)	(0.08)	(0.08)	(0.03)	(0.03)	(0.31)	(0.25)	(0.18)
Eligible × Birth year=2008	-2.67	-0.45	0.53	0.59	2.15	0.53	-0.23	-0.37	8.99	-2.87	6.44
	(3.36)	(1.54)	(1.47)	(1.46)	(1.26)	(1.12)	(0.53)	(0.72)	(6.24)	(8.37)	(4.22)
Eligible × Birth year=2009	2.92	-1.13	-1.17	-1.42	1.73	-0.48	-0.31	-0.40	0.29	-0.35	-2.06
	(3.34)	(1.57)	(0.88)	(0.88)	(1.83)	(0.86)	(0.48)	(0.78)	(5.53)	(5.97)	(4.01)
Eligible × Birth year=2011	2.09	8.03	0.93	-0.72	6.45	-1.18	-0.99	-2.86	-9.18	-7.88	12.25
	(14.72)	(13.09)	(2.95)	(4.51)	(6.42)	(3.68)	(1.11)	(2.10)	(19.29)	(26.95)	(19.28)
Eligible × Birth year=2012	-11.61	6.26	4.09	2.85	5.38	-1.00	-0.91	-2.30	10.30	-2.53	3.99
	(11.35)	(7.84)	(3.85)	(4.23)	(3.40)	(3.13)	(1.12)	(1.97)	(25.94)	(29.91)	(18.69)
Eligible × Birth year=2013	16.71	10.05	1.56	0.65	0.30	-2.90	-2.55*	-2.08	-29.92	-13.26	16.42
	(18.59)	(6.92)	(8.01)	(8.41)	(2.97)	(2.99)	(1.47)	(1.62)	(18.41)	(33.56)	(17.75)
Eligible × Birth year=2014	15.36	1.98	4.04	6.80	7.23	3.97	-1.55	-0.98	-19.86	16.09	23.12
	(10.89)	(9.52)	(3.27)	(6.90)	(6.38)	(6.56)	(2.15)	(2.39)	(27.30)	(20.01)	(15.25)
ID penetration (%)	0.06	0.04	0.02	0.01	0.05**	-0.01	-0.01	-0.00	-0.18	-0.00	0.09
	(0.08)	(0.04)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.14)	(0.13)	(0.09)
Eligible	-0.51	0.97	0.25	0.03	-0.82	0.12	-0.46	-0.25	-5.38	-0.95	-0.90
	(2.73)	(1.35)	(0.51)	(0.53)	(1.46)	(0.63)	(0.33)	(0.56)	(6.16)	(4.52)	(2.71)
Girl	-0.05***	-0.02***	-0.01***	-0.01**	-0.02***	-0.00*	-0.00*	-0.00	-0.05**	-0.03**	-0.02*
	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.02)	(0.01)	(0.01)
Age (months)	0.20	-0.29***	-0.21***	-0.24***	-0.06	-0.13***	-0.08***	-0.11***	0.39	2.74***	1.42***
	(0.15)	(0.09)	(0.05)	(0.04)	(0.06)	(0.04)	(0.03)	(0.03)	(0.49)	(0.16)	(0.13)
Mother smokes	0.05	0.01	-0.01***	-0.01***	0.02	-0.00	-0.00***	-0.00***	0.01	0.05	0.03
	(0.05)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.07)	(0.06)	(0.03)
SISFOH score (0-100)	-0.09***	-0.01	0.00	-0.00	-0.01	-0.00	-0.00	-0.00	-0.19**	-0.15**	-0.06
	(0.03)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.00)	(0.01)	(0.08)	(0.06)	(0.05)
Rural	0.04*	0.00	0.00	0.00	0.01*	0.00*	0.00	0.00	0.07***	0.00	0.02
	(0.02)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.02)	(0.02)	(0.02)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean (y) in pre-period	13.2	3.6	0.6	0.6	2.4	0.6	0.2	0.5	67.5	38.2	15.8
P-value F-test†	0.426	0.772	0.175	0.078	0.253	0.521	0.779	0.854	0.260	0.909	0.136
N observations	4,930	4,930	4,930	4,930	4,930	4,930	4,930	4,930	2,823	5,062	5,062
N clusters	25	25	25	25	25	25	25	25	25	25	25
R-squared within	0.018	0.008	0.010	0.009	0.009	0.006	0.006	0.006	0.025	0.044	0.026
R-squared between	0.333	0.724	0.038	0.153	0.023	0.465	0.025	0.022	0.185	0.022	0.425
R-squared overall	0.023	0.010	0.009	0.009	0.010	0.007	0.006	0.006	0.033	0.047	0.026

* p<0.10, ** p<0.05, *** p<0.01 OLS, s.e. clustered within IFH eligibility area. Fixed effects for IFH eligibility area. Excludes children in the 880 high-poverty districts. † F-test of joint significance of coefficients on interaction term Eligible × t, for t<0. (O) are subset to children older than 12 months at the time of the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included in the summary indices.

Table D.2.11: Potentially affected for infants using year periods (percentage point changes)

	(1) Child vitamin A in last 6 months	(2) Child growth and develop-ment visit in last 6 months (Y)	(3) Child growth visit in last 6 months in public facility (Y)	(4) Treatment for fever or cough at any facility (Y)
Eligible × ID penetration in 2011 (%)	0.29*	-0.34**	0.12	0.74
	(0.15)	(0.15)	(0.18)	(0.53)
Eligible × ID penetration in 2012 (%)	0.16**	-0.23	0.10	0.12
	(0.06)	(0.16)	(0.12)	(0.30)
Eligible × ID penetration in 2013 (%)	0.08	-0.10	0.48*	-0.03
	(0.15)	(0.15)	(0.27)	(0.28)
Eligible × ID penetration in 2014 (%)	0.04	-0.01	0.16	0.36
	(0.25)	(0.13)	(0.15)	(0.33)
Eligible × Birth year=2008	-3.56**	3.51	3.20*	-6.29
	(1.64)	(2.42)	(1.81)	(8.00)
Eligible × Birth year=2009	1.44	1.47	-1.89	3.21
	(3.16)	(2.81)	(1.16)	(5.52)
Eligible × Birth year=2011	-21.19*	33.55***	-8.56	-62.10
	(10.52)	(10.65)	(12.62)	(39.46)
Eligible × Birth year=2012	-13.83***	17.89*	-4.84	-14.71
	(4.58)	(10.25)	(8.13)	(23.18)
Eligible × Birth year=2013	-5.74	9.68	-35.56*	3.42
	(12.80)	(11.72)	(19.85)	(24.28)
Eligible × Birth year=2014	-4.20	4.23	-11.86	-25.38
	(20.30)	(10.61)	(11.05)	(26.46)
ID penetration (%)	-0.10*	-0.01	-0.10	0.23*
	(0.05)	(0.06)	(0.08)	(0.12)
Eligible	-0.83	-2.78	-2.40	-3.16
	(2.03)	(3.21)	(1.72)	(5.35)
Girl	0.00	-0.00	-0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.02)
Age (months)	-0.32***	1.53***	0.17*	-0.30
	(0.05)	(0.22)	(0.10)	(0.29)
Mother smokes	-0.01	0.02	-0.06	-0.03
	(0.02)	(0.02)	(0.04)	(0.11)
SISFOH score (0-100)	-0.07**	0.08**	-0.21***	0.03
	(0.03)	(0.03)	(0.06)	(0.06)
Rural	0.02*	-0.01	0.03*	0.04
	(0.01)	(0.01)	(0.01)	(0.03)
Year FE	Yes	Yes	Yes	Yes
Mean (y) in pre-period	11.2	90.7	96.4	67.6
P-value F-test†	0.048	0.363	0.099	0.521
N observations	10,423	5,062	4,654	1,979
N clusters	25	25	25	25
R-squared within	0.019	0.049	0.044	0.011
R-squared between	0.002	0.046	0.112	0.373
R-squared overall	0.017	0.048	0.046	0.014

* $p<0.10$, ** $p<0.05$, *** $p<0.01$ OLS, s.e. clustered within IFH eligibility area. Fixed effects for IFH eligibility area. Excludes children in the 880 high-poverty districts. † F-test of joint significance of coefficients on interaction term Eligible × t, for t<0. (O) are subset to children older than 12 months at the time of the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included in the summary indices.

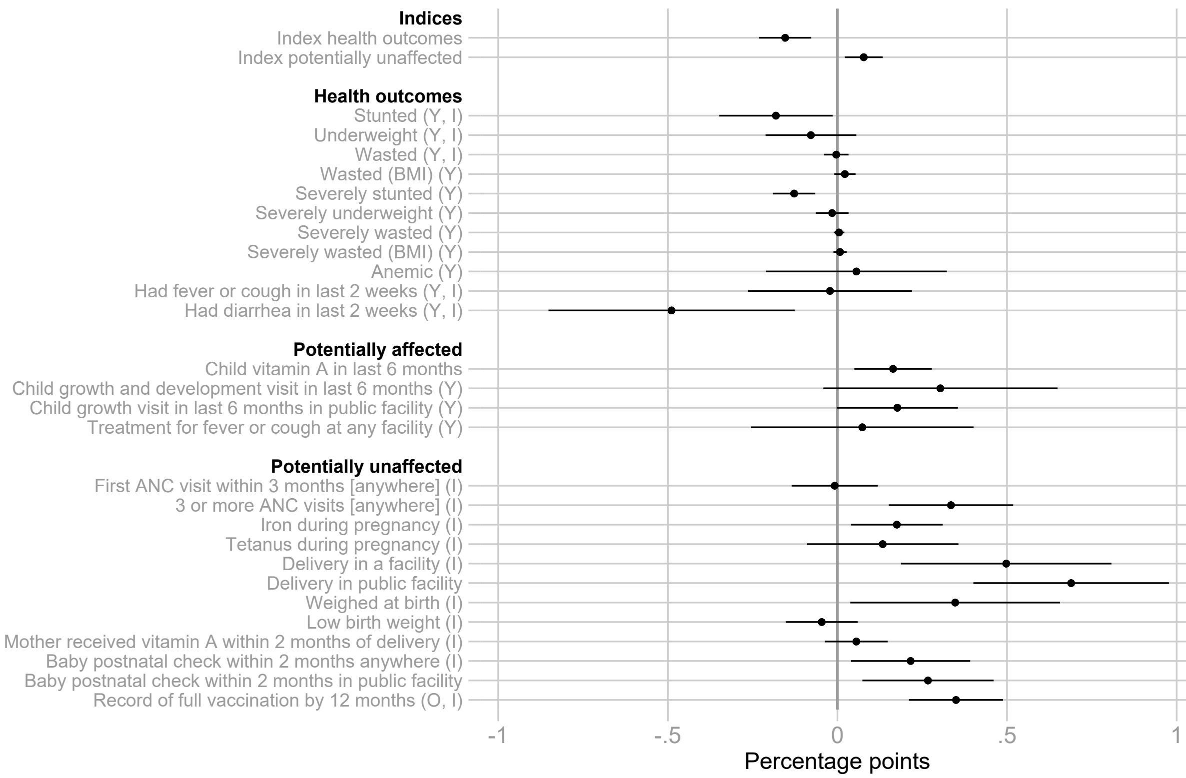
Table D.2.12: Potentially unaffected for infants using year periods (percentage point changes)

	(1) First ANC visit within 3 months [anywhere] (I)	(2) 3 or more ANC visits [anywhere] (I)	(3) Iron during pregnancy (I)	(4) Tetanus during pregnancy (I)	(5) Delivery in a facility (I)	(6) Delivery in public facility	(7) Weighed at birth (I)	(8) Low birth weight (I)	(9) Mother received vitamin A within 2 months of delivery (I)	(10) Baby postnatal check within 2 months anywhere (I)	(11) Baby postnatal check within 2 months in public facility	(12) Record of full vaccination by 12 months (O, I)
Eligible × ID penetration in 2011 (%)	0.04	0.28***	0.20	0.12	0.20	0.38**	0.06	-0.11	0.11	-0.03	0.24*	0.20
	(0.13)	(0.09)	(0.16)	(0.23)	(0.12)	(0.14)	(0.09)	(0.10)	(0.11)	(0.02)	(0.13)	(0.15)
Eligible × ID penetration in 2012 (%)	0.00	0.03	-0.15*	0.12	0.14	0.25	-0.10**	-0.06	0.05	0.04	0.11	0.19
	(0.15)	(0.08)	(0.09)	(0.08)	(0.14)	(0.16)	(0.04)	(0.08)	(0.12)	(0.04)	(0.12)	(0.13)
Eligible × ID penetration in 2013 (%)	0.04	-0.05	0.16	0.38**	0.06	0.34*	-0.06	0.02	0.20	0.07	0.30*	0.54***
	(0.24)	(0.08)	(0.12)	(0.17)	(0.15)	(0.17)	(0.05)	(0.09)	(0.13)	(0.05)	(0.17)	(0.10)
Eligible × ID penetration in 2014 (%)	0.03	0.05	0.09	0.13	0.05	0.34**	0.12	0.10	-0.08	0.05	0.29*	0.43**
	(0.11)	(0.07)	(0.10)	(0.16)	(0.09)	(0.15)	(0.09)	(0.07)	(0.10)	(0.05)	(0.17)	(0.20)
Eligible × Birth year=2008	-0.55	-1.04	2.11	-2.25	-1.22	-0.98	-0.46	-1.68	1.54	-0.60	1.68	-1.35
	(1.70)	(1.50)	(1.38)	(2.17)	(1.30)	(1.35)	(1.02)	(1.38)	(1.46)	(0.84)	(1.28)	(1.53)
Eligible × Birth year=2009	-0.09	-3.70*	0.14	-4.83**	-1.45	-1.68	-0.46	-1.21	-0.58	-0.53	-1.03	-1.29
	(2.32)	(2.09)	(1.45)	(1.74)	(1.19)	(1.48)	(0.72)	(1.25)	(0.85)	(0.52)	(1.34)	(2.23)
Eligible × Birth year=2011	-4.85	-23.53***	-15.18	-11.04	-14.88	-27.67**	-4.12	6.21	-7.01	1.80	-17.94*	-13.74
	(10.78)	(7.08)	(12.83)	(17.25)	(9.00)	(10.35)	(6.56)	(7.37)	(7.98)	(1.85)	(9.98)	(12.30)
Eligible × Birth year=2012	-0.13	-2.18	9.06	-8.30	-10.08	-17.68	8.87***	2.80	-3.50	-3.37	-7.48	-15.56
	(11.82)	(7.04)	(6.42)	(6.28)	(10.33)	(12.15)	(2.97)	(6.11)	(9.18)	(2.94)	(7.99)	(10.28)
Eligible × Birth year=2013	-1.97	2.45	-13.00	-30.64**	-3.95	-22.34*	5.79	-3.01	-13.11	-5.93	-21.29	-44.40***
	(19.59)	(6.90)	(9.77)	(13.46)	(11.75)	(12.57)	(4.27)	(7.02)	(10.12)	(4.56)	(12.80)	(8.63)
Eligible × Birth year=2014	0.41	-3.32	-6.20	-12.06	-3.23	-23.92*	-9.13	-9.79	7.25	-3.90	-21.16	-39.39**
	(9.03)	(5.80)	(8.48)	(12.44)	(7.67)	(11.90)	(7.38)	(5.77)	(9.13)	(4.01)	(13.00)	(15.35)
ID penetration (%)	0.04	-0.07*	0.02	0.03	-0.12**	-0.20**	-0.01	0.01	0.06	-0.01	-0.12**	-0.04
	(0.04)	(0.04)	(0.05)	(0.07)	(0.06)	(0.08)	(0.04)	(0.03)	(0.06)	(0.01)	(0.06)	(0.07)
Eligible	0.96	0.69	1.03	2.53	1.80	-0.39	0.73	1.08	0.51	0.43	-1.22	0.65
	(2.24)	(1.31)	(1.25)	(2.52)	(1.12)	(2.01)	(0.70)	(0.73)	(0.95)	(0.43)	(1.64)	(1.98)
Girl	0.00	0.00	0.01**	0.01	-0.00	-0.01*	0.00	0.01***	-0.00	0.00*	-0.01*	0.00
	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
Age (months)	0.20***	-0.60***	0.03**	0.25***	0.00	0.03*	-0.02**	0.03***	0.05***	0.01**	0.03*	-0.09***
	(0.02)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
Mother smokes	-0.02**	0.02*	-0.01	-0.02	-0.00	-0.03*	0.00	0.02**	0.03*	0.00	-0.04**	-0.07***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.00)	(0.01)	(0.02)	(0.00)	(0.01)	(0.01)
SISFOH score (0-100)	0.29***	0.10***	0.09***	-0.12**	0.17***	-0.17**	0.08***	-0.03*	-0.00	0.01***	-0.27***	-0.00
	(0.03)	(0.02)	(0.02)	(0.06)	(0.03)	(0.06)	(0.01)	(0.02)	(0.02)	(0.00)	(0.05)	(0.03)
Rural	-0.05***	-0.04***	-0.01	0.04**	-0.13***	-0.07***	-0.05***	0.00	0.03***	-0.01***	0.01	-0.03*
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean (y) in pre-period	78.2	82.0	87.1	66.5	92.2	85.5	96.8	5.7	11.3	98.6	89.2	21.3
P-value F-test†	0.935	0.170	0.321	0.026	0.415	0.523	0.800	0.458	0.415	0.581	0.147	0.667
N observations	26,064	30,096	26,324	26,324	29,851	29,851	30,096	29,273	26,322	26,324	25,918	25,559
N clusters	25	25	25	25	25	25	25	25	25	25	25	25
R-squared within	0.025	0.079	0.009	0.013	0.054	0.020	0.019	0.002	0.003	0.003	0.028	0.109
R-squared between	0.394	0.373	0.019	0.011	0.525	0.000	0.534	0.158	0.515	0.235	0.049	0.192
R-squared overall	0.024	0.079	0.007	0.017	0.077	0.015	0.027	0.002	0.005	0.005	0.020	0.108

* p<0.10, ** p<0.05, *** p<0.01 OLS, s.e. clustered within IFH eligibility area. Fixed effects for IFH eligibility area. Excludes children in the 880 high-poverty districts. † F-test of joint significance of coefficients on interaction term Eligible × t, for t<0. (O) are subset to children older than 12 months at the time of the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included in the summary indices.

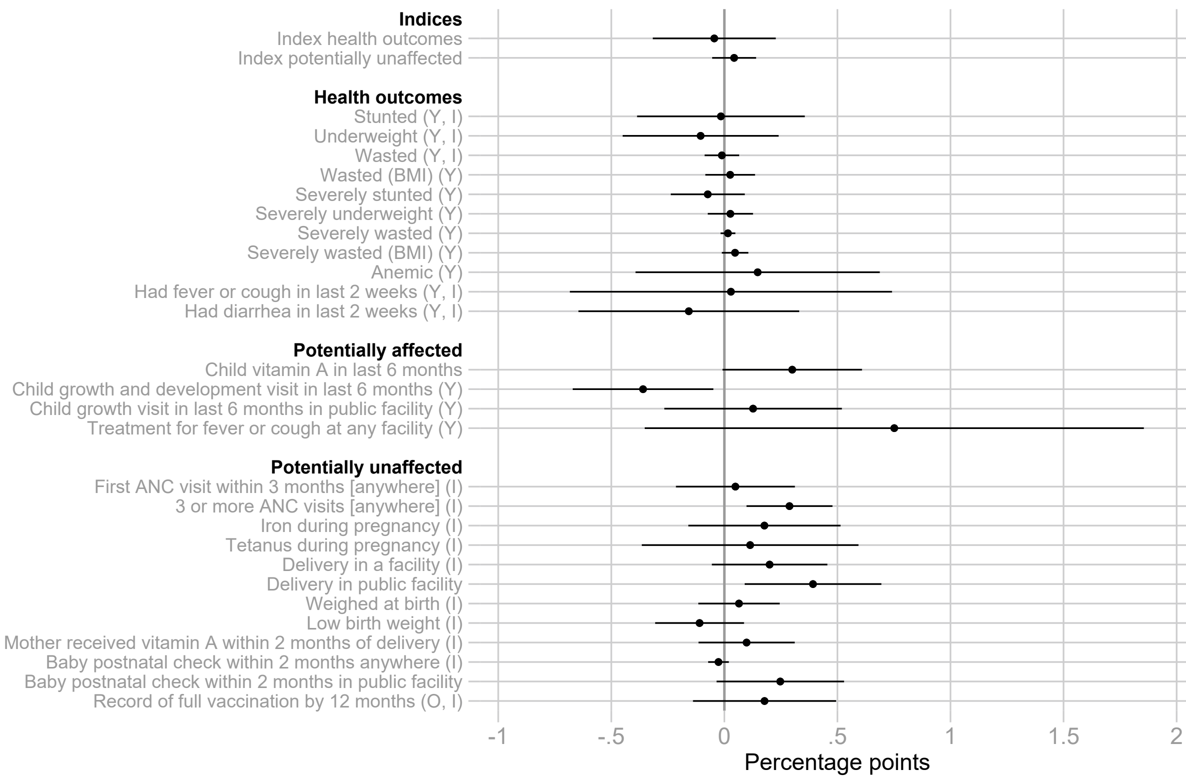
D.3 Alternative samples

Figure D.3.1: Estimated effects of a percentage-point increase in the DNI penetration in first year (eligible vs ineligible children) - sample including the 880 high-poverty district



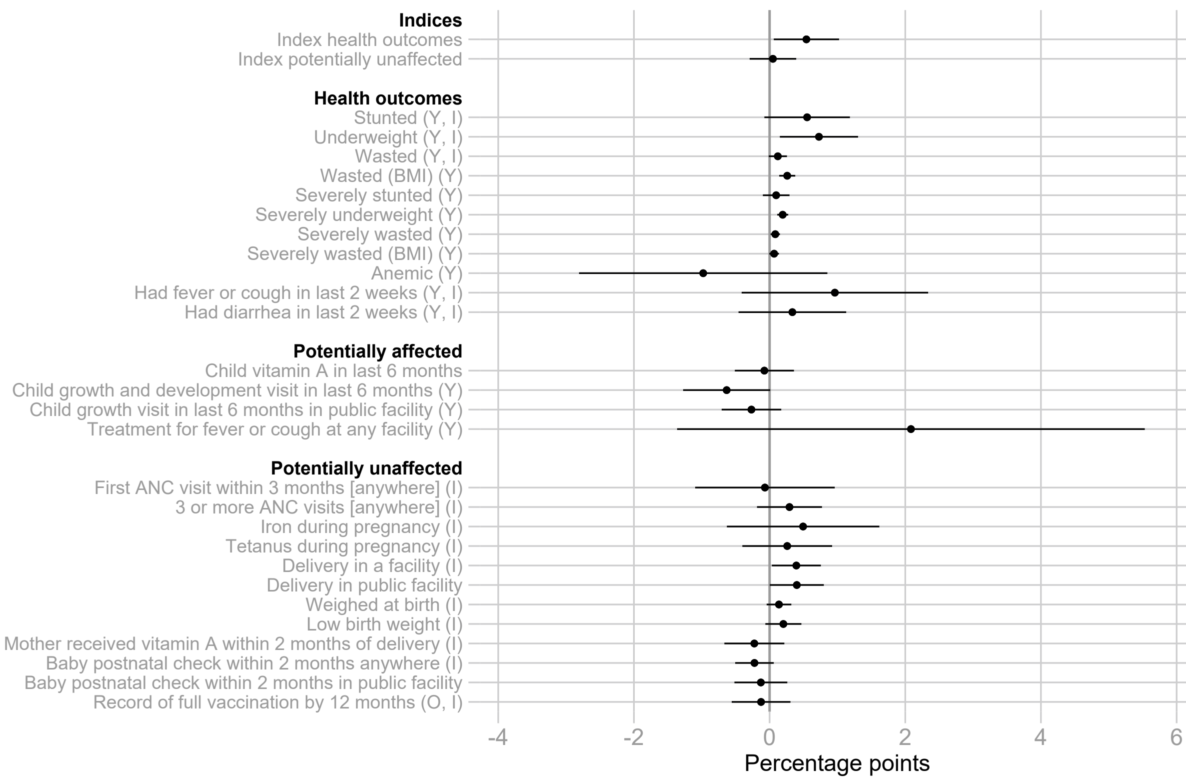
Coefficients and 95% confidence intervals of interaction term $Eligible \times Period$ for 2011, the period immediately after the ID requirement became effective. Results from separate OLS regressions. (O) are subset to children older than 12 months at the time f the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included n the summary indices.

Figure D.3.2: Estimated effects of a percentage-point increase in the DNI penetration in first year (eligible vs ineligible children) - sample excluding data from five departments after they introduced capitation payments



Coefficients and 95% confidence intervals of interaction term $Eligible \times Period$ for 2011, the period immediately after the ID requirement became effective. Results from separate OLS regressions. (O) are subset to children older than 12 months at the time f the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included n the summary indices.

Figure D.3.3: Estimated effects of a percentage-point increase in the DNI penetration in first year (eligible vs ineligible children) - sample with only rural areas



Coefficients and 95% confidence intervals of interaction term $Eligible \times Period$ for 2011, the period immediately after the ID requirement became effective. Results from separate OLS regressions. (O) are subset to children older than 12 months at the time f the interview. (Y) are subset to children who were infants (12 months or younger) at the time of the interview. (I) indicates variables included n the summary indices.