The Impact of Public Hospital Availability in Underdeveloped Areas on Medical Care Utilization and Household Health Expenditures

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Abstract

Limited physical access to facility health care contributes to inadequate medical care in developing countries. Filling the supply gap, the Indonesian government built limited-resource hospitals in poor areas. This paper examines the impact of the existence of those hospitals on medical care utilization and household health expenditures. Difference-in-differences and matching-difference-in-differences methodologies were used in exploiting timing implementations of mobile hospital establishments. To do so, I utilize variables about hospital location and travel distance from many different sources. I find the existence of public hospitals more likely increases outpatient and inpatient in public hospitals, as well as household health expenditures. Also, I find only areas in which new hospitals are located closer than existing hospitals or more transportation alternatives benefit from the intervention. These results suggest that not only broadly expanding facility health centers but also improving infrastructures in poor areas are critical for improving access to health care.

Keywords: Development, Health, Welfare, Government, Hospital.

JEL Classification: O12, I15. This draft: October 2017

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1. Introduction

Limited physical access to health care is a major factor contributing to the poor health of populations in developing countries (Perry & Gesler, 2000). Furthermore, inequality of development between city and rural areas creates an additional burden for people who live in the countryside. Tough topography or remote regions hamper individuals' access to medical care, and these factors also contribute to a lack of health centers. The Indonesian government has introduced limited resource hospitals, named mobile hospitals, for underdeveloped municipalities, outer islands, and shared state border cities.

A mobile hospital is a hospital with a non-permanent structure (such as combined containers) and limited land area (around 2,500 m^2). However, it provides all medical care required including outpatient, inpatient, midwifery, and emergency. It was a substantial policy intervention because there were neither public nor private hospitals in areas that are far from any other place and lack transportation. The purpose of this paper is to estimate the causal effect of government-provided hospitals on medical care utilization and household health expenditures by exploiting mobile hospital development over time in Indonesia.

This government policy creates a differential impact on families living in one area and families residing in other regions over time. Access to the hospital would lower the effective price (regarding time and traveling cost) of medical care utilization and reduce delays in getting medical care. On the other hand, severe topography and lack transportation would hamper individual access to newly-built hospitals. So, the impact depends on the hospital location, whether it is reachable by the society in an area and relative distance compared to an existing hospital in neighboring cities. Also, it may either increase or decrease household health expenditures. Improving access to health care facilities can enhance medical care utilization, thus increasing household health expenditures. On the other hand, closer health facilities may reduce transportation cost, thus decreasing family health expenses. Substitution or complement effects between health centers may either increase or decrease household health expenditures Therefore, the impact on health expenditures depends on whether the reduction in transportation cost outweighs the increase in medical care cost due to higher medical care utilization, also substitution/complement effect between health center. Furthermore, improvement in access to health care utilization may translate into better health outcomes.

Despite the importance of access to health facilities, there are scant studies in developing countries. Well-designed transportation systems in urban areas may cause inconclusive evidence in developed countries because additional health facilities may not substantially decrease travel time (Carpenter, Morrow, Del Gaudio, & Ritzler, 1981; McGuirk & Porell, 1984; Mooney, Zwanziger, Phibbs, & Schmitt, 2000). Even though medical care utilization significantly correlates with distance in developing countries (Ayeni, Rushton, & McNulty, 1987; Stock, 1983; Tanser, Gijsbertsen, & Herbst, 2006), those areas are mostly covered by land. Indonesia has unique geographic characteristics that differ from countries in previous studies. For example, Indonesia consists of thousands of separate islands, even within the same municipalities. It creates an additional burden to access primary health centers since no ground transportation is available to travel to other islands.

This study contributes a valuable resource for policymakers in assessing the impact of public expenditures for rural development in developing countries. To my knowledge, this is the first study the impact of public hospital availability in Indonesia. Our solution to the problem of lack of health facilities in developing countries is to exploit a quasi-experimental intervention of government spending on public hospitals. I applied difference-in-differences (DID) and matching-DID methods with areas that constructed mobile hospitals as a treatment group and municipalities that did not have any hospitals as a control group. Also, variables such as hospital location and travel distance were collected from many different sources, including Google Developers. This information enables us to understand who benefits and who does not benefit from the intervention within the same municipality by comparing travel distance to new hospitals and existing hospitals.

I compared the evolution of medical care utilization at the individual level between the treatment and control units by policy interventions. I used large representative data from Indonesian Household Surveys (*SUSENAS*) that covers underdeveloped or remote areas. Indonesian government built more than 80 percent of the overall mobile hospitals in Indonesia between 2008 and 2012. I estimated the impact of mobile hospital establishment in 2008 since it was the first large wave in building mobile hospitals.

I find that the establishment of mobile hospitals more likely increases outpatient use by more than 1.2 percentage points, corresponding to more than a 40 percent increase from the pre-intervention period. Furthermore, it more likely increases inpatient by 0.2 percentage points, corresponding to more than a 33 percent increase from the pre-intervention period. Interestingly, our results suggest enormous impact for areas that are located in main islands, but I find no evidence for outer islands. Also, only regions with new hospitals located closer than existing hospitals benefit from the intervention. Our results are robust to many specifications. The findings support the notion that healthcare facilities are an essential factor that contributes to access to medical care utilization. Moreover, there may be another policy required in addition to public hospital construction in outer islands, such as infrastructure construction to connect those islands.

The paper is organized as follows. Section 2 reviews the relevant literature on the impact of health facilities. Sections 3 and 4 describe the history of the mobile hospital in Indonesia and data sources. Section 5 discusses identification strategies. In section 6 I apply those methods to mobile hospital availability, robustness and placebo tests. Section 7 concludes.

2. Review of the relevant previous literature

2.1. The impact of physical distance of health facilities

Research on the physical distance of human activities and economic outcomes mostly comes from environmental and resource studies, namely distance-decay approaches. It shows how population characteristics or the demand for a particular good may differ when physical distance increases. For instance, biodiversity studies use distance-decay approaches to explain how the similarity between two communities varies with the geographic distance that separates them. Transportation demand studies evaluate the performance of the transportation network and travel patterns and their effects on medical care facilities (Bashshur, Shannon, & Metzner, 1971; Martínez & Viegas, 2013; Morlon et al., 2008).

A basic distance-decay model assumes interaction intensity of population with health facilities as a function of physical distance:

$$I_j = f(d_j) \tag{1}$$

$$d_j = [\left(x_j - x_i\right)^2 + (y_j - y_i)^2\ ]^{1/2} \tag{2}$$

where I_j is some measure of interaction intensity, f(.) is monotonically decreasing function of distance, and d_j is some measure of distance measured as direct lines from the coordinate (x_j,y_j) location j of each residence to the coordinate (x_i,y_i) location of medical facility i (Bashshur et al., 1971; Taylor, 1971). Equation (2) of the basic distance-decay model assumes distance as a straight line measured from point A to point B. However, a distance from one point to another point may not be a straight line. For example, the travel distance from house A to hospital B follows roads or rivers instead of straight-line distance. Moreover, people who live in mountainous areas may have to use spiral-shaped streets to reach a hospital that is located down the mountain. It creates a significant difference between straight-line distance and travel distance.

Varieties of this model develop some specifications and control factors that affect both distance and outcomes. Two most-often-used specification developments are an exponential model and a gravity model. Exponential models treat f(.) as the exponential of distance, and gravity models normalize range with all intervening hospital ranges around a neighborhood (De Vries, Nijkamp, & Rietveld, 2004; McGuirk & Porell, 1984; Morlon et al., 2008; Roghmann & Zastowny, 1979; Stock, 1983).

Many factors confounded the impact of physical distance of the hospital. People are more likely to travel to a different level of services, such as a general or a specializing health facility, and larger hospitals are perceived to be higher quality. Socio-demographic characteristics such as income, gender, age, and culture may create a differential impact of distance on utilization. For instance, adults are more likely to travel farther than children. There also may be cultural restrictions in society related to distance. Season and type of illnesses have different utilization patterns. For example, rainy seasons are more likely to generate more flu diseases, and some populations may be inclined to go to a traditional healer for fractured bones. Other important factors affecting both distance and health facility choices include the existence of intervening hospitals and physicians in the neighborhood; more hospitals give more opportunities for medical care utilization (McGuirk & Porell, 1984; Stock, 1983).

2.2. The impact on medical care utilization

Improving access to medical care utilization will lower the effective price of health care, thus increasing its use (Dafny & Gruber, 2005). However, empirical evidence shows inconclusive evidence about whether physical access affects health facility utilization choices and medical care utilization. There are two principal directions of empirical research studies that examine the impact of hospital physical distance on medical care utilization, rural and urban areas.

Empirical studies examining the effects of physical access to a hospital for medical care utilization in cities have found inconclusive evidence, whereas one study in a Allegheny county, Pennsylvania found that significant distance and time factors strongly influence hospital choices that vary by service and hospital (McGuirk & Porell, 1984). On the other hand, other studies showed no significant differences in hospital or clinic choice pattern services based on the distance from Rochester, New York and the greater Cleveland area (Bashshur et al., 1971; Carpenter et al., 1981). These instances of mixed evidence may be related to well-developed transportation systems in urban areas. Increasing physical distance in a metropolitan area may only slightly increase travel time due to reliable transportation systems.

Empirical evidence in the countryside has mostly come from developing countries. Empirical studies in Kano State, Nigeria, and Kwa-Zulu Natal, South Africa, found that utilization per capita declined with distance or travel time (Tanser et al., 2006). Another study in rural areas in Nigeria revealed that new facilities have increased the use of maternal and child health centers. However, current location of health facilities could be improved which population could have been more accessible to the centers (Ayeni, Rushton, & McNulty, 1987; Stock, 1983).

I introduce substitution or complementary effect between health facilities. The idea is that reducing the effective price of one provider may reduce utilization of another provider. This substitution effect could create a different impact on health outcomes if there are differences in quality across providers. For example, closer distance to the public hospital might mean that an individual visits a primary-care physician instead of traditional healer, since doctors are more likely to refer the person to a hospital if they need further advanced treatment. A closer distance to the public hospital may substitute similar medical care utilization on the private hospital, and vice versa since they provide similar services. The existence of a health facility could have a complementary impact if nearby facilities have similar objectives and supporting activities. For example, public hospitals in Indonesia use a referral from public health care before someone could visit a hospital, except for some urgent medical care such as an emergency.

Furthermore, increasing the accessibility of medical care may increase *ex-ante* moral hazards by people not taking preventive uses such as immunizations and routine check-up. Also, reducing the effective price of medical care would discourage self-protection because of decreased financial losses associated with illness (Barbaresco et al., 2015; Ehrlich & Becker, 1972). Therefore, hospital availability may increase or decrease the utilization of medical care from different medical care utilization channels.

3. History of mobile hospitals in Indonesia

The Indonesian government-provided limited medical facility hospital started in 2005 when a new government regime prioritized developing poor areas and remote islands by issuing Presidential Decree No. 78 about outer islands management. The Ministry of Health spelled out this mandate that requires cooperation between central and local governments to build hospitals, issuing regulations about field and mobile hospitals in underdeveloped municipalities and/or on remote islands. They started to build one field hospital in 2004 and 2005, then established two in 2006. Ten mobile hospitals were constructed in 2008 and nine in 2012. Modern mobile hospitals have better medical facilities than those built years ago. While the field hospital may be built by using tents in the temporary location, the mobile hospital can be constructed using bricks or mixed containers.

The mobile hospital is a hospital in a non-permanent building with limited land area. For example, a mobile hospital can be made using mixed containers covering less than 2,500 m^2. Although it was created with limited resources, it gives all required medical care services, including outpatient, inpatient, midwifery, and emergency. The central government constructed the hospital and covered all operating costs in the first year, reducing its support gradually over time as local authorities started financing this hospital from that point on.

To support a mobile hospital operation, cooperation between central and local governments was necessary to provide at least three general practitioners and two specialists in the hospital. Using another regulation, the Ministry of Health mandated each newly graduated doctor to dedicate their time for a particular period, one or two years, in remote places. They also gave additional monetary incentives for physicians who worked at those places, both for mandated physicians and doctors voluntarily working at those remote sites.

The Ministry of Health together with the local government developed eligibility criteria from the Ministry of Underdeveloped Areas for building mobile hospitals based on geography, accessibility, social, economic, culture, health, and budget priorities. One obvious eligible criterion was that a municipality must not have a single hospital. They defined remote areas as a zone located in inland areas, mountainous regions, small outer islands, and/or a shared international border region. Furthermore, they identified underdeveloped areas as those with less developed sectors nationally in their social, economic, culture, and health conditions. Therefore, we would expect these targeted areas would more likely have high-risk people and less transportation compared to non-targeted areas.

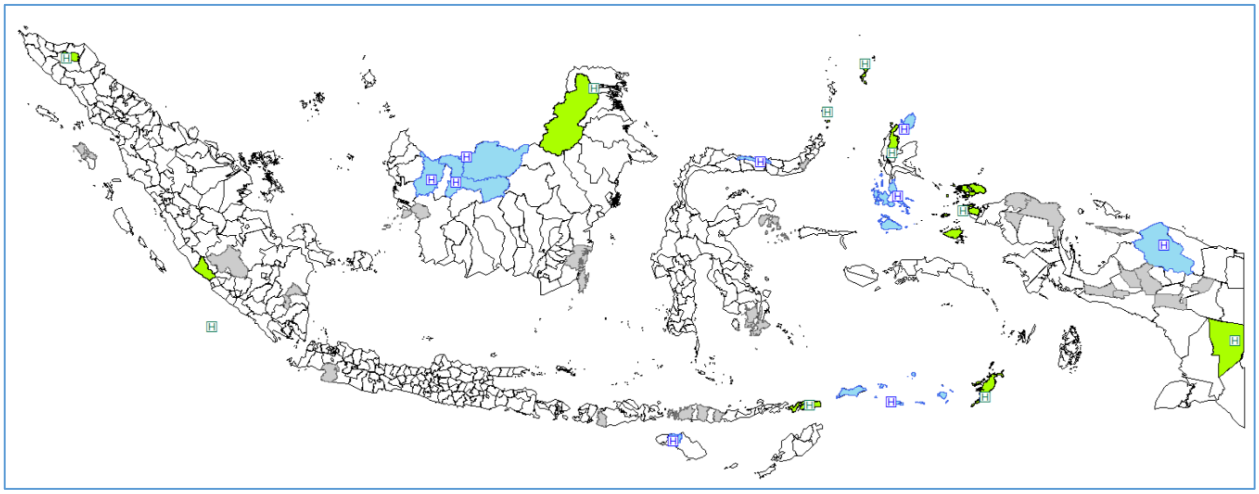


Figure 1. Mobile Hospital Map

Figure 1 provides the mobile hospital map across Indonesia. The green shaded areas with green "H" signs are municipalities where mobile hospitals were built in 2008. The blue shaded with blue "H" signs are municipalities where mobile hospitals were constructed in 2012. The grey patterns without any "H" signs are municipalities which have no hospital as of 2014. The figure suggests that hospitals have been built both in the west and east regions, but they were not made on Java Island. Hospitals were built not only inside the main five big islands but also in the outer and isolated regions. However, mobile hospitals only reached the east region in 2012. The west region is more developed than the east region in infrastructure and economy on average. For example, the Indonesian capital city, Jakarta, is located on the island of Java (in the western part of Indonesia). So, different level of economic and infrastructure development between those two regions may be one possible reason why mobile hospitals were only built in the east region in 2012.

Different geographical characteristics between the main islands and outer islands are other relevant facts to consider. People who live on the main islands could have more choices of transportation mode compared to people who live on the outer islands. For example, while people on the main islands could either use ground transportation, water transportation or just walk to nearest hospitals, people on the outer islands must use either ferry or private boat to reach hospitals in the neighboring islands, even within the same municipality.

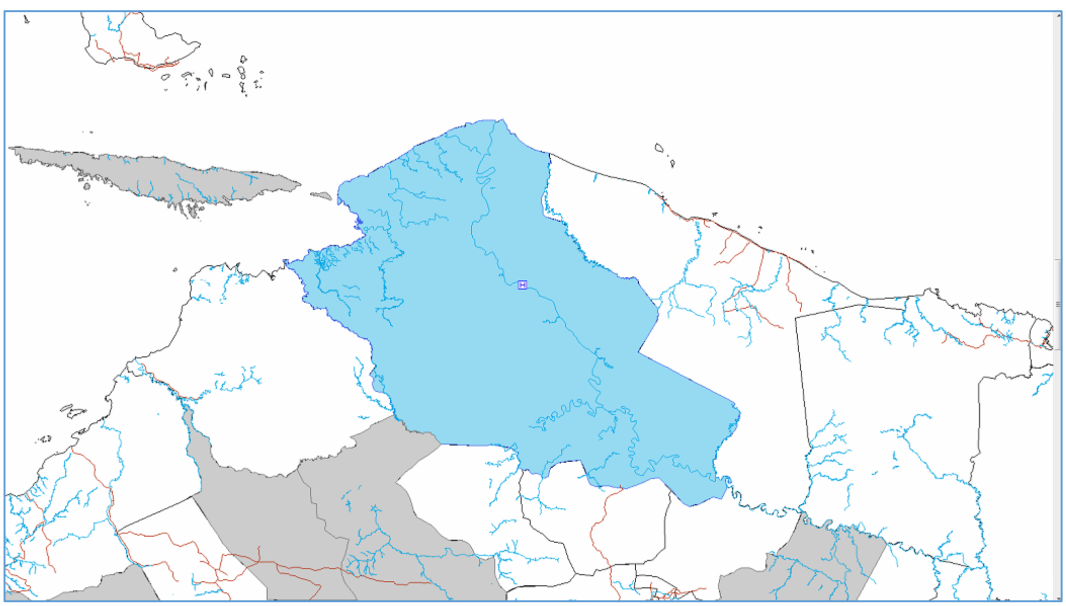


Figure 2. A municipality on a main island (Papua Island)

Figures 2 and 3 provide example areas in main islands and outer islands. The blue shaded area in Figure 2 is a municipality on a main island, Mamberamo Raya. Water transportation is the primary transportation mode in this area. People in this area could use either water transportation or ground transportation for limited distance, or simply walk to the nearby hospital.

Figure 3. A municipality on an outer island (Alor)

Figure 3 shows two islands within the same district, Alor. People on one island must use either a ferry or private boat to reach their nearest hospital on a neighboring island because a sea isolates those islands. In addition, people who live on outer islands could have much longer travel time to reach nearby islands because of using a ferry or other water transportation. For example, travel from Sulawesi Island (main island) to Talaud Islands (outer islands) might take ten hours using a ferry. Additionally, water transportation may not be available all of the time. A ferry transportation may be available only once or twice a week and a private boat only once or twice a day, depending on travel locations. Therefore, people who live on outer islands have more burden to reach both nearby existing hospitals and newly-constructed mobile hospitals.

4. Data

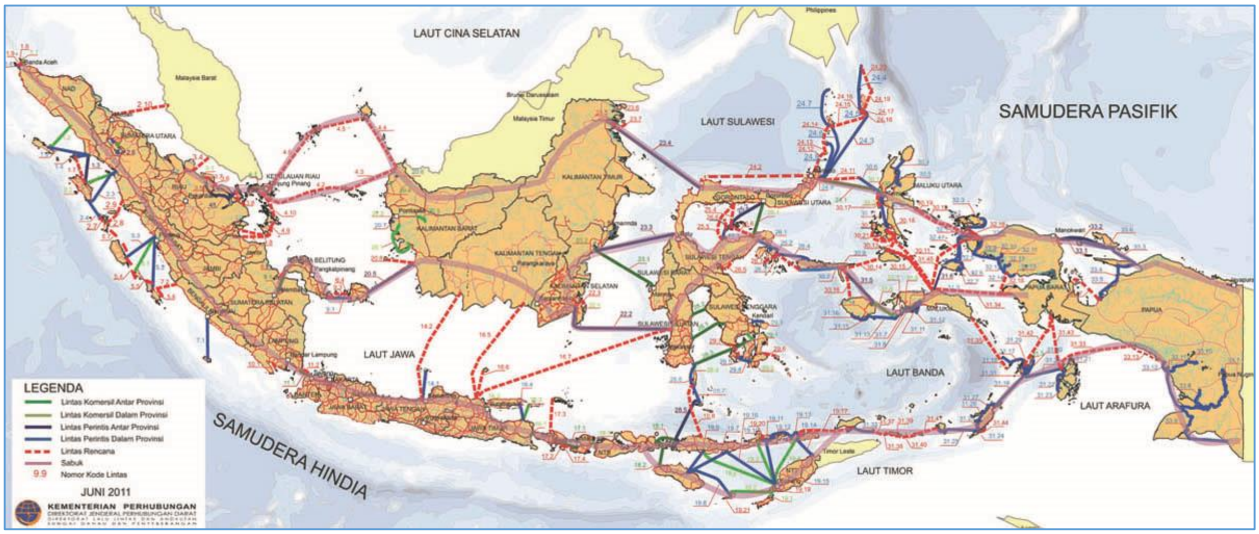
I employed eight waves' repeated cross-section data sets from the Indonesia National Socioeconomic Survey (*SUSENAS*), periods 2004-2007 and 2009-2011. I excluded 2008 because of the mobile hospital regulation effective as of October 2008. Thus, an individual may or may not be treated depending on when they were interviewed during that year. *SUSENAS* removed sub-district identifiers since 2012. Sub-district identifiers are required to merge with travel distance data on our primary analysis. Therefore, I included 2012-2014 for robustness purposes without utilize travel distance.

SUSENAS is a series of restricted large-scale multi-purpose socioeconomic surveys initiated in 1963-1964 and fielded every year or two since then. Since 1993, *SUSENAS* has collected household and individual data across all provinces in Indonesia, including underdeveloped or remote areas. Each survey contains a core questionnaire that consists of roster household characteristic, healthcare and educational attainment, and labor force experience. SUSENAS conducts a quarterly survey that is stacked into yearly data sets; it samples around 75,000 households on average for each study period: March, June, September, and December. Therefore, it typically includes 200,000 to 300,000 families in one-year data sets.

Since *SUSENAS* does not have hospital information, I complemented this dataset by scraping Hospital Information System (SIRS) data from the Indonesian Ministry of Health website. This dataset covers all hospitals in Indonesia and provides detailed hospital characteristics such as the number of beds, number of general practitioners and specialists, hospital equipment, hospital address and municipality, and hospital establishment or extension regulation.

I utilized Google Developers and Facebook to obtain hospital geographic coordinate information from the information provided in SIRS. In particular, I used Google Developers'

Places API to find each hospital address and determine its geographic location. However, not all hospital addresses were found in Google Developers, since I am working on underdeveloped/remote areas. I used Facebook to complement what is missing from Google Developers. For example, when someone “checked in” or created a fan page for a hospital in Indonesia, I could obtain that hospital's coordinates from Facebook. With a similar method, I gathered coordinate locations for each centroid sub-district in our population interest.



Source: Ministry of Transportation Republic of Indonesia *(Republic of Indonesia, 2011)*

Figure 4. Water Transportation Routes in Indonesia

Next, I utilized Google Developers' Direction API to obtain travel distance from each sub-district to both existing hospitals in the shared border municipality and a newly-built hospital within district. Appendix A provides example information of travel distances from Google Developers’ Direction API using R software. Google gives both origin and destination coordinates, address, polygon (travel routes), boundaries, travel time, travel distance, and travel mode. I used driving travel mode to achieve a similar travel mode for all observations. Appendix A also shows a missing value when Google Developers cannot estimate travel distance from point A to point B.

Locations without ground transportation generate those missing values since Google Developers only estimates travel distance when there is ground transportation available between two points.

I manually tracked and estimated travel distances for missing locations in Google Developers using either ArcMap software or Google Maps. The Ministry of Transportation of the Republic of Indonesia provides maps for ferry or other boat routes across all Indonesian regions, as depicted in Figure 4. I followed these routes using Google Maps to determine the waterway travel distance from a sub-district to existing municipalities in which boats possibly pass an island in our population of interest. For example, I estimated the travel distance from a local island seaport in a sub-district in the Talaud Islands to a domestic seaport on Sulawesi Island; then I estimated the travel distance from a local seaport to a hospital location using Google Developers' Direction API. Travel distance is the summation of the waterway travel distance between two local seaports and ground transportation travel distance from a local seaport to a hospital. Also, I estimated travel distance when people use river transportation, primarily in areas of main islands which do not have any ground transportation. Figure 2 above shows an example of a hospital located on the main river. I tracked and estimated the river distance from a sub-district to a hospital location to obtain the travel distance either using Google Maps or ArcMap software. Finally, I matched *SUSENAS* and all available information at the sub-district level.

5. Identification strategy

In this section, I describe identification strategy and estimation methods. I utilized central government criteria for building mobile hospitals based on geographic, accessibility, social, economic, culture, health analysis, and budget priorities. Our control groups are municipalities in Indonesia without hospitals, and they are not located on Java Island since it is the primary criteria to build a mobile hospital in a particular area. Furthermore, the Indonesian government identified underdeveloped regions as areas that have less development than other sectors in their social, economic, culture, and health conditions. Therefore, I expected these targeted areas would more likely have high-risk people and a small number of municipalities that do not have any hospital and meeting all of those criteria. I identified 35 municipalities satisfying the above criteria, in addition to 9 areas in which mobile hospitals were constructed in 2012.

The basic approach is a difference-in-differences (DID) estimation. Our baseline regression is the following:

$$Y_{ikrt} = \alpha_0 + \alpha_1(T_{ikr} * Post_t) + \alpha_2 X`_{ikrt} + \alpha_3 Z`_{krt} + \gamma_k + \mu_{rt} + \epsilon_{ikrt} \quad (3)$$

where Y_{ikrt} is a binary variable whether an individual has outpatient/inpatient visit at the public/private hospital or household health expenditures per capita for an individual/family i living in region r and municipality k at time t. T_{ikr} is a treatment indicator of whether an individual or a family is residing in a community where a mobile hospital was built. $Post_t$ indicates whether period t is after the implementation of the new policy (2008). $X`_{ikrt}$ is an individual or a household level vector of control variables including gender, age, married, year of education, family size, and whether a person is living in a rural area. Travel distance and nearby municipality hospital characteristics correlate with medical care utilization with community who live on areas under studies. Controlling travel distance and hospital characteristics are essential to capture heterogeneity between medical care utilization because of hospital existence in the neighborhood areas. $Z`_{krt}$ is a sub-district vector of control variables for an indicator of sub-district total travel distance and travel distance using water transportation to the nearest shared border town hospital, number of beds of a nearest hospital, and hospital type (public hospital governed by central government, public hospital run by local government, or private hospital) at time t. I included municipality fixed effect (γ_k) and region year fixed effect (μ_{rt}) to capture unobserved differences for space and time, respectively, and ϵ_{ikrt} is the idiosyncratic error term. I defined nine regions, one for each of the five main large islands, and outer small islands as the last four regions. I clustered by household level to capture unobserved differences between families.

I expanded the standard DID approach above with a matching-DID approach, due to the various demographic criteria developed in building a mobile hospital and compositional characteristics changes over time between the treatment and control group that may confound the impact of the treatment (Hong, 2013). For example, due to infrastructure and economic development in certain areas, one municipality may not be categorized as the countryside over time, and this composition change may confound the impact of the intervention. The effect magnitude is not only from the incidence of the existence of a mobile hospital in the area but also the effect of diffusion of the infrastructures in the areas, although this is less likely to happen due to harsh topography conditions.

To begin matching difference-in-differences, I first estimated multivariate propensity score using standard propensity score matching methods (see, for an example Angrist & Pischke, 2008; Rosenbaum & Rubin, 1983). I estimated propensity scores of being treated separately for each time t, both pre-treatment-year and post-treatment-year following multivariate propensity score propensity score method from Hong (2013), using the following:

$$P(T_{ikrt} = 1 \mid X_{ikrt}, Z`_{krt}) = \phi(X`_{ikrt}\beta_t) \quad (4)$$

where T_{ikrt} , X_{ikrt} , and X_{krt} are as described in equation (3). Each year, propensity score matching is used to balance the sample characteristics for both pre- and post-treatment periods from repeated cross-sectional data.

Suppose I have an estimated propensity score P_{ikrt} for an individual/household i who lives in municipality k at time t. I then impute those propensity scores for all observations as probability weights. I use the matched-sample and apply DID in equation (3), but including probability weight for each matched observation.

6. Empirical results

In this section, I provide descriptive statistics, and empirical analysis of limited resource hospital existence. Our analysis includes the average treatment effects of limited hospital existence, heterogeneity between main islands and outer islands, and travel distance analysis regarding to new constructed hospitals.

6.1. Descriptive statistics (Mobile hospitals available in 2008)

Table 1 shows the means and standard deviations for medical care utilization outcomes and covariates. The outpatient variable is a binary variable of 0 or 1 showing whether an individual went to outpatient care in the last 30 days. Inpatient variable is a binary variable of whether a person received inpatient services in the last year. Nominal household health expenditures are continuous variables for nominal household health expenditures per capita in a given year.

The treatment group has higher outpatient, inpatient, and household health expenditures per capita before the intervention period; it depicts the treatment group as having a higher health risk. However, the treatment group has a more considerable increase in outpatient, inpatient trend, and household health expenditures per capita after the intervention period, implying preliminary evidence of improvement in medical care accessibility. One interesting evidence is similar inpatient and outpatient traffic at private hospitals for both periods between treatment and control groups. It may show evidence of no substitution effect between health facilities.

Table 1. Means and Standard Deviations

Variables	Pre-Intervention (2004-2007)		Post-Intervention (2009-2011)	
	Treatment	Control	Treatment	Control
Outcomes				
Inpatient, Public Hospital	0.006(0.080)	0.005(0.067)	0.010(0.099)	0.005(0.099)
Outpatient, Public Hospital	0.031(0.172)	0.020(0.139)	0.042(0.201)	0.016(0.201)
Outpatient, Private Hospital	0.006(0.075)	0.005(0.068)	0.006(0.077)	0.006(0.077)
Inpatient, Private Hospital	0.001(0.028)	0.001(0.032)	0.001(0.032)	0.002(0.032)
Ln(HH Health Expenditures/Capita)	11.459(1.303)	11.184(1.293)	12.675(1.267)	12.545(1.267)
Control				
Male	0.511(0.500)	0.509(0.500)	0.507(0.500)	0.509(0.500)
Married	0.447(0.497)	0.437(0.496)	0.456(0.498)	0.448(0.498)
Age	26.76(18.90)	25.76(18.61)	27.43(19.49)	26.37(19.49)
Year of Education	6.087(4.322)	5.012(4.124)	6.170(4.318)	4.869(4.318)
HH Size	5.055(1.939)	5.093(1.942)	4.184(2.404)	4.202(2.404)
Rural	0.907(0.290)	0.885(0.320)	0.854(0.353)	0.913(0.353)
Travel Distance to Nearest Existing Hospital (km)	188.1(126.9)	125.4(100.4)	170.8(126.9)	117.1(126.9)
Nearby Hospital Beds	80.08(60.22)	77.64(44.35)	79.47(61.02)	77.93(61.02)
Travel Distance to New Hospital (km)	0.000 (0.000)	0.000(0.000)	101.9(124.0)	0.000(0.000)
N	41,968 to 181,022		33,439 to 138,443	

For demographic characteristics, both groups have similar traits except for age and year of education. The treatment group tends to have older people and higher education levels compared to their counterparts. Most of the population lives in rural areas, which capture poor/remote areas. One substantial difference is the travel distance to existing hospitals in the nearest municipality since they have no hospital in their regions. Both treatment and control areas had a travel distance of more than 125 km to shared-border neighborhood hospitals before the intervention, which decreased over time as hospitals opened in nearby municipalities. But the control group has 50 to 60 km shorter distance both before and after the intervention.

New hospitals provide substantial decreases in travel distance for the treatment group. For example, new hospitals constructed in the nearby town reduce travel distance up to 18 km on average from travel distance mean to existing hospitals before 2008, but mobile hospital construction further reduce travel distance up to 88 km on average. Furthermore, our analysis, later on, shows great variation in travel distances between sub-districts located on main islands and outer islands. There are some areas having closer distances to new hospitals, but there are some areas farther distance new hospitals than existing hospitals.

6.2. The impact on medical care utilization

The impact of public hospital existence and travel distance varies between main islands and outer islands because of geographic characteristics different such as reliability of transportation alternatives in those islands. For example, communities who live on main islands could either use ground transportation or water transportation to a hospital in nearby municipalities, but water transportation is the only transportation available for those who live on outer islands.

6.2.1. All samples

Figure 5 presents the outpatient at public hospital trend for the treatment and control groups for all samples. Figure 5 suggests the treatment group has bounced trends before the intervention period, but the treatment group has substantially higher outpatient use at public hospitals after the intervention period. Although mobile hospitals were constructed at the end of the year 2008, the treatment group shows two years' lag before increased outpatient care in the year 2011. In the next section we are able to show smoother outpatient trends when we separate between main islands and outer islands. It indicates different medical care utilization between communities living on main islands versus outer islands.

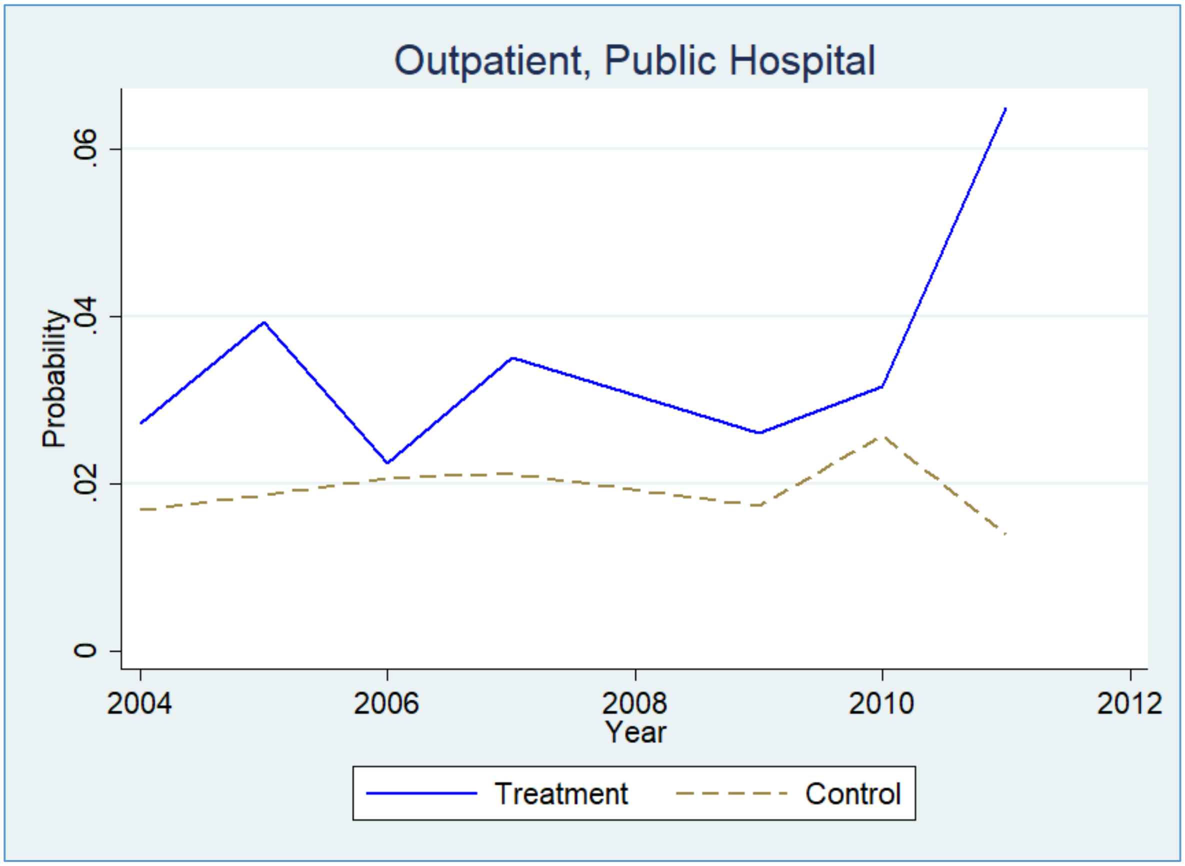


Figure 5. Outpatient in Public Hospital

Figure 6 provides the inpatient in public hospital trend for the treatment and control groups for all samples. I excluded Malinau municipality from our primary analysis for inpatient care because of unusual patterns over time. Excluding Malinau municipality decreases 3 percent of all inpatient samples. Appendix B shows that the Malinau district trends up and down. Figure 6 suggests the treatment group has a similar inpatient trend as the control group before the intervention period, but then the treatment group has higher inpatient care use at the public hospital after the intervention period.

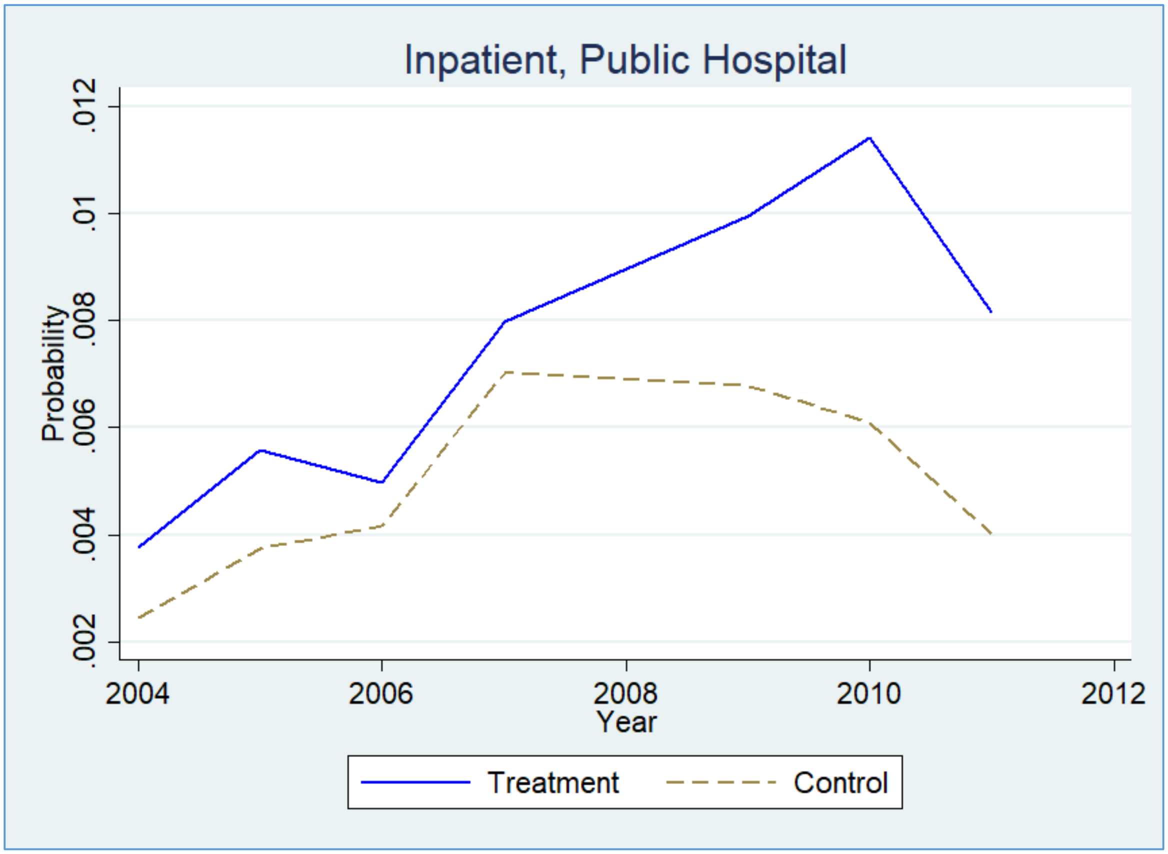


Figure 6. Inpatient in Public Hospital

Table 2 provides DID and matching-DID probability estimations in outpatient and inpatient at the public hospital for population interest. Column (1) contains the DID approach, and column (2) provides the matching-DID approach for outpatient at government hospitals, similarly applied for inpatient at government hospitals in columns (3) and (4). I imputed a propensity score from the matching process and treated it as a probability weight in the matching-DID computations in columns (2) and (4). Treatment is an indicator of whether an individual lived in a municipality in which a mobile hospital was built in 2008. The dependent variable is an indicator of whether a person experienced outpatient (inpatient) care at a public hospital in the last 30 days (12 months). While inpatient includes all individuals in the community, outpatient only covers individuals who experienced any morbidity symptoms. I included municipality fixed effects and region year fixed effects and clustered the standard error by household level to capture unobserved differences between families.

Table 2. The Impact on Medical Care Utilization at Public Hospital (2008)

VARIABLES	Outpatient		Inpatient	
	Public Hospital		Public Hospital	
	DID	Matching DID	DID	Matching DID
	(1)	(2)	(3)	(4)
Treatment*Post	0.0168***	0.0119***	0.0019**	0.0015
	(0.0043)	(0.0046)	(0.0009)	(0.0010)
Travel distance to an existing	0.0015	-0.0021	-0.0009**	-0.0010**
hospital (100 Km)	(0.0016)	(0.0019)	(0.0003)	(0.0004)
Observations	74,401	73,435	303,291	299,193
R-squared	0.0189	0.0242	0.0050	0.0057
Individual and HH Controls*	YES	YES	YES	YES
Sub-District Controls**	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES
Region*Year FE	YES	YES	YES	YES
Propensity Score***		YES		YES

* Gender, marital status, education, HH Size, and rural
** Travel distance to existing hospital, # beds of existing hospitals, type of existing hospital
*** Imputed propensity scores from matching process

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The matching-DID model shows smaller magnitudes for both outpatient and inpatient medical care although they are not much different. This magnitude difference may be due to the wide variability distribution of travel distances in outer islands compared to main islands. While people who live on main islands travel 150 km to existing hospitals in the nearby municipality on average, people who live on outer islands travel 180 km on average. A matching approach gives a higher weight to the control group, who has similar travel distances as people in the treatment group. It suggests that the matching-DID approach addresses the potential bias in the DID approach that confounds hospital availability and medical care utilization. I address this problem in the next section by showing the smaller difference in magnitudes when I separate main islands from outer islands.

Both models suggest an individual who lives in the treatment municipality is more likely to have both outpatient and inpatient medical care at a public hospital after the intervention period. In particular, a city in which a mobile hospital was opened in the areas is more likely to have public-hospital outpatient services increase more than 1.2 percentage points, corresponding to more than a 40 percent increase from the pre-intervention period outpatient average. Similar for inpatient, municipalities in which mobile hospitals were opened in the areas are more likely to have public-hospital inpatient care increase by 0.2 percentage points, corresponding to a 33 percent increase from the pre-intervention period inpatient average. It supports the notion that primary health facilities are essential factors contributing to access to health care. Harsh topography and lack of transportation hamper individual access to appropriate medical care, and even an existence of limited healthcare facilities may improve their health care access.

The model suggests travel distance to the nearest hospital in a neighboring municipality more likely affects medical care utilization, primarily for inpatient medical services. 100 Km increase travel distance more likely decreases inpatient medical care by 0.1 percentage points. The result indicates people who required intensive medical care utilization through hospitalization more likely have an adverse impact on the farther distance to the nearest hospital. It is very intuitive because people who experience severe health risks less likely to travel farther to obtain medical care.

6.2.2. Main islands and outer islands

To further investigate heterogeneity between Indonesian regions, I estimate the impact on main islands, and small outer islands. I define small outer islands as any island which is located outside the five main islands. The main islands and outer islands have different geographic characteristics. For example, municipalities which are located in the outer islands are more likely surrounded by sea that makes them more isolated from other areas, and their island location may result in wide variability in travel distances. It makes them less accessible to existing hospitals in the nearby municipalities because people have to use either ferry, boat, or airplane to reach nearby cities. Also, it is harder for residents on different islands within the same municipalities to reach new hospitals located on another island.

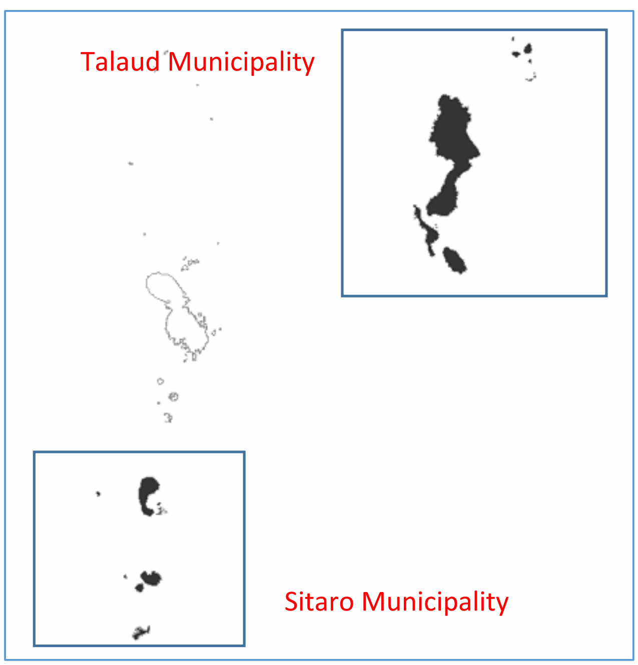


Figure 7. Talaud and Sitaro Islands

Figure 7 shows Talaud and Sitaro Islands, two sample municipalities which have a mobile hospital. Although there is a mobile hospital on one island, people who live on another island may not be able to go to an island where a mobile hospital is located since the sea isolates them. Therefore, we expect only the fraction of people who live on the same island as a mobile hospital may benefit from newly-constructed health facilities. On one hand, more isolated areas may represent higher marginal utilities of medical care, thus greater impact. On the other hand, separated islands within municipalities would lower access to constructed mobile hospitals, thus lowering treatment effects. Therefore, the net effect depends on whether infrastructure effects outweigh utilities of medical care, or vice versa.

Figures 8 and 9 provide public-hospital inpatient and outpatient trends for individuals who live in the municipalities located on the main islands of Indonesia, respectively. The main islands include Sumatera, Java, Kalimantan, Sulawesi, and Papua. Appendix C.1 and C.2 present similar public hospital trends for inpatient and outpatient medical care utilization for outer islands. Outer islands include Nusa Tenggara, Halmahera, Talaud, Sitaro (Siau Tagulandang Biaro), Maluku, and Morotai.

Figure 8 suggests the treatment and control groups have similar public-hospital inpatient trends before the intervention period, primarily in 2006 and 2007. Their trends started to diverge in 2009 where mobile hospitals were constructed. The treatment group has higher public-hospital inpatient medical care rates over time after the intervention period. Appendix C.1 provides similar inpatient medical care information as in Figure 8, but for the outer islands. Similarly, Appendix C.1 suggests that both the treatment and control groups have similar trends before the intervention period, but the treatment group are more often likely inpatients at public hospitals after the intervention period, although the trend is not as pronounced as with the main islands. Both treatment and control groups depict a substantial reduction in inpatient care at public hospitals in 2011.

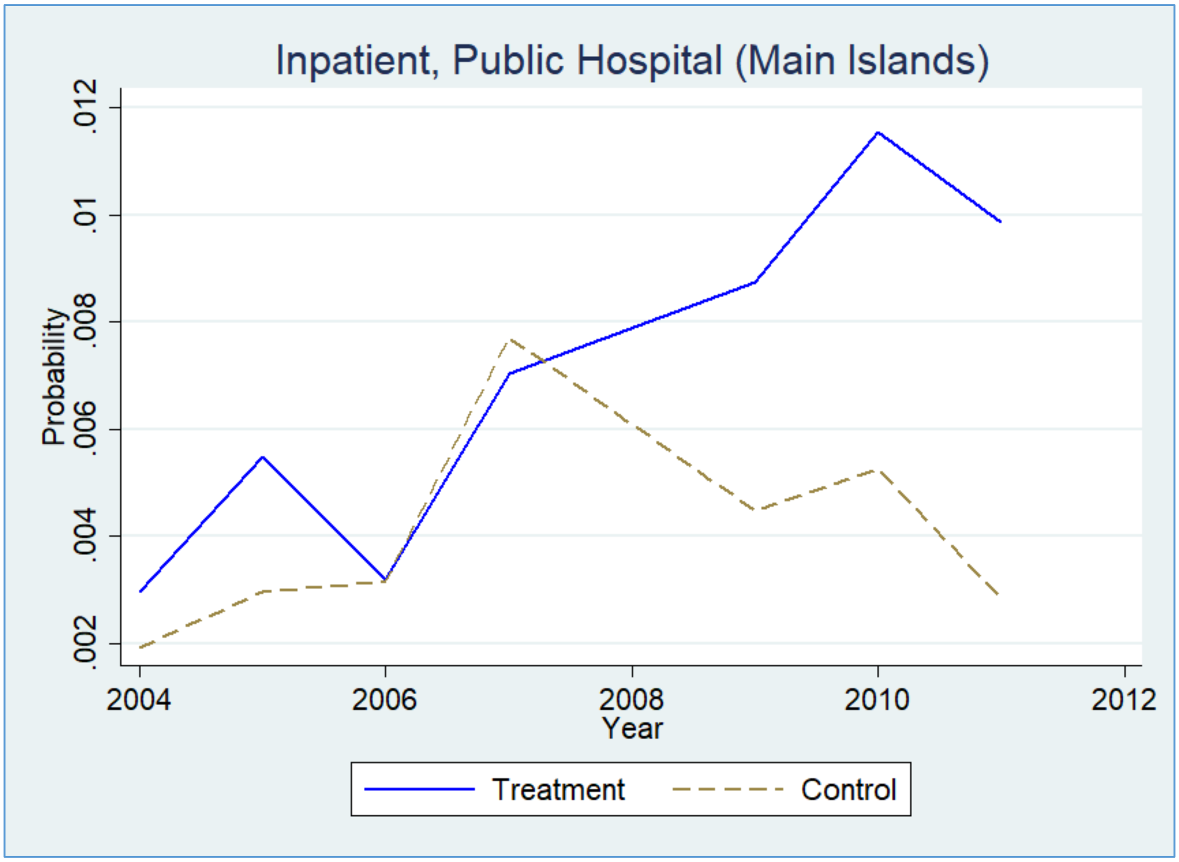


Figure 8. Inpatient in Public Hospital: Main Islands

Figure 9 suggests similar trends for public-hospital outpatient care utilization on the main islands. Initially, the treatment and control groups have similar patterns before the intervention period, primarily year 2006 and 2007. In particular, the lines cross each other; the treatment group has higher inpatient rates in 2004 and 2005 but then lower in 2006 and 2007. For both groups, three percent of people on average seek public-hospital outpatient care before the intervention period, evidence that harsh topography hampers community access to appropriate medical care. While there is no substantial difference in outpatient rates for the control group after the intervention period, the treatment group has a considerable increase in public-hospital outpatient rates after the intervention period. Appendix C.2 provides public-hospital outpatient information for the outer islands. The figure suggests no substantial difference after the intervention. Therefore, all figures indicate a consistent increase in the inpatient and outpatient trends over time for the main islands' treatment group but a slight increase for outer islands.

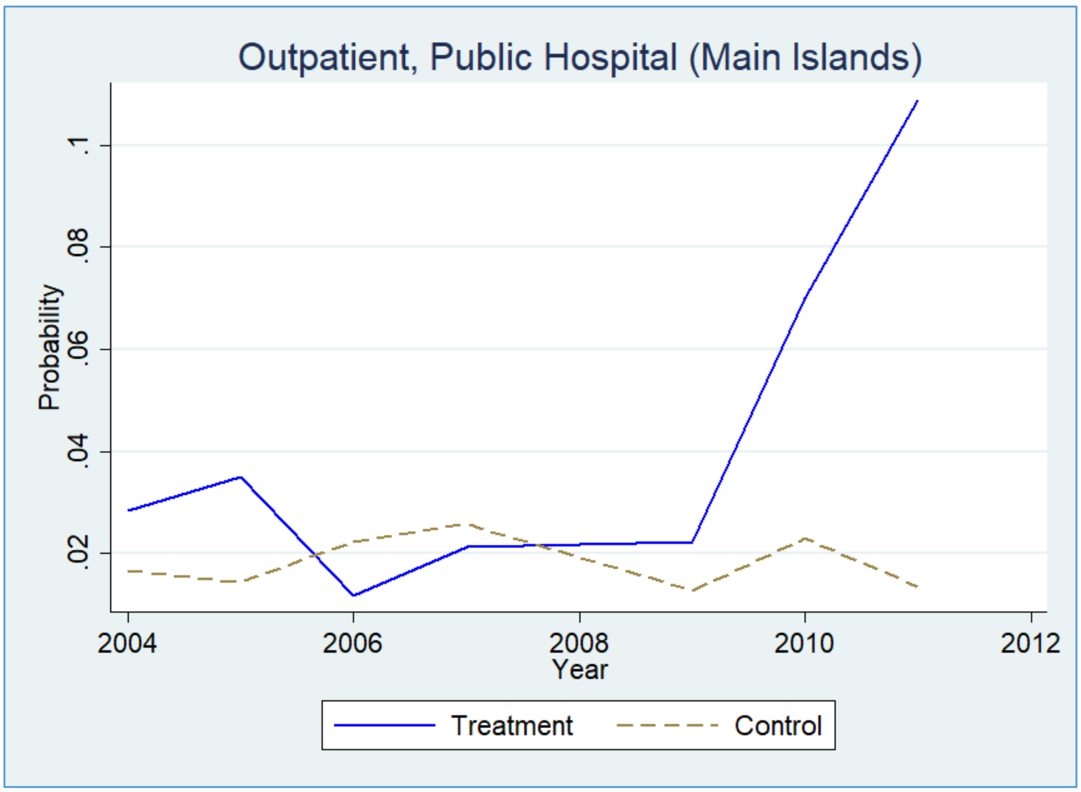


Figure 9. Outpatient in Public Hospital: Main Islands

Table 3 provides DID and matching-DID estimations for the main islands and outer islands of Indonesia. Panel A is the DID approach, and Panel B is the matching-DID approach. Column (1) is an outpatient estimator for municipalities located on the main islands, column (2) is the analogous estimator for those found on outer islands, column (3) is the inpatient estimator for those discovered in main islands, and column (4) shows the estimator for inpatient in public hospitals on outer islands. All columns use similar specifications as Table (2), and Panel B shows matching-

DID with imputed propensity scores for weighting. Main islands include Sumatera, Kalimantan, and Papua. Outer islands include Nusa Tenggara, Halmahera, Talaud, Sitaro (Siau Tagulandang Biaro), Maluku, and Morotai.

Table 3. The impact on Utilization at Public Hospital: Main Island, and Outer Island

VARIABLES	Outpatient, Public Hospital		Inpatient, Public Hospital	
	Main Islands	Outer Islands	Main Islands	Outer Islands
	(1)	(2)	(3)	(4)
Panel A (DID)				
Treatment*Post	0.0490***	-0.0016	0.0051***	0.0006
	(0.0078)	(0.0051)	(0.0014)	(0.0011)
Travel distance to an existing	0.0041**	-0.0036	-0.0006	-0.0014**
hospital (100 Km)	(0.0019)	(0.0026)	(0.0004)	(0.0006)
Observations	30,018	44,383	121,486	181,805
R-squared	0.0263	0.0210	0.0045	0.0057
Pre-Intervention Mean	0.021	0.037	0.005	0.006
% Change	186%	-4%	100%	21%
Panel B (Matching DID)* **				
Treatment*Post	0.0359***	-0.0019	0.0051***	0.0002
	(0.0078)	(0.0059)	(0.0015)	(0.0014)
Travel distance to an existing	0.0003	-0.0042	-0.0011**	-0.0009
hospital (100 Km)	(0.0025)	(0.0028)	(0.0005)	(0.0007)
Observations	29,334	44,101	118,422	180,771
R-squared	0.0281	0.0272	0.0046	0.0066
Pre-Intervention Mean	0.021	0.037	0.005	0.006
% Change	170%	-5%	100%	3%
Individual and HH Controls*	YES	YES	YES	YES
Sub-district Controls**	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES
Region*Year FE	YES	YES	YES	YES

* Morbidity, gender, marital status, education, HH Size, and rural
** # beds of existing hospitals, type of existing hospital
*** Imputed propensity scores from matching process

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The models suggest the impact of public hospital existence on medical care utilization was driven by a municipality located on the main islands. For outpatient, while there was a slight smaller magnitude for matching-DID, both models suggest substantial increases in public-hospital outpatient care on main islands. Public hospital existence on the main islands more likely increases outpatient rates in public hospitals more than 170 percent from the pre-intervention period. However, I find no evidence of such an increase for municipalities located on outer islands. A substantial outpatient increase on the main islands supports the notion that there are higher marginal utilities of having medical care utilization for communities with fewer health care facilities.

For inpatient, the DID and matching-DID methods have similar magnitude. In particular, mobile hospital availability on the main islands of Indonesia is more likely to increase inpatient medical care at public hospitals by 0.5 percentage points, corresponding to a 100 percent increase from the pre-intervention period inpatient average. I do not find evidence of this for outer regions. It seems counter-intuitive; we expect more isolated areas would have higher marginal utilities of having medical care utilization. However, separated small islands within a municipality may be the reason for this. A mobile hospital is located in one of the various small islands within each district. Less infrastructure, especially roads and less reliable transportation would hamper individuals' hospital visits. For instance, ferry transportation may only run once or twice a week, or private boat only once or twice a day, for people who live on different islands that have no ground transportation, so sick people cannot reach the hospital. It suggests that either more similar hospitals on each different island but within the same cities, or infrastructure to connect those separated islands, is critical for those communities.

Therefore, our findings support the notion that primary health facilities are critical in underdeveloped municipalities. Also, the results suggest that transportation and infrastructures are essential to improving access to health care facilities, in addition to the existence of healthcare facilities.

6.2.3. Robustness checks

In this section, I employ some robustness checks and sensitivity analyses to test the primary results. Appendix D.1-D.4 provide robustness tests for mobile hospital availability estimations with specification variations of equation (1). I use five specifications for primary outcomes both for the DID approach and matching-DID approach. Column (1) is a simple DID. Column (2) includes individual and household controls. Column (3) includes sub-district controls, column (4) includes municipality and year fixed effects, and column (5) is our baseline regression. Appendix D.5-D.8 reflect a similar robustness test when I include 2012-2014. I removed travel distance because, since 2012, *SUSENAS* has not provided sub-district identifier information. In general, our results are robust to those specifications. Estimation magnitudes slightly decrease when I include travel distance, suggesting the importance of controlling travel distance to hospitals in nearby municipalities.

Appendix D.9-D.12 provide similar regression information as Appendix D.1-D.4 for main islands and Appendix D.13-D.16 for outer islands. Our results are robust to those specifications, and the differences between the DID and matching-DID methods are smaller. I find only one weakly significant (10 percent significant level) value from 20 regressions for outer islands. That estimate was eliminated by either including travel distance to nearby existing hospitals or region-year fixed effects.

To test our estimates' sensitivity from our choices of treatment and control groups, I either exclude municipalities in which mobile hospitals were constructed in 2012 as a control group, or I include those towns as a treatment group. Appendix D.17 presents DID estimates when I exclude cities in which 2012 mobile hospital construction took place in the control group and expand observations by including the year 2012-2014 for all samples and main islands. Column (1) is outpatient in public hospitals for all samples; Column (2) is outpatient in government hospitals for main islands; Column (3) and (4) have similar specifications as in columns (1) and (2) for inpatient rates. As discussed above, the Indonesian government introduced the second wave of mobile hospital construction in 2012. If our results are sensitive to sample choices, then I may see substantial differences when I exclude those 2012 municipalities. I implement the base specification on equation (3) but without travel distances, since *SUSENAS* does not provide sub-district identifiers for years 2012-2014. In general, the model suggests the estimator slightly increases when I exclude those municipalities and years 2012-2014. These results make sense since more information about new hospitals and their services spreads over time, thus more people visit new hospitals.

Appendix D.18 presents DID estimates when I include municipalities in which 2012 mobile hospitals were opened as a treatment group. I define 2009-2014 as the post period for mobile hospitals opened in 2008 and 2012-2014 for mobile hospitals constructed in 2012. Appendix D.18 has similar specifications as in Appendix D.17. The model suggests similar magnitudes as the previous table. It supports the notion that our findings are not sensitive to treatment and control groups' choices.

Appendix D.19-D.26 provide estimates when I include a morbidity symptom to test sensitivity of our estimates from omitted variables. Health condition is an important factor affecting medical care utilization. Severe health condition lead more medical treatment in hospitals. In general, our preliminary estimates show slight increase when we include health condition. But, it also shows that our findings are not sensitive to omitted variable biases.

6.2.4. Falsification tests

The identifying assumption for the DID approach is common parallel trends between treatment and control groups without any intervention. It implies that, without any intervention, both treatment and control groups would have parallel trends over time before the treatment period. I estimate various specification tests for artificial effects during pre-treatment years using the DID and Matching DID approaches. Appendix E.1-E.4 provide falsification tests for our primary outcomes for all samples and municipalities within the main islands with total 24 regressions.

I use the years 2005, 2006 and 2007 as our artificial effect. Columns (1)-(3) are falsification tests for outpatient and columns (4)-(6) are the same tests for inpatient using the base specification on equation (3). Column (1) and (4) are using 2005 as artificial year, column (2) and (5) are using 2006 and, column (3) and (6) are using 2007. If the intervention drove our results instead of inherent differences between the treatment and control groups, then I would see no impact on the pre-treatment period. In general, the model suggests all but two estimators are not significant and reduce the estimation magnitude substantially. Those two significant estimates were eliminated when I separate between main islands and outer islands. These results support the notion that the actual interventions likely drive the difference in outcomes and importance of separating main islands and outer islands.

6.3. Travel distance and transportation infrastructures matter

In this section we explore travel distance and infrastructures heterogeneity to understand the importance of travel distance and transportation infrastructures.

6.3.1. Closer distance or farther distance

The wide coverage area of a newly-built hospital within a municipality results in the newly-built hospitals being closer than the existing hospital for some areas, but farther for others. Figure 10 provides travel distance comparison between new-construction hospitals and existing hospitals per treated sub-district for people who are living on main islands. The X-axis is travel distance to existing hospitals, and the Y-axis is travel distance to newly-constructed hospitals. Therefore, people who are living in areas that are closer to new hospitals are below the 45-degree line. The figure shows that regions within 200 km of existing hospitals are more likely farther from new hospitals. In contrast, areas located over 200 km from existing hospitals are closer to new hospitals. Appendix F shows a similar graph for outer islands, but more areas are now closer to newly-constructed hospitals. We expect only people who are living closer to the new hospitals to benefit from the intervention.

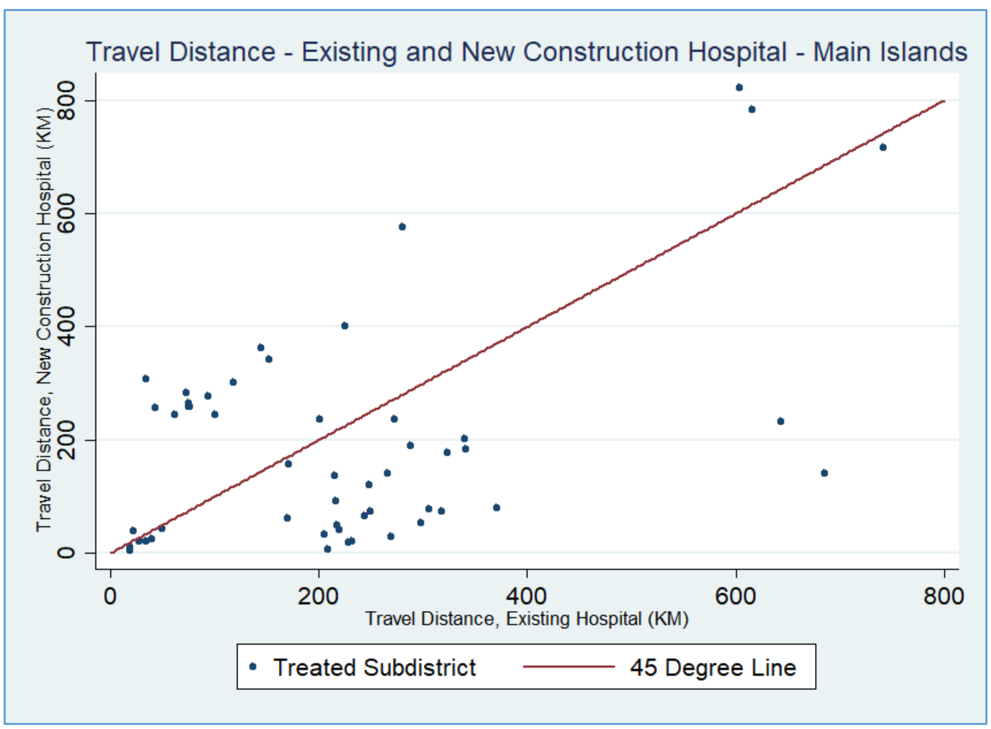


Figure 10. Travel Distance Between New and Existing Hospitals – Main Islands

Table 4 provides DID and matching-DID estimation for areas that are closer to newly hospitals. It is analogous to the specifications in Table 3. As expected, the models suggest more considerable impact for both outpatient and inpatient at public hospitals on main islands when I exclude people who are living farther from new hospitals than existing hospitals. I find no evidence of improvement of access to medical care utilization for people who are living in outer islands.

Table 4. The Impact on Utilization at Public Hospital: Closer Distance

	Outpatient, Public Hospital		Inpatient, Public Hospital	
VARIABLES	Main Islands	Outer Islands	Main Islands	Outer Islands
	(1)	(2)	(3)	(4)
Panel A (DID)				
Treatment*Post	0.0720***	-0.0030	0.0078***	0.0005
	(0.0099)	(0.0055)	(0.0017)	(0.0012)
Travel distance to an existing	0.0034	-0.0047*	-0.0004	-0.0019***
hospital (100 Km)	(0.0022)	(0.0027)	(0.0004)	(0.0007)
Observations	27,741	42,728	112,030	174,926
R-squared	0.0300	0.0214	0.0046	0.0057
Panel B (Matching DID)* **				
Treatment*Post	0.0553***	-0.0034	0.0067***	0.0001
	(0.0098)	(0.0062)	(0.0018)	(0.0015)
Travel distance to an existing	-0.0010	-0.0063**	-0.0009*	-0.0018**
hospital (100 Km)	(0.0030)	(0.0029)	(0.0004)	(0.0008)
Observations	27,057	42,446	108,966	173,892
R-squared	0.0316	0.0271	0.0046	0.0067
Individual and HH Controls*	YES	YES	YES	YES
Sub-district Controls**	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES
Region*Year FE	YES	YES	YES	YES

* Morbidity, gender, marital status, education, household size, and rural
** # beds of existing hospitals, type of existing hospital
*** Imputed propensity scores from matching process

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5 provides similar estimators for areas that are farther from new hospitals. Mobile hospitals are limited resource hospitals compared with existing hospitals in nearby municipalities.

People may still visit a new-constructed hospital since it is located in their administrative areas if they have more benefits from local administrative government such as local government subsidy for hospital fees. Otherwise, people tend to visit existing hospitals because those hospitals are not only closer but also better perceived quality.

Table 5. The Impact on Utilization in Public Hospital: Farther Distance

VARIABLES	Outpatient, Public Hospital		Inpatient, Public Hospital	
	Main Islands	Outer Islands	Main Islands	Outer Islands
	(1)	(3)	(4)	(6)
Panel A (DID)				
Treatment*Post	0.0014	0.0054	0.0012	-0.0004
	(0.0087)	(0.0086)	(0.0023)	(0.0015)
Travel distance to an existing	0.0055**	-0.0034	-0.0007	-0.0015**
hospital (100 Km)	(0.0022)	(0.0033)	(0.0005)	(0.0007)
Observations	24,362	34,077	108,511	137,127
R-squared	0.0207	0.0172	0.0044	0.0053
Panel B (Matching DID)* **				
Treatment*Post	-0.0004	0.0167	0.0030	-0.0001
	(0.0087)	(0.0115)	(0.0026)	(0.0021)
Travel distance to an existing	0.0049**	0.0025	-0.0014**	0.0001
hospital (100 Km)	(0.0024)	(0.0042)	(0.0006)	(0.0009)
Observations	23,678	33,795	105,447	136,093
R-squared	0.0251	0.0205	0.0043	0.0055
Individual and HH Controls*	YES	YES	YES	YES
Sub-district Controls**	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES
Region*Year FE	YES	YES	YES	YES

* Morbidity, Gender, Marital Status, Education, HH Size, and Rural
** Travel distance to existing hospital, # beds of existing hospitals, whether public or private hospital
*** Imputed propensity scores from matching process

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

If travel distance drives the impact of new hospital construction, we expect either smaller or no impact for people who are farther from new hospitals. In general, the models suggest that no estimators are significant and estimation magnitude is substantially reduced. Inpatient in public hospital estimates reduce more than by 55 percent from areas which closer to newly constructed hospitals and outpatient in public estimates reduce more than 97 percent. These results support the notion that travel distance to newly hospitals likely drives the difference in outcomes.

6.3.2. How far people are from newly-built hospitals

A community who lives closer to new hospitals within a municipality may have better access to medical care utilization. I estimate the relationship between travel distance and medical care utilization for the community in the treatment areas. Figure 11 provides a relationship between travel distance and outpatient care in public hospitals for treated areas after the intervention period (2009-2011). The X-axis is travel distance to the mobile hospital from a sub-district and Y-axis is the percentage of the population in a sub-district who had outpatient care in the last 30 days. The red line is a local polynomial fitted line to show the relationship between travel distance and outpatient care at the public hospital.

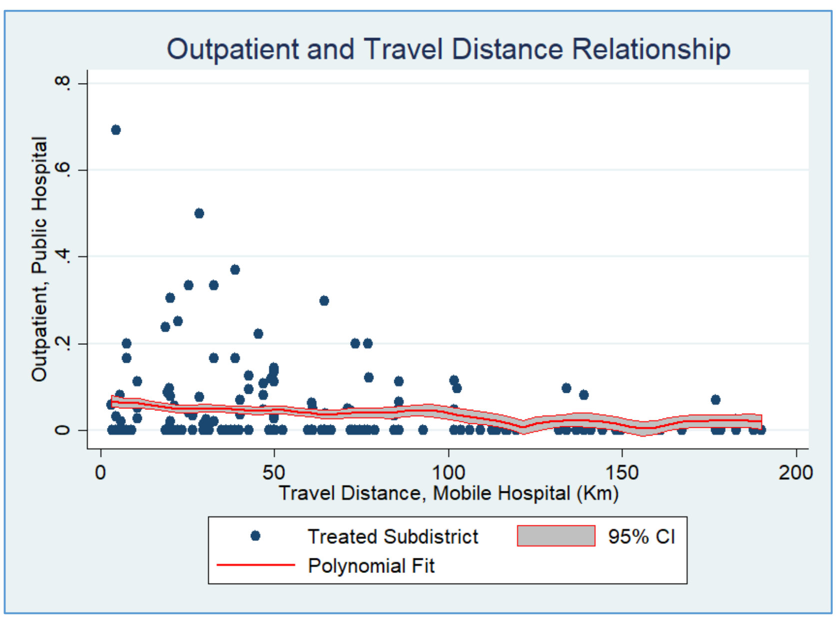


Figure 11. Travel Distance and Outpatient, Treated Sub-District

The picture suggests a negative relationship between travel distance and outpatient care; farther areas would have less outpatient access at public hospitals. Furthermore, most people in a community cannot reach new hospitals when they live more than 100 km from new hospitals. Appendix G shows a similar trend for the relationship between travel distance and inpatient access at public hospitals.

Transportation alternative is another essential factor affecting medical care besides travel distance. Similar travel distance could end with longer travel time with water transportation compare to ground transportation. An individual has to wait for either a ferry or a boat schedule which often longer waiting time between two available schedules than a bus schedule. Also, a ship runs slower than if a person uses a bus with similar distance. It suggests small increase travel distance to new-constructed hospitals could decrease higher possibility an individual to visit that hospital if people have better transportation alternative to existing hospitals. In another side, small increase travel distance to new-constructed hospitals could only reduce smaller possibility an individual to visit new hospitals if he has worse transportation alternative to existing hospitals.

Table 6 provides DID estimates between travel distance to mobile hospitals and medical care utilization by geographic condition both existing hospitals as well as new-constructed hospitals. Panel A is regression estimates for public-hospital outpatient care and Panel B is similar estimates for public-hospital inpatient services. Column (1) is estimators for people who can use a ground transportation both to new hospitals and existing hospitals; column (2) is the analogous estimators for those who can use ground transportation to new hospitals, but they requires water transportation to existing hospitals; column (3) is estimators for those required water transportation to reach new hospitals, but they have a ground transportation access to existing hospitals; column (4) is similar estimators for those need water transportation to new hospitals as well as existing hospitals. I define ground transportation if an individual uses ground transportation more than 50% of their travel distance to a particular hospital. Similarly, water transportation was defined if an individual uses water transportation more than 50% of their travel distance to a hospital.

Table 6. Travel Distance and Medical Care Utilization Relationship

VARIABLES	New Hospital: Ground Transportation		New Hospital: Water Transportation	
	Existing: Ground	Existing: Water	Existing: Ground	Existing: Water
Difference-in-differences (DID)	(1)	(2)	(3)	(4)
A. Outpatient in Public Hospital				
Ln(Travel Distance (100 km))	-0.0155***	-0.0051**	-0.0106***	-0.0039
	(0.0028)	(0.0024)	(0.0030)	(0.0028)
Observations	62,570	62,194	56,562	56,596
R-squared	0.0174	0.0198	0.0160	0.0161
B. Inpatient in Public Hospital				
Ln(Travel Distance (100 km))	-0.0013**	-0.0008*	-0.0018***	-0.0015***
	(0.0006)	(0.0004)	(0.0006)	(0.0005)
Observations	252,985	259,059	239,656	239,500
R-squared	0.0046	0.0053	0.0046	0.0044
Individual and HH Controls*	YES	YES	YES	YES
Sub-district Controls**	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES
Region*Year FE	YES	YES	YES	YES

* Gender, marital status, education, household size, and rural
** Travel distance to existing hospital, # beds of existing hospitals, type of existing hospital

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The model suggests increased travel distance likely reduces medical care utilization and estimates lower for those who have worse transportation alternative to existing hospitals. In particular, increase 1% travel distance more likely decreases outpatient in public hospitals by 0.016 percentage points and decreases inpatient in public hospitals by 0.001 percentage points for those who have access to ground transportation for both new and existing hospitals. However, a similar increase in travel distance only reduces smaller magnitudes for those have just water transportation (worse transportation) to existing hospitals. In contrast, increase 1% travel distance more likely decreases outpatient in public hospitals by 0.004 percentage points and decreases inpatient in public hospitals by 0.002 percentage points for those who have access to water transportation for both new and existing hospitals. A similar increase in travel distance reduces higher magnitudes for those have access to ground transportation (better transportation) to existing hospitals. The model also suggests higher reduction for outpatient in public hospitals when an individual has less transportation mode. Our results support the notion that travel distance would have a more considerable impact if people have better transportation alternative to existing hospitals. Also, our results suggest less severe health condition that requires medical care would have higher reduction if people have choices for transportation alternative. It is intuitive because people with less critical health condition could choose to stay at home instead of going to a hospital as it farther from their house. But people with critical health condition fewer choices because they require urgent medical care.

6.4. Substitution between public and private hospital

When mobile hospitals open closer to public hospitals, does this lead to a substitution effect between hospital providers? This occurs primarily in main-island municipalities since they have a substantial increase in public-hospital outpatient and inpatient care. Private hospital openings along shared municipality borders may also lead to substitution between private and public health facilities. If there is substitution between health centers, then the net impact of health facility construction depends on the two magnitudes since they provide similar services.

Table 7. The Impact on Medical Care Utilization at Private Hospital, Main Islands

VARIABLES	Outpatient		Inpatient	
	Private Hospital	Private Hospital	Private Hospital	Private Hospital
	DID	Matching DID	DID	Matching DID
	(1)	(2)	(3)	(4)
Treatment*Post	0.0000	0.0010	0.0002	0.0007
	(0.0024)	(0.0024)	(0.0008)	(0.0009)
Observations	29,370	28,695	121,097	118,035
R-squared	0.0104	0.0096	0.0025	0.0034
Individual and HH Controls*	YES	YES	YES	YES
Municipality Controls**	YES	YES	YES	YES
Municipality FE	YES	YES	YES	YES
Region*Year FE	YES	YES	YES	YES
Propensity Score***		YES		YES

* Morbidity, Gender, Marital Status, Education, HH Size, and Rural
** Travel distance to existing hospital, # beds of existing hospitals, type of existing hospital
*** Imputed propensity scores from matching process

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 8 provides DID and matching-DID estimates for private-hospital outpatient and inpatient care for municipalities which are located on main islands. Columns (1) and (3) show DID approaches for outpatient in private hospitals and columns (2) and (4) matching-DID approaches for inpatient in private hospitals. The models suggest no evidence of substitution effect between private and public hospitals because of mobile hospital opening. Incorporated weights do not change the conclusion. Our conclusion does not change with many specifications, as shown in Appendix H.1 to Appendix H.4. These results suggest tough topography and lack of transportation hamper individual access to appropriate outpatient and inpatient medical care, even though many private health facilities are opening along shared municipality borders. Rough ground transportation, limited and expensive sea, river, and air transportation, may obstruct community hospital access in neighboring cities.

6.5. The impact on household expenditures

An important feature of the mobile hospital is fulfilling medical care needs in harsh topography and isolated areas. Improving access to health care facilities can enhance medical care utilization, thus increasing household health expenditures. On the other hand, closer health facilities may reduce transportation costs, thus decreasing family health expenses. Substitution or complement effect between health centers may also either increase or decrease household health expenditures. Therefore, the impact depends on whether the reduction in transportation costs outweighs the increase in medical care cost due to higher medical care utilization and also cost differential between health facility. I estimate the impact of mobile hospital availability on yearly household health expenditures per capita. Nominal household health expenditures include preventive cost, curative cost, medicine, and medical devices bought at any medical facility. Figure 12 shows trends in household medical expenditures per capita before and after the intervention period for a municipality located on the main islands. The treatment group has slightly higher household health expenditures than the control group in 2004 and 2007, but a similar trend in 2005 and 2006. Although I find almost similar pattern before the intervention period, the treatment group continuously increases in medical spending after the intervention period.

I estimate the impact of mobile hospital availability on household health expenditures. Table 9 provides DID and matching-DID results for household health expenditures for municipalities located on the main islands. The dependent variable is yearly household health expenditures per capita. Table 9 has similar specifications as Table 2. I am using household-level data since household health expenditures are on the household level. I aggregate individual characteristics into the household level to obtain household-level demographics.

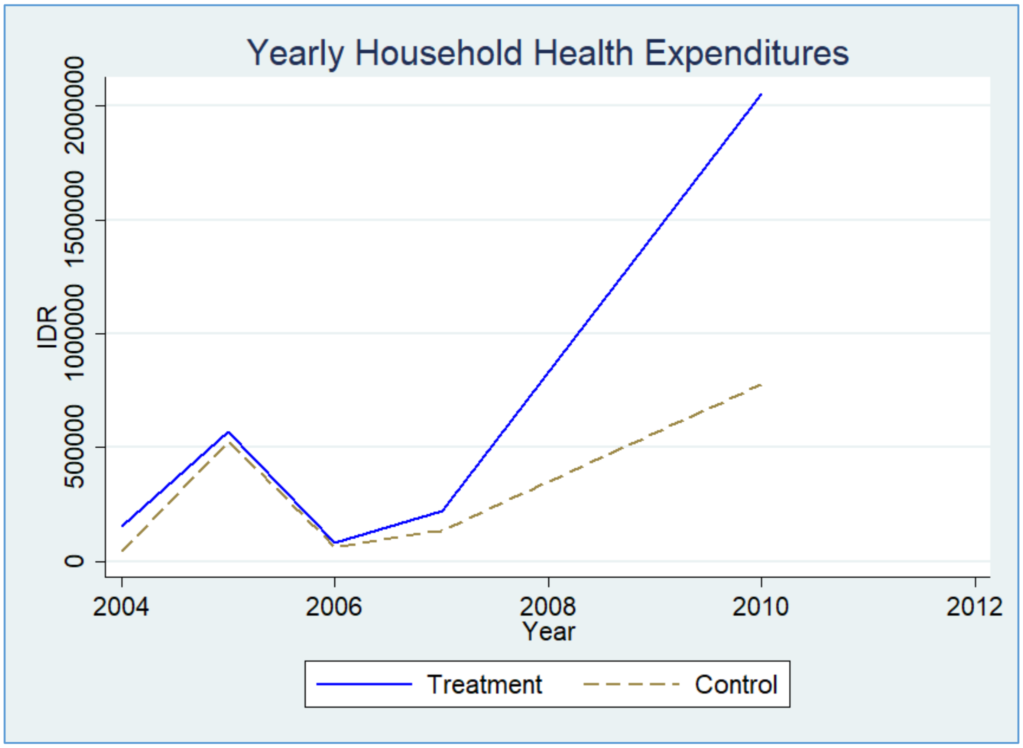


Figure 12. Household Health Expenditures, Main Islands

Despite a small different in magnitude estimates between the two approaches, they offer the same general conclusion: that people living in treatment areas are more likely to increase household health expenditures per capita by IDR 2 million (US $153), assumes USD 1 equal to IDR 13,000. Household yearly income (household head and spouse income) in the treatment areas from 2004 to 2011 are around IDR 9.5 million (US $730), thus corresponding to 20 percent of household income. Large increase in household health expenditures per capita may due to high differential out of pocket cost between outpatient and inpatient medical care services. Inpatient medical care services could cost much larger than outpatient medical care services because it includes room fees, and it may include intensive treatment fees. Our finding supports the notion that people in the community would spend more on medical care utilization when they have a hospital in their neighborhood.

Table 8. The Impact on Household Health Expenditures

VARIABLES	DID Household Health Expenditures/Capita (IDR)	Matching DID Household Health Expenditures/Capita (IDR)
	(1)	(2)
Treatment*Post	1,957,518.680***	2,027,835.166**
	(735,385.273)	(844,003.322)
Observations	17,485	16,976
R-squared	0.029	0.049
Individual and HH Controls*	YES	YES
Sub-District Controls**	YES	YES
Municipality FE	YES	YES
Region*Year FE	YES	YES
Propensity Score***		YES

* Morbidity, Gender, Marital Status, Education, HH Size, and Rural
** Travel distance to existing hospital, # beds of existing hospitals, whether public or private hospital
*** Imputed propensity scores from matching process

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix I provides falsification tests for household health expenditures per capita. Appendix I shows DID and matching-DID approach when we use three artificial years: 2005, 2006, and 2007. If our results were driven by differences in pre-treatment trends, then we might see a significant impact before the intervention period. In general, the models suggest no estimators are significant and estimation magnitude is substantially reduced. It implies that the actual intervention, instead of spurious regressions, likely drive the difference in outcomes.

7. Discussion and conclusion

The existence of facility health centers in underdeveloped and remote areas in developing countries is a major factor in improving access to medical care utilization. However, difficult topography also creates a burden on those attempting to visit newly-built hospitals. I examined the impact of mobile hospital availability in underdeveloped and remote regions on medical care utilization using difference-in-differences and matching difference-in-differences approaches.

I found evidence that mobile hospital existence likely increases inpatient and outpatient utilization at public hospitals for municipalities which are located on main islands without any substitution effect for medical care utilization in private hospitals. I did not find evidence of increased public-hospital utilization for municipalities located on outer islands when a mobile hospital is located in one of the various small islands within districts. It suggests either the building of similar hospitals on each different island within the same cities or creating infrastructure to connect those separated islands. I have suggested that travel distance matters. I found that only areas in which new hospitals are closer than existing hospitals benefit from the intervention. Also, locations farther from newly-built hospitals are less likely to have inpatient and outpatient at public hospitals. Larger reduction for those who have better transportation mode to an alternative hospital. Households spend more on health when new hospitals appear. It suggests a family would spend more money and visit hospitals to get access to medical care when there is a hospital available in their neighborhood area.

Our study contributes to facility health center planning in underdeveloped and remote areas in Indonesia and provides information to policymakers in developing countries. Our study suggests not only facility health center existence in remote areas, but also transportation infrastructure, in general, are both critical to improving medical care utilization. Policymakers may even consider growing limited facilities within hospitals because of medical care utilization growth over time.

Acknowledgements

The author thanks, Dr. Thomas A. Mroz, Dr. James Marton, Dr. Charles Courtemanche, and Dr. Angela Snider for their insightful comments and anonymous comments from seminars and conferences. The author gains substantial data collection techniques useful from Dr. Daniel Kreisman dan Dr. Jonathan Smith because of our works. Those data collection techniques were essential for author's papers. We thank for Dr. Sarah Goodwin for correcting English errors. Finally, we are grateful for Ministry of Finance Republic of Indonesia for providing the *SUSENAS* datasets, Facebook and Google for providing me with geographic and distance related data.

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APPENDICES

Appendix A: Travel distance information from Google Developer

<table>
<tr><th>origin_lat</th><th>origin_lon</th><th>origin_address</th><th>destination_lat</th><th>destination_lon</th><th>destination_address</th><th>overview_polyline</th></tr>
<tr><td>4.8812885</td><td>96.77144</td><td>Pintu Rime Gayo, Bener Meriah Regency, Aceh, Indon...</td><td>4.6963269</td><td>96.8607181</td><td>Serule Kayu, Bukit, Bener Meriah Regency, Aceh 245...</td><td>akx\otsmQzCoHVsDj@kDnA_@fEh@jCw@r@xCjLvBb...</td></tr>
<tr><td>4.6502384</td><td>97.13594</td><td></td><td>4.69584</td><td>96.86008</td><td></td><td></td></tr>
<tr><td>4.7256780</td><td>96.99524</td><td>Mesidah, Bener Meriah Regency, Aceh, Indonesia</td><td>4.6963269</td><td>96.8607181</td><td>Serule Kayu, Bukit, Bener Meriah Regency, Aceh 245...</td><td>o~y[gk_oQeBvBgAnCa@pBEn@K`EN~GEhAKdAuBrG}...</td></tr>
<tr><td>4.7641173</td><td>96.78254</td><td>Timang Gajah, Bener Meriah Regency, Aceh, Indonesia</td><td>4.6963269</td><td>96.8607181</td><td>Serule Kayu, Bukit, Bener Meriah Regency, Aceh 245...</td><td>wna\{yumQTXTXh@fA^dAHt@Ej@KN[LMF?NHRT^DRB...</td></tr>
<tr><td>4.8140840</td><td>96.93441</td><td>Permata, Bener Meriah Regency, Aceh, Indonesia</td><td>4.6963269</td><td>96.8607181</td><td>Serule Kayu, Bukit, Bener Meriah Regency, Aceh 245...</td><td>_gk\aosnQfB_GzDoNn@eBdBoBxMyLfUyT~@e@fA_...</td></tr>
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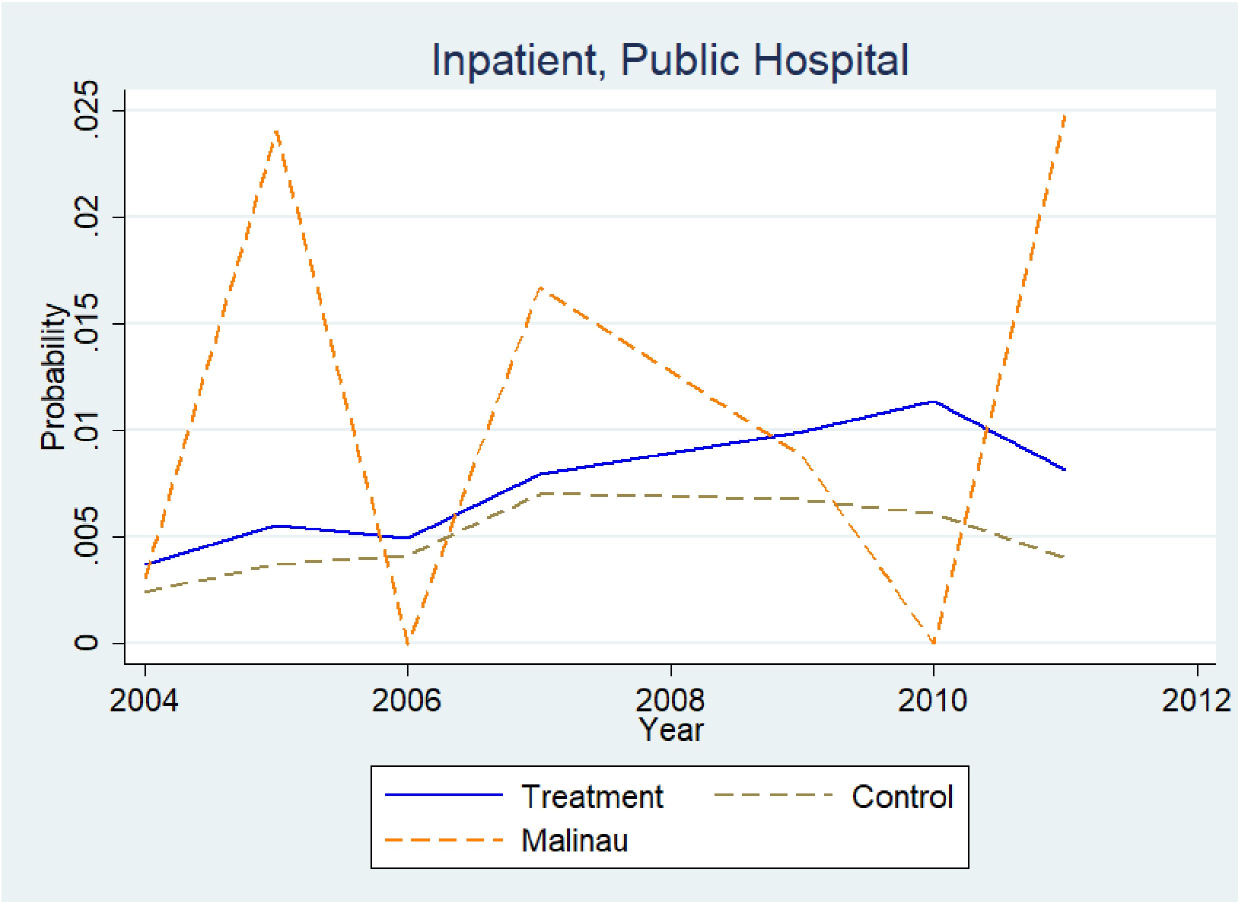
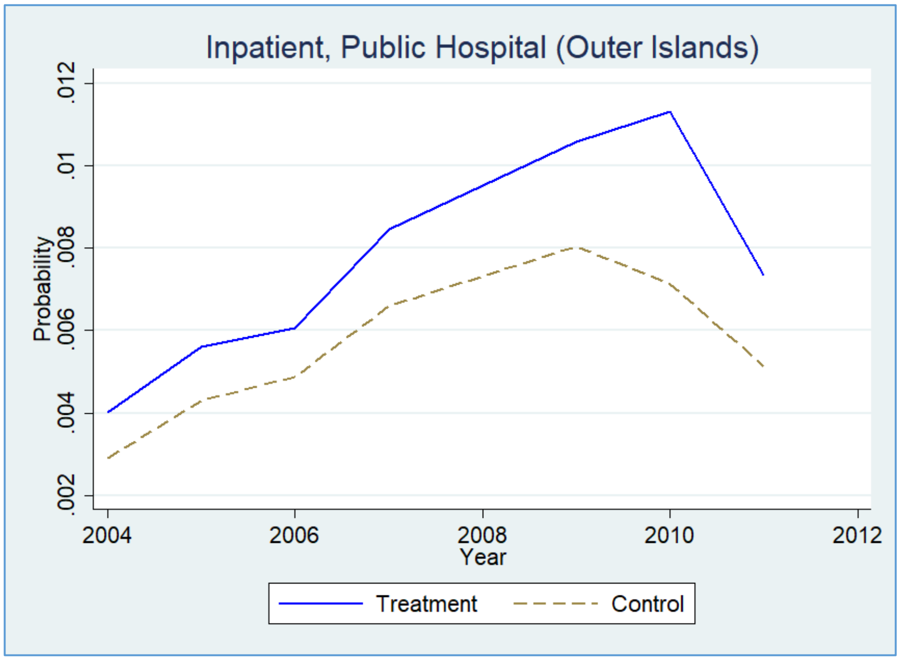
</table>

bound_sw_lat	bound_sw_lon	bound_ne_lat	bound_ne_lon	totalduration_seconds	totalduration_text	totaldistance_meter	totaldistance_text	travelmode
4.6955107	96.73171	4.8812885	96.86334	4233	1 hour 11 mins	42645	42.6 km	DRIVING
NA	NA	NA	NA	NA		NA		
4.6954853	96.85920	4.7554485	96.99524	3238	54 mins	21408	21.4 km	DRIVING
4.6954853	96.76644	4.7641173	96.86339	2080	35 mins	19873	19.9 km	DRIVING
4.6954853	96.85920	4.8140840	96.94529	2275	38 mins	20135	20.1 km	DRIVING
4.6954853	96.85920	4.7554485	96.95552	3920	1 hour 5 mins	25405	25.4 km	DRIVING
4.6954853	96.73172	4.8170107	96.86339	3116	52 mins	31196	31.2 km	DRIVING
4.6954853	96.80298	4.7294291	96.86339	1102	18 mins	10809	10.8 km	DRIVING
4.6954853	96.85920	4.7799889	96.92337	1842	31 mins	15225	15.2 km	DRIVING
4.6954853	96.85920	4.7254345	96.87205	511	9 mins	4533	4.5 km	DRIVING

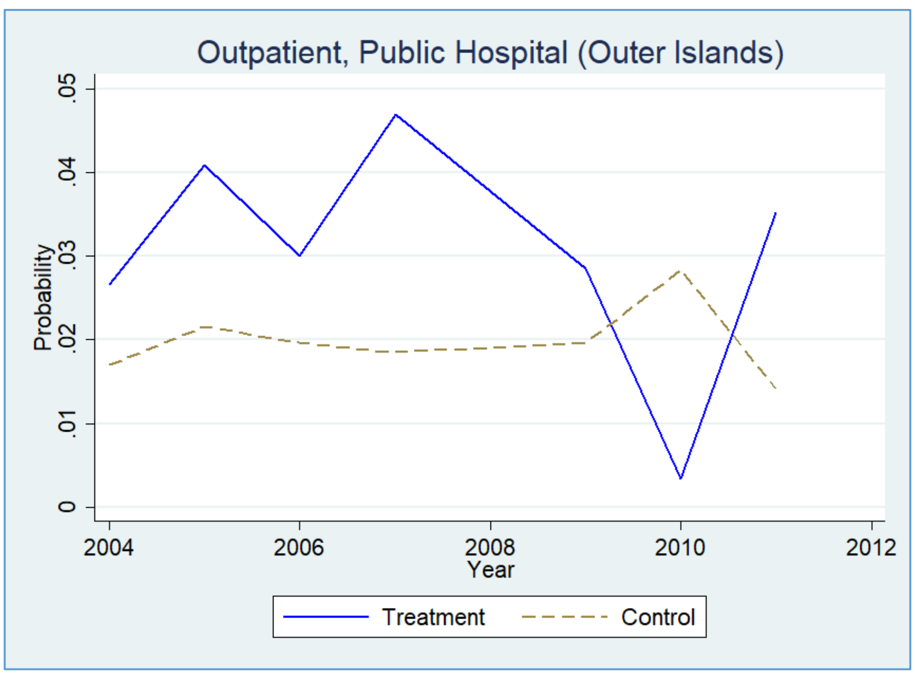
Appendix B: Inpatient at Public Hospital (Include Malinau Municipality)



Appendix C: Medical Care Utilization, Outer Islands



Appendix C. 1. Inpatient in Public Hospital: Outer Islands



Appendix C. 2. Outpatient in Public Hospital: Outer Islands

Appendix D: Robustness Checks, Primary Outcomes

Appendix D. 1. Robustness Checks: The Impact on Inpatient in Public Hospital (DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital
Treatment*Post	0.0026***	0.0019**	0.0020**	0.0023***	0.0019**
	(0.0008)	(0.0008)	(0.0008)	(0.0008)	(0.0009)
Treatment	0.0013***	0.0011**	0.0009*		
	(0.0005)	(0.0005)	(0.0005)		
Post	0.0007**	0.0008***	0.0008**		
	(0.0003)	(0.0003)	(0.0003)		
Male		-0.0005*	-0.0005*	-0.0004	-0.0004
		(0.0003)	(0.0003)	(0.0003)	(0.0003)
Age		0.0001***	0.0001***	0.0001***	0.0001***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		0.0003	0.0003	0.0007*	0.0007*
		(0.0004)	(0.0004)	(0.0004)	(0.0004)
Education		0.0001***	0.0001***	0.0001**	0.0001**
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Rural		-0.0084***	-0.0082***	-0.0073***	-0.0074***
		(0.0007)	(0.0007)	(0.0007)	(0.0007)
HH Size		-0.0000	-0.0000	0.0000	0.0000
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Public Hospital			0.0018**	-0.0005	-0.0005
(Central Gov)			(0.0008)	(0.0014)	(0.0014)
Public Hospital			-0.0007**	0.0001	0.0002
(Local Gov)			(0.0003)	(0.0006)	(0.0006)
Travel Distance			-0.0009***	-0.0009**	-0.0009**
(Total (100 Km))			(0.0002)	(0.0003)	(0.0003)
Travel Distance			0.0010***	0.0025***	0.0026***
(Water (100 Km))			(0.0002)	(0.0004)	(0.0004)
# of Beds/1000			-0.0002	-0.0007*	-0.0009**
population			(0.0002)	(0.0004)	(0.0004)
Constant	0.0046***	0.0087***	0.0097***	0.0039***	0.0109***
	(0.0002)	(0.0009)	(0.0009)	(0.0013)	(0.0019)
Observations	308,968	307,279	303,291	303,291	303,291
R-squared	0.0003	0.0028	0.0029	0.0048	0.0050
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 2. Robustness Checks: The Impact on Inpatient at Public Hospital (Matching DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital
Treatment*Post	0.0014	0.0008	0.0009	0.0013	0.0015
	(0.0009)	(0.0009)	(0.0009)	(0.0010)	(0.0010)
Treatment	0.0022***	0.0017***	0.0016***		
	(0.0005)	(0.0005)	(0.0006)		
Post	0.0010**	0.0008*	0.0010**		
	(0.0004)	(0.0004)	(0.0005)		
Male		-0.0003	-0.0003	-0.0002	-0.0002
		(0.0004)	(0.0004)	(0.0004)	(0.0004)
Age		0.0001***	0.0001***	0.0001***	0.0001***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		0.0006	0.0006	0.0009	0.0009
		(0.0005)	(0.0005)	(0.0005)	(0.0005)
Education		0.0001**	0.0001**	0.0001**	0.0001**
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Rural		-0.0081***	-0.0079***	-0.0068***	-0.0069***
		(0.0010)	(0.0010)	(0.0010)	(0.0010)
HH Size		0.0000	-0.0000	0.0001	0.0001
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Public Hospital			0.0024	0.0040	0.0038
(Central Gov)			(0.0020)	(0.0047)	(0.0046)
Public Hospital			-0.0014***	0.0000	0.0001
(Local Gov)			(0.0005)	(0.0007)	(0.0008)
Travel Distance			-0.0009***	-0.0010**	-0.0010**
(Total (100 Km))			(0.0003)	(0.0004)	(0.0004)
Travel Distance			0.0010***	0.0029***	0.0032***
(Water (100 Km))			(0.0003)	(0.0005)	(0.0005)
# of Beds/1000			-0.0008***	-0.0016***	-0.0018***
population			(0.0002)	(0.0006)	(0.0006)
Constant	0.0045***	0.0030***	0.0052***	0.0050***	0.0099***
	(0.0003)	(0.0011)	(0.0013)	(0.0019)	(0.0022)
Observations	299,193	299,193	299,193	299,193	299,193
R-squared	0.0004	0.0028	0.0030	0.0054	0.0057
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 3. Robustness Checks: The Impact on Outpatient at Public Hospital (DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital
Treatment*Post	0.0156***	0.0134***	0.0152***	0.0171***	0.0168***
	(0.0038)	(0.0037)	(0.0038)	(0.0039)	(0.0043)
Treatment	0.0108***	0.0103***	0.0066***		
	(0.0022)	(0.0022)	(0.0022)		
Post	-0.0038***	-0.0023*	-0.0029**		
	(0.0013)	(0.0014)	(0.0014)		
Male		0.0010	0.0008	0.0006	0.0005
		(0.0010)	(0.0011)	(0.0011)	(0.0011)
Age		0.0001***	0.0001***	0.0001***	0.0001***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		0.0008	0.0008	0.0011	0.0011
		(0.0014)	(0.0014)	(0.0014)	(0.0014)
Education		0.0006***	0.0006***	0.0006***	0.0007***
		(0.0002)	(0.0002)	(0.0002)	(0.0002)
Rural		-0.0335***	-0.0338***	-0.0350***	-0.0350***
		(0.0034)	(0.0034)	(0.0035)	(0.0035)
HH Size		0.0006*	0.0006	-0.0000	0.0001
		(0.0003)	(0.0003)	(0.0004)	(0.0004)
Public Hospital			0.0079**	-0.0040	-0.0019
(Central Gov)			(0.0038)	(0.0048)	(0.0048)
Public Hospital			-0.0009	-0.0014	-0.0010
(Local Gov)			(0.0016)	(0.0023)	(0.0024)
Travel Distance			0.0011	0.0016	0.0015
(Total (100 Km))			(0.0011)	(0.0016)	(0.0016)
Travel Distance			0.0034***	0.0030*	0.0028
(Water (100 Km))			(0.0011)	(0.0018)	(0.0018)
# of Beds/1000			0.0025***	0.0013	-0.0003
population			(0.0009)	(0.0019)	(0.0019)
Constant	0.0197***	0.0392***	0.0359***	0.1001***	0.1227***
	(0.0010)	(0.0040)	(0.0042)	(0.0196)	(0.0206)
Observations	75,407	75,104	74,401	74,401	74,401
R-squared	0.0031	0.0090	0.0103	0.0164	0.0189
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 4. Robustness Checks: The Impact on Outpatient at Public Hospital (Matching DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital
Treatment*Post	0.0115***	0.0100**	0.0115***	0.0118**	0.0119***
	(0.0044)	(0.0044)	(0.0044)	(0.0046)	(0.0046)
Treatment	0.0126***	0.0103***	0.0058**		
	(0.0027)	(0.0026)	(0.0025)		
Post	-0.0038**	-0.0045**	-0.0046**		
	(0.0019)	(0.0019)	(0.0019)		
Male		0.0023	0.0020	0.0015	0.0013
		(0.0015)	(0.0015)	(0.0015)	(0.0015)
Age		0.0001***	0.0001***	0.0001**	0.0001**
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Married		0.0011	0.0010	0.0014	0.0014
		(0.0020)	(0.0020)	(0.0020)	(0.0020)
Education		0.0005**	0.0006***	0.0006***	0.0006***
		(0.0002)	(0.0002)	(0.0002)	(0.0002)
Rural		-0.0432***	-0.0439***	-0.0465***	-0.0459***
		(0.0052)	(0.0050)	(0.0051)	(0.0050)
HH Size		0.0005	0.0004	0.0001	0.0002
		(0.0005)	(0.0005)	(0.0006)	(0.0006)
Public Hospital			0.0086	-0.0129**	-0.0144**
(Central Gov)			(0.0063)	(0.0058)	(0.0062)
Public Hospital			-0.0021	-0.0056*	-0.0052*
(Local Gov)			(0.0023)	(0.0030)	(0.0031)
Travel Distance			-0.0003	-0.0018	-0.0021
(Total (100 Km))			(0.0013)	(0.0019)	(0.0019)
Travel Distance			0.0053***	0.0046**	0.0050**
(Water (100 Km))			(0.0013)	(0.0021)	(0.0022)
# of Beds/1000			0.0026**	0.0015	-0.0014
population			(0.0011)	(0.0027)	(0.0025)
Constant	0.0210***	0.0494***	0.0464***	0.1392***	0.1570***
	(0.0013)	(0.0059)	(0.0064)	(0.0264)	(0.0280)
Observations	73,435	73,435	73,435	73,435	73,435
R-squared	0.0030	0.0114	0.0137	0.0197	0.0242
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 5. Robustness Checks: The Impact on Inpatient in Public Hospital (DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital
Treatment*Post	0.0021***	0.0020***	0.0025***	0.0034***	0.0023***
	(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0007)
Treatment	0.0013***	0.0008*	0.0003		
	(0.0004)	(0.0004)	(0.0004)		
Post	0.0021***	0.0020***	0.0007**		
	(0.0002)	(0.0002)	(0.0003)		
Morbidity		0.0122***	0.0122***	0.0118***	0.0118***
		(0.0003)	(0.0003)	(0.0003)	(0.0003)
Male		-0.0007***	-0.0007***	-0.0006***	-0.0006***
		(0.0002)	(0.0002)	(0.0002)	(0.0002)
Age		0.0001***	0.0001***	0.0001***	0.0001***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		-0.0001	-0.0001	0.0002	0.0002
		(0.0003)	(0.0003)	(0.0003)	(0.0003)
Education		0.0003***	0.0003***	0.0003***	0.0003***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Rural		-0.0077***	-0.0075***	-0.0068***	-0.0069***
		(0.0005)	(0.0005)	(0.0005)	(0.0005)
HH Size		0.0002***	0.0001**	0.0002**	0.0002**
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Inaccessible			-0.0004	0.0012**	0.0015**
Nearby			(0.0003)	(0.0006)	(0.0006)
Public Hospital			0.0005***	0.0003**	0.0007***
Nearby			(0.0001)	(0.0001)	(0.0002)
Ln(GRDP/Cap)			0.0001	-0.0018***	-0.0022***
			(0.0002)	(0.0006)	(0.0006)
Ln(Population)			-0.0009***	-0.0009***	-0.0005
			(0.0002)	(0.0003)	(0.0004)
Constant	0.0044***	0.0017**	0.0112***	0.0219***	0.0181**
	(0.0002)	(0.0007)	(0.0029)	(0.0062)	(0.0073)
Observations	555,286	547,536	547,536	547,536	547,536
R-squared	0.0004	0.0084	0.0086	0.0102	0.0105
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2014	2004-2014	2004-2014	2004-2014	2004-2014

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 6. Robustness Checks: The Impact on Inpatient in Public Hospital (Matching DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital
Treatment*Post	0.0024***	0.0021***	0.0026***	0.0036***	0.0025***
	(0.0007)	(0.0007)	(0.0007)	(0.0007)	(0.0007)
Treatment	0.0011**	0.0004	-0.0001		
	(0.0005)	(0.0005)	(0.0005)		
Post	0.0015***	0.0018***	0.0009***		
	(0.0003)	(0.0003)	(0.0003)		
Morbidity		0.0129***	0.0130***	0.0126***	0.0126***
		(0.0004)	(0.0004)	(0.0004)	(0.0004)
Male		-0.0007***	-0.0008***	-0.0007***	-0.0007***
		(0.0002)	(0.0002)	(0.0002)	(0.0002)
Age		0.0001***	0.0001***	0.0001***	0.0001***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		0.0002	0.0002	0.0005	0.0004
		(0.0004)	(0.0004)	(0.0004)	(0.0004)
Education		0.0004***	0.0004***	0.0003***	0.0003***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Rural		-0.0073***	-0.0072***	-0.0065***	-0.0066***
		(0.0005)	(0.0005)	(0.0005)	(0.0005)
HH Size		0.0002***	0.0001**	0.0001**	0.0002**
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Inaccessible			0.0001	0.0012**	0.0015**
Nearby			(0.0003)	(0.0006)	(0.0006)
Public Hospital			0.0006***	0.0002*	0.0007***
Nearby			(0.0001)	(0.0001)	(0.0002)
Ln(GRDP/Cap)			-0.0001	-0.0014**	-0.0017**
			(0.0002)	(0.0007)	(0.0007)
Ln(Population)			-0.0008***	-0.0008**	-0.0004
			(0.0002)	(0.0004)	(0.0004)
Constant	0.0049***	0.0010	0.0116***	0.0174***	0.0123
	(0.0002)	(0.0007)	(0.0031)	(0.0067)	(0.0079)
Observations	547,536	547,536	547,536	547,536	547,536
R-squared	0.0004	0.0088	0.0089	0.0104	0.0107
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2014	2004-2014	2004-2014	2004-2014	2004-2014

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 7. Robustness Checks: The Impact on Outpatient in Public Hospital (DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital
Treatment*Post	0.0208***	0.0188***	0.0230***	0.0223***	0.0217***
	(0.0033)	(0.0033)	(0.0033)	(0.0034)	(0.0036)
Treatment	0.0108***	0.0097***	0.0037		
	(0.0022)	(0.0022)	(0.0023)		
Post	0.0012	0.0008	-0.0050***		
	(0.0012)	(0.0012)	(0.0014)		
Male		0.0015*	0.0011	0.0012	0.0010
		(0.0009)	(0.0009)	(0.0009)	(0.0009)
Age		0.0002***	0.0002***	0.0002***	0.0002***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		-0.0000	-0.0007	0.0003	0.0004
		(0.0011)	(0.0012)	(0.0012)	(0.0012)
Education		0.0009***	0.0010***	0.0009***	0.0009***
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Rural		-0.0336***	-0.0337***	-0.0333***	-0.0335***
		(0.0026)	(0.0027)	(0.0026)	(0.0026)
HH Size		0.0013***	0.0011***	0.0004	0.0005*
		(0.0003)	(0.0003)	(0.0003)	(0.0003)
Inaccessible			0.0042***	0.0094***	0.0101***
Nearby			(0.0014)	(0.0025)	(0.0027)
Public Hospital			0.0027***	0.0026***	-0.0001
Nearby			(0.0004)	(0.0006)	(0.0010)
Ln(GRDP/Cap)			-0.0015**	0.0042	0.0038
			(0.0007)	(0.0029)	(0.0030)
Ln(Population)			-0.0083***	-0.0012	0.0026
			(0.0009)	(0.0015)	(0.0021)
Constant	0.0198***	0.0343***	0.1474***	0.0306	-0.0006
	(0.0009)	(0.0033)	(0.0141)	(0.0320)	(0.0377)
Observations	120,939	117,259	117,259	117,259	117,259
R-squared	0.0043	0.0109	0.0131	0.0193	0.0213
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2014	2004-2014	2004-2014	2004-2014	2004-2014

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 8. Robustness Checks: The Impact on Outpatient in Public Hospital (Matching DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital
Treatment*Post	0.0212***	0.0187***	0.0226***	0.0218***	0.0214***
	(0.0034)	(0.0034)	(0.0035)	(0.0035)	(0.0036)
Treatment	0.0085***	0.0069***	0.0005		
	(0.0021)	(0.0021)	(0.0023)		
Post	0.0020	-0.0000	-0.0044***		
	(0.0013)	(0.0013)	(0.0015)		
Male		0.0018*	0.0014	0.0014	0.0012
		(0.0010)	(0.0010)	(0.0010)	(0.0010)
Age		0.0002***	0.0002***	0.0002***	0.0002***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		0.0001	-0.0003	0.0004	0.0004
		(0.0013)	(0.0013)	(0.0013)	(0.0013)
Education		0.0010***	0.0011***	0.0010***	0.0011***
		(0.0001)	(0.0001)	(0.0002)	(0.0002)
Rural		-0.0347***	-0.0353***	-0.0337***	-0.0341***
		(0.0027)	(0.0028)	(0.0027)	(0.0027)
HH Size		0.0013***	0.0010***	0.0004	0.0005
		(0.0003)	(0.0003)	(0.0004)	(0.0004)
Inaccessible			0.0050***	0.0090***	0.0086***
Nearby			(0.0015)	(0.0027)	(0.0029)
Public Hospital			0.0030***	0.0023***	-0.0012
Nearby			(0.0005)	(0.0007)	(0.0011)
Ln(GRDP/Cap)			-0.0030***	0.0037	0.0040
			(0.0007)	(0.0031)	(0.0032)
Ln(Population)			-0.0085***	-0.0013	0.0031
			(0.0009)	(0.0016)	(0.0024)
Constant	0.0205***	0.0337***	0.1629***	0.0381	-0.0034
	(0.0010)	(0.0033)	(0.0156)	(0.0350)	(0.0417)
Observations	117,259	117,259	117,259	117,259	117,259
R-squared	0.0036	0.0116	0.0138	0.0193	0.0214
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2014	2004-2014	2004-2014	2004-2014	2004-2014

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 9. Robustness Checks: Inpatient in Public Hospital, Main Islands (DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital
Treatment*Post	0.0053***	0.0049***	0.0048***	0.0053***	0.0051***
	(0.0013)	(0.0013)	(0.0013)	(0.0014)	(0.0014)
Treatment	0.0007	0.0003	0.0002		
	(0.0007)	(0.0007)	(0.0008)		
Post	-0.0006	-0.0003	-0.0004		
	(0.0004)	(0.0004)	(0.0004)		
Male		-0.0005	-0.0004	-0.0004	-0.0004
		(0.0004)	(0.0004)	(0.0004)	(0.0004)
Age		0.0001***	0.0001***	0.0001***	0.0001***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		-0.0006	-0.0006	-0.0003	-0.0003
		(0.0006)	(0.0006)	(0.0006)	(0.0006)
Education		0.0002***	0.0002***	0.0001**	0.0001**
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Rural		-0.0049***	-0.0047***	-0.0046***	-0.0044***
		(0.0010)	(0.0010)	(0.0010)	(0.0010)
HH Size		0.0001	0.0001	0.0001	0.0000
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Public Hospital			0.0019**	-0.0009	-0.0008
(Central Gov)			(0.0009)	(0.0014)	(0.0014)
Public Hospital			0.0015***	0.0003	0.0003
(Local Gov)			(0.0004)	(0.0008)	(0.0008)
Travel Distance			-0.0007***	-0.0005	-0.0006
(Total (100 Km))			(0.0002)	(0.0004)	(0.0004)
Travel Distance			0.0003	0.0003	0.0000
(Water (100 Km))			(0.0003)	(0.0005)	(0.0005)
# of Beds/1000			0.0000	-0.0002	-0.0004
population			(0.0002)	(0.0004)	(0.0005)
Constant	0.0041***	0.0042***	0.0037***	0.0013	0.0107***
	(0.0003)	(0.0012)	(0.0012)	(0.0016)	(0.0024)
Observations	123,957	123,249	121,486	121,486	121,486
R-squared	0.0006	0.0026	0.0028	0.0043	0.0045
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 10. Robustness Checks: Inpatient in Public Hospital, Main Islands (Matching DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital
Treatment*Post	0.0049***	0.0046***	0.0050***	0.0054***	0.0051***
	(0.0014)	(0.0014)	(0.0015)	(0.0015)	(0.0015)
Treatment	0.0010	0.0006	-0.0003		
	(0.0008)	(0.0008)	(0.0008)		
Post	-0.0003	-0.0003	-0.0004		
	(0.0005)	(0.0005)	(0.0006)		
Male		-0.0000	0.0000	0.0001	0.0001
		(0.0005)	(0.0005)	(0.0005)	(0.0005)
Age		0.0002***	0.0002***	0.0002***	0.0002***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		-0.0003	-0.0003	-0.0002	-0.0002
		(0.0008)	(0.0008)	(0.0008)	(0.0008)
Education		0.0001**	0.0001*	0.0001	0.0001
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Rural		-0.0045***	-0.0045***	-0.0045***	-0.0043***
		(0.0012)	(0.0012)	(0.0012)	(0.0012)
HH Size		0.0002	0.0002	0.0002	0.0002
		(0.0002)	(0.0002)	(0.0002)	(0.0002)
Public Hospital			0.0054*	0.0038	0.0050
(Central Gov)			(0.0029)	(0.0046)	(0.0048)
Public Hospital			0.0025***	0.0002	0.0004
(Local Gov)			(0.0005)	(0.0009)	(0.0009)
Travel Distance			-0.0008***	-0.0009*	-0.0011**
(Total (100 Km))			(0.0003)	(0.0005)	(0.0005)
Travel Distance			0.0004	0.0003	0.0001
(Water (100 Km))			(0.0003)	(0.0006)	(0.0006)
# of Beds/1000			-0.0001	-0.0011	-0.0012
population			(0.0003)	(0.0008)	(0.0008)
Constant	0.0040***	0.0027*	0.0022	0.0019	0.0082***
	(0.0004)	(0.0016)	(0.0016)	(0.0022)	(0.0024)
Observations	118,422	118,422	118,422	118,422	118,422
R-squared	0.0008	0.0028	0.0031	0.0043	0.0046
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 11. Robustness Checks: Outpatient in Public Hospital, Main Islands (DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital
Treatment*Post	0.0459***	0.0444***	0.0465***	0.0510***	0.0490***
	(0.0064)	(0.0065)	(0.0069)	(0.0073)	(0.0078)
Treatment	0.0004	-0.0016	-0.0045		
	(0.0029)	(0.0029)	(0.0033)		
Post	-0.0065***	-0.0026	-0.0036		
	(0.0020)	(0.0022)	(0.0022)		
Male		0.0039**	0.0040**	0.0037**	0.0037**
		(0.0016)	(0.0017)	(0.0017)	(0.0017)
Age		0.0003***	0.0003***	0.0004***	0.0004***
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Married		-0.0019	-0.0015	-0.0024	-0.0023
		(0.0024)	(0.0024)	(0.0024)	(0.0024)
Education		0.0008***	0.0008***	0.0010***	0.0010***
		(0.0002)	(0.0003)	(0.0003)	(0.0003)
Rural		-0.0275***	-0.0279***	-0.0270***	-0.0256***
		(0.0059)	(0.0060)	(0.0061)	(0.0062)
HH Size		0.0029***	0.0027***	0.0013*	0.0014*
		(0.0007)	(0.0007)	(0.0008)	(0.0008)
Public Hospital			0.0019	-0.0033	-0.0040
(Central Gov)			(0.0037)	(0.0053)	(0.0053)
Public Hospital			0.0074***	-0.0029	-0.0006
(Local Gov)			(0.0025)	(0.0034)	(0.0035)
Travel Distance				0.0041**	0.0041**
(Total (100 Km))				(0.0020)	(0.0019)
Travel Distance				-0.0058**	-0.0074***
(Water (100 Km))				(0.0024)	(0.0024)
# of Beds/1000				0.0017	0.0015
population				(0.0023)	(0.0021)
Constant	0.0203***	0.0174**	0.0102	0.0851***	0.1055***
	(0.0016)	(0.0068)	(0.0069)	(0.0199)	(0.0218)
Observations	30,385	30,243	30,018	30,018	30,018
R-squared	0.0082	0.0146	0.0159	0.0223	0.0263
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 12. Robustness Checks: Outpatient in Public Hospital, Main Islands (Matching DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital
Treatment*Post	0.0373***	0.0372***	0.0368***	0.0406***	0.0359***
	(0.0066)	(0.0066)	(0.0068)	(0.0073)	(0.0078)
Treatment	-0.0009	-0.0035	-0.0052		
	(0.0030)	(0.0030)	(0.0036)		
Post	-0.0067***	-0.0021	-0.0027		
	(0.0025)	(0.0028)	(0.0030)		
Male		0.0059***	0.0058***	0.0052**	0.0052**
		(0.0022)	(0.0022)	(0.0022)	(0.0022)
Age		0.0005***	0.0005***	0.0005***	0.0004***
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Married		-0.0010	-0.0009	-0.0016	-0.0013
		(0.0033)	(0.0033)	(0.0033)	(0.0033)
Education		0.0006**	0.0007**	0.0008**	0.0007**
		(0.0003)	(0.0003)	(0.0003)	(0.0003)
Rural		-0.0332***	-0.0340***	-0.0315***	-0.0289***
		(0.0080)	(0.0081)	(0.0079)	(0.0080)
HH Size		0.0045***	0.0044***	0.0026**	0.0028**
		(0.0013)	(0.0013)	(0.0012)	(0.0012)
Public Hospital			-0.0001	-0.0144**	-0.0131*
(Central Gov)			(0.0059)	(0.0063)	(0.0067)
Public Hospital			0.0062	-0.0079*	-0.0051
(Local Gov)			(0.0039)	(0.0043)	(0.0046)
Travel Distance				0.0016	0.0003
(Total (Km))				(0.0025)	(0.0025)
Travel Distance				-0.0030	-0.0047
(Water (Km))				(0.0030)	(0.0033)
# of Beds				0.0017	-0.0015
				(0.0032)	(0.0031)
Constant	0.0203***	0.0114	0.0051	0.1135***	0.1324***
	(0.0018)	(0.0090)	(0.0093)	(0.0273)	(0.0303)
Observations	29,334	29,334	29,334	29,334	29,334
R-squared	0.0065	0.0174	0.0179	0.0256	0.0281
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 13. Robustness Checks: Inpatient at Public Hospital, Outer Islands (DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital
Treatment*Post	0.0010	0.0000	0.0005	0.0007	0.0006
	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0011)
Treatment	0.0014**	0.0015**	0.0008		
	(0.0006)	(0.0006)	(0.0006)		
Post	0.0016***	0.0017***	0.0017***		
	(0.0005)	(0.0005)	(0.0005)		
Male		-0.0004	-0.0005	-0.0005	-0.0005
		(0.0004)	(0.0004)	(0.0004)	(0.0004)
Age		0.0001***	0.0001***	0.0001***	0.0001***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		0.0011**	0.0012**	0.0014***	0.0014**
		(0.0005)	(0.0005)	(0.0005)	(0.0005)
Education		0.0000	0.0000	0.0000	0.0000
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Rural		-0.0103***	-0.0100***	-0.0087***	-0.0088***
		(0.0010)	(0.0010)	(0.0010)	(0.0010)
HH Size		-0.0001	-0.0001	-0.0000	-0.0000
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Public Hospital			0.0019	-0.0010	-0.0015
(Central Gov)			(0.0015)	(0.0091)	(0.0092)
Public Hospital			-0.0020***	-0.0017	-0.0018
(Local Gov)			(0.0005)	(0.0011)	(0.0011)
Travel Distance			-0.0010***	-0.0014**	-0.0014**
(Total (Km))			(0.0004)	(0.0006)	(0.0006)
Travel Distance			0.0014***	0.0042***	0.0043***
(Water (Km))			(0.0004)	(0.0006)	(0.0006)
# of Beds			-0.0003	-0.0014*	-0.0009
			(0.0003)	(0.0008)	(0.0009)
Constant	0.0049***	0.0115***	0.0131***	0.0070***	0.0060***
	(0.0003)	(0.0012)	(0.0013)	(0.0018)	(0.0015)
Observations	185,011	184,030	181,805	181,805	181,805
R-squared	0.0003	0.0031	0.0034	0.0053	0.0057
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 14. Robustness Checks: Inpatient at Public Hospital, Outer Islands (Matching DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital
Treatment*Post	-0.0004	-0.0010	-0.0003	-0.0008	0.0002
	(0.0012)	(0.0012)	(0.0012)	(0.0013)	(0.0014)
Treatment	0.0026***	0.0022***	0.0013*		
	(0.0007)	(0.0007)	(0.0007)		
Post	0.0019***	0.0015**	0.0015**		
	(0.0006)	(0.0006)	(0.0006)		
Male		-0.0004	-0.0004	-0.0004	-0.0004
		(0.0005)	(0.0005)	(0.0005)	(0.0005)
Age		0.0001***	0.0001***	0.0001***	0.0001***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		0.0011*	0.0012*	0.0014**	0.0014**
		(0.0007)	(0.0007)	(0.0007)	(0.0007)
Education		0.0001	0.0001*	0.0001*	0.0001*
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Rural		-0.0098***	-0.0092***	-0.0077***	-0.0078***
		(0.0013)	(0.0013)	(0.0013)	(0.0013)
HH Size		-0.0001	-0.0002	0.0000	0.0000
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Public Hospital			0.0005	-0.0051	-0.0085
(Central Gov)			(0.0021)	(0.0063)	(0.0066)
Public Hospital			-0.0037***	-0.0031**	-0.0026*
(Local Gov)			(0.0007)	(0.0013)	(0.0015)
Travel Distance			-0.0005	-0.0008	-0.0009
(Total (Km))			(0.0005)	(0.0007)	(0.0007)
Travel Distance			0.0011**	0.0042***	0.0044***
(Water (Km))			(0.0005)	(0.0008)	(0.0008)
# of Beds			-0.0014***	-0.0025***	-0.0022*
			(0.0004)	(0.0009)	(0.0011)
Constant	0.0047***	0.0105***	0.0135***	0.0058**	0.0048***
	(0.0004)	(0.0015)	(0.0018)	(0.0025)	(0.0018)
Observations	180,771	180,771	180,771	180,771	180,771
R-squared	0.0003	0.0029	0.0037	0.0063	0.0066
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 15. Robustness Checks: Outpatient in Public Hospital, Outer Islands (DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital
Treatment*Post	-0.0055	-0.0079*	-0.0058	-0.0038	-0.0016
	(0.0044)	(0.0044)	(0.0043)	(0.0045)	(0.0051)
Treatment	0.0178***	0.0187***	0.0100***		
	(0.0032)	(0.0032)	(0.0029)		
Post	-0.0019	-0.0014	-0.0010		
	(0.0018)	(0.0018)	(0.0018)		
Male		-0.0016	-0.0019	-0.0020	-0.0019
		(0.0014)	(0.0014)	(0.0014)	(0.0014)
Age		0.0000	-0.0000	-0.0000	-0.0000
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		0.0019	0.0024	0.0027	0.0026
		(0.0017)	(0.0017)	(0.0017)	(0.0017)
Education		0.0005**	0.0004*	0.0004**	0.0005**
		(0.0002)	(0.0002)	(0.0002)	(0.0002)
Rural		-0.0364***	-0.0353***	-0.0374***	-0.0366***
		(0.0042)	(0.0041)	(0.0042)	(0.0042)
HH Size		-0.0003	-0.0004	-0.0007*	-0.0007
		(0.0004)	(0.0004)	(0.0004)	(0.0004)
Public Hospital			0.0101	-0.0257***	-0.0206***
(Central Gov)			(0.0070)	(0.0046)	(0.0056)
Public Hospital			-0.0065***	-0.0019	-0.0033
(Local Gov)			(0.0021)	(0.0032)	(0.0033)
Travel Distance				-0.0050**	-0.0036
(Total (Km))				(0.0025)	(0.0026)
Travel Distance				0.0154***	0.0148***
(Water (Km))				(0.0025)	(0.0025)
# of Beds				-0.0005	0.0004
				(0.0038)	(0.0043)
Constant	0.0193***	0.0499***	0.0511***	0.0471***	0.0397***
	(0.0013)	(0.0049)	(0.0055)	(0.0075)	(0.0066)
Observations	45,022	44,861	44,383	44,383	44,383
R-squared	0.0024	0.0095	0.0133	0.0188	0.0210
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 16. Robustness Checks: Outpatient in Public Hospital, Outer Islands (Matching DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital
Treatment*Post	-0.0041	-0.0064	-0.0033	-0.0060	-0.0019
	(0.0057)	(0.0057)	(0.0056)	(0.0059)	(0.0059)
Treatment	0.0204***	0.0189***	0.0086**		
	(0.0038)	(0.0038)	(0.0034)		
Post	-0.0020	-0.0050*	-0.0039		
	(0.0026)	(0.0026)	(0.0026)		
Male		-0.0008	-0.0010	-0.0013	-0.0013
		(0.0021)	(0.0021)	(0.0020)	(0.0020)
Age		-0.0000	-0.0000	-0.0000	-0.0000
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Married		0.0021	0.0023	0.0021	0.0024
		(0.0026)	(0.0026)	(0.0026)	(0.0026)
Education		0.0005*	0.0004	0.0005	0.0005
		(0.0003)	(0.0003)	(0.0003)	(0.0003)
Rural		-0.0480***	-0.0488***	-0.0527***	-0.0516***
		(0.0065)	(0.0062)	(0.0063)	(0.0062)
HH Size		-0.0012**	-0.0010*	-0.0010*	-0.0009
		(0.0006)	(0.0006)	(0.0006)	(0.0006)
Public Hospital			0.0170	-0.0196***	-0.0218***
(Central Gov)			(0.0132)	(0.0055)	(0.0069)
Public Hospital			-0.0062**	-0.0062*	-0.0062*
(Local Gov)			(0.0029)	(0.0036)	(0.0034)
Travel Distance				-0.0050*	-0.0042
(Total (Km))				(0.0028)	(0.0028)
Travel Distance				0.0125***	0.0128***
(Water (Km))				(0.0029)	(0.0030)
# of Beds				0.0008	-0.0035
				(0.0042)	(0.0047)
Constant	0.0213***	0.0675***	0.0677***	0.0658***	0.0588***
	(0.0018)	(0.0076)	(0.0083)	(0.0107)	(0.0094)
Observations	44,101	44,101	44,101	44,101	44,101
R-squared	0.0034	0.0130	0.0174	0.0233	0.0272
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 17. Medical Care Utilization, Excluding Municipality with 2012 Opening as Control Group

	(1)	(2)	(3)	(4)
VARIABLES	Outpatient Public Hospital	Outpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital
	All Samples	Main Islands	All Samples	Main Islands
Treatment*Post	0.0229***	0.0607***	0.0029***	0.0064***
	(0.0037)	(0.0075)	(0.0007)	(0.0013)
Morbidity			0.0122***	0.0142***
			(0.0004)	(0.0006)
Male	0.0005	0.0038**	-0.0007***	-0.0001
	(0.0010)	(0.0018)	(0.0002)	(0.0004)
Age	0.0001***	0.0004***	0.0001***	0.0002***
	(0.0000)	(0.0001)	(0.0000)	(0.0000)
Married	-0.0004	-0.0067***	0.0005	-0.0006
	(0.0013)	(0.0025)	(0.0004)	(0.0007)
Education	0.0008***	0.0010***	0.0003***	0.0002***
	(0.0002)	(0.0003)	(0.0000)	(0.0001)
Rural	-0.0332***	-0.0234***	-0.0073***	-0.0045***
	(0.0029)	(0.0055)	(0.0006)	(0.0010)
HH Size	0.0005	0.0028***	0.0002***	0.0003**
	(0.0004)	(0.0009)	(0.0001)	(0.0001)
Inaccessible	0.0084**	0.0190***	0.0030***	0.0009
Nearby	(0.0033)	(0.0064)	(0.0008)	(0.0011)
Public Hospital	-0.0007	-0.0105***	0.0010***	-0.0003
Nearby	(0.0013)	(0.0025)	(0.0002)	(0.0004)
Ln(GRDP/Cap)	0.0047	-0.0322***	-0.0030***	-0.0016
	(0.0033)	(0.0093)	(0.0007)	(0.0014)
Ln(Population)	0.0047**	0.0127**	-0.0010**	0.0019**
	(0.0024)	(0.0050)	(0.0005)	(0.0009)
Constant	0.0284***	0.0462	0.0284***	-0.0101
	(0.0081)	(0.0972)	(0.0081)	(0.0162)
Observations	93,903	32,442	431,882	168,775
R-squared	0.0240	0.0454	0.0110	0.0150
Municipality FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Region*Year FE	YES	YES	YES	YES
Year	2004-2014	2004-2014	2004-2014	2004-2014

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 18. Medical Care Utilization Including Municipality with 2012 Opening as Treatment Group

	(1)	(2)	(3)	(4)
VARIABLES	Outpatient Public Hospital	Outpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital
	All Samples	Main Islands	All Samples	Main Islands
Treatment*Post	0.0171***	0.0417***	0.0021***	0.0067***
	(0.0035)	(0.0080)	(0.0005)	(0.0012)
Morbidity			0.0118***	0.0114***
			(0.0003)	(0.0005)
Male	0.0010	0.0045***	-0.0006***	-0.0006**
	(0.0009)	(0.0014)	(0.0002)	(0.0003)
Age	0.0002***	0.0004***	0.0001***	0.0001***
	(0.0000)	(0.0001)	(0.0000)	(0.0000)
Married	0.0004	-0.0034*	0.0002	-0.0010**
	(0.0012)	(0.0020)	(0.0003)	(0.0005)
Education	0.0009***	0.0012***	0.0003***	0.0003***
	(0.0001)	(0.0002)	(0.0000)	(0.0000)
Rural	-0.0340***	-0.0313***	-0.0069***	-0.0047***
	(0.0026)	(0.0044)	(0.0005)	(0.0008)
HH Size	0.0006*	0.0021***	0.0002**	0.0002
	(0.0003)	(0.0007)	(0.0001)	(0.0001)
Inaccessible	0.0114***	-0.0023*	0.0016***	0.0013*
Nearby	(0.0028)	(0.0013)	(0.0006)	(0.0007)
Public Hospital	0.0006	-0.0085	0.0008***	0.0003
Nearby	(0.0010)	(0.0079)	(0.0002)	(0.0002)
Ln(GRDP/Cap)	0.0016	-0.0003	-0.0026***	-0.0015
	(0.0031)	(0.0045)	(0.0007)	(0.0012)
Ln(Population)	0.0032	0.0812	-0.0006	-0.0008
	(0.0021)	(0.0763)	(0.0004)	(0.0007)
Constant	0.0055	-0.0023*	0.0294***	0.0238*
	(0.0385)	(0.0013)	(0.0077)	(0.0133)
Observations	117,259	46,877	547,536	226,362
R-squared	0.0211	0.0308	0.0105	0.0108
Municipality FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Region*Year FE	YES	YES	YES	YES
Year	2004-2014	2004-2014	2004-2014	2004-2014

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 19. Robustness Checks: Inpatient in Public Hospital, Main Islands (DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital
Treatment*Post	0.0053***	0.0050***	0.0050***	0.0056***	0.0055***
	(0.0013)	(0.0013)	(0.0013)	(0.0013)	(0.0014)
Treatment	0.0007	-0.0003	-0.0029*		
	(0.0007)	(0.0007)	(0.0016)		
Post	-0.0006	-0.0004	-0.0005		
	(0.0004)	(0.0004)	(0.0004)		
Morbidity		0.0088***	0.0088***	0.0087***	0.0088***
		(0.0005)	(0.0006)	(0.0006)	(0.0006)
Male		-0.0003	-0.0003	-0.0002	-0.0002
		(0.0004)	(0.0004)	(0.0004)	(0.0004)
Age		0.0001***	0.0001***	0.0001***	0.0001***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		-0.0004	-0.0004	-0.0002	-0.0001
		(0.0006)	(0.0006)	(0.0006)	(0.0006)
Education		0.0003***	0.0003***	0.0003***	0.0003***
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Rural		-0.0048***	-0.0048***	-0.0044***	-0.0041***
		(0.0010)	(0.0010)	(0.0010)	(0.0010)
HH Size		0.0001	0.0001	0.0001	0.0001
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Public Hospital			0.0017*	-0.0001	-0.0000
(Central Gov)			(0.0009)	(0.0016)	(0.0016)
Public Hospital			0.0012**	-0.0002	-0.0000
(Local Gov)			(0.0005)	(0.0009)	(0.0009)
Travel Distance			-0.0000**	-0.0000	-0.0000
(Total (Km))			(0.0000)	(0.0000)	(0.0000)
Travel Distance			0.0000	0.0000	0.0000
(Water (Km))			(0.0000)	(0.0000)	(0.0000)
# of Beds			-0.0000	-0.0000	-0.0000
			(0.0000)	(0.0000)	(0.0000)
Constant	0.0041***	0.0012	0.0016	0.0011	0.0101***
	(0.0003)	(0.0012)	(0.0013)	(0.0018)	(0.0026)
Observations	123,957	123,249	121,486	121,486	121,486
R-squared	0.0006	0.0063	0.0066	0.0079	0.0082
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 20. Robustness Checks: Inpatient in Public Hospital, Main Islands (Matching DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital
Treatment*Post	0.0058***	0.0059***	0.0062***	0.0066***	0.0056***
	(0.0016)	(0.0016)	(0.0016)	(0.0016)	(0.0017)
Treatment	0.0013	0.0001	-0.0027		
	(0.0009)	(0.0009)	(0.0024)		
Post	-0.0003	-0.0005	-0.0005		
	(0.0007)	(0.0007)	(0.0007)		
Morbidity		0.0100***	0.0102***	0.0100***	0.0100***
		(0.0009)	(0.0009)	(0.0009)	(0.0009)
Male		0.0009	0.0009	0.0009	0.0009
		(0.0007)	(0.0007)	(0.0007)	(0.0007)
Age		0.0002***	0.0002***	0.0002***	0.0002***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		-0.0018	-0.0018	-0.0016	-0.0016
		(0.0011)	(0.0011)	(0.0011)	(0.0011)
Education		0.0001	0.0001	0.0001	0.0001
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Rural		-0.0044***	-0.0045***	-0.0042***	-0.0042***
		(0.0015)	(0.0015)	(0.0015)	(0.0015)
HH Size		0.0000	0.0000	-0.0000	-0.0000
		(0.0002)	(0.0002)	(0.0002)	(0.0002)
Public Hospital			0.0055	0.0063	0.0074
(Central Gov)			(0.0038)	(0.0062)	(0.0062)
Public Hospital			0.0016**	-0.0009	-0.0006
(Local Gov)			(0.0007)	(0.0010)	(0.0011)
Travel Distance			-0.0000	0.0000	0.0000
(Total (Km))			(0.0000)	(0.0000)	(0.0000)
Travel Distance			0.0000	-0.0000	-0.0000
(Water (Km))			(0.0000)	(0.0000)	(0.0000)
# of Beds			-0.0000	-0.0000	-0.0000
			(0.0000)	(0.0000)	(0.0000)
Constant	0.0040***	-0.0002	-0.0008	0.0003	0.0043
	(0.0004)	(0.0018)	(0.0020)	(0.0025)	(0.0028)
Observations	106,331	106,331	106,331	106,331	106,331
R-squared	0.0012	0.0074	0.0078	0.0085	0.0087
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 21. Robustness Checks: Outpatient in Public Hospital, Main Islands (DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital
Treatment*Post	0.0459***	0.0444***	0.0481***	0.0520***	0.0504***
	(0.0064)	(0.0065)	(0.0071)	(0.0075)	(0.0081)
Treatment	0.0004	-0.0016	0.0065		
	(0.0029)	(0.0029)	(0.0066)		
Post	-0.0065***	-0.0026	-0.0031		
	(0.0020)	(0.0022)	(0.0022)		
Male		0.0039**	0.0041**	0.0038**	0.0038**
		(0.0016)	(0.0017)	(0.0017)	(0.0017)
Age		0.0003***	0.0004***	0.0004***	0.0004***
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Married		-0.0019	-0.0017	-0.0024	-0.0023
		(0.0024)	(0.0024)	(0.0024)	(0.0024)
Education		0.0008***	0.0009***	0.0010***	0.0010***
		(0.0002)	(0.0003)	(0.0003)	(0.0003)
Rural		-0.0275***	-0.0274***	-0.0264***	-0.0253***
		(0.0059)	(0.0060)	(0.0060)	(0.0061)
HH Size		0.0029***	0.0027***	0.0012	0.0013*
		(0.0007)	(0.0007)	(0.0007)	(0.0008)
Public Hospital			0.0057	-0.0036	-0.0039
(Central Gov)			(0.0038)	(0.0056)	(0.0057)
Public Hospital			0.0131***	-0.0001	0.0017
(Local Gov)			(0.0031)	(0.0031)	(0.0033)
Travel Distance			0.0000	0.0001***	0.0001***
(Total (Km))			(0.0000)	(0.0000)	(0.0000)
Travel Distance			-0.0000*	-0.0000*	-0.0001**
(Water (Km))			(0.0000)	(0.0000)	(0.0000)
# of Beds			-0.0001***	0.0000	-0.0000
			(0.0000)	(0.0000)	(0.0000)
Constant	0.0203***	0.0174**	0.0139*	0.0819***	0.1031***
	(0.0016)	(0.0068)	(0.0073)	(0.0203)	(0.0221)
Observations	30,385	30,243	30,018	30,018	30,018
R-squared	0.0082	0.0146	0.0170	0.0229	0.0267
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 22. Robustness Checks: Outpatient in Public Hospital, Main Islands (Matching DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital
Treatment*Post	0.0498***	0.0491***	0.0474***	0.0489***	0.0471***
	(0.0072)	(0.0073)	(0.0074)	(0.0080)	(0.0081)
Treatment	-0.0047	-0.0070**	0.0013		
	(0.0033)	(0.0034)	(0.0074)		
Post	-0.0098***	-0.0048	-0.0045		
	(0.0032)	(0.0035)	(0.0036)		
Male		0.0069***	0.0067**	0.0060**	0.0059**
		(0.0026)	(0.0026)	(0.0026)	(0.0026)
Age		0.0006***	0.0006***	0.0006***	0.0006***
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Married		-0.0046	-0.0045	-0.0055	-0.0052
		(0.0039)	(0.0039)	(0.0039)	(0.0039)
Education		0.0006*	0.0007**	0.0007*	0.0007*
		(0.0004)	(0.0004)	(0.0004)	(0.0004)
Rural		-0.0283***	-0.0283***	-0.0227**	-0.0222**
		(0.0089)	(0.0088)	(0.0089)	(0.0090)
HH Size		0.0052***	0.0052***	0.0024**	0.0027**
		(0.0012)	(0.0012)	(0.0012)	(0.0012)
Public Hospital			-0.0040	-0.0230**	-0.0263**
(Central Gov)			(0.0066)	(0.0103)	(0.0119)
Public Hospital			0.0089**	-0.0110**	-0.0115**
(Local Gov)			(0.0045)	(0.0051)	(0.0055)
Travel Distance			0.0000**	0.0001**	0.0001**
(Total (Km))			(0.0000)	(0.0000)	(0.0000)
Travel Distance			-0.0000**	-0.0000	-0.0000
(Water (Km))			(0.0000)	(0.0000)	(0.0000)
# of Beds			0.0000	0.0001*	0.0001*
			(0.0001)	(0.0001)	(0.0001)
Constant	0.0235***	0.0034	-0.0122	0.0702***	0.0656***
	(0.0023)	(0.0104)	(0.0117)	(0.0243)	(0.0253)
Observations	26,756	26,756	26,756	26,756	26,756
R-squared	0.0102	0.0209	0.0222	0.0323	0.0343
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 23. Robustness Checks: Inpatient at Public Hospital, Outer Islands (DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital
Treatment*Post	0.0010	0.0008	0.0016	0.0015	0.0013
	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0012)
Treatment	0.0014**	0.0015***	0.0018		
	(0.0006)	(0.0006)	(0.0011)		
Post	0.0016***	0.0013***	0.0012**		
	(0.0005)	(0.0005)	(0.0005)		
Morbidity		0.0114***	0.0115***	0.0112***	0.0112***
		(0.0005)	(0.0005)	(0.0005)	(0.0005)
Male		-0.0003	-0.0003	-0.0003	-0.0003
		(0.0004)	(0.0004)	(0.0004)	(0.0004)
Age		0.0001***	0.0001***	0.0001***	0.0001***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		0.0012**	0.0012**	0.0014***	0.0014**
		(0.0005)	(0.0005)	(0.0005)	(0.0005)
Education		0.0002***	0.0002***	0.0002***	0.0002***
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Rural		-0.0100***	-0.0095***	-0.0083***	-0.0083***
		(0.0010)	(0.0010)	(0.0010)	(0.0009)
HH Size		0.0000	-0.0000	0.0001	0.0001
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Public Hospital			0.0020	-0.0040	-0.0042
(Central Gov)			(0.0015)	(0.0092)	(0.0092)
Public Hospital			-0.0026***	0.0017	0.0019
(Local Gov)			(0.0005)	(0.0015)	(0.0015)
Travel Distance			-0.0000**	-0.0000**	-0.0000**
(Total (Km))			(0.0000)	(0.0000)	(0.0000)
Travel Distance			0.0000***	0.0000***	0.0000***
(Water (Km))			(0.0000)	(0.0000)	(0.0000)
# of Beds			0.0000	-0.0000***	-0.0000***
			(0.0000)	(0.0000)	(0.0000)
Constant	0.0049***	0.0067***	0.0079***	0.0050***	0.0050***
	(0.0003)	(0.0011)	(0.0013)	(0.0018)	(0.0015)
Observations	185,011	184,030	181,805	181,805	181,805
R-squared	0.0003	0.0078	0.0083	0.0098	0.0102
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 24. Robustness Checks: Inpatient at Public Hospital, Outer Islands (Matching DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital	Inpatient Public Hospital
Treatment*Post	-0.0020	-0.0016	0.0000	-0.0001	0.0003
	(0.0013)	(0.0013)	(0.0013)	(0.0014)	(0.0013)
Treatment	0.0037***	0.0028***	0.0028**		
	(0.0008)	(0.0007)	(0.0012)		
Post	0.0032***	0.0026***	0.0026***		
	(0.0007)	(0.0007)	(0.0007)		
Morbidity		0.0145***	0.0140***	0.0137***	0.0137***
		(0.0009)	(0.0008)	(0.0008)	(0.0008)
Male		-0.0001	-0.0002	-0.0002	-0.0002
		(0.0006)	(0.0006)	(0.0006)	(0.0006)
Age		0.0001**	0.0001**	0.0001***	0.0001***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		0.0012	0.0013*	0.0013*	0.0013*
		(0.0008)	(0.0008)	(0.0008)	(0.0008)
Education		0.0003***	0.0003***	0.0003***	0.0003***
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Rural		-0.0116***	-0.0104***	-0.0076***	-0.0076***
		(0.0016)	(0.0016)	(0.0016)	(0.0016)
HH Size		-0.0000	-0.0000	0.0001	0.0001
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Public Hospital			0.0029	-0.0062	-0.0080
(Central Gov)			(0.0043)	(0.0059)	(0.0062)
Public Hospital			-0.0053***	-0.0004	0.0005
(Local Gov)			(0.0008)	(0.0015)	(0.0015)
Travel Distance			0.0000	0.0000	0.0000
(Total (Km))			(0.0000)	(0.0000)	(0.0000)
Travel Distance			0.0000	0.0000***	0.0000***
(Water (Km))			(0.0000)	(0.0000)	(0.0000)
# of Beds			-0.0000	-0.0003***	-0.0003***
			(0.0000)	(0.0000)	(0.0000)
Constant	0.0044***	0.0073***	0.0085***	0.0063***	0.0069***
	(0.0003)	(0.0016)	(0.0018)	(0.0024)	(0.0019)
Observations	143,899	143,899	143,899	143,899	143,899
R-squared	0.0005	0.0100	0.0109	0.0132	0.0134
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 25. Robustness Checks: Outpatient in Public Hospital, Outer Islands (DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital
Treatment*Post	-0.0055	-0.0079*	-0.0048	-0.0022	0.0003
	(0.0044)	(0.0044)	(0.0044)	(0.0045)	(0.0052)
Treatment	0.0178***	0.0187***	0.0166***		
	(0.0032)	(0.0032)	(0.0049)		
Post	-0.0019	-0.0014	-0.0007		
	(0.0018)	(0.0018)	(0.0018)		
Male		-0.0016	-0.0018	-0.0021	-0.0019
		(0.0014)	(0.0014)	(0.0014)	(0.0014)
Age		0.0000	-0.0000	-0.0000	-0.0000
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		0.0019	0.0023	0.0026	0.0025
		(0.0017)	(0.0017)	(0.0017)	(0.0017)
Education		0.0005**	0.0004*	0.0004**	0.0005**
		(0.0002)	(0.0002)	(0.0002)	(0.0002)
Rural		-0.0364***	-0.0349***	-0.0366***	-0.0358***
		(0.0042)	(0.0041)	(0.0042)	(0.0042)
HH Size		-0.0003	-0.0004	-0.0007*	-0.0007*
		(0.0004)	(0.0004)	(0.0004)	(0.0004)
Public Hospital			0.0101	-0.0223***	-0.0175***
(Central Gov)			(0.0070)	(0.0055)	(0.0063)
Public Hospital			-0.0073***	0.0082	0.0064
(Local Gov)			(0.0023)	(0.0057)	(0.0056)
Travel Distance			-0.0001***	-0.0001**	-0.0000*
(Total (Km))			(0.0000)	(0.0000)	(0.0000)
Travel Distance			0.0001***	0.0002***	0.0002***
(Water (Km))			(0.0000)	(0.0000)	(0.0000)
# of Beds			0.0000**	-0.0001**	-0.0001**
			(0.0000)	(0.0001)	(0.0001)
Constant	0.0193***	0.0499***	0.0504***	0.0478***	0.0411***
	(0.0013)	(0.0049)	(0.0055)	(0.0075)	(0.0066)
Observations	45,022	44,861	44,383	44,383	44,383
R-squared	0.0024	0.0095	0.0135	0.0192	0.0215
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix D. 26. Robustness Checks: Outpatient in Public Hospital, Outer Islands (Matching DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital	Outpatient Public Hospital
Treatment*Post	-0.0091	-0.0093	-0.0060	-0.0084	-0.0041
	(0.0060)	(0.0059)	(0.0060)	(0.0064)	(0.0061)
Treatment	0.0203***	0.0163***	0.0156***		
	(0.0042)	(0.0040)	(0.0058)		
Post	-0.0008	-0.0049	-0.0025		
	(0.0033)	(0.0032)	(0.0033)		
Male		-0.0007	-0.0009	-0.0014	-0.0015
		(0.0024)	(0.0024)	(0.0024)	(0.0024)
Age		-0.0000	-0.0000	-0.0001	-0.0000
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Married		0.0023	0.0023	0.0021	0.0023
		(0.0030)	(0.0030)	(0.0030)	(0.0030)
Education		0.0004	0.0003	0.0004	0.0004
		(0.0004)	(0.0004)	(0.0004)	(0.0004)
Rural		-0.0657***	-0.0637***	-0.0636***	-0.0626***
		(0.0088)	(0.0084)	(0.0080)	(0.0079)
HH Size		-0.0015**	-0.0012*	-0.0013*	-0.0012*
		(0.0007)	(0.0007)	(0.0007)	(0.0007)
Public Hospital			0.0194	-0.0065	-0.0066
(Central Gov)			(0.0185)	(0.0066)	(0.0088)
Public Hospital			-0.0093**	0.0073	0.0107*
(Local Gov)			(0.0036)	(0.0061)	(0.0061)
Travel Distance			-0.0000	-0.0000	-0.0000
(Total (Km))			(0.0000)	(0.0000)	(0.0000)
Travel Distance			0.0001***	0.0001***	0.0001***
(Water (Km))			(0.0000)	(0.0000)	(0.0000)
# of Beds			0.0001***	-0.0005***	-0.0005***
			(0.0000)	(0.0001)	(0.0001)
Constant	0.0231***	0.0894***	0.0800***	0.1030***	0.1072***
	(0.0022)	(0.0102)	(0.0110)	(0.0227)	(0.0235)
Observations	35,000	35,000	35,000	35,000	35,000
R-squared	0.0028	0.0182	0.0220	0.0294	0.0332
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix E: Falsification Test, Primary Outcomes

Appendix E. 1. Falsification Test, All Samples (DID)

VARIABLES	Outpatient Public Hospital			Inpatient Public Hospital		
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment*Post	0.009	0.003	0.011*	-0.000	0.000	0.001
	(0.006)	(0.006)	(0.006)	(0.001)	(0.001)	(0.001)
Morbidity				0.010***	0.010***	0.010***
				(0.000)	(0.000)	(0.000)
Male	0.001	0.001	0.001	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Age	0.000	0.000	0.000	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.001	0.001	0.001	0.001	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)
Education	0.001***	0.001***	0.001***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Rural	-0.035***	-0.035***	-0.035***	-0.005***	-0.005***	-0.005***
	(0.005)	(0.005)	(0.005)	(0.001)	(0.001)	(0.001)
HH Size	-0.000	-0.000	-0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Public Hospital	-0.004	-0.003	-0.004	0.000	0.000	0.000
(Central Gov)	(0.006)	(0.006)	(0.006)	(0.002)	(0.002)	(0.002)
Public Hospital	0.007*	0.007**	0.007*	0.000	0.000	0.000
(Local Gov)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)
Travel Distance	0.000**	0.000*	0.000**	0.000	0.000	0.000
(Total (Km))	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Travel Distance	0.000**	0.000**	0.000**	0.000***	0.000***	0.000***
(Water (Km))	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
# of Beds	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.081***	0.035**	0.084***	0.005***	0.001	0.003
	(0.021)	(0.015)	(0.023)	(0.002)	(0.002)	(0.002)
Observations	41,483	41,483	41,483	171,834	171,834	171,834
R-squared	0.021	0.021	0.021	0.009	0.009	0.009
Municipality FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Region*Year FE	YES	YES	YES	YES	YES	YES
Year	2004-2007	2004-2007	2004-2007	2004-2007	2004-2007	2004-2007
Artificial Year	2005	2006	2007	2005	2006	2007

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix E. 2. Falsification Test, All Samples (Matching DID)

VARIABLES	Outpatient Public Hospital			Inpatient Public Hospital		
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment*Post	0.010	0.008	0.013**	-0.000	0.001	0.001
	(0.006)	(0.006)	(0.006)	(0.001)	(0.001)	(0.001)
Morbidity				0.011***	0.011***	0.011***
				(0.001)	(0.001)	(0.001)
Male	0.000	0.000	0.000	-0.000	-0.000	-0.000
	(0.002)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)
Age	0.000	0.000	0.000	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.001	0.001	0.001	0.001	0.001	0.001
	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)
Education	0.000	0.000	0.000	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Rural	-0.053***	-0.054***	-0.054***	-0.005***	-0.005***	-0.005***
	(0.007)	(0.007)	(0.007)	(0.001)	(0.001)	(0.001)
HH Size	-0.001	-0.001	-0.001	0.000*	0.000*	0.000*
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Public Hospital	-0.017**	-0.017**	-0.018**	0.006	0.006	0.006
(Central Gov)	(0.008)	(0.007)	(0.007)	(0.005)	(0.005)	(0.005)
Public Hospital	-0.001	-0.001	-0.002	-0.000	-0.000	-0.000
(Local Gov)	(0.004)	(0.003)	(0.004)	(0.001)	(0.001)	(0.001)
Travel Distance	-0.000	-0.000	-0.000	0.000	0.000	0.000
(Total (Km))	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Travel Distance	0.000**	0.000***	0.000***	0.000***	0.000***	0.000***
(Water (Km))	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
# of Beds	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.147***	0.146***	0.131**	0.007***	0.007***	0.007***
	(0.054)	(0.054)	(0.056)	(0.002)	(0.002)	(0.002)
Observations	41,099	41,099	41,099	170,085	170,085	170,085
R-squared	0.029	0.029	0.029	0.010	0.010	0.010
Municipality FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Region*Year FE	YES	YES	YES	YES	YES	YES
Year	2004-2007	2004-2007	2004-2007	2004-2007	2004-2007	2004-2007
Artificial Year	2005	2006	2007	2005	2006	2007

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix E. 3. Falsification Test, Main Islands (DID)

VARIABLES	Outpatient Public Hospital			Inpatient Public Hospital		
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment*Post	-0.003	-0.012	0.005	0.001	0.001	0.001
	(0.009)	(0.008)	(0.008)	(0.002)	(0.002)	(0.002)
Morbidity				0.009***	0.009***	0.009***
				(0.001)	(0.001)	(0.001)
Male	0.005**	0.005**	0.004**	-0.001	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)
Age	0.000***	0.000***	0.000***	0.000**	0.000**	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	-0.001	-0.001	-0.001	-0.000	-0.000	-0.000
	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)
Education	0.001***	0.001***	0.001***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Rural	-0.028***	-0.028***	-0.028***	-0.003***	-0.003***	-0.003***
	(0.008)	(0.008)	(0.008)	(0.001)	(0.001)	(0.001)
HH Size	0.000	0.000	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Public Hospital	-0.010	-0.010	-0.010	-0.001	-0.001	-0.001
(Central Gov)	(0.006)	(0.006)	(0.006)	(0.002)	(0.002)	(0.002)
Public Hospital	0.006	0.006	0.005	-0.001	-0.001	-0.001
(Local Gov)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)
Travel Distance	0.000***	0.000***	0.000***	0.000	0.000	0.000
(Total (Km))	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Travel Distance	-0.000*	-0.000	-0.000*	-0.000	-0.000	-0.000
(Water (Km))	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
# of Beds	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.067***	0.013	0.067***	0.002	-0.000	0.003
	(0.024)	(0.017)	(0.026)	(0.002)	(0.002)	(0.002)
Observations	16,549	16,549	16,549	67,183	67,183	67,183
R-squared	0.021	0.021	0.021	0.008	0.008	0.008
Municipality FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Region*Year FE	YES	YES	YES	YES	YES	YES
Year	2004-2007	2004-2007	2004-2007	2004-2007	2004-2007	2004-2007
Artificial Year	2005	2006	2007	2005	2006	2007

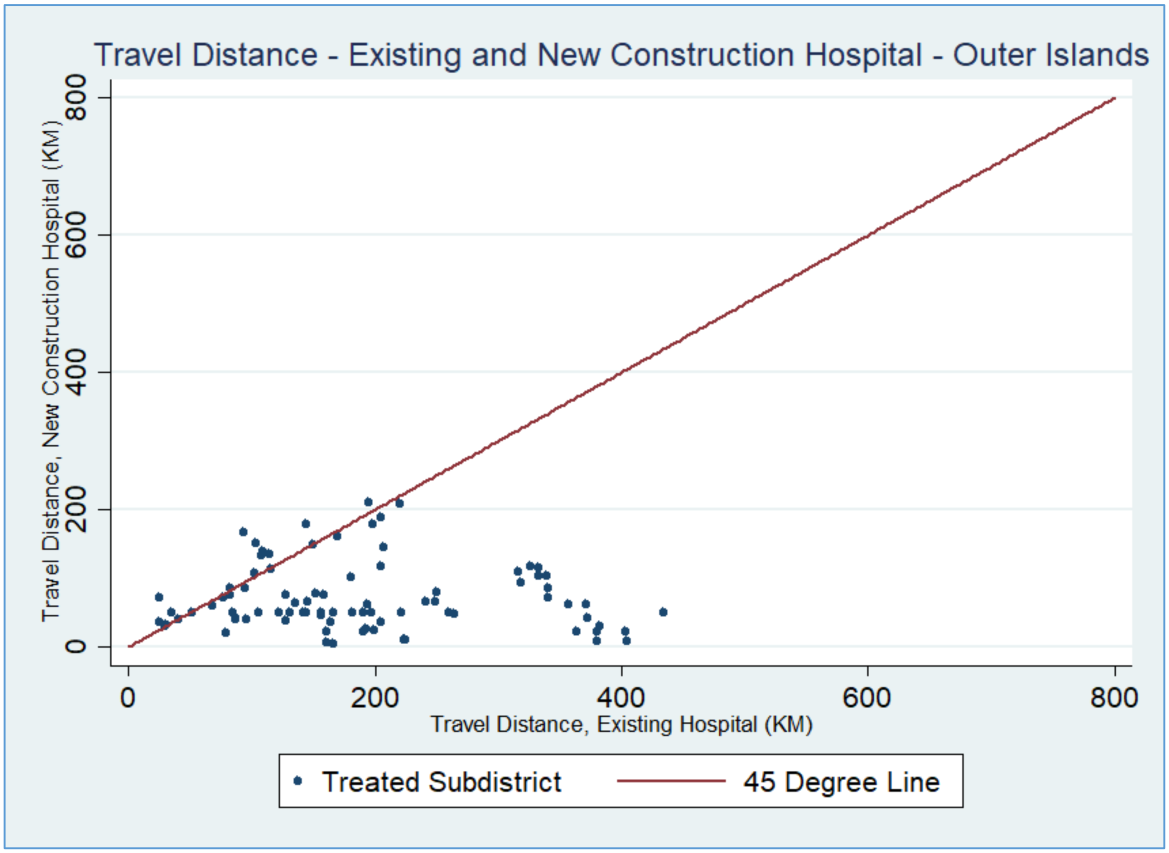
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix E. 4. Falsification Test, Main Islands (Matching DID)

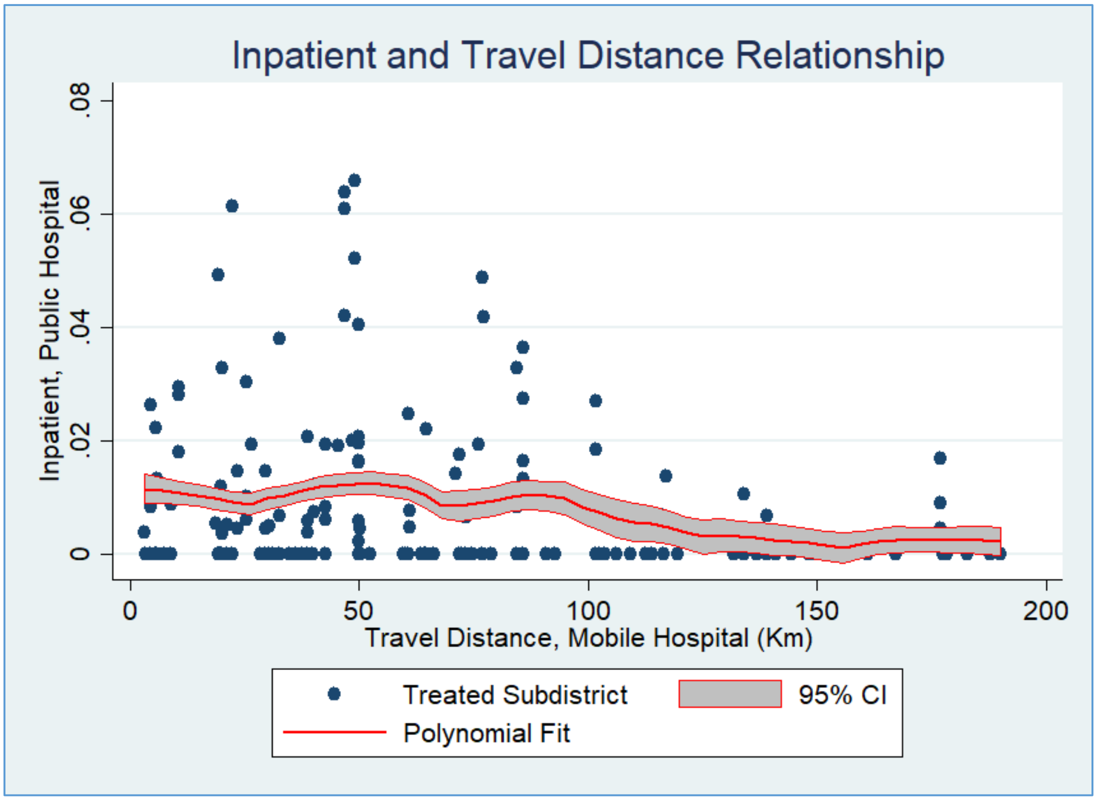
VARIABLES	Outpatient Public Hospital			Inpatient Public Hospital		
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment*Post	-0.014	-0.016	-0.001	0.002	0.003	0.003
	(0.012)	(0.010)	(0.007)	(0.003)	(0.003)	(0.002)
Morbidity				0.009***	0.009***	0.009***
				(0.001)	(0.001)	(0.001)
Male	0.009***	0.009***	0.009***	0.001	0.001	0.001
	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)
Age	0.000***	0.000***	0.000***	0.000*	0.000*	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	-0.002	-0.002	-0.002	-0.001	-0.001	-0.001
	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)
Education	0.001**	0.001**	0.001**	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Rural	-0.044***	-0.044***	-0.044***	-0.004**	-0.004**	-0.004**
	(0.011)	(0.011)	(0.011)	(0.002)	(0.002)	(0.002)
HH Size	0.001	0.001	0.001	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Public Hospital	-0.030**	-0.030**	-0.031**	0.003	0.003	0.003
(Central Gov)	(0.012)	(0.012)	(0.012)	(0.006)	(0.006)	(0.006)
Public Hospital	-0.005	-0.005	-0.006	-0.003**	-0.003**	-0.003**
(Local Gov)	(0.005)	(0.005)	(0.005)	(0.001)	(0.001)	(0.001)
Travel Distance	0.000**	0.000**	0.000**	0.000	0.000	0.000
(Total (Km))	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Travel Distance	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
(Water (Km))	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
# of Beds	0.000	0.000	0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.076***	0.076***	0.050	0.004	0.005*	0.005
	(0.028)	(0.028)	(0.031)	(0.003)	(0.003)	(0.004)
Observations	14,810	14,810	14,810	59,109	59,109	59,109
R-squared	0.026	0.026	0.025	0.007	0.007	0.007
Municipality FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Region*Year FE	YES	YES	YES	YES	YES	YES
Year	2004-2007	2004-2007	2004-2007	2004-2007	2004-2007	2004-2007
Artificial Year	2005	2006	2007	2005	2006	2007

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix F: Travel Distance Between New Hospital and Existing Hospital, Outer Islands



Appendix G: Travel Distance and Inpatient, Treated Sub-District



Appendix H: Robustness Checks, Private Hospital, Main Islands

Appendix H. 1. Robustness Checks: Outpatient in Private Hospital, Main Islands (DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Outpatient Private Hospital	Outpatient Private Hospital	Outpatient Private Hospital	Outpatient Private Hospital	Outpatient Private Hospital
Treatment*Post	0.0030	0.0021	0.0018	0.0036	0.0000
	(0.0023)	(0.0022)	(0.0023)	(0.0024)	(0.0024)
Treatment	0.0012	0.0010	0.0016		
	(0.0015)	(0.0016)	(0.0017)		
Post	-0.0018*	-0.0019*	-0.0017		
	(0.0010)	(0.0011)	(0.0011)		
Male		0.0019***	0.0020***	0.0018**	0.0018**
		(0.0007)	(0.0007)	(0.0007)	(0.0007)
Age		0.0000	0.0000	0.0000	0.0000
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		0.0009	0.0010	0.0012	0.0013
		(0.0009)	(0.0009)	(0.0009)	(0.0009)
Education		0.0001	0.0001	0.0001	0.0001
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Rural		-0.0047*	-0.0044*	-0.0032	-0.0035
		(0.0024)	(0.0024)	(0.0025)	(0.0025)
HH Size		-0.0002	-0.0002	-0.0003	-0.0003
		(0.0002)	(0.0002)	(0.0003)	(0.0003)
Public Hospital			0.0046*	0.0050	0.0049
(Central Gov)			(0.0027)	(0.0039)	(0.0035)
Public Hospital			0.0032***	0.0004	0.0005
(Local Gov)			(0.0011)	(0.0016)	(0.0015)
Travel Distance			-0.0006	-0.0012	-0.0012
(Total (100 Km))			(0.0005)	(0.0009)	(0.0009)
Travel Distance			0.0004	0.0005	-0.0001
(Water (100 Km))			(0.0007)	(0.0012)	(0.0011)
# of Beds/1000			-0.0011***	0.0001	-0.0000
Population			(0.0003)	(0.0005)	(0.0005)
Constant	0.0048***	0.0075**	0.0059*	0.0011	-0.0023
	(0.0008)	(0.0030)	(0.0030)	(0.0039)	(0.0057)
Observations	29,731	29,593	29,370	29,370	29,370
R-squared	0.0004	0.0014	0.0020	0.0072	0.0104
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Appendix H. 2. Robustness Checks: Inpatient in Private Hospital, Main Islands (DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Inpatient Private Hospital	Inpatient Private Hospital	Inpatient Private Hospital	Inpatient Private Hospital	Inpatient Private Hospital
Treatment*Post	0.0009	0.0006	0.0002	0.0009	0.0002
	(0.0006)	(0.0006)	(0.0006)	(0.0007)	(0.0008)
Treatment	0.0002	0.0001	0.0003		
	(0.0004)	(0.0004)	(0.0004)		
Post	0.0001	0.0001	0.0003		
	(0.0003)	(0.0003)	(0.0003)		
Male	0.0002	0.0002	0.0002	0.0002	0.0002
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Age	0.0000*	0.0000	0.0000	0.0000	0.0000*
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married	0.0006**	0.0006**	0.0006**	0.0007**	0.0006**
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Education	0.0001**	0.0000*	0.0000	0.0000	0.0001**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Rural	-0.0012**	-0.0011**	-0.0012**	-0.0012**	-0.0012**
	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)
HH Size	-0.0000	0.0000	-0.0001	-0.0001	-0.0000
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Public Hospital			0.0004	0.0006	0.0006
(Central Gov)			(0.0005)	(0.0008)	(0.0008)
Public Hospital			0.0003	-0.0006	-0.0005
(Local Gov)			(0.0003)	(0.0005)	(0.0005)
Travel Distance			-0.0004***	-0.0005**	-0.0005**
(Total (100 Km))			(0.0001)	(0.0002)	(0.0002)
Travel Distance			0.0002*	-0.0007	-0.0008
(Water (100 Km))			(0.0001)	(0.0006)	(0.0007)
# of Beds/1000			-0.0005***	-0.0002	-0.0002
Population			(0.0001)	(0.0001)	(0.0001)
Constant	0.0011***	0.0011*	0.0015**	0.0010	-0.0004
	(0.0002)	(0.0007)	(0.0006)	(0.0009)	(0.0016)
Observations	123,567	122,859	121,097	121,097	121,097
R-squared	0.0001	0.0005	0.0007	0.0020	0.0025
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix H. 3. Robustness Checks: Outpatient in Private Hospital, Main Islands (Matching DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Outpatient Private Hospital	Outpatient Private Hospital	Outpatient Private Hospital	Outpatient Private Hospital	Outpatient Private Hospital
Treatment*Post	0.0037	0.0034	0.0023	0.0033	0.0010
	(0.0023)	(0.0023)	(0.0023)	(0.0024)	(0.0024)
Treatment	0.0008	0.0004	0.0011		
	(0.0013)	(0.0013)	(0.0013)		
Post	-0.0011	-0.0011	-0.0005		
	(0.0010)	(0.0011)	(0.0011)		
Male		0.0011	0.0011	0.0008	0.0008
		(0.0008)	(0.0008)	(0.0009)	(0.0009)
Age		0.0000	0.0000	0.0000	0.0000
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		0.0012	0.0013	0.0011	0.0011
		(0.0011)	(0.0011)	(0.0011)	(0.0011)
Education		-0.0000	-0.0000	0.0000	0.0000
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Rural		-0.0073**	-0.0074**	-0.0068**	-0.0066**
		(0.0030)	(0.0030)	(0.0030)	(0.0030)
HH Size		0.0000	0.0001	-0.0002	-0.0001
		(0.0003)	(0.0003)	(0.0003)	(0.0003)
Public Hospital			0.0030	-0.0042**	-0.0036*
(Central Gov)			(0.0060)	(0.0021)	(0.0019)
Public Hospital			0.0013	-0.0013	0.0003
(Local Gov)			(0.0011)	(0.0020)	(0.0017)
Travel Distance			0.0006	0.0005	0.0006
(Total (1000 Km))			(0.0006)	(0.0009)	(0.0009)
Travel Distance			-0.0008	-0.0016	-0.0031**
(Water (1000 Km))			(0.0007)	(0.0013)	(0.0013)
# of Beds/1000			-0.0012***	-0.0002	-0.0004
Population			(0.0004)	(0.0007)	(0.0008)
Constant	0.0036***	0.0084**	0.0075**	0.0065	0.0050
	(0.0008)	(0.0035)	(0.0035)	(0.0052)	(0.0044)
Observations	28,695	28,695	28,695	28,695	28,695
R-squared	0.0005	0.0020	0.0025	0.0061	0.0096
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix H. 4. Robustness Checks: Inpatient in Private Hospital, Main Islands (Matching DID)

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Inpatient Private Hospital	Inpatient Private Hospital	Inpatient Private Hospital	Inpatient Private Hospital	Inpatient Private Hospital
Treatment*Post	0.0009	0.0008	0.0006	0.0010	0.0007
	(0.0007)	(0.0007)	(0.0007)	(0.0008)	(0.0009)
Treatment	0.0001	-0.0001	-0.0000		
	(0.0004)	(0.0004)	(0.0004)		
Post	0.0002	0.0002	0.0004		
	(0.0003)	(0.0003)	(0.0004)		
Male		0.0002	0.0002	0.0002	0.0002
		(0.0003)	(0.0003)	(0.0003)	(0.0003)
Age		0.0000*	0.0000*	0.0000	0.0000
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Married		0.0007**	0.0008**	0.0007**	0.0007**
		(0.0003)	(0.0003)	(0.0003)	(0.0003)
Education		0.0001	0.0000	0.0001	0.0001
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Rural		-0.0022***	-0.0022***	-0.0023***	-0.0024***
		(0.0008)	(0.0008)	(0.0008)	(0.0008)
HH Size		0.0000	0.0001	-0.0000	-0.0000
		(0.0001)	(0.0001)	(0.0001)	(0.0001)
Public Hospital			-0.0001	-0.0005	-0.0002
(Central Gov)			(0.0007)	(0.0012)	(0.0012)
Public Hospital			0.0001	-0.0009*	-0.0008
(Local Gov)			(0.0003)	(0.0005)	(0.0005)
Travel Distance			-0.0002	-0.0001	-0.0000
(Total (100 Km))			(0.0001)	(0.0002)	(0.0002)
Travel Distance			-0.0001	-0.0011*	-0.0014**
(Water (100 Km))			(0.0001)	(0.0006)	(0.0007)
# of Beds/1000			-0.0006***	-0.0003	-0.0002
population			(0.0001)	(0.0002)	(0.0002)
Constant	0.0011***	0.0016*	0.0021***	0.0020*	0.0007
	(0.0002)	(0.0008)	(0.0008)	(0.0011)	(0.0014)
Observations	118,035	118,035	118,035	118,035	118,035
R-squared	0.0001	0.0009	0.0013	0.0030	0.0034
Municipality FE	NO	NO	NO	YES	YES
Year FE	NO	NO	NO	YES	YES
Region*Year FE	NO	NO	NO	NO	YES
Year	2004-2011	2004-2011	2004-2011	2004-2011	2004-2011

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix I: Falsification Test, Household Health Expenditures, Main Islands (DID and Matching DID)

VARIABLES	Difference in Difference			Matching Difference in Difference		
	(1)	(2)	(3)	(4)	(5)	(6)
	Household Health Expenditures			Household Health Expenditures		
Treatment*Post	-27,486.448	-44,208.012	74,238.718	-25,312.307	28,875.119	93,300.930
	(53,941.841)	(60,764.900)	(100,839.627)	(63,231.799)	(78,189.427)	(115,287.869)
Male	-27,402.072	-27,331.244	-26,649.470	-107,929***	-106,993***	-106,809***
	(49,467.949)	(49,322.461)	(49,297.482)	(39,235)	(38,923.948)	(38,975.582)
Age	3,184.492**	3,178.681**	3,183.030**	2,030.941	2,034.051	2,031.306
	(1,306.388)	(1,310.652)	(1,308.566)	(1,372.147)	(1,384.379)	(1,375.456)
Married	-29,225.423	-29,384.343	-28,308.166	3,188.946	3,992.208	4,232.868
	(46,967.691)	(47,255.762)	(47,082.572)	(67,633.301)	(68,229.465)	(67,890.196)
Education	49,992.859***	50,053.191***	49,865.165***	34,318.918**	34,221.875**	34,205.858**
	(15,291.336)	(15,264.797)	(15,281.679)	(14,356.303)	(14,329.154)	(14,356.582)
Rural	20,087.633	20,095.064	20,090.972	-49,987.554	-50,793.428	-51,856.871
	(98,160.124)	(98,162.528)	(98,170.757)	(36,030.649)	(35,589.490)	(35,244.090)
HH Size	4,345.408	4,298.102	4,393.323	6,740.020	6,806.071	6,759.004
	(4,310.933)	(4,297.845)	(4,313.660)	(4,793.144)	(4,780.208)	(4,810.554)
Public Hospital	-192,789***	-192,846***	-194,417***	-217,832***	-222,207***	-224,104***
(Central Gov)	(67,726.509)	(67,726.798)	(67,734.449)	(67,201)	(67,400.600)	(67,314.557)
Public Hospital	-74,337.674***	-73,097.343***	-76,566.605***	-34,627.063	-38,228.364	-38,706.656
(Local Gov)	(25,838.211)	(26,445.920)	(26,257.777)	(25,474.231)	(28,033.548)	(26,364.114)
Travel Distance	8,002.761	8,728.885	8,191.572	31,154.607	32,004.033	31,159.882
(Total (100 Km))	(15,533.534)	(15,445.355)	(15,442.869)	(24,041.646)	(22,246.016)	(21,978.073)
Travel Distance	-64,109**	-64,049.238**	-65,559.172**	-105,646*	-106,878**	-105,610**
(Water (100 Km))	(29,454.097)	(29,467.474)	(29,420.080)	(56,660.990)	(53,902.845)	(52,860.456)
# of Beds	-188.599	-178.671	-227.339	372.927*	362.752*	337.670*
	(507.489)	(507.442)	(506.828)	(196.500)	(191.495)	(199.230)
Constant	-403,601.086	108,109.486	-480,480.832	18,560.415	27,160.450	-67,641.206
	(394,791.846)	(431,079.595)	(391,911.818)	(71,172.423)	(68,644.921)	(85,790.910)
Observations	16,457	16,457	16,457	14,536	14,536	14,536
R-squared	0.016	0.016	0.016	0.036	0.036	0.037
Subdistrict FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Reg*Year FE	YES	YES	YES	YES	YES	YES
Year	2004-2007	2004-2007	2004-2007	2004-2007	2004-2007	2004-2007
Artificial Year	2005	2006	2007	2005	2006	2007

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1