

## **Place-Sensitive Policies in the Provision of Subnational Public Goods in Colombia**

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### **Abstract**

What causes stark differences in living standards between subnational units? What can countries do to lessen such variations? This article argues that there is an aspect of national policy frameworks that impacts subnational provision of social services: the sensitivity of policy to the particularities of place. Place-sensitive policies make adaptations to the way social services are organized and provided across a country so that they are better equipped to deal with the different characteristics of places and better support their wellbeing. When policies are place-sensitive, subnational provision is facilitated in poor, rural, and marginal locations of a country. In contrast, place-blind policies employ a one-size-fits-all approach that excludes people in vulnerable areas and aggravates inequalities in social service provision and social outcomes. By studying the Colombian case, this article demonstrates that a key place-blind feature of its healthcare model disproportionately affects small localities.

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## Introduction

In many developing countries around the world, a person's chances of living a healthy and educated life depend, to a large extent, on the part of the country in which that person lives. In Colombia, in particular, the differences between municipalities are striking. For example, a mother in the municipality of Apia (Risaralda) has a higher chance of dying after birth than a mother in the war-torn Central African Republic. But less than sixty kilometers away, in Pereira (Risaralda), a mother's chances of surviving labor are similar to those in Uruguay.<sup>1</sup> In Colombia, and in many other Latin American countries, we can find similar contrasts for other social indicators (Otero-Bahamon, 2016 and 2019). This responds to what Harbers and Steele (this issue) name *differentiated* and *disjointed* states. What causes such stark differences in living standards within countries? What explains *differentiated* and *disjointed* states? What can countries do to lessen such variations?

In the quest for the causes of subnational variation, this article builds on key health geography concepts to point to an aspect of the national policy arena that drives subnational disparities in living standards: *the sensitivity of policy to the particularities of place* (Curtis et al. 2010; Curtis & Riva 2010). Place-sensitive policies make adaptations to the way social services are provided so that they are better equipped to deal with the different characteristics of places that matter for wellbeing. When the national policy framework for social services is place-sensitive, provision is facilitated in more rural, poorer, or places inhabited by ethnic minorities. But if the national policy framework is place-blind and employs a one-size-fits-all approach, services such as health and education take a toll in these locations. In a nutshell, my argument is that the health and

education that people in a place enjoy is not exclusively a matter of subnational determinants but can be greatly affected by the degree of place-sensitivity in the national policy environment.

To develop and test this argument, I focus on Colombia's health sector. In 1992 and 1993, policy-makers devised an overarching health reform that created a *structured competition* model, in which private and public health insurers and providers would compete to expand healthcare in a cost-effective manner. But despite yielding good results in coverage and access, public health experts and bureaucrats warned that the market of insurers was not working everywhere. The careful examination of the Colombian healthcare reform enabled me to observe that reformers ignored some place-based characteristics that mattered for health and that would interact with the proposed marketization. In concrete, reformers did not take into account that markets might work differently in sparsely populated, small, and rural areas. The concept of *place-sensitivity* surfaced as an aspect that was missing from the Colombian health reform.

Through an econometric exercise I test whether the place-blind feature of the Colombian health system has different impacts on health outcomes across different types of municipalities. The positive results of this analysis evidences that place sensitivity (or place-blindness) plays an important role on the variations in subnational welfare, and merits its conceptualization and theorization for future applications in other studies on social policies and their subnational variation.

In this regard, I argue that place-sensitivity is an important aspect of social policies that has not been taken into account in studies of social policy expansion and universalism (Esping-Andersen, 1990; Huber & Stevens, 2012; Franzoni & Sanchez-

Ancochea, 2016; Garay, 2017; Pribble, 2013), although it has been acknowledged by public health scholars and health geographers. Scholars have provided explanations as to why a country designs more universal or inclusive welfare regimes that aim to reach the poorest members of society, but have forgotten that, in order to accomplish this goal, social policies must also be “pro-place” and organized to cater to the particularities of service provision in the different locations where the poor live. In fact, and as I will show in the case of Colombia’s healthcare, a social policy can be designed to incorporate the poor, but it will still exclude inhabitants of certain vulnerable areas when the model of provision is not adapted to the particularities of place. Thus, place sensitivity is an aspect that policy makers should take into account in order to bring into existence truly universal and inclusive welfare regimes that reach all members of society.

Place-sensitivity is a feature embedded in the design of social policies, and, therefore, it puts into question the traditional division between “policy design” and “policy implementation” (Niedzwiecky, 2016; Carnes & Mares, 2007). Extant scholarship tends to explain “policy design” with national level processes— such as democracy or political competition – while, in the face of stark subnational variations, “policy implementation” is explained by subnational-level determinants. When scholars attempt to make sense of variations between municipalities and provinces (Snyder, 2002), they ignore the national political and policy arena and focus on subnational characteristics. The national arena practically disappears because, according to the methodological parlance of the subnational method, it is constant across subnational units and does not explain variations. As Kent Eaton ascertains in his article for this special issue, this theoretical approach is problematic because it cannot be assumed that

subnational jurisdictions are autonomous and free from pressures and influence from the central state (Eaton, this issue). In fact, the national policy framework ruling a service cannot be considered as constant across localities, because policies are never “place-neutral” but always have concrete spatial implications (Barca et al., 2012; Garcilazo et al., 2010). The likelihood of even policy implementation across places largely depends on the degree to which the effects of place are built into the policy design. Place-sensitivity is, in essence, an attribute of policy design that facilitates even policy implementation across a country.

This study begins with a theorization of place-sensitivity as a determinant of subnational public goods’ provision. Next, it focuses on the design of Colombia’s health reform to show how place was absent from the policy-making process. To test the theory, the third section performs a quantitative analysis that shows how the place-blind feature of Colombia’s healthcare regime—the market of insurers—impacted negatively the health outcomes of less populous localities. The last section discusses conclusions and implications.

### **Place-Sensitivity and Public Goods’ Provision**

What leads to better health, income, sanitation, and education? Recent studies on the sources of universal or inclusive social policies stress the role of democracy (Huber & Stevens, 2012), left party rule (Huber & Stevens, 2012; Pribble, 2013), political competition (Pribble, 2013; Garay, 2017), and social mobilization (Garay, 2017). But even in countries with universal welfare regimes, stark variations across areas are observed, motivating the majority of scholars to shift attention to subnational

determinants. Human geographers investigate what aspects of place matter for wellbeing (Macintyre et al., 2002; Andrews et al., 2012; Powell, 1995; Curtis et al., 2010). In a groundbreaking work, Macintyre et al. (2002) identified three types of place-based explanations: compositional, contextual, and collective. Compositional explanations refer to characteristics of individuals that cluster in places, such as their income, race, gender, or level of education. Contextual explanations refer to elements of the local physical and social environment, such as the quality of water, air, or government, the physical location in space, or other aspects likely to be shared by the people in a place. Lastly, collective aspects refer “to socio-cultural and historical features of communities” like religion, traditions, or cultural practices (Macintyre et al., 2002). Locations across a country have diverse combinations of compositional, contextual, and collective aspects that have different implications for wellbeing, an idea that is built into the concept of “social determinants of health” put forward by the new public health (Curtis et al., p. 329). In the case of subnational research on Latin America, political scientists acknowledge (or control for) the impact of several compositional and collective features and focus on the theorization of political contextual determinants, such as the quality of the subnational state (Harbers, 2015), subnational political competition (Pribble, 2015; Alves, 2015), social capital (Diaz-Cayeros et al., 2014), democratic institutions (Touchton & Wampler, 2014), or partisan alignments (Niedzwiecky, 2018). A more recent and yet incipient approach focuses on the national and subnational determinants that account for cross-national differences in the degree of subnational variation (Otero-Bahamon, 2016 and 2019; Giraudy & Pribble, this issue). Both literatures in human geography and subnational politics agree on the fact that place matters for social outcomes.

The argument of this paper builds on –and departs from- these research traditions to stress that not only local aspects influence local outputs. In line with what Eaton (this issue) terms a “hybrid approach”, this paper posits that national and subnational level causes interact to influence subnational outcomes. In concrete, the policy environment that organizes the social services at the national level also influences subnational social outcomes by determining which place-based aspects matter for wellbeing and to what degree. The degree of “place-sensitivity” refers to an aspect of the institutions, laws, rules, and regulations that organize a social service that accentuates, mitigates, or leaves untouched the impact of place-based features on wellbeing. Social policy frameworks can have different degrees of place sensitivity, ranging from place-sensitive to place-blind. The place-sensitive end takes into account place-based features in the design of policies so that their negative impacts on health or education are mitigated. Place-blind policies, in contrast, reflect a one-size-fits-all approach for different subnational contexts, leaving untouched or even accentuating the negative impacts of certain features of place on wellbeing.

Two examples for the health sector: if, for instance, the health system of a country is organized around private insurance, as in Chile, Mexico, or the United States, population density of places becomes important in calculating insurance premiums. This occurs because healthcare provision is more expensive in places where not many people live. In such a system, population density is a place-based aspect that influences insurance consumption and, as a consequence, healthcare access and health outcomes. But the role of population density in health is not automatic; it is mediated by the fact that the national policy framework requires that individuals buy insurance. In this case, a

place-blind approach would do nothing to mitigate the impact of population density on insurance premiums whereas a place-sensitive approach would design a system of area-based subsidies to ensure that people in low density places manage to purchase insurance. In the place-blind scenario a place-based feature (population density) is activated; in the place-sensitive scenario the impact of the place-based feature on health is mitigated.

Now let us consider the case of Peru, a where ethnic minorities have particular practices regarding maternal and infant health. Among many women in the highlands, it is customary to give birth in the standing position, so women have preferred to give birth at home rather than in hospitals where they would give birth in a horizontal position. Homebirths in Peru are associated with higher risks of maternal and infant deaths (MINSA, 2005, p. 14). A place-sensitive approach would design a health system that embraces the cultural practices so that women would feel less antagonistic toward birthing in a health facility. A place-blind policy framework, in contrast, would not take this aspect into consideration. Place sensitivity mitigates the impact of a collective aspect—the cultural practices surrounding childbirth—on health outcomes, whereas in a place-blind approach the impact of culture on maternal and infant health is left untouched. In conclusion, place-blind policy frameworks accentuate or ignore the impact of certain place-based determinants on wellbeing, whereas place-sensitive policies acknowledge them, adapt the ways in which the service is provided, and, by doing so, mitigate their impact.

When place-blind frameworks prevail, the provision of a service might become unattainable, due to costs or the absence of necessary requirements, particularly in distant, rural, less densely-populated, and poorer locations (Garcilazo et al., 2010). The



next sections of this paper establishes a typology of place-sensitive policies and a proposal of operationalization.

### **Types of Place-Sensitive Policies**

Place sensitive policies come in different varieties depending on their relationship to the overarching policy environment. They can relax the existing standards of provision to meet the conditions of places; add resources to places to meet the model of provision; or adapt the standards of provision altogether to cater to the conditions of places.

The first type of place-sensitive policy relaxes the standards of provision to facilitate it in certain areas. Sometimes it might be unattainable to provide a service with the same characteristics or quality across all locations, making it necessary to make exceptions to rules. This type of place sensitivity might sacrifice quality to expand coverage, but, without it, it might be impossible to provide the service in the first place. Examples of place-sensitive policies of this sort include an educational regulation that allows localities with less than a certain number of people to hire teachers without a master's degree or a norm that provides different specifications for rural health posts than for urban health posts. In these instances, the standards of provision are relaxed for rural or less populous locations so that education and healthcare can be provided. Without such exceptions or adaptations, it might be impossible to provide the service in the first place. Education and health services in places that receive this type of place-sensitive adaptations might be subpar as a result of the place-sensitive policy, but there is, at least, coverage in these areas.

A second type of place-sensitive policies assigns additional resources to places with certain characteristics in order to meet the standards or fit the model of provision. In development literature these initiatives are called “place-based policies” (Duranton & Venables, 2018). In contrast to the previous type, the policy framework does not lower the standards to meet the more precarious conditions of some places but, instead, matches or compensates the local conditions to provide access to a social service without affecting quality. For instance, in a country like Brazil with a primary healthcare model that assigns a team of doctors and nurses to each 10000 people, a place-sensitive adaptation allows the assignment of a team in dispersedly-populated areas without reaching the population threshold. To compensate for the lack of population, the place-sensitive instrument assigns more teams of doctors and nurses to some places so that their access to healthcare is similar to more urbanized locations. Other place-sensitive policies of this type include the following: an insurance-based healthcare system that subsidizes insurance in places where provision is costlier or an educational regulation that establishes various student-per-teacher ratios depending on population size and population density. In these examples, more resources are assigned to certain places in order to compensate for the place-based aspect that negatively affects provision. Through this type of place-sensitive instrument, it is possible to expand service coverage while maintaining quality.

A third type devises a different model of provision for certain places. These place-sensitive policies acknowledge that in some areas the service cannot be adequately provided in the current model and devises a different way to deliver it. For instance, in a health system organized around private insurance, a place-sensitive adaptation of this

type would provide public healthcare in areas where insurers have no interest in going because of high costs of provision.

Now that we know what place-sensitivity is, its contrast with place-blindness, and the typology of place-sensitive policies, it is important to determine how to differentiate a place-sensitive policy environment from a place-blind one. The next section proposes an operationalization of place-sensitivity.

### **Operationalization of Place-Sensitivity**

How to determine the degree of place-sensitivity in a policy environment? To start, one must use existing local knowledge and available research to identify the place-based conditions that impact the provision of social services and social outcomes. Such knowledge will probably include rurality, distance, population density, ethnicity, and income, although the analysis can point to other aspects. As demonstrated in the previous section, it is important to keep in mind that some place-based conditions might become important for wellbeing because the policy environment *activated* its effects.

Second, one must estimate the proportion of people who live in places that exhibit either the wellbeing promoting or wellbeing damaging condition. I consider that a place-based aspect deserves an adaptation when at least 10% of the population lives in places that exhibit the so-called condition. To be fair, it is hard to establish these estimates without a degree of arbitrariness, but I consider that a 10% constitutes a sufficient amount of people to deserve an adaptation to the policy framework.

For those place-based determinants that reach the 10% threshold, one must ask whether the set of policies that organize the social sector takes into account the impact of

the identified place-based factors or not. Are aspects such as rurality or ethnicity outright ignored by the policy environment? Are some place-based determinants ignored and others considered? To determine this, it is useful to survey all the policy instruments in a sector and search for the different types of place-sensitive policies outlined above.

Next, one must evaluate the aptness of such instruments. Sometimes countries devise policies that are not really suited to the place-based challenge under consideration. For instance, let us consider an instrument that introduced variation in the per capita amount (or capitation fee) that the central state transfers to subnational units to provide a service, so that there are more funds in areas where provision is costlier. One must evaluate whether those price differentials are sufficient to pay for higher costs or are just symbolic acknowledgements not meant to solve the challenges of provision. More apt place-sensitive instruments mean higher place-sensitivity.

Lastly, one must gauge the quality of the place-sensitive instruments. Policies of the first place-sensitive type delineated above, that lower the standards of provision in certain places, have less quality than policy instruments of the second and third type – those that add resources to places or devise entirely different models of provision.

A country's policy environment is increasingly more place-sensitive to the extent to which a) more place-based characteristics are considered in the policy framework, b) the place-sensitive policy-instruments are more apt to deal with the provision challenges of the place-based characteristics, and c) the place-sensitive instruments are of better quality (second and third type, as per our typology). Deviations from these move a country closer to the opposite, place-blind approach.

Let us consider an example. In an existing country it is widely acknowledged that

rurality negatively impacts the provision of educational services. We first estimate the proportion of people that live in counties labeled as rural. Let us say that, in this case, 30% of the population live in rural municipalities. Second, we must survey the regulations, rules, mandates, laws, practices, and institutions to find the instruments that make adaptations to the provision of educational service for rural areas. If there are no such instruments, the country is place-blind with respect to rurality. If the contrary is the case, after having identified the policy-instruments, we must evaluate their aptness to deal with variations in degree of rurality and their capacity to provide services of similar quality in rural and urban areas. If the policy instruments are apt and have high quality, then the country is place-sensitive with respect to rurality.

Countries will often employ a variety of instruments to address the place-based challenges of provision. They can combine a place-blind general framework with place-sensitive policies that capture the locations that are left behind, or they can adopt a place-sensitive general framework that is more easily adaptable to the particularities of places.

The next section will explore the Colombian health sector to show how the reformers in the 1990s did not take into consideration the impacts of some place-based characteristics in the design of the new healthcare regime. As a result, they designed a place-blind policy with harmful effects in a particular type of locations.

### **Place-Sensitivity in Colombia's Healthcare Regime**

Using primary and secondary sources (interviews, documents, and newspaper archives), I will outline the healthcare reform of 1993 that introduced a model of public and private insurance markets. During the reform process, policy-makers ignored the

possible impacts of several place-based aspects like population size, population density, and rurality on the performance of markets. But after a few years of the rollout of the new system, policy-makers realized that the new healthcare regime “was not working” in places with such characteristics. Despite this, no place-sensitive approach was introduced. Using a quantitative approach, the next section will explore the effects of this place-blind aspect on health outcomes.

A study of place-sensitivity for the Colombian healthcare case is relevant for two main reasons. First, several scholars and policy makers acknowledge that Colombia’s healthcare system has been successful in increasing equity between the poor and the non-poor: universal health insurance was reached in 2011, and the country has the lowest out-of-pocket health expenditure of all Latin American countries (Giuffrida et al., 2009; Montenegro & Bernal, 2013, p. 9; Ewig, 2016, p. 208). Acknowledging the negative impacts of the marketization of social services in subnational inequality is thus important in a context in which reforms of this type are constantly on the table. Second, the findings could apply to other countries with similar models of social service marketization with private and public actors. In Argentina, Mexico, Chile, and the United States, private insurers have an important participation in the provision of healthcare.

In 1991, Colombia’s Constituent Assembly established that health would be a basic right guaranteed by the central state. To materialize that mandate, technocrats in the MoH devised a health reform later known as Law 100. Juan Luis Londoño, the Health Minister appointed to carry out that task, was convinced that the best way to guarantee universal healthcare was by opening the sector to the participation of private actors and by expanding insurance coverage. The health reform created a “structured competition”

model based on three principles: (i) the creation of a market for providers and insurers with the participation of private and public actors; (ii) the municipalist decentralization of many functions in administration, public health, service provision, and surveillance; and (iii) the transformation of hospital funding from government transfers to sell of services (Guerrero et al., 2014).

In this study I focus on the territorial implications of the first and most central tenet of the new health system: the creation of a market for insurers. Technocrats, government, and congressmen alike believed that corruption, clientelism, and excessive bureaucratization in health institutions was detrimental to health-care expansion. For them, participation of private actors would correct the problems with which the public service was riddled (Uribe Botero, 1992). The basic assumption of insurance-based healthcare in Colombia and elsewhere “is that health is just another economic sector and would benefit from competition to increase quality and contain costs (Londoño & Frenk, 1997)” (Laurell & Giovanella, 2019, p. 5).

For insurers, two healthcare plans were created: the “contributory plan”<sup>2</sup> for employees and independents, which contributed 12% of their income, and the “subsidized plan” for the poor and independent workers with incomes below the minimum wage, which was subsidized with government transfers and employers’ taxes. Insurers would enroll users in both plans, receive a capitation for each affiliate,<sup>3</sup> provide the services included in the benefits’ plan, and administer the health risk. To this end, insurers had to set up networks of providers where their affiliates lived, and pay providers for the services individuals requested. Insurers would profit by making their affiliates healthy and incentivizing preventive healthcare. Insurers would compete for affiliates,

and the possibility of changing insurer would incentivize good service provision (De Groote et al., 2005, p. 127).

Although this system had the goal of expanding to the poor, it assumed that the market for insurers would work. Policy-makers in the MoH and in Congress firmly believed that opening the market for competition would be sufficient to guarantee access and quality of services. Fernando Botero Zea, the president of the legislative commission in charge of approving the health reform in the first debate, expressed this belief: “There is freedom to choose whatever the employee prefers. And there is another element. Competition between service providers. Wherever there is competition, the quality of service improves”. Alvaro Uribe Velez, sponsor of the bill, stated: “To the extent that private enterprises participate, we offer [Colombians] an institutional plurality that will allow us to advance in universal coverage.” There seemed to be widespread support for the creation of a market in the health sector. “The more competition, the more coverage” seemed to be the motto shared by all (“Y Ahora la Salud,” 1993). Even legislators from the communist party had no problem with the proposed marketization (“Trabajadores Escogerán,” 1993).

In the reform process, legislators did not consider the difficulties of creating insurer markets in vast areas of the country that had a limited or widely-dispersed population, even though it is evident that markets need scale to function correctly. Policy-makers did not take into account that the reform would activate the impact of population number and population density. For instance, in an event held in Congress, congressmen and government members explicitly admitted that rural areas were completely forgotten in the Social Security Reform, but they hoped that privatization and marketization would



solve access problems (“Seguridad Social Rural: Promesas,” 5 June 1993).

A few years after the rollout of the new health system, it became evident that in many areas there was not enough demand to sustain a market of insurers, with more insurers than could be efficient and profitable. Small and widely-dispersed populations fragmented across several insurers, making the provision of services very costly. Subnational health authorities complained about this situation: “*there are insurers with 300 affiliates in one town, and in another town 100 kilometers away they have another 5000. How do I divide them? How to conform health networks like that? The attention is very costly*” (quoted in Guerrero, 2014, p. 116). The first Health Minister after the rollout of the reform acknowledged the situation: “in the years 1994 and 1995 (we presumed) that there were not going to be market conditions in many regions of the country. We asked that to be investigated ... and in effect, it was proved that in a large proportion of the country there were no market conditions” (“Reportaje Alonso Gómez Duque,” 2002). This means that the principle of quality improvement through open competition among insurers did not become a reality in “peripheral” regions (Guerrero et al., 2014, p. 13; Guzman, 2014; Plaza et al., 2001).

In sum, several observers agreed that, for areas with low density, small sizes, and rural populations, the principle of competition that the national policy framework devised was either unattainable or provoked unforeseen consequences (I1, I3, I4). The place-blindness of the health reform led to lack of competition or competition without scale in a number of locations. This aspect is important because there is a significant proportion of people living in locations with these characteristics. The country has 1101 municipalities, out of which 630 have populations below fifteen thousand people, and together these

municipalities account for 12% of the population. Similarly, about 650 municipalities have more rural than urban residents (rurality above 50%).

How would a place-sensitive approach look like? To start, it would acknowledge that markets for insurers and providers would not emerge evenly across locations. Using disaggregated data, it would identify the municipalities lacking scale to support such markets. For those locations, it would devise alternative approaches: grouping municipalities in order to establish larger markets; inventing non-market mechanisms to compensate for perverse incentives created by imperfect competition; or ditching competition altogether, by offering the area to a single provider/insurer.

The 1993 health reform did not acknowledge contextual aspects, such as rurality and population size, in the design of insurer and provider markets. This aspect of the Colombian process raises a question: is the place-blindness of the healthcare reform partially responsible for differences between municipalities in health outcomes? The next section will test this question.

### **Data, Methods, and Results**

The main argument of this paper is that place-blindness (or place-sensitivity) in national policy frameworks is a determinant of subnational service provision and well-being. Place sensitivity (or place blindness) can either accentuate, mitigate, or ignore the impact of place-based characteristics on social outcomes such as educational attainment or infant mortality. In the Colombian case, my argument is that the policy framework that introduced competition between insurers did not take into consideration that the success of the market approach would depend on the existence of local conditions to sustain such markets. In particular, a market of insurers in places with high rurality, low population

size, and low population density would be detrimental because it increased the costs of attention and diluted the responsibility of care. Since no place-sensitive instruments were designed to solve the challenges of the insurers' markets in places with these characteristics, this feature of the reform was *place-blind*.

I devised an econometric test that takes advantage of the municipal variation in the aforementioned place-blind aspect of Colombia's policy framework. Since the degree of insurer competition varies across municipalities, this test evaluates the relationship between competition among insurers and health outcomes in municipalities with different degrees of rurality, population density, and population size. In other words, I test whether the impact of competition among insurers is moderated by rurality, density, and population size, and in what direction. I select these moderators or mediators and not others because these are the ones that most clearly affect the functioning of markets. At the same time, my models control for other place-based characteristics that impact health outcomes such as poverty and ethnicity.

If the theory is correct, and place-blindness (in the shape of insurance market) is a determinant of subnational outcomes, the data should show that the effect of competition on health outcomes depends on these three moderators. In particular, I expect that more competition would be linked to better health outcomes in more populous, dense, or urban municipalities, and worse outcomes in less populous, disperse, or more rural municipalities.

The database employed here contains data from different sources such as censuses, electoral results, and statistics from the Ministry of Health and previous studies. It contains information for all 1101 Colombian municipalities for the years 2009,

although the dependent variables consider 2009 and 2010. I prefer a cross-sectional study rather than a longitudinal one due to data constraints: the majority of the control variables are observed only for 2005, which is the year of the latest Census.<sup>4</sup> I select 2009 and not other years because the data for the dependent variables (infant mortality rates and mother deaths) has quality problems for prior years, and is too far from the Census for later years. In addition, during 2009 and 2010 subnational governments did not change.

My key independent variable (IV) operationalizes market competition between insurers. I constructed an Insurer Market Fragmentation Index (IMFI), which is a Herfindahl concentration index for municipal insurers. This index uses the market share of each insurer in each municipality and expresses the probability that two persons randomly chosen belong to different insurer companies. The index used here is similar to the Ethnic Fractionalization Index, commonly used in studies of ethnic heterogeneity. The formula is reported in Table 1. Data on insurer market share is contained in the SISPRO dataset, a resource of the MoH that records indicators of provision, treatments, and demographic indicators for all municipalities. I take the average value of IMFI for 2009 and 2010 in order to avoid irregular patterns in a single year. The average IMFI in our dataset is 0.6 with a standard deviation of 0.21.

My dependent variables are Municipal Infant Mortality Rate (IMR) and Municipal Mother Deaths (MD). Both indicators are well established measurements of well-being, as their inclusion as Millennium Development Goals # 4 and # 5 reveals. I prefer Mother Deaths to Maternal Mortality Ratio due to the difficulty of estimating such ratio in the many municipalities that have no or few living births in a year. To avoid high fluctuation in rates, the dataset reports the two-year average for 2009 – 2010 for Infant Mortality

Rates, and the sum of 2009 and 2010 for Maternal Deaths. This because I employ count models in the MD regressions that require integers. The data comes from the SISPRO dataset.

My theory states that the effect of IMFI on health outcomes is moderated by three place-based characteristics: rurality (rural population / total population), population density (total population / area), and population size. The sources of these variables are estimations of the 2005 Census for 2009. As I claim that the health reform was conceived with large urban populations in mind, I expect the sign of IMFI to be negative in urban, dense, and large municipalities. This means that in this type of places, greater market fragmentation should be correlated with lower IMR and MD. Alternatively, I expect the sign of IMFI to be positive in small, dispersedly populated, and rural municipalities. In municipalities with these characteristics, greater market fragmentation should be correlated with higher IMR and MD.

To test these interactions, I perform three two-way interactions between IMFI and rurality, IMFI and density, and IMFI and population size for each dependent variable. Surprisingly, there are no multicollinearity issues: the three moderators are not correlated. The correlation between rurality and density is -0.29; rurality and population is -0.22; and density and population is 0.43. I test the interactions in separate models instead of a four-way interaction model not only to simplify analysis, but also because my theory does not suggest that the effects of the moderators on health outcomes depend on each other. In other words, my theory stresses that the impact of competition between insurers depends on certain place-based characteristics, and says nothing regarding whether such place-based characteristics interact between themselves.

I ran linear regressions for the log of Municipal Infant Mortality Rate (IMR) and negative binomial models for Municipal Mother Deaths (MD): Maternal Deaths require a count model appropriate for over-dispersed outcome variables. Since there are so many municipalities with zero Maternal Deaths in the course of two years, the data is overdispersed. Specialists use negative binomial regressions to deal with this problem (Hogan et al., 2010).

In addition, I controlled for other determinants of municipal infant and mother mortality. Municipal capacity is measured through locally raised income. This is a good proxy because municipalities need technical skills and strength to be able to tax their population (Harbers, 2015; Sanchez & Pachon, 2013). I also controlled for electoral competition, which may improve the provision of subnational public goods' (Alves, 2015; Niedzwiecki, 2016; Pribble, 2015). I controlled for the availability of local resources for health, since Soto et al. (2012) have shown that fiscal decentralization lowers IMR. To do so, I use per capita health transfers from the national government and per capita total investments in health, which include locally-raised resources and transfers. Giuffrida et al. (2009) have highlighted the positive impact of affiliation to health insurance on health outcomes, and, to control for this, I included the proportion of people insured in both subsidized and contributory plans. I also controlled for number of healthcare providers existing in a municipality, since it is reasonable to believe that the existence of several insurers in a municipality would be irrelevant if just a single or no providers exist. I controlled for poverty, proportion of the population that belongs to an ethnic minority, distance to the capital, and homicides. In addition, I include department-fixed effects to take into account neighboring effects and omitted institutional variables.

In the IMR models, I controlled for the proportion of people that have no access to an improved source of water (Granados & Sanchez, 2014). I excluded from the MD models all municipalities with no live births (around 80) and added live births as a control variable. And although it would be ideal to control for municipal IMR and MD before the health reform, there is no data for the early 1990s for these indicators. For this reason, results might overestimate the real effects of the IV. Table 1 contains information on the sources of each variable.<sup>5</sup>

**\*\*Insert Table 1 here\*\***

## **Results**

Table 2 reports the results of the different models. Columns 1, 2, and 3 have MD as DV, and Columns 4 through 6 have the log of IMR as DV. For each dependent variable, the first column interacts market fragmentation with population size, the second with population density, and the third with rurality.

**\*\*Insert Table 2 here\*\***

### ***IMFI and Maternal Mortality***

I find that the association between insurer market fragmentation (IMFI) and Mother Deaths (MD) is mediated by two of the three variables considered here at a statistically significant level. The results show that the effect of market fragmentation on maternal mortality depends on the degree of rurality and population size of the municipality. For this reason, the coefficient reported for IMFI in the output only reveals what the effect would be in the case that rurality or population equaled 0 and it makes it necessary to plot marginal effects to assess the varying coefficients. The results partially

support the theory stressed in this paper in the sense that the national policy framework interacts with place-based characteristics to produce subnational outcomes. However, regarding the direction of effects, some of the models lead to conclusions that go against the expectations. For population size the interaction behaves as expected. Higher insurer fragmentation is linked with more maternal deaths in small municipalities, and fewer deaths in larger municipalities. For rurality, the interaction behaves contrary to the expectation: higher insurer fractionalization is correlated with more maternal deaths in very urban municipalities. I will discuss these findings in greater detail.

**\*\*Insert Figure 1, 2, and 3 here\*\***

Regarding the interaction between IMFI and population size, Figure 1 presents the coefficients of insurer fractionalization for municipalities ranging from 0 to 500,000. In small populations up to 36,000 (3.6 in the plot), insurer fractionalization has a positive effect on MD at a 95% confidence interval. This means that a more fragmented market is correlated with higher MD. This effect is quite dramatic considering that there are 927 municipalities (out of 1101) with populations below 36,000, and one third of Colombians live in municipalities of this size. As population becomes larger, the effect of market fractionalization becomes negative. From population sizes of 51,000 onwards, increased market fractionalization is correlated to lower MD. Increasing competitors in the market is correlated with beneficial health outcomes in larger municipalities, and prejudicial outcomes in smaller municipalities. These findings support the predictions of the theory.

Figure 2 shows that interaction between IMFI and density is not significant: the effect of IMFI is constant across population density values.

The interaction between IMFI and rurality, however yields results that go against



the expectations. As figure 3 shows, in very urban municipalities, insurer market fragmentation is linked with higher maternal deaths. To the extent that municipalities become more rural, the coefficient of IMFI approaches 0. In other words, it is worse for rates of maternal deaths to have more competition between insurers in more urban than in rural areas, a finding that does not fit the predictions.

**Figures 4, 5 here**

Why is this the case? Why would market competition affect urban, rather than rural municipalities? This could be explained by the fact that multiple mother deaths are practically absent in mostly rural municipalities. Figure 4 plots rurality levels against mother deaths and evidences that municipalities with rurality above 0.6 have 0 or 1 mother deaths. In other words, places with more than two mother deaths are mostly urban. The same cannot be said for density and population size since mother deaths occur in municipalities of all sizes and all densities. We are in need of a further study of how insurance markets function in mostly rural municipalities to better interpret this counterintuitive result.

Figure 5 shows the predicted multiplicative effect of changes in market fragmentation on Maternal Deaths for different types of municipalities. The plot shows what happens when a particular municipality goes from having an IMFI of -1 standard deviation (0.37) to +1 standard deviation (0.847), keeping all other variables constant at their median values. In a municipality of five thousand people, the increase in IMFI is correlated with a four times increase in MD. In a much larger municipality of one hundred thousand people, a similar-sized change in IMFI is correlated with a 100% drop in Maternal Deaths.

### ***IMFI and Infant Mortality Rates***

I find that the association between market fragmentation and IMR is mediated by rurality, but not by population size or population density. This means that the effect of market fragmentation on infant mortality depends on rurality, but is constant across population sizes and population densities. The lack of significance of two of the interactions (Models 4 and 5) means that it is possible to read the direction of the effect of the IV straight from the coefficients table. IMFI is significant and with the expected sign: more insurer fractionalization is correlated with lower infant mortality rates.

#### **[Figures 6, 7, 8]**

Figure 6 and 7 show the non-significant interactions between IMR and population size – population density.

Figure 8 shows the marginal effects of IMFI for different values of rurality. Let us remember that rurality goes from 0 when a municipality is completely urban, to 1 when it is completely rural. As Figure 8 shows, in completely urban populations the coefficient of insurer fractionalization is around -0.3. This means that in very urbanized municipalities, insurer fractionalization works as the health reform expected: increased competition is correlated with better health outcomes.

The effect of insurer fractionalization becomes less substantial as the more rural the municipalities observed are. In municipalities where at least 80% of the population lives in rural areas (20% of all municipalities), the effect of insurer fractionalization stops being significant. Insurer fractionalization is positive for IMR only when more than 20% of the population in a municipality lives in urban areas.

### **[Figure 9]**

Figure 9 explores the predicted reduction (or increment) in IMR for different types of municipalities. When the hypothetical municipality is completely urban, going from having an IMFI of -1 standard deviation (0.37) to +1 standard deviation (0.847) is correlated with an 11% reduction in the initial IMR. When the municipality is completely rural, the same IMFI change is correlated with just a 1% drop in the initial IMR. Adding competitors to the insurers market is only beneficial in mostly urban municipalities.

### ***Controls***

Regarding controls, there is only one aspect that turned significant and with the same direction in all models: a higher proportion of people belonging to an ethnic minority is associated with higher IMR and MD.

Some of the controls have significant but contrasting effects for MD and IMR. This is the case of rurality, which is associated with lower MD but higher IMR<sup>6</sup>; population density, which is insignificant for MD but significantly associated with lower IMR; distance from the capital, which is associated with higher IMR at a significant level, but the effect is insignificant for MD; municipal capacity, which is only significantly associated with lower infant mortality; and percentage of insured population, which contrary to the expectations is associated with more MD. These contrasting associations suggest that the geography of infant mortality is different to the geography of Maternal Deaths, and aspect worth exploring in future work. Urban places with highly capable subnational governments and closer to the capital have lower IMR; and smaller and rural places have fewer Maternal Deaths.

Some of the controls resulted insignificant across most models. Subnational electoral competition, homicides, number of healthcare providers, health transfers, and health expenditures are not significant for neither of the two outcomes.

### *Discussion*

The results of the econometric exercise partially support the theory. The fragmentation of insurance markets is in general not place-neutral, but its effects on infant and maternal deaths depend on context. For infant mortality, the positive effect of the market is only tangible in municipalities where at least 20% of the population lives in urban areas. For maternal mortality, the positive effect of increasing market competition can be observed with a significant level in municipalities with populations larger than 36,000. On the other hand, marketization has a negative effect in the 927 municipalities where the population is smaller than 36,000

However, there are a few findings that contradict our expectations. The effect of market fragmentation does not depend on population size (for IMR) or density (both outcomes) and is worse for mother deaths in urban than in rural municipalities.

My results imply that for the most part, markets are associated with different effects depending on the type of municipality. In this sense, markets are not place-neutral: they are not “good everywhere”, as the policy designers first thought. In contrast, they interact with the local conditions and produce differentiated outcomes. In places with particular characteristics –small and urban, in the case of maternal mortality-- deepening the markets is associated with worse health outcomes. The fact that the national policy environment does not counter the possible pernicious effects of insurer

competition in places not fit for the market makes the Colombian health system place-blind with respect to these aspects. In Colombia, the lack of place-sensitivity in the national health framework, which translated into the creation of insurer markets without territorial distinctions, is associated with variation in subnational health outcomes.

This empirical test does not explore the relationship between different degrees of place-sensitivity and social service provision/social outcomes in a sample of countries. Neither does it test the impact of going from a place-blind to a place-sensitive approach on different social indicators. There are, indeed, different empirical strategies to test the arguments developed in this paper that I do not pursue. The approach I employ here takes advantage of the fact that this particular place-blind feature of the Colombian health policy (the market of insurers) varies across locations, allowing me to test its impact on health outcomes. The subnational variation in this place-blind feature enables me make the point that place-blindness (or sensitivity) in the national policy framework is a subnational determinant in this case.

To what extent are these findings generalizable? The Colombian case is relevant for countries such as Argentina, Mexico, Chile, and the United States with significant participation of private insurers in healthcare provision. In addition, the Colombian case can illuminate the limits of marketization on social services, since this type of reforms is often an option when social service reforms are on the table.

### **Conclusions**

What explains subnational variation in living standards related to health, education, and sanitation? What can countries do to reduce such variations? This article stresses that there is one aspect of national social policy frameworks that has been

neglected by existing accounts focusing on policy progressiveness and subnational determinants: place-sensitivity. Place-sensitive national policy frameworks are those that acknowledge that the well-being people enjoy is influenced by the characteristics of places where they live, and their interaction with the set of rules, laws and regulations that organize a social sector. In this regard, place-sensitive policy instruments devise ways to mitigate the negative impact of place-based features on social outcomes and are instruments to reduce subnational inequality (Otero-Bahamon, 2016 and 2019; Giraudy & Pribble, this issue).

This article studied the Colombian healthcare system to demonstrate how the lack of place-sensitivity (place-blindness) is a determinant of subnational health outcomes and a of the differentiated nature of the Colombian state (Harbers & Steele, this issue). Such place-blindness is crystalized in the creation of a market of insurers which disregarded the areas that lacked the scale to sustain such markets. Through an econometric exercise, the evidence suggested that more competition can lead to worse, rather than better, health outcomes in less populated municipalities, even controlling for subnational determinants such as poverty, ethnicity, and municipal state capacity. And although some of the findings run contrary to the theory, the majority of the models give support to our expectations.

Two key policy implications emerge from this study. Policy makers should take place seriously by devising place-sensitive instruments that activate or neutralize the effect of subnational determinants on social outcomes. But despite being desirable, it is oftentimes hard to come by these policy innovations. First, policy-makers must have a motive, such as responding to demands of pro-poor incumbents, or the need to cater to

certain subnational constituencies. But motives might be elusive since politics entail an urban bias. It is hard for policy-makers to craft policies for places with a shortage of voters. Second, changes to existing policy frameworks often generate opposition and resistance: from agents that gain economically or politically from the place-blind approach, from other state actors that prefer a place-blind approach because it is universal, pro-market, or cheaper, or from bureaucrats that anticipate the added challenges of differential policy frameworks. In order to implement a place-sensitive design, policy-makers need to impose themselves upon such varied challengers.

In addition, the study suggests that place-sensitivity can be an avenue to universalism. Voices in favor of universal social services despise an approach that might lead to different services for different populations. A universal stance means that all citizens, regardless of gender, location, or income, have the same right of access to quality services. Yet attempts to make a service universal might be confused with a one-size-fits-all approach, and this could lead to higher, rather than lower, inequality between individuals and regions. This article suggests that place-sensitivity could be a way to make universal social service a reality for all citizens in a country.

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## **Interviews**

I1: Mario Hernandez, Public Health expert. Professor at Universidad Nacional, August 29, 2014.

~~I2: Milton Guzman, Organizacion Panamericana de la Salud, OPS, October 8, 2014.~~

Deleted per author 12/4/19

I3: Oscar Ospina, Congressman for Partido Verde, Former Department Health Director for Cauca and former Hospital director, September 24, 2014.

I4: Luis Olarte, technocrat at Ministerio de Salud, Colombia, September 29, 2014.

**Table 1. List of Variables and Sources**

<b>Variable Name</b>	<b>Description</b>	<b>Year</b>	<b>Source</b>
Infant Mortality Rate (IMR)	Infant (less than one year old) deaths per 100000 living births	Average 2009-2010	CEDE Municipal Panel (CEDE)
Mother Deaths (MD)	Mother Deaths	Sum 2009-2010	SISPRO
Insurer Market Fragmentation Index (IMFI)	<p>Insurer Market Fragmentation<sub>j</sub> =</p> $1 - \sum_{i=1}^N s_{ij}^2$ <p>Where s is the market share of insurer i (i = 1...N) in municipality j</p>	Average 2009-2010	Built from SISPRO
Living Births	Number of living births	Sum 2009-2010	SISPRO
Population	Number of inhabitants in municipality	2009	CEDE
Rurality	Rural population/total population	2009	CEDE
Distance to capital	Lineal distance to Bogota in km	2009	CEDE
Population Density	Total Population / municipal area in km <sup>2</sup>	2009	CEDE
Non-insured	% of municipal population not insured	2005	CEDE
Locally raised income	% of local income raised locally, or tax income/current income	2009	CEDE
Poverty	Per Capita Expenditures (in thousands of pesos)	2005	CEDE
Ethnic minority	% of the local population that belongs to an ethnic minority	2005	2005 Census
No water	% of local population without access to an improved source of water	2005	CEDE
Electoral Competition	Winner victory margin in 2007 mayoral elections	2007	CEDE Elections Panel
Health Transfers per Capita	Total health investments transferred by the central government / total population, in thousands of pesos	2009	CEDE
Health investments	Local investments in public health, subsidized plan, attentions to non insured population/ total population, in thousands of pesos	2009	CEDE
Insured	Percentage of insured population	2009	MoH Data
Providers	Number of Healthcare providers in	2013 <sup>7</sup>	Guzmán (2014)
Homicides	Number of homicides	2008	CEDE

**Table 2. Regression Coefficients**

Dependent variable:	Mother Deaths			Log Infant Mortality Rate		
	Negative Binomial Model			Linear model		
	1	2	3	4	5	6
Model	Population	Density	Rurality	Population	Density	Rurality
Intercept	-6.4 (1.87***)	-4.19 (1.85*)	-7.84 (1.9***)	2.703 (1.841***)	2.73 (1.84***)	2.802 (0.195***)
Insurer Fractionalization	3.92 (0.72***)	2.31 (0.672***)	8.345 (1.65***)	-0.102 (0.038**)	-0.122 (0.038**)	-0.276 (0.111*)
Population In tens of thousands	0.96 (0.099***)	0.0078 (0.021)	-0.09 (0.02)	0.001 (0.0025)	0.0014 (0.0027)	0.002 (0.002)
Population density	0.000 (0.000)	0.000 (0.0016)	0.000 (0.000)	-0.00003 (0.000*)	-0.0004 (0.0002*)	-0.00003 (0.00001*)
Rurality	-1.53 (0.47**)	-2.09 (0.47***)	4.37 (1.79*)	0.021 (0.111)	0.023 (0.04***)	0.085 (0.11)
Municipal capacity	-0.0005 (0.01)	0.006 (0.01)	0.003 (0.009)	-0.0027 (0.0004***)	-0.002 (0.0008**)	-0.0026 (0.0008***)
Ethnic composition	0.01 (0.0038**)	0.013 (0.0039***)	0.012 (0.0036***)	0.0015 (0.0001***)	0.0015 (0.0003***)	0.0015 (0.0003***)

Distance to capital	0.002 (0.0014)	0.0015 (0.0014)	0.001 (0.001)	0.0006 (0.0001***)	0.0006 (0.0001***)	0.0006 (0.0001***)
Poverty	-0.003 (0.002)	-0.004 (0.002)	-0.003 (0.002)	-0.0004 (0.0001**)	-0.0004 (0.0001**)	-0.0004 (0.0001**)
Provincial per capita expenditures in thousands						
National health transfers	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.034 (0.047)
Per capita in thousands						
Total investments in health	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.024 (0.026)	0.018 (0.026)	0.000 (0.000)
Per capita in thousands						
Proportion of Insured population	0.021 (0.007**)	0.023 (0.007**)	0.02 (0.007**)	0.002 (0.0005**)	0.0006 (0.0005)	0.0007 (0.0005)
Electoral Competition	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Homicides	0.0046 (0.002*)	-0.003 (0.002)	-0.002 (0.002)	0.0002 (0.0003)	0.0003 (0.0003)	0.0002 (0.0003)
Health providers	0.002 (0.0035)	-0.004 (0.004)	-0.004 (0.003)	-0.0006 (0.0004)	-0.0006 (0.0004)	-0.0006 (0.0004)
Living Births	0.0002 (0.000***)	0.0002 (0.000***)	0.0002 (0.000***)			
Water deprivation				0.0038 (0.0004***)	0.0038 (0.0004***)	0.004 (0.0004***)
Insurer Fractionalization* Population	-1.07 (0.11***)			-0.0009 (0.016)		
Insurer Fractionalization*		0.0000			-0.0005	



Population Density		(0.0019)			(0.0002)	
Insurer Fractionalization*			-9.15			0.258
Rurality			(2.28***)			(0.155*)
Observations	1016	1016	1016	1066	1066	1066
Adjusted R square				0.6592	0.6607	0.6599

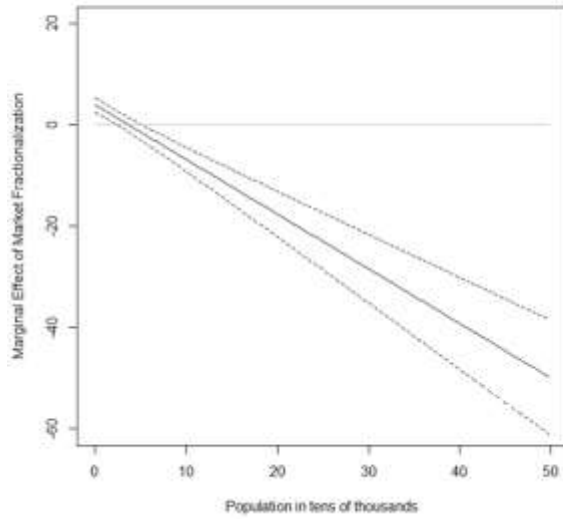
Department Coefficients not reported

Standard Errors in Parentheses

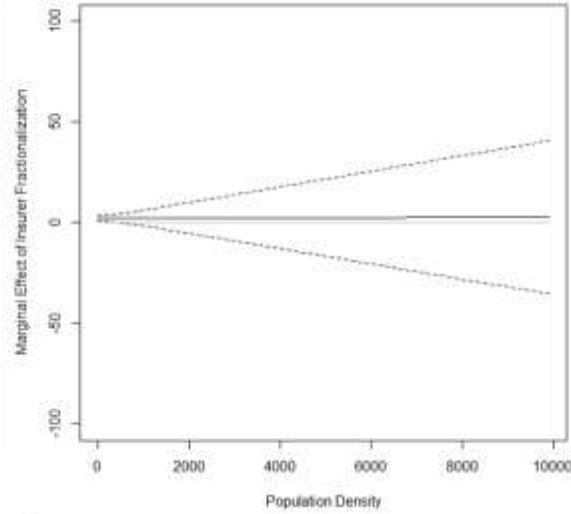
\* p<0.05, \*\* p<0.01, \*\*\*

p<0.001

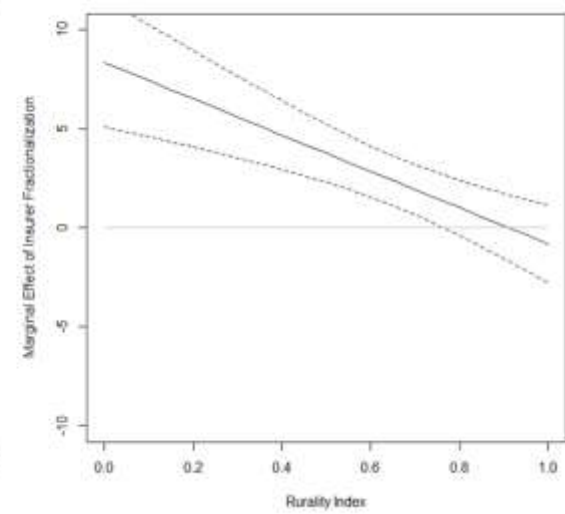
**Fig. 1. Marginal Effect of Insurer Fractionalization Index on MD for different values of Population**



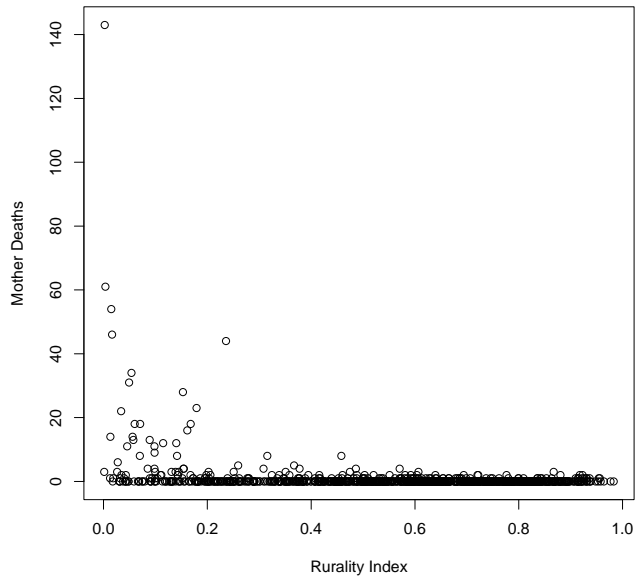
**Fig. 2. Marginal Effect of Insurer Fractionalization Index on MD for different values of Population Density**



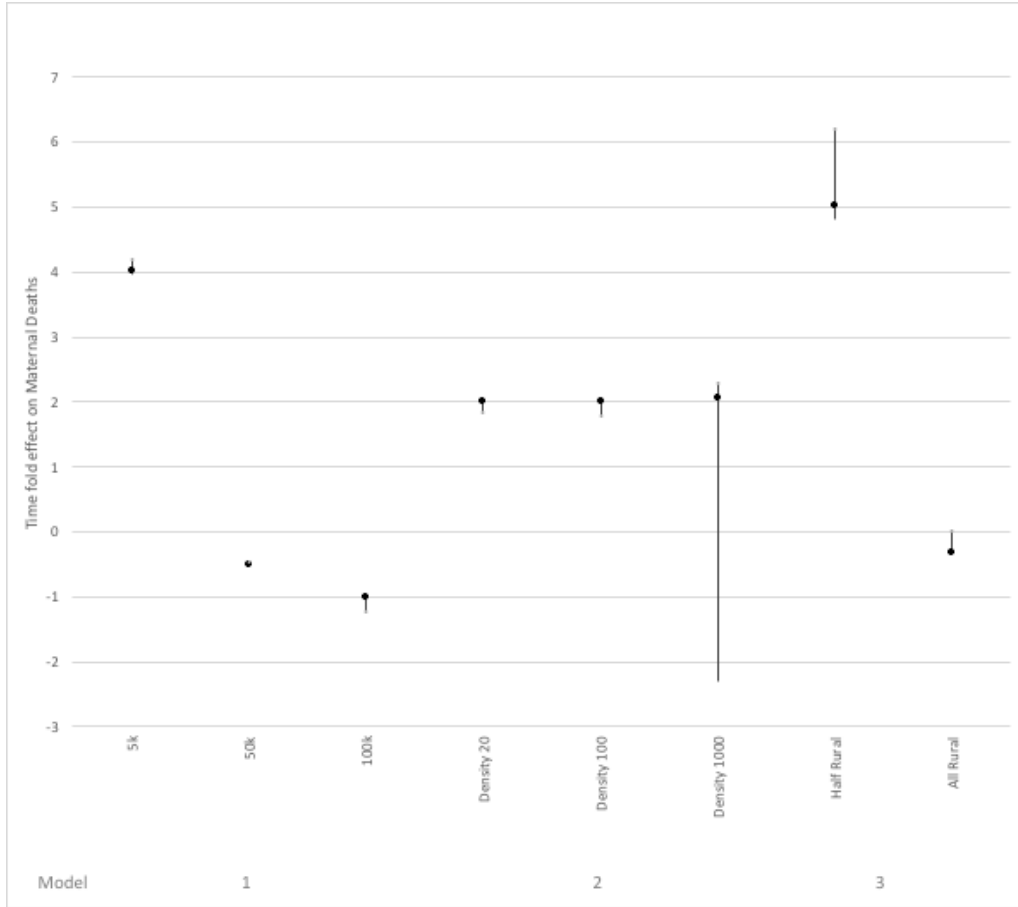
**Fig. 3. Marginal Effect of Insurer Fractionalization Index on MD for different values of Rurality**



**Figure 4. Rurality Index against Mother Deaths**

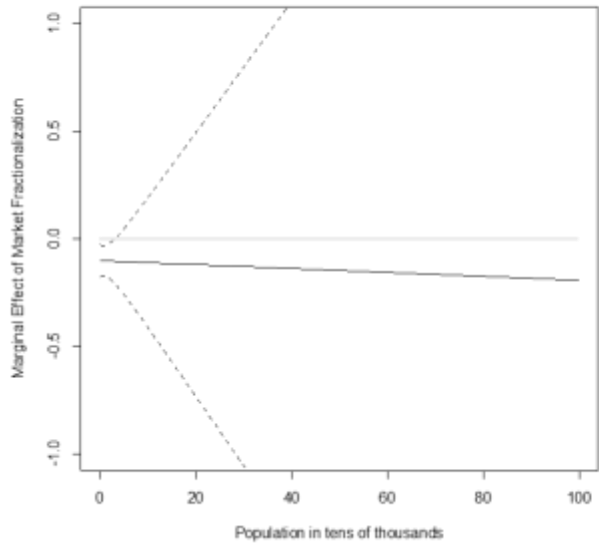


**Figure 5. Effect of IMFI changes on Maternal Deaths for selected municipality types**

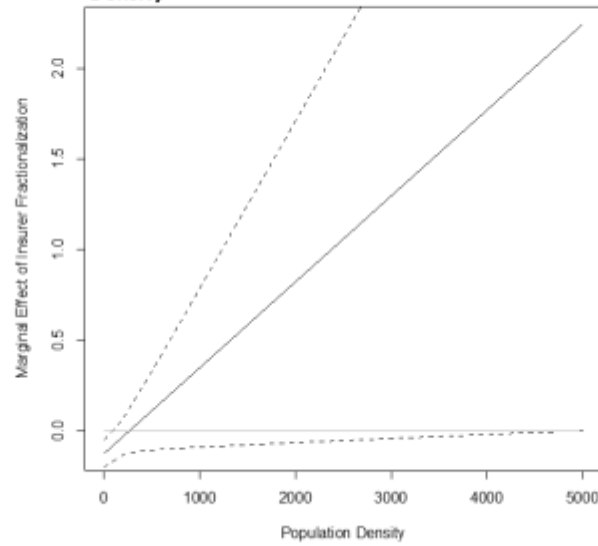


Note: The figure reports the time fold effect on Maternal Deaths of going from -1 SD to +1SD in Insurer Market Fragmentation, for different types of municipalities. All other variables are held constant at the median values. The lines about the points represent 95% confidence intervals.

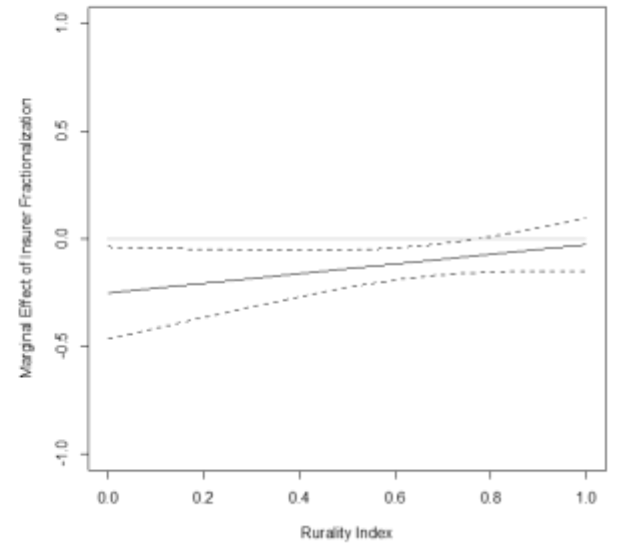
**Fig. 6. Marginal Effect of Insurer Fractionalization Index on IMR for different values of Population**



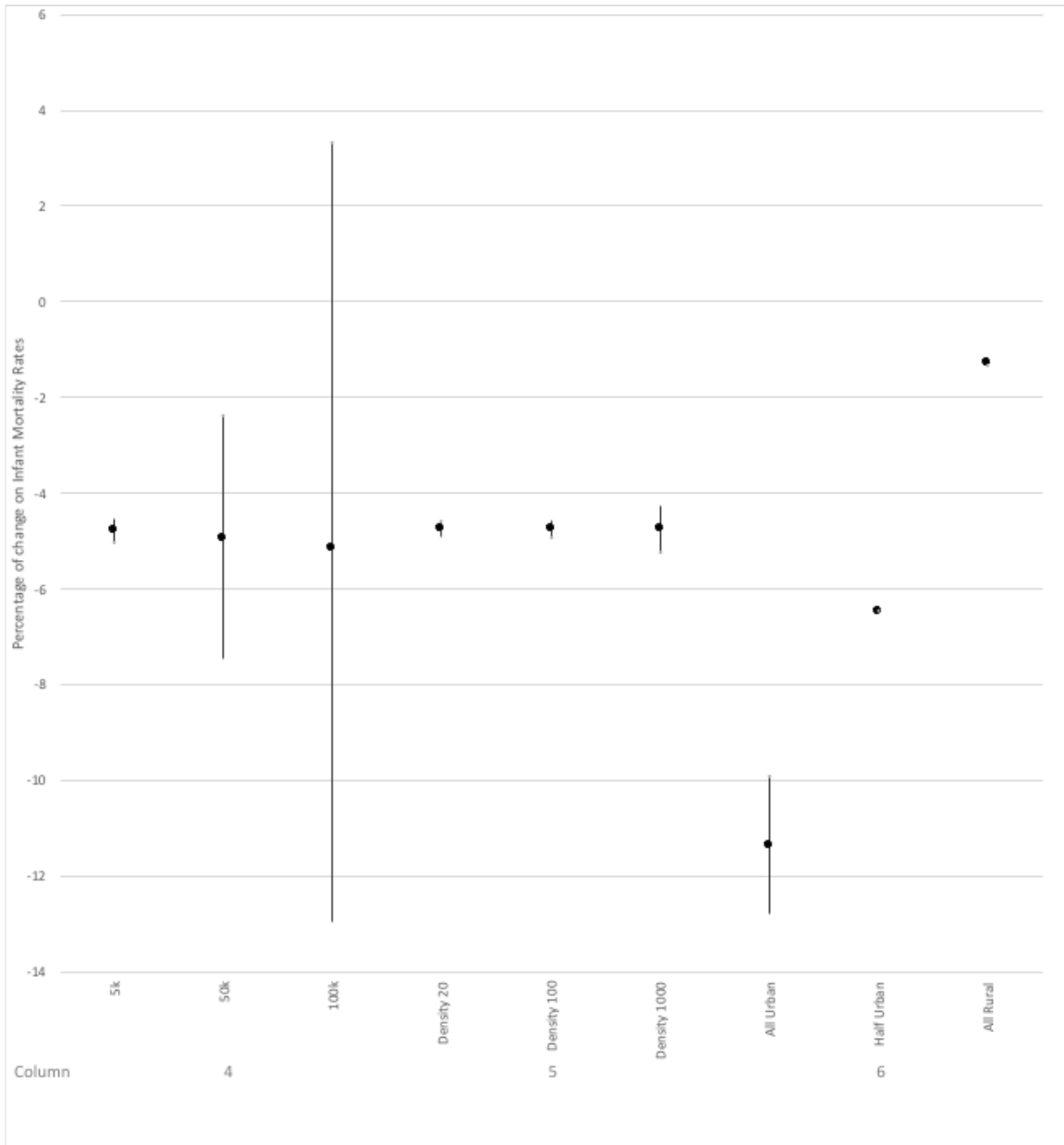
**Fig. 7. Marginal Effect of Insurer Fractionalization Index on IMR for different values of Population Density**



**Fig. 8. Marginal Effect of Insurer Fractionalization Index on IMR for different values of Rurality**



**Figure 9. Effect of IMFI changes on Infant Mortality Rates for selected municipality types**



Note: The figure reports the % reduction on IMR of going from -1 SD to +1SD in Insurer Market Fragmentation, for different types of municipalities. All other variables are held constant at the median values. The lines about the points represent 95% confidence intervals.

## Notes

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<sup>1</sup> Maternal Mortality Ratio reported for 2015: Central African Republic: 882. Uruguay: 15. Source: CIA 2018. Apia (Risaralda): 980. Pereira (Risaralda): 18.55. Source: SISPRO 2018.

<sup>2</sup> Régimen Contributivo in Spanish.

<sup>3</sup> Capitation is the amount paid to an insurer for each enrolled person. Capitation is computed according to age, gender, and location.

<sup>4</sup> The 2018 Census has not yet been released.

<sup>5</sup> I do not control for party alignment between national and subnational officials (Niedzwiecki 2016), because in Colombia it is impossible to assess such alignment based on party labels.

<sup>6</sup> The effect observed here talks of the Models with no interaction with rurality.

<sup>7</sup> The year for this variable is 2013 since the data from years before is inconsistent. Including a 2013 variable should not be problematic since the number of providers in municipalities changes little over time.