Title:
Creating a preference for prevention: The role of universal health care in the demand for preventive care among Mexico's vulnerable populations

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Key Messages:

- Demand for preventive care services among poor, urban Mexicans is higher for women, children and the educated, but is lower for the indigenous than the non-indigenous in some cases.
- The introduction of a universal health care system for the poor – Seguro Popular – was correlated with increased demand for three central preventive care interventions: general physical exams, diabetes screening, and cervical cancer screening. However, much of this demand can be explained by self-selection into the program.
- When Seguro Popular (SP) affiliation is interacted with demographics, we find that women using SP demand more diabetes testing and fewer physicals, but that SP does not help to mitigate the serious dispartities experienced by Mexico's indigenous population.
- These findings suggest that policy interventions aimed at indigenous health must go beyond targeting and consider the effect of health-promoting behaviors such as the demand for preventive care.

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Abstract

The introduction of Seguro Popular (SP) – providing health insurance to over 50 million Mexicans since the early 2000s – represents a large shift in health care delivery to the Mexican population. And yet, its impact on Mexico's most marginalized communities has been little studied. This paper investigates SP's effect on the vulnerable by looking at the impact of the program on demand for preventive care services with a focus on demand by women, children, and the indigenous. Three outcomes important to Mexico's burden of disease are explored: general physical exams, diabetes screening, and cervical cancer screening. I find that the introduction of SP is associated with an increase in demand for all three services. Additionally, women are more likely than men to utilize diabetes and cancer screenings, but affiliation with SP increases women's demand for physicals while decreasing their demand for diabetes testing. The indigenous are less likely to demand diabetes screening than the non-indigenous, and SP affiliation does not affect their demand. In order to control for self-selection into health insurance, I estimate the impact of demographics on the decision to affiliate with SP. Women and children are more likely to affiliate, while the indigenous are less likely to do so. Using the staggered geographic roll out of SP between 2004 and 2009, I am able to use access to SP in 2004 as an instrumental variable to predict SP affiliation in 2009. Two stage least squares estimates of the causal impact of SP on demand for preventive care services finds that, out of the three outcomes studied, only demand for physicals is increased by SP affiliation. The other forms of preventive care are not affected. The results suggest that SP is not addressing the needs of it most vulnerable populations to the full spectrum of quality health care services.

1 Introduction

One of the most radical alterations in the history of Mexican health care occurred in 2003 with the introduction of *Seguro Popular*. *Seguro Popular* (or SP) is a government-funded program that provides free health insurance with no user fees to over 50 million Mexicans. The program is targeted to the approximately 50% of Mexicans that are not eligible for formal social security. These are workers (and their families) that are not formally employed and are therefore do not receive health (and other) benefits funded through payroll taxes (Knaul et al., 2006). This informal sector is disproportionately made up of the poor, who are disproportionately rural, indigenous, female, children, and elderly. These are also the populations that suffer from the greatest health disparities, and part of *Seguro Popular's* design explicitly targeted the program at these groups (King *et al.*, 2007; Leyva-Flores *et al.*, 2014).

Seguro Popular has been successful in achieving near-universal coverage among previously uninsured Mexicans (Knaul *et al.*, 2012). However, while its affiliates have reduced their household out of pocket spending on health care and medicines (Galárraga *et al.*, 2010; Garcia-Diaz and Sosa-Rubi, 2011; Grogger *et al.*, 2014), researchers have found little evidence of increased health care utilization and improved health outcomes (King *et al.*, 2009). This outcome is not surprising, given the results of other recent health system reforms (Wagstaff and Pradhan, 2005; Camacho and Conover, 2013); however, two recent studies of long term outcomes show health improvements due to SP, mainly for women and children (Knox, 2016; Turrini *et al.*, 2016).

This paper seeks to inquire specifically about how the introduction of Seguro

Popular changed patterns of use of preventive care services, specifically. Preventive care can be cost-effective way to increase public health, especially in countries like Mexico that are undergoing an epidemiological transition, but is often underutilized (Carrieri and Bilger, 2013). The literature on Seguro Popular, moreover, displays a surprising absence of inquiry into this important question. Only one previous study of SP focuses on the demand for preventive care, but this study focuses on a rural population and only in the period right after SP was introduced (Spenkuch, 2012). My study, instead, seeks to understand the impact of SP under the circumstances that are most likely to affect the greatest number of people: the urban context (Grogger *et al.*, 2014), and several years after the introduction of the intervention.

Secondly, this analysis focuses specifically on SP's impact the on demand for preventive care from various population subgroups, specifically women, children, and the indigenous. Much of the justification for SP came from the health disparities suffered by Mexico's vulnerable groups: women, the indigenous, the elderly. And yet, little work has been done to investigate its impact specifically in these populations. A notable exception is Leyva-Flores and co-authors, who find that indigenous SP affiliates are more likely to seek curative primary care than non-indigenous affiliates (2014). This study seeks to discover whether SP has the same effect on promoting preventive care among its vulnerable affiliates, while also asking whether vulnerable groups are more or less likely than the rest of the population to affiliate to SP or to demand preventive care.

I find that SP affiliation is associated with an increase in demand for preventive care. However, only one form of preventive care (general physical exams) can be causally attributed to SP. Additionally, I find that the effect of SP on vulnerable groups is variable.

In spite of the history of health disparities suffered by Mexico's indigenous population, *Seguro Popular* was neither successfully targeted to the indigenous in my sample, nor was it effective in boosting utilization among those indigenous individuals who did choose to affiliate. SP was more effectively targeted at women and children in my sample, but my findings show that these groups are already more likely to receive preventive care and SP affiliation does not increase their utilization. The answers found here suggest that Mexican policy makers have much room for improvement in encouraging preventive care among SP affiliates, especially among the most vulnerable members of society.

The scale of *Seguro Popular* – over 50 million people moved from uninsured to complete coverage over the course of ten years – provides a unique opportunity to understand the social and economic heterogeneity in demand for health care by vulnerable populations more broadly. This paper investigates these questions in Mexico, but the results can be used to evaluate and understand the effects of alterations in the prices of health care resources on both spending decisions and health outcomes in a broad variety of countries and contexts.

1.1 Background on the Demand for Preventive Care

Preventive care is commonly believed by policy makers to be beneficial for reducing overall health expenditure and improving population level health outcomes. Because of this belief, many public and private health programs subsidize preventive care, with some even offering incentives for its use (Paris et al. 2016). By making preventive care free, the reasoning goes, patients have increased incentives to choose screenings and disease prevention services over the potential for more costly treatments of disease down the line.

There are factors beyond price that determine the demand for any kind of health care. These include social factors such as age, education (including health knowledge) and ethnic background, health status or need, and ease of access to health care services (Andersen 1995). In this study, I look for the social determinants of demand for preventive health care –specifically sex, education, and ethnicity. Mexico is subject to extreme economic inequality and health disparities that affect the indigenous, the poor, and women (Gutiérrez *et al.*, 2002). These inequalities are exacerbated by their relationship to educational achievement (the average education of adults in this study is 5 years), which can be expected to be correlated with an understanding of the role of preventive care in producing long term good health.

In this study, I examine how changes in health insurance interact with these factors. Health care lowers the cost of services, which changing the supply of proividers; the present study is intended to examine how different sets of people react to these changes in their health care resource sets. In particular, we should note that the Seguro Popular reform not only lowered out of pocket costs, it increased access and quality of services relative to services available for the poor before the reform (Garcia-Diaz and Sosa-Rubi 2011). We might expect these reforms to increase demand; there was, however, also a significant increase in wait times for care (Scott 2006). Since waiting for care effectively increases the cost to the user, queuing tends to lead to decreased demand – especially for preventive care, whose perceived lack of urgency makes waiting seem onerous (Carrieri and Bilger 2013).

The questions asked in this study are increasing in importance. The top causes of premature death and disability in Mexico are now diseases against which preventive care

can be effective: diabetes, heart disease, and kidney disease. Neo-natal and prenatal diseases, on the other hand, have become less prevalent over this period, although STDs are becoming more so (Global Burden of Disease Study 2016). If Mexico's health policies are failing to give the Mexican people reason to use preventive care, then those policies are in need of revision.

1.2 Background on Mexico's Health System and Reform

The Seguro Popular program was created in 2003, to serve that half of Mexico's population without access to employment-based health insurance. That half of Mexico's population – approximately 50 million people – faced high user fees and inconsistent service from the Mexican Ministry of Health (Frenk *et al.*, 2006; Knaul *et al.*, 2006). That sector was also disproportionately composed of the rural, the poor, and the indigenous and SP was designed to be targeted to those populations (King et al., 2007; Leyva-Flores et al., 2014). Affiliates can receive primary or specialist care at a SP clinic or hospital free of charge. These facilities were either built new or were refurbished former Ministry of Health facilities. This investment in health care facilities was done over time, between 2002 and 2009, as part of the health reform that created SP.

Since families were not eligible for SP affiliation until their district had an accredited SP health care facility, there was geographic variation in SP eligibility over this time period. Otherwise, any family not eligible for formal social security through IMSS or similar organizations was eligible to affiliate with Seguro Popular. By design, no premiums were to be charged to those in the bottom two income quintiles. In practice, no premiums were charged in the early years of the program (Knaul et al., 2012).

Given SP's background and goals of decreasing health inequities, we can ask how

those targeted by SP altered their health care consumption patterns in response to this intervention. It is to this task that I now turn.

2 Methods

2.1 Data

The data is drawn from the Urban Evaluation Survey (Encelurb), a repeated sampling of over 22,000 poor, urban Mexicans over seven years. The survey was originally conducted to evaluate the urban implementation of Mexico's conditional cash transfer program, called *Oportunidades* at the time of the survey (and now called *Prospera*). Poor, urban households (households near the cutoff for *Oportunidades* program eligibility) were surveyed yearly in 2002, 2003, and 2004, and a follow up survey of the same households was added in 2009 (Behrman et al., 2012). Most of the outcomes and explanatory variables used in the present study are drawn from the 2009 follow up, but 2002 and 2004 variables are included, especially for explaining selection into the program.

For the present study, a subsample of 10,426 individuals were selected based on their eligibility for *Seguro Popular*. Selected individuals were not covered by formal insurance systems in 2002, and were living in regions that were admitted to SP eligibility in 2004 or later. The households in this subsample represent 61 districts (*municipios*) in 16 Mexican states. Due to its emphasis on urban households, the survey is not nationally representative. However, this urban sample may be considered as a group who has access to the highest quality SP facilities and the fewest barriers to program uptake for a few reasons. Despite targeting of the program to rural communities, the majority of affiliates in the program's early years were urban (Scott, 2006). There are also many reports of

heterogeneous quality and financial protection in SP's rural facilities (Grogger et al., 2014). In many ways, then, the urban sample gives a more consistent and "best possible" set of outcomes for the program effects. Finally, all respondents in this survey have incomes near or below the eligibility cutoffs for the conditional cash transfer program, *Oportunidades*, which was targeted to the poorest of the poor. Since *Seguro Popular* was targeted those in the bottom two income deciles, the respondents here should be similar to the typical *Seguro Popular* affiliate, even if they were not yet eligible for administrative reasons.

2.2 Key Variables and Analysis

There are three main outcomes of interest. First: were there any indicators of a preventive care consultation (or "physical") – a physical exam for adults in the past year or a well-child visit for children under five in the last six months? Second: were there any indicators of testing for diabetes in the past year? Third, were there indicators, for women, of a screening for cervical cancer by means of a Pap test? These latter two tests can be seen, in light of their efficacy as means for increasing population health, as a proxy for overalo quality of preventive care available (Cohen, Neumann and Weinstein, 2008; Villarivera *et al.*, 2012; Rivera-Hernandez *et al.*, 2016). For ease of coefficient interpretation, the impact of the explanatory variables on these binary outcomes is estimated using a linear probability model.

To test the effects of SP on my outcomes, I use a dummy variable for affiliation with SP in 2009 (as reported in the survey) as an explanatory variable. I also include three measures of vulnerability as explanatory variables. These are: a dummy variable that is one for women and girls, a dummy that is one if the individual is under 18, and a dummy if

the individual speaks an indigenous language. This last variable is consistent with the definition of "indigenous" used in other studies and yields a similar measure of proportions of indigenous in the population (about 10%) (Leyva-Flores *et al.*, 2014). Finally, I include interactions between SP affiliation and measures of vulnerability in order to detect whether there are differential effects of SP for these sub-groups.

Other determinants of demand for preventive care considered are age, education, and the individual's affiliation with the *Oportunidades* conditional cash transfer program, since this program was targeted to children and their mothers. Cash incentives were given for receiving some very basic forms of preventive care such as vaccines, so we should expect that membership in the program would increase demand for at least some of our outcomes (Behrman *et al.*, 2012). Finally, the individual's perceived health care need is also considered as a possible determinant of preventive care utilization (López-Cevallos and Chi, 2010). This can be a factor of not only health, but education, culture, and demographics. However, here we only use a measure of health status to represent this variable and separately control for the other factors listed. Encelurb has two measures of health: number of days out of the last 30 that the respondent was unable to perform their typical activities due to illness and number of days in the last 30 that the respondent was ill. These two measures may be capturing two correlated but not identical aspects of the need for health care. However, Encelurb only asks about typical activities for children over the age of five, so I only use the measure of self-reported illness in the majority of the analysis here.

Summary statistics for this population are given in table 1. Column 1 shows means and standard deviations for the full sample, while columns 2 and 3 show the same statistics

for those affiliated to SP in 2009 (N=3,959) and those not affiliated by 2009 (N=6,467), respectively. The table shows those that affiliated to SP by 2009 are younger, more likely to be female, and less educated than the non-affiliates. The preventive care outcome is not available before 2009 for adults, but in unreported results, I find that there is no significant difference in utilization of diabetes testing or for preventive care for children under 6 in 2002. Table 1 does report mean levels of utilization of these preventive services in 2009 and finds that the affiliate group has greater utilization of both services in 2009, after affiliation with SP.

2.3 Estimating and Controlling for Self-Selection

Literature on the impact of health insurance on health outcomes is often concerned with unobservable differences in health-related behavior between those who voluntarily choose to enroll in health insurance and those who do not (Manning et al., 1987). This kind of selection into programs can lead to overestimates of program impacts, especially if it is based on unobservable personal characteristics that cannot be controlled for in a standard regression. For this reason, I first estimate the effect of observable characteristics on program uptake, then control for any possible bias created by self-selection on unobservable characteristics by using instrumental variables estimation.

In designing my model of program selection, I anticipated that observable demographic factors such as age, sex, and indigenous status would play important roles in explaining affiliation to SP, especially since the program was specifically targeted to women, children and the indigenous (King et al., 2007). *Seguro Popular* affiliation was also automatically granted to *Oportunidades* beneficiaries, although there is evidence that the beneficiaries were not made aware of this information (Scott, 2006), so I include this

variable. I also include socio-economic factors such as household size and home ownership, previous medical spending, and health status (as a proxy for need). I estimate a linear probability model that uses affiliation with SP in 2009 as the binary outcome variable.

All of these characteristics can be controlled for in the regressions above. However, their relevance raises the question of whether there are other individual characteristics (underlying beliefs about health, family culture, or genetic health endowment) that might be both strong determinants of health insurance enrollment and health behavior. If the people who are more likely to enroll in SP are also the people who favor healthy behaviors, for example, then these regressions will overestimate the impact of SP on the demand for health care due to advantageous selection into the program. On the other hand, it is also possible that health insurance attracts the least healthy, leading to an underestimation of program effects due to adverse selection.

Instrumental variables regression can remove the bias due to self-selection by using a variable that is independent of all individual characteristics to predict and explain an individual's choice to affiliate with SP. I use the staggered geographic roll-out of SP access as a strong predictor of uptake, in this case. Many of the individuals in my sample had access to SP in 2004, solely based on their district (municipio) of residence. Others did not receive access until 2007 or later. My hypothesis is that individuals with earlier access will be more likely to be enrolled by 2009. This variable has been used in multiple studies of Seguro Popular's impact, and has been treated as a determinant of uptake that is independent of individual-level health care decisions (Bosch and Campos-Vazquez, 2014; Knox, 2016; Rivera-Hernandez et al., 2016). I verify that early access does in fact explain

uptake by including it in the regressions predicting uptake. Then, following the previous literature, I use this early access as an instrumental variable to remove coefficient bias due to self-selection into the program.

3 Results

3.1 Determinants of Demand

Table 2 shows the results of the linear regression of the binary outcome variables for preventive care utilization on SP affiliation, membership in the *Oportunidades* program, demographic characteristics, and health status. Variables for the interaction between SP affiliation and the three demographic characteristics of interest - speaking an indigenous language, being female, and being under 18 – are also included. Column 1 reports the results for a general physical in the past year for all individuals, Column 2 reports results for diabetes screening for adults over 18, and Column 3 reports results for Pap testing for cervical cancer detection for women aged 25-49. Standard errors and 95% confidence intervals are reported in Table 2 and all tables that follow.

The results show that access to both *Seguro Popular* and *Oportunidades* are associated with an increase in the likelihood of using all three forms of preventive care. The mean effect of SP on demand for a general visit is 18 percentage points (pp), a 150% increase over demand for non-affiliates in the same period, while SP affiliates are 6.6 pp (38%) more likely to receive blood sugar testing and 16 pp (67%) more likely to receive a Pap test than non-affiliates. Affiliation with *Oportunidades* is also associated with large increases in all three types of care (83% for general preventive, 18% for blood sugar testing, and 54% for Pap testing). The relative ranking of importance of *Oportunidades*

for the three forms of testing is not surprising, given that *Oportunidades* was targeted to children and their mothers and would be expected to have much less effect on older adults most likely to need to be screened for diabetes. The estimated effects of the other non-demopgraphic control variables mostly follow the expectations discussed above. Education and age increase the demand for preventive care, as does perceived need, although the effect is negative in the case of Pap testing and positive in the other two cases.

Turning to the impact of demographics on demand, I find that women are more likely than men to demand both general preventive care and diabetes screening. Being under 18 also increases demand for general preventive care relative to those who are over 18. Both of these results suggest that these populations – women and children - are being reached by the health care system and are not likely to be facing significant barriers to care.

Surprisingly, although the indigenous population's health outcomes are uniformly worse than those of the non-indigenous (Gutiérrez *et al.*, 2002; Leyva-Flores *et al.*, 2014), there seems to be no impact of indigenous status on demand for physicals or cervical cancer screening. The indigenous do have lower demand for diabetes screening, however, and are 3.2 pp less likely to receive this service than the non-indigenous.

Interaction terms were also included in this regression to directly measure the impact of SP on members of the three demographic groups of interest in this paper. Any significant coefficient on an interaction term indicates that SP increased (or decreased) demand by that group over and above the effect of SP on the average affiliate. I find that for physical exams (Column 1), only the interaction between SP and female is significant. Women in the SP program are 3.7 percentage points less likely to receive physicals than the average SP user, although women and SP affiliates are both more likely to receive this

type of care overall. For diabetes testing, Column 2 shows that female SP affiliates are more likely to receive care than women and SP affiliates in general. In Column 3, there are no significant interaction terms, although this test is only offered to women.

For all three forms of testing, however, the most striking result is that indigenous SP users see no additional increases in their demand for prevention. Although the creation of the SP program was, in part, justified by health disparities experienced by the indigenous, this population's decisions about health care consumption were unaffected by the program. This result confirms that the distressing health outcomes for indigenous Mexicans have not been significantly addressed by SP's introduction. As I will discuss below, this is a significant and troubling finding.

3.2 Controlling for Selection in Seguro Popular

Determinants of affiliation with Seguro Popular in 2009 are shown in Table 3. Column 1 shows results of a regression testing the effect of many socio-economic, demographic, and health-related factors on the decision to enroll in SP. As expected, I find that early access to the program (eligibility in 2004) is a significant determinant of enrollment in 2009. Individuals in eligible districts are 15 percentage points more likely to enroll in SP. *Oportunidades* membership also increases uptake, but there is no effect of health status or current medical spending on enrollment.

The three measures of vulnerability explored in this study all have a significant impact on SP enrollment. Women are more likely to affiliate than men and children under 18 are more likely to affiliate than adults. This reinforces the findings above, that these groups are not facing significant barriers to accessing the Mexican health care system. Individuals identified as indigenous, however, are 5.9 pp less likely to enroll in SP than the

non-indigenous. These results show that indigenous status does negatively impact an individual's access to the Mexican health care system overall, a finding that is striking when combined with the finding that the indigenous individuals who do decide to enroll in SP are not receiving any additional access or encouragement to use preventive care.

Column 2 shows the effect of an abbreviated set of explanatory variables on SP affiliation. These variables are used in the first stage of the two stage least squares regressions used to eliminate coefficient bias. These results show that early eligibility for the program (in 2004) accounts for about 13 percentage point increase in enrollment, Oportunidades beneficiaries are about 20 pp more likely to enroll, women are 10 pp more likely to enroll, and propensity to enroll increases with age and with total household medical spending.

Finally, I use early access to SP and the other explanatory variables in the first stage regression shown in Table 4 to predict SP affiliation in 2009. Table 4 shows the results of the second stage of an instrumental variables regression using this prediction. These results show that, once self-selection bias is removed, Seguro Popular affiliation is a statistically significant predictor of receiving a physical but not the other two forms of care. Since the effect of SP on demand for physicals is larger in this model than in the uncorrected model (39 percentage point increase versus a 19 percentage point increase), the results imply that there is adverse selection into SP, at least for this outcome. In other words, those who choose to affiliate with SP are, in the absence of affiliation, less likely to receive this sort of preventive care than non-affiliates.

In contrast, Columns 2 and 3 show that SP affiliation does not causally impact diabetes screening or Pap testing. When compared to the results in Table 2, these results

imply advantageous selection - that those who choose SP affiliation are also independently more likely to choose diabetes testing and Pap testing even without SP. In other words, those who choose to join SP are already the type of individuals who would demand these preventive care services.

4 Discussion

This paper has investigated the role of socio-economic vulnerability and access to universal health care in preventive care demand for the poor. I find that two demographic characteristics are important, but for different reasons. First, women are more likely to affiliate with social health insurance and to demand preventive care services. This result may explain recent findings that women and children experience long-run health improvements under SP but do not necessarily increase their overall utilization of health care (Knox, 2016; Turrini *et al.*, 2016). Neither study is able to distinguish between preventive and curative care in their investigations of SP's effects on utilization and health and may be unable to detect substitution occurring between the two forms of care. Further research should investigate these links more fully.

Second, and especially important in the Mexican context, I find that speaking an indigenous language is associated with lower rates of affiliation with SP, and lower demand for preventive care in some cases. Additionally, once affiliated with SP, there is no evidence SP does anything to mitigate these disparities for the indigenous who do choose to affiliate with the program. These results are especially striking in the face of large health disparities experienced by Mexico's indigenous population. Overall, it is clear that, although Seguro Popular has been effective in increasing the demand for some forms

of preventive care, there is still work to be done in improving access for one of Mexico's most vulnerable populations.

Finally, I find that SP only causally increases demand for physical exams but not for diabetes or cervical cancer screening. This heterogeneity in impacts requires some explanation. The disparity could possibly be due to age, since only adults receive the two latter types of care. However, in unreported results, I find no difference in SP's effect on demand for general physical exams among children and adults. Most likely, the heterogeneity in causal effects is due to the quality of care provided by SP. The results discussed above would be consistent with SP facilities encouraging and increasing access to general preventive visits such as physicals, but not having the staff or facilities needed to provide diabetes or Pap testing to most. Instead, these more specialized services are probably only provided to those who seek them out. This suggests that programs like SP might not yet be able to adequately prompt demand for preventive care, even among those people who can be most counted on to increase their preventive care demand in response to SP's introduction.

5 Conclusions

My study shows that age, sex, and education can explain part of how people's demand for preventive care changed as *Seguro Popular* was introduced to increase equity in health care delivery for Mexico's poor. What is more striking, however, are the ways in which that demand has *not* increased in response to the introduction of SP. In the first instance, while SP is effective in promoting some basic forms of preventive care, it has failed to create an increased demand for more sophisticated forms of preventive care.

Since these interventions – such as diabetes testing and cervical cancer screening – are particularly important for population health, my study shows that the Mexican government has a reason to continue revising its methods. In the second instance, the search for effective preventive care, the indigenous urban population is being left behind. Even those programs nominally created with their interests in mind have tended to do little to increase demand for preventive care among the indigenous. Given the significant pre-existing gap between indigenous and non-indigenous health outcomes, the ineffectiveness of SP on this front is particularly worrying. Mexico has, in sum, an obligation to continue searching for ways to encourage its indigenous population to demand an equitable share of preventive care resources.

Mexico, like all societies, faces a social landscape in which markers like sex, gender, and indigeneity affect health outcomes. Mexico has sought to reduce the effect of these markers on health care outcomes. The results in the present paper provide Mexico some reason for pride; SP has had some effects on the demand for preventive care, and over time these effects can undermine injustice in the distribution of health and health care resources. The present paper, however, also has some reason for Mexico to rethink its strategy. This strategy has not adequately responded to the unique situation of the indigenous, and has failed to give the indigenous adequate reasons to demand the preventive care that would best protect their interests in health. If Mexico were able to respond to these questions with new policy interventions, they could be of enormous benefit – both to the indigenous of Mexico, and to all governments that seek to ensure equity and efficiency in the provision of health care in a socially divided world.

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Table 1: Characteristics of Study Sample

	Full Sample	2009 Affiliates	2009 Non-Affiliates
	N=10,426	N=3,959	N=6,467
		2002 Characteristics	
Age (in years)	22	21.3***	22.5
	[0.17]	[0.29]	[0.22]
Female (%)	0.52	0.57	0.49
	[0.50]	[0.50]	[0.50]
Education (in years, for >18 years)	4.9	3.9***	5.4
	[3.1]	[2.6]	[3.1]
Speaks Indigenous Language (%)	0.10	0.09	0.10
	[0.30]	[0.29]	[0.30]
Days of Illness (in last 30 days)	0.98	1.04	0.95
	[3.5]	[3.6]	[3.5]
Household Medical Spending (last 30 days, in pesos)	11.5	10.9	12
	[104.1]	[92.0]	[110.9]
		2009 Outcomes	
Any Preventive Care (Physical) (% last year)	0.21	0.35***	0.12
	[0.40]	[0.48]	[0.33]
Diabetes Testing (% last year)	0.22	0.33***	0.17
(N=7,000)	[0.41]	[0.47]	[0.37]
Pap Testing (% last year)	0.33	0.46***	0.24
(N=2,235)	[0.47]	[0.50]	[0.43]

Note: Means and standard deviations reported. Stars denote p-values for t-test of means between treated and control group. * p<0.10, ** p<0.05, *** p<0.01

Table 2: Demand for Preventive Care Including Interactions

	1 Physical	2 Diabetes	3 Pap Test
Seguro Popular	**0.18***** (0.11 – 0.24) [0.033]	**0.066***** (0.02 – 0.11) [0.022]	**0.16***** (0.08 – 0.23) [0.037]
SP*Indigenous	**-0.027** (-0.10 – 0.04) [0.034]	**0.052** (-0.03 – 0.14) [0.042]	**0.032** (-0.04 – [0.035]
SP*Female	**-0.037***** (0.1 – 0.06) [0.012]	**0.041**** (0.004 – 0.08) [0.018]	**-----**
SP*Under 18	**-0.003** (-0.04 – 0.04) [0.019]	**-----**	**-----**
Oportunidades	**0.10***** (0.06 – 0.14) [0.019]	**0.03**** (0.001 – 0.06) [0.014]	**0.13***** (0.07 – 0.19) [0.029]
Female	**0.047***** (0.03 – 0.07) [0.01]	**0.06***** (0.04 – 0.08) [0.01]	**-----**
Spks Indigenous Lang	**0.017** (-0.07 – 0.10) [0.041]	**-0.032**** (-0.06 - -0.0003) [0.016]	**-0.026** (-0.09 – [0.030]
Age	**0.004***** (0.002 – 0.007) [0.001]	**0.018***** (0.01 – 0.02) [0.002]	**0.13***** (0.09 – 0.16) [0.017]
Under 18	**0.053***** (0.02 – 0.09) [0.017]	**-----**	**-----**
Observations	10,426	7,000	2,235
State Fixed Effects	Yes	Yes	Yes

Note: Linear regressions with binary dependent variables. Coefficients for years of education and days of illness unreported but not materially different from values in Table 2. 95% Confidence intervals reported in parentheses below point estimates, and robust standard errors are in brackets. Robust standard errors clustered at the district level. * p<0.10, ** p<0.05, *** p<0.01

Table 3: Determinants of Selection into Seguro Popular

	1 OLS	2 First Stage
Eligible in 2004	**0.15***** (0.13 – 0.18) [0.012]	**0.13***** (0.11 – 0.15) [0.011]
Oportunidades (2004)	**0.23***** (0.20 – 0.25) [0.012]	**0.20***** (0.18 – 0.22) [0.011]
Female	**0.08***** (0.06 – 0.10) [0.01]	-----
2004 Medical Spending (log Pesos)	**0.007** (-0.005 – 0.02) [0.006]	**0.011**** (0.0005 – 0.02) [0.005]
Own Home (2004)	**-0.007** (-0.03 – 0.02) [0.013]	**-0.028**** (-0.05 – 0.004) [0.012]
Number of HH Residents	**-0.010***** (-0.01 - -0.006) [0.002]	**-0.016***** (-0.02 - -0.01) [0.002]
Age (2004)	**0.002***** (0.001 – 0.002) [0.0004]	-----
Spks Indigenous Lang	**-0.059***** (-0.09 - -0.02) [0.018]	-----
Days Sick in Last Month (Self Report, 2004)	**-0.00001** (-0.003 – 0.003) [0.002]	-----
Days Sick in Last Month (Activities, 2004)	**-0.0002** (-0.004 – 0.005) [0.002]	-----
Observations	8,722	10,426

Note: Linear regressions with binary dependent variables. 95% Confidence intervals reported in parentheses below point estimates, and robust standard errors are in brackets. Robust standard errors clustered at the district level. * p<0.10, ** p<0.05, *** p<0.01

Table 4: Demand for Preventive Care in the Last Year Controlling for Self-Selection

	1 Physical	2 Diabetes	3 Pap Test
Seguro Popular	**0.39****	**0.062**	**-0.07**
	(0.05 – 0.72)	(-0.09 – 0.22)	(-0.40 – 0.26)
	[0.17]	[0.077]	[0.17]
Oportunidades	**0.053**	**0.037***	**0.19*****
	(-0.02 – 0.12)	(-0.009 – 0.08)	(0.07 – 0.31)
	[0.035]	[0.020]	[0.06]
Female	**0.046*****	**0.076*****	**-----**
	(0.02 – 0.08)	(0.06 – 0.10)	
	[0.015]	[0.010]	
Spks Indigenous Lang	**0.013**	**-0.014**	**-0.016**
	(-0.08 – 0.1)	(-0.04 – 0.14)	(-0.09 – 0.06)
	[0.045]	[0.015]	[0.038]
Age	**0.0023**	**0.019*****	**0.133*****
	(-0.0007 – 0.005)	(0.01 – 0.02)	(0.10 -0.17)
	[0.0015]	[0.002]	[0.017]
Under 18	**-0.006**	**-----**	**-----**
	(-0.09 – 0.08)		
	[0.043]		
Years of Education	**0.005**	**0.010*****	**0.016*****
	(-0.002 – 0.01)	(0.006 – 0.01)	(0.008 – 0.02)
	[0.003]	[0.002]	[0.004]
Days Sick in Last Month	**0.0067*****	**0.011*****	**0.0047****
	(0.003 – 0.01)	(0.007 – 0.01)	(0.0004 – 0.009)
	[0.002]	[0.002]	[0.002]
Observations	10,426	7,000	2,235
State Fixed Effects	Yes	Yes	Yes

Note: Linear regressions with binary dependent variables. 95% Confidence intervals reported in parentheses below point estimates, and robust standard errors are in brackets. Robust standard errors clustered at the district level. * p<0.10, ** p<0.05, *** p<0.01