Social Exclusion and Social Preferences: Evidence From Colombia's Leper Colony[*]

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Abstract

This paper explores the implications of social exclusion on empathy and behavior. Employing a lab-in-the-field approach in the region where Colombia's leper colony was located, I establish that individuals whose ancestors suffered social exclusion tend to be more altruistic and display a higher degree of in-group favoritism. Moreover, this medically-induced exclusion continues to affect health choices and trust in modern medicine amongst descendants of lepers. I also show that oral historical narratives, which recurrently make salient the exclusion experienced by ancestors, are a mechanism through which the outcomes materialize in the long run. Randomizing the exposure to different historical narratives, I show that descendants of lepers who are reminded of the historical banishment of their ancestors display higher altruism and in-group favoritism, while descendants who are reminded of historical medical inaccuracies about the disease display lower trust in modern medicine. All in all, this paper shows that the effects of social exclusion can ripple across generations and may curb crucial public policies when these are associated with the exclusionary group.

JEL: C91, C93, J71, I12, I15, N30, N96, O17, O43, Z10

Keywords: Pro-sociality; Mistrust in medicine; Social exclusion; Social preferences

1 Introduction

Social exclusion of minorities has been historically widespread, and it continues to be present in both developing and developed regions. Further, such experiences will likely continue to be prevalent, as the number of excluded refugees and migrants is expected to increase in the coming years and decades (United Nations, 2016). These socially-excluded communities are unable to enjoy the opportunities available to the majority of the population and are also subject to the trauma deriving from their stigmatization and mistreatment. Despite the relevance of such a phenomenon, little is known about its lasting implications on attitudes and behaviors. Can social exclusion experiences have an intergenerational effect on empathy and social preferences, even when descendants no longer endure the adverse conditions experienced by their ancestors?

This paper examines the consequences of social exclusion on empathy and on attitudes towards the source of exclusion -in this context, modern medicine. It is the first paper to examine the legacy of the exclusion of lepers, a group that has been met with social exclusion historically across all regions of the globe. In particular, it exploits the geographical location of a Colombian policy that officialized and enforced the practice of excluding and segregating lepers. Between 1871 and 1950, the Health Ministry and the Central Hygiene Board in Colombia promoted and imposed lepers' isolation into a specific site, seeking to mitigate the social anxieties that such disease produced on healthy subjects. Based on the inaccurate belief that leprosy was highly contagious and deadly, physicians appointed by the Central Hygiene Board tested all suspects of having leprosy; they secluded all sufferers of the disease in an isolated colony, regardless of their social and economic stature. The mistreatment of lepers at the hands of doctors continued inside the colony; physicians experimented with new treatments on sufferers and intervened in their daily lives. Leprosy has vanished from the region ever since, but most of its inhabitants are descendants of former inmates of the colony. This policy was the mere continuation of an exclusionary and segregating practice dating back to antiquity, by which all lepers were isolated and marginalized from society.

I examine the intergenerational effects of lepers' exclusion on altruism, ingroup favoritism, and attitudes towards modern medicine through lab-in-the-field experiments conducted in the region that contained the former leper colony. Using dictator games, I find that participants living in the previous site of seclusion display a significantly higher pro-sociality towards both outgroup and in-

group members than those in the (nearly identical) contiguous municipalities. The dictator games also reveal that, despite generating a higher base level of altruism, exclusion has led to a higher degree of ingroup favoritism displayed by participants living in the former leper colony. Additionally, I find these results are consistent when comparing, within each of these municipalities, those whose ancestors were secluded lepers with those whose ancestors were not isolated.

I also examine views towards modern medicine, which reflects attitudes towards the group responsible for the exclusion of lepers. Participants received a voucher exchangeable for a free dose of anti-parasitics, and I then collected information on which participant had redeemed their voucher. I also asked participants about their trust in physicians and in the vaccine against the Human Papilloma Virus, a controversial vaccine in Colombia. The medically-induced exclusion of lepers appears to have harmed attitudes towards doctors and modern medicine in the long run. Hence, descendants of the socially-excluded display attitudes of wariness towards the group that was responsible for the mistreatment of their ancestors. Such adverse opinions map on suboptimal health choices nowadays, as proven by (1) significantly worse vaccination rates of newborns (provided for free by the Colombian state) and (2) a lower proclivity of these subjects to redeem a free dose of anti-parasitics (recommended by doctors to be taken at least once a year).

The results do not appear to be driven by selection on those who were excluded, nor by migration in the aftermath of the policy of isolation. The epidemiological features of leprosy, most notably its long period of incubation, the disease's low contagiousness, and the fact that there is a genetic component facilitating its manifestation, make it unlikely for leper ancestors to be selected in a way that could explain these results. Secluded lepers were ethnically, religiously, linguistically, and economically no different than inhabitants of nearby regions. Additionally, the fact that results are consistent when comparing along ancestral lines within municipalities mitigate concerns that the results are driven by those who chose to migrate to the region under scrutiny. Further, an examination of the observable attributes of those who out-migrated suggests that selection in out-migration is also not driving the results discussed above.

The paper experimentally documents the role of oral histories as narratives that contribute to the transmission of beliefs and attitudes, which hasn't been explored empirically in the growing literature on the persistence of history. I implemented a randomization exercise to show that exposure to different historical narratives consistently elicits altruism, ingroup favoritism, and mistrust

in medicine. Specifically, descendants of lepers who were reminded of the banishment and isolation of their ancestors display significantly higher altruism and ingroup favoritism, while those who were reminded of the historical medical inaccuracies concerning such disease display lower trust in medicine. Hence, factual stories of ancestors' adversity serve as responsibilizing narratives that foster pro-sociality. In contrast, factual stories about medicine's historical errors serve as exculpatory narratives that allow individuals to maintain a positive social image while adopting suboptimal health behaviors with negative externalities (Bénabou et al., 2018). Conversely, those who have no excluded ancestry do not react to such historical narratives, suggesting that transmission of values and beliefs operate in a vertical rather than a horizontal fashion (Bisin and Verdier, 2001). Considering that these treatments are consistent with the contents shared through oral histories within households, this result sheds light on the on-the-ground role of oral histories as narratives that bring about and perpetuate the long-run effects of historical trauma.

The case of lepers shows that the effects of social exclusion may ripple across generations. The disappearance of leprosy since the end of the policy of isolation, coupled with the fact that economic exchange and population movements have been unrestricted for nearly 70 years, suggests that exclusion may continue to affect behavior and attitudes even when mistreatment and discrimination have ceased to exist for several generations. Hence, although focusing on a specific and extreme case of social exclusion, this paper addresses a broader question in political economics by pointing to the lasting consequences of segregation and social discrimination on the strengthening of pro-sociality, the formation of durable in- and outgroup distinctions, and the emergence of persistent mistrust towards the specific actors that are responsible for such social exclusion. Moreover, it sheds light on the consequences of an important historical pattern of exclusion that has victimized nearly 16 million people only in the last 30 years.

This paper fits into several strands of literature. First, it contributes to the literature investigating the roots of social preferences and beliefs, particularly in the context of developing economies (Di Tella et al., 2007; Nunn and Wantchekon, 2011; Blattman et al., 2016). In particular, the paper contributes to the agenda that examines social preferences and economic behavior of populations with histories of traumatic experiences (Lowes and Montero, 2019a; Becker et al., 2020). The paper also ties into the literature that employs a lab-in-the-field approach in assessing the consequences of geographically-specific historical configurations (Karaja and Rubin, 2017; Lowes et al.,

2017; Valencia-Caicedo and Voth, 2018). Moreover, it is directly related to recent studies that examine the lasting adverse effects of unconsented medical interventions, which have been imposed both in developed and developing regions (Alsan et al., 2018; Lowes and Montero, 2019b). By examining the effects of a historical case of social exclusion that went hand-in-hand with an unconsented medical intervention, this project is the first to find evidence from an incentivized experiment supporting the claim that historical medical malpractice continues to affect health behaviors and outcomes. Finally, the paper belongs to the literature that investigates how beliefs and values are culturally transmitted (Bisin and Verdier, 2001; Bénabou and Tirole, 2006). In particular, by documenting the role of oral histories in the transmission of beliefs and values, the paper contributes to the literature the examines the role of orality and narratives in shaping views and social preferences (Shiller, 2017; Bénabou et al., 2018; Michalopoulos and Xue, 2019).

The paper proceeds as follows. Section 2 provides the historical background on the stigma to which lepers have been subject, along with the specificities of the isolation and the experiences of Colombian lepers in Agua de Dios, the leper colony under scrutiny. Section 3 describes the methodology and the data collection process employed in the field. Section 4 presents the main results, section 5 examines awareness of history as a mechanism, and section 6 concludes.

2   Historical Background

This section reviews the epidemiology of leprosy, as well as its history both globally and in Colombia. Leprosy -formally known as Hansen's Disease- is a long-term bacterial infection that is believed to be transmitted mainly through nasal droplets. Despite its prevalence throughout human history, and although close contact with an infected individual is the single most important risk factor, it is not a highly infectious disease (Schreuder et al., 2016). A genetic predisposition explains the susceptibility to both contracting leprosy and developing a (visually recognizable) stage of it (Abel, 1998; Mira et al., 2003.). Further, the disease is not sexually transmitted. The main symptoms of the illness are neuropathic pain, sensory loss in the extremities, skin lesions, and the deformation of cartilages (World Health Organization, 2014). The disease is not deadly, and in most cases, it does not significantly affect the quality of life, its length, nor the capacity to work or to be employed in any occupation -notwithstanding the social stigma. Currently, the disease has been eliminated as a global public health problem, although some sites of endemicity prevail in some developing countries such

as Indonesia, Brazil, India, Democratic Republic of Congo, and Madagascar.

Leprosy initially presents no manifestation, and it may remain latent for more than two decades (World Health Organization, 2014), which amplifies the reach of both the disease itself and the genes that explain a predisposition to it. In most cases, the immune system can eliminate the infection before the occurrence of any physical manifestation. The illness becomes visually unconcealable when it reaches an advanced stage, and in those cases, the likelihood of lacerations deriving from sensory loss may worsen the lesions. It is only this advanced, visually recognizable, stage of the disease which has been historically subject to social stigma and exclusion across the globe.

The characteristics of the disease enable to arguably claim the randomness of developing (visually-manifested) leprosy in the context of Colombia during the XIXth and early XXth centuries. The low infectiousness of the disease and its unmanifested latency for as much as three decades makes it impossible to avoid exposure. The fact that the illness is not deadly, coupled with the former two characteristics, makes the disease nearly unaffected by evolutionary forces and discards selection on those who carry the genetic predisposition for the malady. Further, the generalized poverty in Colombia and the prevalence of unsanitary norms in such a time-period, plus the fact that the policy of isolation took place before the epidemiological transition, ensures that selection on income is not a concern (as will be discussed next section).[1] Finally the unconcealable nature of the advanced cases of leprosy makes it impossible for those who suffer from it to avoid being identified and associated with the malady.

A vital feature of the social rejection triggered by leprosy has to do with the fact that it is not context-specific. Indeed, Kuzban and Leary (2001) explain the stigma against people suffering from noticeable diseases or disabilities as an evolutionary response aimed at avoiding or reducing the 'fitness-costs.' Exclusion of individuals suffering from leprosy (or from other noticeable disease or physical/mental disability) would, therefore, be an adaptive mechanism of humans in reducing the costs of social interactions that would follow from having dissimilar individuals being part of the social group. The rejection of advanced cases of leprosy is thus an evolutionary response that has been present for most of human history, and that does not respond to calculable political or economic reasons. Hence, the isolation of lepers into colonies is the official endorsement and enforcement of

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[1]Indded, by 1973 -more than two decades after the abolishment of the strict isolation of the Leper Colony of Agua de Dios, the extent of poverty in Colombia was of 70%, as measured by the percentage of people with unfulfilled basic needs (Robinson, 2015).

a long-run history of exclusion of a (non-selected) group of individuals who suffered from the advanced stage of the disease.

2.1   Leprosy since Antiquity

The stigma against those suffering from leprosy can be traced back to antiquity, as demonstrated by the perceptions consigned in the book of Leviticus in the Old Testament. The relevance of such source comes not only from the fact that Christianity became a dominant ideological force in the Western World but also because the book was taken by ecclesiastical and official authorities as a source to be followed literally when it came to the administration of public affairs. The message that transcends from such book is that God considers leprosy as something not intended for his people, meaning that whoever suffered from such malady was intrinsically an exception to God's plan (Rawcliff, 2006; Rawcliff, 2012). Such message entailed a clear prescription on how to administer such disease: If its existence was not intended for God's people, and therefore was outside God's plan, then people suffering from it did not belong in a society devoted to God. Therefore, the message transmitted by Leviticus entails an axiomatic marginalization of lepers from society, a prescription that would be followed by public authorities during the Middle Ages and would survive until modern times.

The dissemination of leprosaria in Europe during the High Middle Ages evidences the marginalization that lepers continued to suffer in such epoch. Located in small houses in the outskirts of towns and cities, leprosaria were destined to reduce the anxieties experienced by healthy subjects who wanted to avoid the disease (Miler and Nesbit, 2014). Strict segregation was endorsed and promoted by the Catholic Church, as demonstrated by the Canon XXIII of the 3rd Lateran Council in 1179, which stipulated that the leprous had to have their churches, congregations, and burial sites. The negative perceptions against lepers were intensified with the advent of the Black Plague, after which the aversion towards the community of the ill led to a public administration that emphasized even more social exclusion and stricter physical segregation than before. Interestingly, stigmatization and marginalization of lepers were also prevalent in regions with histories and cultures distinct from Europe, such as Japan, and non-Western religions also held views of the disease as divine punishment (Kikuchi, 2008).

Between the XVth and the XVIIth centuries, there was a severe reduction in the number of Euro-

pean leprosaria, which coincided with a significant decline in the number of cases in Europe. However, the disease regained momentum in the colonial world, where European empires imposed the extreme version of the exclusionary practice. The administration of lepers gradually changed in the Colonial and Post-Colonial World, shifting from decentralized management of the lepers in the periphery of cities to a more centralized version characterized by a handful of towns, which were expected to harbor and contain a higher number of cases. This transition was in large part the result of the recommendation of the European Medical Association and subsequently of the First Congress on Leprosy held in Berlin in 1897, which declared (mistakenly, as would be realized decades afterward) the disease to be dangerous and highly contagious (Obregon, 2004). The primary site of analysis for this project, the leper colony of Agua de Dios in Colombia, is one of such cases of centralization, as it was the largest and eventually the only Colombian site where the state officialized the exclusion of lepers via their strict isolation.

2.2   The Leper Colony of Agua de Dios

In 1871 the Colombian Government officialized the foundation of what would become the largest leper colony in such country. Located to facilitate access from Colombia's Capital and thus facilitate the transportation of the ill into the colony, Agua de Dios harbored nearly 70% of the population of lepers in Colombia, with approximately 8000 lepers living there by the XXth century. Although not large by contemporary standards, the size of Agua de Dios at the time gained an international reputation, and it even led to Colombia's denomination as 'The Land of the Lepers' by the New York Times in 1906. As in other leprosaria around the world, the state sponsored the isolation of lepers while healthy members of society informally enforced the exclusion through active discrimination. In 1905, and consistent with other experiences of 'colonial medicine,' the state became more active in enforcing the reclusion of lepers into such colony. The population of isolated lepers was comprised of subjects coming from all income-segments and occupations, including celebrities and famous figures from the arts and the political world.[2] This further corroborates the fact that income

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[2]The records show that there are representatives of various occupations out of those coming from the urban areas, including domestic workers, public servants, carpenters, merchants, and masons. Among the various celebrities and influential actors secluded in the leper colony at the time, there are famous musicians and composers -such as Luis A. Calvo-, famous poets and writers -such as Luis Carlos Pradilla or Rosa Restrepo Mejia-, along with famous politicians -such as Adlofo León Gómez- (Ramos-Arenas, 2008).

and occupation were not at all a good predictor of the contraction of the disease. By 1910, nearly 12% of the population came from urban settings, a figure that is very close to the urbanization rate of 10% that characterized Colombia at the time. Despite harboring patients from all the country, most of the population (more than 80%) came from the central region in Colombia (Cundinamarca, Tolima, Southeast Antioquia, and Caldas), which was mostly homogenous with regards to the composition of its population along religious (catholic), linguistic (Spanish), and ethnic (mestizo) lines (Aparicio, 1919).

As the state assumed an active role in the isolation of lepers, the exclusion was rationalized under medical pretenses and was implemented almost exclusively by physicians. The Colombian Central Hygiene Board -an institution ran by doctors who followed the guidelines of the European Medical Association, the First Congress on Leprosy, and the Medical Academy of Bogotá- was made responsible for establishing how to administer the population of lepers, and the plan set forth by said agency was followed minutely by the Colombian State. Among the policies established by the Board was the creation of distinct coins and bottles to be used exclusively in the colony, to avoid contagion through the spread of the bacteria (Ramos-Arenas, 2008). What is more important, a series of rules and procedures were set at the national level to ensure the effective seclusion of all the lepers in Colombia. All citizens were legally obligated to report anyone who suffered from any deformation or physical manifestation akin to leprosy, and the town/city in which such report took place had an obligation to appoint a physician who could examine both the suspect and his/her relatives. Any trace of the bacteria would be enough to force the displacement of the subject into the leper colony.

Secluded lepers lost their citizenship as soon as they entered the colony, and their identification cards were replaced by cards that certified them as medical patients. All subjects were welcomed by doctors, who assessed and monitored the entrance of all individuals (Oyaga, 2013). After entering the colony, a system of fences and military supervision from outside enforced the isolation of the ill. No family member -no children, parent, or couple- was admitted in the colony if found healthy, regardless of the human implications and the material consequences of separating the family (Ramos-Arenas, 2008). Aside from physicians, members of religious orders, and authorized merchants, no one entered or left the colony, and even they were forced to sleep outside and to pass through a strict protocol of disinfection in which the bodies of the incoming or outgoing subjects, along with any good they could carry, were meticulously scrutinized and cleaned. Such an increasing role of doc-
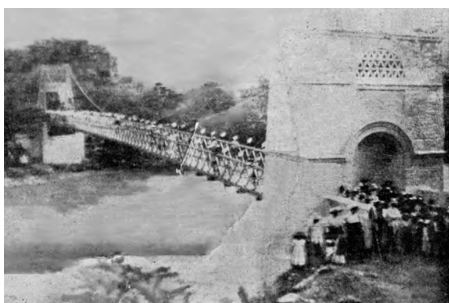
Figure 1: Disinfection House

Note: This is a picture of what used to be the 'disinfection site', where all incoming and outgoing subjects had to face high-pressure hoses that was supposed to clean the bacteria and reduce its spread outside Agua de Dios. Source: Ramos-Arenas, Manuel Jose. 2008. Agua de Dios: Cristalizacion de un Proyecto Pionero de Asistencia Publica: 1907-1960. Universidad Javeriana, mimeo.

Figure 2: The Bridge of Sighs

Panel A - Bridge of Sighs in 1920　　　Panel B - The Transit of an Incoming Leper　　　Panel C - Current Remains of the Bridge of Sighs

Note: These images, taken in 1920, 1950, and 2018, respectively, depict the bridge that welcomed the incoming lepers into Agua de Dios. The picture in Panel A (Botero Jaramillo, 2017) captures the moment where family members were saying farewell for good to a group of lepers entering Agua de Dios. The picture in Panel B (Oyaga, 2013) depicts the moment in which a group of ill was entering the isolated municipality of Agua de Dios for the first time through the Bridge of Sighs. The picture in Panel C depicts the current remains of said bridge.

tors in identifying, marginalizing, and mistreating lepers, combined with the continued social stigma faced by the ill, was prevalent in leprosaria around the world throughout the XXth century.[3]

Family members who traveled with the ill were forced to say farewell in the bridge that connected Agua de Dios with Tocaima, the nearest town. Named as 'The Bridge of Sighs,' the bridge that constituted the official entrance into Agua de Dios was a testament to the pain and the emotional scars inflicted on those who entered the colony. The administration of the ill by doctors continued once in the colony, as the leprous were forced to follow strict medical and social protocols. Notably, considering

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[3]The geographical isolation and mistreatment of lepers administered by physicians (and fueled by social stigma) was prevalent throughout the globe. Some prominent examples of this include the San Pablo leper colony in Peru, the Kalaupapa leprosarium in Hawaii, the Lake Bunyioni Leprosy Settlement in Uganda, the leper colony in the island of Culion in the Philippines, the leprosarium in the island of Spinalonga in Greece, and the leprosarium in the Sorok island in Japan, among many others.

the lack of a treatment that could cure the disease and revert the symptoms, physicians occasionally experimented alternative treatments with the leprous (Oyaga, 2013). From the perspective of lepers, physicians thus became the visible faces responsible for their exclusion. No other public official or authority operated within the colony besides government-appointed doctors, which furthered the perception of lepers that physicians were responsible for their isolation.

The trauma experienced when entering Agua de Dios, which persisted with the control of the intimacies of the ill, contrasted with the openness and generosity with which the inmates received the incoming population despite not knowing them. Historians have stressed the selfless help and warmth that was provided to newcomers in Agua de Dios, as those recently secluded assisted the incoming ill when settling in, regardless of their income and the stage of their disease (Oyaga, 2013; Alcaldía de Agua de Dios, 2017). Settled lepers often shared their homes with those who did not have where to stay, and others selflessly helped those who were more vulnerable by assisting in the building of houses and of essential infrastructure (Ramos-Arenas, 2008). All in all, the isolated population developed altruism and solidarity as a means of resisting and countering their social exclusion (Plata Rueda, 2007). Such a pattern of behavior is consistent with findings from the experimental literature about group-identity and social preferences: The experience of social exclusion plausibly triggered the formation of group identity, which favored the development of social preferences that could mitigate the adverse experience commonly shared by all members of the group.

Although the isolation was legally abolished in 1962, starting 1950 subjects could freely move in and out of the leper colony. However, once the government lifted the policy of segregation and granted citizenship back to the lepers, most chose to stay in what used to be the colony. Currently, leprosy has nearly vanished from the Colombian landscape and from Agua de Dios in particular. Further, there is a vibrant economic and cultural exchange between this municipality and its contiguous region, with their citizens working on -and actively exchanging with- their neighboring municipalities. Despite such current fluid exchange, scholars who have studied the former leper colony claim that the social preferences and attitudes displayed by its current inhabitants are distinct from those living in any other town in Colombia. Further, their inhabitants are aware of the distinct identity of the town, even when compared with its closest neighbors (Oyaga, 2013). By experimentally testing the incentivized behavior of subjects in Agua de Dios, this investigation will be the first to empirically examine whether inhabitants of Agua de Dios do indeed behave significantly different than

their peers when facing measurable economic incentives.

3 Empirical Approach

This paper exploits the clear and enforced geographical delimitation to which Agua de Dios was subject, leveraging it to examine the effects of historical exclusion on pro-sociality, on the behavioral awareness of in- vs out-group distinctions, as well as on attitudes towards the visible source of the suffered exclusion (in this case, modern medicine). In line with the historical discussion and the historiographic evidence presented in Section 2, a prolonged historical experience of social exclusion is expected to have a strong positive effect on in-group altruism, and to intensify the awareness of an in- vs out-group distinction.

The ex-ante expected effect of social exclusion on out-group altruism is ambiguous. On the one hand, if the socially excluded blame all outsiders equally, one would expect a persistent animosity towards out-group subjects, which would entail an adverse effect on the altruism towards them. On the other, strong pro-social bonds within the isolated community may have overflowed into generalized empathy and altruism, which makes a positive net effect on out-group altruism possible. The latter would be reinforced by the fact that doctors were the ones who rationalized and enforced the exclusion of lepers, which may have provided a visibly-responsible set of actors towards which attitudes of wariness may have been directed (as opposed to an abstract outsider). This second possibility highlights the importance of measuring attitudes towards physicians and medicine overall.

A lab-in-the-field approach was thus implemented to test for differences in these dimensions in the former leper colony and its adjacent municipalities (see Figure 3). To the extent that individuals in Agua de Dios are mostly descendants of secluded lepers, coupled with the fact that the proximity of such sites reduces the scope for unobservables, comparing the responses and actions of subjects in these sites allows for an examination of the long-run behavioral effects of social exclusion.

Considering subjects in the contiguous municipalities (Tocaima and Ricaurte) as a comparison group also addresses potential concerns over the endogeneity of the former leper colony's location. Notably, the adjacent municipalities were established before the foundation of the leper colony,

Figure 3: Agua de Dios
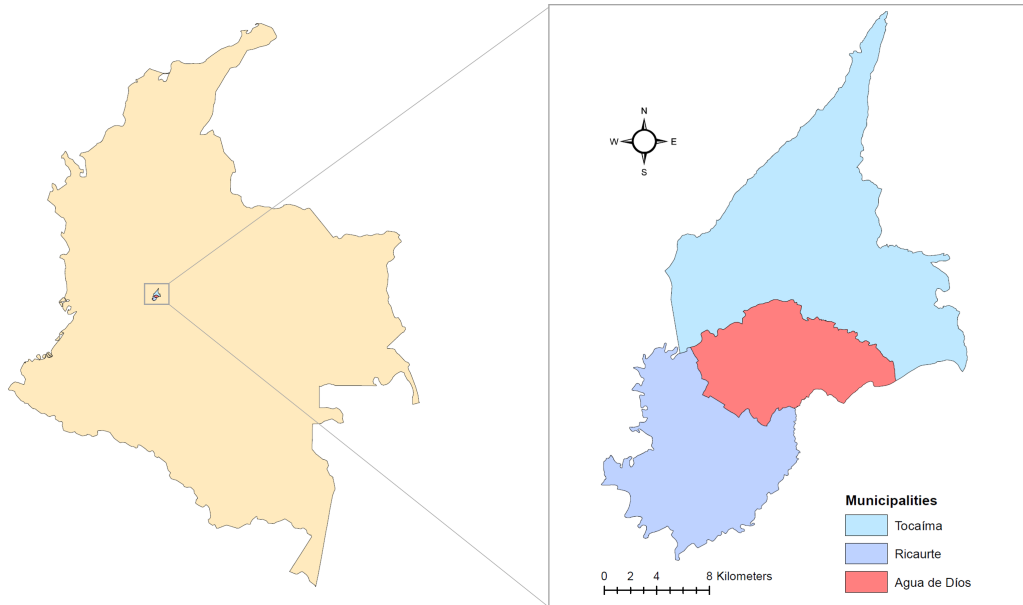
Note: These maps depict the location and the spatial arrangement of Agua de Dios and its contigous municipalities.

Table 1: Historical and Contemporary Demographic Characteristics

	(1)	(2)	(3)	(4)	(5)
	Marital	Fertility	Primary	Secondary	Employment
			2005		
AguaDios	0.026	-0.016	-0.015	0.043	0.004
	(0.075)	(0.093)	(0.048)	(0.080)	(0.022)
Mean Dep Var.	0.573	0.751	0.951	0.302	0.918
Observations	8,008	4,035	9,522	9,522	3,248
R-squared	0.000	0.000	0.001	0.001	0.000
			1973		
AguaDios	-0.010	-0.109	0.013	0.033	0.002
	(0.111)	(0.077)	(0.027)	(0.017)	(0.004)
Mean Dep Var.	0.678	0.785	0.596	0.108	0.883
Observations	16,439	7,467	16,106	16,106	8,271
R-squared	0.001	0.017	0.000	0.003	0.000

Note: This table documents the resemblance of Agua Dios and its contigous municipalities when considering historical and contemporary gender rates, fertility, education and employment status. The unit of observation is the individual. AguaDios is a binary variable equal to 1 for those observations recorded inside Agua de Dios, and 0 otherwise. Robust standard errors clustered at the municipality-cohort level. Source: Census Data, 1973 and 2005 from the National Bureau of Statistics in Colombia.. ***p<.01, **p<.05, *p<.1

which was imposed by the government on a site of the region that was previously uninhabited. Importantly, the leper colony's location was sufficiently distant from these municipalities (approximately 3 hours walking), which rendered impossible observing what was happening within the leprosaria. On the other hand, the close distance between the previously–existing municipalities and the colony rendered irrelevant the differences in the climatic conditions in these sites. Indeed, Figure B in the appendix shows that the region contiguous to Agua de Dios is, out of the universe of municipalities in Colombia, the most similar climatically to the leprosaria.

The fact that the incidence of the disease in Colombia at the time was mainly concentrated in the central region of the country also make these neighboring places a suitable comparison group: They held the same (homogenous) features as the region in terms of its ethnic, religious, and linguistic characteristics, and they were also mainly rural. Further, out- and in-migration of subjects into these municipalities following the foundation of Agua de Dios would operate against finding higher altruism in the former leper colony. Less pro-social individuals would be less likely to tolerate living near the socially-excluded, which would increase their likelihood of moving out from the municipalities adjacent to the leprosaria (likewise, less pro-social types would be less willing to migrate into these neighboring municipalities). Similarly, out- and in-migration based on trust in medicine would also operate against finding lower trust in medicine in Agua de Dios. Subjects who trusted medicine back then were likely more prone to believe that leprosy was highly contagious and dangerous, which reduces the proclivity of these types to out-migrate from the municipalities contiguous to the leprosaria (and, similarly, these types of individuals living in other places in Colomba would have been less likely to migrate into these neighboring municipalities).

Table 1 documents further the remarkable similarity between Agua de Dios and its neighboring municipalities in terms of their historical and contemporaneous demographic composition.[4] Figure 4 corroborates the demographic resemblance between Agua de Dios and its neighboring municipalities when it comes to cohort composition.

An additional concern derives from the possibility that social exclusion is associated with a depressed economic activity. Table 2 examines such concern using micro-data as far back in the past

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[4]Despite the difference being statistically insignificant, some may worry that the economic difference is large. Most likely, this difference is explained by the fact that parents at the time were afraid that the segregation policy would be reinstated in some way, and thus preferred concealing their fertility (Ramos-Arenas, 2008). Moreover, Figure 4 is reassuring in as much as it shows no differences in the cohort structure.

Figure 4: Age Structure
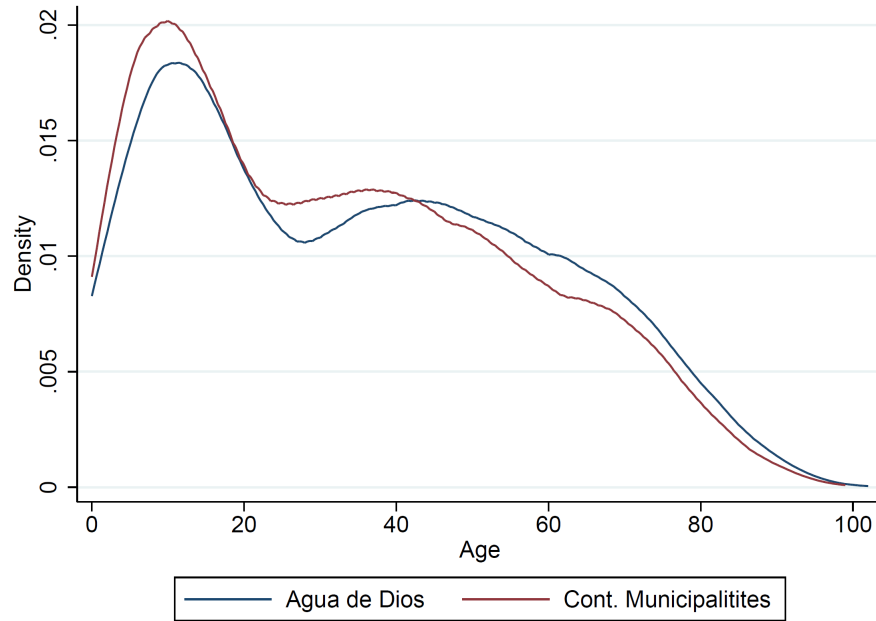
Note: This figure depicts the (kernel) age distribution of Agua de Dios vis-a-vis its contigous municipalities, showing that the age structure of the three municipalities are almost identical. Source: Colombian Census 2005 from the National Bureau of Statistics in Colombia..

as it is possible for the region (1973). Overall, when considering historical access to utilities, home ownership, and quality of housing -all of which capture material wellbeing-, Agua de Dios appears to be no different from its contiguous municipalities. The lack of significant differences may be explained by the fact that the region as a whole had limited state-presence until recently, which implies that economic wellbeing was primarily determined by subsistence-agriculture. Remarkably similar climatic conditions facilitated similar historical economic activity despite the existence of social exclusion. Further, as documented in Sections C and D in the Appendix, comparable demographic and economic conditions continue to characterize the region, as demonstrated by the fact that there are no significant differences when examining ethnic composition, gender composition, percentag of population of local ancestry, educational quality and economic activity as proxied by nightlights.

All in all, considering data along various dimensions (both historical and contemporary), coupled with the history of both the disease and of the isolation of Colombian lepers, one finds that subjects in the neighboring municipalities constitute a reasonable comparison group when examining the long-run effects of exclusion. If anything, the marginal differences observable today along with the potential selective migration to (and from) these adjacent municipalities would operate against finding higher altruism and lower trust in medicine in Agua de Dios. Although this does not rule out

Table 2: Housing and Utilities in 1973

	(1) Sewage	(2) Housing Material	(3) Floor Quality	(4) Home Ownership	(5) Rooms per House
AguaDios	0.088	-0.018	-0.038	0.011	-0.311
	(0.068)	(0.059)	(0.040)	(0.014)	(0.189)
Mean Dep Var.	0.435	0.407	0.472	0.424	2.709
Observations	7,445	7,445	7,445	7,445	7,445
R-squared	0.008	0.000	0.001	0.000	0.005

Note: This table documents the similarity of Agua de Dios with its neighboring municipalities when considering historical material wellbeing as proxied by the quality of housing and access to basic utilities. The unit of observation is the home. Housing Material is a binary variable that takes the value of 1 for those units that were built with durable and/or high/quality material. Similarly, Floor Quality is a binary variable that takes the value of 1 for those units that have any type of floor. Finally, Home Ownership takes the value of 1 if the family living in the unit owns it. AguaDios is a binary variable equal to 1 for those observations recorded inside Agua de Dios, and 0 otherwise. Source: Housing Census Data 1973 from the National Bureau of Statistics in Colombia. Robust standard errors clustered at the block level (43 blocks total). ***p<.01, **p<.05, *p<.1

selective migration to (and from) Agua de Dios, Section 4.3 addresses such concerns by showing that (1) even within municipalities there are significant differences between those who have excluded ancestors and those who do not, and (2) there are no observable differences in the attributes of those who recently out-migrated from Agua de Dios when compared with outmigrants from the neighboring municipalities.

3.1 Recruitment to the sessions

The method of recruitment employed was that of a "Random Walk," which allows covering all the socio-economic segments of the municipalities of interest. With the help of local leaders, all the neighborhoods within each municipality were identified, along with the most central location within each of those neighborhoods. Afterwards, a path that starts from each of those central nodes was randomly chosen, and every fifth household along such path was contacted. The members of the household were addressed, and they were asked if anyone would be interested in participating in the session. If they reported interest, one of the members was randomly chosen and given a printed invitation.[5] Subjects were cited at different hours to facilitate the implementation of the sessions. Only those holding an invitation with the proper hour of citation were allowed to come into the session.

All in all, the process of recruitment yielded a fairly balanced sample, with no statistical differences in all but one of the demographic characteristics (marital status). Although the difference is

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[5]The physical properties of these invitations were such that imitation was made difficult. These were printed in a special type of paper and in laser, both of which are difficult if not impossible to find in these municipalities.

Table 3: Demographic Characteristics of the Sample

| | Mean Values | | s.e. |
	Agua de Dios	Contiguous Municip.	
Female	0.602	0.583	(0.007)
Age	45.109	41.079	(1.459)
Primary Education	0.818	0.850	(0.015)
Secondary Education	0.572	0.535	(0.018)
Children	2.087	1.866	(0.175)
Marital Status	0.493	0.614	(0.021)**
Attrition	31%	34%	
Obs	139	126	

Note: This table documents the demographic characteristics of the sample recruited for the experimental sessions, showing a balancedness in all but one characteristic. Columns 1 and 2 contain the average values for either Agua de Dios or the contigous municipalities, respectively, while the third column contains the standard error of their difference. ***p<.01, **p<.05, *p<.1

statistically significant (with a lower percentage of participants in Agua de Dios reporting to be married), the economic difference is not sufficiently relevant to pose a threat to the empirical analysis. Considering the small involuntary imbalance that resulted in this dimension, it is crucial to incorporate these variables as controls -and to account for the potential non-linear effect in the case of age-. The balancedness of the sample along various demographic characteristics is shown in Table 3, while Section A in the Appendix contains descriptive statistics of these and all other variables employed in the analysis.

3.2 Description of the Experimental Measures

The outcomes from two rounds of Dictator Games provided the primary measure of pro-sociality that will be examined (Kahneman et al., 1986; Forsythe et al., 1994). Said game entails a one-shot interaction, where subjects get to choose how to divide a given sum of money between themselves and a second randomly chosen, anonymous, individual. Strict anonymity of decisions was ensured so that each participant could be confident that only they knew the exact amount they decided to keep. Details of the exact protocol implemented to ensure this, along with a description of the exact steps of the sessions, can be found in Section N in the Appendix. After answering basic demographic questions, subjects got to play two rounds of the game. In one of the rounds, they were told that

the anonymous -randomly chosen- receiver would be someone from their municipality. In another round they were told that the receiver would be a randomly chosen, anonymous, subject living in Apulo, another municipality with similar climatic and socio-economic characteristics, but sufficiently distant from the municipalities under scrutiny.[6]

All subjects knew from the onset of the protocol that they were going to play two rounds (the actual order in which they played was randomized). In each round, the participant got to choose how much to allocate to the anonymous person out of a total of COP $16,000, which was roughly 60% of a day of work under the legal minimum-wage at the time.[7] In each round, the participant was given a stack of 8 bills of COP $2,000 and was asked to deposit whichever amount they chose for the receiver -including cero- in an empty envelope. Participants were then asked to close the envelope and to deposit it in an urn. Such task was performed with absolute privacy: Subjects were directed to a private area where they were left alone to place the envelope in the urn, and where no one could observe how much they decided to deposit inside the envelope. There was a specific area with a specific urn for each of the rounds, which avoided the possibility of a participant confusing the site of the receiver when making the decision. After completing the two rounds, subjects were asked to complete a final set of questions concerning self-reported measures of altruism, as well as attitudes towards physicians and modern medicine.

4 Results

4.1 Altruism

The baseline difference between the altruism displayed by subjects in Agua de Dios and in its contiguous municipalities is illustrated in Figure 5. Panel A depicts the total allocation (i.e., the sum of the amounts allocated in both rounds), showing significantly higher generalized altruism in the

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[6]Local leaders where asked which similar municipality would be certainly known by all subjects, while avoiding as much as possible frequent cases of family ties or strong friendship between the interviewed and people from such a municipality. Out of the two municipalities suggested by local leaders, one of them (Viota) was excluded due to the historical association that such site has with the presence and the activities of the rebel armed group FARC. The remaining option was Apulo. The protocol that examines mechanisms selected another -more distant- municipality as an out-group reference, and as discussed in Section 5 the results are qualitatively consistent in such a case.

[7]Hence, participants were aware from start that they were going to make decisions on how to allocate money out of a total of more than a day of minimum-wage, which is a considerable sum considering that nearly 60% of the working population in Colombia earns a minum-wage or less.

Figure 5: Baseline Differences in Experimental Measures of Altruism
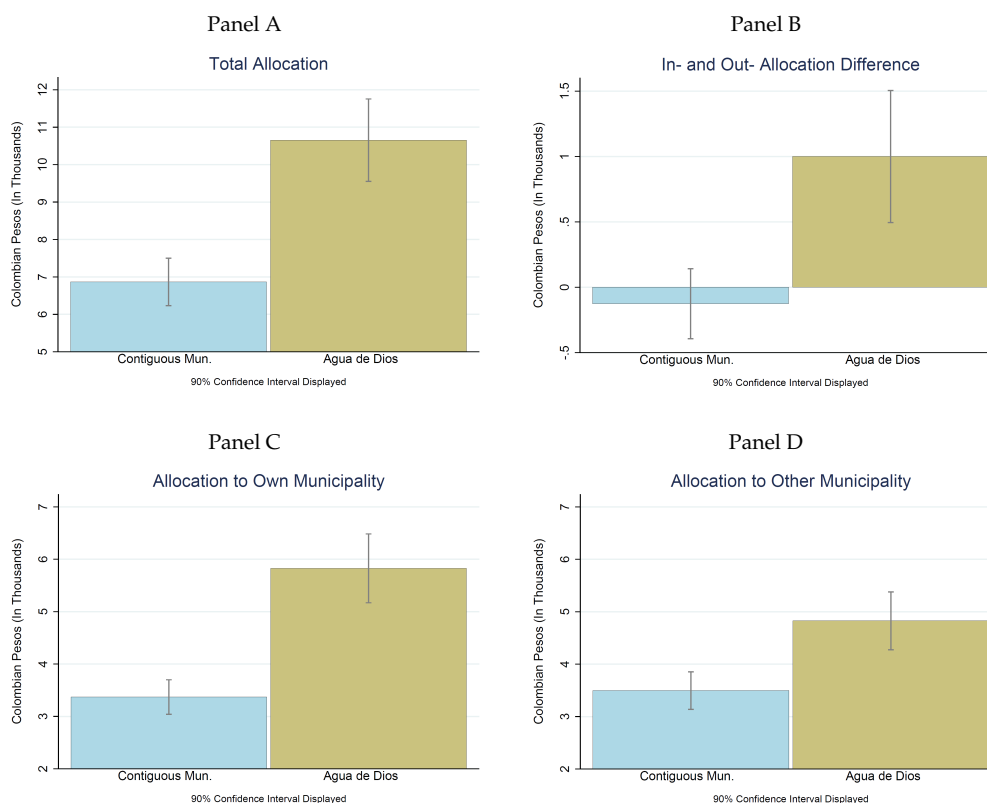
Note: These figures depict the differences across municipalities in allocations in two rounds of dictator games. Values are reported in thousands of Colombian Pesos (COP), and each participant had the possibility of allocating up to COP 16 thousand per round to an anonymous receiver either from the same municipality (in-group allocation) or from a distant municipality (out-group allocation). Total allocation corresponds to the summ of in-group and out-group allocations, whereas the in- vs out- group allocation differences corresponds to the differences between the in-group allocation and the out-group allocation.

former leper colony. Subjects in the municipalities contiguous to Agua de Dios allocate 20% of the total amount, a figure remarkably similar to that observed in various lab settings among university students (Camerer, 2003) and, more importantly, quite similar to the allocation recorded by other researchers in a different Colombian setting (Cardenas & Carpenter, 2008).[8] In the other hand, participants in the former leper colony allocated 33% of the total amount, an allocation that is high even for the standards of traditional societies in Latin America (Henrich et al., 2005). Panel B demonstrates that despite higher overall altruism, subjects in Agua de Dios act upon clearer in-group vs out-group distinctions, with a clear preference for in-group members (also known as parochial altruism or in-group favoritism).

Panels C and D dissect these measures into their in-group and out-group components. As ex-

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[8]The consistency between the behavior displayed by participants in contiguous municipalities and that of participants in independent studies in Colombia mitigates concerns of a potential effect of the presence of the leper colony on the nearest municipalities, which would bias the comparison if the leper colony negatively affected the altruism of people who lived near it.

Table 4: Experimental Measures of Altruism

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total Allocation		In- vs Out-Group Allocation Difference		In-Group Allocation		Out-Group Allocation	
AguaDios	3.786***	3.755***	1.126***	0.981**	2.456***	2.368***	1.330***	1.387***
	(0.877)	(0.813)	(0.361)	(0.330)	(0.532)	(0.435)	(0.408)	(0.442)
Female		-0.288		-0.835*		-0.561		0.274
		(0.924)		(0.437)		(0.563)		(0.453)
Age		-0.025		-0.034		-0.030		0.004
		(0.181)		(0.083)		(0.112)		(0.085)
Marital		0.238		-0.114		0.062		0.176
		(0.645)		(0.378)		(0.450)		(0.277)
Primary		-1.320		-0.225		-0.773		-0.547
		(0.743)		(0.742)		(0.466)		(0.578)
Secondary		2.044		0.745		1.395		0.649
		(1.545)		(0.598)		(0.968)		(0.659)
Age square		0.000		0.001		0.001		-0.000
		(0.002)		(0.001)		(0.001)		(0.001)
Children		-0.222		0.184		-0.019		-0.203**
		(0.199)		(0.216)		(0.195)		(0.073)
First		0.789		0.025		0.407		0.382
		(0.826)		(0.373)		(0.479)		(0.426)
Mean Value	8.838	8.838	0.460	0.460	4.649	4.649	4.189	4.189
Clusters	12	12	12	12	12	12	12	12
Observations	265	265	265	265	265	265	265	265
R-squared	0.081	0.106	0.037	0.086	0.099	0.125	0.039	0.072

Note: This table documents the legacy of social exclusion on the experimental measures of altruism, as measured by the allocation in two rounds of dictator games implemented in the former leper colony of Agua de Dios and its contiguous municipalitiesin. Values are reported in thousands of Colombian Pesos (COP), and each participant had the possibility of allocating up to COP 16 thousand per round to an anonymous receiver either from the same municipality (in-group allocation) or from a distant municipality (out-group allocation).Total allocation corresponds to the summ of in-group and out-group allocations, whereas the in- vs out- group allocation differences corresponds to the differences between the in-group allocation and the out-group allocation. AguaDios is a dummy variable that takes the value of 1 if the subject was interviewed in Agua de Dios. The variable 'First' is a dummy that assumes the value of 1 for those subject who were told that the receiver of the first round of the Dictator Game was someone from the same municipality. Heteroskedastic-robust standard errors clustered at the experimental session-level***p<.01, **p<.05, *p<.1

pected, Panel C shows a significantly higher allocation from participants in Agua de Dios, further corroborating the fact that prolonged discrimination has a positive effect on in-group pro-sociality. Crucially, Panel D reveals that there is no net adverse effect from discrimination on out-group altruism, which suggests that the positive effect on in-group altruism overflows to pro-sociality towards out-group members. These results can be examined more formally through the estimation of the following equation:

$$Y_i = \alpha + \beta AguaDios_i + \vartheta' \mathbf{X}_i + \varepsilon_i \quad (1)$$

Where Y_i is each of the four variables specified above (total allocation, in- vs out-group allocation difference, in-groups allocation, and out-group allocation) $AguaDios_i$ takes the value of 1 for respondents in Agua de Dios and 0 otherwise, and $\mathbf{X}_i$ is the vector of individual-level covariates reported in Table 4. The vector of controls includes the variable 'First,' which takes the value of 1 for those subjects who were told that the receiver of the first round was someone from their municipality (an

order which, as mentioned earlier, was randomized). Table 4 reports the estimates from equation (1). Columns 1 and 2 report the estimator on Agua de Dios to be positive and significant when it comes to the experimental measure of total (generalized) altruism. Columns 3 and 4 corroborate the positive and significant estimated effect of historical social exclusion on the development of in-group preference (parochial altruism), which goes in line with the strong positive effect on in-group solidarity. Columns 5 through 8 show that such in-group favoritism comes about through a disproportionately positive effect on in-group altruism vis-a-vis a positive but smaller effect on out-group altruism, and not through an adverse effect on pro-social attitudes towards out-group members. Crucially, the order in which subjects were instructed to play appears to be irrelevant, a pattern that will hold for all outcome variables that will be assessed in what remains of the paper.

The above suggests that there is an overall positive effect of historical social exclusion on experimental measures of altruism, which is consistent with the examination of survey measures of solidarity and empathy. Table 5 contains estimates from equation (1), where the outcome variables are now self-reported measures of altruism. Columns 1 and 2 have as an outcome variable answers (on a 1-10 scale) to a question asking subjects their similarity with someone who helps others selflessly and frequently. The estimates here are consistent with the experimental measures, showing a positive and significant difference between respondents in Agua de Dios and respondents in the contiguous municipalities.

A second survey measure leverages current political and social affairs in the region, where the Venezuelan crisis has unleashed a wave of refugees. These refugees have been rejected by many Colombians (nearly 40% by the latest estimate) who consider that such migrants are seizing economic opportunities that belong to Colombians. Participants thus answered how much of a priority (on a 1-10 scale) should be given to these Venezuelan migrants, even over Colombian themselves. Columns 3 and 4 show that subjects in Agua de Dios report a significantly higher predisposition to prioritize Venezuelan migrants in need. The table closes with a variable that collapses all elicited measures (both experimental and survey measures) into one, and thus assess the overall effect on generalized altruism. Columns 5 and 6 have as an outcome variable the first principal component deriving from a principal component analysis (PCA) comprised of in-group allocation, out-group allocation, and the survey measures as mentioned above. These results are again positive and significant, further corroborating the claim that exclusion is associated with increased pro-sociality despite

Table 5: Survey and Aggregate Measures of Altruism

	(1)	(2)	(3)	(4)	(5)	(6)
	Self Reported Altruism		Solidarity with Venezuelan Refugees		First Principal Component	
AguaDios	0.728***	0.708***	0.640**	0.647**	0.794***	0.788***
	(0.142)	(0.148)	(0.245)	(0.285)	(0.172)	(0.164)
Female		0.660**		0.837**		0.037
		(0.293)		(0.377)		(0.190)
Age		0.059*		0.019		0.002
		(0.027)		(0.051)		(0.035)
Marital		-0.046		-0.179		0.040
		(0.258)		(0.263)		(0.128)
Primary		0.669		0.796**		-0.170
		(0.378)		(0.276)		(0.158)
Secondary		-0.439		-0.699***		0.326
		(0.251)		(0.220)		(0.302)
Age square		-0.001*		-0.000		0.000
		(0.000)		(0.001)		(0.000)
Children		0.081		-0.001		-0.038
		(0.075)		(0.093)		(0.041)
First		-0.051		-0.150		0.143
		(0.179)		(0.254)		(0.164)
Mean Value	7.970	7.970	7.491	7.491		
Clusters	12	12	12	12	12	12
Observations	265	265	265	265	265	265
R-squared	0.035	0.095	0.018	0.063	0.092	0.111

Note: This table documents the positive legacy of the social exlusion endured by lepers who lived in Agua de Dios on the pro-sociality of its current inhabitants, as captured by survey measures of altruism collected in the former leper colony and its contiguous municipalities. Self-reported altruism and solidarity with Venezuelan refugees are both on a 1-10 scale, while the First Principal Component corresponds to the first principal component of these reported measures of altruism along with both the in-group and the out-group allocation chosen in the dicator games. AguaDios is a dummy variable that takes the value of 1 if the subject was interviewed in Agua de Dios. The variable 'First' is a dummy that assumes the value of 1 for those subject who were told that the receiver of the first round of the Dictator Game was someone from the same municipality. Heteroskedastic-robust standard errors clustered at the experimental session-level. ***p<.01, **p<.05, *p<.1.

being associated with increased in-group favoritism.

Despite the consistency between experimental and survey outcomes, a closer examination of demand effects is required, considering that dictator games are sensitive to such concerns (Zizzo, 2010). Demand effects refer to situations in which subjects in experimental settings modify their behavior to comply with what they consider the 'proper' or 'expected' behavior. Double anonymity (followed in the experiment described above) mitigates but does not discard demand effects. However, there are additional factors that suggest that these effects are not a concern in this specific setting. Participants in the former leper colony reported being less trusting of researchers (see Table 6 below). This reduces concerns of demand effects deriving from social cues in the experiment: Subjects would have to be willing to comply with the cues (consciously or unconsciously) conveyed by the research team when (privately and anonymously) deciding on how much to allocate, while at the same being more likely to tell the research team to their face that they are not to be trusted, which seems unlikely.

Even if one assumes that demand effects are entirely cognitive in their nature (i.e., if one as-

sumes they derive from participants' beliefs, right or imaginary, about how they should behave in the experiment), there is additional evidence suggesting that demand effects are not an issue in this setting. First, De Quidt et al. (2018) estimate demand effects in dictator games to be 0.24 standard deviations, which is below the difference (expressed in standard deviations) in total allocation, in-group allocation, and out-group allocation shown above, which amounts to a difference of 0.56, 0.71 and 0.35 standard deviations, respectively. Second, this paper examines several dimensions in addition to overall altruism, including the difference between in-group and out-group allocation, trust in medicine, and consistent results when comparing individuals who differ in their ancestral background (see Section 5 below). It is thus unlikely that participants anticipated and navigated through the multiple dimensions upon which their behavior could have been expected to operate, even less so when considering that their ancestral background was the last piece of information recorded. This further reduces the scope for demand effects in this context, considering that these are a concern only when they positively correlate with the experimenter's hypotheses (Zizzo, 2010).

Another concern worth addressing at this point is that municipalities contiguous to Agua de Dios could have been affected by the presence of the leper colony in a way that may have reduced the altruism and/or increased the trust in medicine of its inhabitants. Additionally, as discussed in the historical section, sufferers of leprosy were brought into Agua de Dios mainly from the rurality of central Colombia and Bogota. Both of these observations raise the possibility that the municipalities contiguous to Agua de Dios are not proper comparison groups, as they could behave differently from what could be construed as the ideal comparison group. Reassuringly, Section E of the Appendix contains figures that depict survey evidence collected in both Bogota and distant (but climatically identical) municipalities, showing that subjects in Agua de Dios (and not those in its neighboring municipalities) are the ones who exhibit significantly different preferences and behavior pertaining altruism (and trust in medicine, as discussed below).

4.2 Attitudes Towards Modern Medicine

The evidence presented in the previous subsection suggests that shared adversity has a long-run, intergenerational, effect on empathy and pro-social attitudes. However, it would be imprecise to conclude that there is a positive effect on all dimensions of pro-social attitudes. On the one hand, the

Figure 6: Baseline Differences in Attitudes Towards Medicine
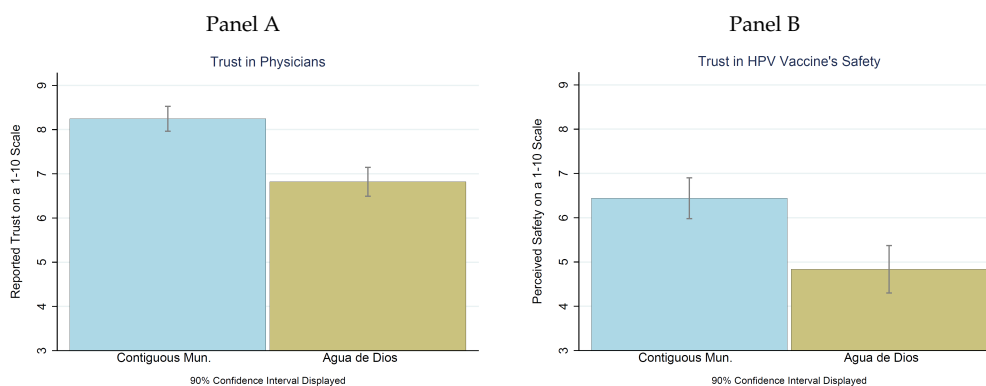
Note: These figures depict the differences across municipalities in attitudes towards medicine. Trust in physicians is a variable on a 1-10 scale that measures the participant's reported trust in physicians, with higher numbers corresponding to a higher reported trust. Perceived safety of the HPV Vaccine is the participant's reported belief in the safety of the vaccine on a 1-10 scale, with lower numbers corresponding to a higher fear towards said vaccine.

historical responsibility of exclusion may not be placed equally on all non-excluded. On the other, there are cases in which the exclusion is rationalized and implemented by a specific socio-economic group, so that such a specific group may be the recepient of a lasting wariness or mistrust. As per Section 2's historical analysis of the experience of lepers in Colombia, the visible responsibility fell on the representatives of modern medicine. This subsection thus proceeds to examine the legacy of social exclusion on trust in physicians and modern medicine.

Two direct measures capturing the wariness towards modern medicine were collected in the session. First, subjects were asked how much they trusted (on a 1-10 scale) the criteria and intentions of contemporary physicians. Second, they were asked about the degree of fear towards the vaccine against the Human Paanti-parasiticoma Virus (HPV). The latter question leverages recent developments on Colombia's public health, where a wave of panic and frenzy against the HPV vaccine recently unleashed, endangering the success of a national policy seeking to achieve the vaccine's universal coverage . The Health Ministry then initiated a national campaign to educate people on the safety of the vaccine, which covered all municipalities. Participants were thus asked how much they considered the vaccine to be safe (on a 1-10 scale). The baseline difference between the attitudes towards medicine and physicians are depicted in Figure 6, showing significantly lower trust from participants in Agua de Dios.

As with pro-sociality, one can formally test for the difference by estimating equation (1) using trust in physicians and perceived safety of the HPV vaccine as outcome variables. Table 6 contains

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Table 6: Attitudes Towards Medicine and Science

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Trust in Physicians		Perceived Safety of HPV Vaccine		Trust in University Researchers		First Principal Component	
AguaDios	-1.425***	-1.485***	-1.607***	-1.416**	-0.666**	-0.712**	-0.780***	-0.762***
	(0.287)	(0.206)	(0.457)	(0.548)	(0.295)	(0.260)	(0.172)	(0.157)
Female		0.543*		-0.101		-0.126		0.159
		(0.262)		(0.522)		(0.193)		(0.175)
Age		-0.006		-0.128		0.005		-0.021
		(0.050)		(0.083)		(0.043)		(0.032)
Marital		0.251		0.508		-0.149		0.230
		(0.325)		(0.556)		(0.106)		(0.197)
Primary		0.060		0.348		0.750		-0.030
		(0.518)		(0.902)		(0.437)		(0.281)
Secondary		0.165		0.281		0.171		0.123
		(0.365)		(0.578)		(0.303)		(0.138)
Age square		0.000		0.001		0.000		0.000
		(0.001)		(0.001)		(0.001)		(0.000)
Children		0.003		0.110		-0.141		0.022
		(0.081)		(0.176)		(0.092)		(0.059)
First		-0.499*		-0.294		-0.375		-0.305*
		(0.264)		(0.483)		(0.262)		(0.159)
Mean Value	7.502	7.502	5.645	5.645	8.008	8.008		
Clusters	12	12	12	12	12	12	12	12
Observations	265	265	265	265	265	265	265	265
R-squared	0.100	0.132	0.061	0.089	0.029	0.086	0.119	0.158

Note: This table documents the negative legacy of a social exlusion suffered by lepers in Agua de Dios based on medical criteria on contemporary trust in medicine and science, as captured by various survey measures. Trust in physicians and trust in university researchers are both on a 1-10 scale (higher number implies higher trust), whereas perceived safety of the Human Papiloma Virus (HPV) is also on a 1-10 scale, with lower numbers associated to lower perceived safety. The first principal component comes from a PCA using the variables concerning health. AguaDios is a dummy variable that takes the value of 1 if the subject was interviewed in Agua de Dios. The variable 'First' is a dummy that assumes the value of 1 for those subject who were told that the receiver of the first round of the Dictator Game was someone from the same municipality. Heteroskedastic-robust standard errors clustered at the experimental session-level. ***p<.01, **p<.05, *p<.1.

the results of such exercise. Columns 1 and 2 show a significant adverse estimated effect on trust in physicians of nearly 20% relative to the mean response. Such detrimental effect is also prevalent in Columns 3 and 4 examining the perceived safety of the HPV vaccine, with an estimated adverse effect of nearly 30% relative to the mean. Considering physicians as exponents of modern science, one could reasonably conjecture a detrimental effect on other types of researchers. Indeed, Columns 5 and 6 show a significant adverse effect of nearly 10% relative to the mean when it comes to trust in university researchers. This result also indicates that the allocated amounts in the experiment would be a lower bound, considering that participants in Agua de Dios could have allocated even more if they trusted the research team to give the allocated money to receivers (as we did indeed).[9] Finally, columns 7 and 8 examine the first principal component of a PCA using these three measures of trust in medicine and science, showing that on average there is a detrimental adverse effect on the attitudes

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[9]As mentioned earlier, this result also mitigates concerns of social desirability as a potential driver of the results presented in this paper. Indeed, it is unlikely that participants in Agua de Dios were trying to please the research team by anonymously allocating more money whilst simultaneously reporting mistrust of researchers to the research team.

Table 7: Effects on Infant Vaccination

	(1)	(2)	(3)	(4)
	Vaccination Rate of Newborns			
AguaDios	-8.656***	-8.656***	-13.154***	-13.154***
	(2.023)	(2.084)	(2.324)	(2.394)
Comparison Group	Matched Munic.		Contiguous Munic.	
Mean Value	77.92	77.92	81.12	81.12
Type FE	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes
Observations	234	234	234	234
R-squared	0.140	0.266	0.371	0.553

Note: This table documents the negative legacy of the medically-induced social exclusion of Agua de Dios on current health choices, as demonstrated by the lower municipality-level vaccinations rates of newborns (<1 year) for several vaccines (BCG, Pentavalent, MMR, Rotavirus, Neumococus, Polio, and Yellow Fever) in the past 15 years. AguaDios is a dummy variable that takes the value of 1 for the vaccination rates in Agua de Dios and 0 otherwise. Columns 1-2 report the coefficients from regressions in which the control group is provided by the vaccination rates of Mariquita and Puerto Salgar, two municipalities that were matched on geoclimatic charactersistics to Agua de Dios but that nonetheless are sufficiently far from the region of the former leper colony. Columns 3-4 report the coefficients from a regression where the control group is provided by the vaccination rates of the contiguous municipalities of Tocaima and Ricaurte. Type FE are fixed effect for the type of vaccine rate (BCG, Pentavalent, MMR, Rotavirus, Neumococus, Polio, and Yellow Fever). Year FE are fixed effects for the year of recorded municipality-level vaccination rates. Heteroskedastic-robust standard errors clustered at the municipality-type of vaccination level. Source: Health Ministry of Colombia. ***p<.01, **p<.05, *p<.1.

towards physicians and what they represent -medicine and scientific research more broadly-. Section E in the Appendix shows that the significantly different perceptions presented in Tables 5 and 6 do not map on other dimensions.

Considering such reported aversion towards medicine and physicians, are there observable legacies in health choices? To answer such question, I turn to vaccination records of newborns in Agua de Dios, its adjacent municipalities, as well as in municipalities that are distant from the region but that are nonetheless comparable in geoclimatic conditions. These vaccines are provided for free by the state, which implies that differences in rates are most likely going to be demand rather than supply-driven. Notably, one would expect a significantly worse performance of Agua de Dios in the rates of various vaccines administered to the newborn (children less than one years old). To analyze this, I estimate expression (2), with $Y_{m,t,p}$ being the rate of vaccination in municipality m for the type of vaccine p in year t, and γ_t and γ_p being year and type-of-vaccine fixed effects, respectively:

$$Y_{m,t,p} = \alpha + \beta AguaDios_m + \gamma_t + \gamma_p + \varepsilon_{m,t,p} \quad (2)$$

The results, displayed in Figure 7 and Table 7, show that vaccination rates of newborns in the former leper colony are significantly worse than those of its nearest (comparable) neighbors by as much as 13%. Similarly, the rates of vaccinations of newborns is nearly 9% lower in Agua de Dios than in municipalities that are comparable in terms of geoclimatic factors. These outcomes are observable for health-services provided for free, which imply that these results are demand-driven and are likely to

Figure 7: Vaccination Rates
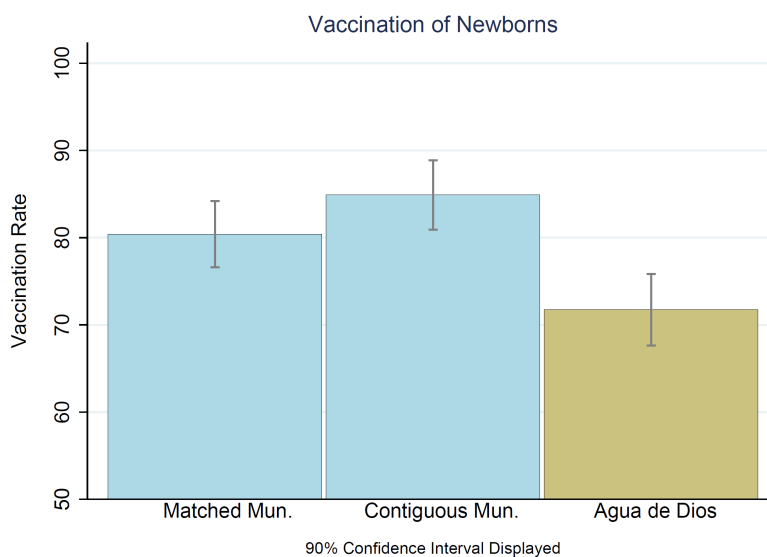
Note: These figure depicts the differences across municipalities in vaccination rates, focusing on several types of vaccines (BCG, Pentavalent, MMR, Rotavirus, Neumococus, Polio, and Yellow Fever) administered for free to newborns (<1 year). Contiguous Municipalities correspond to the vaccination rates of Tocaima and Ricaurte, while Matched Mun. correspond to vaccination rates of Puerto Salgar and Mariquita, two municipalities matched on geoclimatic characteristics with Agua de Dios.

be explained by attitudes towards medicine. Hence, the survey evidence is indeed capturing an overall mistrust that is conducive to worse health choices and outcomes. This is further corroborated by the results discussed in Section 5, which show that subjects who have ancestors who were excluded into the leper colony are significantly less likely than subjects with no excluded ancestry to collect a free dose of anti-parasitics against stomach worms (a common condition in the region, and one for which physicians recommend taking a yearly dose). All in all, these results reinforce existing findings in the literature (Alsan et al., 2018; Lowes and Montero, 2018) demonstrating the relevance of particular historical processes when understanding the differential success/failure of health policies and health outcomes today.

4.3 Analysis Across Ancestry

The evidence presented thus far shows a persistent effect of the history of Agua de Dios on the social preferences and attitudes of its inhabitants, particularly on altruism (both, in-group and generalized), in-group favoritism (parochialism), and on mistrust and wariness with respect to the group that was historically exclusionary (physicians and modern medicine). As discussed in Section 2.2, these results stem from historical rather than concurrent social exclusion; inhabitants of Agua de Dios no longer

have leprosy and are observably identical to those in the surrounding area. The figure contained in Appendix F shows that there is no longer a stigma against inhabitants of Agua de Dios: Surveyed subjects in its contiguous region are equally tolerant towards having a neighbor from the former leper colony as they are towards having a neighbor from other municipalities and cities in the area. A critical question that remains unanswered is whether these effects are the result of attitudes and norms intergenerationally-transmitted by those who endured social exclusion, or whether they are either site-specific results or a consequence of selection in migration.

As mentioned earlier, selective migration into (and out of) the contiguous municipalities would go against the results presented in this paper, considering that only those with a high tolerance towards the excluded would choose to move close to them, and similarly those who are intolerant of them would be more prone to move out of such sites. However, it is still possible that selective migration into and out of the former leper colony could be partially driving of the results. Indeed, it could potentially be the case that after the isolation ended, those who migrated into (out of) the former leper colony were altruistic (non-altruistic) or warry (trusting) towards medicine.

To assess such a possibility, we turn to examine excluded ancestry of respondents. In the experimental session, the last question asked to participants was whether they had grandparents who lived in Agua de Dios when the policy of isolation was in place. By comparing those who had at least one isolated ancestor with those who had no isolated ancestor, one can effectively assess whether the observed baseline results are a consequence of intergenerationally-transmitted attitudes and norms. The table reported in Appendix G shows the overall balancedness of the characteristics amongst participants with and without an excluded ancestry, which reinforces the earlier claim that these individuals grew up facing comparable circumstances and opportunities.

Figures 8 and 9 depict the results along this axis, indicating a remarkably similar pattern as the one observed when comparing participants in the former leper colony with those in its nearby municipalities. Indeed, those who had a socially-excluded ancestor report higher altruism (Panel A of Figure 8) -which derives from both a higher in-group (Panel C) and a higher out-group (Panel D) altruism-, and parochialism (favorability towards in-group members) appears to be a key feature of their behavior (Panel B of Figure 8). Further, the persistence of biases against physicians and medicine seems to be another key feature of their attitudes (Figure 9).

Figure 8: Baseline Differences in Experimental Measures of Altruism Across Ancestry

Panel A

Panel B

Panel C

Panel D
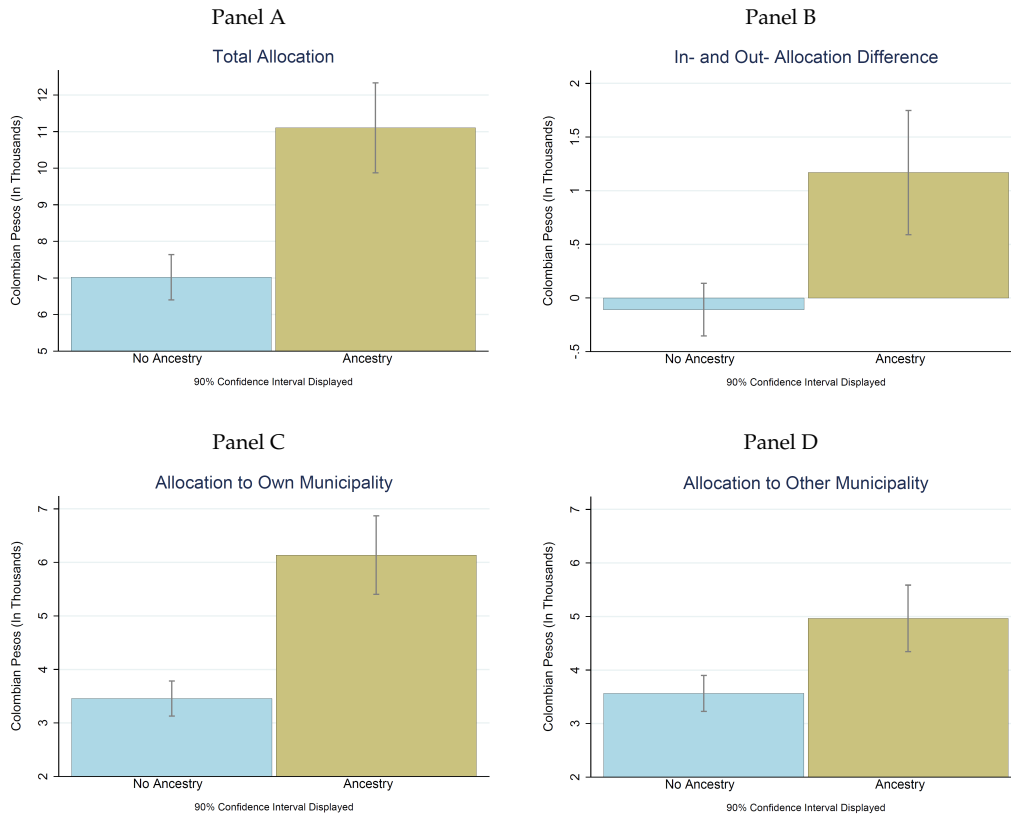
Note: These figures depict the differences across socially-excluded ancestry in the allocations in two rounds of dictator games in Agua de Dios and its neighboring municipalities. Values are reported in thousands of Colombian Pesos (COP), and each participant had the possibility of allocating up to COP 16,000 per round to an anonymous receiver either from the same municipality (in-group allocation) or from a distant municipality (out-group allocation). Total allocation corresponds to the summ of in-group and out-group allocations, whereas the in- vs out- group allocation differences corresponds to the differences between the in-group allocation and the out-group allocation.

Figure 9: Baseline Differences in Attitudes Towards Medicine Across Ancestry

Panel A

Panel B
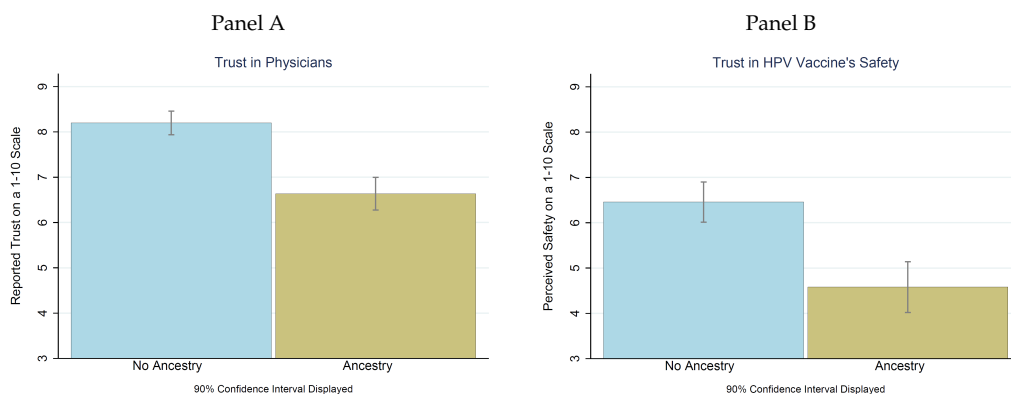
Note: These figures depict the differences across socially-excluded ancestry in attitudes towards medicine collected in Agua de Dios and its contiguous municipalities. Trust in physicians is a variable on a 1-10 scale that measures the participant's reported trust in physicians. with higher numbers corresponding to a higher reported trust. Perceived safety of the HPV Vaccine is the participant's reported trust in the safety of the vaccine on a 1-10 scale, with lower numbers corresponding to a higher perceived fear towards said vaccine.

These results can be examined more formally through the estimation of the following equation:

$$Y_{i,m} = \alpha + \beta Ancestry_{i,m} + \vartheta' X_{i,m} + \gamma_m + \varepsilon_{i,m} \qquad (3)$$

Where $Y_{i,m}$ are the same outcome variables discussed above, $X_{i,m}$ is the vector of individual-level covariates reported in Table 4, and $Ancestry_{i,m}$ takes the value of 1 for those who had at least one ancestor who experienced the exclusion and 0 otherwise. Individuals who had excluded ancestors were found both in Agua de Dios and in its neighboring municipalities (nearly 20% of the participants in the neighboring municipalities had at least one ancestor who experienced secluded in the leper colony). Notice that by comparing along ancestry one can control for all municipality-level characteristics (γ_m), which effectively allows comparing within municipalities subjects who had a socially excluded ancestor vs those who did not. Table 8 reports the estimates of equation (3) with the experimental measures of altruism as outcome variables.

Table 8: Differences in Experimental Measures of Altruism Across Ancestry

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Total Allocation		In- vs Out-Group Allocation Difference		In-Group Allocation		Out-Group Allocation	
Ancestry	3.874***	2.523***	1.296***	1.111**	2.585***	1.817***	1.289***	0.706**
	(0.745)	(0.564)	(0.344)	(0.484)	(0.448)	(0.418)	(0.368)	(0.318)
Female	-0.157	-0.208	-0.794*	-0.808*	-0.476	-0.508	0.318	0.300
	(0.853)	(0.862)	(0.420)	(0.408)	(0.516)	(0.517)	(0.431)	(0.433)
Age	-0.019	-0.030	-0.034	-0.033	-0.027	-0.031	0.007	0.002
	(0.185)	(0.176)	(0.084)	(0.085)	(0.115)	(0.111)	(0.085)	(0.082)
Marital	0.107	0.268	-0.123	-0.096	-0.008	0.086	0.115	0.182
	(0.597)	(0.607)	(0.357)	(0.358)	(0.408)	(0.415)	(0.274)	(0.275)
Primary	-1.551*	-1.386	-0.277	-0.255	-0.914*	-0.820	-0.637	-0.565
	(0.862)	(0.834)	(0.729)	(0.719)	(0.500)	(0.487)	(0.622)	(0.607)
Secondary	2.023	1.884	0.694	0.670	1.359	1.277	0.664	0.607
	(1.546)	(1.558)	(0.580)	(0.583)	(0.969)	(0.971)	(0.651)	(0.664)
Age square	0.000	0.000	0.001	0.001	0.000	0.001	-0.000	-0.000
	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Children	-0.056	-0.121	0.237	0.226	0.091	0.053	-0.147*	-0.173**
	(0.167)	(0.177)	(0.215)	(0.226)	(0.180)	(0.188)	(0.070)	(0.075)
First	0.494	0.657	-0.052	0.016	0.221	0.336	0.273	0.320
	(0.930)	(0.902)	(0.368)	(0.377)	(0.540)	(0.509)	(0.457)	(0.467)
Mean Value	8.838	8.838	0.460	0.460	4.649	4.649	4.189	4.189
Clusters	12	12	12	12	12	12	12	12
Municipality FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	265	265	265	265	265	265	265	265
R-squared	0.110	0.127	0.105	0.108	0.141	0.157	0.067	0.079

Note: This table documents the positive legacy of a socially excluded ancestry on the pro-sociality of subjects, as measured by the allocation in two rounds of dictator games implemented in a former leper colony and its contiguous municipalities. Values are reported in thousands of Colombian Pesos (COP), and each participant had the possibility of allocating up to COP 16,000 per round to an anonymous receiver either from the same municipality (in-group allocation) or from a distant municipality (out-group allocation). Total allocation corresponds to the summ of in-group and out-group allocations, whereas the in- vs out- group allocation differences corresponds to the differences between the in-group allocation and the out-group allocation. Ancestry is a dummy variable that takes the value of 1 if the subject reported having at least one grandparent from Agua de Dios. The variable 'First' is a dummy that assumes the value of 1 for those subject who were told that the receiver of the first round of the Dictator Game was someone from the same municipality. Heteroskedastic-robust standard errors clustered at the experimental session-level. ***p<.01, **p<.05, *p<.1.

Table 9: Differences in Survey and Aggregate Measures of Altruism Across Ancestry

	(1)	(2)	(3)	(4)	(5)	(6)
	Self Reported Altruism		Solidarity with Venezuelan Refugees		First Principal Component	
Ancestry	0.666**	0.377	0.962***	0.914***	0.808***	0.523***
	(0.227)	(0.382)	(0.208)	(0.223)	(0.144)	(0.112)
Female	0.683**	0.669**	0.867**	0.837**	0.064	0.053
	(0.257)	(0.278)	(0.360)	(0.364)	(0.169)	(0.174)
Age	0.060**	0.059**	0.019	0.028	0.003	0.001
	(0.027)	(0.027)	(0.051)	(0.049)	(0.035)	(0.034)
Marital	-0.076	-0.040	-0.175	-0.153	0.012	0.046
	(0.244)	(0.249)	(0.258)	(0.258)	(0.116)	(0.118)
Primary	0.624	0.659	0.765**	0.770**	-0.219	-0.184
	(0.368)	(0.375)	(0.247)	(0.249)	(0.179)	(0.174)
Secondary	-0.433	-0.465*	-0.749***	-0.773**	0.322	0.292
	(0.268)	(0.258)	(0.228)	(0.260)	(0.303)	(0.305)
Age square	-0.001*	-0.001*	-0.000	-0.000	0.000	0.000
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
Children	0.110	0.095	0.038	0.027	-0.003	-0.017
	(0.072)	(0.074)	(0.096)	(0.094)	(0.033)	(0.034)
First	-0.106	-0.051	-0.201	-0.029	0.081	0.120
	(0.196)	(0.201)	(0.244)	(0.224)	(0.187)	(0.181)
Mean Value	7.970	7.970	7.491	7.491		
Clusters	12	12	12	12	12	12
Municipality FE	No	Yes	No	Yes	No	Yes
Observations	265	265	265	265	265	265
R-squared	0.090	0.100	0.084	0.098	0.115	0.135

Note: This table documents the positive legacy of a socially excluded ancestry on the pro-sociality of subjects, as captured by survey measures collected in a former leper colony and its contiguous municipalities. Self reported altruism and solidarity with Venezuelan refugees are both on a 1-10 scale, while the First Principal Component corresponds to the first principal component of these reported measures of altruism along with both the in-group and the out-group allocation chosen in the dicator games. Ancestry is a dummy variable that takes the value of 1 if the subject reported having at least one grandparent from Agua de Dios. The variable 'First' is a dummy that assumes the value of 1 for those subject who were told that the receiver of the first round of the Dictator Game was someone from the same municipality. Heteroskedastic-robust standard errors clustered at the experimental session-level. ***p<.01, **p<.05, *p<.1.

A crucial finding from this set of estimations is that having a historically excluded ancestry positively (and significantly) affects altruism and in-group favoritism, even after controlling for all municipality-level characteristics. The above is clear evidence of intergenerational transmission of culture as a mechanism through which historical exclusion affects social preferences in the long-run. Even when comparing people within the same municipality, one observes a legacy of exclusion on the behavior of those who are descendants of the socially alienated. Such finding is consistent when considering survey-measures of altruism. Table 9 and Figures in Appendix I corroborate that when examining self-reported altruism or solidarity towards the Venezuelan refugees, one consistently finds a positive and significant effect of having a socially excluded ancestry. Further, when assessing the first principal component of a PCA incorporating both experimental and survey measures of altruism, one observes the positive legacy of social exclusion on altruism, even when controlling for municipality-level characteristics.

Table 10: Differences in Attitudes towards Medicine and Science Across Ancestry

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Trust in Physicians		Perceived Danger of HPV Vaccine		Trust in University Researchers		First Principal Component	
Ancestry	-1.583***	-1.071*	-1.753**	-1.374	-0.393	0.059	-0.840***	-0.591*
	(0.394)	(0.549)	(0.609)	(0.933)	(0.268)	(0.350)	(0.224)	(0.299)
Female	0.490*	0.498*	-0.138	-0.160	-0.142	-0.122	0.137	0.139
	(0.231)	(0.244)	(0.575)	(0.545)	(0.191)	(0.194)	(0.182)	(0.175)
Age	-0.009	-0.001	-0.128	-0.106	0.002	0.004	-0.023	-0.013
	(0.049)	(0.049)	(0.074)	(0.080)	(0.043)	(0.043)	(0.028)	(0.030)
Marital	0.299	0.244	0.524	0.541	-0.094	-0.149	0.249	0.237
	(0.343)	(0.323)	(0.506)	(0.522)	(0.117)	(0.109)	(0.181)	(0.183)
Primary	0.150	0.087	0.396	0.303	0.804*	0.749	0.005	-0.045
	(0.498)	(0.493)	(0.830)	(0.837)	(0.430)	(0.442)	(0.282)	(0.266)
Secondary	0.182	0.227	0.293	0.328	0.120	0.169	0.115	0.144
	(0.334)	(0.349)	(0.545)	(0.608)	(0.291)	(0.305)	(0.131)	(0.145)
Age square	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)
Children	-0.065	-0.044	0.039	0.017	-0.161	-0.138	-0.010	-0.014
	(0.095)	(0.081)	(0.188)	(0.187)	(0.097)	(0.092)	(0.064)	(0.058)
First	-0.382	-0.375	-0.179	0.073	-0.319	-0.390	-0.246	-0.181
	(0.292)	(0.267)	(0.502)	(0.327)	(0.305)	(0.256)	(0.176)	(0.119)
Mean Value	7.502	7.502	5.645	5.645	8.008	8.008		
Clusters	12	12	12	12	12	12	12	12
Municipality FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	265	265	220	220	265	265	220	220
R-squared	0.145	0.169	0.112	0.145	0.064	0.087	0.180	0.223

Note: This table documents the negative effect on trust in medicine coming from having an ancestry that was socially excluded based on medical criteria. Trust in physicians and trust in university researchers are both on a 1-10 scale (higher number implies higher trust), whereas perceived danger of the Human Papiloma Virus (HPV) is also on a 1-10 scale, with lower numbers associated lower reported trust in the vaccine's safety. The first principal component comes from a PCA using the health-related variables. Ancestry is a dummy that takes the value of 1 if the subject reported having at least one grandparent coming from Agua de Dios. The variable 'First' is a dummy that assumes the value of 1 for those subject who were told that the receiver of the first round of the Dictator Game was someone from the same municipality. Heteroskedastic-robust standard errors clustered at the experimental session-level. ***p<.01, **p<.05, *p<.1.

An examination of attitudes towards the source of exclusion (which, as indicated in this paper, in this case, corresponds to medicine and its exponents) corroborate the significance of having an excluded-ancestry. Table 10 reports the estimates of equation 3, showing that the descendants of socially excluded people are significantly warier towards physicians, medicine, and scientific research more broadly. Even though some of the estimates retain significance and remain negative after accounting for all municipality-level characteristics, the reduction in the degree of significance suggests that site-specific dynamics may have played a role in explaining attitudes relative to modern medicine.

The relevance of an excluded-ancestry reduces the scope for selection in migration as a driver of the results. There are significant differences between descendants and non-descendants of the socially-excluded when considering altruism, in-group favoritism, and attitudes towards modern medicine, and these differences hold both across and within municipalities. Although these results discard concerns of selective in-migration to Agua de Dios, the fact that the protocol was only imple-

mented in Agua de Dios and its neighboring municipalities leave room for a special kind of selection in out-migrants from Agua de Dios. For instance, those who out-migrated to distant municipalities (and whose preferences were therefore not assessed) could be of different types than those who only migrated to nearby municipalities. To address such concerns, we turn to the 2005 Colombian census, which contains information on the migration status of all individuals. Specifically, the census asked whether the respondent lived in a different municipality five years ago, and also asked for the municipality of residence five years ago (which was the same as the current municipality of residency for all non-migrants). Using this information, one can formally estimate the following expression to examine any observable difference between the out-migrants from Agua de Dios and other out-migrants from the region:

$$Y_{i,m} = \alpha + \beta(AguaDios_{i,m} * Migrant_{i,m}) + \vartheta Migrant_{i,m} + AguaDios_{i,m} + \varepsilon_{i,m} \quad (4)$$

With $Y_{i,m}$ being the different observable attributes of individual i who lived 5 years ago in municipality m, $AguaDios_{i,m}$ being an indicator variable for whether the individual resided in Agua de Dios 5 years prior to the census, and $Migrant_{i,m}$ being an indicator variable for whether individual i changed her municipality of residence during the 5 years prior to the census. The main coefficient of interest is β, which captures the observable differences between outmigrants from Agua de Dios and all outmigrants from the contiguous municipalities. The results, contained in Table 11, provide further evidence against selective out-migration from Agua de Dios, as there are no significant differences between these out-migrants across several dimensions. When considering gender composition, marital status, fertility choices, health, human capital and employment status, those who out-migrated from Agua de Dios appear to be no different from those who out-migrated from the vicinity of the former leper colony, which further supports intergenerationally-transmitted preferences arising from social exclusion as the primary driver of the results presented in this paper.

5   Mechanisms

The role of intergenerationally-transmitted culture as a mechanism leaves many questions unanswered. What specific aspects of culture are mediating the results? Are these preferences passively learned by descendants from ancestors, or are these actively transmitted through formal knowledge

Table 11: Examining Selection in Out-Migration

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Gender	Marital Status	Children	Primary	Secondary	Employemnt	Health
Out-Migrant*AguaDios	0.033	0.001	0.027	-0.001	-0.028	-0.023*	-0.063
	(0.027)	(0.024)	(0.038)	(0.011)	(0.020)	(0.007)	(0.037)
AguaDios	0.011	0.079**	-0.025*	-0.013	0.028	-0.012	0.063
	(0.006)	(0.014)	(0.010)	(0.007)	(0.025)	(0.007)	(0.055)
Out-Migrant	-0.023	-0.037	0.043	-0.001	0.015	0.015	0.133**
	(0.027)	(0.024)	(0.038)	(0.011)	(0.020)	(0.007)	(0.037)
Mean Dep Var.	0.477	0.601	0.765	0.946	0.330	0.935	
Observations	14,026	12,433	5,548	12,236	12,236	4,075	14,026
R-squared	0.000	0.006	0.001	0.001	0.000	0.001	0.001

Note: This table examines individuals in Colombian Census data of 2005, which contains information on the migration status of individuals. It shows that there are no observable differences in the characteristics of out-migrants coming from Agua de Dios when compared to out-migrants from the nearby region (municipalities contigous to Agua de Dios, as discussed in Section 3 of this paper). Out-Migrant is a dummy variable that takes the value of 1 if 5 years ago the subject resided in a municipality different than the one where she was at the time of the Census. AguaDios is a dummy variable that takes the value of 1 for all subjects who report living in Agua de Dios 5 years ago. Health corresponds to the first principal component of a PCA that incorporates reported health along various dimensions (sight, hearing, walking and arms's health). Heteroskedastic-robust standard errors clustered at the level of municipality of past residence (i.e. residence 5 years prior to the census). Source: Census Data 2005 from the National Bureau of Statistics in Colombia. ***p<.01, **p<.05, *p<.1.

of history? This section examines historical narratives as one cultural mechanism through which differences in preferences and behaviors materialize. This paper understands historical narratives as stories and facts on the history of ancestors that are orally transmitted within the household. Following Bénabou et al. (2020), these narratives could shape behavior by recurrently justifying actions based on morality. Indeed, oral histories are critical ways in which ancestors share and transmit their trauma in the former leper colony (Botero-Jaramillo et al., 2017). By making salient and palpable the trauma endured within the leprosaria, historical narratives enhance the individual's direct stakes in the matter and downplay externalities of mistrust and wariness towards those historically responsible for the trauma.

What remains of this section examines two pieces of evidence to establish the role of historical narratives as one mechanism that explains the results discussed above. First, it assesses whether individuals who have an excluded ancestry believe to be more aware of history, which would be a natural consequence of oral histories as a cultural praxis that fosters sensitivity towards historical information in households with leper patients. The second subsection describes and examines a protocol designed to understand what type of behavior is elicited by different types of historical narratives, focusing on a narrative that fosters local pro-sociality by raising direct stakes, and on a second one that reduces trust in and engagement with modern science by downplaying the externalities of

such behavior.

5.1 Awareness of History

A first exercise in determining the role of historical narratives in shaping social preferences is establishing whether the descendants of socially excluded subjects believe to be more aware of history than their counterparts, which would be a natural consequence of frequent transmission of historical narratives within the household. To indirectly examine such issue, one of the questions collected from participants in the protocol was whether they considered themselves to be aware of the formal history of the region or not. [10] This allows to examine (1) whether self-reported historical awareness is a feature of the former leper colony, and (2) whether those who have ancestors who suffered exclusion tend to believe that they are more aware of the history of the region. Figure 10 and Table 12 answer such questions.

Notably, a stronger inclination to report awareness of history appears to be one of the legacies of social exclusion, both when comparing individuals in Agua de Dios with those in neighboring municipalities, and when comparing subjects with vs. subjects without excluded ancestors. Results of columns 2 and 4 would indicate that living in Agua de Dios entails a 25.8% higher likelihood of reporting awareness of history (30.4% relative to the mean of reported awareness of history), whereas being a descendant of an excluded leper entails a 16.9% higher likelihood of reporting awareness of formal history (20% relative to the mean). Regardless of whether this indeed involves a more accurate knowledge of the history of the region, the fact that these participants view themselves as more historically-informed is suggestive of a distinct dynamic of historical narratives operating within the household connected to the trauma, considering that all participants face the same education system and the same municipality-specific commemorations, events, and festivities. The critical question remains whether historical narratives that are often shared by ancestors elicit the type of behaviors analyzed in Section 4.

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[10]Subjects answered this question after making the choices for the dictator games, and after reporting their views and attitudes on medicine and physicians

Figure 10: Awareness of History
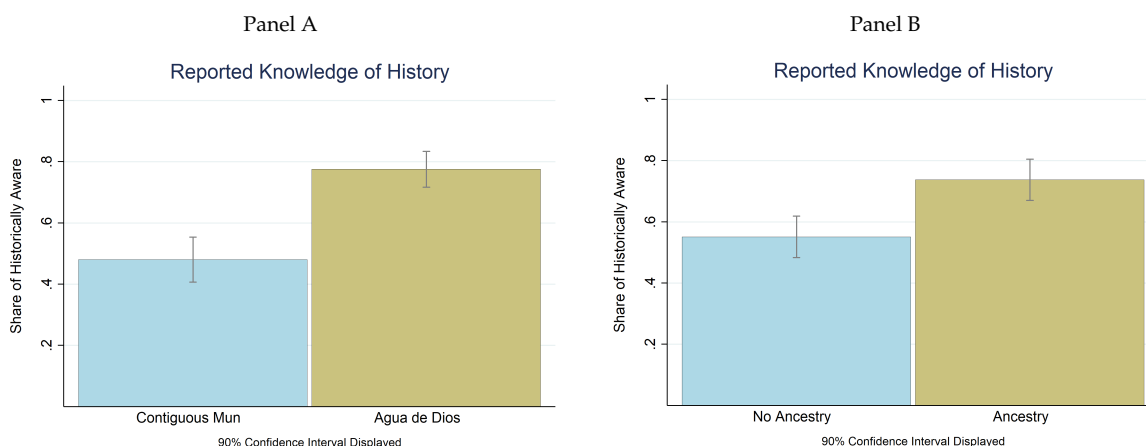
Note: These figures depict the significantly higher self-reported awareness of history reported by (1) subjects in Agua de Dios when compared with those in its contiguous municipalities (Panel A), and (2) subjects with an excluded ancestry when compared with those who have no excluded ancestry (Panel B). Formal Knowledge of History takes the value of one if the subject reports having at least a knowledge of 5 on a 1-10 subjective scale.

Table 12: Awareness of History

	(1)	(2)	(3)	(4)
		Formal Knowledge of History		
AguaDios	0.295***	0.258***		
	(0.068)	(0.083)		
Ancestry			0.186**	0.169**
			(0.064)	(0.076)
Mean Value	0.846	0.846	0.846	0.846
Clusters	12	12	12	12
Additional Controls	No	Yes	No	Yes
Observations	265	265	265	265
R-squared	0.094	0.156	0.037	0.117

Note: This table documents a higher reported formal knowledge of history on behalf of those who live in Agua de Dios and/or are descendants of excluded lepers. Formal Knowledge of History takes the value of one if the subject reports having at least a knowledge of 5 on a 1-10 subjective scale. Additional controls are the baseline demographic controls reported in Table 4. Heteroskedastic-robust standard errors clustered at the experimental session-level. ***p<.01, **p<.05, *p<.1.

5.2   Behavior Elicited by Historical Narratives

A second (analogous) protocol was implemented to establish historical narratives as a cultural channel of transmission, this time in Agua de Dios alone. In a nutshell, the goal of the intervention was to (randomly) remind some participants of different pieces of historical information, and to examine whether different types of historical information elicit different types of behavior. The type of information given to participants was previously consulted with locals to be close to the type of historical narrative that is commonly shared within households in the former leper colony. Specifically, all participants were selected into one of the following four groups:

- 1) Participants who answered the survey with no additional information (NoTreat)

- 2) Participants who received information on the non-medical history of exclusion (Exclusion-Hist)

- 3) Participants who received information on the historical responsibility of medicine and physicians (MedicineHist)

- 4) Participants who received information on the history of the Chicala Tree, a floral species that is nowadays emblematic in the region (FloraHist)

In all cases, individuals both read and listened while the enumerator read a small paragraph with the corresponding information.[11] Following this, the enumerators collected information analogous to the outcomes described in Sections 3 and 4. Crucially, participants got to play in a modified dictator game, in which they were automatically enrolled in a lotery for COP$800,000 (a month of minimum-wage paying job), and were asked to decide how much to allocate beforehand, in case of winning the lottery, to (1) an anonymous receiver from the same municipality and (2) an anonymous receiver from a distant municipality.[12] As in the earlier protocol, the order of the type of receiver was randomized. To get at reported and observed measures of trust in medicine, two variables were collected: (1) Self-reported truts in physicians on a 1-10 scale, and (2) the take-up of a voucher given to all participants that could be redeemed in the local pharmacy for a complete dose of anti-parasitics against amoebiasis, giardiasis and trichomoniasis (conditions prevalent in the region and for which doctors recommend taking at least one dose a year). The table contained in Appendix J presents evidence suggesting that the randomization of the treatments was successful, while Appendix O discusses further details of the protocol, the treatments, and of the collected variables.

A reassuring finding of this second protocol is the fact that behavior of those who have vs those who do not have excluded ancestors resembled (qualitatively and quantitatively) the findings reported in earlier sections (higher total altruism, higher in-group favoritism, and lower trust in medicine). Further, the additional observed measure of the anti-parasitic take-up corroborates the lack of trust

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[11]This was implemented considering that some participants were potentially illiterate.

[12]In this case, the selected distant municipality was Pandi, Cundinamarca, another municipality that is socioeconomically and climatically similar to Agua de Dios, but that is nonetheless farther apart than Apulo. See Appendix N for more details on the protocol. Participants were reminded twice that, if they ended up winninng the lottery, the reported amounts would be deducted from their prize and given to anonymous receivers in the municipalities corresponding to each round.

in medicine and corroborates that it is not only a reported outcome but also an observed behavior (which is consistent with the observed lower vaccination rates). Appendixes K and L contain figures and tables corroborating the consistency of such findings.
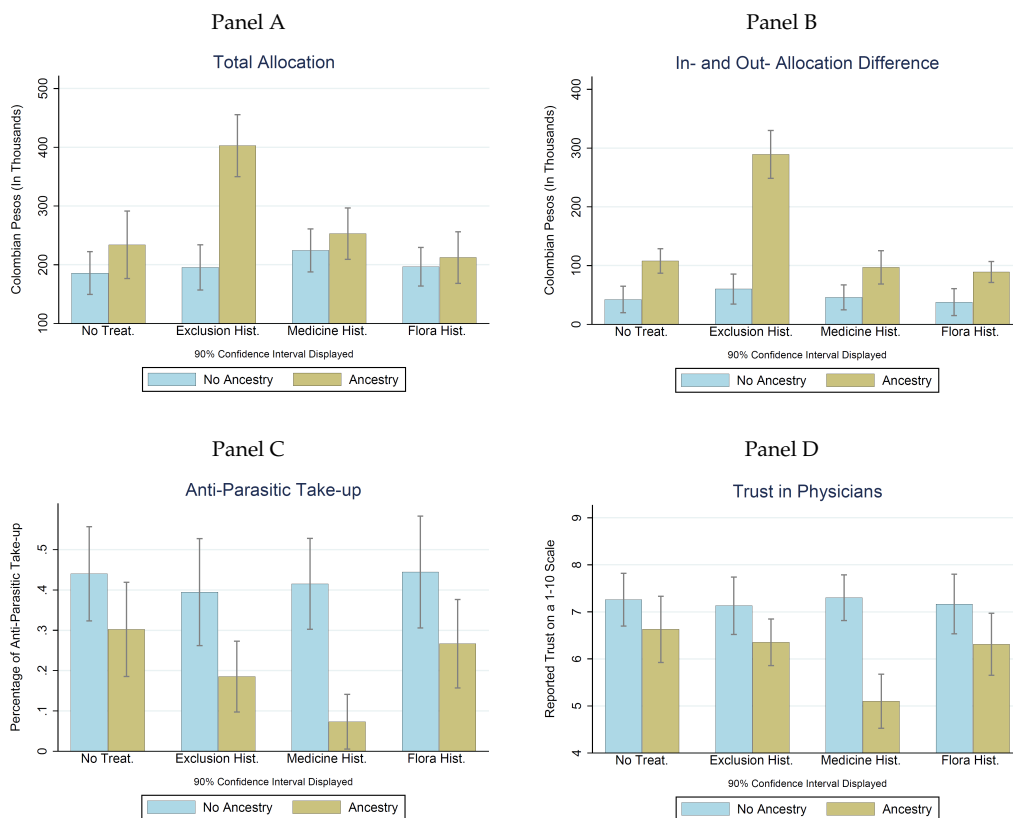
A critical question that remains is whether different types of historical information have specific effects on different dimensions of behavior. Is awareness of the non-medical aspects of the history of exclusion conducive to different behavior than awareness of the history of medical malpractice? Answering such a question requires determining whether those who have ancestors who were excluded behave differently depending on the type of historical information received, and whether such response is specific to those who have ancestors (as opposed to those who received the same information but have no excluded ancestry). Formally, this can be assessed through the following estimation:

$$Y_i = \alpha + \beta\mathbf{1}[ExclusionHist = 1]_i + \theta\mathbf{1}[MedicineHist = 1]_i + \pi\mathbf{1}[FloraHist = 1]_i$$

$$+\mu Ancestry_i + \upsilon(Ancestry_i * \mathbf{1}[ExclusionHist = 1]_i*) + \omega(Ancestry_i * \mathbf{1}[MedicineHist = 1]_i)$$

$$+\xi(Ancestry_i * \mathbf{1}[FloraHist = 1]_i) + \vartheta'\mathbf{X}_i + \epsilon_i \qquad (5)$$

Where *ExclusionHist*, *MedicineHist* and *FloraHist* are the treatment groups described above, $Ancestry_i$ is equal to 1 when the respondent i has an excluded ancestry, Y_i is one of the outcome variables described above, and $\mathbf{X}_i$ is a vector of demographic characteristics of respondent i. Figure 11 below depicts the results of such analysis, while Table 14 contains the results of the regression.

Both Figure 11 and Table 13 show that, regardless of the treatment, those who have excluded ancestors exhibit, on average, higher in-group favoritism, lower trust in medicine, and higher overall altruism. Crucially, both the figures and the regressions' outcomes show that different historical information elicits changes in distinct behavioral dimensions of descendants of lepers. Interestingly, these effects are not observed in those participants who have no leper ancestry, which suggests that the role of historical narratives in transmitting and shaping values and beliefs follow a vertical (parent-offspring) dynamic rather than a horizontal (peer-to-peer) one. Moreover, the placebo treatment where individuals learn about a local tree's history does not affect the behaviors of descendants of lepers, indicating that the effects of these historical narratives are not coming from simple

Figure 11: Historical Narratives and Behavior

Panel A

Total Allocation

90% Confidence Interval Displayed

No Ancestry | Ancestry

Panel B

In- and Out- Allocation Difference

90% Confidence Interval Displayed

No Ancestry | Ancestry

Panel C

Anti-Parasitic Take-up

90% Confidence Interval Displayed

No Ancestry | Ancestry

Panel D

Trust in Physicians

90% Confidence Interval Displayed

No Ancestry | Ancestry

Note: These figures depict the differences on different types of behavior stemming from being reminded of different aspects of the historical exclusion of lepers. Being reminded of the non-medical history of exclusion (ExlusionHist) elicits higher altruism and higher in-group favoritism. Further, being reminded of historical medical errors with respect to leprosy (MedicalHist) elicits lower trust in medicine (lower reported trsust and lower observed take-up of free, recommended, medicine). Effects vary by ancestry (i.e. by those who have vs those who do not have an excluded ancestry). ExclusionTreat corresponds to the (randomly chosen) group that was reminded of the non-medical history of exclusion, MedicalHist corresponds to the group that was reminded of historical medical errors regarding leprosy, FloraHist corresponds to the (randomly chosen) group that was made aware of the history of a native tree, while NoTreat corresponds to the group of participants who answered the survey without additional information. For Panels A and B, values are reported in thousands of Colombian Pesos (COP), and each participant had the possibility of allocating up to COP 800,000 per round to an anonymous receiver either from the same municipality (in-group allocation) or from a distant municipality (out-group allocation). Total allocation (Panel A) corresponds to the summm of in-group and out-group allocations, whereas the in- vs out- group allocation differences (Panel B) corresponds to the differences between the in-group allocation and the out-group allocation. anti-parasitic take-up (Panel C) is a binary variable equal to 1 for those participants who redeemed a voucher in exchange for a free anti-parasitic dose. Trust in physicians (Panel D) corresponds to reported trust in physicians on a 1-10 scale.

orality. Analogously, as shown by Columns 5 of Table 13 and by the figure contained in Appendix M, having an ancestor bears no effect on perceptions concerning lawyers, corroborating the fact that the wariness demonstrated by descendants of lepers is not capturing an overall suspicion of other types of professionals or fields of knowledge that played no significant role in the historical exclusion of lepers.

Results contained in Columns 1 and 2 of Table 13 indicate that descendants of lepers who were reminded of the non-medical history of exclusion allocate, on average, COP 179,563 more due to such information (an increase of 21.7 p.p. relative to the COP 800,000 that each participant could distribute). Moreover, they allocated COP 165,970 more to in-group than to out-group members (an

Table 13: Effects of Different Historical Narratives

	(1) Total Allocation	(2) In- vs Out- Alloc Diff	(3) Anti-Parasitic Take-up	(4) Trust in Physicians	(5) Trust in Lawyers
ExclusionHist*Ancestry	173.927***	165.970***	-0.076	0.023	0.013
	(51.689)	(16.924)	(0.099)	(0.533)	(0.493)
MedicalHist*Ancestry	-11.684	-11.616	-0.186***	-1.412***	0.264
	(59.351)	(19.872)	(0.048)	(0.362)	(0.414)
FloraHist*Ancestry	-25.078	-8.236	0.012	-0.261	0.590
	(54.683)	(14.449)	(0.141)	(0.406)	(0.542)
Ancestry	37.267	59.597***	-0.164***	-0.876***	-0.190
	(37.310)	(12.984)	(0.035)	(0.288)	(0.267)
ExclusionHist	-0.651	15.323	-0.032	-0.329	0.301
	(22.343)	(14.189)	(0.071)	(0.439)	(0.541)
MedicalHist	32.555	0.417	-0.029	-0.086	0.028
	(28.032)	(14.476)	(0.043)	(0.330)	(0.424)
FloraHist	14.211	-2.020	-0.008	-0.071	-0.590
	(28.552)	(13.530)	(0.106)	(0.362)	(0.551)
Mean Value	242.839	101.144	0.314	6.666	4.544
Clusters	24	24	24	24	24
Additional Cont.	Yes	Yes	Yes	Yes	Yes
Observations	360	360	360	360	360
R-squared	0.160	0.391	0.121	0.130	0.093

Note: This table documents the effects of being made aware of different types of historical information on various behavioral dimensions. Specifically, it shows that (1) non-medical historical information pertaining the exclusion of lepers (ExclusionHist) elicits higher altruism but also higher in-group favoritism on those who have leper ancestors, (2) historical information pertaining the medical malpractice with regards to lepers (MedicalHist) elicits lower reported and observed trust in medicine on those who have leper ancestors, and (3) historical information about a native tree (FloraHist) elicits no observable differences in behaviors or opinions. For Columns 1 and 2, values are reported in thousands of Colombian Pesos (COP), and the information comes from each participant's decision on how much to allocate out of COP 800,000 to an anonymous receiver either from the same municipality (in-group allocation) or from a distant municipality (out-group allocation). Total allocation (Column 1) corresponds to the summ of in-group and out-group allocations, whereas the in- vs out- group allocation differences (Column 2) corresponds to the differences between the in-group allocation and the out-group allocation. Anti-parasitic take-up (Column 3) is a binary variable equal to 1 for those participants who redeemed a voucher in exchange for a free anti-parasitic dose. Trust in physicians and lawyers (Columns 4 and 5) correspond to reported trust in these professionals on a 1-10 scale. Ancestry is a binary variable equal to 1 for those subjects who have at least one ancestor who was socially excluded due to leprosy. Additional controls are the baseline demographic controls reported in Table 4 and a control for whether the receiver in the first round of the quasi-dictator game was an in-group member. Heteroskedastic-robust standard errors clustered at the enumerator-treatment level. ***p<.01, **p<.05, *p<.1.

increase of 20.7 p.p.). Thus, a narrative that reminds individuals of the generalized mistreatment of their ancestors fosters local pro-social behavior. On the other hand, Columns 3 and 4 indicate that, for descendants of the socially excluded, being reminded of historical medical errors led to an 18.6 p.p. decrease in the likelihood of redeeming the dose of anti-parasitics and to a 21.18% decrease in reported trust in physicians relative to the mean reported trust. This second historical narrative emphasizes the suffering experienced by ancestors due to modern medicine, thereby leading to lower reported and observed confidence in modern medicine.

All in all, these results indicate that (1) The behaviors and attitudes of descendants of the socially-excluded are sensitive to historical narratives regarding the experiences of their ancestors, and (2) the transmission of different historical facts and stories act as different types of narratives. Being re-minded of the (non-medical) history of exclusion fosters pro-sociality, particularly towards ingroup

members, suggesting that the transmission of this type of information acts as a 'responsibilizing narrative.' This type of narrative increases the pressure on individuals to 'do the right thing' with their peers by reminding them of their ancestors' suffering.[13] Conversely, for those who have a leper ancestor, reminding them of the historical medical malpractice elicits a significantly lower reported and revealed trust in modern medicine. The transmission of this historical medical information thus serves as a 'negative narrative,' which emphasizes potential personal costs of engaging with modern medicine while downplaying the externalities to others of avoiding the recommendations of physicians (Bénabou and Tirole, 2018).

An alternative, conservative interpretation of these results is to discard them as demand effects. Notwithstanding the careful wording that avoided explicit nudging, the treatment can be interpreted as precise information that cues the expected behavior of participants. Even if one assumes such conservative interpretation of the results, the fact that those who have ancestors are the only ones who are responding to such cues is in itself informative, as it implies that oral histories are ways of conveying signals of expected behavior, which are internalized and later acted upon by those who have an excluded ancestry.[14] Combined with the fact that those who have excluded ancestors are more prone to know the formal history of the region, this suggests that the historical narratives transmitted orally within the household enhance historical awareness and shape the behavior of the descendants of lepers along the lines of what was discussed in earlier sections.

6 Conclusion

Leveraging the history of leprosy in Colombia, this paper has ascertained long-run consequences of social exclusion on social preferences. Leprosy as an excluded affliction provides several advantages, amongst which two crucial ones are the arguably random nature of the disease in the context of Colombia in the XIXth and early XXth centuries, and the fact that the disease has nearly vanished for several generations. Such aspects of historical leprosy allow examining the effects of social exclusion,

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[13]Recall that 74% of the former leprosaria inhabitants are descendants of mistreated lepers, which implies that the recipient anonymous of higher local altruism is very likely to be a fellow descendant of a socially-excluded individual.

[14]Note that if one interprets the information treatment as a treatment that induces demand effects, this intervention would be similar to the one suggested by De Quidt et al. (2018) in dealing with such kinds of bias. Hence, interpreting this intervention in such a way would not only be consistent with the importance of historical narratives in the context but would further mitigate altogether concerns that the baseline results are driven by demand effects, as the differences between treated and control groups persist despite both being exposed to a treatment that induces demand effects.

even when exclusion is no longer taking place.

The paper has examined outcomes from a lab-in-the-field approach, documenting an effect of ancestral social exclusion on empathy (which holds when considering both experimental and survey measures of altruism). On the other hand, historical social exclusion also appears to harm other social preferences. Specifically, there seems to be a legacy on in-group favoritism, which may undermine the cohesiveness of broader macro-political structures to which the socially excluded belong (e.g., the cohesiveness of the nation).

Further, the paper has shown a detrimental effect on attitudes towards those who visibly led the exclusion -as measured by mistrust towards physicians and medicine. The detrimental effects on attitudes towards medicine are consistent with observable health choices in the former leper colony, as demonstrated by a significantly lower share of mothers who have a (freely-provided) health-coverage, significantly lower vaccination rates for vaccines provided by the state, and significantly lower likelihood of redeeming a free dose of (doctor-recommended) anti-parasitics.

The paper also shows that historical narratives constitute a mechanism through which these outcomes materialize. First, the tradition of telling oral histories within the household, which is common in Agua de Dios, has led to an increased historical awareness of the socially excluded descendants -regardless of whether that heightened awareness corresponds with an increased factual knowledge of history. Second, a randomization exercise corroborates that the information or cues conveyed through such historical narratives have specific effects on different behavioral dimensions. Descendants of lepers who were reminded of the mistreatment and banishment suffered by their ancestors exhibited higher altruism but also in-group favoritism. In contrast, those who were reminded of medical actors' errors in the exclusion of their ancestors showed lower trust in physicians and medicine overall. Importantly, this information did not significantly alter the behavior and attitudes of those who do not have leper ancestors.

All in all, these findings speak to broader political economics questions, considering the prevalent and recurrent exclusion of different social groups across the globe. Although this paper sheds light on the legacies of an important social issue -social exclusion-, it is crucial to acknowledge that this analysis examines the causal impact of a specific 'bundle' of exclusion (e.g., spatial segregation, stigma, among others). Despite the suggestive evidence discussed as mechanisms, this approach cannot isolate the causal impact of each of the different dimensions of social exclusion. Understand-

ing the legacies of various aspects of social exclusion thus constitutes a fruitful avenue for future research.

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Appendix

Definition of Variables

- Female: Binary variable that takes the value of 1 if the respondent is female, and 0 othewise.

- Age: Number of years of the participant since birth.

- Childern: Number of biological or adopted childern that the participant reports to have.

- Marital: Binary variable that takes the value of 1 if the participant reports being married or having a permanent partner.

- Primary: Binary variable that takes the value of 1 if the participant reports having a complete primary education.

- Seconday: Binary variable that takes the value of 1 if the participant reports having a complete secondary education.

- Alloc In-Group: Value that the participant chose to allocate in a Dictator Game to an anonymous receiver from their same municipality, in thousands of Colombian Pesos.

- Alloc Out-Group: Value that the participant chose to allocate in a Dictator Game to an anonymous receiver from Apulo, a distant municipality, in thousands of Colombian Pesos.

- Alloc Total: Summ of the values that the participant chose to allocate to in-group and to out-group members, in thousands of Colombian Pesos.

- Alloc Difference: Difference between the values of the in-group allocation and the out-group allocation, in thousands of Colombian Pesos.

- Trust in Physicians: Response to the question "On a scale from 1 to 10, with the former being nothing like me and the latter being identical to me, how similar do you consider yourself to be to someone who trust entirely in physicians as professionals?"

- Trust in Researchers: Response to the question "On a scale from 1 to 10, with the former being 'nothing like me' and the latter being 'identical to me', how similar do you consider yourself to be to someone who trust entirely in university researchers?"

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- Trust in Lawyers: Response to the question "On a scale from 1 to 10, with the former being nothing like me and the latter being identical to me, how similar do you consider yourself to be to someone who trust entirely in lawyers as professionals?"

- Trust in Engineers: Response to the question "On a scale from 1 to 10, with the former being nothing like me and the latter being identical to me, how simflar do you consider yourself to be to someone who trust entirely in engineers as professionals?"

- Selfless Altruism: Response to the question "On a scale from 1 to 10, with the former being 'nothing like me' and the latter being 'identical to me', how similar do you consider yourself to be to someone who frequently and selflessly help and assist others?"

- Perceived Safety of HPV Vaccine: Response to the question "On a scale from 1 to 10, with the former being 'not at all safe' and the latter being 'completely safe', how similar do you consider the Vaccine afainst the Human Papiloma Virus to be?"

- Formal Knowledge of History: Binary variable that takes the value of 1 if the respondent answered affirmatively to the following question: "Would you say that you formally know the history of this region?"

- Solidarity with Venezuelan Refugees: Response to the question "On a scale from 1 to 10, how much of a priority do you think the Colombian Government should give to attending the needs of Venezuelan refugees?"

- First Principal Component - Altruism: First principal component of a principal component analysis based on the two experimental measures of altruism (in-group and out-group allocations) and the two survey measures of altruism (reported selfless altruism and reported solidarity with Venezuelan refugees).

- First Principal Component - Science: First principal component of a principal component analysis based on the answers to the survey questions assessing trust in physicians and perceived safety of the HPV vaccine.

Appendix A - Summary Statistics

Descriptive Statistics - Baseline Design

Variable	Obs	Mean	Std.	Min	Max
Panel A - Demographic Characteristics					
Female	265	0.59	0.49	0	1
Age	265	43.18	16.72	17	85
Children	265	1.98	1.88	0	11
Marital	265	0.55	0.54	0	4
Primary	265	0.83	0.37	0	1
Secondary	265	0.55	0.50	0	1
Panel B - Experimental Measures					
Alloc In-Group	265	4.19	3.35	0	16
Alloc Out-Group	265	4.65	3.91	0	16
Alloc Total	265	8.84	6.67	0	32
Alloc Difference	265	0.46	2.94	-12	16
Panel C - Survey Measures					
Trust Physicians	265	7.50	2.26	1	10
Trust Researchers	265	8.01	1.96	1	10
Selfless (Reported Altruism)	265	7.97	1.96	1	10
Perceived Safety HPV Vaccine	220	5.65	3.26	0	9
Formal Knowledge of History	266	0.85	0.36	0	1
Solidarity w. Venezuelan Refug	265	7.49	2.38	1	10
Panel D - PCA					
First Principal Comp. - Altruism	265	0.00	1.31	-2.18	4.70
First Principal Comp. - Science	220	0.00	1.22	-4.04	1.83

Descriptive Statistics - Design to Assess Mechanisms

Variable	Obs	Mean	Std.	Min	Max
Panel A - Demographic Characteristics					
Female	360	0.51	0.50	0	1
Age	360	46.68	17.43	18	93
Children	360	1.99	1.71	0	11
Marital	360	0.50	0.50	0	1
Primary	360	0.83	0.37	0	1
Secondary	360	0.59	0.49	0	1
Panel B - Experimental Measures					
Alloc In-Group	360	70.85	89.82	0	800
Alloc Out-Group	360	171.99	140.56	0	800
Alloc Total	360	242.84	192.26	0	1600
Alloc Difference	360	101.14	136.69	-200	800
Anti-parasitic Take-up	360	0.31	0.46	0	1
Panel C - Survey Measures					
Trust Physicians	360	6.67	2.46	1	10
Trust Lawyers	360	4.54	2.55	1	10
Trust Engineers	360	5.91	2.57	1	10
Panel D - Treatments					
ExclusionHist	360	0.26	0.44	0	1
MedicalHist	360	0.26	0.44	0	1
FloraHist	360	0.23	0.42	0	1

Appendix B - Climatic Differences
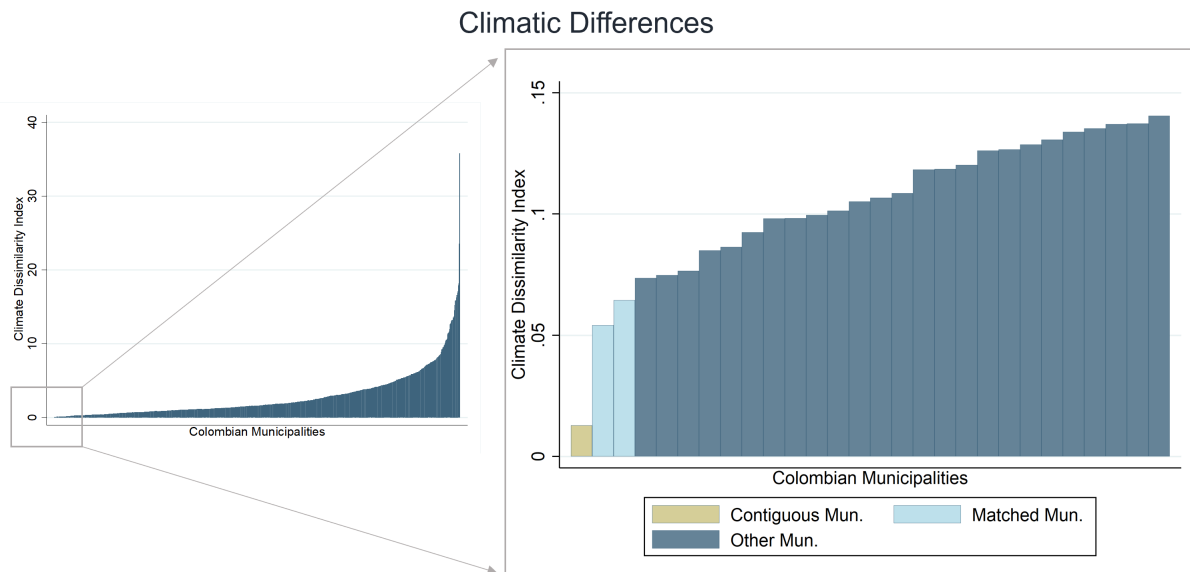
Note: This figure shows the climatic similarity between the former leper colony of Agua de Dios and the contiguous municipalities. It shows the distribution of a Climatic Dissimilarity Index across municipalities in Colombia (1117 municipalities), showing that the contiguous municiaplity of Tocaima has the smallest differences with respect to Agua de Dios in the country, followed by two munipalities that will be used as benchmark comparison groups in a 'climatic matched' analysis (see Figure 6 and Appendix E). Climatic Dissimilarity Index is defined as the sum of the squared percentage difference in each geoclimatic attribute, $CDI(c) = \sum_{i \epsilon N}((x_i^c - x_i^{AD})/x_i^{AD})^2$, where N is the number of climatic attributes, $c \epsilon C$ are municipalities in Colombia, x_i^c is the average value of each attribute i in municipality c, and x_i^{AD} is the average value of each attribute i in Agua de Dios (so that higher CDI entails larger climatic differences). The geoclimatic attributes included in the calculation of the CDI are ruggedness, temperature, precipitation, precipitation seasonality and temperature seasonality.
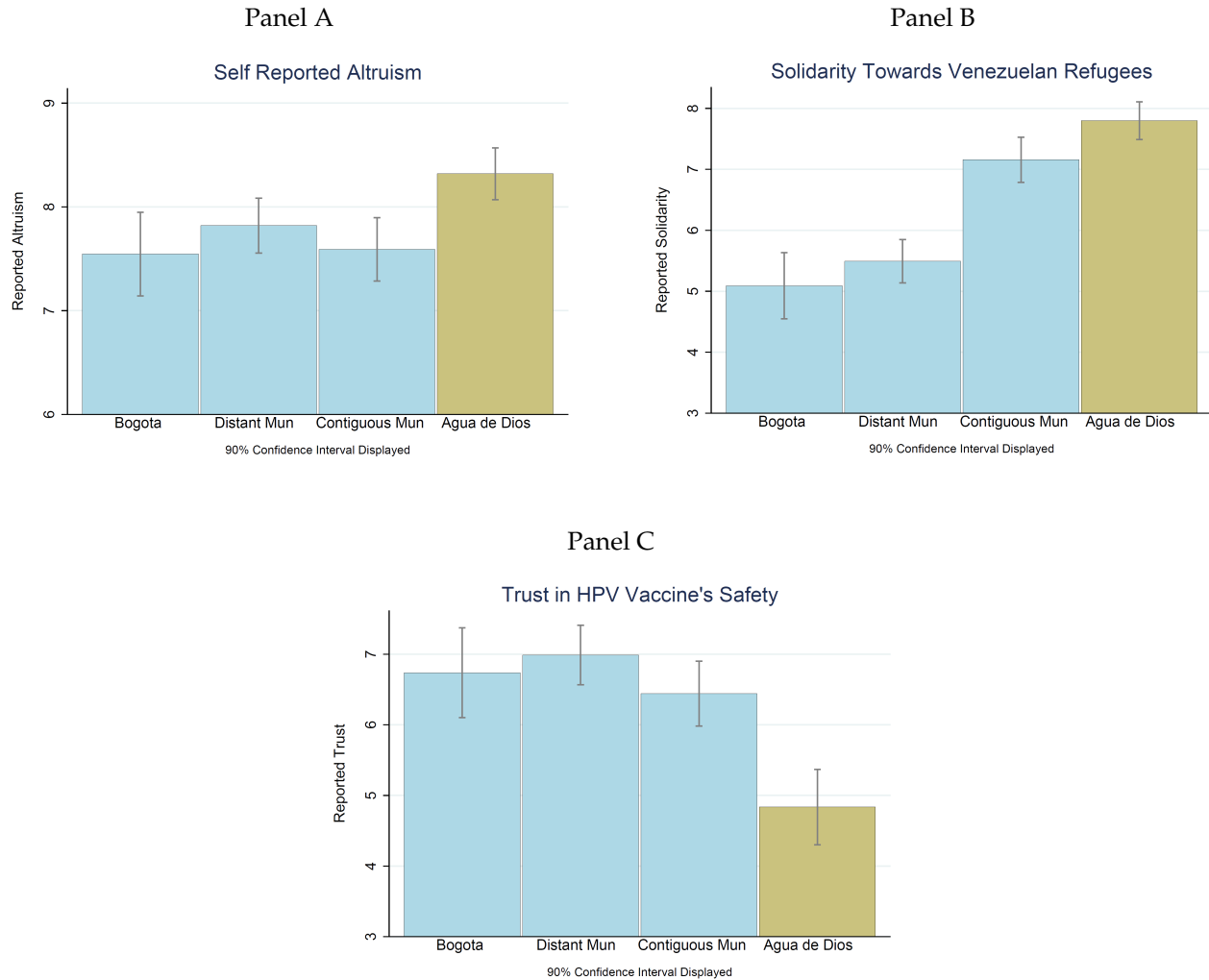
Appendix C - Aggregate Demographic Composition

	Current Demographic Composition	
	Agua de Dios	*Contigous Municipalities*
Female	47%	47%
Mestizos	98%	95%
Dependency Ratio	61%	61%
Local Mother (%)	74%	73%

Appendix D - Educational Quality and Nightlights

	Current Educational Quality and Economic Activity			
	(1)	(2)	(3)	(4)
	Icfes Score	Icfes Percentile	Icfes (Alternative)	Nightlights
AguaDios	-0.315	-1.753	-0.346	-1.456
	(0.153)	(0.815)	(0.148)	(4.922)
Mean Dep Var.	43.331	56.952	43.156	11.591
Observations	853	853	853	463
R-squared	0.121	0.031	0.140	0.003

Note: This table documents the similarity of Agua de Dios with its neighboring municipalities when considering current quality of education and economic activity as proxied by nightlight luminosity. Columns 1-3 have individuals as units of observation, while Column 4 has grids of 1 sq. kilometer as the unit of observation. Icfes score report the numeric grade earned by the individual in the state exam administered to all students graduating from highschool. Icfes percentile is the percentile corresponding to the grade of the individual according to the national distribution of grades. Icfes Alternative corresponds to an alternative way of grading the exam. AguaDios is a binary equal to 1 for all individuals from Agua de Dios and 0 otherwise. Columns 1-3 account for year fixed effects. Source: ICFES Colombia, National Oceanic and Atmospheric Administration, National Geophysical Data Center. Robust standard errors clustered at the municipality level ***p<.01, **p<.05, *p<.1

Appendix E - Baseline Differences in Survey Measures of Altruism Across Municipalities

Panel A

Self Reported Altruism

90% Confidence Interval Displayed

Panel B

Solidarity Towards Venezuelan Refugees

90% Confidence Interval Displayed

Panel C

Trust in HPV Vaccine's Safety
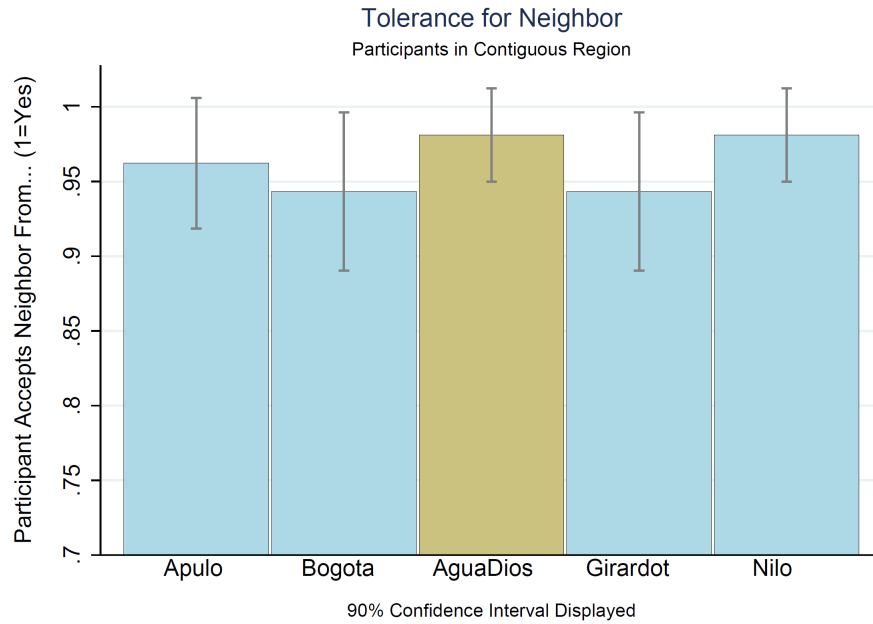

90% Confidence Interval Displayed

Note: These figures show differences across municipalities in altruism and attitudes towards medicine, showing that Agua de Dios stands out as the municipality characterized by higher altruism and lower trust in medicine. The figures depict data collected in Agua de Dios (the former leper colony, 138 respondents from the initial intervention), its two contiguous municipalities (127 respondents from the initial intervention in Tocaima and Ricaurte), two distant but climatically similar municipalities from Colombia's central region (128 respondents from an auxiliary surveys in Mariquita and Puerto Salgar), and a neighborhood in Bogotá (68 respondents from an auxiliary survey) with comparable socioeconomic conditions as in Agua de Dios. Self-reported altruism and solidarity with Venezuelan refugees are both on a 1-10, with higher altruism/solidarity corresponding to higher values in the subjective scale. The perceived safety of the HPV Vaccine is the participant's reported safety on a 1-10 scale of such vaccine, with lower numbers corresponding to a higher perceived fear towards said vaccine. Surveys in the distant municipalities and Bogota were collected with respondents on the spot, and respondents were recruited through a random walk method akin to the one used in Agua de Dios and its contiguous municipalities (see sections J and K in the Appendix). The distant, rural, municipalities selected were the ones that minimized the Climatic Dissimilarity Index, defined as the sum of the squared percentage differences with respect to Agua de Dios in each geographical attribute (i.e., the ones that solved $min_{c \epsilon C} \sum_i^N ((x_i^c - x_i^{AD})/x_i^{AD})^2$, where N is the number of climatic attributes, $c \epsilon C$ are municipalities in Colombia, x_i^c is the average value of each attribute i in municipality c, and x_i^{AD} is the average value of each attribute i in Agua de Dios). Likewise, the neighborhood selected in Bogota was the one that minimized the sum of the squared differences in each social and demographic attributes.

Appendix F - Falsifications

	Falsifications - Alternative Outcome Variables					
	(1)	(2)	(3)	(4)	(5)	(6)
	Religiosity		Trust in Local Bureaucrats		Trust in Politicians	
AguaDios	0.103		-0.846		0.007	
	(0.267)		(0.643)		(0.483)	
Ancestry		0.321		-0.049		0.347
		(0.279)		(0.385)		(0.466)
Female	0.466*	0.496*	0.059	0.142	-0.289	-0.227
	(0.250)	(0.249)	(0.388)	(0.405)	(0.302)	(0.314)
Age	0.050	0.042	0.077	0.047	0.147***	0.128**
	(0.033)	(0.033)	(0.051)	(0.052)	(0.041)	(0.046)
Marital	0.104	0.098	-0.736*	-0.779**	-0.472	-0.493
	(0.165)	(0.152)	(0.335)	(0.334)	(0.319)	(0.315)
Primary	0.178	0.171	0.130	0.139	-0.560	-0.564
	(0.181)	(0.206)	(0.536)	(0.535)	(0.583)	(0.578)
Secondary	-0.017	-0.026	-0.252	-0.200	-0.091	-0.084
	(0.263)	(0.253)	(0.552)	(0.549)	(0.453)	(0.479)
Age square	-0.001	-0.000	-0.001	-0.000	-0.002***	-0.001**
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)
Children	0.005	0.023	-0.007	0.016	-0.024	0.005
	(0.050)	(0.051)	(0.115)	(0.108)	(0.111)	(0.098)
First	0.184	0.051	-0.131	-0.628	0.015	-0.305
	(0.224)	(0.188)	(0.602)	(0.357)	(0.456)	(0.356)
Mean Value	9.521	9.521	4.702	4.702	3.725	3.725
Municipality FE	No	Yes	No	Yes	No	Yes
Clusters	12	12	12	12	12	12
Observations	265	265	265	265	265	265
R-squared	0.109	0.125	0.105	0.108	0.140	0.155

This table documents the lack of association between social exclusion and opinions on religiosity, trust on politicians and trust on bureaucrats. All outcomes are in a 1-10 scale, with 10 being the highest possible value (higher trust or higher religiosity). Heteroskedastic-robust standard errors clustered at the experimental session-level. ***p<.01, **p<.05, *p<.1.

Appendix G - Lack of Current Stigma Against Agua de Dios

Tolerance for Neighbor
Participants in Contiguous Region
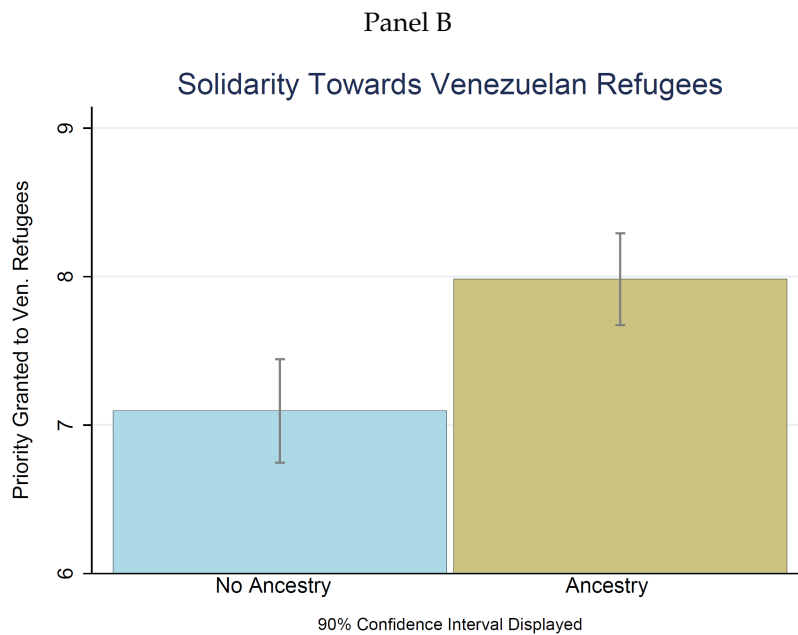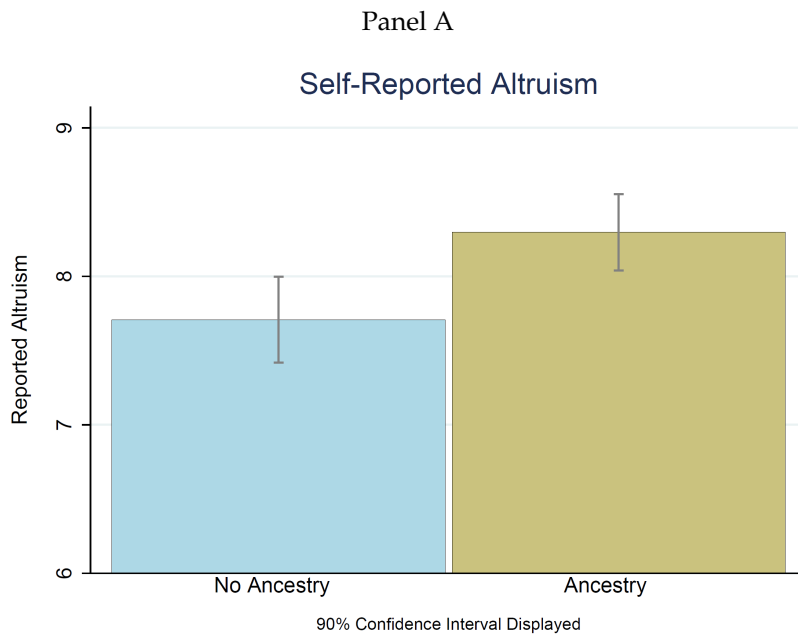
90% Confidence Interval Displayed

Note: This figure corroborates that there is currently no stigma towards inhabitants of the former leper colony (Agua de Dios), as demonstrated by the fact that there is no bias against them as potential neighbors. It depicts data from a survey conducted in February 2020 in a municipality contigous to Agua de Dios (N=53), where each participant was asked if they would feel confortable with a having a neighbor from each of each of the following municipalities/cities: Apulo, Bogota, Agua de Dios, Girardot or Nilo. Answers were coded separately for each of the municipalities/cities (1 if the participant would feel confortable, 0 otherwise). People from Agua de Dios are at least as well accepted at those from other sites that have no association to a history of exclusion. Surveys were collected with respondents on the spot, and respondents were selected through a random walk method akin to the one used in the baseline results described in Section 4.

Appendix H - Ancestry Balance

	Mean Values		s.e.
	Ancestry	*No Ancestry*	
Female	0.585	0.599	(0.057)
Age	43.085	43.252	(2.460)
Primary Education	0.856	0.816	(0.020)
Secondary Education	0.628	0.497	(0.044)*
Children	0.492	0.599	(0.040)
Marital Status	1.72	2.19	(0.264)
Obs	118	147	

Appendix I - Baseline Differences in Survey Measures of Altruism Across Ancestry

Panel A

Self-Reported Altruism

90% Confidence Interval Displayed

Panel B

Solidarity Towards Venezuelan Refugees
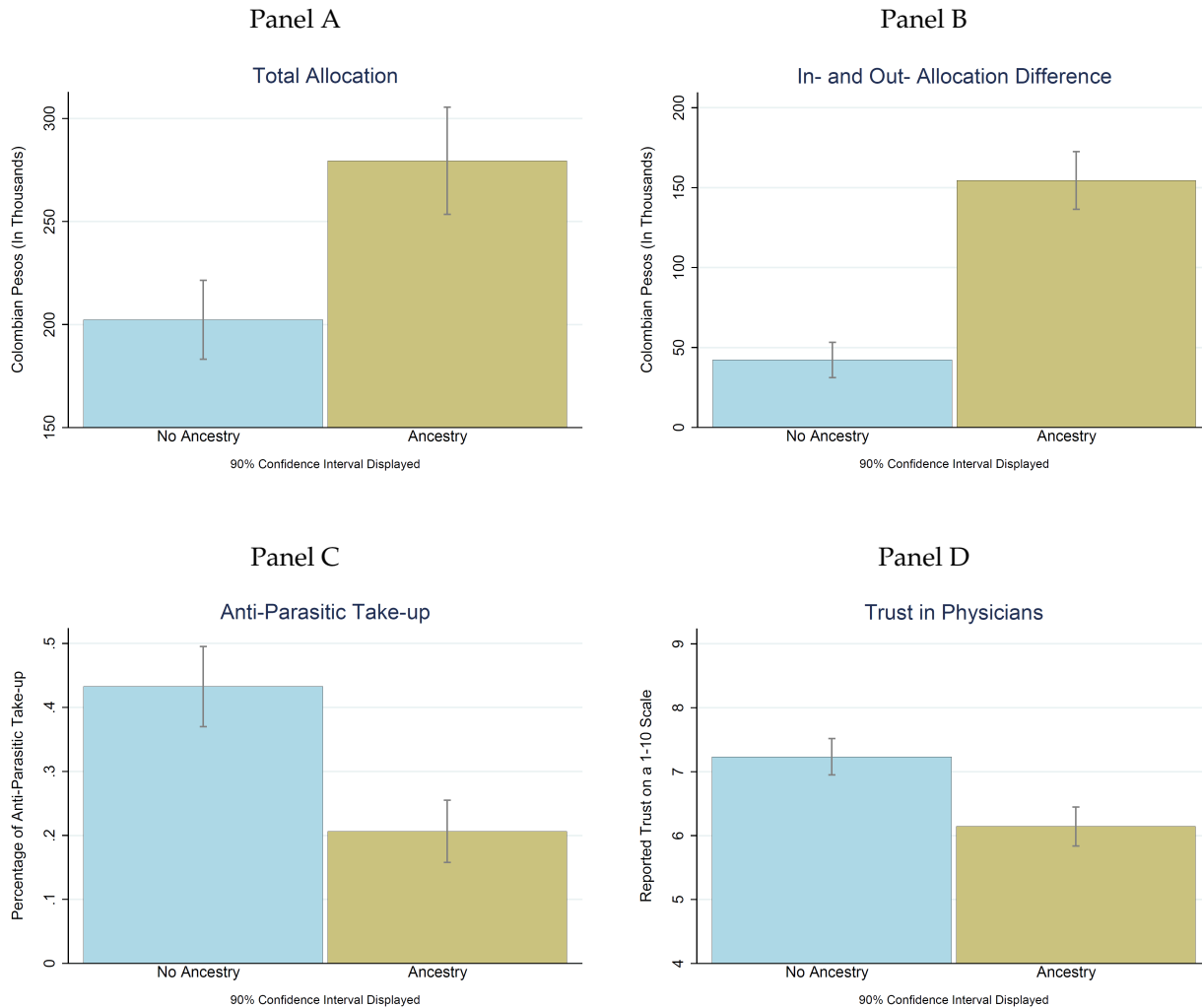

90% Confidence Interval Displayed

Note: These figures depict the differences across excluded ancestry in altruism, showing that those who had an excluded ancestry display higher altruism. The figures depict data collected in Agua de Dios (the former leper colony) and its two contiguous municipalities (Tocaima and Ricaurte). Self-reported altruism and solidarity with Venezuelan refugees are both on a 1-10, with higher altruism/solidarity corresponding to higher values in the subjective scale. Surveys in the distant municipalities and Bogota were collected with respondents on the spot, and respondents were selected through a random walk method akin to the one used in Agua de Dios and its contiguous municipalities. Ancestry corresponds to those subjects who had at least one ancestor who was socially excluded in Agua de Dios due to leprosy.

Appendix J - Balance Check in Second Protocol

	(1) Ancestry	(2) Age	(3) Female	(4) Marital	(5) Children	(6) Primary	(7) Secondary
ExclusionHist	0.125	-2.977	0.027	0.005	-0.218	0.063	0.093
	(0.086)	(2.753)	(0.075)	(0.062)	(0.157)	(0.046)	(0.055)
MedicalHist	-0.026	-4.225	-0.005	-0.090	-0.085	0.034	0.079
	(0.073)	(3.163)	(0.085)	(0.073)	(0.247)	(0.051)	(0.056)
FloraHist	0.093	-2.561	0.036	0.123*	0.332	-0.039	0.055
	(0.080)	(2.536)	(0.099)	(0.069)	(0.240)	(0.071)	(0.065)
Mean Dep Var.	0.508	46.68	0.51	0.50	1.99	0.83	0.59
Clusters	24	24	24	24	24	24	24
Observations	360	360	360	360	360	360	360
R-squared	0.016	0.008	0.001	0.022	0.013	0.010	0.005

This table presents balance checks on main demographic variables, showing evidence that suggests that the randomization was successful. There only appears to be a marginal difference in the marital status of those who received Treatment 3. Standard errors clustered at the enumerator-treatment level. *** p<0.01, ** p<0.05, * p<0.1

Appendix K - Differences by Ancestry in Second Protocol

Panel A

Total Allocation

90% Confidence Interval Displayed

Panel B

In- and Out- Allocation Difference

90% Confidence Interval Displayed

Panel C

Anti-Parasitic Take-up

90% Confidence Interval Displayed

Panel D

**Trust in Physicians**

90% Confidence Interval Displayed

Note: These figures depict the differences on different behaviors an preferences across excluded ancestry for respondents in Agua de Dios. Effects vary by ancestry (i.e. by those who have vs those who do not have an excluded ancestry in Agua de Dios due to leprosy), with an excluded ancestry predicting higher altruism and lower reported and observed trust in medicine. For Panels A and B, values are reported in thousands of Colombian Pesos (COP), and each participant had the possibility of allocating up to COP 800,000 per round to an anonymous receiver either from the same municipality (in-group allocation) or from a distant municipality (out-group allocation). Total allocation (Panel A) corresponds to the summ of in-group and out-group allocations, whereas the in- vs out- group allocation differences (Panel B) corresponds to the differences between the in-group allocation and the out-group allocation. anti-parasitic take-up (Panel C) is a binary variable equal to 1 for those participants who redeemed a voucher in exchange for a free anti-parasitic dose. Trust in physicians (Panel D) corresponds to reported trust in physicians on a 1-10 scale.

Appendix L - Differences by Ancestry in Second Protocol (Regression)

	(1)	(2)	(3)	(4)	(5)	(6)
	Total Allocation	In- vs Out- Alloc Diff	Anti-Parasitic Take-up	Trust in Physicians	Trust in Engineers	Trust in Lawyers
Ancestry	77.363***	104.549***	-0.226***	-1.275***	-0.640**	0.015
	(25.739)	(18.702)	(0.042)	(0.206)	(0.270)	(0.214)
Female	-7.079	-2.814	0.041	0.459**	-0.240	0.146
	(21.439)	(13.092)	(0.046)	(0.190)	(0.262)	(0.246)
Age	2.952	-2.831	-0.005	-0.055	-0.037	-0.108**
	(3.709)	(2.382)	(0.010)	(0.042)	(0.041)	(0.047)
Age Sq.	-0.024	0.035	0.000	0.001	0.000	0.001**
	(0.038)	(0.026)	(0.000)	(0.000)	(0.000)	(0.000)
Children	-3.804	-2.491	0.003	-0.088	-0.004	0.005
	(5.320)	(4.622)	(0.020)	(0.098)	(0.114)	(0.110)
Marital	-25.750	-17.445	-0.077	0.241	0.056	-0.296
	(21.169)	(14.100)	(0.055)	(0.297)	(0.237)	(0.323)
Primary	63.510**	60.720***	0.088	0.571*	0.959**	0.638*
	(24.755)	(15.779)	(0.071)	(0.327)	(0.452)	(0.325)
Secondary	19.503	-19.963*	-0.060	0.631*	0.990***	0.620
	(24.373)	(11.134)	(0.049)	(0.342)	(0.299)	(0.427)
First	6.218	14.836	0.137**	0.210	0.222	0.103
	(22.320)	(15.288)	(0.051)	(0.231)	(0.256)	(0.279)
Mean Value	242.839	101.144	0.314	6.666	5.908	4.544
Clusters	24	24	24	24	24	24
Observations	360	360	360	360	360	360
R-squared	0.073	0.189	0.103	0.103	0.108	0.085

This table documents the consistency between the findings in the baseline protocol and results and the results of the second protocol when comparing along ancestry. Participants who have an excluded ancestry are significantly more pro-social, significantly more prone to in-group favoritism, and exhibit significantly less trust in medicine and in physicians. For Columns 1 and 2, values are reported in thousands of Colombian Pesos (COP), and the information comes from each participant's decision on how much to allocate out of COP 800,000 to an anonymous receiver either from the same municipality (in-group allocation) or from a distant municipality (out-group allocation). Total allocation (Column 1) corresponds to the summ of in-group and out-group allocations, whereas the in- vs out- group allocation differences (Column 2) corresponds to the differences between the in-group allocation and the out-group allocation. Anti-parasitic take-up (Column 3) is a binary variable equal to 1 for those participants who redeemed a voucher in exchange for a free anti-parasitic dose. Trust in physicians, engineers and lawyers (Columns 4-6) correspond to reported trust on these professionals on a 1-10 scale. Ancestry is a binary variable equal to 1 for those subjects who have at least one ancestor who was socially excluded due to leprosy. Heteroskedastic-robust standard errors clustered at the enumerator-treatment level. ***p<.01, **p<.05, *p<.1.

Appendix M - Effect of Interventions on Attitudes Towards Lawyers
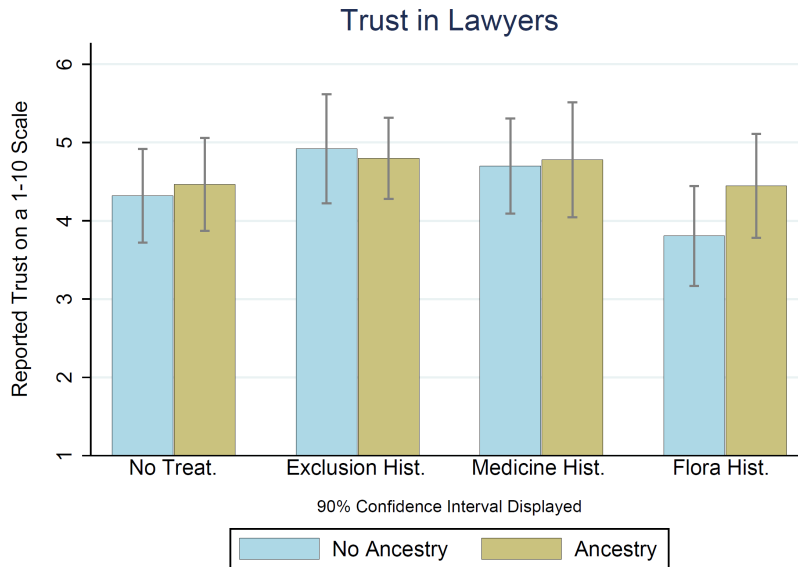
Note: This figure depicts the differences on attitudes towards lawyers stemming from being reminded of different aspects of the historical exclusion of lepers. There appears to be no differences on attitudes amongst descendants and non-descendants of lepers, regardless of whether they were reminded of the non-medical history of exclusion (ExlusionHist), if they were reminded of the historical medical errors with respect to leprosy (MedicalHist), of the history of a local tree (FloraHist), or if they were reminded of no type of history. Effects vary by ancestry (i.e. by those who have vs those who do not have an excluded ancestry). ExclusionTreat corresponds to the (randomly chosen) group that was reminded of the non-medical history of exclusion, MedicalHist corresponds to the group that was reminded of historical medical errors regarding leprosy, FloraHist corresponds to the (randomly chosen) group that was made aware of the history of a native tree, while NoTreat corresponds to the group of participants who answered the survey without additional information. Trust in lawyers corresponds to reported trust in physicians on a 1-10 scale, with higher numbers corresponding to a higher reported trust in these professionals.

Appendix N- Details of Baseline Experimental Protocol

Experimental sessions where conducted on Saturdays of June, July and August of 2019. The invitations were distributed the Wednesdays and Thursdays prior to each session, as per the procedure described in Section 3 above. A total of 12 sessions were implemented, with 6 sessions in Agua de Dios, 3 sessions in Tocaima and 3 sessions in Ricaurte. In hopes of achieving 25 subjects per session, approximately 33 participants were invited for each of the sessions in Agua de Dios (total of 200 invitations), while approximately 32 participants were invited per session in the contiguous regions (total of 192 invitations). The total number of participants was then of 265 people, with 139 choosing to participate in Agua de Dios and 126 in its neighboring municipalities.

All sessions were conducted in the most central school of each municipality. The invitations contained the formal address of the school along the informal name with which people associated such school. Such invitations also had the specific hour at which each participant had to arrive, and it was made clear that late arrivals would not be allowed in. One member of the research team was standing in the entrance of the school verifying the authenticity of the invitation as a prerequisite for entrance. Once inside, subjects gathered in a patio, where they had to wait before being called one by one into a classroom specially arranged for the interview and for the experimental decision. While in the patio, subjects were instructed about the rules of the dictator game, and were told that they were going to be able to play twice. Special emphasis was made on the fact that all decisions were completely anonymous, and that nor the interviewers nor the receivers would be able to trace back the allocation decisions to the participants.

Participants (blurred) entering the session

Two chairs facing each other were placed in the middle of the room, one in which the enumerator was seating and another one where the participant was expected to seat throughout the interview. The interview began with some basic demographic questions, and then proceeded with the experimental decisions. The interviewer handed 8 bills of 2,000 Colombian Pesos to the participant, along with an empty white envelope, and instructed once again that such money was theirs and that they were free to allocate whichever amount they choose for the receiver. This process was done twice (the order was randomized), one in which the receiver was someone from the same municipality as the participant (in-group allocation) and another in which the receiver was from a distant yet known municipality called Apulo (out-group allocation).

The room contained two voting booths, each of these hidden behind a tall and wide cardboard that made it impossible for second-parties to see the booths and the actions undertaken behind the cardboard. Depending on the round, participants were asked to step behind a particular carboard and to deposit the envelope in a particular booth (i.e., they were asked to make their decision behind the cardboard). Participants had to deposit the in-group allocation (including cero, which would be an empty envelope) in the booth located to their right, while the out-group allocation had to be deposited in the booth to their left. These booths and their respective cardboards were behind the interviewer's chair, which added another degree of privacy to the decisionmaker when deciding

how much to allocate to the receiver.

The booths had a small orifice where the envelopes (with the respective allocation) had to be placed. A small window allowed participants to see the envelopes introduced by other participants to grant transparency to the process. However, considering the (small) size of the window and the homogenous color and (large) size of the envelopes, it was impossible to tell the amounts allocated by other participants, or even to have infer any information such room contained two urns.

Urns where envelopes were deposited
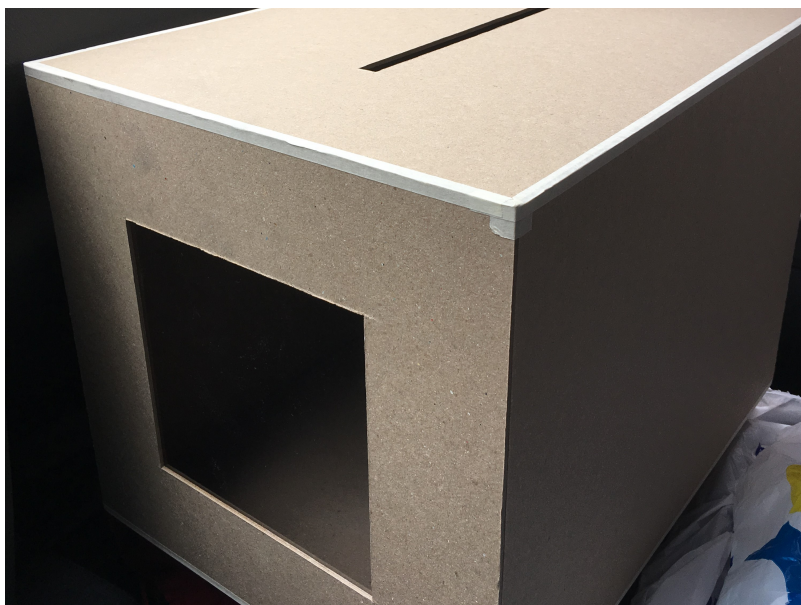
After completing the two experimental decisions, subjects were asked further questions about altruism, their trust in medicine, and their formal knowledge of history (see Appendix A). The interview ended with the interviewer asking the participant to avoid sharing the content of the session and of their answers with anyone. After answering all questions, participants left the classroom and stepped into an area where all other participants who also completed their session were standing. The session ended when all participants completed their respective decisions and interviews.

Appendix O - Details of the Protocol Designed to Assess Mechanisms

The second protocol, designed to asses mechanisms, was implemented on Saturday, June 01, 2019. Six enumerators were hired and were sent to the central nodes of neighborhoods in the municipality of Agua de Dios. Starting from such central nodes, each enumerator started walking along a different path than the one selected when recruiting subjects for the first protocol a year ago. The enumerators approached every second house they encountered along such a route. The enumerator mentioned that answering 5-10 minutes of information would allow respondents to enter a lottery for COP 800,000 as well as a free dose of anti-parasitics. The enumerators were instructed to interview one subject in the household before moving on to the following household. There was a formulary per interview and all formularies were numbered. The number of the formulary determined (1) the type of treatment given to the participant and (2) whether the receiver in the first round of the quasi-dictator game was an in-group or an out-group member. Participants interviewed with formularies numbered 1-99 received Treatment 1 (ExclusionHist), those interviewd with formularies 100-198 received Treatment 2 (MedicalHist), those with 199-297 received Treatment 3 (FloraHist), and those interviewed with formularies 298-396 received no treatment (T0). Even-numbered formularies got to play the quasi-dictator game starting with an in-group receiver (odd numbers started with an out-group receiver). The numbers of the formularies were randomized across the six enumerators (non-stratified 1:1 randomization with the assistance of the web-based tool Research Randomizer) , who received a such a (randomly generated) pile of formularies from which they picked before conducting each interview. Neither the subject nor the enumerator knew the treatment assignment before the subject's decision to enter the study. The enumerator began by reading and providing the information to the participant corresponding to the treatment, which was one of the following three:

- No Treatment: Choices and responses collected without priming

- ExclusionHist: Participants to whom the enumerators read a brief excerpt commenting on the social stigma to which lepers have been subject historically and globally. The exact excerpt read as follows:

"Since antiquity and across continents and nations, people suffering from leprosy have been subject to social stigma and exclusion. With the help of state-authorities and civilians, lepers have historically faced strict

physical isolation and marginalization."

- MedicalHist: Participants to whom the enumerators read a brief excerpt commenting on the historical medical misinformation relative to leprosy. The exact excerpt read as follows:

"For centuries, civilians and experts alike believed that leprosy was a highly contagious and deadly disease. Such a belief was ratified by international summits like the Berlin Congress of Leprosy, where it was concluded that the disease was indeed as dangerous as it was commonly believed. Nowadays, it is known that the disease is, in fact, neither deadly nor highly contagious."

- FloraHist: Participants to whom the enumerators read a brief excerpt commenting on the history of the trees and the geology of the region. The exact excerpt read as follows:

"The Chicala Tree is a floral species that is originally in the southern regions of North America. It was brought into Colombia and specifically to Cundinamarca by indigenous communities, due to its resistance to fire and its potential decorative use. The climatic conditions in the Tequendama Region in Cundinamarca has allowed the Chicala to flourish."

After reading the corresponding excerpt to the participants, the enumerator collected demographic information and then proceeded to inquire about allocations for the dictator game. In this modified version of the dictator game, enumerators informed participants that they had to select how much to allocate either to someone chosen at random and anonymously from Agua de Dios (in-group allocation) or someone chosen at random and anonymously from Pandi, Cundinamarca (out-group allocation). Participants knew that these allocations, although hypothetical, would have been enforced in the event of being selected as the winners of the lottery. To ensure that participants trusted the outcome and the randomness of the lottery, they were given a number (between 001 and 399) and they were told that the winning number would be the last three digits of the 'Lotería de Bogotá' of June 06 2019, a popular lottery that plays every Thursday and that is well known in the region (the winning number turned out to be 466).[15] Participants were told that, in the event of winning the lottery, they were going to be contacted (their phone numbers and their addresses were

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[15]The target sample was 396 participants, 66 per enumerator, but prior to the begining of data collection it became aparent that enumerators would only manage to interview 60 each in such day. To avoid contaminating the responses of the remaining 30 participants, a decision was made to call off the collection of information on another day, which explains the final number of 360 observations that ended up being registered.

recorded). Further, they were provided with a local contact in case they wanted to dispute or discuss the outcome of the lottery. After making the choices corresponding to the modified dictator game, participants gave their opinion on their degree of trust (on a 1-10 scale) on physicians, lawyers, and engineers. After this, the enumerator provided a voucher to the participant and instructed him/her that they could redeem it (for free) in exchange for a full dose of anti-parasitics (a dose of albendazole and secnidazole). The voucher, participants were told, could be redeemed in the local and trusted pharmacy (Drogueria Popular, located in the center of the municipality and run and owned by a Saul Morales, a local Aguadedioscense). The voucher had written the deadline before which it could be redeemed (June 05, which gave participants 4 days to collect it). After giving the voucher to the participant, the enumerator inquired about the ancestry of the participant (whether he/she had an ancestor who lived through the exclusion in Agua de Dios). Further, the enumerator warned the participant that the information on his/her ancestry had to be accurate and that he/she should be able to prove his/her claim (through images or documentation), or they would be stripped from the lottery in case of being selected as winners.