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Ethnic diversity makes me sick! An examination of ethnic diversity's effect on health outcomes

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Abstract

This study hypothesizes a relationship between ethnic diversity and health outcomes. We explore the effects of ethnic and linguistic heterogeneity (measured by indices of ethnic and linguistic fractionalization) on 30 health outcome variables in a cross-section of 87 countries. We explore outcomes related to four major categories of health: 1) immunization rates, 2) prevalence of diseases, 3) life expectancy and mortality rates, and 4) health related infrastructure and staff. Across all dimensions examined, evidence suggests that higher heterogeneity is bad for health. We explore several potential mechanisms which could explain the observed negative effects of ethnic and linguistic diversity on health.

Keywords: health; ethnic diversity; linguistic diversity; fractionalization

1. Introduction

A growing literature explores the implications of ethnic diversity on various outcomes. In economics, existing research has examined the implications of ethnic heterogeneity, measured by indices of ethnolinguistic fractionalization (ELF), on economic development, public goods, quality of government, social participation, conflict and trust (see, e.g., Alesina et al., 2003; Alesina & Ferrara, 2000; Alesina & Zhuravskaya, 2011; Easterly & Levine, 1997; La Porta et al., 1999; Leigh, 2006; Mauro, 1995; Montalvo & Reynal-Querol, 2005; Reynal-Querol & Montalvo, 2005). These studies often associate higher levels of ethnic heterogeneity with poorer performance. For instance, in a cross-country setting, Alesina and Zhuravskaya (2011) establish a negative association between ethnic diversity and institutional quality while Easterly and Levine (1997) show a negative association between fractionalization and economic growth. Similarly, Leigh (2006) reports that trust is lower in more fractionalized communities.

In this study, we propose that, beyond the effects of ethnic diversity on outcomes explored in the existing literature, ethnic diversity presents implications on various health outcomes as well. Existing literature on the determinants of health and health outcomes cuts across various disciplines, and thus several determinants have been explored. In economics, the literature has focused on determinates such as health expenditures and investment (see, e.g., Bokhari et al., 2007; Chen et al., 2007; Crémieux et al., 2005; Crémieux et al., 1999; Martin et al., 2008), income (see, e.g., Apouey & Geoffard, 2013; Jones & Wildman, 2008; Kuehnle, 2014; Reinhold & Jürges, 2012), education and socio-economic status (see, e.g., Bishai, 1996; Braakmann, 2011; Chen & Li, 2009; Christopher Auld & Sidhu, 2005; Contoyannis & Jones, 2004; Häkkinen et al., 2006; Park & Kang, 2008), infrastructure (see, e.g., Berman & Fenaughty, 2005; Günther & Schipper, 2013; Kosec, 2014; Kumar & Vollmer, 2013; Lamichhane & Mangyo, 2011; Mangyo, 2008; Zhang, 2012), physical activity participation (see, e.g., Humphreys et al., 2014), democracy (see, e.g., Besley & Kudamatsu, 2006; Lake & Baum, 2001).

However, not much is known about the effect of ethnic diversity on health. Existing studies on the association between ethnicity and health explore the health of migrants (minorities), and in most cases interethnic comparisons of health issues (see Cruickshank & Beevers, 2013). Furthermore, while examining the effect of other explanatory variables on health outcomes, a number of studies control for ethnolinguistic fractionalization (ELF) and thus present some estimates on the effects of ethnic diversity on selected health outcome variables (see, e.g., Alesina et al., 2003; Besley & Kudamatsu, 2006). However, none of these studies explore in detail the implications of ethnic diversity on health, beyond the use of ELF as a control variable. In this study, we hypothesize a relationship between ethnic diversity and health, and thus examine the implications of fractionalization on a wide range of health outcomes. Specifically, we propose that cross-country differences in ethnic diversity can explain observed differences in health outcomes. Conceptually, there are several reasons for why we expect ethnic diversity to affect health and health outcomes.

For instance, higher levels of ethnic heterogeneity is associated with a larger talent pool (Fafchamps, 2000), and this could improve the quality of health workers in a community, which, a priori, promotes positive health or health outcomes. The underlying logic behind this concept suggests that various ethnic groups can be associated with different skills. Thus, evidence suggests that ethnic diversity promotes innovation and creativity (see, e.g., Lee, 2014; McLeod et al., 1996; Nathan, 2014).

The implications of innovation on health are also well documented (see, e.g., Berman & Fenaughty, 2005; Hwang & Christensen, 2008; McCullough, 2008; Paulus et al., 2008).

On the other hand, ethnic diversity is associated with lower public goods (see, e.g., Bandiera et al., 2005; Banerjee et al., 2005; Easterly & Levine, 1997; Khwaja, 2001; Miguel & Gugerty, 2005). Therefore, the provision of public goods is lower in more fractionalized areas, and this extends to lower levels of public infrastructure as well (see Banerjee et al., 2005; Miguel & Gugerty, 2005). In this regard, it is argued that inhabitants of highly fractionalized communities have dissimilar tastes, and this makes it difficult to cooperate in the provision of a common good, given that there are difficulties in agreeing on such common goods (Alesina et al., 1999; Bandiera et al., 2005; Esteban & Ray, 1999). Furthermore, it is argued that fractionalized communities are characterized by higher levels of dissent (see, e.g., Blimes, 2006; Henderson, 1997), and governments may considers such dissents as threats and respond to such threats with restricted provision of public goods. However, existing studies have established the importance of infrastructure and public goods in promoting health and health outcomes (see, e.g., Berman & Fenaughty, 2005; Günther & Schipper, 2013; Kosec, 2014; Kumar & Vollmer, 2013; Lamichhane & Mangyo, 2011; Mangyo, 2008; Zhang, 2012). Thus, ethnic diversity's negative toll on infrastructure could hinder health.

Thus, a priori, the effect of ethnic diversity on health outcomes could either be positive or negative. We therefore explore and seek a better understanding of ethnic diversity as a determinant of health. To this end, we draw on indices of ethnic and linguistic fractionalization from Alesina and Zhuravskaya (2011), and examine the effect of diversity on a wide range of health outcomes. We find that higher levels of fractionalization are associated with poorer health outcomes, and this finding is robust to several sensitivity and robust checks.

Our findings present a new perspective on the existing debate that seeks to understand the determinants of health. With the evidence presented in this study, we show that besides the existing determinants of health outcomes discussed in the literature, ethnic diversity is an important determinant, and thus needs to be considered a factor of interest in policy.

2. Data and Empirical Approach *2.1.Data*

This study draws on data from various sources. Specifically, our indices of ethnic and linguistic fractionalization are drawn from Alesina and Zhuravskaya (2011), where indices are constructed for a cross-section of countries. The indices of fractionalization are constructed using the Herfindhal-type fractionalization formula, and they measure the probability that two randomly selected individuals in a country belong to different ethnic or linguistic groups.¹ Owing to data constraints, indices of fractionalization are computed based on census information closest to the year 2000. Consequently, indices of fractionalization for each country in our sample are not based on information from the same the year. This is however not a problem given that ethnicity, composition of ethnic groups and indices of fractionalization are highly persistent and hardly change over time. For our health outcome variables and other independent variable, we take the mean of each

¹Where s_{ej} is the share of ethnic group e in country j, the Herfindahl-type fractionalization formula indicates that FRACTIONALIZATION_j = $1 - \sum_{E=1}^{N} S_{Ej}^2$. For details about index construction see Alesina and Zhuravskaya (2011)

country's data for the decade 2000 to 2009. Furthermore, to ensure robustness, we conduct analyses for the starting year of the decade (2000) and the last year of the decade (2009).

Health outcome variables are drawn from the World Bank's database on Health, Nutrition and Population Statistics. This database pools together information on health, nutrition and population from various international sources including the World Bank itself, World Health Organization (WHO), United Nations Children's Fund (UNICEF), United Nations Programme on HIV/AIDS (UNAIDS) and the United Nations Population Division, among others. We examine the effect of ethnic and linguistic heterogeneity on 30 health outcomes. These variables capture four broad categories; 1) immunization against diseases, 2) prevalence of diseases, 3) life expectancy and mortality, and 4) health-related infrastructure and staff. We also consider other outcomes which include the prevalence of contraceptive use, the consumption of iodized salt and fertility rate.

Consistent with the existing literature, we include relevant covariates in our regressions (see, e.g., Bishai, 1996; Bokhari et al., 2007; Crémieux et al., 1999). Specifically, we control for GDP per capita, literacy rate, income inequality (measured by the GINI index), total expenditure on health, urbanization (measured by the urban population), and institutional quality.² Consistent with the literature on ethnic diversity (see, e.g., Alesina & Zhuravskaya, 2011; La Porta et al., 1999), we also control for the share of the major religions in a population (Protestants, Catholics, and Muslims), and also the legal origin of countries (English, German and French).

Overall, for regressions with the highest number of observations, our merged dataset includes 87 countries. Table A1 in the appendix presents a summary statistics and description of included variables, while Table A2 presents a list of countries included in our analysis.

2.2. Regressions Framework

Our primary goal is to establish whether ethnic and linguistic fractionalization are associated with various health outcomes, conditional on various macroeconomic factors including the level of institutional quality, economic development and literacy rate. To this end, we adopt a cross country framework consistent with the existing literature (see, e.g., Alesina et al., 2003; Alesina & Zhuravskaya, 2011; Easterly & Levine, 1997), and run regressions of the form;

$$HEALTH_i = \alpha + \beta F_i + \sigma' X_i + \varepsilon_i$$

Here, *HEALTH* represents our health outcome variables; *F* stands for our indices of ethnic and linguistic fractionalization; *X* is a vector of country level covariates discussed earlier, which are likely to influence health. i indexes countries and ε is the heteroskedastic error term.

We use the method of OLS with robust standard errors adjusted for heteroskedasticity. OLS estimates adjusted for heteroskedasticity account for issues of normality and heteroskedasticity, and therefore are efficient in dealing with observations that exhibit relatively large leverage or residuals. This method is appropriate as we are not faced with endogeneity issues. Particularly, reverse causality is not an issue here as intuitively it is unlikely that our health outcomes would influence

² Our measure of institutional quality is consistent with Easterly (2007) who developed a single measure of institutional quality by taking the mean of the six indicators of institutional quality reported in the World Bank's World Governance Indicators database. These indicators are government effectiveness, control of corruption, political stability, voice and accountability, rule of law and regulatory quality.

ethnicity or the composition of ethnic groups. Furthermore, endogeneity may arise if changes are observed in our indices of fractionalization through time. However, changes in ethnicity and ethnic composition are argued to be sufficiently stable over a long period of time (usually 30 years), and therefore in cross-country regressions, indices of fractionalization are generally taken as exogenous (see, e.g., Alesina & Zhuravskaya, 2011; Green, 2005).

3. Results

Regressions in Tables 1A to 1D present results for the association between fractionalization and health outcome variables.³ In each table, Panel A presents results for the effect of ethnic fractionalization while Panel B for linguistic fractionalization.

Table 1A presents results for the association between fractionalization and health outcomes related to immunization and disease treatment. We report on child immunization rate with regards to diphtheria, pertussis, and tetanus (DPT), hepatitis B (HepB3), Haemophilus influenzae type B (Hib3), Polio (Pol3), and measles. We also report on the effect of fractionalization on the success rate of tuberculosis (TB) treatment.

Insert Table 1A Here

We find that the effect of ethnic and linguistic fractionalization on measles immunization rate and the success rate of TB treatment is statistically insignificant. However, we find a negative association with other immunization variables. Specifically, results show that a movement from complete ethnic homogeneity to complete ethnic heterogeneity or a standard deviation increase in ethnic fractionalization is associated with a decline of; 0.18 standard deviations in the rate of DPT immunization, 0.24 standard deviations in the rate of Hib3 immunization and 0.18 standard deviations in the rate of Pol3 immunization. Similarly, a standard deviations in the rate of HepB3 immunization, 0.27 standard deviations in the rate of Hib3 immunization and 0.18 standard deviations in the rate of Pol3 immunizations in the rate of Hib3 immunization and 0.18 standard deviations in the rate of HepB3 immunization, 0.27 standard deviations in the rate of Hib3 immunization and 0.18 standard deviations in the rate of Pol3 immunizations.

Overall, we can conclude that higher levels of ethnic and linguistic heterogeneity are associated with a decline in the rate of children that are immunized against DPT, HepB3, Hib3 and Pol3. Comparing the effects (standardized coefficients) of ethnic and linguistic fractionalization to other key determinants that are statistically significant, we find that the effects of fractionalization on immunization are relatively weaker compared to key determinants such as institutional quality, literacy rate and health expenditure.⁴ However, relative to per capita GDP, urbanization and income inequality (GINI Index), the effects of ethnic and linguistic fractionalization appear to be significant and relatively stronger.

Table 1B presents results for the relationship between fractionalization and health outcomes related to the prevalence of various diseases or health problems. We report on the prevalence of HIV, anaemia (among children and women), syphilis, tuberculosis (TB), malaria, overweight, low-birthweight, and undernourishment. Here, results show an insignificant effect of ethnic

³ For the sake of brevity, we only report coefficients for our key variables of interest (i.e., indices of ethnic and linguistic fractionalization). Tables with full results are available on request.

⁴ Full tables with standardized coefficients that allow for the comparison of effect sizes are reported in Appendix Tables A3 to A10.

fractionalization on the prevalence of low-birthweight babies, syphilis and undernourishment. However, we find that higher ethnic fractionalization is associated with a higher percentage of people affected by other health problems. Specifically, results indicate that a standard deviation increase in ethnic fractionalization is associated with an increase of; 0.35 standard deviations in the prevalence of HIV, 0.16 and 0.22 standard deviations in the prevalence of anaemia among children and women, respectively, 0.29 standard deviations in the prevalence of overweight children, 0.20 standard deviations in the prevalence of TB and 0.27 standard deviations in the prevalence of malaria.

Insert Table 1B Here

Similar results are also observed for the effect of linguistic fractionalization. Precisely, a standard deviation increase in linguistic fractionalization is associated with an increase of; 0.28 standard deviations in the prevalence of HIV, 0.16 and 0.20 standard deviations in the prevalence of anaemia among children and women, respectively, and 0.21 standard deviations in the prevalence of TB. Other results for linguistic fractionalization are statistically insignificant.

Consistently, the results therefore show that increases in fractionalization are associated with increases in the number of health related cases for HIV, anaemia, overweight, syphilis and malaria. Compared to other key determinants, the effects of ethnic and linguistic fractionalization on the prevalence of health problems appear to be relatively stronger, except for institutional quality which is a stronger determinant. Specifically, results show that the effect of fractionalization is stronger than the effects of health expenditure, urbanization and per capita GDP.

Table 1C presents results for the association between fractionalization and health outcomes related to life expectancy and mortality. Here, we find a statistically significant association between indices of fractionalization and all health outcomes. Specifically, a standard deviation increase in ethnic and linguistic fractionalization, respectively, leads to a decline of 0.30 and 0.27 standard deviations in life expectancy. Results also show that an increase in ethnic and linguistic fractionalization leads to an increase in ethnic and deviation increase in ethnic fractionalization leads to an increase of; 0.39 standard deviations in the number of AIDs related deaths and 0.16 standard deviations in the number of TB related deaths. Likewise, a standard deviation increase in linguistic fractionalization is associated with an increase of 0.27 and 0.16 standard deviations in the number of AIDs and TB related deaths, respectively.

Insert Table 1C Here

Similar positive relationships are also observed for all measures of mortality. A standard deviation increase in ethnic fractionalization leads to an increase of; 0.11 standard deviations in the rate of maternal mortality, 0.08 standard deviations in the rate of infant mortality, and lastly, 0.32 and 0.42 standard deviations in female and male mortality rates, respectively. For linguistic fractionalization, a standard deviation increase in fractionalization is associated with an increase of; 0.10 and 0.08 standard deviations in the rates of maternal and infant mortality, respectively, and also, 0.27 and 0.35 standard deviations in the rates of female and male mortality, respectively.

Thus, quite robustly, results show that higher fractionalization is associated with lower life expectancy and higher mortality rates. Our comparison of standardized coefficients reveals that the effects of fractionalization on life expectancy and mortality rates are mostly stronger than other key determinants except for the effect of institutional quality which is relatively stronger.

Lastly, Table 1D presents results for the effects of fractionalization on outcome related to facilities, health staff and other outcomes such as iodized salt consumption, the prevalence of contraceptive use and fertility rate. We find that both ethnic and linguistic fractionalization have a statistically insignificant effect on the number of hospital beds and physicians, the percentage of population with access to improved water source, and the level of iodized salt consumption.

Insert Table 1D Here

Turning to the statistically significant results, we find that a standard deviation increases in ethnic fractionalization is associated with a decline of 0.17 and 0.53 standard deviations, respectively, in the percentage of the population with access to improved sanitation facilities and the number of community health workers. From another perspective, a standard deviation increase in ethnic and linguistic fractionalization leads to an increase of 0.12 and 0.13 standard deviations, respectively, in fertility rate. On the other hand, a standard deviation increase in ethnic and linguistic fractionalization, respectively, is associated with a decline of 0.25 and 0.23 standard deviations in the use of contraceptives. This result ties in with what we observe for fertility rates, and thus, to an extent, explains why fractionalization leads to higher fertility rate.

Overall, drawing on the statistically significant results, evidence suggests that higher fractionalization is associated with a decline in the provision of health related infrastructure such as improved sanitation facilities, and also a decline in the number of community health workers. Fractionalization appears to be a relatively weaker determinant of access to sanitation facilities compared to other determinants such as institutional quality and literacy rate. On the other hand, fractionalization is a stronger determinants of number of community health workers compared to urbanization, literacy rate and income inequality. Institutional quality and health expenditure are however stronger determinants of the number community health workers. Furthermore, literacy rate, institutional quality and urbanization appear to be stronger determinants of fertility rate and the prevalence of contraceptive use.

3.1. Robustness of Results

We conduct two major exercises to verify the robustness of our results. Here, we examine if our results are robust to alternative measures of fractionalization and different samples (dataset). With regard to alternative measures of fractionalization, we draw on indices of fractionalization presented by Alesina et al. (2003) to examine if our results are sensitive to different measures of fractionalization. The widely used indices of fractionalization published by Alesina et al. (2003) are constructed using national level census observations. On the other hand, Alesina and Zhuravskaya (2011) collect census information at the regional (sub-national) level to form sub-national fractionalization indices, and then aggregate this to national level indices.

To examine robustness, we run all regressions reported in our main results using indices of fractionalization from Alesina et al. (2003) as our main determinant. Results show that the association between fractionalization and health outcomes is not altered by the measure of fractionalization used.⁵ We observe that the nature of the relationship between fractionalization and health outcomes largely remain the same except for minor variations in the magnitude of the coefficients, which is expected. Also, a few coefficients which were insignificant in our main results have now gained significance with the use of different fractionalization measures. Similarly, a few coefficients which were significant in our main results have not lost significance. However, the overall trend of results is consistent with our main results and conclusions. For instance, the effect of ethnic fractionalization on the rate of DPT immunization is no longer significant; however, the effect on the success rate of TB treatment is now significant and negative. This still supports our conclusions of a negative association between fractionalization and negative.

With regard to different samples, we ran regressions for two different datasets. Given that our main results are based on the average of the decade 2000 to 2009, we consider individual years to examine if our results are robust. Specifically, we consider the start (2000) and end (2009) of the decade. Results here are also consistent with our main results.⁶

4. Discussion and Conclusions

This study analyses the association between ethnic/linguistic diversity and health outcomes. Indices of ethnic and linguistic fractionalization are used as measures of ethnic and linguistic diversity, respectively. We find detrimental effects of ethnic and linguistic fractionalization on health outcomes. These results are robust across several different health outcomes variables, and also to different measures of fractionalization and dataset. Specifically, results show that ethnic diversity leads to lower life expectancy and immunization rates but higher mortality rates. Results also show that the prevalence of various diseases or health problems such as HIV, anaemia, tuberculosis and malaria is higher in more fractionalized areas. Similarly, higher fractionalization is associated with lower provision of sanitation facilities and fewer community health workers. Also, fertility rates are higher and the prevalence of contraceptive use is lower in fractionalized areas.

Overall, it is evident that the implications of fractionalization on health related outcomes are unfavourable, or put differently, fractionalization is bad for health. Several different arguments can be put forward to explain these results. First, consider the already mentioned scenario in the context of public goods provision. The negative effects of ethnic diversity on infrastructure and the provision of public goods in general can explain the observed effect of fractionalization on health. This phenomenon, particularly, ties in with the results observed for sanitation facilities.

The established effect of fractionalization on economic growth (see, e.g., Easterly & Levine, 1997) and institutional quality (see, e.g., Alesina & Zhuravskaya, 2011) could also explain our results. Economic development and institutional quality are poorer in more fractionalized areas. Given the role of economic growth and better institutions in enhancing health and related outcomes (see, e.g.,

⁵ For brevity, we do not report tables of results for robustness exercises. Full results are available on request from the authors.

⁶ Note that not all outcome variables have data available for individual years. Particularly, data is not reported for several health outcome variables for the year 2000. However, where data is available, results are consistent with our main results.

Gupta & Mitra, 2004; Tapia Granados & Ionides, 2008), it is not surprising that our results show a negative effect on health.

From another perspective, other potential channels that could explain our results include trust and social networks. Evidence suggests that trust is lower in more fractionalized areas (see, e.g., Alesina & La Ferrara, 2002; Leigh, 2006). Participation in social groups is also lower in more fractionalized areas given that the formation of social groups and networks is dependent on trust (Alesina & Ferrara, 2000). Further, information flows easily along social and personal networks, and thus the quality of information declines in highly heterogeneous communities.⁷ The connection between social networks and health related outcomes is a very important one and can explain the observed negative effect on immunization rates. In fact, evidence presented by Devillanova (2008) suggests that social networks and information flow significantly foster health care utilization.

Thus, information flow is crucial for health. Several individuals depend on social networks to get information regarding important health issues such as immunization. Furthermore, individuals that increase social participation and build informal or formal social networks have the opportunity to casually share information about relevant health issues such as communicable diseases and nutrition. This allows them to be prepared and take appropriate action (Nobles & Frankenberg, 2009). DeLoach and Lamanna (2011) argue that the development of social capital allows parents to improve the health of their children. Overall, it can therefore be argued that social networks can supply information on the availability of health services, location of such services, and other pertinent details. Furthermore, social networks can also advance peer pressure which can compel individuals to patronize health services (Devillanova, 2008).⁸ However, social capital, developed through social networks, is weaker in highly fractionalized areas given the reduced participation in social groups.

Related to information flow, another important channel of influence relates to issues of communication gaps. Ethnic and linguistic diversity can increase communication gaps among people. If serious communication gaps exist, health-care professionals may not be able to adequately communicate to patients and the public. This can make the provision of health care more costly, and more importantly, increase the risk of drug abuse. Furthermore, evidence suggests that patient satisfaction with health care and several cases of patient readmission can be associated with issues of communication gaps (see, e.g., Korsch et al., 1968; Witherington et al., 2008).

Higher levels of ethnic diversity have also been associated with increase in conflicts (see, e.g., Blimes, 2006; Henderson, 1997). The prevalence of conflicts presents significant implications for mortality rates. Intuitively, one would expect a positive association between conflict and mortality rates. Thus, as conflicts increase, mortality rates increase. Related to this, it has been argued that civil conflicts can negatively affect physical and psychological maternal health, and increase the probability of spontaneous abortions (see, e.g., Valente, 2015). Furthermore, destruction associated with civil war, such as destruction of infrastructure, income sources and crops can promote issues of malnutrition, lead to poorer access to health care, psychological stress and also an increase in the prevalence of disease.

⁷ Economists and game theorists have shown this in a series of games where equilibrium pay-offs decline with declining information quality (Blackwell & Girshick, 1954; Cook & Cooper, 2003).

⁸ This is often referred to as the stigma effect in the take-up literature (see, e.g., Daponte et al., 1999; Remler & Glied, 2003; Stuber, 2000)

Discrimination is another potential channel that could explain the observed effect of fractionalization on health outcomes. A large body of literature explore the relationship between discrimination and various health outcomes including the prevalence of diseases (see, e.g., Johar et al., 2013; Johnston & Lordan, 2012; Krieger & Berkman, 2000; Pascoe & Smart Richman, 2009; Williams et al., 2003). Evidence presented by this strand of literature consistently suggests that discrimination is bad for health, and specifically presents negative implications for both mental and physical health. However, discrimination is higher in more fractionalized communities (Ahmed & Hammarstedt, 2008; Dion & Kawakami, 1996), and thus the negative effect of fractionalization on health outcomes could be via its effect on discrimination.

Lastly, we consider innovation as a potential channel. As discussed earlier, ethnic diversity tends to promote innovation, which could be good for various health outcomes. However, innovation could also present some negative implications for health. On the one hand, innovation could lead to medical advances which could promote health. On the other hand, innovation could promote industrial activity which leads to significant pollution that can increase the prevalence of diseases and induce higher death rates (Tapia Granados & Ionides, 2008).

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Table 1A – Effects on Immunization and Disease Treatment										
	(1)	(2)	(3)	(4)	(5)	(6)				
VARIABLES	Immunization	Immunization	Immunization	Immunization	Immunization	TB Treatment				
	(DPT)	(HepB3)	(Hib3)	(Pol3)	(Measles)	Success				
Panel A : Ethn	ic Fractionalizati	on								
Ethnic	-0.11**	-0.06	-0.27**	-0.11**	-0.10	-0.04				
	-0.18	-0.05	-0.24	-0.18	-0.15	-0.07				
	(0.06)	(0.13)	(0.12)	(0.05)	(0.06)	(0.08)				
Observations	87	75	72	87	87	83				
R-squared	0.71	0.33	0.44	0.68	0.71	0.19				
Panel B: Lingu	istic Fractionaliz	ation								
Linguistic	-0.10	-0.36**	-0.31**	-0.12*	-0.08	-0.10				
	-0.13	-0.29	-0.27	-0.18	-0.11	-0.18				
	(0.08)	(0.15)	(0.14)	(0.07)	(0.08)	(0.07)				
Observations	86	73	68	86	86	84				
R-squared	0.62	0.40	0.45	0.64	0.63	0.20				

Robust standard errors adjusted for heteroskedasticity in parentheses

Standardized coefficients in bold

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

Table 1B – Effects on Prevalence of Health Issues

			Idu	ne ib – Litects on	Flevalence of He	aitii issues			
	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
VARIABLES	HIV	Anaemia	Anaemia	Overweight	Low-	Syphilis	Tuberculosis	Undernourishment	Malaria
	Prevalence	Prevalence	Prevalence	Prevalence	birthweight	Prevalence	Prevalence	Prevalence	Prevalence
		(Children)	(Women)	(Children)	Prevalence				
Panel A : Ethn	ic Fractionaliza	tion							
Ethnic	1.95**	0.41**	0.39**	0.69*	-0.21	1.08	1.07**	0.43	2.94*
	0.35	0.16	0.22	0.29	-0.11	0.24	0.20	0.19	0.27
	(0.88)	(0.16)	(0.15)	(0.39)	(0.16)	(0.87)	(0.51)	(0.36)	(1.59)
Observations	58	87	87	60	77	47	87	52	49
R-squared	0.66	0.83	0.75	0.43	0.75	0.50	0.82	0.65	0.52
Panel B: Lingu	istic Fractionali	zation							
Linguistic	1.59**	0.39***	0.37***	0.50	-0.17	1.28	1.11**	0.03	2.05
	0.28	0.16	0.20	0.22	-0.09	0.28	0.21	0.01	0.19
	(0.64)	(0.14)	(0.14)	(0.42)	(0.20)	(0.80)	(0.44)	(0.33)	(1.33)
Observations	63	86	86	62	80	50	86	56	54
R-squared	0.69	0.82	0.73	0.32	0.73	0.56	0.82	0.54	0.52

Robust standard errors adjusted for heteroskedasticity in parentheses

Standardized coefficients in bold

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

	Table 1C – Effects on Life Expectancy and Mortality Rates											
	(16)	(17)	(18)	(19)	(20)	(21)	(22)					
VARIABLES	Life	AIDs	Tuberculosis	Maternal	Mortality	Mortality	Mortality					
	Expectancy	Deaths	Deaths	Mortality	(Female)	(Male)	(Infant)					
Panel A : Ethn	ic Fractionaliz	ation										
Ethnic	-0.18***	2.95**	1.05*	0.68*	0.84***	0.83***	0.72*					
	-0.30	0.39	0.16	0.11	0.32	0.42	0.08					
	(0.06)	(1.15)	(0.62)	(0.37)	(0.23)	(0.20)	(0.42)					
Observations	87	59	87	87	87	87	87					
R-squared	0.80	0.65	0.82	0.88	0.81	0.75	0.91					
Panel B: Lingu	istic Fractiona	lization										
Linguistic	-0.16***	2.18**	1.09**	0.62*	0.73***	0.69***	0.70*					
	-0.27	0.27	0.16	0.10	0.27	0.35	0.08					
	(0.05)	(0.88)	(0.53)	(0.34)	(0.19)	(0.17)	(0.41)					
Observations	86	62	86	86	86	86	86					
R-squared	0.81	0.71	0.81	0.90	0.84	0.73	0.92					

Robust standard errors adjusted for heteroskedasticity in parentheses

Standardized coefficients in bold

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

Table 1D – Effects on Infrastruct	re. Staff and Other Outcomes
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		Tuble ID	Encets on minustrated		outcome.	<u>, </u>		
	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
VARIABLES	Number of Beds	Improved Water	Improved Sanitation	Community	Community Physician Iodized		Contraceptive	Fertility
		Source	Facilities	Health Workers		Consumption	Prevalence	Rate
Panel A : Ethn	ic Fractionalization							
Ethnic	0.51	-0.06	-0.30*	-3.04***	-0.27	-0.18	-0.57***	0.23*
	0.13	-0.08	-0.17	-0.53	-0.04	-0.11	-0.25	0.12
	(0.35)	(0.07)	(0.15)	(0.79)	(0.47)	(0.26)	(0.17)	(0.13)
Observations	87	87	86	28	87	50	76	87
R-squared	0.77	0.70	0.70	0.87	0.75	0.39	0.81	0.86
Panel B: Lingu	istic Fractionalizati	on						
Linguistic	0.33	-0.04	-0.20	-1.45	-0.05	0.39	-0.54***	0.25*
	0.09	-0.05	-0.11	-0.24	-0.01	0.17	-0.23	0.13
	(0.35)	(0.08)	(0.13)	(1.36)	(0.46)	(0.63)	(0.18)	(0.14)
Observations	86	86	85	30	85	54	76	86
R-squared	0.77	0.69	0.72	0.68	0.79	0.25	0.77	0.85

Robust standard errors adjusted for heteroskedasticity in parentheses

Standardized coefficients in bold

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

APPENDIX
Table A1 – Description and Summary of Variables

Variable	Description	Mean	Std Dev
Health Outcomes (Variables are Lo	ogged)		
Immunization (DPT)	Immunization, DPT (% of children ages 12-23 months)	4.45	0.18
Immunization (HepB3)	Immunization, HepB3 (% of one-year-old children)	4.35	0.33
Immunization (Hib3)	Immunization, Hib3 (% of children ages 12-23 months)	4.38	0.31
Immunization (Pol3)	Immunization, Pol3 (% of one-year-old children)	4.46	0.17
Immunization (Measles)	Immunization, measles (% of children ages 12-23 months)	4.44	0.18
TB Treatment Success	Tuberculosis treatment success rate (% of new cases)	4.32	0.15
HIV Prevalence	Percentage of people ages 15-49 who are infected with HIV	-0.36	1.58
Anaemia Prevalence (Children)	Percentage of children under age 5 whose haemoglobin level is less than 110 grams per litre at sea level.	3.41	0.68
Anaemia Prevalence (Women)	Percentage of pregnant women whose haemoglobin level is less than 110 grams per litre at sea level.	3.26	0.49
Overweight Prevalence (Children)	Prevalence of overweight (% of children under 5)	1.79	0.69
Low-birthweight Prevalence	Number of newborns weighing less than 2,500 grams	2.22	0.53
Syphilis Prevalence	Percentage of women attending antenatal care seropositive for syphilis	-0.24	1.38
Tuberculosis Prevalence	Number of TB cases	4.35	1.47
Undernourishment Prevalence	Number of people who are undernourished	2.75	0.67
Malaria Prevalence	Malaria cases reported	10.41	3.16
Life Expectancy	Life expectancy at birth, total (years)	4.21	0.16
AIDs Deaths	Estimated number of death due to AIDS-related causes	8.01	2.17
Tuberculosis Deaths	Estimated number of death due to Tuberculosis-related causes	1.64	1.82
Maternal Mortality	Estimated number of women who die from pregnancy-related causes	4.14	1.73
Mortality (Female)	Probability of female dying between the ages of 15 and 60	4.82	0.71
Mortality (Male)	Probability of male dying between the ages of 15 and 60	5.32	.53
Mortality (Infant)	Number of infants dying before reaching one year of age	8.90	2.38
Number of Beds	Hospital beds (per 1,000 people)	0.83	1.04
Improved Water Source	Percentage of the population using an improved drinking water source	4.43	0.21
Improved Sanitation Facilities	Percentage of the population using improved sanitation facilities	4.25	0.47
Community Health Workers	Community health workers (per 1,000 people)	-1.79	1.68
Physician	Physicians (per 1,000 people)	-0.18	1.65
Iodized Salt Consumption	Percentage of households that use edible salt fortified with iodine.	4.11	0.46
Contraceptive Prevalence	Contraceptive prevalence (% of women ages 15-49)	3.83	0.62
Fertility Rate	Fertility rate, total (births per woman)	0.93	0.52
Independent Variables			
Ethnic Index	Index of Ethnic Fractionalization	0.37	0.27
Linguistic Index	Index of Linguistic Fractionalization	0.36	0.26
Per capita GDP	GDP per capita (current LCU)	2.82	2.21
Urbanization	Percentage of Urban Population	15.92	1.49
Institutional Quality	Average of World Bank WGI indicators	0.19	0.95
Literacy Rate	Country literacy rate (proxied by primary school enrolment)	4.53	0.27
Income Inequality	GINI Index	3.63	0.22
Health Expenditure	Health expenditure, total (% of GDP)	1.21	0.61
Protestant	Protestant Share of Population	13.69	23.81
Muslim	Muslim Share of Population	17.14	30.17
Catholic	Catholic Share of Population	34.80	36.81
English	Dummy if country is from English Legal Origin	0.21	0.41
German	Dummy if country is from German Legal Origin	0.05	0.23
Eronch		0.00	0.49

	Table A2 – Countries Involved in Analysis				
Argentina	Gabon	Niger			
Armenia	Germany	Norway			
Australia	Ghana	Pakistan			
Austria	Greece	Panama			
Bangladesh	Guatemala	Paraguay			
Belarus	Guinea	Peru			
Belgium	Honduras	Philippines			
Benin	Hungary	Romania			
Bolivia	Iceland	Russia			
Brazil	India	Rwanda			
Bulgaria	Indonesia	Senegal			
Burkina Faso	Ireland	Slovakia			
Cambodia	Israel	Slovenia			
Cameroon	Italy	South Africa			
Canada	Japan	Spain			
Central African Republic	Jordan	Sri Lanka			
Chile	Kazakhstan	Sweden			
China	Kenya	Switzerland			
Colombia	Kyrgyzstan Republic	Tajikistan			
Costa Rica	Latvia	Tanzania			
Cote d'Ivoire	Lesotho	Togo			
Croatia	Lithuania	Turkey			
Czech Republic	Macedonia	Uganda			
Denmark	Malawi	Ukraine			
Ecuador	Mali	United Kingdom			
Estonia	Mexico	United States			
Ethiopia	Morocco	Uzbekistan			
Finland	Nepal	Vietnam			
France	Netherlands	Zambia			

APPENDIX TABLES A3 TO A6 (EFFECTS OF ETHNIC FRACTIONALIZATION)

Table A3 - Effects on Immunization and Disease Treatment (Standardized Coefficients)										
	(1)	(2)	(3)	(4)	(5)	(6)				
VARIABLES	Immunization	Immunization	Immunization	Immunization	Immunization	TB Treatment				
	(DPT)	(HepB3)	(Hib3)	(Pol3)	(Measles)	Success				
Ethnic Fractionalization	-0.18	-0.05	-0.24	-0.18	-0.15	-0.07				
GDP per capita	0.08	0.05	-0.24	0.16	0.16	0.32				
Urbanization	0.06	-0.14	-0.00	0.08	0.09	-0.03				
Institutional Quality	0.27	0.05	0.54	0.21	0.14	0.10				
Literacy Rate	0.49	0.08	0.16	0.42	0.48	0.10				
Income Inequality	0.16	0.42	0.22	0.10	0.20	0.05				
Health Expenditure	0.27	0.29	-0.25	0.35	0.32	-0.08				
Protestants	-0.15	-0.07	0.12	-0.14	-0.08	-0.09				
Muslims	0.30	0.28	0.42	0.27	0.27	0.12				
Catholics	0.08	0.05	0.28	0.06	0.13	-0.18				
English	-0.20	-0.46	0.08	-0.17	-0.25	0.14				
German	-0.09	-0.07	0.01	-0.07	-0.09	-0.07				
French	-0.35	-0.45	-0.12	-0.26	-0.40	0.19				
Observations	87	75	72	87	87	83				
R-squared	0.71	0.33	0.44	0.68	0.71	0.19				

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

Table A4 - Effects on Prevalence of Health Issues (Standardized Coefficients)									
	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
VARIABLES	HIV	Anaemia	Anaemia	Overweight	Low-birthweight	Syphilis	Tuberculosis	Undernourishment	Malaria
	Prevalence	Prevalence	Prevalence	Prevalence	Prevalence	Prevalence	Prevalence	Prevalence	Prevalence
		(Children)	(Women)	(Children)					
Ethnic Fractionalization	0.35	0.16	0.22	0.29	-0.11	0.24	0.20	0.19	0.27
GDP per capita	0.06	0.00	-0.04	0.20	-0.12	0.24	0.14	0.57	0.12
Urbanization	-0.18	-0.25	-0.21	0.01	-0.15	0.15	-0.05	-0.27	0.02
Institutional Quality	-0.41	-0.52	-0.45	0.09	-0.17	-0.33	-0.47	-0.59	-0.11
Literacy Rate	-0.14	-0.18	-0.04	0.06	-0.18	-0.29	-0.03	-0.31	-0.22
Income Inequality	0.17	0.06	-0.05	0.20	-0.26	0.27	0.13	0.15	-0.20
Health Expenditure	0.19	-0.18	-0.22	0.30	-0.37	0.09	-0.38	-0.08	-0.01
Protestants	0.27	0.02	0.02	0.38	-0.09	0.37	0.09	-0.09	0.04
Muslims	-0.29	0.05	0.19	0.28	0.04	0.28	-0.06	-0.25	-0.31
Catholics	-0.06	0.07	0.04	0.24	-0.04	0.28	0.08	0.11	0.05
English	0.35	0.08	0.04	-0.75	0.66	0.20	-0.02	0.54	0.68
German	0.05	0.03	0.10	-0.33	0.22	0.07	0.03	0.14	0.17
French	0.28	0.01	0.01	-0.49	0.59	0.11	-0.14	0.42	0.64
Observations	58	87	87	60	77	47	87	52	49
R-squared	0.66	0.83	0.75	0.43	0.75	0.50	0.82	0.65	0.52

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

Table A5 - Eff	ects on Life E	xpectancy	and Mortality	/ Rates (Star	ndardized C	oefficients)	
	(1.0)	(4 -)	(10)	(10)	(20)	(21)	

	(16)	(17)	(18)	(19)	(20)	(21)	(22)
VARIABLES	Life	AIDs	Tuberculosis	Maternal	Mortality	Mortality	Mortality
	Expectancy	Deaths	Deaths	Mortality	(Female)	(Male)	(Infant)
Ethnic Fractionalization	-0.30	0.39	0.16	0.11	0.32	0.42	0.08
GDP per capita	-0.03	0.17	0.11	0.10	0.09	0.16	0.06
Urbanization	0.18	0.34	-0.08	-0.10	-0.13	-0.10	0.48
Institutional Quality	0.67	-0.49	-0.47	-0.55	-0.67	-0.70	-0.50
Literacy Rate	0.26	-0.21	-0.11	-0.23	-0.16	-0.10	-0.21
Income Inequality	-0.09	0.26	0.07	0.19	0.13	0.13	0.13
Health Expenditure	-0.15	0.18	-0.37	-0.19	0.08	0.18	-0.14
Protestants	-0.24	0.18	0.06	0.24	0.27	0.14	0.15
Muslims	0.10	-0.32	-0.11	-0.04	-0.04	-0.09	0.06
Catholics	0.05	-0.13	-0.02	-0.00	0.03	0.08	0.01
English	-0.26	0.26	0.00	0.25	0.24	-0.03	0.28
German	-0.09	0.08	0.03	0.11	0.05	-0.06	0.10
French	-0.13	0.22	-0.07	0.26	0.09	-0.18	0.15
Observations	87	59	87	87	87	87	87
R-squared	0.80	0.65	0.82	0.88	0.81	0.75	0.91

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

Table A6 - Effects on Infrastructure, Staff and Other Outcomes (Standardized Coefficients)

	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)
VARIABLES	Number of Beds	Improved Water	Improved	Community	Physician	Iodized Salt	Contraceptive	Fertility
		Source	Sanitation	Health Workers		Consumption	Prevalence	Rate
			Facilities					
Ethnic Fractionalization	0.13	-0.08	-0.17	-0.53	-0.04	-0.11	-0.25	0.12
GDP per capita	0.07	-0.10	0.09	-0.15	0.00	0.19	0.16	-0.05
Urbanization	0.02	0.14	0.15	0.23	0.22	-0.27	0.27	-0.22
Institutional Quality	0.14	0.46	0.54	-0.79	0.46	0.10	0.13	-0.44
Literacy Rate	0.43	0.50	0.37	-0.36	0.37	0.26	0.48	-0.26
Income Inequality	-0.12	0.02	0.10	0.23	-0.01	0.42	-0.07	0.13
Health Expenditure	0.44	0.08	0.01	0.92	0.08	0.00	0.03	-0.08
Protestants	-0.19	-0.15	-0.12	-0.03	-0.17	-0.20	0.12	0.27
Muslims	0.02	0.17	0.31	-0.11	0.19	-0.10	0.09	0.08
Catholics	-0.06	0.04	0.12	0.15	0.13	-0.05	0.26	0.03
English	-0.29	-0.26	-0.41	0.12	-0.50	-0.06	-0.03	0.39
German	-0.00	-0.09	-0.09	-0.32	-0.19	-0.09	-0.07	0.12
French	-0.41	-0.28	-0.31	-0.56	-0.45	-0.06	-0.10	0.37
Observations	87	87	86	28	87	50	76	87
R-squared	0.77	0.70	0.70	0.87	0.75	0.39	0.81	0.86

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

APPENDIX TABLES A7 TO A10 (EFFECTS OF LINGUISTIC FRACTIONALIZATION)

Table A7 - Effects on Immunization and Disease Treatment (Standardized Coefficients)										
	(1)	(2)	(3)	(4)	(5)	(6)				
VARIABLES	Immunization	Immunization	Immunization	Immunization	Immunization	TB Treatment				
	(DPT)	(HepB3)	(Hib3)	(Pol3)	(Measles)	Success				
Linguistic Fractionalization	-0.13	-0.29	-0.27	-0.18	-0.11	-0.18				
GDP per capita	0.00	-0.10	-0.21	0.08	0.07	0.30				
Urbanization	-0.00	-0.15	-0.02	0.02	0.05	-0.02				
Institutional Quality	0.43	0.08	0.53	0.36	0.30	0.01				
Literacy Rate	0.43	-0.01	0.09	0.39	0.40	0.05				
Income Inequality	0.19	0.32	0.22	0.10	0.18	0.01				
Health Expenditure	0.20	0.18	-0.29	0.27	0.23	-0.08				
Protestants	-0.29	-0.06	0.16	-0.27	-0.23	-0.10				
Muslims	0.21	0.20	0.39	0.20	0.19	0.09				
Catholics	-0.03	0.02	0.33	-0.05	0.08	-0.12				
English	-0.31	-0.48	0.06	-0.25	-0.38	0.11				
German	-0.12	-0.14	0.01	-0.10	-0.14	-0.12				
French	-0.35	-0.42	-0.13	-0.24	-0.41	0.22				
Observations	86	73	68	86	86	84				
R-squared	0.62	0.40	0.45	0.64	0.63	0.20				

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

Table A8 - Effects on Prevalence of Health Issues (Standardized Coefficients)

	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
VARIABLES	HIV	Anaemia	Anaemia	Overweight	Low-	Syphilis	Tuberculosis	Undernourishment	Malaria
	Prevalence	Prevalence	Prevalence	Prevalence	birthweight	Prevalence	Prevalence	Prevalence	Prevalence
		(Children)	(Women)	(Children)	Prevalence				
Linguistic	0.28	0.16	0.20	0.22	-0.09	0.28	0.21	0.01	0.19
Fractionalization									
GDP per capita	0.11	0.02	-0.05	0.16	-0.13	0.26	0.17	0.32	0.07
Urbanization	-0.22	-0.30	-0.19	0.07	-0.17	0.09	-0.11	-0.22	0.16
Institutional Quality	-0.39	-0.49	-0.49	0.05	-0.17	-0.25	-0.44	-0.59	-0.27
Literacy Rate	-0.07	-0.17	-0.06	0.23	-0.20	-0.22	0.01	-0.42	-0.29
Income Inequality	0.20	0.09	0.04	0.01	-0.18	0.22	0.25	0.11	-0.12
Health Expenditure	0.16	-0.17	-0.18	0.34	-0.35	0.08	-0.31	-0.05	0.09
Protestants	0.23	-0.04	0.03	0.30	-0.06	0.37	0.04	0.04	0.11
Muslims	-0.34	0.00	0.18	0.21	0.02	0.22	-0.06	-0.31	-0.30
Catholics	-0.25	-0.04	0.01	0.14	-0.05	0.21	-0.06	0.11	0.05
English	0.52	0.16	0.05	-0.51	0.63	0.26	0.05	0.30	0.69
German	0.13	0.04	0.08	0.00	0.21	0.11	0.05	0.05	0.15
French	0.48	0.09	-0.04	-0.23	0.54	0.26	-0.09	0.20	0.58
Observations	63	86	86	62	80	50	86	56	54
R-squared	0.69	0.82	0.73	0.32	0.73	0.56	0.82	0.54	0.52

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

Table A9 - Effects on Life Ev	upectancy and Mortality R	ates (Standardized Coefficients)
Table A3 - Ellects off Life E7		ales (Stanuaruizeu Cuenicients)

	(16)	(17)	(18)	(19)	(20)	(21)	(22)
VARIABLES	Life	AIDs	Tuberculosis	Maternal	Mortality	Mortality	Mortality
	Expectancy	Deaths	Deaths	Mortality	(Female)	(Male)	(Infant)
Linguistic Fractionalization	-0.27	0.27	0.16	0.10	0.27	0.35	0.08
GDP per capita	-0.06	0.18	0.14	0.10	0.08	0.17	0.06
Urbanization	0.19	0.26	-0.10	-0.13	-0.19	-0.17	0.46
Institutional Quality	0.67	-0.46	-0.50	-0.55	-0.64	-0.66	-0.47
Literacy Rate	0.25	-0.16	-0.09	-0.23	-0.16	-0.08	-0.20
Income Inequality	-0.12	0.28	0.18	0.20	0.20	0.22	0.15
Health Expenditure	-0.17	0.07	-0.29	-0.15	0.07	0.15	-0.10
Protestants	-0.21	0.13	0.06	0.18	0.20	0.08	0.10
Muslims	0.11	-0.39	-0.10	-0.09	-0.11	-0.13	0.03
Catholics	0.11	-0.27	-0.10	-0.10	-0.09	-0.03	-0.05
English	-0.33	0.41	0.08	0.31	0.32	0.06	0.30
German	-0.09	0.13	0.04	0.11	0.05	-0.05	0.09
French	-0.18	0.34	-0.05	0.32	0.13	-0.12	0.18
Observations	86	62	86	86	86	86	86
R-squared	0.81	0.71	0.81	0.90	0.84	0.73	0.92

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

Table A10 - Effects on Infrastructure, Staff and Other Outcomes (Standardized Coefficients)										
	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)		
VARIABLES	Number of Beds	Improved Water	Improved Sanitation	Community	Physician	Iodized Salt	Contraceptive	Fertility		
		Source	Facilities	Health Workers		Consumption	Prevalence	Rate		
Linguistic Fractionalization	0.09	-0.05	-0.11	-0.24	-0.01	0.17	-0.23	0.13		
GDP per capita	0.05	-0.13	0.11	0.09	0.00	0.37	0.11	-0.02		
Urbanization	-0.01	0.12	0.15	-0.08	0.25	-0.22	0.22	-0.17		
Institutional Quality	0.17	0.53	0.60	-0.54	0.46	0.25	0.25	-0.48		
Literacy Rate	0.43	0.50	0.36	-0.09	0.35	0.30	0.48	-0.31		
Income Inequality	-0.05	0.02	0.11	0.07	0.01	0.09	-0.09	0.13		
Health Expenditure	0.33	-0.03	-0.03	0.59	-0.04	0.07	-0.04	-0.07		
Protestants	-0.15	-0.16	-0.11	-0.11	-0.06	-0.21	0.09	0.31		
Muslims	0.06	0.17	0.32	-0.01	0.26	0.07	0.06	0.06		
Catholics	-0.02	0.07	0.16	0.34	0.30	0.09	0.23	0.08		
English	-0.35	-0.30	-0.47	0.03	-0.60	0.05	-0.11	0.37		
German	-0.01	-0.08	-0.08	-0.22	-0.19	-0.00	-0.07	0.12		
French	-0.51	-0.34	-0.35	-0.48	-0.62	0.04	-0.12	0.33		
Observations	86	86	85	30	85	54	76	86		
R-squared	0.77	0.69	0.72	0.68	0.79	0.25	0.77	0.85		

Robust standard errors in parentheses

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