Living conditions in Bogotá at the beginning of the nineteenthth century: smallpox epidemics and the colonial economy

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Abstract

This research studies the political and economic arguments that influenced the decisions undertaken by the Cabildo and the Viceroy for the treatment of patients during the two smallpox epidemics that affected Santa Fe de Bogota in 1782 and 1802. The period of study begins in 1782 when occurs the first outbreak after the Bourbon Reforms and ends in 1802, the year in which the last epidemic arises before the Independence. This paper argues that the economic growth in the central region of the Viceroyalty in the second half of the eighteenth century and Enlightment ideas explain the public health measures headed by the Cabildo, and the subsequent positive impact on the population of New Granada's capital. The measures adopted by the colonial state are probably the first attempt in the history of Colombia to implement Enlightenment ideas for public disease control. In other words, these policies can be considered a pre-national antecedent for the health policy of nascent modern state.

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In November 1782, the Viceroy and Archbishop of New Granada, Antonio Caballero, announced that the spread of smallpox detected some months earlier in the coastal cities of Cartagena and Santa Marta threatened the capital of the Viceroyalty. Despite restrictions on transit of people and goods placed by authorities in the rivers and roads connecting these cities with the capital, the epidemic inevitably reached Santa Fe. For the Archbishop, the epidemic was a punishment from the *Divine Providence* that stirred the people out of "their deep lethargy in which they were plunged, produced by a continued prosperity." Similarly, the Viceroy ordered families to overcome the fear and horror that produced these diseases and encouraged them to receive the inevitable contagion, "with the religious resignation which separates the civilized nations from the barbarians." Caballero suggested subjects to follow health care recommendations, while acknowledging that these human means could do little against the dictates of a "God of wrath and vengeance deserved for our sins and public scandals, but He also reveals Himself as a God of health and mercy."[2] According to Caballero, during the last two months of 1782, smallpox took the lives of 3,000 people (18 percent of the population at the time), although other reports claimed higher figures.[3]

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[2] "Edicto del Virrey Antonio Caballero y Gongora, Santa Fe, 20 de Noviembre de 1782" cited in Marcelo Frias, *Enfermedad y Sociedad en la Crisis Colonial del Antiguo Régimen: Nueva Granada en el Tránsito del Siglo XVIII al XIX* (Madrid: Consejo Superior de Investigaciones Científicas, 1992) 240 – 241.

[3] It is difficult to obtain an accurate conclusion of the mortality caused by the epidemic of 1782. There are at least three extant reports on the number of people killed by the virus. The first source is the report of Viceroy Caballero, who reported about 3,000 fatalities. Jose Maria Caballero, a contemporary author reported 5,000 dead, but the most common number that

Twenty years later, some hospitals in the city reported the admission of people affected by smallpox, which heralding the beginning of a new epidemic. Some members of the Cabildo were particularly terrified by this news because they remembered with horror the "death of the population, hunger and calamities that God, in his righteous indignation, sent to afflict mortals" during the outbreak of 1782. They also described the terrible living conditions of the population during the outbreak. One member of the Cabildo spoke of "children orphans, widows, the bodies without tomb and the inhabitants fugitives, the desolate streets, hunger and nakedness complete the picture of what happened in the city."[4] Therefore, those responsible for the policies of disease control issued a series of measures based on the experience of the epidemic of 1782.

This paper studies the political and economic factors that influenced the decisions dictated by the Cabildo for the treatment of patients during the two smallpox epidemics that affected Santa Fe de Bogota in 1782 and 1802. The paper begins with the epidemic of 1782, the first outbreak after the Bourbon Reforms, and ends in 1802, the year in which the last epidemic arises before the independence. The responsibility for the policies of disease control rested primarily on the Viceroy and the officials that composed the Santa Fe Cabildo, the administrative council in charge of the economic, judicial, legislative and administrative issues of a municipality during

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appeared in many works written during the nineteenth century is 7,000. Taking into consideration that the 1778 Bogota census listed a population of 16,000 approximately, the lower figures of the Viceroy Caballero and José María Caballero seem the most likely. See José María Caballero, *Particularidades de Santa Fé. Un diario de José María Caballero* (Bogotá: Imprenta Nacional, 1946), 24, and Renán Silva, *Las Epidemias de Viruela de 1782 y 1802 en la Nueva Granada.* (Bogota: La Carreta Editores, 2007) 47.

[4] Renán Silva, *Las Epidemias de Viruela*, 48–49.

Spanish colonial rule. The economic and political aspects related to public health and disease treatment would also be discussed and considered by Cabildo members. Similarly, it was the political space for animated discussions between Enlightenment officials that believed in the benefits of inoculation and new medical developments developed on both sides of the Atlantic, and supporters of old practices, such as the isolation of patients.

I argue that new Enlightenment ideas regarding health, the poverty and urban segregation in the city, and economic and fiscal issues explain the health policy undertaken by the Viceroy and the Cabildo during smallpox epidemics that affected Santa Fe de Bogota in 1782 and 1802. I also address that the policies issued by the colonial authorities during this period of epidemics could be a pre-national precedent for the modern liberal fiscal state.

Much of the literature on the history of medicine in Colombia has addressed these epidemics as well as colonial regional histories, prominently *Enfermedad y Sociedad en la Crisis Colonial del Antiguo Régimen: Nueva Granada en el Tránsito del Siglo XVIII al XIX* by Marcelo Frías and *Las Epidemias de Viruela de 1782 y 1802 en la Nueva Granada* by Renan Silva. These works study the establishment of disease control and institutionalization of colonial authorities as guarantors of medical measures. Both works focus on the smallpox epidemics and changes in inoculation treatments with the introduction of sanitation measures recommended by José Celestino Mutis, the most important physician and advisor of the Viceroy on health issues. They also explore the 1804 Balmmis-Salvany expedition that introduced the most recent enlightened public health measures that were undertaken in Europe during the last years of the eighteenth century and how colonial authorities changed their ideas about the origins and treatment of the disease. Previous studies have focused on the political, cultural and medical aspects of the disease, but leave out some economic aspects of treatment such as expenditures on the construction of new hospitals, sanitation and vaccination campaigns, and the impact of these

measures on the material welfare of the population. It is important to note that in colonial regimes, the metropole often applied public health measures to reduce the mortality of the workforce and facilitate the economic exploitation of the colonies.[5] By the second half of eighteenth century, for example, the Spanish government undertook a number of significant reforms characterized by the expansion of economic and political control to marginal areas of the kingdom inhabited by population "without God or King," which was unacceptable for Spanish officials on both sides of the Atlantic. [6] These uprooted masses of workers with no fixed residence, and without a stable family structure were indispensable workforce for a growing agricultural sector. Therefore, the promotion of production and trade was accompanied by the defense of a healthy and abundant population because, "A ruler who cares about the health of his subjects, apart from earning a place in heaven, also gets to this world important social, economic and political advantages."[7] The application of public hygiene and recent medical advances developed in late-eighteenth century should ensure subjects, consumers and workers. Therefore, this research seeks to make a contribution to the economic history of public health in the late colonial period.

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[5] Alexandra Stern, "Yellow Fever Crusade: US Colonialism, Tropical Medicine and the International Politics of Mosquito Control, 1900-1920," in *Medicine at the Border*, ed. Alison Bashford (Basingstoke: Palgrave Macmillan, 2006), 42.

[6] Jaime Jaramillo, "La economía del virreinato" in *Historia Económica de Colombia*, ed. José Antono Ocampo (Bogotá: Ediciones siglo XXI), 66.

[7] Manuel Lucena, "Entre el Miedo y la Piedad: la Propuesta de José Ignacio de Pombo para traer la Vacuna a la Nueva Granada (1803)" *Asclepio: Archivo Iberoamericano de Historia de la Medicina y Antropología Médica 41*, no. 2 (1989): 127.

The smallpox epidemics of 1782 and 1802 that affected Santa Fe de Bogotá, the capital of the Viceroyalty of New Granada, current Republic of Colombia, provide case studies that illustrate the implementation of innovative practices in the treatment of diseases, the practices of individual and collective sanitary measures, and the allocation of fiscal resources towards the implementation of these policies. In general, these policies represented a substantial change in the political relations between rulers and ruled, deeply rooted in the principles of the Enlightenment.

For most of modern human history, public services such as clean water, health policies and diseases prevention measures were funded by notables or local charitable organizations. Taxation by the states was almost entirely related to maintaining internal order and protect boundaries or, in the case of a colonial order, to build the infrastructure to enable the economic surplus extraction from the colony. But the role of the colonial state during the smallpox epidemics of late eighteenth century and early nineteenth century could be the first attempt in the history of Colombia to implement Enlightenment measures for healing and disease control.

Medicine and Politics in Santa Fe

The turn of the eighteenth century in Europe was a period of revolutionary innovations in the treatment and control of diseases. The biggest breakthrough in this field occurred in 1796, when the English physician Edward Jenner discovered the first vaccine against smallpox, which appeared as an alternative to inoculation that was practiced in Europe and Asia since the tenth century.[8] At the same time, the Spanish government undertook some measures that equally

[8] James C. Riley, *Rising Life Expectancy: a Global History* (Cambridge: Cambridge University Press, 2001), 51.

suggested new ideas about health. In September, 1803, for example, King Charles IV issued a royal order to all colonial officials and religious authorities in his American and Asian domains, "announcing the arrival of a vaccination expedition and commanding their support to vaccinate the masses free of charge, teach the domains how to prepare the smallpox vaccine, and organize municipal vaccination boards throughout the domains to record the vaccinations performed and to keep live serum for future vaccinations."[9] The Spanish doctors Francisco Xavier Balmis and José Salvany were in charge of the expedition to vaccinate the population in South America against smallpox that carried the vaccine and administered it in villages and cities of the new world.

In New Granada, policies on public health were also changing. Enlightenment ideas in Spain, and in the rest of Europe, influenced New Granada intellectuals. The interaction of these ideas with local initiatives and intellectual ambitions, led to a strong transformative spirit among the local intelligentsia that sought, eventually, distinguish the local society from peninsular Spain.[10] The confluence between aspirations to improve living standards of the population and

[9] Rafael Tarrago "The Balmis-Salvany Smallpox Expedition: The First Public Health Vaccination Campaign in South America," Perspectives in Health 6, No. 1 (2001), accessed January 18, 2015, http://www1.paho.org/English/DPI/Number11_article6.htm.

[10] Renan Silva, *Saber, Cultura y Sociedad en el Nuevo Reino de Granada. Siglos XVIII y XIX* (Bogotá: Universidad Pedagógica Nacional, 1984). For the Peruvian case see: Adam Warren, *Medicine and Politics in Colonial Peru Population Growth and the Bourbon Reforms* (Pittsburgh: University of Pittsburgh Press, 2010).

concerns for reducing mortality, led to a new understanding of the fight against the disease.[11] Therefore, public health was a demonstration of the Enlightenment idea of "public utility," which was related to justice since improving social and natural surroundings through experimentation and reform would be beneficial to all the people at the same time.[12]

One of the most important representatives of the local Enlightenment was the priest Jose Celestino Mutis, the main scientist in New Granada. Nicknamed *El Sabio* (the wise in Spanish), he was born in Cadiz in 1732 and there he studied medicine, physics, chemistry and botany. In 1761 he decided to move to Santa Fé de Bogotá as the private physician of the Viceroy Pedro Messia de la Cerda. In New Granada he carried out his scientific research in medicine and botany and in 1783 the King of Spain authorized his Royal Botanic Expedition that explores the natural wealth and resources of the Viceroyalty. He also was an experienced advisor in medical and scientific matters for the colonial authorities in New Granada.

During the seventeenth and eighteenth centuries the state of scientific knowledge hindered the accurate diagnosis of diseases, which were commonly identified with the generic name of *la plaga* (the plague) followed by the name of the city or town in which the outbreak emerged. This identification of the location of the outbreak was important because it allowed applying a *cordon sanitaire*, the only measure of sanitary control used by the Spanish government during the seventeenth century. Commonly, this strategy entailed some regulation to assist patients with medication, legal orders to prevent the interaction of infected families with others, particularly

[11] Marcelo Frias, *Enfermedad y Sociedad en la Crisis Colonial del Antiguo Régimen* (Madrid: Consejo Superior De Investigaciones Científicas, 1992), 18.

[12] J. L. Mackie, *Ethics: Inventing Right and Wrong* (London: Penguin, 1977), 110.

Spanish families, and restricting mobility of infected people.[13] These policies were more drastic if the outbreak was identified in populations closer to the viceregal capital. In 1646, for example, the Marquis of Miranda, Governor and Captain General of New Granada, reported concerns about the typhus epidemic emerged in Tunjuelo, a small town near Bogota. The Marquis expressed his fears that ongoing communication between Santa Fe and Tunjuelo favored the spread of the disease throughout the center of the Viceroyalty, and he ordered isolation measures such as those described above.[14]

When an infectious outbreak emerged, the Corregidor (the mayor or local, administrative and judicial official) was directly responsible for implementing the isolation measures in their *corregimiento* (town or subdivision of a territory for administrative purposes). Along with the Corregidor, who officiated as sanitary police, the local priest was another important agent in the treatment of diseases. They were in charge of the basic healing and the "spiritual salvation" of the patient. Corregidor and local priest were also responsible for informing the authorities in Santa Fe of the emergence and development of epidemics. These reports typically were accompanied by requests for financial help to address the disease, which must be approved by the viceroy and the Cabildo. If the disease appeared in a village near the capital, the Cabildo processed faster application to prevent the spread.[15]

Since its foundation in 1539, the council was the maximum body of local administration in Bogota, and the main mechanism of representation of local elites before the royal

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[13] Renán Silva, *Las Epidemias de Viruela de 1782 y 1802 en la Nueva Granada.* (Bogota: La Carreta Editores, 2007), 23.

[14] Silva, *Las Epidemias de Viruela*, 22.

[15] Silva, *Las Epidemias de Viruela,* 27.

bureaucracy.[16] It regulated the social, administrative and economic activities of the city and different aspects of the city such as hygiene policy, weights and measures, price controls, quantity and quality of supplies, commercial activities in the city (internal distribution of goods in the farmer´s markets or in local shops or *pulperias*), and professional activities such as guilds of merchants and artisans.

Depending on the importance or size of the city, municipal councils[17] in the New World were composed by four or twelve *regidores*, which were elected by the heads of local households and were in charge of the administration of the territory. At the beginning of each year, regidores elected two ordinary *alcaldes* or judges of first instance in all criminal and civil cases. The *alferez real* (or royal standard-bearer) was another member of the council, who had right to vote in the council deliberations and would substitute *alcaldes* if they could not carry their functions. The *alguacil mayor* (or sheriff) oversaw local law enforcement and the *fiel ejecutor* was the inspector of weights, measures, and markets and also was in charge of the supplies of the city and municipal sanitation. The council members were elected among the prominent people of the city (called *vecinos*) and generally held their positions without remuneration. Councils also had paid employees with specific functions such as the scribe and the *sindico produrador*, or procurador or city attorney, who was the official in charge of the representation of Cabildo's opinions and interest before other governing bodies.

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[16] Julian Vargas, *La sociedad de Santa Fe Colonial* (Bogota: Centro de Investigación y Educación Popular CINEP, 1990)*, 216.*

[17] The description of the city council follows Joseph O'Callaghan's analisis of Spanish organizations in Joseph O'Callaghan, *A History of Medieval Spain* (Ithaca: Cornell University Press, 1975).

Colonial authorities, namely, council and viceroy, were gradually abandoned the practice of isolation of the city and replaced it by isolating those considered "touched by the disease" during the late-eighteenth century. The colonial government applied two ways of quarantine. In the first method, patients were taken to a place outside the city, normally a hospital, where priests or colonial officials prevented any contact with the rest of their neighbors or family. The officials also ensure food, care, and some basic treatment to the inmate. This form of isolation was the most popular, which should have generated a significant negative effect on the psychological condition of the patient and his family. The second way was the isolation in some room inside family houses, which was considered a humanitarian breakthrough at the time. This practice was popular during the smallpox epidemics of 1782 and 1802, and certainly convenient for the colonial authorities because it delegated to families the caring for the infected. It is worth noting that this measure was intended for the care of patients in wealthy families.

Epidemics that attacked the Viceroyalty in the seventeenth and eighteenth centuries emerged in poor and vulnerable populations in most cases. According to Renan Silva, "These epidemics had its epicenter in one or more native communities (indigenous *resguardos*, *encomiendas*, Indian villages or missions) or mestizo housing places, but since the seventeenth century was common the confluence of indigenous, mestizos and poor Spaniards in the same places of residence."[18] These populations also have a poor diet characterized by low consumption of protein and calories, and lived in an almost complete state of health vulnerability.[19] Local

[18] Silva, *Las Epidemias de Viruela,* 30.

[19] It is a characteristic shared by many epidemic episodes in world history before the industrial revolution. The Black Death in Europe during the fourteenth century, for example, affected negatively population with poor health conditions and bad diet. See Gregory Clark, *A*

priests and monks were the only skilled personnel trained in basic medical aid that instructed patients in the use of oils and gauze to cover the bumps and wounds in the case of smallpox, and applied the most basic treatments such as new diets or new clothes and blankets. In Bogotá and many other cities of the New World, the segregated urban design favored the spread of the disease in these poor populations, who lived together in the peripheries of the city, in neighborhoods far away from the central plaza where colonial bureaucracy buildings and houses of the wealthiest inhabitants were located.[20]

Clergy were commonly the first to be aware of the emergence of an epidemic since the affected population sought their help, whether in their parishes or medical centers where they developed their pastoral service. They proceeded to inform the central authorities either directly or through the Corregidor, role that priests maintained throughout the eighteenth and nineteenth centuries. When the disease was detected in an Indian village, for example, they solicited money for the purchase of medicines and also asked for a momentary waiver in the payment of tribute, which was always the aspiration of the native people during an epidemic.[21] Normally, clerics

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Farewell to Alms: A Brief Economic History of the World (Princeton: Princeton University Press, 2007), 374.

[20] Vargas. *La Sociedad*, 35.

[21] Renan Silva, *Las Epidemias de Viruela,*30. Archivo General de la Nacion, Colombia (hereafter AGNC), Seccion Colonia, *Colonia. Tributos*, caja 60, legajo 20, 23 August 1786, ff 571v. Another example of this is the case of Joaquín Bernal, Corregidor of Bogota and responsible for collecting the tribute. In 1786 he informed to the *tribunal of accounts* (tribunal de cuentas) on the impossibility of collecting the tribute in the indian villages of Fontibon, Bogota,

covered treatment costs with funds from their parishes and the central government subsequently reimbursed these payments.[22] Therefore, the church was an essential part of the institutional organization responsible for the treatment of diseases during the colonial period.

Social assistance to vulnerable and poor people during the colonial period was a task undertaken by private organizations or individuals, under the concept of Christian charity. Some private organizations such as guilds (or *Cofradías*) and fraternities (*hermandades*) and gave donations that helped people in need or during a catastrophe. These organizations provided social aid to the individual under the concept of neighbor or *prójimo*, the notion of *the other* in the Catholic Church that guided morality and politics of the Spanish empire. Thus, helping others was sustained by the idea of Christian charity and the kind of social relations based on Christian brotherhood. Individuals who were commonly subjects of Christian compassion were beggars and homeless, indigenous peoples, uprooted women or widows, orphaned children, the sick, people with mental illnesses, and the elderly.[23]

Bojaca, Factatativa and Tenjo in 1882 and the first half of 1783. The reason was "the disease and the scarcity of food that the Indians faced in 1782".

[22] AGNC. *Capellán reclama pago de servicios en la epidemia de viruela*, Seccion Colonia, Caja 39, Legajo 3, 9 July 1803, ff 270v. In July, 1803, for example, Francisco González, friar of the Order of Preachers and Chaplain of *Nuestra Señora de las Aguas*, demanded a payment for their services during the 1802 epidemic. Gonzalez claimed 18 pesos that he had paid for renting a house to treat the patients and a salary not specified. The request was approved by the council.

[23] Vargas, *La sociedad,* 261.

In the late eighteenth century, however, these private and individual forms of social assistance were gradually replaced by other more centralized and collective. In most cases, these measures were undertaken by royal corporations along with the Church, which remained a major character in Latin American social policy, even after independence. The enlightenment introduces the concept of citizen with rights and duties that replaced the Christian notion of neighbor. In this new form of enlightened charity,[24] health and sanitary policy in Latin America was in charge of the Cabildo or municipal council and the Vicerroy.

At the central administrative level, discussions on public health issues focused on the building of new hospitals and lazarettos,[25] the quarantine of the infected population and financing the operation of these health centers. By the early nineteenth century, however, inoculation was emerging as an alternative treatment to patient isolation. Likewise, the vaccine brought by Balmis and Salvany change the opinion of some colonial officials, who perceive isolation as an outdated

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[24] María H. Ramírez, *De la Caridad Barroca a la Caridad Ilustrada: Mujeres, Género y Pobreza en la Sociedad de Santa fe de Bogotá, Siglos XVII y XVIII* (Bogotá: Universidad Nacional de Colombia, 2006), 125.

[25] AGNC. *Santafé: providencia creación de lazareto*, Caja 39, Legajo 10, Colony Section, 6 May 1802, ff 2v and ff 10v. A *Lazaretto* was a quarantine building for the treatment of infectious diseases. In 1802, Eugenio Martin Melendez, *Sindico Produrador* or the official in charged of the representation of Cabildo's opinions and interest before other governing bodies, wrote a report in which he described all the proposals to be discussed by the members of the council. One of the proposal was a budget allocation for the construction of a Lazaretto. Another proposal was the control of rice and maize prices to avoid speculation during times of disease and escarcity.

and anti-humanitarian practice. Inoculation and vaccination sought to prevent disease, which was a novelty compared to other methods known at the time that attacked the disease after being diagnosed. Not everyone believed in the benefit of these new ways of dealing with illness, including the Viceroy Pedro de Mendinueta, who ruled New Granada between 1797 and 1803. Mendinueta believed that inoculation increased the spread of disease and suggested the isolation of patients as the best way to face the outbreak, to which the Council members opposed.[26] The Cabildo considered particularly inconvenient the confinement of patients in hospitals because many families choose to hide their sick relatives to report them to the authorities for fear of being separated from them. In fact, many common people supported inoculation, based on the success that this practice had during the epidemic occurred 20 years ago. In 1802, the viceroy disallowed the council and took its role of managing public spending on public health measures, fearing that the council promoted measures other than isolation of patients. This discrepancy between these Spanish officials was resolved after a series of conversation in which some *Regentes* finally convinced Viceroy Mendinueta of the benefits of inoculation.[27] Therefore, the implementation and financing of new medical practices in New Granada were not achieved without difficulties.

Disease, Poverty and Population

Smallpox was an epidemic disease, sustainable only by large human population, brought to the New World by Europeans and affected Brazil and the rest of Latin America since the early

[26] Silva, *Las Epidemias de Viruela,*112.

[27] Ana Luz Rodriguez, *Confradías, Capellanías, Epidemias y Funerales. Una Mirada al Tejido Social de la Independencia* (Bogotá: Banco de la Republica and El Ancora Editores, 1999), 221.

years of the conquest.[28] In New Granada, the first epidemic occurred in 1558 and had an enormous impact on mortality rates of the indigenous population. [29] Since that episode, smallpox attacked the Viceroyalty in seven times (1588, 1621, 1651, 1667, 1693, 1781 and 1802). Other diseases that attacked New Granada were measles (1617, 1692 and 1729), typhus (1630) and influenza (1568).[30] Mortality rates were high in all these outbreaks, especially among the indigenous population.

The late eighteenth century was a period of great advances in research into the causes and cures of smallpox undertaken by the English Physician Edward Jenner. In 1798, Jenner argued that smallpox was originally a disease that affected cows, but was transmitted to humans through the consumption of milk. Jenner analyzed twentythree cases of people affected by smallpox in England since 1770. In his study, which included men and women of different ages, occupation and wealth levels, Jenner concluded that people who survived the disease did not get sick again, and that the disease could not be propagated by effluvia.[31] The first conclusion provides Jenner

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[28] James Lockhart and Stuart B. Schwartz, *Early Latin America a History of Colonial Spanish America and Brazil* (Nueva York: Cambridge University Press, 1983), 198.

[29] Juan Villamarin and Judith Villamarin, "Epidemias y despoblación en la sabana de Bogotá, 1536-1810," in *Juicios Secretos de Dios, Epidemias y Despoblación indígena en Hispanoamérica Colonial*, ed. George Lovell and David Cook (Quito: Ediciones Abya-Yala, 2000), 142.

[30] Juan Villamarin and Judith Villamarian, "Epidemias y despoblación," 142-43

[31] Edward Jenner, *An Inquiry into the Causes and Effects of the Variolae Vaccinae: A Disease Discovered in Some of the Western Counties of England, Particularly Gloucestershire, and Know by the Name of the Cow Pox* (Birmingham: Classics of Medicine Library, 1978), 83.

with the experimental evidence for the development of his vaccine, and the second conclusion challenged the miasma theory that dominated the diagnosis and cure of diseases at that time. Miasma theory held that diseases and epidemics were caused by a lethal form of "bad air" or miasma emanating from rotting organic matter. In fact, in 1737 the *Diccionario de Autoridades* defined *la peste* (the plague), a name commonly used to identify epidemic, as a "Contagious disease, usually fatal, and causing much havoc in the lives of men and brutes. Usually caused by any infection of the air, and its main signal is the growth of few lumps called buboes or *landres*."[32] The same definition also identifies the cause of plagues and public calamities as "the wrath of God." The miasma theory seemed to be an important influence on the work of Jose Celestino Mutis. In 1782 Mutis published his method to cure smallpox, which was an adaptation of the general method to cure the disease used in all Spanish America. This method suggested some healing measures such as a good nutrition for the patient and his family, bath for the patient and adequate ventilation of the patient's room. This last measure was commonly recommended by doctors in the context of miasma theory.[33]

According to the 1793 Santa Fe census, the city had 195 blocks, and it was inhabited by 16,405 people (about 2.3 percent of the population of the Viceroyalty). In the city, also lived 1,500 people consider mendicants or homeless (2.3% of the city's population).[34] Most of the population was *mestiza* (53 percent of the total population, approximately), followed by whites

[32] *Diccionario de Autoridades*, s.v. "peste."

[33] Jose Celestino Mutis, "Método general para curar las viruelas (1782)," In *Escritos Científicos de Don José Celestino Mutis*, ed. Guillermo Hernández de Alba (Bogotá: Instituto Colombiano de Cultura Hispánica, 1983), 195–98.

[34] Vargas, *La Sociedad,* 34.

(38 percent), Indians (4 percent), slaves (3 percent) and free blacks (2 percent). It is important to note that, although the entire population of the city shared relatively the same environmental conditions, the indigenous and poor people were the most affected by the disease. For this reason, exposure to evil air was not the only risk factor that generated high rates of mortality among Indians. Overcrowding and poverty also have an impact on high mortality rates on these population groups.

Poverty and diseases are two sides of the same coin, and commonly associated with overcrowding and overpopulation. During the eighteenth and nineteenth century, some authors argued that poverty was the leading risk factor for diseases.[35] Although smallpox was eradicated in 1979, modern medicine asserts smallpox is transmitted throughout direct and fairly prolonged face-to-face contact from one person to another. The disease also can be spread through direct contact with infected bodily fluids or contaminated objects such as bedding or clothing. Smallpox rarely is airborne by viruses enclosed settings such as buildings, buses, and trains, which corroborates Edward Jenner early discoveries. Overcrowding, however, facilitated the direct and prolonged contact between people affected by smallpox, and many indigenous and poor people in Santa Fe lived under these conditions in the turn of the eighteenth century. For this reason, the

[35] Charles Drysdale, *The population question according to T. R. Malthus and J. S. Mill, Giving the Malthusian theory of overpopulation* (London: London G. Stranding, 1892), 79-78. Drysdale cites the English author Annie Besant, who studied the works on population written by English philosophers Thomas Malthus and John Stuart Mill, associated to the classical school of economics. Besant argued that "as poor men have large families, pauperism is a necessity; and from pauperism grow crime and desease."

disease could spread quickly among these populations, producing high mortality rates during these outbreaks.

The city was divided into four large districts or parishes (*parroquias*): La Catedral, Las Nieves, Santa Barbara and San Victorino. These zones were divided into neighborhoods, (see Figure 1). *La Catedral* was the central district of the city where the wealthiest people lived (mainly in *Palacio* and *San Jorge*). In this area also worked the colonial and ecclesiastical bureaucracy (primarily in *El Principe* and *La Catedral*). *Las Nieves* was located in the northern limit of the city. It was largely inhabited by mestizos, Indians, and poor white people, who worked in artisan centers or small ranches (or *estancias*). Santa Barbara was located at the southern end of the city and also was inhabited by Indians and mestizos. *San Victorino* was located on the western boundary of the city, and was the location of one of the city's three marketplaces and the butchers that supplied the city.

Figure 1

Population and population density 1793

Parrish (*Parroquia*)	**Neighborhood (Barrios)**	**Population (1)**	**Number of blocks (2)**	**Population density (1)/(2)**
La Catedral	El Principe	2,408	18	133.8
	La Catedral	2,079	15	138.6
	Palacio	1,164	14	83.2
	San Jorge	1,016	11	92.4
Las Nieves	Las Nieves east	4,541	32	154.4
	Las Nieves west			
Santa Barbara	Santa Barbara east	2,624	17	154.4

	Santa Barbara west			
San Victorino		2,000	18	111.1
Total		18,172	125,5	144.8

Source: Author's calculations based on Julian Vargas, *La Sociedad de Santa Fe Colonial* (Bogotá: Cinep, 1990), 30–31.

Figure 1 indicates that Las Nieves, Santa Barbara, and San Victorino had the highest population densities. These peripheral neighborhoods also had the highest proportions of indigenous dwellings, according to the 1806 census: 45 percent in Las Nieves, 12.7 percent in San Victorino, 12.3 in Santa Barbara.[36] Approximately 18 percent of the indigenous population lived in overcrowded conditions because a family had to share a house with one or two additional families.[37] Also, 13 percent of the indigenous population lived in shacks (*chozas* or *bohíos*) built with straw and mod. The rest of the Indians lived in Creoles' or withes' houses as domestic servants.

In general, Santa Fe was a poor city in the Latin American context. In 1789, Francisco Silvestre, the general secretary of New Granada, argued that the city has the best conditions to be "polished and neat," given its privileged location that allows the city to have an adequate supply of water resources. However, the lack of police and fiscal resources enabled the outspread of "idleness and vagrancy."[38] In 1777, the viceroy Manuel de Guirior reported that the artisans of Santa Fe could not have a decent living derived from his economic activity. In general, the

[36] Vargas, *La Sociedad,* 40.

[37] Vargas, *La sociedad,* 39.

[38] Francisco Silvestre. *Descripción Del Reyno De Santa Fé De Bogotá: Escrita En 1789 Por D. Francisco Silvestre, Secretario que fue del Virreinato y Antiguo Gobernador de la Provincia de Antioquia* (Bogotá: Universidad Nacional De Colombia, 1968), 35.

viceroy concluded that "the offices in Bogotá were in such poor condition that artisan's attires, their idleness and licentiousness made them barely distinguishable from mendicants."[39] Guirior also address that the relatively prosperous people in the city "enjoyed modest attributes of material life."[40] All these impressions lead to the conclusion that the population of Santa Fe faced living conditions that were far from being the center of prosperity. Thus, poverty and overcrowding placed city's population in a position of vulnerability to diseases, particularly indigenous and mestizo peoples.

It is difficult to quantify precisely the deadly consequences of the outbreaks. The smallpox epidemics that attacked Bogota in 1782 took the lives of 3,000 people (18 percent of the population at the time) and 2,800 (13 percent of the population) during the epidemics of 1802. Figure 2 indicates that the population in Bogota grew steadily between 1778 and 1832. Both outbreaks, however, affected the rates of population growth, which went from 2.6 percent prior 1779 to 0.7 percent in the period 1780-1793 and from 2.4 percent prior 1800 to 0.9 percent between 1801 and 1809.

Figure 2

Population growth

Census	Population	Rate of intercensal growth (%)	Index
1778	16,002		100

[39] Anthony McFarlane, *Colombia Antes de la Independencia: Economía, Sociedad y Política Bajo el Dominio Borbon* (Bogota: Banco De La República, 1997), 93.

[40] McFarlane, *Colombia antes de la Independencia*, 96.

1779	16,420	2,6	102,6
1793	18,174	0,7	113,6
1800	21,464	2,4	134,4
1832	28,341	0,9	177,1

Source: Julian Vargas, *La sociedad*, 13.

This was the economic and social picture that colonial authorities faced during the late eighteenth and early nineteenth century. In addition, in 1800 the city had one hospital (Hospital San Juan de Dios) and 31 catholic churches where patients' families went in search of basic assistance,[41] which was the physical infrastructure to deal with diseases in the city. Regarding the personnel available, in 1802 the city had five or six professional doctors[42] that were equivalent to a medical coverage of one doctor for every 3,500 inhabitants, approximately. The Panamanian physician Sebastian Lopez, who moved to Bogotá in 1778 and witnessed the first epidemic of smallpox, noted that empirical practitioners and healers without an official medical degree worked as doctors in the city.[43]

[41] Bibioteca Nacional de Colombia, Hemeroteca, Correo Curioso 5, 17 March 1801, 18-19. Adam Warren mentions that Lima had five large hospitals that "depended on the work of the clergy and donations from wealthy residents, and they were organized around notions of Christian piety and charity." See: Warren, *Medicine and Politics*, 20.

[42] Silva, *Las Epidemias de Viruela*, 111.

[43] Pilar Gardeta, *Sebastián José López Ruiz (1741-1832): sus Escritos Médicos y el Ejercicio de la Medicina en el Virreinato de Nueva Granada en la Segunda Mitad del Siglo XVIII* (Málaga: Universidad de Málaga, 1996), 14.

Health Policy and the Local Economy

All councils in the New World were responsible for certain real estate properties named *propios*.[44] The council could lease or sell these *propios*, from which they derived their main source of income called *Ramo* or *Renta de propios.* In addition, councils financed their expenditures with taxes on some economic activities, such as butcher shops, mills, supply stores or *pulperias*, and distribution of water, among others.

By the late eighteenth century in Bogotá, the major source of income for the council was the *ramo de propios*. In 1804, the council has 39 properties for which it received an 2,106 pesos, which represented approximately 31 percent of total council income.[45] The rest of the revenue came from the taxes on butcher shops and pulperias. It is important to note that in case of deficit, the council had to borrow money to finance this shortfall. For this, the council resorted to the Church or the owner of a *capellania* for resources to cover the excess of expenditures originated in exceptional situations such as epidemics. *Capellanias* were pious works (or *obras pias*) in the Catholic Church, in which the founder, usually a wealthy person earmarked a certain amount of funding to be spent and managed by a chaplain, who conducted a number of Masses in memory of the deceased founder. The chaplain administered the *capellanía* with the aim of generating economic surplus to finance their ecclesiastical duties. Occasionally, the chaplain lent these

[44] Vargas, *La sociedad,*217.

[45] Vargas, *La sociedad,*222.

monetary surpluses to private individuals or the council at a rate of five percent.[46] These loans to the Cabildo are further evidence of the close relationship between the council and the church.

Despite the constant complaints and claims of some council members about the lack of resources,[47] Figure 3 illustrates that in the late eighteenth century council revenues grew at rates of over two percent. It is difficult to know with certainty the exact causes of this increase in the council's income, however, the economic situation in central New Granada and other regions improved with the implementation of the Bourbon Reforms.[48] Additionally, there was a strong flow of population into the city from 1770, which pushed up real estate prices in the city, which was the main revenue of the council. Usually, the city council also lent money when it generated economic surpluses, and gave these loans at a rate similar to the interest levied by the church.

Figure 3

Revenues and Expenditures, Cabildo of Santa Fe

Year	Revenue (Pesos)	Annual growth rate %	Expenditures (Pesos)	Annual growth rate %
1653	1000		n.a	
1719	1855	1,3	1837	n.a
1735	2274	1,4	2294	1,5

[46] Jaime Jaramillo, "La Economía del Virreinato (1740-1810)" in *Historia Económica de Colombia*, ed. José A. Ocampo (Bogotá: Editorial Planeta, 2010), 56.

[47] Silva, *Las Epidemias de Viruela,*94.

[48] Salomón Kalmanovitz, "El PIB de la Nueva Granada en 1800: Auge Colonial, Estancamiento republicano," *Revista de Economía Institucional* 15, no. 2 (2006): 46.

1785	5590	2,9	5196	2,5
1796	6859	2,0	n.a	n.a
1810(e)	8760	2,5	n.a	n.a

Source: George Brubaker, *Santa Fe de Bogota: A Study of Municipal Development in Eighteenth Century Spanish America (*Austin: University of Texas, 1960), 90-95. Julian Vargas, *La sociedad*, 161. (e) The revenue in 1810 is estimated, based on growth rates of previous years.

Due to some delays in the collection of fiscal information, council members rarely had access to up-to-date information that allowed them to know the current situation of council finances. Because of this lack of knowledge of its actual financial situation, the economic resources to fund action plans to address the smallpox epidemics was the main discussion held by the viceroy and council members. It is difficult to know further details on the funding mechanism of the measures taken during the 1782 outbreak. The evidence available suggests that the council and the viceroy Caballero agreed to use the money of the *Renta de Propios* to finance healing measures and the population control to reduce the spread of disease.[49]

In contrast, there is more information available for the 1802 outbreak that helps to understand the political and economic dynamics related to the health policy of the colonial government. There were two important discrepancies between the Cabildo and Vicerroy positions. Firstly, by June 1801 the council already knew about cases of people infected, information that was not supported by the viceroy Mendinueta.[50] Thus, the Viceroy asked the council the application of preventive measures, when the city was requiring measures to treat the disease. Regidores Jose Miguel de Rivas and José Antonio de Ugarte were important figures during this episode and spokespersons between the Cabildo and the Vicerroy. His parents,

[49] Silva, *Las Epidemias de Viruela,* 61.

[50] Silva, *Las Epidemias de Viruela,* 108.

Miguel de Rivas and Pedro de Ugarte were also *regidores* during the 1770s. As members of prominent families of the city, they had access to the intellectual production developed in Europe and other areas of Latin America, which allowed them to have ideas related the treatment of diseases and based on recent scientific knowledge in that time[51]. They opposed, for instance, to the isolation of the city and proposed inoculation as a preventive and healing. Besides the views of Jose Celestino Mutis, who was very close to the viceroy, they also considered the scientific opinions of two other prominent physicians of the city, Honorato de Villa and Miguel de Islas, who did not always coincide with the views of *el Sabio*.[52] On the other hand, the viceroy was strongly opposed to any measure related to the inoculation because they recognize as true the recent findings of Edward Jenner on smallpox.[53] This evidence suggests that these different perceptions on healing and health policy were an important source of the discrepancies between the Cabildo and the Viceroy.

The second point of disagreement was the economic resources to deal with the disease. While the viceroy considered that the measures against the epidemic should be financed with the *renta de propios*, council members argued that the resources of the corporation were not enough. Therefore, the council proposed the viceroy to take administrative actions to use the revenues that belonged to the church as a temporary loan. Another solution proposed by the council was to conduct a fund-raising or *suscripción pública* to collect money among military, clergy, religious orders and traders. None of these proposals were well received by the Viceroy, who argued that the law impeded him to use church resources, which was partly true. For the Viceroy, the

[51] Pedro de Ibañez, *Crónicas de Bogotá* (Bogotá: Imprenta Nacional, 1913), 106.

[52] Silva, *Las Epidemias de Viruela,* 111.

[53] Silva, *Las Epidemias de Viruela,* 110.

position of the council was a sign of laziness and lack of commitment to their duties towards society of Santa Fe.[54] The council, however, ended up using money from the church to finance the health policy.[55]

In March 1803, colonial authorities considered that the smallpox epidemic was concluded, and the viceroy was required by the king to write a report about the event.[56] In drafting his report, the viceroy requested relevant information to all levels of administration of the city. Firstly, the *Contador Real de Cuentas,* or the royal accountant[57] explained the origin of the funds utilized. Most of the funds were taken from the *Ramo de Hospitales Vacantes*, revenue that arose from a portion of the tithe that corresponded to the colonial administration and was used in the maintenance of hospitals.[58] The accountant suggested this revenue as the principal source of funding for health policy in the Latinamerica, because it was collected in all cities and villages of viceroyalties.[59]

Regarding Cabildo's expenditures, Rivas and Ugarte reported 6,344 pesos, considered by *Regentes* as moderate, taking into account that "many thousands of subjects were treated and

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[54] Silva, *Las Epidemias de Viruela,*96-97.

[55] Silva, *Las Epidemias de Viruela,* 145.

[56] Silva, *Las Epidemias de Viruela,* 144.

[57] The accountant was one of the four standard royal offices established in each Oversees Spanish colony. See: Richard Flint. *No Settlement, No Conquest: A History of the Coronado Entrada* (Albuquerque: University of New Mexico Press, 2008), 323.

[58] Silva, *Las Epidemias de Viruela,*145.

[59] Silva, *Las Epidemias de Viruela,*146.

cured by of their terrible disease."[60] This quantitative evidence indicates that expenditures during the epidemic corresponded to 92.5 percent of income received by the council in 1786 (Figure 3). Likewise, this figure demonstrates that the council did have the resources to finance the policies embarked upon the control of the epidemic, despite the constant complaints of members of the Cabildo by the scarcity of resources.

A common analysis of health economics is related to social opportunity costs[61] incurred to deal with the epidemic episode. It is difficult to make a precise quantification of the opportunity costs associated with the control of these epidemics. It is known, however, that the owners had to pay for the care of their slaves in the hospital, in the same way those employers paid for the care and healing of his servants.[62] These payments helped to partially compensate for the costs incurred in the recovery of poor people of the city, who were not able to make any expense for their care costs and healing in the hospital. It is virtually impossible to individually determine the reasons for which slaveholders and employers were willing to pay sums of money for the care of slaves and servants. In the case of slaves, it is obvious that they generate a return to their owner. However, there is no evidence to reject the hypothesis that both, employers and slave owners, were also motivated by the idea of Christian Charity.

In its report, Rivas and Ugarte give an account of the number of people treated and inoculated in the San Juan de Dios Hospital. Of a total of 816 patients admitted to hospital, 702

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[60] Silva, *Las Epidemias de Viruela,*145.

[61] In economics, oportunity cost is A benefit, profit, or value of something that must be given up to acquire or achieve something else. See: A. J. Culyer, *Handbook of Health Economics* (Amsterdam: Elsevier, 2000), 437.

[62] Silva, *Las Epidemias de Viruela,*146.

were cured and the remaining 114 died and were buried in the first cemetery regulated by colonial authorities.[63] Similarly, Rivas and Ugarte argued the success of inoculation: they spoke about a total of 96 inoculated patients and 95 cured.[64] In 1805, the doctor Honorato Villa commented that the measures undertaken during the outbreak were remarkably successful, and if a similar outbreak happened in the future, the authorities should apply exactly the same measures.[65] However, Villa admitted that the probability of a new smallpox epidemic in the future was low since vaccination in 1805 was already a widespread practice in New Granada and throughout Spanish America.[66]

Conclusions

In 1789, the influential intellectual of New Granada, Pedro Fermin de Vargas commented that "smallpox affects all countries, but in any cause such devastation as in America."[67] This de Vargas' opinion suggests the existence of particular factors in America that increased the negative effects of epidemics affecting the continent. In this article, poverty and overcrowding in

[63] Historian Ana Luz Rodriguez discusses in detail the new burial practices covered in the Bourbon Refroms. See: Ana Luz Rodriguez, *Confradías, Capellanías, Epidemias y Funerales,* 27-51.

[64] Silva, *Las Epidemias de Viruela,*147.

[65] Silva, *Las Epidemias de Viruela,*148.

[66] Silva, *Las Epidemias de Viruela,*148.

[67] Pedro Fermin de Vargas, "Memorias sobre la Población del Reino," in *Pensamientos Políticos*, Pedro Fermin de Vargas (Bogota: Editorial Linotopia, 1986), 130.

the peripheral regions of the city of Santa Fe de Bogota is identified as one of the factors behind the deadly consequences of epidemics in Bogota in the late eighteenth and early nineteenth century.

The scientific and administrative capacities are also factors that affected health policy in Santa Fe in this period. Despite the terrifying and detailed reports on the devastation caused by the smallpox in 1782, the Viceroy Joseph de Espeleta, who ruled New Granada from 1789 to 1797, distrusted this information. According to Espeleta, "the horror that people in this kingdom have to smallpox "comes from ignorance and the lack of means of control, prevention and treatment.[68] In other words, Espeleta was very critical of the actions taken by the Caballero's administration, which never had attempted a comprehensive sanitation policy in 1782. But Espeleta's views also suggest that during the 1782 epidemic the city did not have the economic resources and scientists to undertake appropriate health policy, which were available to the colonial officials during the 1802 outbreak. Unlike previous epidemic episodes, in the turn of the nineteenth century the city received the scientific support of Jose Celestino Mutis, one of the most important scientists of America during the late eighteenth century. His ideas influenced by the European Enlightenment and also by their own knowledge of local natural resources, influenced health policy adopted by the colonial authorities. Likewise, in this period the colonial authorities had increasing tax revenues such as *Renta de Propios* and *Ramo de Hospitales Vacantes* to finance necessary expenses associated with the eradication of the disease.

Although a considerable part of the health policy was still supported by private organizations and individuals, such as religious orders, employers, and slave owners, the colonial

[68] Joseph de Espeleta, "Relación de Mando" in *Relaciones de Mando de los Virreyes del Nuevo Reino de Granada* (Bogotá: Academia colombiana de historia, 1910), 326.

state pursued more collective health policies. These measures will be part of the construction of national states in the post-independence era, and they will be in the center of the modernizing plans of the Latin American state-builders.[69] Therefore, it is important to highlight that for the first time, the city had the resources and scientific knowledge to launch a health policy that was one of the conditions for the success of the implemented measures during these outbreaks.

[69] Modern states, following Scott's work S*eeing Like the State*, look for more legible societies. The modern state would build upon uniformity of measurement in trade and land as it began to be involved in "productivity, health, sanitation, education, transportation, mineral resources, grain production and investment." See: James C. Scott, *Seeing like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 1999), 32. On the specific Colombian case see: Brooke Larson, *Trials of Nation Making Liberalism, Race, and Ethnicity in the Andes, 1810-1910* (Cambridge, UK: Cambridge University Press, 2004), 71-102.