

Responding to Obesity in Brazil: Understanding the International and Domestic Politics of Policy Reform through a Nested Analytic Approach to Comparative Analysis

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Abstract Why do governments pursue obesity legislation? And is the case of Brazil unique compared with other nations when considering the politics of policy reform? Using a nested analytic approach to comparative research, I found that theoretical frameworks accounting for why nations implement obesity legislation were not supported with cross-national statistical evidence. I then turned to the case of Brazil's response to obesity at three levels of government, national, urban, and rural, to propose alternative hypotheses for why nations pursue obesity policy. The case of Brazil suggests that the reasons that governments respond are different at these three levels. International forces, historical institutions, and social health movements were factors that prompted national government responses. At the urban and rural government levels, receiving federal financial assistance and human resource support appeared to be more important. The case of Brazil suggests that the international and domestic politics of responding to obesity are highly complex and that national and subnational political actors have different perceptions and interests when pursuing obesity legislation.

Keywords Brazil, obesity, policy

Introduction

Obesity is quickly emerging as a serious health epidemic, not only among advanced industrialized nations, such as the United States, but also among emerging middle-income nations, such as Brazil, Russia, India, China, and South Africa (also known as the BRICS). But what are the motivating factors driving these nations to respond to obesity through the implementation of policies emphasizing obesity prevention, such as better nutrition and exercise? Do all nations respond the same way, for the same

reasons? And how about particular emerging nations, such as Brazil? Were Brazil's politicians motivated by the same international and domestic conditions when pursuing policy reform?

Adopting a nested analytic approach, a methodology that combines the benefits of statistical and case study analysis (Lieberman 2005; Rohlfing 2008; Harrits 2011), I claim that there is essentially no cross-national statistical evidence suggesting that nations implement obesity policies in a similar manner and for similar reasons. Indeed, several schools of thought have emerged specifying the conditions under which governments respond to obesity through policy implementation. For example, some claim that the growth of obesity cases instigates fear and concern among politicians, in turn motivating them to pursue legislation (Kersh and Morone 2005; Kersh 2009; Friedman and Schwartz 2008). Others emphasize the economic costs of treating diseases associated with obesity and how these costs prompt governments to implement prevention policies (Homer and Simpson 2007; Marrow 2011; Hammond and Levine 2010). Still others maintain that the availability of health care infrastructural resources matters, as it facilitates the implementation of policies (National Advisory Committee on Rural Health 2000; Lee et al. 2007; Tai-Seale and Chandler 2010). Finally, some claim that citizens' increased attention to obesity through the availability of information both pressures and incentivizes politicians to introduce legislation (True, Jones, and Baumgartner 2007; Zahariadis 2007; Gómez and Sanchez 2012). Nevertheless, after conducting multivariable logistic regressions for eighty-three nations, I found that these schools of thought were not supported with cross-national statistical evidence. These statistical findings prompted me to devise alternative causal hypotheses for why and how nations respond to obesity through policy implementation.

To that end, and in line with a nested analytic approach to comparative research, I turned to the case of Brazil to devise alternative hypotheses about the conditions under which governments respond to obesity through policy implementation.¹ I began by establishing a hypothesis for

1. As Evan Lieberman (2005) maintains, in a nested analytic approach, after disconfirming theories through initial cross-national statistical analysis, scholars engage in model-building small-N analysis by selecting case studies to build alternative hypotheses about the conditions under which a policy is pursued. In this approach, if the testing of a new hypothesis is not feasible, hypothesis building is the ultimate end goal, in turn providing future areas of scholarly research. In this study, I have extended Lieberman's (2005) discussion on the benefits of model-building small-N analysis by claiming that one can build a hypothesis at multiple levels of government *within* a nation; this treatment is somewhat akin to Gary King, Robert O. Keohane, and Sidney Verba's (1994) discussion of establishing causal inference within countries.

the conditions under which Brazil's national government, that is, the Ministry of Health (MOH), responded to obesity. Next, I scaled down to the state government of Rio Grande do Sul to devise alternative hypotheses about the conditions under which governments respond to obesity. More specifically, alternative hypotheses were established for the urban and rural governments of Natal and Mossoró, respectively, within the state of Rio Grande do Sul. This approach allowed me to devise hypotheses at three levels of government *within* a nation: the national government level, followed by the urban and rural government levels.

I nevertheless found that the empirical evidence generating hypotheses was different at each of these levels of government. At the national government level, historical institutions and policy legacies of a centralized government response to nutrition disorders, the presence of proactive social health movements occupying key areas of the national health care bureaucracy advocating nutrition policy as a human right, and international comparisons and international reputation-building interests fostered a national policy response. In contrast, none of these factors were present in Natal and Mossoró. Instead, in both of these governments a municipality's receipt of financial, technical, and human resource assistance from the national government provided the confidence needed to implement obesity policies. As I discuss below, because cross-national data could not be found to test these subnational hypotheses, the goal was to induct hypotheses to encourage future statistical analysis of their effectiveness in accounting for variation in obesity policy outcomes.

In Brazil, despite these differences in policy outcomes at the subnational level, the national government responded earlier to obesity when compared with Natal and Mossoró. This difference in the timing of policy response highlighted key differences in the international and domestic politics of obesity in Brazil. As I discuss in the conclusion, this finding suggests that the politics of adopting obesity legislation are much more complex than expected and that new insights may be obtained from Brazil and other emerging nations.

Methodology: Conducting a Nested Analytic Approach

I take a nested analytic approach to comparing government responses to obesity. This method suggests taking advantage of the causal inferences obtained from large-N statistical analysis and small-N case study analysis (Lieberman 2005; Rohlfsing 2008; Harrits 2011). Moreover, this methodological approach has a specific order of events: the researcher first

conducts a large-N statistical analysis of the theoretical framework(s) under investigation. If these theoretical frameworks are supported with large-N statistical evidence, then the researcher moves to the usage of case studies for further testing and confirmation. However, if these theoretical frameworks are not supported by the statistical evidence, then case studies are used to build new hypotheses and potential theories—or what Evan Lieberman (2005) refers to as model building in small-N analysis. If a hypothesis is developed but insufficient data are available to test it, then the analysis ends (Lieberman 2005). Moreover, in this approach, case studies are deliberately selected on the values of their dependent variable, so that the research can benefit from their in-depth contextual knowledge (Lieberman 2005; Collier and Mahoney 1996).

In this study, theoretical frameworks about the circumstances leading to obesity legislation were first examined with multivariable logistic statistical analysis at the large-N cross-national level. Next, I used an in-depth case study of Brazil to propose alternative hypotheses at the subnational level. Yet, because of the absence of cross-national data capturing these alternative hypotheses within Brazil, subsequent large-N statistical analysis could not be pursued. In accord with a nested analytic approach, at this point I ended the analysis.

I then used a subnational comparative method to analyze the potential efficacy of hypotheses developed within Brazil. In so doing, I used a most-similar system design (MSSD) (Landman 2008; Przeworski and Teune 1970) by controlling for similar political cultures, institutions, and socioeconomic conditions within a nation (e.g., Brazil) while highlighting differences in causality and outcomes. Beginning with hypotheses constructed at the national government level, I then scaled down to the subnational level to assess hypotheses proposed at the national level, on the one hand, and to induct alternative hypotheses at the urban and rural levels of government in the state of Rio Grande do Sol, on the other. This method, in turn, allowed me to assess the potential efficacy of their proposed hypotheses while establishing future areas of research (Snyder 2001; Gómez 2003; King, Keohane, and Verba 1994).

However, why was the state government of Rio Grande do Norte chosen? I selected this state, first, because of its reputation for having a high level of obesity cases—recently found in the top ten in Brazil (Giraldi and Palma 2012). Second, it was a unique state in that obesity was highly prevalent at both urban and rural levels. Third, this state was chosen because I knew ahead of time that several policy innovations were being pursued at the

urban and rural levels. I therefore intentionally selected on the dependent variable to learn more about, and to possibly better explain, the conditions leading to the implementation of obesity policy—a distinct methodological advantage associated with small-N qualitative research (Collier and Mahoney 1996).

With respect to data, I used both quantitative and qualitative sources. Quantitatively, I obtained data from the World Health Organization (WHO 2012), WHO's online database for noncommunicable diseases (NCDs), the World Bank's (2013) online database, and the Central Intelligence Agency (CIA 2013). These data were collected for 192 nations, though actual data were available for only 83 nations because of missing values for some of the variables in the data set. Indicators were randomly selected and based on the availability of data, thus avoiding any biased selection of data.

With respect to statistical methods (see the appendix), I constructed two multivariable logistic models. The dependent variable *ObesePol* (national obesity policies) was a binary estimate provided by WHO, with a score of 1 for “present” or 0 for “absent.” All the other independent variables were both continuous and binary estimates. With the exception of *DiabPrev* (diabetes prevalence), *DiabPol* (national diabetes policies), and *ExtNCD* (existence of an MOH program focused on NCDs), all the independent variables were unrelated, thus avoiding problems of multicollinearity.²

With respect to my subnational comparative analysis, I used qualitative evidence from published peer-reviewed journal articles, online newspaper articles, and unpublished manuscripts. Much of the information obtained for the state of Rio Grande do Norte was also available online through newspaper archives.

Conditions Leading to a Government Response to Obesity

The literature discussing the politics of government response to obesity is nascent and scattered, with different views and interpretations. As this section explains, several theoretical approaches have emerged to explain why nations implement obesity programs.

One school of thought emphasizes the burgeoning growth of obesity cases and how this increase generates incentives for politicians to propose

2. Problems of multicollinearity arise when two or more independent variables used in a multivariable regression are highly related to each other, thus making it difficult to assess their independent effects on the outcome variable(s).

and implement obesity legislation (Kersh and Morone 2005; Kersh 2009). Politicians are more likely to act especially when they and/or their family members are threatened by the health ailments associated with obesity, and a sudden spike in the number of obese children also provides incentive. Historically, health threats that have affected children in particular, such as malnutrition and polio, have instigated immediate policy action because politicians consider children to be innocent and to represent a nation's economic potential (Gómez, forthcoming). Further compelling lawmakers to take action is the rise of health threats associated with obesity, such as type 2 diabetes, as well as obesity's nonphysical consequences, such as depression, anxiety, and low self-esteem (Friedman and Schwartz 2008).

Others believe that the rising economic costs of obesity and its associated ailments create fiscal incentives to implement legislation. Studies have shown, for example, that obesity is strongly correlated with certain types of cancer, type 2 diabetes, high blood pressure, and heart disease and that policy action is needed to help suppress obesity's rise (Homer and Simpson 2007; Marrow 2011). As these health threats emerge, moreover, individuals miss days from work, which in turn can have a negative effect on economic performance; this effect is typically referred to as obesity's *indirect* costs (Hammond and Levine 2010). In comparison, obesity's *direct* costs may entail government expenditures for medical treatment, for example, medicines, inpatient care, and surgery, as well as prevention campaigns (Hammond and Levine 2010); such costs may also entail payments through specific programs for the poor and elderly, such as Medicaid and Medicare in the United States, respectively (Hammond and Levine 2010).

Nevertheless, others claim that what determines a government's interest in pursuing obesity legislation are the financial and, especially, health care infrastructural resources at its disposal. When governments have ample fiscal revenue, and when they have the human resources needed to effectively implement obesity prevention and treatment policies, legislatures are more likely to pass antiobesity legislation (National Advisory Committee on Rural Health 2000). These differences in resources and policy interests are especially stark at the more affluent urban level than at the rural geographic level (UnitedHealth Center for Health Reform and Modernization 2011). At the urban level, one often finds better-quality hospitals, health care personnel, and technological devices, as well as the physical educational infrastructure—for example, gyms and parks—needed to

encourage the development of obesity prevention and treatment policy (Lee et al. 2007). The converse is true at the rural level (Lee et al. 2007); few medical and especially nutrition health personnel have incentives to work in rural areas (because of low pay), and fewer prevention and treatment services for nutrition and obesity are available in rural areas (Tai-Seale and Chandler 2010).

And, finally, others claim that a change in the national mood and increased citizen concern about the rise of obesity, facilitated through the availability of information and knowledge about obesity and its related ailments, generate incentives for politicians to implement policy. This sudden increase in citizen knowledge and awareness in turn creates a “window of opportunity” for policy action (Kingdon 1995; True, Jones, and Baumgartner 2007; Zahariadis 2007). Politicians realize how much citizens know about obesity; politicians therefore recognize their fears and as accountable representatives seeking reelection, they propose obesity legislation to garner political support (Gómez and Sanchez 2012). Thus access to information and citizens’ understanding of the health threats surrounding obesity are necessary for policy reforms to emerge (Gómez and Sanchez 2012).

Empirical Results

However, is there statistical evidence supporting these four theoretical schools of thought? Empirical results obtained from a multivariable logistic analysis suggest that no corroborative evidence supports these four theoretical approaches to explaining the adoption of obesity legislation.

As model 1 in the appendix illustrates, the prevalence of obese individuals (*ObesePrev*), measured in terms of body mass index (BMI) scores greater than 25, did not have a statistically positive association with the presence of national obesity policies (*ObesePol*).³ Moreover, none of the aforementioned theoretical frameworks, that is, the economic burden of obesity (*GovExp*, *ExtNCD*), the level of resources (*GDP*, *Physicians*, and *Beds*), and increased citizen concern and awareness through information (*Literacy* and *Internet*), had a statistically significant association with the

3. Important to note, however, is that the dependent variable of interest did not record the year in which this legislation was passed. The agency collecting the data, WHO, never reported this information. Consequently, we do not know for sure if the other independent variables examined predated national obesity legislation. This limitation forced me to submit a more modest claim about the association between my independent and dependent variables.

presence of national obesity policies.⁴ The only variables that did have a positive association were the presence of national diabetes policies (*DiabPol*), with a positive coefficient estimate of 4.434, statistically significant at the 0.001 level, and gross domestic product (GDP) per capita (*GDPPERCap*), with a positive coefficient estimate of 2.794, significant at the 0.05 level.

Next, an additional logistic regression was conducted to examine the importance of these independent variables in the absence of *DiabPol*. As model 2 illustrates, still, none of the aforementioned four theoretical schools of thought were statistically significant. This finding, in turn, suggests that nations are more likely to create national obesity programs only when the presence of ailments perceived as being closely related to obesity, such as diabetes (Hossain, Kavar, and El Nahas 2007; *Lancet* 2011), is high, thus giving a clear indication that tackling obesity is important for avoiding the deaths and costs associated with diabetes.

Considering the lack of cross-national statistical evidence supporting the aforementioned four schools of thought, I now turn to a within-case analysis of Brazil's response to obesity.⁵ I do so in order to devise alternative hypotheses about the conditions under which governments implement obesity policies.

Brazil's Response to Obesity

By the 1990s, Brazil joined the advanced industrialized nations in seeing a burgeoning growth of obesity cases. Factors such as the increased importation of processed fatty foods and sedentary lifestyles and a decline in physical activity have been seen as contributing to weight gain (Monteiro, Conde, and Popkin 2007; Hahn 2008; Sichieri 2002). According to surveys conducted by the MOH in 2011, the number of obese individuals increased from 11.4 percent in 2006 to 15.8 percent in 2011 (Gómez 2012). Despite the fact that a large portion of the population is still malnourished and poor, thus leading to a dual nutrition problem, by 2010 the minister of health,

4. These proxy values do not precisely capture national expenditures for obesity. To my knowledge, such data do not exist. The closest I came to these values were those obtained for *ExtNCD*, which is a binary score—obesity policies should be included in *ExtNCD*, though I did not know for sure. While the variable *Beds* was statistically significant, I did not count this as an indicator of resources, as it is only one indicator of the total sum of variables that I believe constitute resources. Please consider, however, that the variables *Literacy* and *Internet* did not capture literacy in health and the ability to acquire medical information on the Internet. To my knowledge, no such variables exist.

5. Indeed, I acknowledge that not enough cross-national statistical indicators were available to adequately capture each school of thought, a limitation of this empirical study.

José Gomes Temporão, stated that “the problem of Brazil is no longer malnutrition but childhood obesity and the increase in weight” (quoted in Yapp 2010).

Brazil’s response to obesity was delayed, however. While Congress and the MOH did organize a national conference in 1996, Congresso Nacional de Nutrição (National Congress of Nutrition), to address Brazil’s ongoing nutrition challenges, policy responses to obesity did not arise until 1999 when Congress passed the Política Nacional de Alimentação—(PNAN, National Policy of Nutrition). Through PNAN, the product of negotiations between the government, the private sector, and activists, the MOH was committed not only to increasing awareness about obesity but also to funding the provision of healthier foods in schools (Monteiro, Conde, and Popkin 2002). Other federal and state agencies, such as education, worked with PNAN to coordinate these activities; PNAN also increased the MOH’s monitoring and reporting of nutrition data. It was also committed to increasing the number of health care professionals working on better nutrition (Monteiro, Conde, and Popkin 2002). Finally, PNAN stipulated that 70 percent of the foods provided to schools must be fresh and minimally processed (Coitinho, Monteiro, and Popkin 2002; Monteiro, Conde, and Popkin 2002). To help ensure this policy, the MOH provided additional grants to schools that agreed to work with local farmers to obtain healthier foods.

By 2000 Congress also passed legislation requiring that all processed food have their nutrition content listed on their packaging (Coitinho, Monteiro, and Popkin 2002). That year Brazil also became the first nation to mandate the printing of recommended serving sizes on food labels (Coitinho, Monteiro, and Popkin 2002).

In 2010 Congress implemented the Plano de Ações Estratégicas para o Enfrentamento das Doenças Crônicas Não Transmissíveis no Brasil (Plan of Strategic Action for Confronting Noncommunicable Diseases in Brazil) (MOH 2012a). Through this endeavor the MOH has provided clear guidelines and procedures for addressing obesity, such as funding for various prevention campaigns and the training of health care workers (MOH 2012a). The 2010 plan also provided new grant opportunities through a national policy on health promotion, physical activity, and nutrition as well as support for primary care services (MOH 2012a).

In response to the growing childhood obesity problem, Congress in 2007 also implemented the Programa Saúde nas Escolas (PSE, Health in Schools Program). The PSE is jointly administered between the health

and education ministries (MOH 2012b). The PSE emphasizes the following policy initiatives: (1) evaluating children's health; (2) strengthening health care worker training to address children's health needs; (3) promoting health and prevention in schools; (4) increasing children's health awareness (mainly through seminars); and (5) monitoring and evaluating the effectiveness of these interventions (MOH 2012c).

Through the PSE, Congress also authorized the MOH to provide grant assistance to schools for the purchase of physical education equipment (*Ponto de pauta* 2012). Funding has been provided to any school in need; yet this assistance has been given under the proviso that schools adhere to the MOH's policy guidelines (*Ponto de pauta* 2012; MOH 2012b). Schools receiving grant assistance are also expected to participate in the MOH's *Semana de Mobilização na Escola* (Week of School Health Mobilization), which is to be conducted every March; this endeavor is intended to help increase interest and awareness in children's nutrition as well as promote civic participation in combating childhood obesity (Campos 2013).

To help ensure better nourishment for children in schools, Congress supplemented the PSE with Law No. 11.947 in 2009, the *Programa Dinheiro Direto na Escola* (Program for Direct Money to Schools). Through this policy, the MOH provides grant assistance through the *Fundo Nacional de Desenvolvimento da Educação* (National Development Fund for Education) as long as 30 percent of the funding is used to purchase food directly from agricultural farmers (Reis, Vasconcelos, and Barros 2011). These efforts are also reinforced with the MOH's creation of the *Secretaria de Atenção a Saúde* (Secretary of Attention to Health) and its effort to create in-departmental collaboration with the Ministry of Education, Social Development, and Sports to develop new policy initiatives; this joint partnership is managed through the office of the *Coordenação-Geral de Alimentação e Nutrição* (Gómez and Sanchez 2012).

But what were the factors leading to the national government's eventual policy response? First, the presence of historical institutions and policy legacies seems to have mattered.⁶ That is, the 1999 PNAN legislation was mainly the product of a long history of the MOH, as well as of Congress's commitment to addressing nutrition disorders (Gaglianone et al. 2006; Gómez 2013c).

6. Important to note, however, is that this process is different from the heightened prevalence of obesity cases and politicians' fears, as mentioned earlier (Kersh and Morone 2005; Kersh 2009; Friedman and Schwartz 2008). Instead, historical institutionalism in policy development is a necessary but insufficient condition and must be combined with obesity prevalence rates; the latter, on its own, will not instigate policy action, as mentioned earlier.

Indeed, Brazil has a unique history when it comes to establishing federal institutions and policies focused on nutrition. Federal efforts to address nutrition deficiencies began in the 1960s with the military government. Seeking to ensure the presence of a healthy and vibrant workforce, especially in the hinterland, the military enacted federal laws and initiatives. For example, the Fundo de Assistência Previdenciária do Trabalhador Rural (FUNRURAL, Rural Work Assistance Fund), was created to provide nutrition and health services to poor workers (McGuire 2010). Malnutrition among children was also of concern. To ensure their health and their future ability to work, the military also created federal laws mandating that proper health and nutrition, as well as physical exercise, be incorporated into school curriculums (Gaglianone et al. 2006). The hope was that by incorporating these discussions into school curriculums, children would develop healthy eating habits (Gaglianone et al. 2006). And, finally, under the military the Brazilian Federal Council of Education stated that health, wellness, and nutrition needs were to be a vital component of the educational system (Gaglianone et al. 2006).

Another important factor seems to have been the presence of social health movements focused on good nutrition as a human right. During the 1960s, the *sanitarista* health movement, a leftist, pro-democratic collective mobilization effort comprising medical professionals, academics, intellectuals, community members, and local politicians, demanded greater equality in access to health care. In addition to pressuring the government for universal access to medicine, the *sanitaristas* viewed sound nutrition as a core aspect of human rights and the responsibility of the state (Gómez 2013c). The *sanitaristas* gradually infiltrated the highest echelons of the MOH (Weyland 1996) and, having done so, established a bureaucratic and political consensus around these very principles. By the time health care as a human right was written into the new democratic constitution in 1988, a political commitment—led by the *sanitaristas*—to view nutrition as a human right already existed. This conviction, in turn, reinforced the aforementioned historical institutional commitments to better nutrition and health.

By the 1990s, these preexisting historical institutions and policy principles, reinforced through the *sanitarista* movement, confronted escalating cases of adult and childhood obesity. In light of this historical context, health officials apparently believed in the importance of beginning discussions on nutrition and overweight issues at the national level, gradually laying out policy legislation. The aforementioned national conference on nutrition organized in 1996 was illustrative of this perspective; these

policy convictions, moreover, continued and led to the creation of PNAN in 1999. By the 2000s, as the health ailments associated with obesity heightened, these preexisting institutional designs and policy convictions motivated the MOH to view the distribution of diabetic medications as a “human right,” on par with access to antiretroviral medications for HIV/AIDS (Recine and Vasconcellos 2011; Jack 2011).

Yet the government’s response was based not only on domestic factors. The international community also played an important role. Specifically, the government’s comparison of itself with other nations appears to have motivated health officials to pursue obesity legislation. Furthermore, the MOH’s fear of sharing with other nations the reputation of being obese and overburdened with disease also appears to have mattered. This concern comports with the government’s long-standing history of building its international reputation in combating epidemics, such as HIV/AIDS and tuberculosis (Gómez 2013b, 2010), as well as its historic yearning to be viewed as a modern state capable of eradicating disease (Gómez 2013b, 2010).

The same international comparison and reputation-building dynamics occurred when the subject turned to obesity. By 2010 the MOH feared that Brazil would soon join the United States in having a reputation as an obese nation. In an interview with the United Kingdom’s *Telegraph* that year, Otaliba Libanio Neto, director of Brazil’s Department of Health Analysis, stated that if Brazil’s obesity trends continued, they would soon equal those of the United States by 2012 (Yapp 2010). Others in the media commented that such trends would not bode well for a nation that was planning to host the World Cup in 2014 and the Olympics in 2016 (Yapp 2010).

Such fears reached the highest echelons of the bureaucracy. In 2010 health minister Temporão revealed his concern that Brazil would become like the United States in its struggle with obesity: “If we stay at this pace, in 10 years we will have two-third[s] of the population overweight (or obese), as has happened in the United States” (quoted in Reuters 2010). Two years later, his predecessor, Health Minister Alexandre Padilha, commented: “Now is the time to act to ensure we don’t reach the levels of countries like the US, where more than 20% of the population is obese” (quoted in BBC 2012). Padilha further commented: “There is a tendency toward increased weight and obesity in the country. It’s time to reverse the trend to avoid becoming a country like the United States” (quoted in Ghosh 2012).

In sum, at the national government level, three alternative causal hypotheses can be put forth about the conditions leading to the implementation of

obesity policies: (1) the impact of historical institutionalism in policy legacies; (2) the presence of supportive and proactive social health movements within government advocating for better nutrition as a human right; and (3) international comparisons and reputation-building concerns.

But were these three hypotheses also relevant at the subnational level? Or were the conditions leading to policy adoption different? Below I examine how an urban government, Natal, and a rural government, Mossoró, both in the state of Rio Grande do Sul, responded to obesity.

Natal

Natal is a coastal city in northeastern Rio Grande do Norte. With a population of approximately 806,000, Natal is a fairly developed municipality, possessing a growing tourism industry, beautiful beaches, and carnivals. While a poorer section of the city is located to the west of the downtown area, Natal, in general, has sound infrastructure, a thriving economy, and a safe environment.

Heightened economic growth has nevertheless posed health challenges. As in other states in Brazil, the arrival of fatty foods, poverty, and sedentary lifestyles seems to have contributed to escalating cases of obesity (Medeiros 2012). From 2006 to 2011, the number of obese individuals in Natal increased to approximately 41 percent of the entire population, while 5.8 percent of individuals have type 2 diabetes (Rio Grande do Norte State Government 2012). By 2008 childhood obesity increased to approximately 26.4 percent for children between the ages of ten and thirteen years (*Tri-buna do Norte* 2011). Studies have also shown that children attending private schools (often from the wealthier socioeconomic classes) have a higher BMI than students from public schools (often from the poorer classes): 54.5 percent of a random sample of private school students between the ages of six and eleven years versus 15.6 percent for public school students (Brasil, Fisberg, and Maranhão 2007).

Similar to what we saw at the national government level, Natal's municipal legislature was also delayed in its policy response, in fact, much more so: despite knowing that obesity rates were increasing, the municipal legislature did not respond until April 2011. That year, council member Rejane Ferreira, of the Partido do Movimento Democrático brasileiro (PMDB, Brazilian Democratic Movement Party), introduced and helped pass the *Obesidade Zero* (Zero Obesity) legislation. This initiative requires that the municipal government increase awareness of obesity while also

addressing stigma and discrimination (CMN 2011; Casciano 2011). Nevertheless, no municipal legislation has been introduced to fund obesity prevention programs.

The only other legislation introduced in Natal is from the state legislature. In March 2012, state representative Larissa Rosado, of the Partido Socialista Brasileiro (PSB, Brazilian Socialist Party), passed the *Semana Estadual de Combate à Obesidade Infantil* (State Week to Combat Infantile Obesity) initiative. Celebrated during the second week of October, this initiative introduces public awareness campaigns about childhood obesity and sponsors school seminars that focus on educating students about better nutrition and physical activity (*O mossoroense* 2012b).

But what factors eventually accounted for Natal's policy response? Two factors emerge. First, the municipal legislature seems to have implemented the *Obesidade Zero* initiative because the mayor and the city council member anticipated and received federal financial and technical assistance. In 2011 the MOH's PSE transferred R\$6.2 million to over a hundred municipalities in the state of Natal (*Ponto de pauta* 2012). The municipality of Mossoró received the highest amount, R\$395,000 (which reflects the seriousness of the obesity problem there), while the municipality of Natal received the second highest R\$140,700 (*Ponto de pauta* 2012). In addition, through the Family Health Program (FHP), which comprises a team of doctors, nurses, and health assistants who make home visits, the MOH provides Natal with human resource assistance. The FHP workers help to increase awareness, providing schools and families with information on better nutrition and physical activity (Pinto 2012). This grant money is provided in phases and is conditional on following PSE policy guidelines (*Diario de Natal* 2012).

The timing of this federal assistance with respect to Natal's initial legislative effort supports the notion that much of the municipal legislature's motivation was based on its realization that it would receive the additional resources needed to implement the *Obesidade Zero* program. This finding is particularly surprising considering the relatively higher level of human resources and infrastructural support that Natal has when compared with other municipalities in the state (Duarte and Barbosa 2006). But it further suggests that an adequate level of health care resources by no means guarantees that governments will pursue obesity legislation—which corroborates the aforementioned statistical findings.

Thus, in sum, yet another alternative causal hypothesis can be made from the case of Natal, that is, anticipation and receipt of federal financial, technical, and human resource assistance for implementing obesity programs.

But were other causal factors important? How about the hypotheses generated from the national government level? Historical institutions and policy legacies, social health movements, and international comparisons and reputation building—none seem to have been important causal factors. The reason is that, historically, the central government was the main supplier of public health services (Hochman 1998), and thus it provided the only arena where historical institutional legacies and policy traditions could be established. Additionally, while emerging at the local level, the *sanitarista* health movement trickled upward, not downward; that is, seeking to create legislation inspired by their belief in universal access to medicine, these activists sought to infiltrate and affect *national* government policies, not local (Weyland 1996; Gómez 2013b). And, finally, to my knowledge, Natalese health officials were never concerned about comparing themselves with other cities in the world, nor were they concerned about building their state's international reputation. Such concerns have been shown to mainly affect national government politicians and presidential leaders (McGuire 2010; Gómez 2013b).

But were other causal factors at play? Perhaps the growing number of obesity cases and their associated health care costs were a factor. Logically, these concerns could not have been important. The reason is that the Natalese health department and legislature had extensive knowledge about the obesity epidemic prior to the 2011 legislation. And yet no policies were implemented in response. Alternatively, perhaps an ample level of health care infrastructural resources, such as hospitals, beds, equipment, and medical staff, was at play? These resources, too, could not have been a causal factor, as Natal's government appears to have had a sufficient level of resources prior to the 2011 legislation, especially when compared with other poorer municipalities (Duarte and Barbosa 2006). Despite these advantages, access to resources did not lead to an earlier policy response.

Aside from Natal, how have municipal governments in other areas of Rio Grande do Norte responded to obesity? What were the factors leading to reform in the more rural areas of the state, such as in Mossoró, and were they different from the urban and national government levels?

Mossoró

Mossoró is in a rural area in northeastern Rio Grande do Norte. Situated 275 kilometers from Natal, it has a population of about 234,390 individuals. Mossoró is mainly an agricultural-based economy, yet, when compared with Natal, is economically underdeveloped; it lacks adequate

employment and infrastructure and has high levels of poverty and crime (Torres, Silva, and Neta, n.d.). Mossoró also has a comparatively higher level of inequality in terms of access to primary medical care and treatment and infrastructure (Duarte and Barbosa 2006).

Mossoró joins Natal in having a high level of obesity. In 2012 40 percent of the city population was obese (*O mossoroense* 2012a). Since 2009 the total number of obese, including children, has steadily increased and is mainly concentrated among women (*O mossoroense* 2012a). Furthermore, by 2011 the number of diabetics reached eleven thousand (*O mossoroense* 2011). As in Natal, several factors account for this rise in obesity, such as heightened sedentary lifestyles and increased access to fatty foods.

In addition, when compared with Natal, Mossoró's municipal legislature has been seemingly more progressive with respect to policy initiatives. In 2011 the municipal legislature implemented the Centro de Apoio ao Controle da Obesidade, Jensen Jefferson Diogenese e Medeiros (Jensen Jefferson Center for Support and Control of Obesity) (*O mossoroense* 2012a, 2012c). This center employs two nutritionists, two physical education teachers, and one social assistant to provide free, daily attention to those suffering from obesity (Moura 2011). The focus is on prevention and healthier lifestyles, as well as psychological therapy for those with depression (*O mossoroense* 2012a).

In 2011 Mossoró municipal legislator Francisco José Jr. (2011) also implemented a series of prevention and awareness activities, which included a "week of focus" on obesity. And in 2012 the municipal legislature implemented the Programa Municipal de Prevenção da Obesidade em Crianças e Adolescentes (Municipal Program for the Prevention of Obesity in Children and Adolescents) (Lei No. 2836, de 10 de Janeiro de 2012 [Law No. 2836, January 10, 2012], *Jornal Oficial de Mossoró [JOM]* 5(129): 6, January 2012 (Braz.)). Through this endeavor the municipal health department works with schools to create classes for children to improve their healthy eating habits and lifestyles (Lei No. 2836, *JOM* 5(129): 6).

But why have Mossoró's legislative politicians been so proactive? One key variable emerges. That is, the Mossoró government's partnership with the national government seems to have eventually created incentives for its city officials to pursue obesity legislation. By partnering with the MOH, in the acquisition of both financial and human resources, municipal legislators appear to have been confident in their ability to implement policy.

Indeed, since 2007 Mossoró's department of health has engaged in a strong partnership with the MOH's PSE; this partnership has occurred

mainly by working with federal FHP staff to help implement initiatives at the school level (*O mossoroense* 2007). In addition to supplying financial support, FHP staff has helped conduct clinical evaluations, provide preventative medications for diseases such as diabetes and hypertension, and also offer various seminars and workshops (*O mossoroense* 2007). At the same time, for the aforementioned Municipal Program for the Prevention of Obesity in Children and Adolescents, FHP staff provides BMI exams, lessons, and tests on the causes and potential likelihood of gaining weight (Lei No. 2836, JOM 5(129): 6). The FHP has also helped construct public spaces where children can play (*O mossoroense* 2007). Finally, through the PSE, the MOH has provided Mossoró's health department with funding for the constructions of gym infrastructure, such as monkey bars and swings (*O mossoroense* 2007).

Through these endeavors, Mossoró's government officials have received the human resource support needed to ensure that their obesity policies can be effectively implemented. Through this support and because of the national-municipal government partnership created in 2007, Mossoró's mayor and municipal legislators seem to have had confidence in their ability to implement obesity legislation in 2011 and 2012.

But what about the hypothetical causal conditions formed at the national and urban government levels? None of these conditions appear to have mattered. With respect to my national-level hypothesis, for the same reasons found in Natal, that is, the absence of a long history of public health policy, the absence of bottom-up social health movements, and the absence of international comparisons and reputation building, none of these conditions seem to have mattered in Mossoró.

However, couldn't other causal factors have accounted for Mossoró's response? Surely the rise of obesity cases, especially among children, should have prompted policy efforts? Yet such could not have been the case, as municipal health officials were well aware of the growing prevalence of obesity prior to 2011; yet despite this awareness no legislation was pursued. How about infrastructural resources? This factor also could not have been important, as Mossoró had far fewer health care infrastructural resources (e.g., beds, medical equipment, and health care workers) than Natal (Duarte and Barbosa 2006), and still legislators implemented obesity policies.

Nevertheless, federal support and partnerships, similar to what was seen in Natal, seem to have mattered. As in Natal, the receipt of federal support appears to have given Mossoró's health officials the confidence and

incentives needed to pursue obesity legislation. In a context where financial and infrastructural resources are limited, especially for health care, this outcome certainly makes sense.

Conclusion

A nested analytic approach to comparing the politics of government response to obesity has suggested that recent theoretical approaches to explaining the implementation of obesity policies have several limitations. The large-N statistical analysis conducted at the beginning of this study suggests that this literature's emphasis on the importance of obesity prevalence rates (Kersh and Morone 2005; Kersh 2009; Friedman and Schwartz 2008), obesity's economic burden (Homer and Simpson 2007; Marrow 2011; Hammond and Levine 2010), financial and health care infrastructural resources (National Advisory Committee on Rural Health 2000; Lee et al. 2007; Tai-Seale and Chandler 2010), and shifts in civil societal attention and mood through increased access to information (True, Jones, and Baumgartner 2007; Zahariadis 2007; Gómez and Sanchez 2012) did not have statistically significant correlations on the presence of obesity policies. Instead, the prevalence of diabetes and national diabetes programs did; this finding in turn suggests that politicians may wait until the ailments associated with obesity emerge before pursuing legislation.

Absent strong cross-national statistical validation of the aforementioned theoretical schools of thought, I turned to an in-depth, within-case comparative analysis of the potential factors leading to the creation of obesity policies. The first step in this approach was to examine the national government's policy response, devise hypotheses, and then propose alternative hypotheses with evidence from the urban and rural government levels.

Evidence from Brazil's national government response, as well as from Natal and Mossoró, suggests that while hypotheses were established, they were different at the national and subnational levels. At the national level, historical institutionalism and policy legacies, the presence of social health movements supporting policy, and the MOH's interest in international comparisons and reputation building seem to have been important factors leading to the implementation of obesity policy. At the subnational level, however, the factors leading to reform appear to have been different. In Natal, the municipal legislature's expectation and receipt of federal financial and human resource assistance seems to have been important; the same could be said for Mossoró.

Thus while politicians and bureaucrats faced similar health challenges at the national and subnational levels, the political logic of reform appears to be different at these two levels of government. This finding suggests that even within nations, different international and domestic conditions may be at play in motivating governments to respond to obesity.

Some limitations nevertheless emerge from this study. As model 1 in the appendix illustrates, the correlation between the presence of national obesity policies and the prevalence of diabetes and national diabetes policies is very strong. This correlation may reflect the fact that a high prevalence of diabetes because of obesity may be motivating governments to implement obesity policies to quell obesity's continued growth and the health care costs associated with it. Yet at no point in this article did I explain national and subnational government responses to diabetes. This discussion was omitted for two reasons: first, very little data were available on the implementation of diabetes programs in Rio Grande do Norte, and second, I wanted to limit the discussion and keep it focused on obesity. Future researchers should nevertheless compare national and subnational responses to obesity and diabetes and the relationship between these program initiatives.

Several other lessons emerge from this article. First, in Brazil, the impact of the international community only seemed to affect decision-making processes at the national government level. This effect may be due to the fact that national politicians, bureaucrats, and diplomats interact more with international health agencies, the United Nations, and other countries when compared with leaders at the local level. Consequently, these national officials may be more concerned with how they are perceived in the world and how their reputation in health affects not only their geopolitical influence but also their ability to increase foreign direct investment.

Studies have similarly found that national-level officials are often the only ones who are interested in international comparisons and reputation building (McGuire 2010; Gómez 2013b). A future area of research will nevertheless be to examine whether larger cities in Brazil, as well as cities in other emerging nations, are interested in these international issues and whether this level of interest has affected their policy response to obesity.

Second, the qualitative case study evidence from Brazil suggests that the four aforementioned theoretical schools of thought, examined at the large-N statistical level, were lacking in their explanatory power. The case of Brazil suggests that none of these theoretical approaches paid attention to the importance of international forces, historical institutions, policy legacies, and within-state intergovernmental partnerships in health. Following

Ingo Rohlfig (2008) and Lieberman (2005), the next step will be to try to quantify my alternative hypotheses and to incorporate them into additional large-N statistical and nested analyses.

Third, even within an increasingly decentralized context, findings from Brazil propose that richer urban *and* poorer rural governments still rely on federal assistance to implement obesity programs. Such is especially the case when municipal officials lack confidence in their ability to implement legislation. Findings from Natal and Mossoró suggest that federal assistance can quell such doubts and inspire legislators to pursue policy. But this finding also suggests that local governments have doubts in the decentralization process and that going forward, a more hybrid intergovernmental partnership is necessary to effectively combat obesity.

Policy responses at the local level in Brazil also reveal that financial and infrastructural inequalities between urban and rural governments may not be as consequential as others have thought (UnitedHealth Center for Health Reform and Modernization 2011; Tai-Seale and Chandler 2010; National Advisory Committee on Rural Health 2000). Natal, for example, had far more infrastructural resources than Mossoró, yet Mossoró demonstrated a seemingly more progressive policy response. Future research will need to examine why some rural governments are more progressive than their urban counterparts in response to obesity and other NCDs. It may be a fruitful area of comparative research for not only Brazil but also other large, highly decentralized federations, such as India and China.

However, what about the role of civil society? Given Brazil's rich history of proactive social health movements, one would expect that nongovernmental organizations (NGOs) should have played an important role in combating obesity. Nevertheless, research indicates that the social health movement for obesity is essentially nonexistent in Brazil (Gómez 2013a; Gómez and Sanchez 2012). This absence is mainly due to the lack of consensus in society that obesity is a major policy issue, as well as the absence of adequate financial support, especially from the international community. Therefore, NGOs in Brazil had essentially no impact on the creation of obesity legislation (Gómez and Sanchez 2012). Future research will need to further explore whether NGOs have mobilized in response to obesity in other nations and to what extent they are contributing to policy formulation processes.

Finally, a fruitful area of research will be to conduct this nested analytic approach, as well as other types of statistical tests, with new data sets incorporating hypotheses obtained from Brazil's national and subnational governments, while further expanding our subnational comparative

analysis not only to other states within Brazil but to states in other emerging nations, such as India, China, and Russia—nations that are geographically large and where differences in decentralization processes have yielded high levels of infrastructural and health policy inequality at the urban and rural levels. Such a comparison can help assess whether Brazil is historically and contextually unique from these other emerging nations and, if not, whether a more generalizable theoretical claim about the international and domestic political conditions conducive for effectively responding to obesity can be achieved.

■ ■ ■

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Appendix Conditions Leading to Implementation of National Obesity Policies (ObesePol) in 83 Countries

	Model 1	Model 2 (Excluding <i>DiabPol</i>)
ObesePrev ^a	4.793 (2.785)	1.763 (1.946)
DiabPrev ^b	5.349* (2.781)	4.528 (4.152)
DiabPol ^c	4.434*** (1.315)	
GDP	-6.573 (1.713)	2.077 (2.667)
GDPPerCap	2.794* (1.388)	2.369* (1.179)
GovExp ^d	8.536 (7.912)	6.246 (6.433)
Physicians	-1.519 (7.894)	-8.710 (6.199)
Beds	5.343* (2.451)	3.249 (1.842)
Deaths ^e	-2.810 (2.979)	4.437 (2.272)
ExtNCD ^f	1.651 (1.027)	1.450 (8.699)
Literacy	-5.323 (3.366)	-1.180 (2.511)
Internet ^g	1.747 (6.393)	1.396 (2.717)

Notes: Columns present coefficients from logistic regressions, with standard errors in parentheses.

^aObesity prevalence.

^bDiabetes prevalence.

^cNational diabetes policies.

^dGovernment expenditure for health as a % of total government expenditure.

^eAge-standardized cardiovascular and diabetes deaths.

^fExistence of Ministry of Health program focused on NCDs.

^gIndividual access to the Internet.

* $p < .05$; ** $p < .01$; *** $p < .001$

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