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The Political Cure: Gender Quotas and Women's Health

Aubrey Westfall

Wheaton College

Carissa Chantiles

American University

As the international community emphasizes the importance of bolstering the economic, social, and political inclusion of women, gender quotas have emerged as a popular mechanism for encouraging women's political participation and improving the descriptive representation of women (Krook 2008). Quotas are institutional rules that recruit women into political positions in an effort to counteract instances of structural discrimination that prevent qualified women from taking public office. At present, about half of the countries in the world use some type of gender quota system (QuotaProject 2013). While no government has descriptively represented the female population in its legislature, female candidates have made substantial progress. As of May 1, 2015, 22.1% of the world's national legislators were women. This is a lower percentage than ideal descriptive representation of around 50%, but it is a significant improvement from just 13% in 1990 (IPU 2015).

Well-implemented quotas usually boost women's political inclusion at the national level (Htun and Jones 2002; Jones 2009; Larserud and Taphorn 2007; Matland 2005; Norris 2004; Tripp and Kang 2008). Many studies have started to link this representation to substantive changes through the assumption that female representatives will introduce legislation pertaining to women's rights or issues of direct

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relevance to women's life (frequently called "women's issues") (Franceschet and Piscopo 2008; Huddy and Terkildsen 1993; Mangoli and Tarase 2009).[1] Many studies find that female legislators are more likely than men to vote for bills on women's issues (McAllister and Studlar 1992; Swers 1998) and that women are more likely to propose bills relating to women's issues, regardless of political party (Jones 1998; Shogan 2001; Swers 1998; Thomas 1991). There is also evidence suggesting that women pursue different policy initiatives than men, particularly in regard to women's rights, children and families (Jones 1998), and infrastructure and education (Pande and Ford 2011). For example, Macfarquhar (2008) argues that a high number of female representatives strongly correlates with legislation focused on the needs of women, such as improved street lighting and expanded day care facilities. While much of the literature focuses on legislation, some scholars have linked representation to favorable conditions for the average woman in her everyday life. Mangoli and Tarase (2009) use the Indian example to illustrate how quotas are associated with positive security outcomes for women, while Myakayaka-Manzini (2003) links the implementation of quotas to women's health and social development. This article builds on these studies to examine the relationship between women elected under quota regimes and women's health outcomes.

While the previous literature has made important progress in developing our understanding of the implementation and effects of gender quotas, we identify two important gaps in the literature. First, studies examining substantive representation have often been limited to regional comparative analysis or case study (e.g., Baldez 2004, 2007; Burnet 2011; Chowdhury 2002; Dahlerup and Freidenvall 2011; Gray 2003; Jones 2009; Schmidt and Saunders 2004). There are excellent reasons to recommend a single case or regional analysis: the effect of quotas on women's representation and the way representation filters down into policy outcomes require a detailed investigation of the policy process. A regional focus helps control for cultural attributes or other regional factors that influence women's representation (Franceschet, Krook, and

1. The concept of "women's issues" is controversial. Researchers often lump family, education, and health concerns together, assuming that nurturing femininity will motivate women to support political solutions to problems in these areas. Critics take aim at the concept of "women's issues," arguing that there is no such thing; women are as diverse in their opinions and preferences as any other segment of the population. Regardless, the concept is relatively widespread in the literature when referring to political solutions to problems of gender inequity and caregiving.

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Piscopo 2012; Franceschet and Piscopo 2008; Jones 2009). However, a narrower focus may neglect an important institutional dimension of quotas that transcends region or mask "dramatic patterns of change" (Krook 2007, 368). A primary contribution of this study is an empirical analysis of the relationship between quotas and health at the international level.

Second, most studies on gender quotas examine the effects of quotas without distinguishing between the different types of quotas (Caul 1999, 2001; Gray 2003; Htun and Jones 2002; Tripp and Kang 2008). Exceptions include Dahlerup (2006), Dahlerup and Freidenvall (2011), and Schwindt-Bayer (2009), who consider the effects of diverse quota institutions on women's representation. We examine the effects of quotas by examining patterns in substantive representation within counties implementing different types of quotas, arguing that the institutionalization of national quotas leads to diverse effects in women's health outcomes.

WOMEN'S HEALTH

Access to health care remains one of the most important global issues, and *women's* health is a particular concern, especially in developing countries. In 2002, the Global Burden of Disease estimates indicated a 20% gender discrepancy in 68 of 126 health conditions and health risk factors (Sen, Östlin, and George 2007). Much of this inequity is linked to gender disparities in education, unemployment, and access to resources, while further inequities are created by war and economic instability. Certain health concerns are specifically associated with female biology and reproduction, including maternal mortality, infant mortality, high rates and risks of pregnancy, and sexually transmitted disease contraction. These health risks result in substantial reductions to life expectancy for women compared with men (Sen, Östlin, and George 2007).

While both men and women face many similar health challenges, inequality in access to health and economic resources significantly contributes to gender discrepancy in health, resulting in the "gender paradox," whereby women generally live longer than men but do not live healthier lives (Doyal 2000). Doyal argues that "policies in pursuit of gender equity must focus not on health outcomes themselves but on the inputs that provide the basis for human flourishing. . .making sure that [men and women] have equal access to those resources which they need

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to realize their potential for health" (2000, 932). At the political level, women's health is commonly ignored or neglected, particularly where poverty is present (Smyke 1991). Further, many global efforts to combat inequities in health provision and outcomes are "characterized by attempts to counter women's 'vulnerability,' rather than promote women's rights or entitlements, and that this may exacerbate inequalities rather than alleviate them" (Hanefeld et al. 2007, 4).

Female politicians often identify women's health as a policy priority in response to the common inequities in women's health outcomes and health care provision. In the 103rd Congress of the United States, the sex of the representative was the most significant attributable determinant of votes addressing abortion and women's health (Swers 1998). In Argentina, female representatives introduce 80% of the bills on reproductive rights, including expanding access to contraception (Franceschet and Piscopo 2008). Across the developed world, the number of women in leadership positions correlates with the adoption of specific women's health policies, such as reconstructive breast surgery and extended maternity stays (Tolbert and Steuernagel 2001), and Swiss, Fallon, and Burgos (2012) find a relationship between countries meeting a 20% threshold of women in government and child health in developing countries. In sum, scholarly evidence worldwide suggests that women in politics are working to promote women's health.

Gender quotas represent an institutional solution that could correct the lag in health care reform by ensuring that a greater proportion of women are elected, thereby providing more advocates for women's issues, and particularly women's health. For example, Deputy Flor Ayala, a representative in the Mexican Chamber of Deputies in the LXII Legislature of the Mexican Congress, explained how quotas have improved women's access to the legislature:

> Recent efforts in past years, such as the development of a quota system as you mentioned, have helped increase the representation of women in different levels of the Mexican Government. In my opinion, this is not only an achievement for Mexican women, but also for Mexican society as a whole, since it has allowed women to initiate many innovative approaches on public policy…I approached these issues by pursuing the welfare of families and individuals in particularly vulnerable situations (special needs, homeless, malnourished, migrant, etc.). My experience to improve women's health has been prioritized in a similar way, by promoting social aid programs that tackle some of the issues these groups face: food

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> assistance, access to medical attention and special needs therapy, among others.[2]

Similarly, Senator Sonia Margarita Escudero of Argentina identified an extensive list of human rights-related legislation she had personally worked on. She mentioned,

> I find a strong difference between the reaction of male and female colleagues on this priority policies. For example, enacted laws related to gender issues have increased since women arrived to the national congress by the application of quota laws. Nowadays, Argentina is one of the world's countries with greater female participation in its National Congress with 34.7% of the Chamber of Deputies and 38.9% of the Senate. It is also a leading Congress in the introduction and approbation of gender laws.[3]

In particular, she described how in 2007, the National Senate passed a resolution establishing the "Seat of the Woman" as a special committee of the chamber:

> In 2011, the 'Seat of the Women' was established as a Permanent Committee in charge of issue dictums on issues related to women rights. Now, I am fostering the treatment of a law that establishes a quota in the directive boards of enterprises, both public and private. Also, I have introduced a draft proposing some amendments into the Senate Rules in order to incorporate a compromise with gender equity in its provisions… I am also working in improving health conditions for women, especially through some proposals such as the regulation of the activity of qualified birth attendants.[4]

The experiences of Deputy Alaya and Senator Escudero illustrate the way quotas can empower women to achieve substantive policy change.

GENDER QUOTAS

Some scholars have suggested that discrepancies in the success of quotas are tied to quota type. Quotas are implemented at the national level in three ways: reserved seat quotas reserve a percentage of seats in the legislature for women, candidate quotas require political parties to place women in equitable numbers and positions on candidate lists, and voluntary quotas are implemented on a voluntary basis by political parties. Each of these models differs greatly from the others in how it

2. Personal communication with Flor Ayala, 2013.
3. Personal communication with Sonia Margarita Escudero, 2013.
4. Personal communication with Sonia Margarita Escudero, 2013.

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frames the future of women in the political realm, but in each one, "it is expected that the higher the number of women in 'policy-making positions,' the higher the possibility that 'women's issue policies' will be brought to the fore and implemented" (O'Regan 2000, 114).

Dahlerup (2006) argues that reserved seat and candidate quotas are more effective for ensuring women are actually elected than any other quota model because political opportunities for women are guaranteed — with reserved seat quotas, the seats are set aside, and with candidate quotas, a place on the party list is reserved for women (Dahlerup and Freidenvall 2011). Schwindt-Bayer (2009) similarly argues that the most effective quotas for achieving women's descriptive representation *require* larger percentages of women to be elected. Voluntary quotas do not institutionalize any requirements and rely on political parties to choose whether and how to implement a quota. These results suggest the mere existence of a quota is insufficient for achieving gender equity in representation. Rather, the design and implementation of the quota in each country determines success in incorporating female representatives into legislative bodies.

While Dahlerup (2006) and Schwindt-Bayer (2009) consider the effects of the different quota types, they limit their conceptualization of quota effectiveness to whether women achieve descriptive representation by having women in political office. We extend their theoretical differentiation of quota types to questions of substantive representation, which implies that "increasing the number of women in politics... [will] bring women's issues into the formal political agenda and will eventually change legislation" (Dahlerup and Freidenvall 2010, 410), which should result in real improvements for women in everyday life. In other words, just as the type of quota has been shown to influence how many women are placed in office, the type of quota may similarly influence how effective the female legislators can be.

The effectiveness of legislators depends on institutional surroundings and how lawmakers and the public perceive the process of election. The presence of quotas may influence the perceived legitimacy of all female candidates, regardless of whether the candidates were elected through a quota (Franceschet and Piscopo 2008). For example, using a survey of Flemish politicians (Belgium uses a candidate quota system), Meier (2008) identifies a cleavage in the perception of quotas between men and women, finding that women do not question the democratic legitimacy of quotas, while men believe they "clash with a number of basic principles behind the Belgian political system" and have a negative effect on the

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credibility of female candidates (Meier 2008, 334). The compromised credibility could result in reduced political power for women.

While all quota systems may incur a negative stigma, we argue that candidate quotas are less polarizing than reserved seat quotas. Dahlerup (2006, 6) describes candidate quotas as aiming to "broaden the pool from which the selection committee or primary will choose candidates." Under this form of quota, the female candidates are theoretically held to similar standards of qualifications, party loyalty, and electability as the male candidates in their pool. As a result, the women running for office under this quota system should be competitive candidates. The element of democratic competition should increase the perceived legitimacy of the candidates, which should help make the female legislators effective. Research on the French case by Murray (2010, 93) supports this idea, as she finds that "sex is a barrier to entry but not to performance" and identifies quotas as an appropriate mechanism for placing qualified women in political positions. French women elected under "parity" (effectively a candidate quota) did come in to office with slightly different experiential profiles, but they were equally effective once in office (Murray 2012). Franceschet and Piscopo (2008) reach similar conclusions about female candidates in Argentina, which also uses a candidate quota.

Compare the institutionalization of candidate quotas with the reserved seat quota system, which *requires* a number or percentage of elected candidates to be women. Under this system, women may not be required to compete at the same level with men. Instead, their parties may place them in "safe" districts, run them in an election in which their only opponent will be female, or set up alternative institutions to ensure the placement of women in the legislature. In her review of the literature on quotas, Krook (2007, 371) notes that quotas may serve "to consolidate control over party representatives and political rivals. For these elites, quotas are attractive because they enable them to hand pick 'malleable women' who will not challenge the partriarchical status quo." Removing electoral competition for female candidates may lower the barriers to entry for the average woman under the reserved seat quotas, but it might compromise the female legislator's ability to advocate for issues if the other legislators and the public perceive her as a token candidate.

Chowdhury (2002, 1) illustrates Bangladeshi women's negative experiences with gender quotas, where reserved seats "accentuated their dependence in politics and reinforced their marginality," as the seats formed a "vote bank" or tool of exchange for coalition building for male politicians (3). Similarly, Sater (2012, 73) finds that the reserved seats in

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Morocco tend to "put those selected into positions of dependency vis-à-vis centers of political power," and O'Brien (2012, 60) argues that "the Ugandan reserve[d] seat system provided a quintessential example of the criticisms launched against quota policies by both politicians and scholars" and that they are "promoting elitism and cronyism."

In sum, reserved seat quotas may create conditions under which "the strategies through which women achieve this inclusion, in fact, reproduce the authoritarian state itself" (Sater 2012, 73). Individual legislators may find their effectiveness compromised because of the questionable legitimacy of reserved seat quotas. Alternatively, if a woman is elected under a candidate quota system with greater perceived competition, the individual female legislator might be able to influence political outcomes more easily. However, this does not mean that women elected under reserved seat quotas are doomed to ineffectiveness. Perhaps there is greater power in numbers under reserved seat systems, where women must occupy more space in the legislature to overcome issues of credibility: if there are enough women in the legislature, the other legislators will have no choice but to engage with them.

This concept has been developed in the "critical mass" literature, which hypothesizes that female legislators need a critical mass of other female legislators in order to address gendered concerns through political alliances (Dahlerup 1988; Kanter 1977). Swiss, Fallon, and Burgos (2012) support critical mass theory when they find that the effectiveness of women's representation on child heath outcomes in developing countries is especially apparent once the women in the legislature reach a 20% threshold. We theorize that the institutional framework of the elections may determine the size of the critical mass. In particular, perhaps contexts that bring the candidate's qualifications or deservedness into question (i.e., reserved seat quotas) require a larger critical mass of female politicians, while the need for a critical mass may be reduced under candidate quota systems.

HYPOTHESES

We derive two hypotheses from previous literature describing the way quotas influence the election of women and how those women can effect policy change:

***H_1*:** *Both candidate and reserved seat quotas should significantly increase the percentage of women in the legislature, but reserved seat quotas should have a stronger effect than candidate quotas.*

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We expect reserved seat quotas to be the most effective at ensuring descriptive representation because they *require* women to occupy political office, while candidate quotas require female candidates to be placed on the party list. The women may not take office, depending on the success of the party and their placement on the list.

***H*$_2$**: *The relationship between the percentage of women in the legislature and women's health outcomes should be stronger in countries implementing reserved seat quotas than in countries implementing candidate quotas.*

Given the findings of the previously cited literature, which suggests that reserved seat quotas compromise the legitimacy of the female legislators, this hypothesis may seem counterintuitive. However, this hypothesis is meant to capture the effect of a *growing number of female legislators*. Based on the critical mass literature, we expect that a greater percentage of women in the legislature should be associated with a significant improvement in health outcomes under both candidate and reserved seat quotas. However, we expect that the growing percentage is more important for achieving substantive outcomes under reserved seat quotas, where more female legislators are needed to overcome the difficulty of potentially diminished credibility. Under candidate quotas, the effect should be less dramatic because the individuals elected are hypothetically less compromised and therefore able to individually effect change.

In effect, we are hypothesizing an indirect relationship between gender quotas and women's health, where the quotas determine the number of women elected and then the number of women elected influences the effectiveness of the politicians with regard to improving health outcomes. However, the relationship is mediated by the political climate created by the quota system, which should change the magnitude of the latter relationship, depending on the quota regime.

A QUANTITATIVE ANALYSIS OF THE INDIRECT EFFECT OF GENDER QUOTAS ON WOMEN'S HEALTH

The Sample

The unit of analysis of the determinants of women's health outcomes is the country-year. The sample covers the years from 1995 to 2012 and contains all countries recognized by the United Nations. Years earlier than 1995 are

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not included because of concerns with data coverage and consistency.[5] Further, most countries (with the exception of Argentina, Belgium, Denmark, Pakistan, and Tanzania) implemented either reserved seat or candidate quotas after 1995.

The Model

We use multilevel linear models to examine the following relationships: (1) the relationship between the different types of quotas and women's representation in the legislature and (2) the relationship between women in the legislature and substantive health outcomes. The multilevel model allows us to account for unit heterogeneity generated by the hierarchical nature of our data where we have multiple observations (years), nested within countries, that are grouped within regions. This model is appropriate for both of the relationships we are examining because of the regional trends in the type of quota implemented and in the women's health outcomes.[6] Table 1 illustrates the regional breakdown of national quotas in 2012.

Reserved seat quotas are found primarily in Africa and Asia, whereas European nations favor voluntary quotas, and candidate quotas are found in every region. We theorize that the variance in both quota type and women's health outcomes is the result of regional and institutional factors; the multilevel model accounts for regional characteristics and allows for a more precise specification of the model that should be generalizable.

The Data

The dependent variable in our first equation is women's representation in the legislature. We measure the percentage of parliament seats held by women, recorded by the Inter-Parliamentary Union. We use variables from three theoretical groups as the independent variables predicting women's representation: institutions, modernization, and international incentives.

5. Where data are missing in the 17 years of our sample, we extrapolate forward from the most recent historical observation.

6. Because our dependent variables of interest are health outcomes, we use the regional definitions from the World Health Organization, which are based on the Global Burden of Disease classification. We believe this definition best allows us to control for state-level factors that might affect overall health.

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Table 1. Breakdown of national quotas by World Health Organization region, 2012

	Countries with quota	*Type of quota instituted*			
		Reserved seat	*Candidate*	*Voluntary*	*None*
Africa ($n = 46$)	26, 56.5%	8	8	12	20
Americas ($n = 35$)	20, 57.1%	1	15	11	15
Eastern Mediterranean ($n = 21$)	12, 57.1%	9	4	0	9
Europe ($n = 53$)	36, 67.9%	1	15	24	17
Southeast Asia ($n = 11$)	4, 36.3%	1	2	1	7
Western Pacific ($n = 23$)	5, 21.7%	1	2	3	18
Total ($n = 207$)	103, 49%	21	46	51	104

Note: Some countries employ more than one type of quota.
Source: QuotaProject, http://www.quotaproject.org/index.cfm.

We argue that gender quotas are important institutions determining the number of women included in political office. The presence or absence of reserved seat and candidate quotas at the national level is recorded as dichotomous variables based on data from the Global Database of Quotas for Women.[7] We omit voluntary party quotas from the analysis because they confuse the issue; they are not constitutionally or legislatively required, so parties might implement them in different ways within a country, and they can take a variety of forms, which promote electoral competition for female candidates to a varying extent.

We collected several indicators to measure modernization, arguing "that women's socioeconomic standing, democracy levels, economic development, and female-friendly public policies co-vary" and must be controlled for in any model predicting women's political inclusion (Bush 2011). We measure freedoms (and therefore the presence of democratic institutions) using Freedom in the World data on political rights and civil liberties (Freedom House 2013). We created an additive index and rescaled it so that 1 represents the least free countries and 7 the most free. Within democratic societies, the electoral institutions

7. Database available at http://www.quotaproject.org. A country is coded as having a quota in the year of the quota implementation and each year after. This approach admittedly does not capture some interesting variance in quota types, nor does it capture some interesting temporal effects, where the effects of quotas might take a few years to manifest. However, the collection of data over 15 years and the dichotomous measure of quota type provide a good starting point for a cross-national analysis.

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influence the probability of women being elected to office. In particular, proportional representation systems tend to exhibit higher rates of women in political positions than majoritarian systems (Schwindt-Bayer 2009). We use information from the Database of Political Institutions to code the district magnitude within the legislative house.

Economic health is measured with World Bank indicators of gross domestic product (GDP) at purchasing power parity and GDP growth (percentage change in GDP from the year before). The World Bank collects data on female literacy rates as a percentage of the population. As a blunt control for gender traditionalism, we created a dichotomous variable that indicates Islamic cultural heritage using data from the Association for Religion Data Archives. Any country with a majority population adhering to Islam is coded as 1 (Fish 2002; see Charrad and Zarrugh 2015 for a discussion of the complex relationships between gender, religion, and the state).

Bush (2011) finds that international incentives are highly predictive of whether a country adopts gender quotas. Similar international concerns could condition the percentages of women elected to the legislature or improvements related to women's health outcomes. To control for international incentives, we incorporate the World Bank variable from Bush's analysis with the greatest data coverage over the years in our sample: official development assistance from members of the Organisation for Economic Co-operation and Development.[8]

Our second equation uses many of the variables described earlier to predict women's health outcomes, although the theoretical mechanism may differ. Women's health outcomes are measured with a variety of indicators that speak to the specific medical needs of women. Because many women's health concerns are culturally sensitive (e.g., access to contraception), we select objective women's health outcomes that are less vulnerable to cultural interpretation. Female life expectancy is a broad measure of women's health capturing the average overall health of women within a country. Female life expectancy at birth in years is recorded using data from the World Bank. Both maternal and infant mortality are used to evaluate the prioritization of maternal health care and, by extension, women's health. The World Health Organization

8. Bush (2011) also codes the presence of a liberalizing United Nations peacekeeping operation and the presence of an international election monitor in the most recent election data. We choose to omit these variables because of missing or incomplete observations, which would have substantially reduced our sample size.

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tracks maternal mortality within each country as the number of women who lose their lives as a result of a maternal complication out of 100,000 live births; it records infant mortality within each country as the number of babies who lose their lives as a result of inadequate health care out of 1,000 live births. Finally, fertility rates, measured by the World Bank as the total number of births per woman, are used as a general measure of women's ability to control their reproductive lives. Health spending is the only unique control variable included in the equation predicting health outcomes that is not in the equation predicting women's representation. Health expenditure as a percentage of GDP is reported by the World Bank.

RESULTS

Table 2 displays the results of a multilevel linear model predicting women's representation. Both reserved seat and candidate quotas exhibit significant relationships with representation, although countries implementing reserved seat quotas are modeled as including 9.3% more women in the legislature than countries without reserved seat quotas, compared with a 6.7% increase with candidate quotas.

The other significant relationships in the model affirm our theoretical expectations. The female literacy ratio is positively associated with the percentage of women in the legislature: the model indicates that a 10% shift in literacy rates should be associated with a 1.9% increase in women's representation. Female literacy may serve as proxy for the number of qualified women who could compete for political office. District magnitude also significantly predicts women's representation, suggesting that countries with a lower threshold of votes required to win office will be more likely to have women in the legislature. Ultimately, the results affirm H_1, finding that countries implementing a quota with a legal requirement for women's inclusion (through either reserved seat or candidate quotas) are associated with higher rates of women in the legislature.

Having illustrated the importance of reserved seat and candidate quotas for helping women reach positions in the legislative branch, Tables 3 and 4 take the analysis a step further and examine the relationship between the percentage of women in the legislature and women's health outcomes in two samples: countries with reserved seat quotas and countries with candidate quotas.

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Table 2. Hierarchical linear model predicting women's representation in the legislature

Reserved seat quota	9.314*
	(0.989)
Candidate quota	6.739*
	(0.621)
Female literacy	0.185*
	(0.028)
Freedom	−0.477
	(0.263)
District magnitude	0.017*
	(0.006)
GDP PPP[a]	0.044
	(0.027)
ODA[a]	0.306
	(0.232)
Muslim majority	−2.923
	(1.896)
Constant	−0.241
	(2.749)
N	1,290
N of regions	6
N of states	124
Average years	10.4
Wald chi^2(8)	340.07
Prob > chi^2	0.000

a. coefficient *1,000.
*$p < .05$.

Table 3 summarizes the results of several multilevel linear models examining the relationship between women's representation and women's health outcomes in countries implementing reserved seat quotas. Within this sample, women's representation is typically significantly associated with women's health outcomes. The one exception is the insignificant relationship between women's representation and prenatal care, which could be weakened because of the complexity of prenatal care participation, which can vary based on individual (demographic, economic, cultural) and health service (accessibility, expertise, communication) factors (Boerleider et al. 2013). The positive relationship between women's representation and female life expectancy suggests that countries with higher numbers of female representatives are associated with a longer predicted lifespan for women. The modeled relationship suggests that a 10% increase in women's representation in the legislature should be associated with an increase in

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Table 3. Hierarchical linear model predicting women's health outcomes in countries with a reserved seat quota

	Female life expectancy in years	*Prenatal care: % pregnant women*	*Maternal mortality: Deaths per 100,000 live births*	*Infant mortality: Deaths per 1,000 live births*	*Fertility: Average births per woman*
Women in legislature	0.175*	0.143	−4.775*	−0.832*	−0.008*
	(0.032)	(0.119)	(1.161)	(0.290)	(0.004)
Female literacy	0.074*	0.184*	−1.842*	−0.640*	−0.011*
	(0.026)	(0.092)	(0.955)	(0.219)	(0.003)
Freedom	0.273	4.302*	−3.503	4.592	0.010
	(0.348)	(1.270)	(12.520)	(3.085)	(0.040)
GDP PPP	0.167[a]	0.530[a]	−0.001	−0.001	−0.012[a]
	(0.116)	(0.432)	(0.004)	(0.001)	(0.013)
GDP growth	0.120*	0.383*	−4.457*	−0.870*	−0.007
	(0.048)	(0.183)	(1.692)	(0.447)	(0.005)
Health spending	0.836*	3.497*	−46.592*	−5.428*	−0.052
	(0.255)	(0.964)	(9.851)	(2.339)	(0.029)
ODA	0.002*	0.004*	−0.046*	−0.006	−0.0001*
	(0.0004)	(0.002)	(0.017)	(0.004)	(0.00005)
Muslim majority	3.941	−11.375	−32.568	−17.900	0.171
	(3.462)	(7.171)	(139.111)	(16.024)	(0.622)
Constant	52.324*	43.733*	712.028*	133.536*	4.680*
	(3.796)	(8.166)	(128.468)	(20.122)	(0.693)
N	141	141	130	141	141
Regions	6	6	6	6	6
States	19	19	18	19	19
Avg. years	7.4	7.4	7.2	7.4	7.4
Wald $chi^2(8)$	182.13	77.19	120.09	67.39	75.44
Prob > chi^2	0.000	0.000	0.000	0.000	0.000

a. coefficient *1,000.
$^{*}p < .05$.

a woman's life expectancy of about 21 months on average. The negative relationships between women's representation and maternal and infant mortality suggest that an improvement in women's representation by 1% is associated with almost five fewer maternal deaths and 80 fewer infant deaths per 100,000 live births. Fertility also shares a negative relationship with women in the legislature.

The most consistently significant independent variable in Table 3 is female literacy: an increase in the percentage of literate women is positively associated with female life expectancy and prenatal care and negatively associated with maternal and infant mortality and fertility. A

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Table 4. Hierarchical linear model predicting women's health outcomes in countries with a candidate quota

	Female life expectancy in years	*Prenatal care: % pregnant women*	*Maternal mortality: Deaths per 100,000 live births*	*Infant mortality: Deaths per 1,000 live births*	*Fertility: Average births per woman*
Women in legislature	0.051*	0.312*	−1.392*	−0.410*	−0.012*
	(0.006)	(0.053)	(0.340)	(0.090)	(0.001)
Female literacy	0.137*	0.293*	−3.995*	−0.506*	−0.029*
	(0.017)	(0.085)	(0.753)	(0.136)	(0.003)
Freedom	−0.032	−0.724	2.221	−1.333	−0.003
	(0.101)	(0.742)	(5.126)	(1.221)	(0.020)
GDP PPP	0.102[a]*	0.0007*	−0.0002	−0.0005*	0.009[a]*
	(0.018)	(0.0001)	(0.001)	(0.0002)	(0.004)
GDP growth	0.005	0.053	0.390	0.348*	−0.001
	(0.007)	(0.064)	(0.385)	(0.110)	(0.001)
Health spending	0.262*	0.017	1.156	0.313	−0.008
	(0.066)	(0.527)	(3.480)	(0.868)	(0.013)
ODA	0.059[a]*	0.0004	−0.001	0.003*	0.002[a]
	(0.025)	(0.0002)	(0.001)	(0.0004)	(0.005)
Muslim majority	1.071	5.328	−44.967	−3.857	0.045
	(1.725)	(3.592)	(37.011)	(5.138)	(0.225)
Constant	57.928*	55.647*	504.347*	84.814*	5.437*
	(2.894)	(7.413)	(80.760)	(13.032)	(0.445)
N	274	265	273	274	274
Regions	6	6	6	6	6
States	42	39	41	42	42
Avg. years	6.5	6.8	6.7	6.5	6.5

a. coefficient *1,000.
*$p < .05$.

simplified mechanism linking literacy to health suggests that as women become more educated (likely within cultural and political contexts that facilitate education), they are more likely to take steps to secure the health of themselves and their families and less likely to engage in harmful practices.[9] Other independent variables share theoretically expected relationships with women's health outcomes. GDP growth and health spending are significantly associated with increased life

9. Practices considered harmful may be culturally determined, which may lead to a different relationship between the independent and dependent variables where the health outcomes are culturally sensitive (access to contraception, sex education, testing for sexually transmitted diseases, etc.).

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expectancy and prenatal care and reduced maternal and infant mortality. Official development assistance is positively associated with life expectancy and prenatal care and negatively associated with maternal mortality and fertility rates.

Table 4 summarizes the results of multilevel linear models predicting women's health outcomes in countries with a candidate quota. In these models, the percentage of women in the legislature is associated with positive women's health outcomes, but the magnitude of the effect is weaker than in countries with reserved seat quotas. In countries with candidate quotas, the percentage of women in the legislature shares the expected positive relationship with female life expectancy (an increase in women's representation of 10% corresponds with a six-month increase in life expectancy) and prenatal care (a 10% increase in women's representation is associated with 3% more pregnant women receiving prenatal care) and a negative relationship with maternal and infant mortality (an improvement in women's representation by 1% is associated with almost one less maternal death and 40 fewer infant deaths per 100,000 live births) and fertility rates. The weaker relationships between women's representation and women's health outcomes in countries implementing candidate quotas appear to affirm H_2, which predicted that countries implementing quotas that encourage competition between candidates (i.e., candidate quotas) should exhibit a weaker relationship between women's representation and substantive women's health outcomes than countries reserving legislative seats for women, on the assumption that the candidates elected under a reserved seat system require a larger mass of female colleagues in the legislature in order to be effective advocates for women's issues. As in Table 3, women's literacy is consistently and significantly associated with positive women's health outcomes, as is GDP, all in the expected directions. No other independent variable is consistently associated with the women's health outcomes.

In sum, our results suggest that gender quotas place women in political office, and once in office, the presence of female legislators is associated with positive outcomes for their female constituents, at least where health care is concerned. The number of female representatives is associated with health outcomes, regardless of the type of quota adopted, but the magnitude of the relationship is strongest in countries implementing reserved seat quotas compared with countries implementing a candidate quota. While this result could be interpreted as an argument in favor of the implementation of reserved seat quotas,

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we caution against this interpretation. Rather, we theorize that the stronger relationship is a product of the heightened barriers created for female legislators under the reserved seat quota system. Because the legitimacy of system is questioned, the females elected under the quota may be ineffectual on their own and must achieve a large critical mass of women to effect policy change around women's issues. Conversely, increasing the number of women elected under a candidate quota system (while still important) will not have as strong an effect in achieving substantive goals for women, although the relationship is still highly significant.

CONCLUSIONS

In this study, we examine the different types of quotas from an international perspective to determine whether placing women in political office filters down to change the lives of nonpolitical women. We use the women's health outcomes for our investigation of the substantive effects of reserved seat and candidate quotas. Our initial findings affirm assumptions in the previous literature suggesting that quotas making legal demands and containing sanctions for noncompliance will be effective at improving the number of women in office and that reserved seat quotas share the strongest relationship with a higher percentage of women in legislative office. However, we find that the policy effectiveness of the individual women elected in countries that implement these quotas may be diminished in certain conditions. In our models, increased descriptive representation is often associated with positive conditions for women's health, but the strength of the relationship depends on the type of quota implemented — the relationship is much stronger under a reserved seat system. We theorize that this relationship is stronger because of the somewhat compromised nature of occupying a protected elected position under a reserved seat system. Because their colleagues and the public question legislators in reserved seats, more women must be elected/appointed in order to be effectual on women's issues, while women elected under candidate quota are not similarly constrained.

By providing a cross-national statistical analysis of the substantive effects of quota systems over time, this study contributes to the growing literature examining the cross-national patterns in quota implementation and efficacy. Most research on the efficiency of quotas focuses on whether

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quotas are effective at increasing representation of women, and until recently, many studies found small or no effect of gender quotas (Htun and Jones 2002; Kunovich and Paxton 2005). Schwindt-Bayer (2009) attributes the absence of any meaningful finding to the simple dichotomous measures of whether a state has a gender quota, without distinguishing between the different types of quotas. As Schwindt-Bayer (2009, 22) correctly notes, "rather than simply controlling for whether or not a quota exists, authors need to account for differences among gender quotas." In her study, she uses cross-sectional statistical analysis illustrating how quota size, placement mandates for candidate lists, and enforcement mechanisms affect quota effectiveness in placing women in political office. Our findings echo those of Schwindt-Bayer (2009), although we include data over time and focus on substantive outcomes rather than women's representation. Our results are evocative and suggest more research focus on teasing out the relationship between quotas and substantive outcomes.

To a lesser extent, our findings contribute to the growing research on women's health outcomes. Although we do not speak directly to the literature on public health, our models reveal important institutional mechanisms for ensuring that the political will is present and active in promoting and securing resources for public health outcomes that should be interesting to those seeking to explain international variation in women's health outcomes or potential institutional solutions to women's health problems.

Women have made great strides toward equality over the last 30 years, but improvements are slow. Cultural norms and discriminatory institutions make it difficult for women to achieve equality. Quotas have been held up as a quick, short-term solution to placing women in visible political positions. However, even if women are in political office, there is no guarantee that their positions will immediately translate into political power. This study reinforces the notion that institutional design matters, not only for achieving descriptive representation but also for achieving substantive representation. Placing women in political positions is a necessary but insufficient condition for substantive representation. The way women achieve office also matters, and quotas that discourage competition may diminish the power of the individual female politicians. Ultimately, our findings remind us that the goal of quotas should always be to eradicate the conditions that made the quota necessary in the first place. If quotas can help even the political playing field for women, eventually women should be able to compete with

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male candidates as equals, without institutional privileges (and thereby with increased legitimacy). At that point, women should be able to make the greatest strides in promoting important issues of great relevance to their female constituents, such as women's health.

SUPPLEMENTARY MATERIAL

To view supplementary material for this article, please visit http://dx.doi.org/10.1017/S1743923X16000167

Aubrey Westfall is Assistant Professor of Political Science at Wheaton College, Norton, MA: westfall_aubrey@wheatoncollege.edu; Carissa Chantiles is a graduate student in the School of International Service at American University.

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