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Beyond community characteristics: a leader's gender and local government adoption of energy conservation practices and redistributive programs

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BEYOND COMMUNITY CHARACTERISTICS: A LEADER'S GENDER AND LOCAL GOVERNMENT ADOPTION OF ENERGY CONSERVATION PRACTICES AND REDISTRIBUTIVE PROGRAMS

ABSTRACT

Most research examining factors associated with local government adoption of sustainability practices focuses on the impact of community characteristics. Little is known about whether adoption is also related to the characteristics of the leaders in these jurisdictions. To address this gap in the literature, this exploratory study uses data from a national survey of U.S. local governments (n=1,672) to examine the potential correlation between adoption of sustainability practices and the gender of a jurisdiction's highest elected official. Our regression models find that jurisdictions led by women were more likely to have adopted redistributive programs and practices encouraging community-based energy conservation. But, there is no correlation between a local government's adoption of measures promoting government energy conservation and its leader's gender. Future research should explore whether female leaders' greater openness to citizen involvement in the policymaking process and women's socialization to focus on communal rather than individual interests help account for our findings.

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INTRODUCTION

There is a growing body of research examining factors associated with local government adoption of various sustainability practices. These studies generally focus on community characteristics, including socioeconomic, political, intergovernmental, and capacity factors (e.g. Homsy, Liao, and Warner 2019; Homsy and Warner 2015; Portney 2013; Saha 2009; Wang 2013). However, little is known about whether local government adoption of sustainability practices correlates to the characteristics of the leaders in these communities, including the gender of the top elected official in a jurisdiction.

This is somewhat surprising given case studies examining local sustainability efforts that emphasize the importance of having a champion, often mayors, in order for these initiatives to be successful (Akpadock 2000; Bulkeley 2010; Mintrom and Luetjens 2017; Young 2010). Elected officials can play an important role in: (1) reframing global sustainability challenges as local problems (Bulkeley 2010; Mintrom and Luetjens 2017), (2) setting the policy agenda (Bulkeley 2010; Hjerpe, Storbjörk, and Alberth 2015; Young 2010), (3) raising awareness about relevant policy issues (Hjerpe, Storbjörk, and Alberth 2015), (4) allocating necessary resources (Meijerink and Stiller 2013), (5) spanning boundaries (Mintrom and Luetjens 2017) and (6) influencing the attitudes of other key stakeholders (Measham et al. 2011). These officials also may value being able to market their jurisdiction as a pioneer to the public and other local governments, particularly when practices have short-term benefits for which they can take credit (Hjerpe, Storbjörk, and Alberth 2015). In addition, local leaders may promote these practices as a way to reduce their jurisdiction's expenses through energy conservation or to attract new businesses (Homsy 2018).

In light of the key role local politicians can play in the success of sustainability efforts, we seek to understand whether jurisdictions led by certain types of elected officials are more likely to adopt these initiatives than others. For example, given the politicized nature of much of the rhetoric around environmental issues, especially the climate change debate within the United States, one might expect jurisdictions where the highest elected official is a Democrat to be more committed to efforts to reduce greenhouse gases. Do other traits, such as the gender of a jurisdiction's leader, matter as well? Our study provides a preliminary answer to this question by examining U.S. local governments' adoption of three types of sustainability measures.

Understanding the possible relationship between sustainability practices at the local level and the gender of a jurisdiction's leader is increasingly important as the percentage of chief administrative officers who are women in the United States has grown from approximately 1% in 1974 (Antil, Letourneau, and Cameron 2014) to 17% in 2018 (ICMA 2018). Our research offers insights about local sustainability efforts in the United States although the dynamics associated with female leadership may be different in settings beyond U.S. local governments and, in particular, may depend on the political context. We explore this point further in our discussion section.

For theoretical and methodological reasons, our study focuses on three relatively narrow indices of sustainability – energy conservation in government, energy conservation in the community, and redistributive programming. Differentiating energy conservation between those practices impacting local government and those impacting the broader community as our first two indices do allows us to examine the theoretical divide between self-interest and community interest. Also, we want to contribute to the literature by taking a broader view of sustainability than many past researchers. As Opp (2017) points out, creating sustainable communities involves

more than just protecting the environment; it also includes promoting greater social equity. Reflecting this more expansive conceptualization of sustainability, we examine local governments' adoption of practices encouraging energy conservation and redistributive programs targeting vulnerable populations to operationalize a community's commitment to environmental protection and social equity, respectively. Methodologically, communities across the United States face difficult decisions about how to conserve energy and fairly redistribute public resources; the fundamental challenges these issues present vary little by region. Moreover, each index contains enough discrete practices so that the values of these variables differ sufficiently across jurisdictions. We do not suggest that these indices represent sustainability in its totality, but simply offer an initial way to explore the possible relationship between a leader's gender and local government decision-making in this policy area.

In the next section, we review past research on the extent to which men and women, especially elected officials, have different views in various policy areas as well as whether there is an association between the gender of elected officials and the decisions jurisdictions make. In addition to looking at general literature on this topic, we focus on studies particularly relevant to this article: those discussing potential gender disparities regarding sustainability issues. Following this, we detail our methods and findings. We conclude by exploring the implications of our study for the adoption of local sustainability measures.

PAST RESEARCH ON GENDER AND STANCES ON PUBLIC POLICY ISSUES

In the United States, the federal government is abdicating or devolving responsibility for protecting the environment and providing social welfare programming to lower levels of government, and, with this transition, some municipalities have increased their sustainability

efforts (Bomberg 2017; Carlarne 2019). Researchers have examined the drivers of sustainability change at the local level. This scholarship has most commonly focused on the influence of community characteristics, such as local government capacity (Krause 2011), experience with environmental change (Zahran et al. 2008), local priorities and intergovernmental collaboration (Hawkins et al. 2016), and administrative structure (Krause, Feiock, and Hawkins 2016).

While scholars have yet to specifically explore whether the adoption of local sustainability initiatives is related to the gender of the jurisdiction's leader, there is a rich literature highlighting that men and women, including elected officials, have different positions on many public policy issues. Not surprisingly, considerable research suggests female elected officials tend to be more supportive of issues important to women, children, and families. For example, studies in multiple countries have found female legislators are more likely than their male counterparts to prioritize bills relating to these issues (Jones 1997; Thomas and Welch 1991; Tremblay 1998). Moreover, evidence suggests that a relationship exists between the gender balance within governing bodies and their decision-making. In the United States, states with a greater proportion of female legislators have more liberal abortion laws (Berkman and O'Connor 1993) and more generous state parental leave policies (Williamson and Carnes 2013). This same basic pattern is found outside the United States too. For instance, policies requiring greater female representation on village councils in India have resulted in increased investment in public goods more closely linked to women's concerns (Chattopadhyay and Duflo 2004).

Literature also investigates variations in the extent to which men and women care about different sustainability issues, including protecting the environment and providing a strong social safety net. Past studies on these topics have usually examined only one of these aspects of sustainability, not both. In addition, almost all of the research on elected officials study

legislators rather than chief executives and focus on the state or national level, largely overlooking leadership in local government.

Relevant to our paper's focus on energy conservation, research has examined gender differences in attitudes about the environment both among the general public and elected officials. Public opinion studies conducted in a wide variety of settings over time find women are consistently more concerned about environmental issues than men. Although the disparities are not always large (Blocker and Eckberg 1997; Mohai 1992; McCright 2010), they are greatest with environmental problems that pose clear health concerns for families and communities (Blocker and Eckberg 1997; McCright and Xiao 2014).

Several scholars attribute these findings about attitudes of the general public to differences in how men and women are socialized. In Western societies, the environment is viewed as a commodity from which humans should extract value (Blocker and Eckberg 1997; Hayes 2001). Men traditionally have been socialized to be the primary economic providers and consequently may be more driven to exploit rather than protect the environment (Blocker and Eckberg 1997; Hayes 2001; Hunter, Hatch, and Johnson 2004; Mohai 1992). By contrast, women are taught to value relationships with others and connections to their surroundings (Chodorow 1974; Gilligan 1982). In their stereotypical roles in society as caregivers, women may be more likely to be worried about environmental issues because: (1) they are more vulnerable to the consequences of environmental degradation, especially in the Global South (Ergas and York 2012; McKinney and Fulkerson 2015; Norgaard and York 2005), (2) they are concerned about their family's health and safety (Ergas and York 2012; Mohai 1997), and (3) they are socialized to develop nurturing attitudes not just about their family but more generally, including about the environment (Mohai 1997). Past research also suggests women may value

altruism more than men (Dietz, Kalof, and Stern 2002), especially when altruism is costly (Andreoni and Vesterlund 2001), and concern for the environment can be viewed as a form of altruism (Stern, Dietz, and Kalof 1993). In addition, women may be more risk adverse than men and thus more worried about the consequences of environmental problems (Bord and O'Connor 1997; Wang et al. 2012).

Despite gender disparities in the attitudes of the general public, evidence is mixed on the extent to which male and female elected officials differ in their concerns about the environment. Some studies find female politicians are more pro-environment (Fredriksson and Wang 2011; Sundström and McCright 2014) while others report little to no gender differences or disparities disappear once political party is controlled for (Fielding et al. 2012; Jones 1997; McAllister and Studlar 1992; Tremblay 1998). Findings regarding the relationship between female political status and efforts to protect the environment are mixed too. A few studies indicate greater female political status improves environmental outcomes (Ergas and York 2012; McKinney and Fulkerson 2015; Norgaard and York 2005) but others find no impact on policymaking in this area (Hiselius et al. 2019; Magnusdottir and Kronsell 2015; 2016). Female political status is measured in various ways in this research, such as by the percentage of women serving in legislative bodies or committees affiliated with those bodies, the percentage of women in administrative policymaking positions, and the time that has elapsed since women were granted the right to vote in a jurisdiction.

However, none of these studies investigate the views of the chief elected official in a jurisdiction, and just two report findings specific to local politicians (Hiselius et al. 2019; Sundström and McCright 2014). According to Sundström and McCright (2014), women serving on municipal and county councils still expressed greater environmental concern than men even

after controlling for political orientation. By contrast, Hiselius et al. (2019) find no relationship between female representation on Swedish local transport-related committees and the extent to which a jurisdiction's transport planning is environmentally-friendly although the political orientation of the representatives was not accounted for. These inconsistent results highlight the value of further studying the potential correlation between the gender of a local government's chief elected official and energy conservation efforts.

Past research also indicates that women may be more concerned with ensuring a strong social safety than men which has important implications for this paper given our focus on redistributive programs targeting vulnerable populations. Based on public opinion studies, women in the general population are more supportive of social welfare policies compared to men both in the United States and beyond (Blekesaune and Quadagno 2003; Linos and West 2003; Yang and Barrett 2006). According to scholars, women's preferences for a stronger social safety net align well with self-interest theory (Blekesaune and Quadagno 2003; Valarino et al. 2018; Yang and Barrett 2006). This theoretical framework is based on a rational choice perspective and asserts that individuals who are more likely to benefit from a particular policy due to their position in the social hierarchy are more likely to be supportive of it (Valarino et al. 2018; Yang and Barrett 2006). Applied in this context, women are more likely to be recipients of many social welfare programs and therefore have more reason to care about them. In addition, women's socialization to value relationships over individualism (Chodorow 1974) may result in their stronger support for programs that prioritize collective needs over individual ones (Heidbreder and Scheurer 2013). This argument focusing on women's emphasis on communal interests is similar to one theoretical explanation previously described in this paper about why women may care more about the environment than men.

Similar to the general population, female elected officials are more likely to be proponents of social welfare programs compared to their male counterparts. In the United States, female state legislators prefer more liberal welfare policy than males (Poggione 2004), and female governors devote more attention to social welfare policy issues (Heidbreder and Scheurer 2013). Limited research indicates a possible association between the gender of elected officials and government decision-making regarding social welfare programing: Taiwanese counties with female mayors spend a higher share of government funding on social welfare programs compared to counties with male chief executives (Chen 2013). This study is particularly relevant to our research as it focuses on local government and suggests jurisdictions with female leaders may be more likely to support redistributive efforts.

Taken together, past scholarship suggests: (1) local leaders, especially elected officials, can play an important role in championing sustainability initiatives; (2) there are systematic differences in how men and women view a variety of public policy issues; (3) female elected officials are more supportive of social welfare programs compared to their male counterparts; and (4) evidence is mixed as to whether female politicians are more committed to protecting the environment. Based on these findings, we expect local communities with female leaders to be more likely to adopt redistributive programs targeting vulnerable populations but not necessarily practices intended to conserve energy. To explore these predictions, we examine the factors correlated with local governments' adoption of sustainability measures, including a possible relationship between adoption and the gender of the jurisdiction's highest elected official.

METHODS

Data source

We used data from the 2015 Local Government Sustainability Practices Survey conducted by the International City/County Management Association. The primary purpose of the survey was to measure the extent to which local governments had adopted a range of policies and actions related to sustainability. The survey sampling frame consisted of all counties as well as all municipalities and townships with over 25,000 residents. In addition, 40% of municipalities and townships with between 2,500 and 24,999 residents were randomly selected and included. The survey was mailed to the chief administrative officers of all 8,560 local governments in this sampling frame. The response rate was 22.2% with 1,899 counties and municipalities filling out the surveys. We had complete survey data from 1,672 local governments, which represents the total number of places in our final sample.

Dependent variable

We examine the association between a local government's adoption of sustainability practices and the gender of the jurisdiction's leader from three different perspectives. Each dependent variable in our Poisson models is an index composed of different sustainability practices local governments can adopt. The first two indices include measures designed to encourage energy conservation, and the third focuses on redistributive programs targeting vulnerable populations. The measures we incorporated into our indices are initiatives that governments must actively implement and are not just regulations or plans. They require local governments to make significant time and monetary investments. By contrast, regulations and plans can often represent nothing more than a symbolic commitment to sustainability. The measures we included are also all actions intended to address widespread problems, not issues

limited to a particular region of the country, and are locally controlled decisions. The data for each dependent variable are derived from the ICMA survey. Our three indices are composed as follows.

- *The energy conservation in government index* consists of 15 actions that municipalities could take to reduce energy consumption within their own facilities and operations, such as updating street lights with energy efficient fixtures or purchasing hybrid vehicles for the municipal fleet. Communities received a point for each of the 15 actions they had taken. Community scores on other indices are calculated in similar ways.
- *The energy conservation in the community index* is composed of ten practices that local governments could adopt to help citizens, non-profit organizations, and businesses in their jurisdiction reduce energy consumption. Examples are funding energy audits and weatherization measures in the community.
- *The redistributive programming index* includes 11 programs local governments can offer that support vulnerable populations in their community such as by incentivizing affordable housing and funding child care.

The exact wording of each of the survey questions that make up the three indices can be found in Table 1. We opted to separate the measures encouraging energy conservation into two separate indices because we were interested in exploring whether the beneficiary of a particular set of practices (i.e., the government or the community) influenced our findings given theory suggesting women prioritize collective interests more than men.

Table 1– Questions used to craft dependent variables

Energy Conservation in Government Index

Which of the following energy actions has your jurisdiction taken in the last five years?

1. Established a fuel efficiency target for the government fleet of vehicles
2. Increased the purchase of hybrid, plug-in hybrid, electric, or other fuel efficient vehicles
3. Installed charging stations for electric vehicles
4. Conducted energy audits of government buildings
5. Established a policy to only purchase energy star equipment when available
6. Upgraded or retrofitted government facilities to higher energy efficiency of office lighting
7. Upgraded or retrofitted traffic signals to increase efficiency
8. Upgraded or retrofitted streetlights or other exterior lighting to improve efficiency
9. Upgraded or retrofitted government facilities to more energy efficient heating or air conditioning systems
10. Upgraded or retrofitted facilities to higher efficiency pumps in the water or sewer systems
11. Installed solar panels on a government facility
12. Installed a geo-thermal system in a government facility
13. Generated electricity through refuse disposal, wastewater treatment or landfill operations
14. Required all new government construction projects be certified green (e.g., LEED, Energy Star, etc.)
15. Required all government renovation projects be certified green (e.g., LEED, Energy Star, etc.)

Energy Conservation in the Community Index

Does your government provide or support any of the following programs to the community?

1. Energy audits for individual residences
2. Weatherization for individual residences
3. Heating/ air conditioning upgrades for individual residences
4. Purchase of energy efficient appliances in individual residences
5. Installation of solar equipment on individual residences
6. Energy audits for businesses
7. Weatherization for businesses
8. Heating/air conditioning upgrades for businesses
9. Purchase of energy efficient appliances for businesses
10. Installation of solar equipment on businesses

Redistributive Programming Index

Please indicate if your local government has any energy conservation programs targeted to assist the following [populations]:

1. Low income residents
2. Seniors
3. Non-profit organizations

Which of the following actions has your government taken to reduce or manage water usage?

4. Protect low-income households from water service shut off

Which of the following programs does your local government provide?

5. Financial support/incentives for affordable housing
6. Supportive housing for people with disabilities
7. Funding for early child care and education
8. Housing options in community for homeless persons
9. Housing options for elderly
10. After school programs for children

Has your government added or adopted any of the following in the past five years?

11. Public transportation to assist low-income residents

(Source: ICMA 2015 Sustainability Survey. All questions are word-for-word from the survey)

Independent variables

The main independent variable of interest is the gender of the highest elected official. The data for this variable comes from the survey. Respondents were only able to select from two options: male or female.

We also include control variables to rule out the possibility of spurious associations between the adoption of sustainability practices and the gender of the jurisdiction's highest elected official. Perhaps most importantly, we control for one other trait of local leaders: whether the highest elected official is identified as a member of the Democratic Party or not. Leaders who were not members of the Democratic Party were either Republicans, belonged to a third party, or were unaffiliated with a political party. (In contrast to national politicians, a significant proportion of local officials in the United States run for office without a party affiliation.) Among the general public in the United States, people affiliated with the Democratic party are more likely than Republicans to believe global warming is happening (Leiserowitz et al. 2011). Similarly, Democrats value wildlife conservation more highly than Republicans (Czech and Borkhataria 2001). There is also a significant association between party affiliation and concern for the environment among both Australian and Swedish politicians, with politicians who belong to more liberal political parties expressing greater concern (Fielding et al. 2012; McAllister and Studlar 1992; Sundström and McCright 2014).

In addition to political party affiliation, we incorporate three characteristics of local governments as controls in our model. The first is whether or not the jurisdiction has a professional city or county manager, which has been associated with the adoption of more innovative policies in general and more sustainability policies in particular (Nelson and Svara 2012; Homsy and Warner 2015). To control for municipal capacity, we include the presence of

sustainability staff in a jurisdiction which past scholarship has shown can provide technical support for the implementation of sustainability initiatives (Homsy 2018). Similarly, research indicates greater community participation in local government policymaking increases sustainability actions (Portney and Berry 2014). To measure this in our models, we include a variable about whether or not there is an official citizen sustainability committee or task force. This variable and the one about sustainability staff come from the survey.

Finally, we control for the following sociodemographic characteristics of communities: homeownership rate, local government revenue per capita, the portion of the population self-identified as white, the portion of residents with a bachelor's degree, average per capita income, the GINI index (a measure of income inequality), the portion of residents over 65 years of age, population size, and whether or not the community is urban, suburban, or rural. According to the literature, these characteristics are positively or negatively associated with government decision-making in general or sustainability programming in particular (Zahran et al. 2008; Krause 2011; Homsy and Warner 2015; Wang, Van Wart, and Lebredo 2014). All sociodemographic data came from the 2014 American Community Survey Five-Year Estimates. Descriptive statistics for our dependent and independent variables are included in Table 2. Table 3 shows the percentage of jurisdictions with different characteristics. This information is reported for the full sample, jurisdictions where the highest elected official is female, and jurisdictions where the highest elected official is male, respectively. As Table 3 illustrates, jurisdictions with female leaders are more likely to have professional managers and be larger communities. In these jurisdictions, the highest elected official is also more likely to be a Democrat.

Table 2 – Descriptive Statistics (n=1,672)

Dependent variables	**Mean** (percent 'yes' for 0/1 variables)	**Std. Dev.**	**Min**	**Max**
Energy conservation in government	4.21	3.138	0	15
Energy conservation in community	1.14	2.224	0	10
Redistributive programming	1.78	2.175	0	10
Independent variables				
Traits of highest elected official				
Female	17.9%	38.4	0	1
Democrat	20.6%	40.4	0	1
Local government characteristics				
Council/manager form of government	57.4%	49.5	0	1
Presence of sustainability staff	23.0%	42.1	0	1
Presence of citizen sustainability committee or task force	38.8%	48.7	0	1
Community characteristics				
Homeownership rate	67.3%	13.4	0.119	1.000
Local government revenues per capita	$1.80	1.46	0.01	18.17
Percent white	81.2%	17.1	4.2	99.0
Percent with a bachelor's or more	29.1%	15.9	1.9	98.9
Average per capita income	$29,021	12,383	5,235	152,128
GINI index	0.43	0.049	0.271	0.635
Percent over 65	14.7%	5.7	2.7	57.0
Population size	56,682	170,364	641	3,792,621
Metro status	**Number**	**Percent**		
Urban	263	15.7		
Suburban	920	55.0		
Rural	489	29.3		

Table 3 – Selected Jurisdiction Characteristics by the Gender of its Leader

	Percent for Full Sample (n=1,672)	Percent for Jurisdictions with Female Leaders (n=300)	Percent for Jurisdictions with Male Leaders (n=1,372)
Highest elected official is a Democrat*	21%	27%	19%
Jurisdiction has a professional manager	57%	62%	56%
Jurisdiction has 100,000 residents or more	12%	14%	9%
Jurisdiction has 25,000 to 99,999 residents	27%	28%	27%
Jurisdiction has fewer than 25,000 residents	62%	58%	62%

* as compared to non-Democrats, which includes Republicans, members of third-parties, and local officials not affiliated with a political party

Limitations

The survey is cross-sectional, and as such it is just a snapshot in time. The correlations that we find cannot imply causation. There may be another characteristic of local governments which we cannot include in our study that makes these jurisdictions both more likely to elect women and be more progressive with some aspects of sustainability. Nonetheless, as an initial exploratory study, our work provides a foundation for further investigations about the relationship between local government adoption of sustainability practices and a leader's gender.

There are also limitations with the survey itself. The ICMA survey only includes a binary measure of a leader's gender even though there is growing recognition that the construct of gender is more fluid. Another limitation of the survey is that gender and political party affiliation were the only data collected about the jurisdiction's leader. In addition, while this represents one

of the most comprehensive datasets around local government decision-making on sustainability issues, its generalizability may be limited due to response bias in favor of places that are more likely to undertake sustainability actions.

Finally, despite the final large sample size, the survey response rate is 22 percent, suggesting some limitations with our study's generalizability. A Chi-Square Goodness of Fit test also indicates that the largest municipalities in the sample (100,000 or more) and the smallest (under 25,000) are slightly overrepresented while the communities between 25,000 and 99,999 are underrepresented. Similarly, urban and suburban jurisdictions are somewhat overrepresented and rural underrepresented. To better understand the differences between our sample and sampling frame, Table 4 compares the averages for several selected characteristics. The averages for the jurisdictions in our study are generally consistent with those in our sampling frame, and the averages for population size are statistically the same at the 0.05 significance level. Further putting our study into context, the response rate for this survey is comparable to response rates for other U.S. studies that include smaller municipalities (e.g. Svara, Watt, and Jang 2013; Kim and Warner 2018). While other local government studies in the United States may have larger response rates, they exclude these smaller places, making their findings less generalizable to a diversity of municipalities (e.g. Feiock, Krause, and Hawkins 2017; Youm and Feiock 2019).

Table 4 – Comparing survey sample to sampling frame

	Sampling frame (n=8,560)	Sample (n=1,672)
Percent over 65	15.6%	14.7%
Percent white	83.0%	81.2%
Percent with a bachelor's or more	25.8%	29.1%
Average per capita income	$27,293	$29,021
Homeownership rate	69.4%	67.3%
Population size	55,383	56,682

RESULTS

Since each of the dependent variables is a count variable with a Poisson distribution, we ran a series of three Poisson models. The results of these are shown in Table 5 and reported as Incidence Rate Ratios (IRR), which indicate the expected change in the rate of adoption given a one-unit increase in a particular independent variable with all other independent variables held constant.

Table 5 – Poisson regression model results

	Energy conservation in government	Energy conservation in community	Redistributive programming
	(reported as Incidence Rate Ratios)		
Traits of highest elected official			
Female	0.984	1.292**	1.127*
Democrat	1.030	1.081	1.185*
Local government characteristics			
Council/manager form of government	1.231***	1.132	1.061
Presence of sustainability staff	1.117**	1.636***	1.127
Presence of citizen sustainability committee or task force	1.262***	1.630***	1.578***
Community characteristics			
Homeownership rate	0.987***	0.986***	0.989***
Local government revenues per capita	1.054*	1.177***	1.130***
Percent white	1.002	0.999	0.999
Percent with a bachelor's or more	1.008***	1.015	1.000
Average per capita income (logged)	1.104	0.625	0.883
GINI index	0.985***	0.946***	0.989
Percent over 65	1.004	1.022*	1.015*
Population size (logged)	1.180***	1.150**	1.357***
Suburban (compared to urban)	0.969	0.903	0.963
Rural (compared to urban)	0.908	0.846	1.186
Constant	0.576	172.117	0.395
* significant at 0.05 level, ** significant at 0.01, *** significant at 0.001			

The main independent variable of interest is significant in two of the three models. Having a female leader increases the expected rate of adoption of community energy conservation practices by 29.2% and the expected rate of adoption of redistributive programs by 12.7%. On the other hand, there is no relationship between our main independent variable of interest and the adoption of measures intended to reduce government's energy consumption.

The party affiliation of a jurisdiction's highest elected official, the other trait of leaders we included, is significant in the redistributive programming index model: having a member of

the Democratic party lead a jurisdiction increases the expected rate of adoption by 18.5%. By contrast, party affiliation is not associated with the adoption of either type of energy conservation practices. These null results are surprising as previous research has found a strong relationship between an elected official's party affiliation and their commitment to sustainability policymaking. We had expected that having a Democratic leader would be correlated with the adoption of more sustainability practices across all of our indices, not just the redistributive programming one.

There is a positive relationship between the presence of a professional government manager and a jurisdiction's adoption of practices reducing government's energy consumption. By contrast, jurisdictions with professional city or county managers do not adopt significantly more redistributive programs or practices promoting energy conservation in their community. These latter indices are areas where the costs of action are incurred by government, but the benefits accrue to other parties (usually citizens or businesses). Therefore, these types of programs increase a municipality's overall spending which is something that professional managers, who often seek employment in other communities to advance their careers, may not want to be known for. Similarly, having dedicated sustainability staff is important for the adoption of energy conservation measures but not redistributive programming, which is somewhat expected given the environmental focus of most of these officials and sustainability offices. In addition, having an official citizen task force or committee focusing on sustainability is positively correlated with the adoption of more practices across all areas. This may suggest that such groups of people can be drivers of social and environmental change in a place. On the other hand, it is also possible that communities with leaders who champion the adoption of sustainability practices may be more likely to invest administrative support resources in this area

too such as by hiring dedicated sustainability staff and creating more opportunities for citizen involvement.

With regards to the community characteristics, we find that homeownership rates are significant and negative in every model. This is consistent with much of the research around sustainability that finds homeownership depresses sustainability policymaking probably due to many sustainability initiatives' perceived negative impact on neighborhoods (Homsy and Warner 2015). As expected, local government revenue per capita, a measure of a municipalities' fiscal capacity, which is important for the adoption and implementation of any policies or programs, is consistently significant and positive in the regressions. As a more general measure of capacity, there is also a positive association between population size and the adoption of sustainability practices in every model. The direction of the other significant relationships in our models are generally consistent with those reported in previous research although these variables were not significant in every model as we had expected. Specifically, educational attainment is only significant and positive in the energy conservation in government regression. Income inequality, as represented by the GINI coefficient, is significant and negatively correlated with both of the energy conservation indices but is not related to a jurisdiction's adoption of redistributive programs. In addition, communities with older residents are more likely to adopt redistributive programs and practices related to energy conservation in the community but not initiatives related to reducing government's energy consumption. Finally, race, community type (i.e., urban, suburban or rural) and average per capita income seem to have no impact on the adoption of sustainability practices.

DISCUSSION

Gender and Sustainability

The main point of our paper is to explore the relationship between a leader's gender and local government's adoption of sustainability practices. Does the gender of a jurisdiction's leader matter? It depends. Jurisdictions in which the highest elected official was a female were more likely to have adopted practices encouraging energy conservation in their communities and redistributive programming targeting vulnerable populations. On the other hand, there is no association between the gender of a jurisdiction's leader and adoption of measures promoting government energy conservation. In this section, we explore the implications of our findings as well as consider possible explanations for them.

Our results are consistent with past research indicating that women leaders tend to be more likely to prioritize social welfare policy issues (Heidbreder and Scheurer 2013; Poggione 2004) and communities led by women provide a stronger social safety net (Chen 2013). The type of practices encompassed in our redistributive programming index include initiatives providing affordable housing, child care, assistance to the homeless, and after school programming. These efforts redistribute resources to vulnerable populations in communities, and some are the kinds of "family-related" issues that research has indicated are emphasized by female leaders (Jones 1997; Thomas and Welch 1991). Previous studies on related topics have been limited to either state government or jurisdictions outside of the United States. Our research expands this body of literature by looking at local governments within the United States and suggests communities with female leaders may be more committed to promoting social equity.

We also wanted to learn whether communities led by women are more likely to adopt measures protecting the environment. Public opinion studies indicate that women tend to take

more pro-environment stances, especially when the policies relate directly to public health concerns (Blocker and Eckberg 1997; McCright and Xiao 2014). By contrast, findings about the association between a politician's concern for the environment and their gender as well as the relationship between female political status and efforts to protect the environment are mixed (Fredriksson and Wang 2011; Sundström and McCright 2014; Fielding et al. 2012; Jones 1997; McAllister and Studlar 1992; Ergas and York 2012; McKinney and Fulkerson 2015; Norgaard and York 2005; Hiselius et al. 2019; Magnusdottir and Kronsell 2015; 2016). Consistent with the literature's ambiguous results, we find no association between the gender of a jurisdiction's leader and adoption of measures reducing government's energy consumption. But, local governments led by women were more likely to promote energy conservation in their communities.

What could account for these mixed findings? None of the practices included in either of the environment-focused indices are connected with public health issues. Thus, it seems unlikely that female leaders are more committed to the issue of energy conservation in the community than they are to the practices intended to reduce government's energy usage due to public health concerns. A better explanation for this finding may be related to the receptivity of female leaders to the voices of local activists compared to their male counterparts. According to past research, female leaders tend to be more inclusive (Fox and Schuhmann 1999; Holman 2017) and more open to citizen involvement (Kathlene 1994; Tilly and Gurin 1992). As a result, local environmental groups may play a greater role in the policymaking process in jurisdictions led by women, and grassroots reform efforts may have a higher likelihood of success in these communities. We would expect local environmental activists to be more likely to focus on championing energy conservation efforts in the community than those targeting just

government's usage because community initiatives have the potential to have a broader impact and result in a greater reduction of greenhouse gases.

Looking at our findings as a whole, our study also suggests communities led by women may be more likely to support sustainability efforts focused on advancing collective interests: jurisdictions where the highest elected official was a woman were more likely to have adopted practices promoting energy conservation in the community and redistributive programs targeting vulnerable populations. Measures on the community energy conservation index include the local government directly offering or financially supporting programs that provide the following to homes or businesses: energy audits, weatherization, appliance upgrades, and improvements to heating and air conditioning systems. The local governments pay for these initiatives but community residents and business owners are the ones benefitting from them. Similarly, the programs included on the redistributive programming index can be costly to implement. Jurisdictions that adopt them are prioritizing the well-being of vulnerable community residents over possible short-term financial savings for the government. By contrast, the primary beneficiary of the practices included on the government energy conservation index is the jurisdiction itself. Although adopting these practices can initially be expensive for local governments too, reducing internal energy consumption can save jurisdictions a substantial amount of money over time and potentially allow politicians to eventually lower tax rates.

What might help explain the positive association between female leadership and the adoption of sustainability efforts that primarily benefit the community? According to feminist scholars, women are socialized to prioritize relationships and collective interests while men are taught to value individualism (Chodorow 1974; Gilligan 1982). It is possible that these differences affect how men and women govern and the type of policies for which they advocate.

Because of their collective orientation, women leaders may be more likely than their male counterparts to champion sustainability initiatives benefitting the broader community, ultimately increasing the likelihood that these measures are adopted in their jurisdictions.

Party affiliation and sustainability

A secondary finding that warrants discussion is the relationship between a municipal leader's party affiliation and the adoption of sustainability practices. This study is one of the first to explore this issue. Jurisdictions where the highest elected official was a Democrat were more likely to have adopted redistributive programs targeting vulnerable populations in their communities. This finding is consistent with previous studies indicating Democrats at all levels of government tend to be more supportive of redistributive policies (Einstein and Glick 2018; Whistler and Ellickson 2010).

In addition, past research reports a significant relationship between party affiliation and concern for the environment among both Australian and Swedish politicians even when a politician's gender is controlled for (Fielding et al. 2012; McAllister and Studlar 1992; Sundström and McCright 2014). Based on these prior results, we had expected to find a positive association between the affiliation of a jurisdiction's highest elected official with the Democratic Party and the adoption of both types of energy conservation measures but we did not: instead party affiliation was not significant in either of the energy conservation models. One possible explanation for why our findings may differ from studies focusing on politicians in other countries may be variation in the political context. Unlike other settings where there may be greater expectations for political party discipline such as when there are complex cross-party coalitions, local politicians in the United States often govern in ways that differ from their national party's official political platforms, instead focusing on local priorities. In this case,

practical financial considerations may be driving U.S. local leaders' behavior more than their political beliefs. Because several of the measures included on the two energy conservation indices require local governments to make significant upfront expenditures, leaders, regardless of their party's commitment to protecting the environment, may only consider advocating their jurisdiction make these investments if their municipalities are in a good financial position. Generally consistent with this explanation, jurisdictions with higher revenues per capita were more likely to adopt both types of energy conservation measures according to our analysis.

CONCLUSION

Our paper contributes to the growing body of literature investigating factors correlated with local government's adoption of sustainability practices. We specifically focus on the potential relationship between adoption and the gender of a jurisdiction's highest elected official. We also contribute to research by taking a broader view of sustainability than many past scholars have done, looking not just at the adoption of measures intended to protect the environment but also those promoting social equity. Communities led by women are more likely to adopt practices reducing energy consumption in the community but not in government, perhaps because of female leaders' greater openness to citizen involvement in the policymaking process in general and grassroots environmental activism in particular. In addition, jurisdictions with female leaders adopt more redistributive programs. Women's socialization to focus on communal rather than individual interests may help to explain why local governments led by women are more receptive to sustainability initiatives that benefit the collective, such as practices encouraging energy conservation in the community and the adoption of redistributive

programs. Further research is needed exploring whether a leader's receptivity to citizen involvement and gender socialization can help account for our findings.

This study represents an important first step in understanding whether the gender of a local government's leader impacts its adoption of sustainability efforts. However, more research is warranted, especially because of the cross-sectional design of this study and its limited ability to establish causal links. In particular, scholars should investigate whether our finding that communities with female leaders appear to be more receptive to sustainability efforts advancing communal goals can be replicated in other settings, ideally using longitudinal data in order to establish causality. Future surveys should also collect more information on the characteristics of jurisdictions' leaders such as their socioeconomic and educational backgrounds as well as include more than just a binary measure of gender. In addition, qualitative researchers could try to identify mechanisms that may help explain why the practices adopted in communities led by women compared to those led by men differ, specifically exploring whether some of this variation may be attributed to gender differences in leadership style or priorities. Further qualitative research could also deepen an understanding of this topic by providing greater insights into the potential causal relationships identified in our study as well as exploring the role sustainability-oriented politicians may play in improving a jurisdiction's sustainability outcomes. Answering these research questions will add important nuance to scholarship examining the factors influencing local sustainability policymaking and expand its current focus beyond just the impact of community characteristics.

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