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Reward exploitation or exploration? The effects of local government sustainability strategies and performance information on citizen evaluation

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ABSTRACT

Given the growing attention on citizen involvement in local sustainability, this study explores how citizens evaluate government sustainability performance stemming from exploitation (established policies) and exploration strategies (pioneering initiatives). Our survey experiment finds that positive sustainability performance resulting from exploitation achieves more favourable citizen evaluations compared to exploration. Negative sustainability performance does not moderate the associations between sustainability strategies and public assessments. Furthermore, Republicans, individuals with low climate beliefs, Hispanics, and low-income citizens prefer exploitation over exploration. As an early attempt to examine citizen preferences for organizational strategies, this study extends performance management research by linking organizational strategies with performance.

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Introduction

Given the push from the American federal government on sustainability requirements and guidelines (e.g. The Federal Sustainability Plan), numerous state and local governments are actively taking action to strategize and plan for their sustainability transitions. Many municipalities nowadays are sharing information about their sustainability strategic policies and performance data with their citizens (Park 2023; Park and Krause 2021). Facilitating citizen-government communication on sustainability policies and periodic outcomes can cultivate citizen understanding of these policies and secure necessary public support for policy implementation, given that sustainability falls outside the scope of local governments' traditional responsibilities and requires additional justification to the public (Deslatte 2020; ICMA 2015; Trischler

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et al. 2022). Additionally, understanding citizens' perceptions of government sustainability strategies and performance enables municipal governments to align their sustainability strategies with citizen perspectives and oversee local sustainable development (Meschede and Mainka 2020). Therefore, it is vital to comprehend how citizens assess their local governments' sustainability strategies and performance.

Sustainability, defined as 'meeting the needs of the present without compromising the ability of future generations to meet their own needs', is considered a management practice (Brundtland 1987; Pinz, Roudyani, and Thaler 2018). Sustainability activities aim to establish a governance system capable of implementing policies that promote sustainability, involving economic, environmental, and social dimensions (Becker, Jahn, and Stieess 1999, 5; Zeemering 2018). These activities often lead to conflicting goals and performance ambiguity (Deslatte 2020; Zeemering 2018). When strategizing local sustainability policies, local governments often face the dilemma of choosing between exploitation and exploration strategies. Some local governments choose exploitation, characterized as a risk-averse approach, and adopt commonly used policy programmes or well-established policy tools, which have a higher possibility of yielding more immediate and predictable efficiency gains (Barrutia and Echebarria 2022; Ji and Darnall 2018). Alternatively, other local governments adopt exploration – a risk-seeking approach – by implementing pioneering sustainability initiatives, which may result in longer-term and less-predictable impacts (Barrutia and Echebarria 2022; Ji and Darnall 2018).

Although both strategies are widely used by municipal governments in their sustainability policies, two challenges emerge when evaluating their performance. First, while the strategic management literature explores factors influencing exploitation and exploration strategies in the public sector (Barrutia and Echebarria 2019), limited attention has been given to understanding how these two strategies influence citizen evaluations, especially under different performance conditions. Second, the abstract and multifaceted nature of sustainability poses challenges in establishing concrete and measurable goals, making it difficult to define clear and relevant indicators for assessing sustainability performance in the public sector (Elgert 2018; Zeemering 2018). Hence, in the performance management literature, it is not yet clear how citizens assess the performance of government sustainability policies. As a result, there is a knowledge gap at the intersection of strategic management and performance management literature regarding how citizens evaluate the sustainability outcomes arising from exploitation and exploration strategies.

To bridge this intellectual gap, our research investigates how citizens evaluate the performance of local governments' exploitation and exploration strategies that promote sustainability. We rely on a 2×2 between-subjects survey experiment using representative samples of American citizens. This study employs hypothetical scenarios designed to highlight the sustainability strategies, specifically, exploitation and exploration strategies, and the episodic performance of a municipal government, including both positive and negative instances. This paper undertakes a comprehensive examination of the relationships between sustainability strategies and citizen evaluations, considers the moderating role of negative performance information, and conducts exploratory analyses to explore their effects within various subgroups.

This study presents three key findings. First, citizens exhibit a preference for exploitation strategies over exploration strategies when yielding positive

sustainability performance. Second, citizens do not assign more or less negative assessments of governments' sustainability policies based on their chosen strategies in cases of poor sustainability performance. Finally, specific subgroups, including Republicans, individuals with low climate beliefs, Hispanics, and low-income individuals prefer exploitation over exploration.

Our research contributes to both strategic management and performance management literature in the context of local sustainability and provides insights into sustainability planning and communications between governments and citizens. First, this study presents an early attempt in strategic management literature to figure out citizen preferences regarding government exploitation and exploration strategies. Exploitation and exploration are two public sector innovation strategies that have become prevalent for local governments to address increasingly complex challenges (Huang, Wu, and Wiebrecht 2024). Given the complicated and multifaceted nature of sustainability and the demands for citizen involvement in local government innovations (Trischler et al. 2022), sustainability is a policy area for examining citizen assessments of public sector innovation strategies. Furthermore, while previous strategic management studies have suggested that local governments adopt different strategies for sustainability, limited evidence exists on how citizens perceive these sustainability strategies (Ji and Darnall 2018; Lee 2024). We leverage the theories of citizen risk-averse and risk-seeking preferences to explain the competing mechanisms through which citizens may or may not prefer exploitation over exploration strategies (Andrews and Van de Walle 2013; Gofen 2015; Lepore and Cunningham 2023; Tversky and Kahneman 1981). Our findings emphasize citizens favour exploitation strategies in local sustainability governance and offer guidance for municipal decision-makers to adopt sustainability initiatives that have been prevalent in other places.

In addition, prior performance management studies primarily focus on the influence of performance information itself on public assessments (James and Moseley 2014; Olsen 2015), but seldom pay attention to the joint effects of other organizational attributes and performance information. This paper connects organizational strategies to performance information and explores their joint impacts on citizen evaluations within the sustainability domain. Our findings highlight the importance of including both the exploitative sustainability policies and positive performance information when communicating government sustainability efforts to the public.

For policymakers and managers involved in local sustainability governance, this study offers valuable insights for developing sustainability programmes and engaging low-income and disadvantaged groups in the planning and implementation of programmes, which is a key component of many funding opportunities for advancing energy and environmental justice under the recent Bipartisan Infrastructure Bill and the Inflation Reduction Act (The White House 2021, 2023). Our subgroup analyses suggest that these underserved groups favour widely adopted sustainability policies. By incorporating the viewpoints of these marginalized groups, municipal governments can gain access to diverse and precise information on unique views and concerns, make well-informed policy decisions, and build capacities for future public engagement (US EPA 2023a).

Theory and hypotheses

Performance management in sustainability policies

Performance management involves establishing performance metrics, collecting data using these metrics, and integrating this information for organizational management (Poister and Streib 1999). One of the benefits of performance management is the potential increase in external interactions with citizens (Jakobsen et al. 2019). Accessible performance information empowers citizens with a comprehensive understanding of policy programmes, encouraging informed decision-making and active participation in government initiatives (Choi and Gil-Garcia 2022; Porumbescu, Neshkova, and Huntoon 2019). Performance management also facilitates the internal learning of governments, encompassing strategic planning and implementation (George et al. 2020; Van der Voet and Lems 2022).

Using performance information to communicate with citizens about governmental efforts – what they aim to do and what they achieve – is particularly important for local sustainability governance. First, clear and transparent explanations of government endeavours to the public are required in the sustainability domain due to the multifaceted nature of sustainability. Effective communication between governments and citizens regarding diverse sustainability policies and their achievements can narrow citizens' knowledge gaps and thus may increase public support for sustainability policy implementation (Trischler et al. 2022; Zhang, Liu, and Vedlitz 2020). Second, understanding citizen evaluations of sustainability performance resulting from different strategic approaches can assist governments in strategizing, enabling effective implementation and monitoring of sustainable development at the local level (Meschede and Mainka 2020). This understanding empowers municipal governments to align their sustainability approaches with citizen perspectives, fostering more effective and citizen-oriented sustainability governance.

Despite its significance, little is known about citizen assessments of performance regarding exploitation and exploration strategies within the realms of performance management and strategic management literature. Our study fills this gap by examining how different sustainability strategies (exploitation vs. exploration) under varying performance conditions (positive vs. negative) affect citizen evaluations of local governments' sustainability practices. Extending existing literature, we explore the joint impacts of sustainability strategies and performance information on public assessments, rather than solely concentrating on the effects of performance information disclosure itself.

Exploitation and exploration strategies, and citizen evaluation

Public sector innovation emphasizes the adoption and implementation of innovative practices, policies, and services in public entities (Criado, Alcaide-Muñoz, and Liarte 2023; Rønning et al. 2022). Exploitation and exploration are two distinct strategies of public sector innovation. Municipal governments grapple with the inherent tensions between exploitation and exploration, which can be dated back to March's argument about organizational strategies (1991). That is, in resource-constrained environments, organizations make a trade-off in allocating their resources towards either exploitation or exploration (March 1991; Uotila et al. 2009). Exploitation strategies closely align with the current knowledge base, featuring incremental changes and controlled risks

(Barrutia and Echebarria 2019; Jansen, Van Den Bosch, and Volberda 2006). On the other hand, exploration strategies require substantial departures from the existing knowledge base, containing radical changes and high risks (Barrutia and Echebarria 2019; Jansen, Van Den Bosch, and Volberda 2006). However, the distinctive nature of exploitation and exploration demands specific and usually conflicting resources, thus rendering the integration of these two types of strategies a formidable and challenging task (Barrutia and Echebarria 2019). In the realm of sustainability, this exploitation-exploration strategic dilemma is reflected in how local authorities choose between a risk-averse or a risk-seeking approach in the pursuit of sustainability. Regardless of the chosen strategy, the sustainability performance concerning economic, environmental, and social dimensions remains relatively uncertain, even though an exploitation strategy may offer assurances of short-term efficiency.

Traditional wisdom suggests that individuals are rational decision-makers, aligning their choices with their preferences (Ellsberg 1961), yet the influence of risks on the formation of citizen preferences remains underexplored (Baser and Tan 2023). The risks derived from sustainability performance of two strategies can be perceived by the public. Specifically, the risks and fear of failure can be perceived by politicians and administrators in the public sector and may influence their adoption of exploitation and exploration strategies (Barrutia and Echebarria 2019; Potts 2009; Potts and Kastle 2010). Such risks can also be perceived by individuals beyond public sectors and projects. For example, crowdfunding projects aiming to explore new markets are often viewed as riskier compared to those seeking funding for exploiting existing markets. Projects emphasizing an exploitative approach with words like ‘execution’, ‘implementing’, and ‘refining’ in their descriptions tend to receive more funding, while those employing explorative language such as ‘experiment’, ‘explored’, and ‘discover’ are typically less supported (Zhang et al. 2023).

When confronted with the risks surrounding the sustainability performance of two strategies, citizens may adopt risk-averse attitudes. Individuals tend to prioritize outcomes deemed certain over those merely probable (Lepore and Cunningham 2023; Ruggeri et al. 2020; Tversky and Kahneman 1981). Exploitation involves controlled risks associated with more certain outcomes through the adoption of well-established sustainability policies, whereas exploration may entail higher risks linked to less certain outcomes through experimenting with pioneering sustainability initiatives. As such, citizens may lean towards exploitation rather than exploration. Therefore, exploitation strategies may receive more favourable evaluations from citizens compared to exploration strategies.

Alternatively, citizens may embrace risk-seeking attitudes. When citizens are not satisfied with current services and local governments are tasked with meeting citizen demands, individuals often opt for reformative services instead of refining existing ones (Gofen 2015). Empirical evidence also suggests that citizens favour some explorative government actions (Andrews and Van de Walle 2013; Criado, Alcaide-Muñoz, and Liarte 2023; De Vries, Bekkers, and Tummers 2016). Sustainability emerges as a field outside traditional policy and service areas in which local governments are urged to address citizens’ evolving environmental, economic, and social needs. To meet these demands, individuals may prioritize exploration through radical policy innovations rather than exploitation, which involves little discontinuity in existing policies. Therefore, exploration strategies may elicit more favourable citizen assessments. Given the discussion, we propose the competing hypotheses as follows.

Hypothesis 1a: The exploitation strategy gains a more favourable assessment from citizens compared to the exploration strategy.

Hypothesis 1b: The exploitation strategy gains a less favourable assessment from citizens compared to the exploration strategy.

The moderating role of negative performance on the relationships between sustainability strategies and citizen evaluation

Performance management literature has extended negativity effects to citizen evaluations of public organization performance (James and Moseley 2014; Shinohara 2023; van den Bekerom, van der Voet, and Christensen 2021), since low public performance is frequently more discernable than high performance (James 2011). Negative performance, associated with ineffectiveness, unresponsiveness, and waste, has detrimental effects on governance arrangements. It can be conveyed to residents through different forms, such as low-performance narratives and service failure events (Deslatte 2020; Olsen 2015). These negative performance signals often lead to citizens' negative responses, such as higher levels of dissatisfaction with programme failures and less support for specific policies (Deslatte 2020; Woodhouse, Belardinelli, and Bertelli 2022).

Within the context of negative performance, citizens' policy preferences could lean towards risk-averse instead of risk-seeking, driven by individual preferences for more certain sustainability outcomes. Thus, these citizens may rate exploitation higher than exploration in local sustainability governance. However, poor sustainability performance can result in negative responses from citizens towards government sustainability policy actions due to the negativity effects. As such, even if citizens may favour exploitation strategies over exploration strategies, such more favourable impact will be undermined by negative sustainability performance.

Conversely, citizens have the potential to recognize the importance of pioneering approaches for tackling sustainability challenges and satisfying local sustainability demands. Therefore, the mass public may be inclined to rate exploitation lower than exploration. When local governments achieve poor sustainability performance, citizens tend to respond negatively to ineffective government sustainability policies. While citizens have less favourable evaluations of exploitation compared to exploration, such less favourable influence on public assessments will be exacerbated by negative sustainability performance. Given the discussion, we propose the competing hypotheses as follows.

Hypothesis 2a: The exploitation strategy gains a more favourable assessment from citizens, compared with the exploration strategy, but its effect will be diminished by negative performance.

Hypothesis 2b: The exploitation strategy gains a less favourable assessment from citizens, compared with the exploration strategy, but its effect will be intensified by negative performance.

Methods

Sample

We conducted a 2×2 between-subjects experiment to assess the effects of sustainability performance of two strategies on citizen evaluation. One factor was the sustainability strategy (exploitation vs. exploration) and the other factor was performance information (positive vs. negative). Experiment participants were representative American residents and were recruited in May 2023 through CloudResearch, an online survey platform that has been frequently used in social science research (Porumbescu, Piotrowski, and Mabillard 2021). To ensure the representativeness of participants, we matched their characteristics, including income, ethnicity, race, and political party according to national estimates from the US Census.¹ The experiment was pre-registered at (<https://osf.io/h6de3>).

To determine the appropriate sample size for our experiment, we conducted a power analysis following conventional criteria, with a significance level of 0.05 and a statistical power of 0.80 (Porumbescu, Piotrowski, and Mabillard 2021). The objective of this analysis was to identify a sample size that would be adequately large to detect meaningful effects. The results of the power analysis implied that we would require approximately 250 subjects for each group, resulting in a total of approximately 1,000 subjects for the experiment. Consequently, we recruited a total of 1,138 subjects residing in the United States.

Experiment design

The experiment consisted of four vignettes, which included information about organizational performance, policy actions, and contextual issues related to environmental, economic, and social aspects. These vignettes were designed in accordance with the sustainability reporting guidelines applicable to the public sector (De Villiers et al. 2014). Participants were randomly assigned to one of four groups in our experiment and provided with hypothetical scenarios that emphasized the strategic policies and episodic performance of a local government. The four groups contained: (1) an exploitation, positive-performance group, in which subjects were told to imagine their city governments adopting exploitation strategies to develop and manage local sustainability, resulting in positive outcomes; (2) an exploration, positive-performance group, in which subjects were informed that their city governments employed exploration strategies for local sustainability governance and lead to positive outcomes; (3) an exploitation, negative-performance group, in which the city government was framed to use exploitation strategy but achieve poor outcomes, and (4) an exploration, negative-performance group. These scenarios were based on actual sustainability experiences of several American local governments (The City of Los Angeles 2019; Deslatte 2020; The Government of the District of Columbia 2023). Further elaboration on the experiment vignettes can be found in Table 1, which provides a comprehensive depiction of their contents.

Considering that local governments employing exploitation strategies exhibit a higher degree of risk aversion and tend to rely on established policy solutions for managing local sustainability issues (Ji and Darnall 2018), we used the statement ‘The city government has adopted sustainability practices that are common in 90% of American cities’ as a means to prime the identification of

Table 1. Experiment conditions and texts.

Policy context: apply to all groups	Please consider the following hypothetical scenario. Assume you are a resident of Duckburg City, a mid-sized American city. Last year, your city government launched a Sustainable City Plan to build a low-carbon, green-energy, and equitable future by balancing the environmental, economic, and social demands.	
	Positive performance	Negative performance
	Group 1 The city government has adopted sustainability practices that are common in 90% of American cities to reduce greenhouse gas emissions, increase energy efficiency, and improve quality of life. After one year, your city has significantly reduced its greenhouse gas emissions, energy costs, and utility bills for all residents.	Group 3 The city government has adopted sustainability practices that are common in 90% of American cities to reduce greenhouse gas emissions, increase energy efficiency, and improve quality of life. After one year, your city has not significantly reduced any greenhouse gas emissions, energy costs, or utility bills for all residents.
Exploitation strategy		
Exploration strategy	Group 2 The city government’s sustainability plan is first-of-its-kind in America with pioneering initiatives to reduce greenhouse gas emissions, increase energy efficiency, and improve quality of life. After one year, your city has significantly reduced its greenhouse gas emissions, energy costs, and utility bills for all residents.	Group 4 The city government’s sustainability plan is first-of-its-kind in America with pioneering initiatives to reduce greenhouse gas emissions, increase energy efficiency, and improve quality of life. After one year, your city has not significantly reduced any greenhouse gas emissions, energy costs, or utility bills for all residents.

the exploitation strategy. On the other hand, the exploration strategy is characterized by a greater inclination towards risk-seeking and a propensity for experimenting with novel approaches (Barrutia and Echebarria 2022). Therefore, we utilized the phrase ‘The city government’s sustainability plan is the first-of-its-kind in America with pioneering initiatives’ to prime the exploration strategy.

Rather than utilizing performance metrics and data, we adopted an alternative approach by utilizing episodic performance that encompassed the environmental, economic, and social dimensions, serving as an indication of the sustainability performance of municipal governments (Deslatte 2020). Furthermore, a majority of local governments in the United States appear to be actively involved in monitoring sustainability performance to some extent and report their measurements on an annual basis (Park and Krause 2021). As a result, in the positive performance conditions, participants were presented with the statement: ‘After one year, your city has significantly reduced its greenhouse gas emissions, energy costs, and utility bills for all residents’. In contrast, in the negative performance conditions, participants were provided with the statement: ‘After one year, your city has not significantly reduced any greenhouse gas emissions, energy costs, or utility bills for all residents’. Following the review of the sustainability strategy and performance information, all subjects were asked to evaluate the sustainability practices of the local government.

Figure 1 demonstrates the experimental procedure. At the end of our experiment, we contained a question to check whether participants perceived our experimental manipulations as expected. Participants were asked to recall whether the local

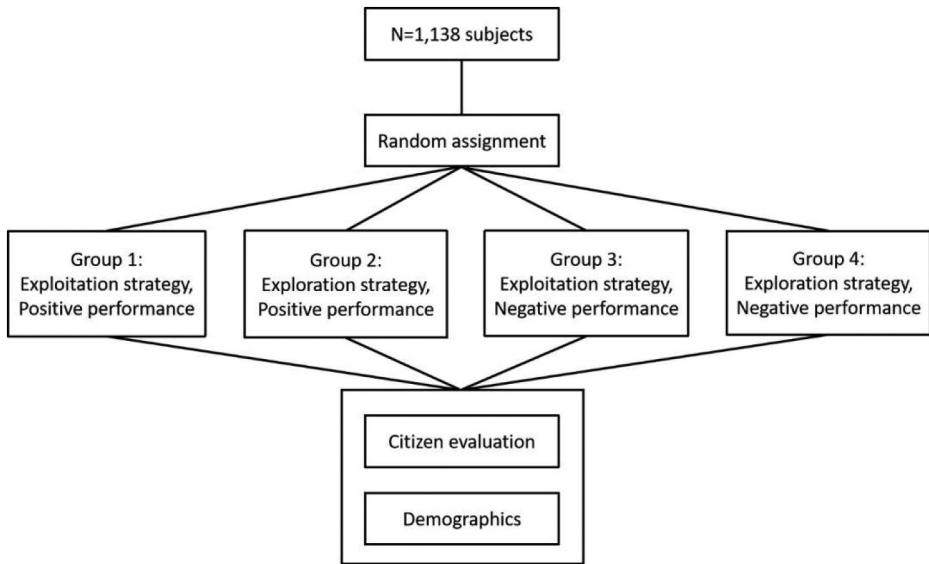


Figure 1. Experimental procedure.

government's sustainability practices were 'common in 90% of American cities' or 'first-of-its-kind in America'. 78.30% of participants correctly identified the strategy. This correct rate of manipulation check was similar to other experimental studies in public administration (Liu and Xu 2023; Porumbescu, Neshkova, and Huntoon 2019).

Dependent variable and covariates

For the outcome measure, our survey experiment asked respondents to evaluate the local government's sustainability practices based on the information they read in the prompts. A 101-point scale from '0 Very bad' to '100 Very good' was used to measure participants' assessments (Olsen 2015).

We collected data on several covariates to improve the precision of the treatment estimates and control for the demographics of the sample. Specifically, we gathered participants' age, sex, race/ethnicity, education levels, income, political partisanship, and political ideology (Woodhouse, Belardinelli, and Bertelli 2022). As climate belief also has the potential to influence public attitudes towards governments' climate-related actions, we also measured participants' climate beliefs, which consisted of two components: issue causality and potential influence (Wehde and Choi 2022; Zawadzki et al. 2020). All respondents were asked two seven-point-scale questions: to what extent climate change is caused by human activities (1 = 'Not at all', 7 = 'Completely') and to what extent climate change is causing the weather patterns to change in the US (1 = 'Not at all', 7 = 'Completely'). The climate belief index was computed by summing the scores of the issue causality question and the potential influence question.

To detect whether experimental groups were balanced, we examined if there was a statistically significant difference in the means of all the covariates across experimental groups. As shown in [Appendix A](#), the tested characteristics of participants in

the four groups were balanced. Therefore, the random assignment of experimental subjects into the four groups was successful, and we did not need to include these covariates in the data analysis (George et al. 2020).

Data analysis strategy

Our experiment examines whether the exploitation strategy elicits more or less favourable citizen evaluations compared to the exploration strategy, considering sustainability performance conditions. To test the competing hypotheses (H1a vs. H1b), we employed a t-test to analyse citizens' ratings on governmental sustainability practices in the contexts of positive and negative performance, respectively. Subsequently, we used ordinary least squares (OLS) regression to examine these hypotheses in the full sample, with the sustainability strategy and sustainability performance of a local government serving as explanatory variables and citizen assessment of governmental sustainability practices as the dependent variable. Next, we added an interaction term between sustainability strategy and sustainability performance into the OLS regression model to test the moderating effect of negative performance information on the relationships between two strategic approaches and citizen evaluations (H2a vs. H2b).

Individual characteristics, such as political partisanship, race/ethnicity, and income levels may affect public perceptions of government actions, while their climate beliefs could also shape policy preferences (Lee and Nicholson-Crotty 2022; Rinscheid, Pianta, and Weber 2020; Zawadzki et al. 2020). In our study, we extended this line of inquiry by conducting exploratory analyses to examine potential variations among these different subgroups.

Results

Figure 2 presents the t-test results which compare citizens' ratings of exploitation and exploration strategies under positive and negative performance scenarios, respectively. Citizens' ratings of exploitation strategies are significantly higher than those of the exploration strategies ($\beta = 4.68$, $p = 0.01$) when they are given positive performance information. That is, participants exposed to the exploitation strategy vignette rate local government sustainability practices approximately 4.68 points higher than those assigned to the exploration strategy vignette in the positive performance condition. However, there is no statistically significant difference between citizens' ratings of the exploitation and exploration strategies ($\beta = 0.11$, $p = 0.96$) when they are given negative performance information.

Table 2 shows the regression results using the full sample. Model 1 serves as the baseline, exploring the associations between sustainability strategies and citizen evaluations, while Model 2 introduces an interaction term between sustainability strategies and performance, aiming to test the moderating influence of negative performance. Model 1 suggests that when holding sustainability performance constant, exploitation strategies fail to elicit more or less favourable assessments from citizens compared to exploration strategies ($\beta = 2.31$, $p = 0.13$). Based on the t-test results for the two performance conditions and the OLS findings with the full sample, our study partially supports H1a in the positive performance contexts. In addition, among all participants, this study does not find support for H2a or H2b. Model 2 shows that the

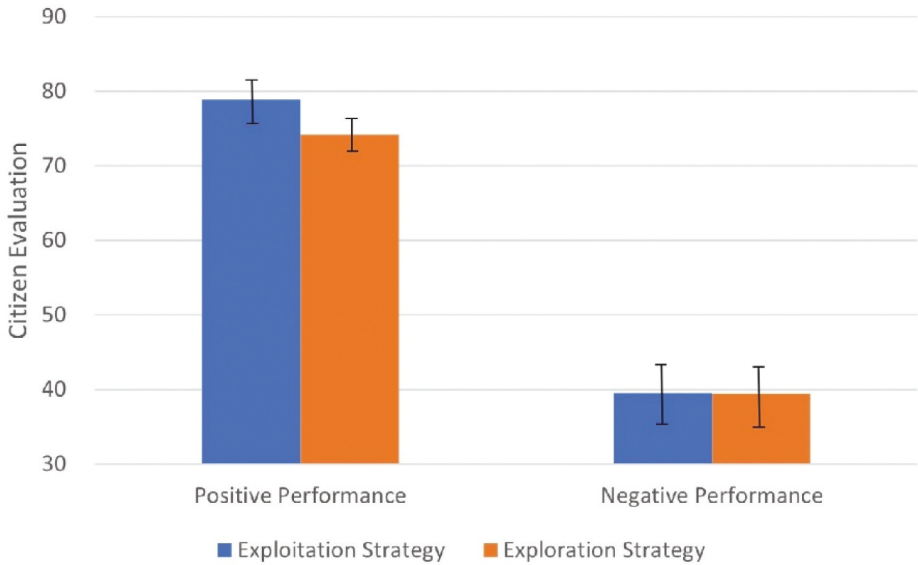


Figure 2. Mean citizen evaluations by performance conditions. Bars are 95% confidence intervals.

Table 2. Regression coefficients with the full sample.

	Model1	Model2
Strategy Dummy (Exploitation = 1)	2.31 (1.50)	4.68* (2.17)
Performance Dummy (Negative = 1)	−37.04** (1.50)	−34.79** (2.11)
Strategy × Performance		−4.57 (3.01)
Constant	75.32** (1.29)	74.21** (1.48)
R ²	0.35	0.35
Observation	1,138	1,138

* $p < 0.05$; ** $p < 0.001$.

interaction term has no statistically significant effect on citizen evaluations of governmental sustainability practices ($\beta = -4.57$, $p = 0.13$). Hence, there exists no empirical evidence to support H2a or H2b.

Nevertheless, our exploratory analyses concerning individual political partisanship, climate belief, race/ethnicity, and income reveal noteworthy findings within various subgroups. Tables 3 and 4 report the results of exploratory analyses. For each subgroup, model (1) (e.g. Democrat (1) and Low Climate Belief (1)) refers to the baseline model and model (2) (e.g. Democrat (2) and Low Climate Belief (2)) refers to the model with the interaction term. According to Table 3, when holding sustainability performance conditions constant, in terms of political partisanship, Republicans assign significantly higher ratings to the performance of exploitation strategies compared to that of exploration strategies, exhibiting a difference of 8.42 points ($\beta = 8.42$, $p = 0.01$). Conversely, there are no notable distinctions in the ratings of the performance of the two strategies among Democrats and individuals with other political affiliations

Table 3. Subgroup analyses based on political partisanship and climate belief.

	Political Partisanship				Climate Belief					
	Democrat (1)	Democrat (2)	Republican (1)	Republican (2)	Others (1)	Others (2)	Low Climate Belief (1)	Low Climate Belief (2)	High Climate Belief (1)	High Climate Belief (2)
Strategy Dummy (Exploitation = 1)	2.45 (2.51)	3.46 (3.49)	8.42** (3.11)	10.27* (4.60)	-0.36 (2.22)	2.90 (3.25)	4.54* (2.17)	6.21† (3.20)	0.04 (2.03)	3.05 (2.87)
Performance Dummy (Negative = 1)	-31.10*** (2.51)	-30.10*** (3.47)	-38.39*** (3.12)	-36.74*** (4.35)	-39.82*** (2.22)	-36.73*** (3.17)	-32.27*** (2.17)	-30.79*** (3.02)	-40.65*** (2.03)	-37.62*** (2.88)
Strategy× Performance		-2.11 (5.03)		-3.42 (6.25)		-6.07 (4.44)		-3.09 (4.36)		-6.00 (4.05)
Constant	79.85*** (2.09)	79.38*** (2.37)	69.51*** (2.67)	68.69*** (3.06)	74.26*** (1.95)	72.67*** (2.27)	67.56*** (1.88)	66.79*** (2.17)	81.89*** (1.73)	80.46*** (1.98)
R ²	0.29	0.29	0.37	0.37	0.40	0.40	0.30	0.30	0.40	0.40
Observation	383	383	265	265	490	490	532	532	606	606

†p < 0.1; *p < 0.05; **p < 0.01; ***p < 0.001. For each subgroup, model (1) (e.g. Democrat (1)) refers to the baseline model and model (2) (e.g. Democrat (2)) refers to the model with the interaction term.

($\beta = 2.45$, $p = 0.33$; $\beta = -0.36$, $p = 0.87$). In addition, participants with low climate beliefs assess the performance of exploitation strategies 4.54 points higher than that of exploration strategies ($b = 4.54$, $p = 0.04$), while participants with high climate beliefs do not rate the performance of two strategies differently ($\beta = 0.04$, $p = 0.98$). In Table 4, when considering the minority participants, Hispanics attribute a significantly higher rating of 7.13 points to exploitation strategies in contrast to exploration strategies ($\beta = 7.13$, $p = 0.05$), while there is no significant difference in the ratings given by Black participants for exploitation and exploration strategies ($\beta = 4.51$, $p = 0.41$). In terms of low-income participants, they rate exploitation 3.78 points higher than exploration ($\beta = 3.78$, $p = 0.06$).

Although we find significant effects of sustainability strategies among Republicans, participants with low climate beliefs, Hispanics, and low-income participants, Tables 3 and 4 suggest that the interaction terms do not demonstrate statistically significant impacts of negative performance on the associations between sustainability strategies and citizen assessments within these subgroups ($\beta = -3.42$, $p = 0.58$; $\beta = -3.09$, $p = 0.48$; $\beta = 3.63$, $p = 0.61$; $\beta = -4.02$, $p = 0.31$). As indicated in Table 4, a significant interaction term emerges within the subgroup of Black participants ($\beta = -17.96$, $p = 0.10$). When Black participants are given positive performance information, on average, they rate exploitation strategies 14.20 points higher than exploration strategies, while in negative performance conditions, they rate exploitation strategies 3.76 points lower than exploration strategies. Nonetheless, among Black participants, our analyses do not show a statistically significant association between sustainability strategies and citizen evaluations ($\beta = 4.51$, $p = 0.41$).

Overall, Republicans, participants with low climate beliefs, Hispanics, and low-income participants tend to rate the performance of exploitation strategies higher than that of exploration strategies when sustainability performance is held constant. This effect is observed within specific subgroups of citizens which does not manifest in the general sample, and thus partially supports H1a. However, we do not find any evidence for the moderating role of negative performance in the relationships between

Table 4. Subgroup analyses for minority and low-income groups.

	Minority				Low Income	
	Black (1)	Black (2)	Hispanic (1)	Hispanic (2)	Low Income (1)	Low Income (2)
Strategy Dummy (Exploitation = 1)	4.51 (5.42)	14.20† (7.92)	7.13* (3.54)	5.37 (4.94)	3.78† (1.96)	5.78* (2.77)
Performance Dummy (Negative = 1)	-35.82** (5.43)	-26.47** (7.78)	-26.99** (3.54)	-28.86** (5.09)	-36.23** (1.96)	-34.20** (2.79)
Strategy× Performance Constant		-17.96† (10.78)		3.63 (7.09)		-4.02 (3.93)
	75.70** (4.85)	70.76** (5.65)	66.37** (3.07)	67.29** (3.56)	73.93** (1.69)	72.94** (1.95)
R ²	0.29	0.31	0.24	0.24	0.35	0.35
Observation	111	111	198	198	645	645

† $p < 0.1$; * $p < 0.05$; ** $p < 0.001$. For each subgroup, model (1) (e.g. Black (1)) refers to the baseline model and model (2) (e.g. Black (2)) refers to the model with the interaction term. Results for additional racial and income groups are shown in Appendix B.

sustainability strategies and citizen assessments among different subgroups. As a result, neither H2a nor H2b is supported in our exploratory analyses.

Discussion and conclusion

This study represents an early attempt to test how the performance of exploitation and exploration strategies affects citizen evaluations of local government sustainability practices, contributing to the intersection of strategic management and performance management literature. More specifically, according to the theories of citizen risk-averse and risk-seeking preferences, we propose competing hypotheses regarding the effects of exploitation and exploration strategies on citizen assessments. Additionally, we extend these hypotheses by considering the moderating role of negative performance, exploring how it may either mitigate or amplify the impacts of exploitation strategies on citizen evaluations, in contrast to exploration strategies.

Sustainability performance of exploitation strategies generally receives more favorable citizen assessments

Our findings, under positive sustainability performance conditions, provide substantial evidence to support a more favourable influence of the exploitation strategy on citizen assessments compared to the exploration strategy. Such an effect corresponds with citizens' preferences for more certain outcomes rather than probable ones (Lepore and Cunningham 2023; Ruggeri et al. 2020; Tversky and Kahneman 1981). Therefore, it uncovers citizens' perceptions regarding the risk-taking behaviours of local governments in the context of local sustainability governance.

However, no evidence suggests that citizens exhibit a stronger propensity to reward exploitation over exploration in negative performance situations. Moreover, negative performance information does not moderate the relationships between sustainability strategies and citizen assessments. Given that negative information frequently triggers a heightened concern of costs that outweighs anticipations of benefits, citizens are more likely to focus on unfavourable results, leading to lower perceptions of government performance and negative responses to government policy actions (George et al. 2020; James and Moseley 2014; Shinohara 2023). In line with such negativity effects, our findings suggest that citizens tend to assess government practices negatively due to these negative outcomes and thus often overlook the specific strategic approaches adopted by governments. Also, owing to the neglect of the chosen strategies caused by such negativity effects, local governments will not be assessed more negatively or less for their unsatisfactory outcomes based on the chosen sustainability strategies.

Heterogeneous citizen assessments among different racial, income, political partisanship, and climate belief groups

Given the limited understanding of disadvantaged and low-income groups' preferences concerning sustainability strategies and outcomes, this study contributes novel insights into their evaluations of these aspects. Our findings reveal that Hispanics and low-income individuals rate exploitation strategies more favourably than exploration ones, regardless of whether sustainability performance is positive or negative. Interestingly, diverging from the preferences of Hispanics and low-income individuals,

Black citizens tend to favour exploitation over exploration when local governments achieve positive outcomes in implementing these strategic policies. However, they view exploitation strategies less favourably than exploration strategies when local governments exhibit poor performance in executing these strategies.

Furthermore, we observe that Republicans and individuals with low climate beliefs prefer exploitation over exploration, as their assessments of local sustainability practices demonstrate significant variations between these two strategies. Previous studies explain Republicans' views on sustainability policies (Casper, McCullough, and Smith 2021; McConnell 2023) and climate change policies to understand their inclinations towards sustainability strategies (Choi, Wehde, and Maulik 2024; Leiserowitz 2006; McCright, Dunlap, and Xiao 2013). Specifically, Republicans are often characterized as conservative and are found to impede sustainability practice adoption (Goodman et al. 2022). Given that exploitation involves incremental policy changes and controlled risks, which is more akin to conservative attitudes compared with exploration, Republicans may therefore show a greater preference for exploitation strategies.

Additionally, higher climate beliefs significantly predict support for climate policies (Ding et al. 2011; Zawadzki et al. 2020), while lower climate beliefs often lead to less support. Those with lower climate beliefs typically do not see climate change as human-caused or risky and feel less responsible for addressing it, which generally requires radical technological and policy innovations. Consequently, individuals with low climate beliefs may favour exploitation strategies, which encompass incremental changes, over exploration strategies that call for rapid innovations to address sustainability issues caused by climate change.

Policy and managerial implications

These findings carry significant implications for municipal governments. In terms of strategic management, local governments can underscore the focused search for more established sustainability policy tools from other municipalities or nationwide sustainability programmes. Moreover, when communicating sustainability performance to the public, governments that adopt exploitation strategies can emphasize that their sustainability policies have been implemented by other municipalities across the country. This can elicit more favourable responses under positive performance conditions and from Republicans, citizens with low climate beliefs, Hispanics, and low-income citizens.

Engaging low-income and disadvantaged communities in local governments' climate and sustainability action planning is explicitly required by some national initiatives aimed at improving energy and environmental justice (e.g. EPA's Community Engagement Initiative and The Environmental Justice Thriving Communities Technical Assistance Centers Program) (US EPA 2023b; 2023c). To access new grant opportunities from related programmes, municipal governments can consider the preferences of low-income and underserved populations, as suggested by our findings. Also, local governments have the option to adopt established and nationally recognized sustainability policies to promote local sustainability within such communities.

Limitations and future research

Nevertheless, we acknowledge some limitations of this study. One notable limitation concerns the utilization of episodic performance information rather than numeric performance data (Deslatte 2020). To better understand and quantify the thresholds of citizen risk-aversion preference, a diverse array of experiments employing more precise measures of performance stimuli could be considered. Another limitation of experimental research is associated with external validity. Survey experiments conducted in artificial environments could differ from complex real-world scenarios (Shay and Byers 2023). To mitigate this artificiality, our vignettes were adapted from real-world sustainability practices of multiple American local governments. Our study investigates public assessments of government strategies and performance information in the realm of sustainability. To enhance its generalizability, further research is needed to replicate this study in other policy areas.

Our findings trace multiple directions for future research. First, citizens' pre-existing beliefs can potentially complicate their evaluations of the successes or failures of public services, as disconfirmation may arise between their expectations and the actual performance (Chen et al. 2022; Deslatte 2020). Therefore, future research can consider the expectation-disconfirmation effect on public assessments of local government sustainability strategies. Second, while exploitation and exploration could also be operationalized by the breadth of policy issues and instruments (Ji and Darnall 2018; Lee 2024), future studies employing different operationalizations could provide an interesting novel approach for research and generate different results. In addition, subsequent research can expand its focus beyond the influences of sustainability strategies and performance on citizen evaluations and investigate other important behavioural outcomes, such as public support for specific policies and citizen participation in sustainability programmes (Porumbescu et al. 2021; Rinscheid, Pianta, and Weber 2020; Woodhouse, Belardinelli, and Bertelli 2022). This will help us understand the broader impacts of sustainability strategies and performance on citizen behavioural changes, enabling policymakers and managers to make informed decisions and effectively engage with the public in local sustainable development.

Note

1. The national distribution of political party is calculated based on the Gallup poll. For more information, see <https://news.gallup.com/poll/15370/party-affiliation.aspx>.

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References

- Andrews, R., and S. Van de Walle. 2013. "New Public Management and Citizens' Perceptions of Local Service Efficiency, Responsiveness, Equity and Effectiveness." *Public Management Review* 15 (5): 762–783. <https://doi.org/10.1080/14719037.2012.725757>.
- Barrutia, J. M., and C. Echebarria. 2019. "Drivers of Exploitative and Explorative Innovation in a Collaborative Public-Sector Context." *Public Management Review* 21 (3): 446–472. <https://doi.org/10.1080/14719037.2018.1500630>.
- Barrutia, J. M., and C. Echebarria. 2022. "Public Managers' Perception of Exploitative and Explorative Innovation: An Empirical Study in the Context of Spanish Municipalities." *International Review of Administrative Sciences* 88 (1): 131–151. <https://doi.org/10.1177/0020852319894688>.
- Baser, E. T., and E. Tan. 2023. "Citizen Expectations, Agency Reputation and Public Service Quality." *Public Management Review* 1–27. <https://doi.org/10.1080/14719037.2023.2245842>.
- Becker, E., T. Jahn, and I. Stiess. 1999. "Exploring Uncommon Ground: Sustainability and the Social Sciences." In *Sustainability and the Social Sciences: A Cross-Disciplinary Approach to Integrating Environmental Considerations into Theoretical Reorientation*, edited by E. Becker and T. Jahn, 1–22. New York: Zed Books.
- Brundtland, G. H. 1987. *What is Sustainable Development*. Oxford: Oxford University Press.
- Casper, J. M., B. P. McCullough, and D. M. K. Smith. 2021. "Pro-Environmental Sustainability and Political Affiliation: An Examination of USA College Sport Sustainability Efforts." *International Journal of Environmental Research & Public Health* 18 (11): 5840. <https://doi.org/10.3390/ijerph18115840>.
- Chen, W., B. Dong, C. W. Hsieh, M. J. Lee, N. Liu, R. M. Walker, and J. Zhang. 2022. "A Replication of 'An Experimental Test of the Expectancy-Disconfirmation Theory of Citizen Satisfaction'." *Public Administration* 100 (3): 778–791. <https://doi.org/10.1111/padm.12860>.
- Choi, I., and J. R. Gil-Garcia. 2022. "Do Different Presentations of Performance Information on Government Websites Affect Citizens' Decision Making? A Survey Experiment." *International Public Management Journal* 25 (1): 140–158. <https://doi.org/10.1080/10967494.2021.1913459>.
- Choi, J., W. Wehde, and R. Maulik. 2024. "Politics of Problem Definition: Comparing Public Support of Climate Change Mitigation Policies Using Machine Learning." *The Review of Policy Research* 41 (1): 104–134. <https://doi.org/10.1111/ropr.12523>.
- The City of Los Angeles. 2019. "L.A.'s Green New Deal." https://plan.lamayor.org/sites/default/files/pLAn_2019_final.pdf.
- Criado, J. I., L. Alcaide-Muñoz, and I. Liarte. 2023. "Two Decades of Public Sector Innovation: Building an Analytical Framework from a Systematic Literature Review of Types, Strategies, Conditions, and Results." *Public Management Review* 1–30. <https://doi.org/10.1080/14719037.2023.2254310>.
- Deslatte, A. 2020. "Positivity and Negativity Dominance in Citizen Assessments of Intergovernmental Sustainability Performance." *Journal of Public Administration Research & Theory* 30 (4): 563–578. <https://doi.org/10.1093/jopart/muaa004>.
- De Villiers, C., L. Rinaldi, J. Unerman, and P. Charl de Villiers. 2014. "Integrated Reporting: Insights, Gaps and an Agenda for Future Research." *Accounting Auditing & Accountability Journal* 27 (7): 1042–1067. <https://doi.org/10.1108/AAAJ-06-2014-1736>.
- De Vries, H., V. Bekkers, and L. Tummers. 2016. "Innovation in the Public Sector: A Systematic Review and Future Research Agenda." *Public Administration* 94 (1): 146–166. <https://doi.org/10.1111/padm.12209>.
- Ding, D., E. W. Maibach, X. Zhao, C. Roser-Renouf, and A. Leiserowitz. 2011. "Support for Climate Policy and Societal Action are Linked to Perceptions About Scientific Agreement." *Nature Climate Change* 1 (9): 462–466. <https://doi.org/10.1038/nclimate1295>.
- Elgert, L. 2018. "Rating the Sustainable City: 'Measurementality', Transparency, and Unexpected Outcomes at the Knowledge-Policy Interface." *Environmental Science & Policy* 79:16–24. <https://doi.org/10.1016/j.envsci.2017.10.006>.
- Ellsberg, D. 1961. "Risk, Ambiguity, and the Savage Axioms." *Quarterly Journal of Economics* 75 (4): 643–669. <https://doi.org/10.2307/1884324>.
- George, B., M. Baekgaard, A. Decramer, M. Audenaert, and S. Goeminne. 2020. "Institutional Isomorphism, Negativity Bias and Performance Information Use by Politicians: A Survey Experiment." *Public Administration* 98 (1): 14–28. <https://doi.org/10.1111/padm.12390>.

- Gofen, A. 2015. "Citizens' Entrepreneurial Role in Public Service Provision." *Public Management Review* 17 (3): 404–424. <https://doi.org/10.1080/14719037.2013.822533>.
- Goodman, D., E. Gorina, R. Abraham, B. Cease, and P. E. French. 2022. "Voters, Neighbors, and City Performance in Environmental Sustainability Transitions." *Public Integrity* 25 (4): 365–379. <https://doi.org/10.1080/10999922.2022.2053439>.
- The Government of the District of Columbia. 2023. *Sustainable DC Progress Reports*. https://sustainable.dc.gov/sites/default/files/dc/sites/sustainable/page_content/attachments/SDC_Progress_Report_Photo_Credits.pdf.
- Huang, B., X. Wu, and F. Wiebrecht. 2024. "Environmental Antecedents, Innovation Experience, and Officials' Innovation Willingness: Evidence from China." *Public Management Review* 1–28. <https://doi.org/10.1080/14719037.2024.2349118>.
- ICMA (International City/County Management Association). 2015. *Local Government Sustainability Practices Survey Report*. https://icma.org/sites/default/files/308135_2015%20Sustainability%20Survey%20Report%20Final.pdf.
- Jakobsen, M., O. James, D. Moynihan, and T. Nabatchi. 2019. "JPART Virtual Issue on Citizen-State Interactions in Public Administration Research." *Journal of Public Administration Research & Theory* 29 (4): e8–e15. <https://doi.org/10.1093/jopart/muw031>.
- James, O. 2011. "Managing Citizens' Expectations of Public Service Performance: Evidence from Observation and Experimentation in Local Government." *Public Administration* 89 (4): 1419–1435. <https://doi.org/10.1111/j.1467-9299.2011.01962.x>.
- James, O., and A. Moseley. 2014. "Does Performance Information About Public Services Affect Citizens' Perceptions, Satisfaction, and Voice Behavior? Field Experiments with Absolute and Relative Performance Information." *Public Administration* 92 (2): 493–511. <https://doi.org/10.1111/padm.12066>.
- Jansen, J. J., F. A. Van Den Bosch, and H. W. Volberda. 2006. "Exploratory Innovation, Exploitative Innovation, and Performance: Effects of Organizational Antecedents and Environmental Moderators." *Management Science* 52 (11): 1661–1674. <https://doi.org/10.1287/mnsc.1060.0576>.
- Ji, H., and N. Darnall. 2018. "All are Not Created Equal: Assessing Local Governments' Strategic Approaches Towards Sustainability." *Public Management Review* 20 (1): 154–175. <https://doi.org/10.1080/14719037.2017.1293147>.
- Lee, E., and S. Nicholson-Crotty. 2022. "Symbolic Representation, Expectancy Disconfirmation, and Citizen Complaints Against Police." *The American Review of Public Administration* 52 (1): 36–45. <https://doi.org/10.1177/02750740211034427>.
- Lee, H. 2024. "Strategic Types, Implementation, and Capabilities: Sustainability Policies of Local Governments." *Public Administration* 102 (1): 264–284. <https://doi.org/10.1111/padm.12917>.
- Leiserowitz, A. 2006. "Climate Change Risk Perception and Policy Preferences: The Role of Affect, Imagery, and Values." *Climatic Change* 77 (1–2): 45–72. <https://doi.org/10.1007/s10584-006-9059-9>.
- Lepore, W., and J. B. Cunningham. 2023. "Making Choices in Addressing Sustainability Problems: A Link to Framing Effects and Protected Values." *Public Management Review* 26 (8): 1–25. <https://doi.org/10.1080/14719037.2023.2180656>.
- Liu, Y., and C. Xu. 2023. "De-Stereotyping Public Performance Evaluation." *International Public Management Journal* 26 (1): 107–125. <https://doi.org/10.1080/10967494.2022.2109786>.
- March, J. G. 1991. "Exploration and Exploitation in Organizational Learning." *Organization Science* 2 (1): 71–87. <https://doi.org/10.1287/orsc.2.1.71>.
- McConnell, K. 2023. "The Green New Deal' as Partisan Cue: Evidence from a Survey Experiment in the Rural US." *Environmental Politics* 32 (3): 452–484. <https://doi.org/10.1080/09644016.2022.2090655>.
- McCright, A. M., R. E. Dunlap, and C. Xiao. 2013. "Perceived Scientific Agreement and Support for Government Action on Climate Change in the USA." *Climatic Change* 119 (2): 511–518. <https://doi.org/10.1007/s10584-013-0704-9>.
- Meschede, C., and A. Mainka. 2020. "Including Citizen Participation Formats for Drafting and Implementing Local Sustainable Development Strategies." *Urban Science* 4 (1): 13. <https://doi.org/10.3390/urbansci4010013>.
- Olsen, A. L. 2015. "Citizen (Dis) Satisfaction: An Experimental Equivalence Framing Study." *Public Administration Review* 75 (3): 469–478. <https://doi.org/10.1111/puar.12337>.

- Park, A. Y. 2023. "Beyond Reporting: What Drives Performance Data Use in Sustainability Management? Empirical Evidence from US Cities." *Public Management Review*: 1–24. <https://doi.org/10.1080/14719037.2023.2250356>.
- Park, A. Y., and R. M. Krause. 2021. "Exploring the Landscape of Sustainability Performance Management Systems in US Local Governments." *The Journal of Environmental Management* 279:111764. <https://doi.org/10.1016/j.jenvman.2020.111764>.
- Pinz, A., N. Roudyani, and J. Thaler. 2018. "Public-Private Partnerships as Instruments to Achieve Sustainability-Related Objectives: The State of the Art and a Research Agenda." *Public Management Review* 20 (1): 1–22. <https://doi.org/10.1080/14719037.2017.1293143>.
- Poister, T. H., and G. Streib. 1999. "Performance Measurement in Municipal Government: Assessing the State of the Practice." *Public Administration Review* 59 (4): 325–335. <https://doi.org/10.2307/3110115>.
- Porumbescu, G. A., M. Cucciniello, N. Bellé, and G. Nasi. 2021. "Only Hearing What They Want to Hear: Assessing When and Why Performance Information Triggers Intentions to Coproduce." *Public Administration* 99 (4): 789–802. <https://doi.org/10.1111/padm.12697>.
- Porumbescu, G. A., M. I. Neshkova, and M. Huntoon. 2019. "The Effects of Police Performance on Agency Trustworthiness and Citizen Participation." *Public Management Review* 21 (2): 212–237. <https://doi.org/10.1080/14719037.2018.1473473>.
- Porumbescu, G. A., S. J. Piotrowski, and V. Mabillard. 2021. "Performance Information, Racial Bias, and Citizen Evaluations of Government: Evidence from Two Studies." *Journal of Public Administration Research & Theory* 31 (3): 523–541. <https://doi.org/10.1093/jopart/muaa049>.
- Potts, J. 2009. "The Innovation Deficit in Public Services: The Curious Problem of Too Much Efficiency and Not Enough Waste and Failure." *The Innovation* 11 (1): 34–43. <https://doi.org/10.5172/impp.453.11.1.34>.
- Potts, J., and T. Kastle. 2010. "Public Sector Innovation Research: What's Next?" *The Innovation* 12 (2): 122–137. <https://doi.org/10.5172/impp.12.2.122>.
- Rinscheid, A., S. Pianta, and E. U. Weber. 2020. "Fast Track or Slo-Mo? Public Support and Temporal Preferences for Phasing Out Fossil Fuel Cars in the United States." *Climate Policy* 20 (1): 30–45. <https://doi.org/10.1080/14693062.2019.1677550>.
- Rønning, R., J. Hartley, L. Fuglsang, and K. Geuijen. 2022. "Valuing Public Innovation: Contributions to Theory and Practice. Cham, Switzerland: Palgrave Macmillan." *Public Management Review*: 1–30. <https://doi.org/10.1007/978-3-031-15203-0>.
- Ruggeri, K., S. Ali, M. L. Berge, G. Bertoldo, L. D. Bjørndal, A. Cortijos-Bernabeu, and T. Folke. 2020. "Replicating Patterns of Prospect Theory for Decision Under Risk." *Nature Human Behaviour* 4 (6): 622–633. <https://doi.org/10.1038/s41562-020-0886-x>.
- Shay, L. P., and J. S. Byers. 2023. "Can't Buy Me Love? An Experiment on the Relationship Between Federal Grant Spending and Public Approval of Federal Agencies." *Public Management Review* 26 (6): 1–19. <https://doi.org/10.1080/14719037.2022.2162956>.
- Shinohara, S. 2023. "Bad Government Performance and Citizens' Perceptions: A Quasi-Experimental Study of Local Fiscal Crisis." *International Review of Administrative Sciences* 89 (3): 722–740. <https://doi.org/10.1177/00208523211067085>.
- Trischler, J., P. O. Svensson, H. Williams, and F. Wikström. 2022. "Citizens as an Innovation Source in Sustainability Transitions—Linking the Directionality of Innovations with the Locus of the Problem in Transformative Innovation Policy." *Public Management Review* 25 (11): 1–23. <https://doi.org/10.1080/14719037.2022.2062041>.
- Tversky, A., and D. Kahneman. 1981. "The Framing of Decisions and the Psychology of Choice." *Science* 211 (4481): 453–458. <https://doi.org/10.1126/science.7455683>.
- Uotila, J., M. Maula, T. Keil, and S. A. Zahra. 2009. "Exploration, Exploitation, and Financial Performance: Analysis of S&P 500 Corporations." *Strategic Management Journal* 30 (2): 221–231. <https://doi.org/10.1002/smj.738>.
- U.S. Environmental Protection Agency. 2023a. "Climate Pollution Reduction Grants Program." https://www.epa.gov/system/files/documents/2023-05/LIDAC%20Technical%20Guidance%20-%20Final_2.pdf.
- U.S. Environmental Protection Agency. 2023b. "Community Engagement." <https://www.epa.gov/fedfac/community-engagement>.

- U.S. Environmental Protection Agency. 2023c. "The Environmental Justice Thriving Communities Technical Assistance Centers Program." <https://www.epa.gov/environmentaljustice/environmental-justice-thriving-communities-technical-assistance-centers>.
- van den Bekerom, P., J. van der Voet, and J. Christensen. 2021. "Are Citizens More Negative About Failing Service Delivery by Public Than Private Organizations? Evidence from a Large-Scale Survey Experiment." *Journal of Public Administration Research & Theory* 31 (1): 128–149. <https://doi.org/10.1093/jopart/muaa027>.
- van der Voet, J., and E. Lems. 2022. "Decision-Makers' Generation of Policy Solutions Amidst Negative Performance: Invention or Rigidity?" *Public Administration Review* 82 (5): 931–945. <https://doi.org/10.1111/puar.13462>.
- Wehde, W., and J. Choi. 2022. "Public Preferences for Disaster Federalism: Comparing Public Risk Management Preferences Across Levels of Government and Hazards." *Public Administration Review* 82 (4): 733–746. <https://doi.org/10.1111/puar.13432>.
- The White House. 2021. "Fact Sheet: The Bipartisan Infrastructure Deal." <https://www.whitehouse.gov/briefing-room/statements-releases/2021/11/06/fact-sheet-the-bipartisan-infrastructure-deal/>.
- The White House. 2023. "Building a Clean Energy Economy: A Guidebook to the Inflation Reduction Act's Investments in Clean Energy and Climate Action." <https://www.whitehouse.gov/wp-content/uploads/2022/12/Inflation-Reduction-Act-Guidebook.pdf>.
- Woodhouse, E. F., P. Belardinelli, and A. M. Bertelli. 2022. "Hybrid Governance and the Attribution of Political Responsibility: Experimental Evidence from the United States." *Journal of Public Administration Research & Theory* 32 (1): 150–165. <https://doi.org/10.1093/jopart/muab014>.
- Zawadzki, S. J., T. Bouman, L. Steg, V. Bojarskich, and P. B. Druen. 2020. "Translating Climate Beliefs into Action in a Changing Political Landscape." *Climatic Change* 161 (1): 21–42. <https://doi.org/10.1007/s10584-020-02739-w>.
- Zeemering, E. S. 2018. "Sustainability Management, Strategy and Reform in Local Government." *Public Management Review* 20 (1): 136–153. <https://doi.org/10.1080/14719037.2017.1293148>.
- Zhang, Y., T. E. DeCarlo, A. S. Manikas, and A. Bhattacharya. 2023. "To Exploit or Explore? The Impact of Crowdfunding Project Descriptions and Backers' Power States on Funding Decisions." *Journal of the Academy of Marketing Science* 51 (2): 444–462. <https://doi.org/10.1007/s11747-022-00871-w>.
- Zhang, Y., X. Liu, and A. Vedlitz. 2020. "How Social Capital Shapes Citizen Willingness to Co-Invest in Public Service: The Case of Flood Control." *Public Administration* 98 (3): 696–712. <https://doi.org/10.1111/padm.12646>.

Appendix

Appendix A. Descriptive statistics and balance checks for covariates

Variables	Group1 N = 257	Group2 N = 291	Group3 N = 306	Group4 N = 284	P-value
	Mean				
Age	43.74	44.72	42.55	44.88	0.77
Climate belief	10.45	10.13	10.23	10.00	0.41
	Percent				
Sex	100.00	100.00	100.00	100.00	0.71
Female	58.37	56.01	54.90	59.15	
Male	41.63	43.99	45.10	40.85	
Race/Ethnicity	100.00	100.00	100.00	100.00	0.84
White, not Hispanic or Latino	59.14	66.32	65.36	65.14	
Asian, not Hispanic or Latino	6.61	5.15	4.25	3.87	
Black, not Hispanic or Latino	10.12	8.59	10.46	9.86	
Hispanic or Latino	20.62	16.84	16.01	16.55	
Other	3.51	3.09	3.92	4.58	
Education levels	100.00	100.00	100.00	100.00	0.14
High school or less	29.57	24.40	26.47	20.77	
Some college and associate degree	31.13	29.21	36.27	37.68	
Bachelor's degree	22.18	24.74	21.90	26.76	
Graduate degree	17.12	21.65	15.36	14.79	
Income	100.00	100.00	100.00	100.00	0.90
Less than \$25,000	17.51	16.15	14.38	13.38	
\$25,000 to \$34,999	13.23	8.93	11.76	11.62	
\$35,000 to \$49,999	12.45	13.75	10.13	12.32	
\$50,000 to \$74,999	18.68	17.53	17.97	17.61	
\$75,000 to \$99,999	12.84	12.37	14.38	15.85	
\$100,000 to \$149,999	15.56	16.84	17.97	15.85	
More than \$150,000	9.73	14.43	13.40	13.38	
Political partisanship	100.00	100.00	100.00	100.00	0.81
Democrat	35.80	36.77	29.41	33.10	
Republican	21.01	23.37	24.84	23.59	
Independent	40.86	38.14	43.14	41.20	
Other	2.33	1.72	2.61	2.11	
Political ideology	100.00	100.00	100.00	100.00	0.12
Very liberal	17.12	12.37	8.50	8.10	
Liberal	19.46	13.75	18.63	17.61	
Moderate	40.47	45.36	44.77	46.83	
Conservative	14.40	16.49	19.93	15.85	
Very conservative	8.56	12.03	8.17	11.62	

Appendix B. Subgroup analyses based on additional racial and income groups

	Race/Ethnicity				Income	
	White (1)	White (2)	Others (1)	Others (2)	High Income (1)	High Income (2)
Strategy Dummy (Exploitation=1)	1.63(1.87)	3.75 (2.73)	-3.29 (4.45)	3.18 (6.23)	0.47 (2.34)	3.30 (3.48)
Performance Dummy (Negative=1)	-39.30*** (1.88)	-37.40*** (2.59)	-42.27*** (4.45)	-35.54*** (6.35)	-38.06*** (2.35)	-35.60*** (3.24)
Strategy× Performance		-4.00 (3.75)		-13.07 (8.85)		-5.18 (4.70)
Constant	77.05*** (1.59)	76.11*** (1.81)	79.99*** (3.89)	76.63*** (4.49)	77.09*** (2.00)	75.85*** (2.29)
R ²	0.38	0.38	0.49	0.50	0.35	0.35
Observation	730	730	99	99	493	493

Note: †p < 0.1; * p<0.05; ** p<0.01; ***p<0.001. For each subgroup, model (1) (e.g. White (1)) refers to the baseline model and model (2) (e.g. White (2)) refers to the model with the interaction term.