# Demolition and Discontent
## Governing the Authoritarian City

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**Abstract**

Abstract: The presence of large cities increases the probability of authoritarian breakdown, but the literature has offered little empirical insight as to how challenges to authoritarian rule develop in urban space. I develop a theory of cities as complex sociopolitical spaces that are difficult to govern, particularly in the absence of democratic institutions. This complexity makes both cooptation and coercion difficult, meaning the very tactics that authoritarian cities use to control discontent can become its proximate cause. Using a large, city-financed housing project in Moscow targeted at rewarding regime supporters, I utilize a Bayesian semi-parametric model to demonstrate that even a seemingly well-targeted cooptive exchange contributed to a surprising defeat for the regime in a subsequent municipal election. My results suggest that the relative illegibility of cities plays an important part in the development of opposition to authoritarian rule.

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A growing body of research suggests that authoritarian durability relies on cooperation and control at lower levels of government. Local governments play a critical role in coopting citizens, targeting the opposition, turning out and coercing voters, and distributing patronage (Magaloni, 2006; Reuter and Robertson, 2014). For these reasons, establishing and maintaining the loyalty of effective subnational political machines is a critical part of authoritarian consolidation (Saikkonen, 2016; Reuter et al., 2016).

In particular, urban contentious and electoral dynamics play an important part in authoritarian survival. Increasingly, the urban middle class drives protest and electoral opposition in authoritarian regimes. Opposition gains in local elections disrupt patronage networks, establish programmatic ties to voters, and create effective political bases for opposition to compete against authoritarian incumbents nationally (Lucardi, 2016; Magaloni, 2006). Urban contention forces incumbents to acknowledge electoral defeat, challenges electoral fraud, ties opposition actors to citizens, and creates effective mobilizing structures. In the more dramatic cases, urban mobilization even brings down the regime itself (Bunce and Wolchik, 2011). In cases as diverse as Tunisia and Serbia, urban protest, subnational and municipal electoral defeats, or both preceded the fall of seemingly durable authoritarian regimes (Bunce and Wolchik, 2011; Beissinger, Jamal and Mazur, 2015).

While it is evident that urban political dynamics pose serious risks to authoritarian rule, little is known about how these risks develop into real challenges to authoritarianism. Despite a substantial body of work which focuses on the relationship between national-level political and economic factors and authoritarian durability, politics at the municipal level are largely ignored, with opposition at the ballot boxes or on the streets simply assumed to organically occur within cities. While we know that large authoritarian cities are often hotbeds of opposition, we lack a clear theory as to how, when, and why they become dangerous (Wallace, 2014). Using data from a housing project and municipal elections in Moscow, I demonstrate that large cities are risky for authoritarian regimes because their socio-political diversity and density makes both targeting cooptation and anticipating reactions to cooptive policy

difficult.

I begin by arguing that while the literature on authoritarianism has established that controlling subnational threats is critical to authoritarian survival, it focuses largely on long-run dynamics and offers little insight into what sparks specific threats within cities. I draw on insights in urban sociology and political geography to argue that cities must be understood as complex political ecologies, where variations in the distribution of social groups and political stimuli create an illegible social terrain. While the presence of ethnic enclaves or concentrated poverty may help regimes target cooptive exchanges, outside of these areas authoritarians are forced to distribute benefits in an environment in which brokerage is extremely difficult, reducing the effectiveness of the exchange, changing the nature and visibility of goods provided, and leading to unanticipated discontent. I will then discuss the appropriateness of my case selection, empirical strategy, and hypotheses. I will close with presentation of results, which confirm that the urban socio-political environment creates a high risk that authoritarians' attempts to maintain social peace can instead be the proximate cause of serious challenges to authoritarian control of urban space.

This work makes substantive, methodological, and theoretical contributions to the study of authoritarianism and urban politics. Theoretically, I explain the nature of the urban threat to authoritarian rule: the difficulty of operating the typical tools of cooptation in the complex environment of the city, which increases the risk and reduces the benefits of patronage, clientelism, and other cooptive exchanges. Methodologically, I demonstrate that Bayesian semi-parametric models are a powerful tool for testing theories that grapple with social complexity and effect heterogeneity; not only are these models capable of dealing with these potential pitfalls where the standard methods fail, they do so in a flexible, principled, and easy to communicate manner. Substantively, I find evidence of my theory in a surprising electoral defeat for Russia's seemingly powerful regime party in its capital city.

## Subnational Politics and Authoritarian Survival

While a robust literature exists on the role of subnational politics in maintaining national authoritarian rule, these works offer little insight as to why specific challenges to the regime emerge in urban space. While cross-national statistical studies have established that large cities significantly reduce the duration of authoritarian regimes, they have not clearly established any mechanisms to explain this effect (Wallace, 2014). While many long-run mechanisms, such as demographic change and modernization, have been proposed to explain why urbanization degrades authoritarian rule, we lack a cohesive theory capable of explaining how specific challenges in specific cities emerge and challenge authoritarian regimes.

In the urban threat literature, cities, particularly the large capital cities that are common in authoritarian regimes, are tinderboxes of collective action (Wallace, 2014). As cities get larger, discontent becomes more dangerous; densely-populated, large cities lower the barriers to collective action and have the potential to make contention more destabilizing and threatening to state actors. In addition, large protests in cities are more likely to create a national "tipping point" phenomenon in which citizens' public alignments rapidly and dramatically change in response to perceived decrease in the costs of opposition (Kuran, 1991). Facing this potential threat, authoritarian regimes often choose to redistribute economic resources from the countryside to their large cities in an attempt to forestall the short-term threat of collective action, ultimately increasing the concentration of their population in a few urban centers and correspondingly increasing the threat of longer-run regime failure (Wallace, 2014; Ades and Glaeser, 1995; Bates, 2014). Wallace (2014) refers to this as the "Faustian bargain" - successful cooptation of urban residents through the provision of clientelistic or public goods pacifies cities in the short term, but in the long term increases the risks of urban unrest.

While this literature is generally assumed to apply to contentious politics, it also rationally applies to electoral threats in electoral authoritarian regimes. Bunce and Wolchik

(2011)'s study of electoral authoritarianism in post-communist countries note that in all but one of their cases of authoritarian defeat, opposition victories in local elections preceded the critical national elections. The paradigmatic case is Serbia, in which the government's initial refusal to certify opposition victories in Belgrade's municipal elections created a large contentious surge. The organizational infrastructure of these protests later proved critical in defeating Milošević nationally (Bunce and Wolchik, 2011). Large cities can be expected to lower the cost of electoral campaigns in much the same way as they reduce the difficulty of solving the contentious collective action problem.

Failure to contain local electoral threats has played a significant role in the collapse of many other authoritarian regimes. Lucardi (2016) argues that opposition victories in local elections in Mexico hampered the operation of PRI patronage and electoral machines, lowered the perceived cost of defection, and created programmatic ties to voters that could be later mobilized at the national level. Much as in Mexico, local electoral victories in Romania, Serbia, Georgia, Croatia, and Slovakia directly contributed to the collapse of national authoritarian regimes. Victory in local elections allowed opposition actors to coordinate and create mobilizing structures in an otherwise hostile electoral environment (Bunce and Wolchik, 2011). Simultaneously, it deprived authoritarian leaders of critical organizational resources for monitoring citizens, manipulating elections, operating clientelistic networks, and repressing the opposition. It is clear that failure to maintain local control presents a real danger to the survival of authoritarian rule, disrupting authoritarian power verticals and wresting control of state resources from the regime.

The existing literature makes it clear that firm control of subnational politics, and urban politics in particular, is fundamental to authoritarian survival. However, very little of this literature considers urban politics specifically, instead focusing on the interaction of local and national politics (Rosenfeld, 2018; Reuter et al., 2016), the national consequences of specific urban movements (Bunce and Wolchik, 2011), or the generalized threat large cities present to long-term authoritarian survival (Wallace, 2014). We lack a theory of why and

how cities are such fertile ground for destabilizing political events despite authoritarians' focus on coopting and controlling urban areas, largely because it rarely considers cities as a social and political phenomena rather than a simple geographical category.

## Cities, Complexity, and Cooptation

To begin unpacking the urban threat, it is necessary to conceptualize cities as a specific political space. Leveraging work in urban sociology and political geography, I argue that the urban threat originates in the socio-spatial complexity of cities. The density, complexity, and heterogeneity of cities makes successfully targeting the cooptation associated with urban bias difficult. As cities grow in response to urban bias targeting difficulty increases due to three factors: anonymity, observability, and demographic diversity. This creates a negative feedback loop in which the chances and risks of failing to co-opt potentially restive populations, maintain support, or avoid backlash become higher. In the absence of politicized ethnicity, concentrated poverty, a large and expensive broker network, or a near inexhaustible pool of resources, authoritarian regimes are doomed to suffer from their own success at co-opting the cities.

The role urban density and heterogeneity play in patterning behavior across space has a long history in urban sociology, beginning with Wirth (1938)'s seminal work "Urbanism as a Way of Life". Wirth argues that three distinct characteristics of cities create patterns of social behavior via the structure they impose on human interaction: population size, population density, and heterogeneity. The heterogeneity and density of the city leads to more complex social interactions and a corresponding system of social stratification. Labor within the city is generally highly-differentiated, and the number of people from different classes and ethnicities an urban-dweller comes into contact with is orders of magnitude higher than their rural counterparts. This more varied life leads to a proliferation of voluntary associations, from social to political interest groups. In turn, urban governance becomes more difficult

than rural governance, with cities forced to grapple with a bewildering array of interests and groups. This creates an environment of socio-spatial complexity, where the heterogeneity of the urban population is patterned across the small spatial scale of the city.

While Wirth considers only one elementary spatial variable (density), work in urban sociology and political geography has elaborated on the complex and heterogeneous effects socio-spatial patterning has on political behavior. Sampson (2012), through an in-depth study of Chicago, identifies the contribution of the surrounding socio-political context to the complexity of urban governance. Sampson finds generation-spanning contextual effects across neighborhoods that pattern residents collective efficacy, electoral and contentious mobilization, ties to government elites, and a vast number of other social and political outcomes. These effects are not simply a function of the heterogeneous social profiles of neighborhood residents; even statistically similar neighborhoods demonstrate vastly different outcomes due to the mediating effect of the surrounding context. Individuals of a certain social profile are certainly more likely to organize, protest, and lobby than others, but the surrounding community plays a large role in their decisions and ability to actually do so. Since these contextual effects emerge from a dense network of invisible and difficult to quantify social ties and interactions, urban governments cannot simply read them off a map of socio-economic fundamentals and tailor their policies accordingly. Even when heterogeneity can be quantitatively captured across space, the dense interactions enabled by the spatial density of the cities create emergent and divergent patterns across virtually every sociopolitical outcome. This underlying complexity serves as a crucial mediator of the effects both urban policy and collective action.

While most this literature focuses on democracies, the legibility of citizens across space deeply structures how authoritarian regimes interact with their citizens. Blaydes (2018), in a study of Iraq, argues that the ability of the state to make specific populations legible determines whether the regime chooses targeted or group-based repression, with major downstream effects on group identity. Wallace (2014) also discusses the importance of specifically

urban legibility to the Chinese regime, detailing the Chinese use of a household registration system to strictly control migration to cities and gather information on residents, rendering urban areas highly legible. Crucially, both authors focus on closed and heavily repressive authoritarian regimes capable of expending great effort on repression and bureaucratic control. In increasingly common electoral authoritarian regimes, we should expect the presence of elections to further increase the complex effects of local context on both citizen and regime behavior; elections create a partially free arena in which citizens interact at regular intervals with both the state and its challengers. When elections occur in the large, dense cities that characterize authoritarian regimes, we should expect the urban sociopolitical terrain to complicate the task of authoritarian electioneering.

When it comes to managing the urban threat, the illegibility of cities makes implementing the urban bias difficult. To effectively target cooptation and buy social peace, maintain support, or buy votes, political actors require a network of brokers to identify whom to target for redistribution and/or to monitor compliance in clientelistic bargains (Stokes et al., 2013; Kitschelt and Wilkinson, 2007). Without an effective brokerage network, regimes must depend on aggregated sources of data such as vote totals, leaving them vulnerable to "seeing like a state" and running afoul of the particularly complex social networks and processes that undergird cities, resulting in either failure to accurately target or failure to anticipate negative reactions to cooptive policy (Sampson, 2012; Scott, 2008). The urban environment makes establishing such effective broker networks harder for three reasons: anonymity, observability, and demographic.

Effective brokers are individuals deeply embedded in their communities, enabling them identify the needs of community members and target them for resource distribution. In rural areas, this task is comparatively simple: community members interact with each other frequently, generally remain in the community for most or all of their lives, and are generally socio-economically similar (Stokes et al., 2013). Given these relatively simple and stable social networks, brokers can easily identify who can be co-opted and how. In contrast, urban

citizens are far more anonymous. Especially when urban areas are growing, new arrivals, gentrification, and more frequent relocation of citizens makes community membership unstable. Additionally, urban communities tend to be more socio-economically heterogeneous. This creates a high level of what Kitschelt and Wilkinson (2007) call "constituent heterogeneity". In this context, brokerage becomes more expensive and less effective, requiring more brokers of higher skill (Stokes et al., 2013).

The urban environment also makes observing the effectiveness of cooptation difficult. The churn of residents contributes to this; when members of a broker's network move, the broker loses the ability to observe them. Under electoral authoritarianism, support at the voting booth also becomes harder to observe in urban environments (Stokes et al., 2013). Even with the secret ballot, polling stations with small numbers of voters provide intelligible information on who to target, their loyalty, and the broker's effectiveness. As the number of votes cast at a polling station increases, this signal rapidly becomes noisier (Kitschelt and Wilkinson, 2007; Stokes et al., 2013). Brokers are forced to either violate the secret ballot or simply use aggregate vote totals to target and/or withdraw access to benefits.

Finally, the demography of a city not only contributes to anonymity of urbanites, it also makes it more difficult to organize them in a manner that allows for efficient targeting. The fate of the PRI in Mexico offers an illustrative example of how urban socio-political complexity derails targeting. While the PRI was able to organize the rural poor using corporatist structures, Mexico City's rapid growth resulted in a large population of urban poor participating in a broad array of informal economic activities. Concentrating the urban poor into a corporatist structures was not possible, largely because their needs and goals varied widely. The resulting reduction in monitoring and targeting ability meant the PRI was unable to prevent the defection of the urban poor to the opposition in the 1988 general election, forcing the PRI to commit widespread fraud to maintain power (Magaloni, Diaz-Cayeros and Estévez, 2007). While the PRI was able to recover a substantial amount of support from the urban poor using targeted cash benefits, this required massive investment

in an extensive brokerage infrastructure, and served only to delay and not prevent the fall of Mexico's hegemonic party regime (Magaloni, 2006; Magaloni, Diaz-Cayeros and Estévez, 2007). Additionally, a critical demographic tends to live in cities: the middle class and the wealthy. It is well established that the middle class require a higher price for their votes and frequently disapprove of clientelistic politicians, preferring investments in public goods to direct transfers (Weitz-Shapiro, 2012).

Critically, these factors apply to the distribution of cooptive goods even when the regime does not intend or is unable to guarantee the contingency of the exchange. A significant body of work on clientelism has argued that often so-called clientelistic goods are intended as a form of "turf protection", where benefits are given as a reward for past loyalty and an incentive for future support without a direct, monitored commitment by the recipients (Stokes et al., 2013; Hicken and Nathan, 2020). In the absence of a true *quid pro quo* where the patron punishes defectors, brokers are still necessary to precisely target supporters for the distribution of this form of patronage. Where broker networks are strong, goods can flow directly to individuals in a efficient and low-visibility manner in the form of cash transfers or private goods. Where brokers can not operate efficiently, such as in the city, regimes must resort to group-based rewards based on noisy aggregated information, such as district level electoral returns or demographics. In addition to being potentially inefficient, this changes the fundamental nature of the exchange; club goods, such as housing or infrastructural improvements, are highly visible to non-recipients. This runs the risk of angering both supporters who the regime failed to target as well as non-supporters and opponents who observe the exchange (Weitz-Shapiro, 2012). Additionally, these club goods are often implemented in a manner that is highly disruptive to non-included citizens: the renovation of housing, repair and improvement of roads, walkways, or parks, or other improvements to infrastructure or neighborhoods all create negative externalities for those who live nearby, providing another possible source of backlash.

This is not to say that effective cooptation is impossible in urban environments; the

literature on clientelism is rife with examples of successful urban clientelistic machines in developing democracies in Latin America, Asia, and the early 19th century United States. These machines function in large part due to massive networks of highly-embedded brokers combined with the existence of concentrated poverty and/or politicized ethnicity. Given the tenuous nature of life in urban slums, the price of vote-buying is relatively simple: food, medicine, work, cash, and other essentials. This simplifies the task of brokerage considerably, with politicians providing brokers with these resources and brokers enabling and monitoring their conditional distribution (Zarazaga, 2014; Auerbach and Thachil, 2018; Levitsky, 2003; Auyero, 2000). Politicized ethnicity functions as a similar simplifying heuristic; ethnic leaders can serve as natural brokers, and when ethnic enclaves exist, geographical targeting of club goods becomes easy and efficient (Wilkinson, 2007; Kitschelt and Wilkinson, 2007; Blaydes, 2018). The ability of brokers in these environments to provide highly-individualized benefits, with or without the ability to monitor clients' commitments, results in both a more efficient distribution of resources and reduces the visibility of clientelistic exchanges to wealthier citizens or excluded groups, simultaneously minimizing the risks of ineffective targeting and backlash. In short, were brokers can serve as the mediators of urban cooptive policy and tailor it to fit complex populations, urban complexity is at least partially eliminated as a mediator between the intent of cooptive policy and its effect. As socio-spatial complexity increases, the ability of brokers to serve as the mediator translating cooptive policy into intended effect correspondingly diminishes, resulting in increased unpredictability of response.

Where authoritarians cannot rely on poverty and ethnicity reliably, the difficulty of targeting cooptation creates a dangerous feedback loop. To forestall the short-run danger of urban unrest, they redistribute from the countryside to the cities, including the provision of clientelistic or patronage benefits. However, the distribution of these benefits is difficult; distribution may be inefficient, ineffective, fail to be targeted towards restive groups, or create backlash. When redistribution is successful, it leads to further urban concentration, increasing the density, complexity and heterogeneity of the city and making targeting more

difficult. Simultaneously, urban concentration increases the threat posed by the city, making careful targeting even more necessary. This adds another twist to Wallace (2014)'s Faustian bargain: authoritarians who successfully buy urban peace via redistribution will find future redistribution both more difficult and dangerous.

## Case Selection

To demonstrate the difficulty and destabilizing potential of urban redistribution, I examine the relationship between a highly-targeted social policy and opposition support in a paradigmatic electoral authoritarian regime, Russia. A large project to provide new housing in Moscow targeted at regime supporters preceded substantial opposition gains on municipal district councils in September 2017, despite the program being highly popular among those receiving new housing. While this mobilization was ultimately not regime threatening, it is nevertheless a representative case study of how targeted cooptation can fail in the urban environment, and did force the Moscow city government to adopt riskier tactics to maintain control.

The Russian regime and the Moscow city government cannot rely on pre-existing clientelistic machines. The collapse of the Soviet Union also resulted in the demise of its characteristic corporatist organizing structures. This was quickly followed by rapid economic dislocation and transformation, leading to large-scale migration to a small group of cities, primarily Moscow. Boris Yeltsin failed to build a stable party or support base, and Vladimir Putin only succeeded in consolidating a ruling party (United Russia) in the early 2000s, long after the complete transformation of Russian politics. Adrift without the large, deeply embedded network of brokers or the slums and ethnic enclaves that make targeted cooptation feasible, the Russian regime has been forced to frequently resort to risky and coercive strategies to maintain its strong electoral advantage: outright fraud, workplace coercion, and heavy repression of opposition candidates. Despite a considerable machinery for distributing

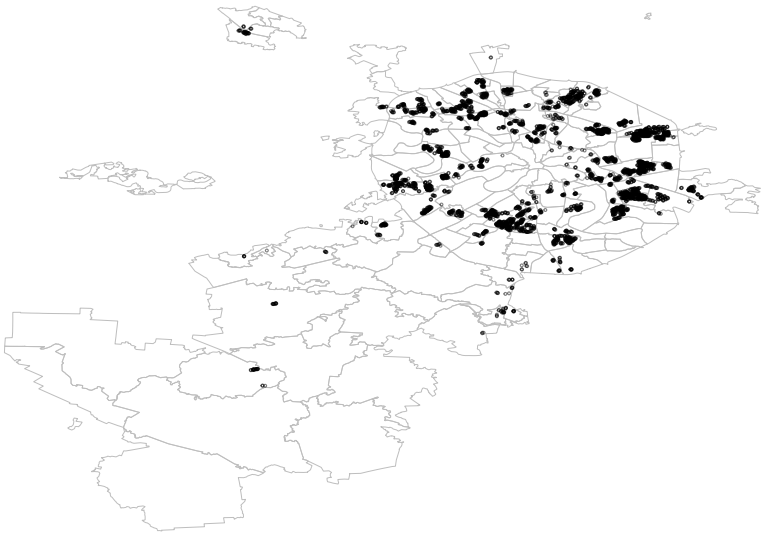
patronage to elites, durable linkages between the party of power and regular citizens are rare to non-existent throughout most of Russia and particularly Moscow, where a flourishing private sector and diversified economy reduce direct dependence on state resources (Frye, Reuter and Szakonyi, 2014).

This is not to say that clientelism, and even urban clientelism, does not exist in Russia; Russia's ethnic republics, poorer regions, and areas heavily dependent on single industries have powerful clientelistic machines (Hale, 2007). In line with my argument, Moscow is a much more difficult case. Moscow in many ways exemplifies (Wallace, 2014) urban threat: a very large, rapidly growing capital city. With an estimated 12.4 million residents, Moscow contains approximately 9% of the Russian population, with that population increasing by nearly 4 million since 1989 despite a decline in the overall Russian population. As such, Moscow presents an ideal case study of the difficulty of urban cooptation. The rapid growth and development of the city creates significant anonymity, the rapidly transforming and diversifying economy creates high constituent heterogeneity, and the increasingly dense population makes observability of behavior difficult. In short, Moscow represents an ideal example of a highly illegible authoritarian city.

However, Russia and Moscow's leaders do not and cannot rely entirely on fraud and coercion to control the capital, as the Moscow renovation project evidences. The Moscow renovation project is intended to replace decaying Soviet housing stock throughout the city, in particular the five to nine story walk-up apartment buildings colloquially known as "Khrushchyovki". These buildings were constructed in the aftermath of the Second World War to resolve a severe housing shortage, and were never intended to stand as long as they have; as such, they are in varying degrees of disrepair. The Moscow administration selected 4,573 buildings for potential inclusion in the project. Residents then voted on whether or not the buildings were to be demolished; if two-thirds of the apartments in a building supported demolition, it was included in the project. The administration promised residents of included buildings that they would be resettled in equivalent apartments in a newly-constructed build-

ing if they voted for demolition. Nearly all selected buildings voted for demolition. However, despite the apparent popularity of the project with residents of included buildings, the project inspired protests throughout Moscow, with Muscovites expressing concerns about the impact of such a large construction project on their neighborhoods, the potentially low quality of new buildings, fears that new buildings would be located in less desirable locations, concerns about increases in population density and associated strain on physical and social infrastructure, and the potential transport disruptions associated with the project (Levada Center, 2017). As demonstrated in Figure 1, the project affects the majority of Moscow's densely populated urban core.

Figure 1



All buildings selected for demolition as part of the renovation project in Moscow. The buildings are clearly distributed throughout Moscow's core, but in an uneven manner.

There is strong evidence that the plan was intended to advantage previous regime supporters as a form of patronage. Smyth (2018), using fine-grained building and neighborhood level data, demonstrates that while older buildings were more likely to be selected, consistent with the city government's stated goal, age has a substantively small effect on the probability of inclusion. Two factors did result in substantially different probabilities of inclusion: high

support for Putin in the last presidential election and low rents, increasing the probability of inclusion by approximately 20% and 45% respectively. While the program's stated goal of improving the quality of Moscow's housing stock is on some level true, it is clear that the program also presented an excellent opportunity to reward poorer regime supporters with a precious private good, maintaining United Russia's electoral base in Moscow. Simultaneously, it also punishes those who opposed the regime via denying them the good. On paper, it appears as a smart and successfully spatially-targeted project: rewarding supporters as specifically as possible given available data, indirectly punishing non-supporters, and providing an example of government responsiveness to citizens' needs.

However, Moscow's reliance on the aggregated spatial signal of vote totals and corresponding lack of individual-level, broker-mediated targeting information resulted in a potent anti-regime backlash. While the housing project used limited information to seemingly accurately target poor supporters for redistribution, the blunt nature of the project created a wave of backlash from citizens either affected by its disruptive nature or excluded from new housing. Rather than simply cementing support for United Russia, the housing project produced a wave of opposition against the regime that caused them to lose their previously near unanimous control of low-level institutions of urban governance.

## Empirical Strategy

Linking the renovation project to opposition victories via this targeting mechanism requires observing two conditions. First, exposure to renovation must have a substantively and statistically significant effect on opposition voting. Second, we should not expect this effect to be unidirectional. As previously argued, the authoritarian targeting task is hard largely because the complexity of the city makes distributing limited resources and anticipating the reactions to cooptation difficult. Approval of the project was high among the largely poor, largely regime-supporting residents of included buildings. Elsewhere, the project inspired

protest and dissatisfaction. As such, we should expect to see significant heterogeneity in effects across space; where targeting was successful and inspired limited backlash, the regime vote should increase, but failed targeting or failure to predict backlash from groups proximate to included buildings should result in decreases in regime votes.

To establish the relationship between renovation and opposition voting, I utilize an instrumental variables approach. The instrument is the location of all buildings that were eligible to be included in the project, regardless of whether or not they were actually included; i.e. all "Khrushchyovki" in Moscow. The instrument was constructed from a data set of all apartment buildings in Moscow, selecting all panel-type buildings built between 1956-1971, when the last Moscow "Khrushchyovki" was completed. Given the length of time since the buildings' construction, their wide distribution throughout Moscow to resolve post-war housing shortages, and the rapid changes Moscow has undergone since 1991, the locations of these buildings are plausibly exogenous from present-day opposition voting and affect vote totals only through inclusion or non-inclusion in the project [1]. For the exclusion restriction to be violated, the USSR's selection of building locations would need to be correlated with modern Moscow's voting dynamics in ways that cannot be controlled for by conditioning on past national and local voting patterns and socio-economic characteristics. This leads directly to the following hypothesis:

*H1: Increased exposure to the renovation project causes a substantively and statistically significant increase in opposition vote percentage.*

While the instrumental variable (IV) approach is capable of establishing a causally valid local average treatment effect, an average effect obscures the variation across space that my theory predicts. I seek to establish not only that renovation had an effect on opposition voting, but also that even a finely targeted patronage project in a stable electoral author-

[1] See SI Figure A1 for a map of all eligible buildings

itarian regime produced unintended urban mobilization, damaging the regime's ability to control a large, highly-populated capital city. The IV approach can demonstrate that the link between the project and opposition victories is not spurious, but it cannot speak to my proposed mechanism linking the difficulty of implementing urban bias to the urban threat.

Providing evidence of my mechanism requires an empirical exercise that while not causal, is falsifiable. My theory predicts that the housing project should interact with latent, underlying socio-political complexity to create unpredictable and heterogeneous effects across the social terrain of the city. If the housing project was both well-targeted and avoided backlash, we should expect rather uniform results across space; areas targeted by the project should record low levels of opposition voting, and the project should have no effect on areas not targeted. If the project instead created backlash, both within the areas targeted for redistribution and those not targeted, we should see considerable heterogeneity in effects. These effects should also persist despite controlling for past opposition voting history, pay, and education, which themselves could be expected to produce negative responses to clientelism (Weitz-Shapiro, 2012).

Acknowledging the complex social terrain of urban areas and searching for heterogeneity across space renders most of the standard statistical toolkit inappropriate. Models such as OLS, standard GLMs, and their extensions with random effects are not capable of modeling hierarchically-dependent treatment effects without researcher specification of the interactions theorized to drive heterogeneity. Given the relative lack of knowledge about what may drive electoral heterogeneity in authoritarian municipal elections, using a standard model would require a "specification search", possibly leading to spurious results. Even in the presence of an explicitly interactive theory, manually specifying only a few interactions without exploring the entire space of possible interactions can unintentionally lead to a multiple comparisons problem that is difficult to correct, "statistically significant" results that are indistinguishable from noise, and wildly different interpretations of results depending on the interactions actually explored (Gelman and Loken, 2013). I adopt a more principled ap-

proach, using Bayesian semi-parametrics to identify latent clusters of effect heterogeneity without researcher discretion, account for the hierarchical structure of the data, and model effect heterogeneity while incorporating uncertainty in latent group assignment.

Specifically, I use a hierarchical Dirichlet process generalized linear model (hdpGLM), a generalization of the infinite mixture model that allows for hierarchical dependence (Ferrari, 2020). The hdpGLM offers several advantages specific to this project. First, it allows me to explicitly identify effect heterogeneity without over-determining the model. If effect heterogeneity is minimal or non-existent, Ferrari (2020) demonstrates in both simulation studies and a real-world application that the model will reduce to a noisy approximation of standard GLM. Secondly, the use of latent clusters sidesteps the messy issue of neighborhood identification and researcher specification searches. Simply using polling station or other administrative boundaries would assume these boundaries are relevant to everyday life, the spatial distribution of social groups, and citizens own conceptions of community.

Additionally, the model is able to incorporate both the data hierarchy and demographic variables into cluster assignment, making polling stations in the same region and similar regions more likely to be assigned to the same cluster while also modeling latent heterogeneity. This acknowledges that within region variation is likely to be lower than between region variation and partially compensates for the lack of polling station level demographic data. The model also allows hierarchical variables to influence the magnitude of effects, while providing coefficients that indicate the degree to which a higher-level variable influences both assignment to clusters (effects-on-assignment) and the estimated effect of lower-level variables (effects-on-effects). Additionally, the hierarchical nature of the model, similar to the more familiar random effects model, controls for unobserved variables correlated with the hierarchical unit in which an observation lies. Finally, as a generalization of the mixture model, the model naturally incorporates clustering uncertainty into the estimation of effects.

More technically, the model is specified as:

$$
\begin{aligned}
G_j \mid \alpha_0, G_0, W_j &\sim \mathcal{DP}(\alpha_0, G(W_j)) \\
\theta_{ji} \mid G_j &\sim G_j \\
y_i \mid X_i, C_i, \theta_{ji}, &\sim \mathcal{N}(y_i \mid X_i, \theta_{ji})
\end{aligned}
$$

Where $G_j$ is the set of mixture component means for region $j$, $W_j$ is the set of regional-level covariates, $\alpha_0$ is the concentration parameter of the Dirichlet process, $G$ is the base measure of the Dirichlet process (which is a function of $W_j$) and $\theta$ is the vector of parameters. The model is then fit with a modified stick-breaking construction and a Gibbs sampler (see Ferrari (2020) for details).

I specify the context-level variables ($W_j$) at the regional level; while these covariates are available at the municipal formation level, this produces a model with over 800 parameters that is difficult to fit and summarize. Additionally, many municipal formations contain only 1-3 polling stations, resulting in posterior distributions with a high degree of variance. The model assigns polling stations to clusters within each region, with the cluster-specific treatment effect dependent on the $W_j$ variables. The max number of possible clusters (researcher specification required for the fitting process) was set to 30; the model does not approach this upper bound, indicating that it is harmless [2].

This model is particularly well-suited to testing for spatial heterogeneity due to its ability to identify fine-grained heterogeneity without being over-determined (i.e. guaranteed to find heterogeneity). In particular, the model allows effects to not only vary between clusters, but within clusters across regions. For example, suppose a cluster contains polling stations in both a poor region and rich region which are similar enough to be grouped together. The model does not constrain the two heterogeneous regions to have the same effect sizes; rather, it samples these effect sizes from a common distribution that's mean is dependent on

[2]The model activates 9 clusters.

regional-level covariates, allowing the wealth levels of the regions to mediate the effect. If significant effect heterogeneity does exist, the model is capable of identifying it in a flexible and fine-grained way. Additionally, it bears re-emphasis that the model is capable of not finding heterogeneity. While Dirichlet process models, similar to all clustering methods, will always identify multiple clusters, the model will return virtually identical distributions for all parameters in the presence of homogeneity [3].

# Data

I have brought electoral data down to the lowest level available: the polling station. Moscow has 3,619 voting districts, many of which serve geographically small and densely populated areas, meaning most municipal formations have several polling stations. Both the dependent variable (opposition vote) and treatment variable (proximity to renovated buildings) are calculated at this level. The dense nature of electoral districts in Moscow and their embedding in municipal formations and regions allows me to investigate how electoral opposition varied in response to the renovation project at the highest available level of spatial resolution.

The primary independent variable is the impact of the Moscow renovation project in the area surrounding the polling station. I operationalized this as the average distance to all included buildings from the polling station in kilometers, irrespective of any district or regional boundaries. In the IV setup, the measure is instead the average distance to all eligible buildings. This is similar to the operationalization used in Ichino and Nathan (2013), which likewise seeks to recover contextual effects on voting. Additionally, this measure is more empirically realistic than a simple count within electoral districts, as this would require assuming that electoral districts are relevant to how voters experience everyday life and the renovation project. The interpretation of this measure is simple, but slightly counter-intuitive: a high value indicates low proximity to any affected buildings, whereas a low value

[3] See SI Figure D1 for a visual example of homogeneity in effects and E1 for an example of a null result

indicates high proximity to many affected buildings. Much like the model, this measure also reduces researcher degrees of freedom by not imposing an arbitrary boundary to which slight shifts could drive large changes in effects.

The dependent variable of interest is the share of the polling station level vote won by the opposition. There are 3,266 polling stations in total, representing elections to 125 municipal councils [4]. I have operationalized a maximal definition of the opposition. The maximal definition includes all parties except the Communist Party of the Russian Federation and United Russia, the regime party. I did not include the Communist Party despite their role as a nominal opposition party, as they are widely considered co-opted (Reuter and Robertson, 2014). While the large "in-system" opposition parties have been accused of collaborating with or being astroturfed by the regime, the fact remains that United Russia attempts to maximize their own vote, as the loss of political control to even astroturfed parties still represents a political defeat. Regardless, votes for the Communist Party collapsed in the September 2017 election. Electoral data was scraped from the Moscow central election committee's website.

The following control variables are also included in the analysis: turnout, opposition vote in the 2013 Moscow mayoral election, opposition vote in the party list in the 2016 Duma elections, opposition vote in single member simple plurality seats in the 2016 Duma election, distance to the Kremlin, education, welfare dependence, and average monthly pay.

I calculated turnout and all past voting data at the polling station level. Turnout is included to account for the low-turnout nature of local elections in Russia. Low turnout in municipal council elections could be expected to either advantage or disadvantage the opposition; it could indicate both lack of regime machine mobilization or lack of opposition mobilization. I include past voting data in the most recent local and national elections to control for electoral districts already more inclined to support the opposition [5]. Kremlin distance is the distance from a polling station to the Kremlin, the center of Moscow. This is intended to be a rough proxy of both property values and the desirability of housing;

[4]The remaining municipal formations have elections on off-years

[5]See SI Figures F1-F3 for maps of these variables.

the center of Moscow is both wealthier and more proximate to businesses, entertainment, transportation, etc.

Education and welfare dependence come from the 2010 Russian Census, and are aggregated at the regional (okrug) level for model interpretability (see next section). This is the most recent such data that is currently available below the city-wide level. Education is the percentage of regional residents who have at least a bachelor's degree. Welfare dependence is the share of regional residents who report that some form of social transfer is their primary source of income, excluding those who rely on student stipends. Average monthly pay comes from 2016 data provided by MosStat, the Moscow government's statistics office. Novomoskovsky Region is not included in the analysis, as it was annexed by Moscow from Moscow Oblast in 2012 [6], so disaggregated census data is not available. As Figure 1 demonstrates, this region possesses very few included buildings [7].

Table 1: Summary Statistics

| Statistic | N | Mean | St. Dev. | Min | Max |
|---|---|---|---|---|---|
| Opposition Vote % | 3,266 | 0.243 | 0.117 | 0.002 | 0.777 |
| Mean Distance | 3,266 | 17.493 | 5.353 | 11.922 | 40.426 |
| Turnout | 3,266 | 0.152 | 0.064 | 0.046 | 1.000 |
| Mayor: Opposition Vote | 3,266 | 0.373 | 0.065 | 0.000 | 0.733 |
| Duma SMSP: Opp. Vote | 3,266 | 0.491 | 0.144 | 0.034 | 0.983 |
| Duma PR: Opp. Vote | 3,266 | 0.459 | 0.067 | 0.026 | 0.676 |
| Kremlin Distance | 3,266 | 13.457 | 6.715 | 0.755 | 39.025 |
| Government Dependence | 3,266 | 19.664 | 1.260 | 16.985 | 21.346 |
| Higher Education | 3,266 | 35.132 | 4.218 | 29.937 | 47.382 |
| Monthly Pay (Rubles) | 3,266 | 71,495.910 | 10,584.690 | 60,992.420 | 102,285.900 |

[6] Moscow Oblast surrounds Moscow, but is governed separately as a federal region

[7] Novomoskovsky is the long "strip" extending to the south from the "circle" which makes up Moscow prior to 2012

# Results and Discussion

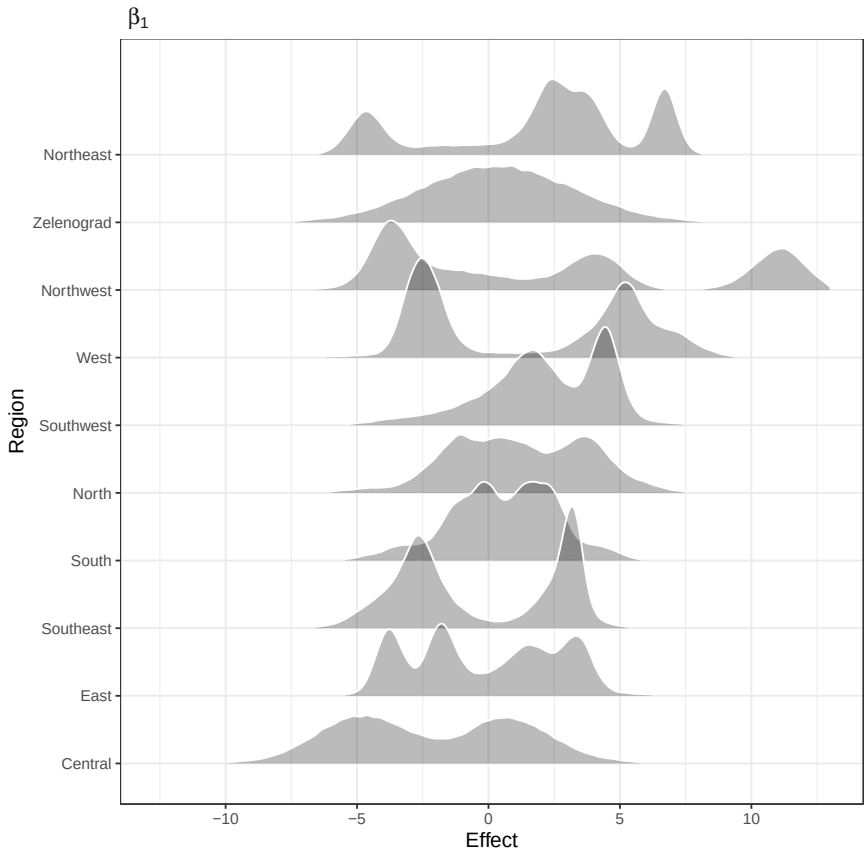
Table 2 displays the results of the instrumental variables analysis, estimated using the standard two stage least squares approach. The instrumented renovation variable is statistically and substantively significant; a 1 standard deviation increase in distance from included buildings is associated with a 3.6% reduction in the opposition vote total. The instrument is strong, allowing me to reject the null on both the weak instruments and Wu-Hausman test. This establishes a valid local average treatment effect for renovation on opposition vote totals and supports my hypothesis.

| | *Dependent variable:* |
|---|---|
| | Opposition Vote % |
| Mean Dist. | $-0.307^{*}$ |
| | (0.131) |
| Turnout | 0.005 |
| | (0.016) |
| Mayor: Opposition Vote | $0.238^{**}$ |
| | (0.023) |
| Duma SMSP: Opposition Vote | $-0.004$ |
| | (0.018) |
| Duma PR: Opposition Vote | $0.185^{**}$ |
| | (0.022) |
| Kremlin Distance | $0.232^{\dagger}$ |
| | (0.138) |
| Government Dependence | $-0.033^{*}$ |
| | (0.016) |
| Higher Education | $0.206^{**}$ |
| | (0.021) |
| Monthly Pay | 0.003 |
| | (0.021) |
| Constant | 0.002 |
| | (0.015) |
| Adjusted $R^2$ | 0.257 |
| Weak Instruments Test | $2528.6^{**}$ |
| Wu-Hausman Test | $61.6^{**}$ |
| *Note:* | $^{\dagger}$p<0.1; $^{*}$p<0.05; $^{**}$p<0.01 |

Table 2: Results of instrumental variables regression using 2SLS. All variables are normalized.

Figure 2 uses the results from the hierarchical Dirichlet process model to demonstrate clear heterogeneity in the relationship between renovation and opposition voting both across and within regions in Moscow. This ridge plot shows the posterior distribution of treatment effect by cluster and region. Focusing on only a single region, unimodal posterior distributions can be interpreted as lack of effect heterogeneity in that region, whereas multimodal posteriors demonstrate heterogeneity. Comparing all regions' posteriors, the model reveals significant treatment effect heterogeneity both within and between regions. All variables were normalized, so effects are in terms of standard deviation changes. For reference, A4 displays how non-heterogeneity would appear in this plot [8].

Figure 2




Distribution of the estimated effect of renovation across districts, effects estimated at polling station level.

[8] See SI Table B1 and Figure B1 for MCMC diagnostics

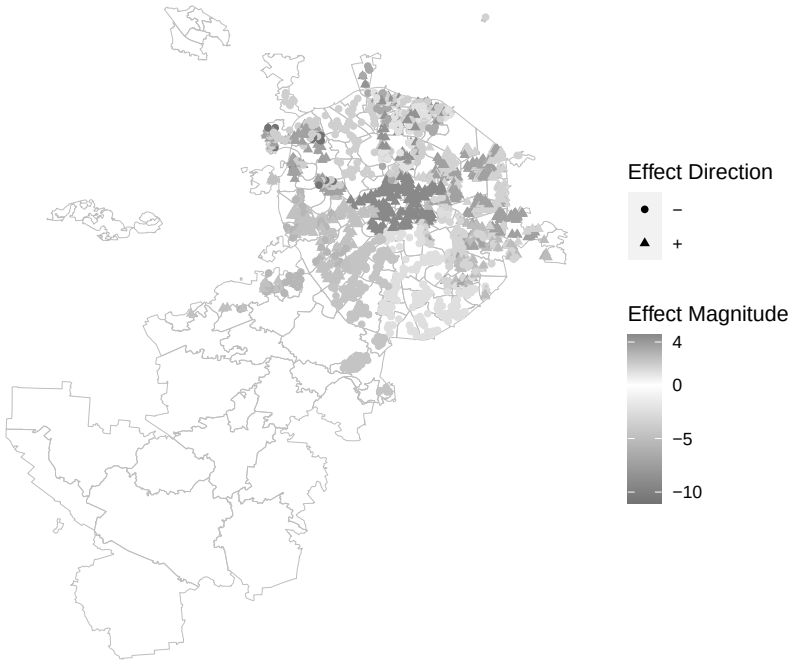
Figure 3 displays median polling station specific effects based on cluster assignment, projecting the modes of Figure 2 onto the map of Moscow. Clusters were assigned to observations based on the maximum posterior cluster responsibility. Effects were judged as distinguishable from zero if the 95% credible interval does not include zero, meaning there is a 95% probability that the true value of the parameter is not zero. Distinct spatial heterogeneity in both the size and direction of effects is evident. Significant effects were identified for 2386, or 73 % of the polling stations in the sample [9]. The median effect's sign was swapped for this plot, so positive effects indicate that opposition vote increased as more buildings were proximate to the polling station, while negative effects indicate that opposition vote decreased.

Figure 3 clearly demonstrates that despite the spatial targeting of the project, rewarding supporters was not sufficient to prevent opposition gains, and in fact failed to produce consistent effects across space. In areas close to large clusters of renovated buildings, such as the Northeast, West, and Southeast the project had diverging effects, generating both support and opposition to the regime. Even in the wealthy Central region, already unfriendly terrain for the regime, the project is associated with a large increase in opposition voting even after controlling for past voting and socioeconomic status. These effects are not simply an artifact of differences between regions: the effects persist despite the hierarchical component of the model controlling for both observed regional level factors and any correlated latent factors. Ultimately, the population of discontented voters was large enough and spatially concentrated enough to deal the Moscow regime a series of unanticipated defeats throughout the city. What was on paper a well-targeted reward for regime supporters instead shattered United Russia's near-unanimous hold on municipal councils.

The disaggregated demographics of the regions (Figures 4-6) offer some leverage as to how this targeted patronage project weakened the Moscow regime's hold on power. The central region is clearly above average on both monthly pay and education. More interestingly,

[9] A2 displays the polling stations for which no effect was identified

Figure 3



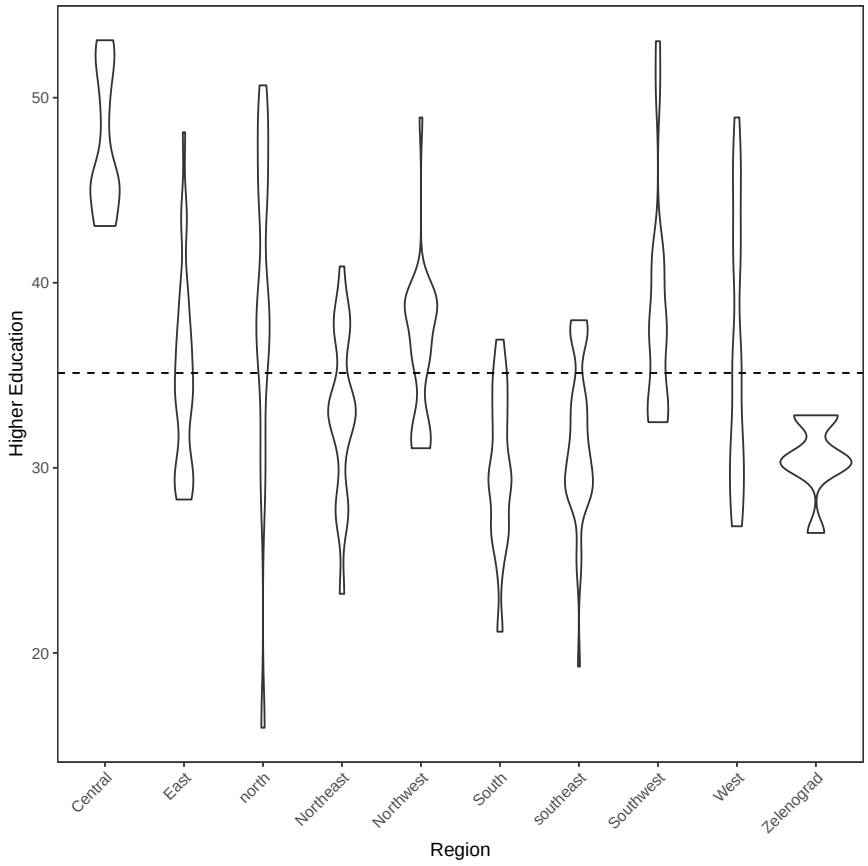

Estimated effects of renovation. Points represent the location of the polling station, and their color represents the standard deviation change in opposition vote percentage associated with a standard deviation change in average proximity to included buildings. Effect signs were swapped, so a positive effect indicates an increase in opposition voting as proximity to renovated buildings increases.

two of the regions that displayed substantial effect heterogeneity, the West and Northwest, display high dispersion about the mean on both education and pay, with the Northwest in particular displaying a heavily bimodal distribution of municipal formations poorer and wealthier than average. This is consistent with both (Weitz-Shapiro, 2012)'s argument that clientelism alienates the middle class and demonstrates the difficulty of targeting; even with municipal formation level data, the high variability of urban residents' education levels, pay, and occupations across space makes efficient targeting difficult, and avoiding backlash due to spillover effects even harder. This is particularly striking given that Russian case seemed likely to be an exception to (Weitz-Shapiro, 2012)'s argument; one half to two-thirds of Russia's middle class is employed in the state or state-dependent sectors, with the greatest concentration of this state-dependent middle class living in Moscow (Rosenfeld, 2017). This makes the failure of the patronage project all the more remarkable; a targeted attempt to maintain support in a city with a state-captured middle class still produced a dangerous opposition upsurge.

It is also notable that the failures of the renovation project may have been avoided via more individualized broker-mediated exchanges. As discussed earlier, urban cooptation is highly successful in environments where brokers build individualized relationships with citizens, allowing the broker to target conditional transfer of benefits to responsive voters or non-conditional rewards to known supporters. Without broker networks, accurate targeting of individualized benefits is impossible, forcing regimes to provide private goods to aggregated groups based on available data, leaving the regime unable to predict or account for the intervening effect of socio-spatial complexity. The Moscow regime was able to target the renovation project to generally include supporters, but could neither avoid areas where the project was likely to anger others nor provide the good in a low visibility manner. The urban environment not only makes targeting cooptation more difficult, but also forces urban governments into riskier, less efficient strategies of cooptation.

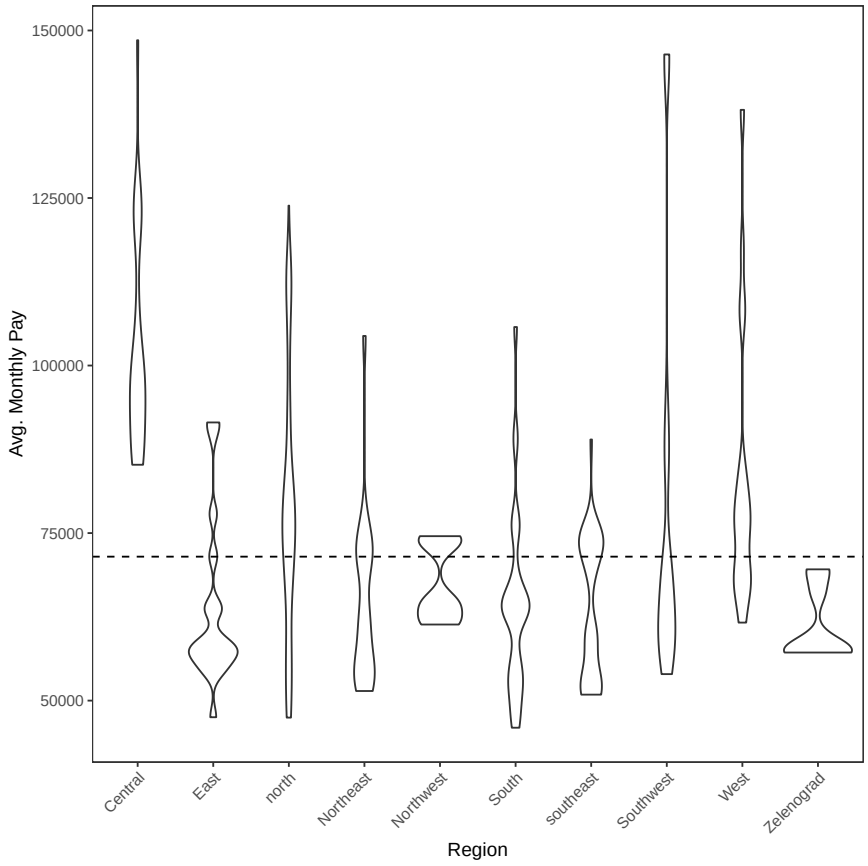
Ultimately, the response to the Moscow housing project did not generate national regime-

Figure 4



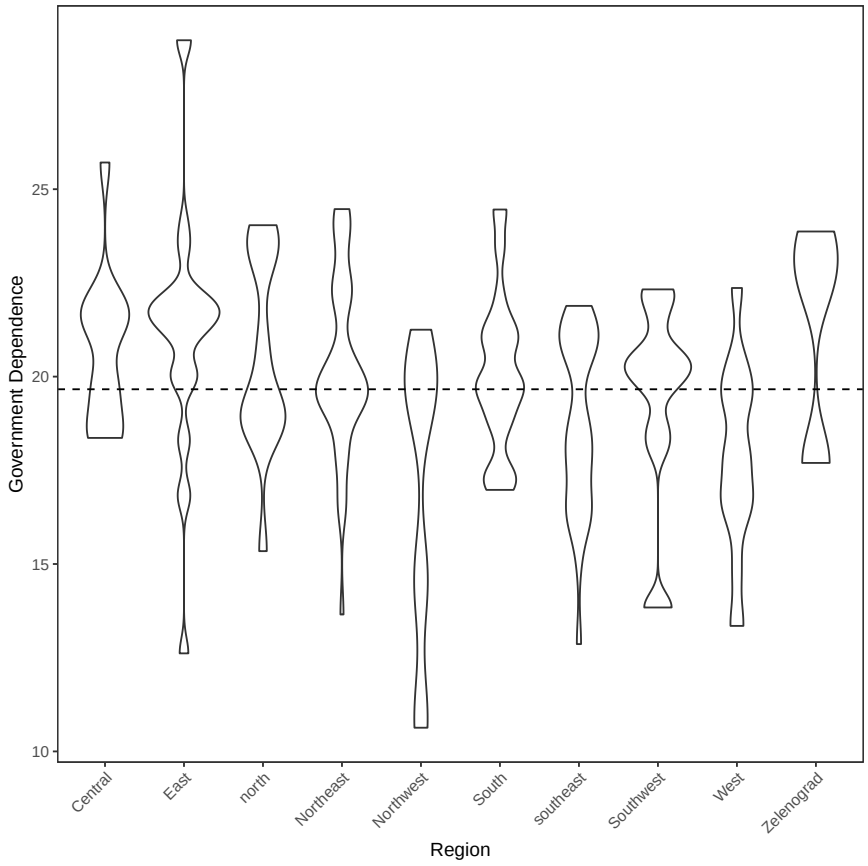

Distribution of higher education across regions. The dashed line is the mean.

Figure 5




Distribution of monthly pay across regions. The dashed line is the mean.

Figure 6




Distribution of government dependence across regions. The dashed line is the mean.

challenging mobilization. However, it did force the Moscow regime into more overt and risky methods of political manipulation. In municipal formations where United Russia no longer held majorities on the city council, the ruling party resorted to tricks, sabotage, and intimidation to achieve their ends. This obstruction has prevented municipal formation heads from being chosen, budgets from being passed, and constituents from being served (Shamardina, 2018). This ultimately appears to be an attempt to discredit the opposition, preventing them from exercising even the minimal power of municipal formation councils to establish enduring political ties to citizens.

Additionally, the opposition's unexpected gains in municipal council elections forced the Moscow regime to reduce the competitiveness of 2018's mayoral race. Moscow uses a so-called "municipal filter" that requires mayoral candidates to get at least one signature from a municipal deputy in 110 of the 130 municipal formations. The opposition did not have seats on enough councils to pass the filter by themselves, and United Russia forbade their members from endorsing any opposition candidates to "maintain their monopoly on the municipal filter" (Meduza, 2017). This ultimately resulted in a noncompetitive, low turnout race where incumbent mayor Sergei Sobyanin took over 70% of the vote (Kolesnikov, 2018).

# Conclusion

The goal of this article was to examine the dynamics through which urban areas become threatening to authoritarian rule, taking as a starting point Wallace (2014)'s observation that authoritarian regimes redistribute to the city to buy short term peace at the expense of long-term survival. The results demonstrate that the unique socio-spatial illegibility of the city makes this redistribution risky, even in the relatively high-information environment of a particularly capable electoral authoritarian regime. A seemingly precisely targeted program that promised new, higher-quality housing was mediated through Moscow's underlying socio-spatial complexity to produce extremely heterogeneous, spatially-patterned effects, depriving

the regime of monopolistic control of the structures of urban governance and tarnishing the regime's "aura of invincibility". Rather than providing short-term stability, the renovation project instead became the proximate cause of an electoral and organizational surge for the opposition.

The takeaway for the study of authoritarianism is that buying social peace in the cities not only increases the long term risk of regime failure via urban concentration, but can itself be a potent short-term risk. Ironically, the risk of unintended consequences to cooptation or coercion only increases when the regime does succeed, as urban bias provokes further migration to a few large cities, increasing both urban concentration and the difficulty of targeting future cooptation. Wallace (2014)'s characterization of urban bias as a Faustian bargain is more complex and correct than originally characterized.

While the renovation project is certainly unique, conflict over the use of space in cities certainly is not. The defining feature of urban politics is conflict over space: its usage, owners, value, and meaning. When cooptation and coercion are spatially targeted, as they often are, the illegibility of urban areas makes unintended side effects likely in democracies and authoritarian regimes alike. However, as the example of Moscow demonstrates, these unintended side effects can lead to much more than a temporary electoral setback under authoritarianism. They can force authoritarian regimes into riskier and more overt coercion, induce a fractured opposition to coordinate, and threaten authoritarians' ability to control their most crucial population centers.

This case study does have notable limitations, namely the focus on a single city in an electoral authoritarian regime. Cities are not all alike, and meaningful electoral choice does not exist in all authoritarian regimes. As previously argued, authoritarian cities with large slums and clearly politicized and spatially-patterned ethnicity are far more legible to authoritarian rulers and potentially easier to coopt and control. Additionally, voting is a relatively low-cost form of opposition in electoral authoritarian regimes. While the results here suggest that discontent with poorly-targeted cooptation could tie citizens to opposition actors,

create cooperation within the opposition, and thus make protest easier to sustain, I cannot explicitly make that link. As a result, this case study cannot be clearly generalized to non-electoral authoritarian regimes. Additionally, the peculiarities of the Russian case, namely the poor institutionalization of Russia's dominant party, limit the scope of the results. More institutionalized dominant party regimes may possess direct and enduring ties to their voters, reducing the difficulty of targeting. Finally, while I have proposed several micro-level mechanisms linking targeting failure to backlash (anger at non-inclusion, disapproval of clientelism, and disruption), I cannot test these directly with the data at hand. Differences in urban politics within and across authoritarian regimes, the distinct mediating effect of different forms and levels of socio-political complexity, comparison of reactions to similar cooptive policies in both rural and urban environments, and the mechanisms behind individual-level responses to cooptive exchanges represent interesting avenues for future research.

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