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Inequality and Civic Participation in the Rocky Mountain West: Missoula, MT

Benjamin C. Harris
The University of Montana

INEQUALITY & CIVIC PARTICIPATION IN THE ROCKY MOUNTAIN WEST: MISSOULA, MT

by

Benjamin C. Harris

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Approved by:

Dr. David A. Strobel, Dean
Graduate School

Dr. Jennifer Alix-Garcia, Chair
Department of Economics

Dr. Douglas Dalenberg
Department of Economics

Dr. Peter Koehn
Department of Political Science

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Committee Chair: Jennifer Alix-Garcia, Ph.D.

This study considers the impact of community-level inequality of income and education on the ways individuals participate in local government and community development activities. It adapts the standard identity-augmented utility model to demonstrate that, given the choice to participate or not to participate, increases in inequality can decrease overall group participation, and an individual's distance from the characteristics of an ideal community member can also decrease the benefits and likelihood of participation. The theory predicts, however, that increasing the responsiveness of civic bodies to input from citizens can mitigate the negative effects of inequality. Original survey data from a stratified random sample of over 680 Missoula households are then analyzed to test the implications of the theory. In Missoula, people have 3 participation options: not participating at all, participating alone (by writing letters or watching meetings on television), or participating in person. A multinomial logit model to estimate the probability of choosing a certain outcome shows that people living in neighborhoods characterized by high inequality are less likely to drop out, but more likely to participate alone. This effect is most pronounced under high educational inequality.

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Chapter 1

Introduction

In recent years, a belief has taken hold that developing and industrialized countries, alike, can benefit from encouraging widespread participation of citizens in the planning and execution of public projects. The idea is that greater participation leads to more expression of political voice, which in turn leads to greater information sharing. This increased information about constituent needs translates into more efficient targeting of political and social benefits. Furthermore, when more people are involved in determining the shape of their civic environment, a sense of ownership will provide greater incentive for all citizens to ensure a healthier civic climate, in general, and successful project outcomes, in particular.

As the two predominant political parties in the United States enthusiastically encourage the vitality of myriad grassroots organizations, and as the World Bank works with the government of Afghanistan on a National Solidarity Program to generate employment and rehabilitate rural infrastructure through a participatory approach World Bank (2007), some social scientists note that participatory development schemes can lead to undesirable outcomes unless certain specific conditions are met. Similar to the risk of asymmetric capture of benefits by the local elite associated with fiscal decentralization, participatory development schemes frequently open a path for elite classes to consolidate power and wealth at the expense of the poor and underprivileged (Platteau and Abraham, 2002). In industrialized democracies, like the U.S., the problem stemming from unbalanced political participation may not be capture of government funds and services or consolidation of tangible power, but rather the transfer to policy makers of misrepresentative information about citizen preferences and needs.

It is important to understand, therefore, what factors determine whether or not a person will participate in civic activities. Conventional wisdom suggests that those enjoying a relatively high socioeconomic status are the ones who are most involved in both local and national politics throughout the world. Economists and other social scientists have more recently begun to look not only at how one's relative socioeconomic position influences her participation patterns, but also how the shape of the distribution of income and wealth in her community play a direct role. Although initial studies suggest that community-level heterogeneity, like income inequality, negatively influences the likelihood that someone will participate in local government (e.g., Alesina and La Ferrara (2000) and La Ferrara (2002)), others suggest that inequality increases participation (Rubenson, 2005). The results are far from definitive, and La Ferrara (2002) writes that relatively little work has been done on the effect of inequality on participation.

This thesis makes four main contributions to this discussion. First, it adapts the standard identity-augmented utility model, developed by Akerlof and Kranton (2000, 2002, 2005), to explain how heterogeneity influences political participation. In the model, in addition to traditional economic costs and benefits related to participation, citizens earn "identity benefits"—the good feelings that come from fitting in with and cooperating with a group—and suffer "identity costs" proportional to the extent to which they do not fit in with the group. The implications of the model are that increased heterogeneity in a community decreases overall participation from both sides of the distribution, and those with greater "identity costs" are less likely to participate. These effects can be mitigated, however, by increasing the responsiveness of civic bodies to constituents' political voice.

A second general contribution of this thesis is the addition to the small but growing body of empirical evidence on the effect of inequality on participation, by generating and analyzing a new survey data set collected during the second half of 2006 from the small city of Missoula, Montana in the Rocky Mountain West. The 3rd and 4th major contributions follow from the structure of Missoula's local civic system. To the best of our knowledge, all the research into how heterogeneity influences political participation allows for only two options: to participate or to drop out. In Missoula, however, the additional option of solitary participation by watching recordings or reading transcripts of meetings, or by contacting public officials or newspaper editors illuminates how inequality effects participation in a more dynamic way that can explain some of the previous empirical ambiguities described above. On the one hand, inequality may encourage participation, since it is often accompanied by misaligned preferences over which opposed constituents would have more incentive to fight.[1] On the other hand, people tend to be adverse to interactions with people whom they see as fundamentally different from themselves. As heterogeneity or inequality increase, then, participation would be expected to decrease. If given only the choice to participate or not to participate, a negative relationship between inequality and participation makes some sense. But if given the option of participating alone, inequality may lead to greater overall participation, but less group-based participation. Finally, previous studies appear only to consider the effects of wealth or income inequality; this thesis also contributes by being among the first to examine the effect of educational inequality on participation. In Missoula, where wages for highly skilled workers are disproportionately depressed and the presence of a university can frequently act as a divisive force between those with more or less education, educational inequality has a stronger impact on participation than income inequality.

The remainder of this thesis proceeds as follows: Chapter 2 reviews the existing literature on the effect of participation on the functions of government, the determinants of participation, and the record of inequality in the U.S. and in Montana since the middle of the 20th century.

[1] A less pessimistic view also suggests that citizens would be aware of pervasive inequality, would interpret it as an injustice, and would take a more active role in civic life to mollify that injustice.

Chapter 3 develops the theoretical model to be tested. Chapter 4 discusses the data set used in the analysis, Chapter 5 develops the empirical strategy and gives the results, and Chapter 6 offers concluding remarks and suggestions for future research.

Chapter 2

Literature Review

2.1 Participation and Outcomes

This study relies on the assumption that communities enjoy more efficient outcomes when fully representative segments of the population participate in civic enterprises. While this assumption is not universally accepted, the hypothesis that a link exists between participation and positive political outcomes has merit. More importantly, it is already being applied in both the developing world, where so much enthusiasm accompanies decentralization and "participatory development," as well as in industrialized democracies, where town hall meetings are popular fora for national policy makers and presidential hopefuls to hear input from individual citizens. The rationale is that fully representative participation increases information and equips policy-makers to better determine the needs of constituents. In representative democracies, this helps politicians more efficiently target programs to benefit citizens. In the context of development projects, when intended beneficiaries actively participate in planning and execution, they have the opportunity to provide unique insight into the problem-at-hand. This increases the likelihood of successful project outcomes by more accurately identifying strategies that will fulfill practical necessities and avoiding the unintended consequences typically associated with externally imposed projects.

Theoretical support for participatory development schemes has a long and well-developed tradition. It is closely related to theories of fiscal and institutional decentralization developed by Oates (1972, 1999, 2005) and Tiebout (1956). As noted above, the force of the argument for decentralized governance (and therefore increased local participation) is that information about constituents' needs will be more accurate and less costly to obtain as those constituents become more involved in decision-making. Chambers (1983) and Kleymeyer (1992) also emphasize the value of empowerment and ownership that citizens—particularly the poor—develop when they have a role in directing development projects. Stiglitz (2002) argues that insofar as development is a process by which attitudes toward social and technological change grow more positive, participation of marginalized groups is a necessary condition for success.

Empirical evidence supporting a positive relationship between participation and project outcomes in a development context is wide and growing. Putnam et al. (1993, 1995, 2001) provided early evidence of a causal relationship between social capital, participation, and positive societal outcomes ranging from public goods provision to health and happiness. More specifically, Isham et al. (1995) show that beneficiary participation causes significantly better development project outcomes, and Isham and Kahkonen (2002) show this to be true with regard to community-based water projects in Java. Using survey data from southern India, Besley et al. (2005) show that constituents who participate in village level meetings called *Gram Sambhas* are more likely to benefit from the social programs advanced during those meetings. In particular, members of disadvantaged social groups were more likely to receive social welfare in villages where participation by those groups was high. Likewise, Chattopadhyay and Duflo (2004) use survey data from a randomized policy experiment in India to show that villages in which women have a mandated political voice also provide public goods that are more relevant to the needs of women.

Few, if any, of these aforementioned researchers would claim that participation is a panacea for development objectives, and many point out that participatory development strategies can have ambiguous outcomes depending on existing conditions within communities. In a review of both economic and anthropological arguments on community-based development, Mansuri and Rao (2004) conclude that participatory development schemes are naively overused and that such projects are best undertaken in a context-specific manner. Platteau and Abraham (2002) argue that such development schemes can actually exacerbate existing community imperfections like economic and political inequality when such imperfections already exist. They assert that if local leaders hold their positions by virtue of age and lineage, those leaders will feel threatened by the increasing political power and improved socioeconomic position of non-elites that are the goals of most development schemes. In those cases, it is likely that local elites will rebel and protect their positions by capturing the intended benefits of the poorer members of the community.

There is also empirical evidence showing participation to have negative or ambiguous effects on political outcomes. Platteau and Abraham (2002) describe many cases in which political decentralization either fails in non-egalitarian communities or succeeds only by virtue of a central government careful not to devolve too much power too quickly, and other reviewers come to similar conclusions (Conning and Kevane, 2002; Mansuri and Rao, 2004; Cleaver, 2005). Platteau and Strzalecki (2004) also show how strongly participants' expectations about the success or failure of projects can influence their outcomes. In this study of Senegalese fishing villages, projects failed when participants were pessimistic after some earlier attempt at cooperation broke down. Furthermore, Gugerty and Kremer (2000) show that the cost of encouraging participation can be greater than the benefits, as was the case in a Kenyan agricultural development project. In reality, it is likely that participatory development schemes have ambiguous effects depending on the institutional and cultural conditions of the relevant populations (Conning and Kevane, 2002; Platteau and Abraham, 2002; Platteau and Strzalecki, 2004; Mansuri and Rao, 2004).

This discussion is also relevant in the context of the industrialized world, although it is generally reframed as a question of whether authoritarian or democratic governance is more conducive to growth. Historically, it was popular to view democracy and growth as a trade off scenario, and this was mostly due to the rapid expansion of the Soviet Union following World War II (Bhagwati, 2002; Stiglitz, 2002). Following the collapse of the USSR, however, this view fell out of favor. More recently, the difficulties of eastern Europe's transition economies and the success of east Asian countries like Singapore, South Korea, Taiwan, and China have been cited as evidence for a positive relationship between "soft authoritarianism" and growth (Bhagwati, 2002; Yew, 1998). Bhagwati (2002) argues, however, that incentives for development and growth, "not the ability to force the pace through Draconian state action" (153), are responsible for economic achievement. Bhagwati further asserts that these incentives arise organically in democratic countries. Insofar as democratized and localized rule promote greater accountability and less corruption among political leaders, the quality of political institutions can increase (Smoke, 2001), and Rivera-Batiz (2002) argues that economic growth is more likely by means of these improved institutions. Kauper (2007) similarly demonstrates that high-quality institutions (i.e., low levels of corruption) lead to greater efficiency and faster growth.

2.2 Determinants of Participation

Putting aside for the moment the question of how participation affects governance and development, it is instructive to review the literature considering the determinants of civic participation. Toward this end, it is also useful to examine how social scientists have explained the motives for cooperation and group formation. Section 2.2.1 considers theories on collective action at the aggregate-level, and section 2.2.2 reviews how individuals' economic resources and social contexts can explain individual participation decisions.

2.2.1 Collective Action

Economic theories explaining the collective action of a group to solve market-failures (e.g., those related to public goods and common property resources) rely heavily on Olson (1965). Olson argues that groups form to achieve a communal task under one of two sufficient conditions: either the group must be small and homogenous, or it must have a means to dissuade free-riding. The first condition essentially states that transaction costs associated with coordination must be low. That is, groups must be small enough to easily communicate and must feature largely homogenous interests between members (1965, 1993). As group size or the diversity of interests within the group increase, it becomes proportionally harder to promote cooperative action until, eventually, the potential for that action dissolves. This accords with the analysis of Coase, who argues that modest transaction costs (litigation or travel costs, for example) can derail cooperation and prevent independent parties from reaching an efficient outcome without external mediation. Furthermore, Coase maintains, as the number of parties negotiating increases, the potential for an efficient outcome diminishes (1960). For Olson, when group size increases, not only does coordination become more problematic, but so too does the free-rider problem. If groups are prohibitively large, "selective incentives", mechanisms that reward those who pull their own weight and punish those who would free-ride on others' effort, must be in place.[1] Development and enforcement costs of selective incentives are frequently high, which means the cost of membership to groups will also be high. The benefits of collective action in large populations are, therefore, "...less often available to potential entrants or those at the lower levels of the social order ..." (Olson, 1993, p. 474). Therefore, whether the group is small with homogenous preferences or large and exclusive, heterogeneity impedes collective action (Olson, 1965; 1993). Similar to Olson's conclusions, Bardhan, Ghatak, and Karaivanov (2006a) assert that within-group homogeneity (wealth-equality, in particular) is always most conducive to collective action, but heterogeneity *between* groups

[1] Olson concludes that in societies with wide distributions of wealth and no selective incentives, those on the high end of the distribution would provide public goods while those on the low end would take advantage of those goods by free-riding. This inefficient outcome would, in the end, prevent those goods from being provided (1965, 1993).

actually creates an atmosphere conducive to competition and economic expansion (2006a, 2006b). Oliver (1999) supports this using the 1990 Citizen Participation Survey. Bardhan (2001) points out that under conditions of extreme inequality within-groups, asymmetric bargaining power between community members can easily lead to breakdowns in coordination. Collective action, he argues, can suffer from within-group inequality.

On the other hand, Baland and Platteau theorize that wealth inequality has no effect (or, at least, a non-measurable effect) on civic participation (1997, 1998, 1999), and Varughese and Ostrom (2001) confirm this in their study of Nepalese forest user groups, where heterogeneity is not a strong predictor of collective action. Other field-based and experimental empirical studies suggest that the potential for collective action under conditions of heterogeneity and wealth-inequality is just ambiguous. Poteete and Ostrom (2004), for example, use international data on forestry management to show that heterogeneity has ambiguous effects on the prospects of collective action, and Baland and Platteau (1999) reach similar conclusions in their review. Finally, Rubenson (2005) shows that increases in heterogeneity in American cities lead to more conflicts over resources and mobilize citizen participation. Clearly, collective action theory lacks the power to conclusively explain what causes individuals within communities to work together toward a common goal. The lack of consensus regarding the effect of heterogeneity on collective action may be due in part to the fact that collective action focuses on the aggregated behavior of many individuals, rather than on the decision process of individuals.

2.2.2 The Individual Participation Decision

Observations of a group's behavior seldom reveal the specific motivation for that behavior, since the observer is really witnessing the agglomerated behavior of many individuals, each responding to his or her own set of incentives. Social scientists stand to gain insight, then, by looking beyond how a community's characteristics influence collective action and toward the way individual- *and* community-characteristics work together to influence a person's action. Two broad strategies for such an analysis appear in the existing literature on political participation. The first, more traditional, method considers how an individual's more-or-less measurable resources (such as time, money, and education) influence the level of utility he or she will get from participating. That utility, ultimately, determines the participation decision. These models, however, neglect to consider the context in which those resources influence behavior. That is, the resource-based models, in trying to predict social behavior, treat people as though they were perfectly isolated. The second method for modeling an individual's social behavior addresses the issues related to purely resource-based models and describes how community characteristics (such as the level of wealth- and educational-inequality) and the individual's personal characteristics work together to instigate behavior. These models begin with standard utility theory and augment it to reflect the way social context frames emotion, identity, perception, and finally action.

Socioeconomic Status and Resource-Based Models of Political Participation

Socioeconomic status (SES) models of political participation assume that an individual's socioeconomic characteristics determine whether or not he or she will participate in political and civic activity. Factors such as income, education, and occupation, therefore, are predictors for engagement, such that people with higher socioeconomic status (i.e., more income and education, and better jobs) are more likely to participate (Verba et al., 2004; Brady, 2004). The SES model, however, is primarily descriptive and has little to say about *how* these socioeconomic indicators influence behavior. Brady, Verba, and Schlozman (1995) provide a nuanced variation. In this resource-based model, individuals gain utility from participating, and they allocate their time toward participation until the costs associated with it outweigh the benefits. Socioeconomic status implies a set of resources that determine the relative size of the costs of participation (Brady et al., 1995). Resources like money, educational attainment, and time are common explanatory factors in these models. Those with more free time, for example, are more likely to participate since their opportunity cost of doing so is lower (and, by extension, the utility gained from participating is higher). In many ways, then, these models resemble the household production model developed Becker (1965) or the theory of consumption pioneered by Lancaster (1966).

Augmented-Utility-Based Models of Political Participation

Many social scientists criticize SES and resource-based models because of their failure to account for the way societal factors interact with individual characteristics to direct behavior (Casta and Kahn, 2003; Huckfeldt, 1979; Rotolo, 2000; Scheufele et al., 2004). The intuition behind this criticism is fairly clear. Human beings are not insular. Instead, people's decisions depend on unique characteristics, the environment in which the decisions are made, and the interplay between the two. Most treatments of the relationship between societal characteristics and individual behavior, referred to here as "augmented-utility models", focus on the psychological effect community-level heterogeneity has on individuals' willingness to join groups or volunteer. Most of these theories, like much of the work on collective action discussed above, conclude that heterogeneity has a negative influence on participation (e.g., La Ferrara (2002)). Although augmented-utility models reach conclusions similar to collective action models regarding community heterogeneity and civic participation, the basic mechanics whereby they do so differ dramatically. In collective action models, the group as a whole suffers high transaction costs due to community heterogeneity; in augmented-utility models, the *individual* experiences psychological disutility, or cognitive dissonance, from interacting with heterogeneous groups.

Rotolo (2000) begins with a sociological principle that people are inherently homophilous; that is, they have a propensity to associate with those whom they see as similar to themselves. Networks between members of a community, then, tend to be based on homophilous social contacts. As communities become more heterogeneous, therefore, the number of potential homophilous ties decreases, which accordingly decreases civic engagement within that community. Similarly, Alesina and La Ferrara (2000) build a model for participation in heterogeneous communities that depends on the assumption that people prefer to interact in groups composed of members of their own racial type. The formal model stipulates that an individual's utility from participating is a function of that person's distance from the group headquarters, the proportion of the population that is another racial type, and the individual's personal aversion to interacting with people who are racially different (α). In particular, utility decreases as α increases or the population of other racial types increase. As racial fragmentation increases, therefore, the utility associated with participating decreases until individuals will choose to drop out. In the empirical part of the study, Alesina and La Ferrara find supporting evidence that heterogeneous communities have lower overall participation, and those who do not participate have the strongest views against racial-mixing. Additionally, they find added instances of heterogeneity like income-inequality exacerbate the negative pressure of racial fragmentation on participation (2000).

The explanations of Rotolo (2000) as well as Alesina and La Ferrara (2000) take preferences for homophilous interaction or aversion to heterogeneous interaction as exogenously determined and leave the question of what makes a person more or less adverse to heterogeneous interaction largely unanswered. Following Putnam (1995), social scientists have increasingly looked to the concept of trust. Here, trust underlies Alesina and La Ferrara's aversion factor or Rotolo's preference for homophily. What is attractive about this approach is that the degree to which a person is trusting of others depends in large part on his or her cultural, religious, and economic environment. In a later article, Alesina and La Ferrara (2002) consider the determinants of trust and find that composition of one's community, including racial and income heterogeneity, has a significant and profound effect on trust. Thus Alesina and La Ferrara (2002) illuminate their previous study by showing how racial fragmentation, for example, decreases a person's overall trust in others, decreases his or her specific trust for members of other racial groups, which decreases the likelihood that that person will participate in civic activities. More specifically, Uslaner and Brown (2005) argue that regularly witnessing economic inequality leads one to develop a generally pessimistic world-view characterized by distrust not only of other people but also of the possibility of a positive future. Trust, then, has its largest negative effect on one's participation in community building, volunteering, and charitable giving.

Finally, Akerlof and Kranton (2000, 2002, 2005) offer a compelling model for human behavior that incorporates the sociological concept of identity into traditional utility analysis. The identity-augmented utility model specifies that individuals' utility depends on the typical set of independent variables (income, cost, etc.) *and* the good (or bad) feelings that come from doing things that harmonize (or clash) with one's sense of identity as an individual and member of a group. To illustrate, consider the two universal and abstract social categories, "man" and "woman", each of which implies an ideal set of physical attributes and prescribed behavior. Each member of a population is assigned to a gender category. People get identity payoffs when they adhere to their gender ideals, and they experience anxiety or discomfort as their characteristics diverge from that ideal. While the degree to which a person's physical attributes correspond to the ideal is (for the most part) exogenous, she or he can adapt behavior to fit the gender-specific prescriptions to maximize identity payoffs (Akerlof and Kranton, 2000). If the ideal attributes and behavior of gender categories or other groups depend on societal forces, it becomes clear how an individual maximizes utility by shaping behavior to match the behavior of the ideal member of his or her group. Akerlof and Kranton apply this basic analysis to explain what would otherwise be described as maladaptive behavior, gender discrimination in the labor market, poverty and exclusion, and household division of labor (2000). They also apply this analysis to explain effort in the workplace (2005) and in schools (2002). In the latter, the authors find that as the degree of social difference—heterogeneity—among a student population increases, so too does the number of groups with which students can identify. In turn, the likelihood that the students would identify with the school decreases, and with it the likelihood that students put high levels of effort into school-related activities.

However, these effects can be augmented by institutional policies aimed to help students identify with the school (Akerlof and Kranton, 2002).[2] The identity-augmented utility model is relevant to the previous discussion, therefore, because it can shed light on how heterogeneity like income inequality or racial fragmentation in a community can influence an individual's response to that inequality through patterns of participation.

This study will be among the first to adapt the Akerlof and Kranton model of identity-augmented utility to explain how inequality influences patterns of political participation. Chapter 3 carries this out formally, and Chapter 5 tests whether the model applies to neighborhoods within an American city in the Rocky-Mountain west. First, though, it will be helpful to review patterns of inequality with the United States, in general, and the west, in particular.

2.3 Inequality in the US and the West

Nearly all of the studies surveyed above theorize or show empirically that inequality has some effect on participation. Whether that effect is positive or negative, the question of how inequality influences participation should be important to communities and countries that exhibit both changing distributions of income or wealth and a desire to promote citizen participation. During the last four decades, inequality has increased in the United States (Jones Jr. and Weinberg, 2000; Plotnick et al., 1998; Weinberg, 1996), where participatory democracy is fundamental to the political and social culture. So the question of how those changes in inequality affect the democratic process is urgent. Furthermore, if the health of US federalism depends on vibrant local governments, it is important to study how localized inequality affects localized participation. This section reviews some of the broad body of literature that establishes and explains the phenomenon of increasing income inequality in the

[2]Such policies might involve including students in curriculum building, developing athletic programs, and holding school-spirit rallies. Mandatory school uniforms may also be helpful for reducing the degree of perceived social difference in the student population.

US. Additionally, it reviews the evidence of a changing distribution of income and increasing inequality in Montana, from where the survey data for the empirical analysis come.

There is little debate about the way income inequality changed in the United States throughout the 20th century. Initially, inequality was relatively high until it dropped precipitously after World War II. Then, it remained fairly stable to the 1970s, when inequality began to rise again. This pattern holds under a wide variety of measurements (Rodríguez et al., 2002), including the Gini index (e.g., Jones Jr. and Weinberg, 2000; Nielsen and Alderson, 1997), income-share ratios (e.g., Piketty and Saez, 2003; Gottschalk and Danziger, 2005), or generalized entropy indices (Galbraith and Hale, 2006a, for example). More and more, the topic of increasing income inequality is earning attention from the popular press (Johnston, 2007) and politicians at the highest level (Abramowitz and Montgomery, 2007). Despite the fact that there is not a clear consensus on the causes of the growing economic disparity in the U.S.[3], it is clear that inequality is growing throughout the nation.

Income inequality has also risen in Montana since the 1970s (Galbraith and Hale, 2006b; Partridge et al., 1998; Silva and Leichenko, 2003), although the rate at which it has risen over that time was less than the national average (Barrett, 1999; Partridge et al., 1998). As is the case with changes in levels of national inequality, no explicit consensus on the causes of income inequality in Montana exists. Partridge et al. (1998) attribute variations in intrastate income inequality to a combination of state-wide institutional efforts toward economic development as well as cultural and religious pressures. Barrett (1999) finds that wages at the upper tail of the income distribution grew more slowly and those at the lower end declined more slowly than throughout the rest of the country, which explains why income inequality increased at slower rate than the rest of the U.S.. Figure 2.1 shows the time series of Montana's Gini index between 1969 and 2004.

[3]Researchers involved in the debate seem to fall into two broad camps: those who believe U.S. inequality is due to structural changes in economic and familial institutions, and those who believe the observed increase is actually a cyclical phenomenon that will inevitably be followed by a plateau and subsequent decrease in inequality. For examples of the former group, see Daly and Valletta (2000) or Autor et al. (2005). For the latter, see the famous article by Kuznets (1955), Nielsen and Alderson (1997), or Reynolds (2007).

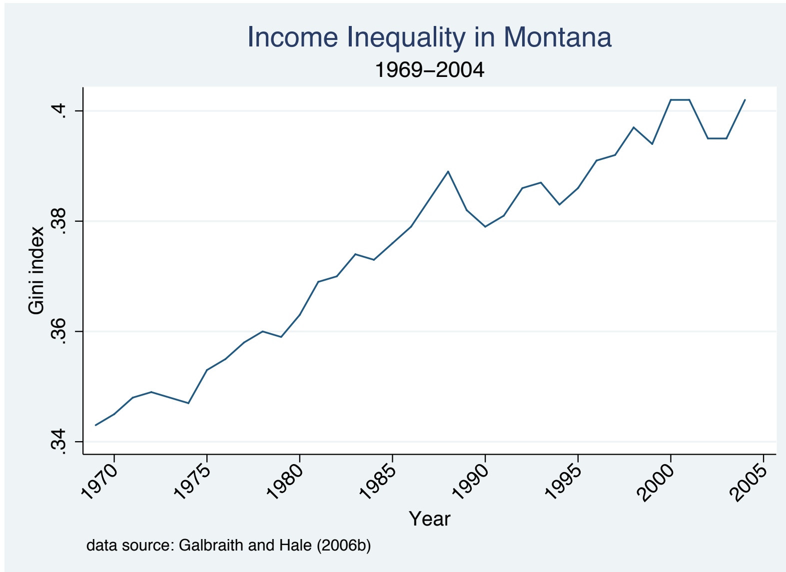


Figure 2.1: Time series of Montana's Gini index between 1969 and 2004

2.4 Summary

This chapter began by reviewing the predominant literature on the effect of citizen engagement on the outcomes of political and developmental projects. While participation is by no means a panacea for the world's political, social, and economic challenges, there is good reason to believe that it can improve information sharing and coordination, given the proper institutional and social context. Namely, the literature points toward widespread participation having positive consequences in communities where inequality is not already a problem and governance is relatively transparent.

We then considered the factors that might promote participation. While most theories of collective action conclude that inequality and other forms of heterogeneity curtail efficient group formation and cooperation, the empirical evidence is inconsistent. Focusing on individual behavior rather than group dynamics lends more insight into how living in the context of social or economic inequality can influence a person's decision to participate in community development. In particular, inequality may create social tension to which people tend to be adverse.

That social friction can be explained by bringing the concept of identity into play: individuals benefit from identifying or fitting in with a particular social category, and they suffer the cost of cognitive dissonance when acting out or witnessing behavior that diverges from the prescripts of their chosen social category. As the distribution of characteristics increases within a population (that is, as a population becomes more heterogeneous), the number of social categories increases, and the population becomes more fragmented. In this way, inequality can be detrimental to participation. This study contributes to the literature by adapting the identity-augmented utility model to explain political participation, and it tests the model using original data from a medium-sized city—Missoula, Montana—in the Rocky Mountain West. It therefore helps address the general question of how inequality interacts with an individual's decision to participate in local government and community development. Because the survey sample stratified the city into neighborhoods, the analysis will also provide insight into the question of whether inequality influences participation within subsets of a population the same way it does for the population as a whole.

The chapter ended by framing the importance of the research question in terms of the historical changes in income inequality within the United States and the state of Montana during the 20^{th} century. Inequality has been increasing in both the nation and the state throughout the past 4 decades, although the rate at which inequality increased in Montana was less than that of the rest of the U.S.. Insofar, then, as Montana has an interest in enjoying a vibrant political culture with widespread and representative citizen participation, it is important to determine how its changing distribution of wealth might promote or discourage that vision of society.

Chapter 3

Theoretical Model

Using a simple cost-benefit analysis, we model an individual's decision to participate in civic activities. Simply put, an individual will choose to participate when the benefits of doing so are greater than the costs. A crucial assumption is that there are two basic kinds of costs and benefits: those that are purely economic and those that are psychological, the latter of which are referred to as "identity benefits". Akerlof and Kranton (2000, 2002, 2005) first incorporated this idea of identity benefits into the standard utility model, and the theory used in this study relies heavily on their work.

Economic benefits come from having one's voice heard during deliberation on public policy as well as being able to enjoy the public goods provided by the deliberation process. In the context of Missoula's municipal and neighborhood meetings, this might mean revising proposals for road construction, prohibiting the establishment of a casino in one's neighborhood, playing a role in composing the homeowners' association bylaws, or simply working to build a community garden in an empty and unsightly plot. Since everyone can enjoy these public goods to the same extent, the economic benefit from the public goods is fixed. But those who participate in local government also benefit from being able to have a say in what goods are provided. Denoting the gross economic benefits from participating as $\bar{b}^* = \bar{b} + v$, where v is the additional economic benefit from having one's voice heard, and gross economic benefits from not participating as $\bar{b}$, gives the identity:

$$\bar{b}^* > \bar{b} \tag{3.1}$$

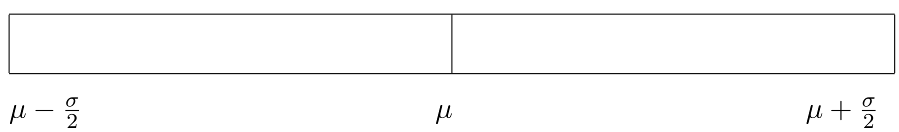
Net economic benefits from participating, B^P, is just the gross economic benefits less economic costs (as a proportion of the individual's resources) associated with participating, such as transportation, time, and membership costs. Since those who do not participate incur no economic costs, the net benefit from not participating, B^N, is the same as the gross benefit. That is:

$$\begin{aligned} B^P_{ij} &= \bar{b}^* - p_{ij} \\ &\text{and} \\ B^N &= \bar{b} \end{aligned} \tag{3.2}$$

Identity benefits are the good feelings people get from taking an active role in community life and associating with others who also have a preference for a healthy community. Similarly, identity costs come from a feeling of not fitting in or associating with a community composed of those whom one sees as fundamentally different than oneself. This study uses neighborhoods to proxy for that community. To see why neighborhoods are a natural reference group, consider the Jones's and why it is so important to keep up with them. It is common for people to compare themselves to their neighbors and model their behavior accordingly. The importance people place on fitting in with their community, which we denote $\bar{t}$, depends on a combination of values and traditions of the community and a stochastic element representing unique personality traits. For simplicity, $\bar{t}$ is taken as fixed across neighborhoods within a city. The net identity benefits of participating for individual i in neighborhood j is given by:

$$I^P - \bar{t}|c_i - c_j^*| \tag{3.3}$$

where I^P represents the identity benefits associated with participating, and $|c_i - c_j^*|$ is the weighted absolute value of the difference between the characteristics of the individual (c_i) and the characteristics of the of archetypal or ideal member of the community (c_j^*). An important assumption is that individual characteristics, c_i, are uniformly distributed across the interval $[\mu - \frac{\sigma}{2}, \mu + \frac{\sigma}{2}]$, as shown below:



Note that the entire length of the distribution is σ, and that increases in σ indicate greater levels of heterogeneity within the community. On the other hand, those who do not participate gain identity benefits, I_{ij}^N.[1]

Putting this together, the utility for those who participate is:

$$U_{ij}^P = \bar{b}^* - p_{ij} + I^P - \bar{t}|c_i - c_j^*| \tag{3.4}$$

Those who do not participate gain utility:

[1]It makes sense to assume that citizens still benefit from not participating. Non-participants, for example, still get to enjoy the community garden or the quieter street. As for identity benefits from dropping out, in addition to avoiding the cost $\bar{t}|c_i - c_j^*|$, people might have a more positive sense of self for not having designed (a negative) public policy.

$$U^N = \bar{b} + I^N \tag{3.5}$$

Individuals will participate when:

$$\begin{aligned}
U_{ij}^P &> U^N \\
\bar{b}^* - p_{ij} + I^P - \bar{t}|c_i - c_j^*| &> \bar{b} + I^N \\
(\bar{b}^* - \bar{b}) + (I^P - I^N) &> p_{ij} + \bar{t}|c_i - c_j^*| \\
v + (I^P - I^N) &> p_{ij} + \bar{t}|c_i - c_j^*| \qquad (3.6)
\end{aligned}$$

We wish to identify the critical values of c_i where individuals choose not to participate. In order to isolate the effect of heterogeneity on identity and participation, consider a special case where $p_{ij} = 0$ for all is and js. Using equation 3.6, the value of c_i where individuals from the lower end of the distribution (i.e., those individuals for whom $c_i < c_j^*$) choose not to participate is:

$$\begin{aligned}
v + I^P - \bar{t}(c_j^* - c_i) &= I^N \\
v + I^P - \bar{t}c_j^* + \bar{t}c_i &= I^N \\
\bar{t}c_i &= I^N - I^P - v + \bar{t}c_j^* \\
c_i^{\textit{left crit}} &= \frac{I^N - I^P - v + \bar{t}c_j^*}{t} \qquad (3.7)
\end{aligned}$$

Using $c_i^{\textit{left crit}}$, it is possible to find the proportion of the population from the left side of the distribution that chooses not to participate. The proportion of a uniform distribution over the interval $[a, b]$ to the left of some point, x, which also lies on the interval $[a, b]$, is given by $\frac{x-a}{b-a}$. Applying this identity, we get:

$$
\begin{aligned}
P^{left\ drop\ out} &= \frac{c_i^{left\ crit} - (\mu - \frac{\sigma}{2})}{(\mu + \frac{\sigma}{2}) - (\mu - \frac{\sigma}{2})} \\
&= \frac{1}{2} + \frac{c_i^{left\ crit} - \mu}{\sigma} \\
&= \frac{1}{2} + \frac{I^N - I^P - v + \bar{t}c_j^*}{\bar{t}\sigma} - \frac{\mu}{\sigma} \\
&= \frac{1}{2} + \frac{I^N - I^P - v + \bar{t}(c_j^* - \mu)}{\bar{t}\sigma} \qquad (3.8)
\end{aligned}
$$

Similarly, the proportion of the population that drops out from the right side of the distribution (i.e., those with $c_i > c_j^*$) is given by:

$$P^{right\ dropout} = \frac{1}{2} + \frac{I^N - I^P - v + \bar{t}(\mu - c_j^*)}{\bar{t}\sigma} \qquad (3.9)$$

Finally, the total proportion of the population that chooses not to participate will be:

$$P^{dropout} = 1 - \frac{2(v + I^P - I^N)}{\bar{t}\sigma} \qquad (3.10)$$

The proportion of the population that will choose not to participate, then, is decreasing in the responsiveness of the community to an individual's political voice, v, and the identity payoff to participating, all of which make intuitive sense. The proportion that chooses not to participate is *increasing* in the identity payoff to not participating, the weight the community places on being different, and the size of the interval from which individual characteristics can be drawn, σ. As noted, the size of that interval, σ, represents the degree of heterogeneity within a community. This shows, then, how increases in forms of heterogeneity such as inequality have an adverse effect on participation.

The total proportion of the population that will drop out is invariant with respect to the population mean set of characteristics (μ) and the value of the community ideal set of characteristics (c_j^*). However, these values do affect the side of the distribution from which the majority of people drop out. If c_j^* is greater than μ, then more will drop out from the left side of the distribution. This makes intuitive sense. If a person is below average, and the standard for participation is someone who is above average, that person will have a disincentive to participate. And the further above the average that standard is, the greater the disincentive for those who are below-average.

The main implications of this theory are that heterogeneity decreases participation within the entire population, as does an individual's divergence from the ideal characteristics of his or her group, but increasing the responsiveness to public input or decreasing the penalty (t) from being different can mitigate the negative effects of heterogeneity. While policy prescriptions can affect the former, there is little that can be done to change the latter (although Scheufele et al. (2004) show that the likelihood a person will attend a meeting increases dramatically if he or she has been received a personal invitation). Nevertheless, working to increase civic bodies' responsiveness to citizen input in order to increase participation is perhaps more easily measured and more worthwhile. It is not only beneficial to new participants, but it also strengthens the democratic structure of the civic body and increases efficiency by facilitating the transmission of information. The next chapter describes the data set used to test the hypotheses that inequality reduces participation and that having different characteristics than the ideal can influence participation decisions.

Chapter 4

Empirical Evidence: The Data

Between July 2006 and January 2007, data were collected from a city-wide door-to-door survey of 683 households in Missoula, Montana. The sampling method followed a stratified random sample, with at least 40 households being drawn from each of the 17 neighborhoods serving as the strata. Neighborhoods are defined by the city, and their collective boundaries encompass the entire perimeter of the city. Face-to-face interviews generally lasted 15 minutes, although some lasted as little as 10 minutes while others took nearly an hour. The questionnaire appears in Appendix A, which also gives more detailed descriptions of the questionnaire design, sampling method, and interview process.

4.1 Demographics and Neighborhood Characteristics

Table 4.1 on page 26 gives summary statistics for city-wide demographics. Estimating city-wide parameters using the stratified data presents a challenge, since some neighborhoods are larger than others, and certain households therefore have a higher probability of being selected. To account for this, each observation is weighted by the inverse probability that the observation was surveyed on account of survey design. In other words, the sampling weight of the observation's stratum determines the number of subjects in the population that each observation represents.[1]

Table 4.1: City-wide demographics

Variable	Mean	Std. Dev.	Min.	Max.	Obs.
Proportion of population that is female	0.498	0.5	0	1	682
Age	46.85	18.0	18	94	682
Proportion of population that owns home	0.669	0.47	0	1	682
Years spent in Missoula	20.124	17.74	<1	90	682
Years spent at current residence	9.477	11.981	<1	70	682
Proportion of population that is employed	0.727	0.446	0	1	682
Proportion of population that is married or partnered	0.580	0.494	0	1	682
Household size	2.5	1.307	1	9	682
Children per household	0.533	0.974	0	8	682
Estimated years of schooling	15.1	3.0	8	22	682
Proportion of population in college	0.118	0.323	0	1	682
Estimated household income (in 1000s USD)	63.883	68.211	1.4995	750	682

[1]For example, if neighborhood A represents 15% of the total population, then each observation from that neighborhood is weighted by $\frac{1}{0.15} = 6.667$, making each observation from neighborhood A represent 6.667 subjects in the entire population. If neighborhood B represents 20% of the population, then each observation from neighborhood B represents $\frac{1}{0.2} = 5$ subjects in the entire population. The weighting scheme, therefore, makes every observation equally probable of having been selected—it imposes randomness on the non-random element of the sample.

The average citizen has lived in Missoula for about 20 years and at his or her current residence for almost 10 years. Approximately 49.8% of the population is female, and the average age of Missoulians over 18 is about 47 years old. 58% are married or in a long-term partnership, and each couple have a little bit more than half a child. The average household has 2.5 members. For the most part, these estimates correspond to figures available from the U.S. Census Bureau (2005), although our estimate of the percentage of homeowners is at least 10 percentage points higher. The U.S. Census Bureau does not provide an estimate of the mean age, but their median age is 34.3, which is over 10 years younger than the median age (45) in our data. This is likely due to the fact that our sample excludes individuals under 18 years old. The average number of years of schooling is about 15, which suggests that most people have had some college. Interestingly, the standard deviation is 3 years, meaning 68.27% of the population attained between a high school diploma and a master's degree. The estimated average household income is $63,883 which is just within the U.S. Census Bureau's range for estimated mean family income, which is between $50,772 and $64,344 (2005). The large estimated standard deviation of income is due to the right-skewed shape of the income distribution. The median income is $42,499.50, and the mode is $54,999.50.

The estimates of years of education and household income deserve special attention. Because the goal is to estimate inequality measurements that depend on continuous data, integer values for years of schooling and income are inferred from categorical responses.[2] Respondents identified themselves as belonging to 1 of 10 categories representing the highest degree or level of schooling completed. Similarly, respondents identified themselves by 1 of the 23 household income categories containing their 2005 before-tax total household income.[3] To illustrate, suppose a respondent identified her highest degree or level of schooling as a bachelor's degree and her 2005 household income as falling within the range $35,000 – $39,999. Then, the

[2]The inferred values of years of education and income supply information to construct neighborhood-level measurements of wealth and educational inequality. Because the margin of error is higher for the inferred incomes, household-level regressions use only the categorical information supplied by the respondent. The estimated number of years of education, however, appears in household regressions, since any errors would be relatively small and theoretically insignificant.

[3]See Appendix A for the wording of the original questions and categories.

variable representing her education would be coded as “6”, and the variable representing her income would be coded as “14”. Her *estimated* years of education would be 16 and her *estimated* income would be the midpoint of her specified income category, $37,499.50. Of course, she may have skipped a grade in elementary school, and she may earn an income at the upper bound of her income group. The assumptions underlying these estimates, however, should appear to the reader as reasonable.

A more critical assumption involves estimating integer values for respondents within the highest income bracket, which is open-ended. 62 respondents indicated that they had a household income of $120,000 or greater. Since the upper bound of that category is uncertain, it is impossible to assign respondents an income at the midpoint. Even with value of the maximum income, however, it would not make much sense to assign every respondent an income at the midpoint, since income tends not to be uniformly distributed at the upper percentile (Cowell, 1977; Kakwani, 1976; Wikipedia, 2006). For example, if the maximum income were $750,000, assigning an income of $435,000 to all 62 respondents in the highest income bracket would be inappropriate, since we know most of the 62 respondents would have incomes closer to the lower bound with only a few having incomes closer to the maximum. The Pareto distribution captures the shape of income-allocation at its upper tail (Cowell, 1977). It states that the proportion of the population whose income exceeds any positive number, $x > x_m$ is given by:

$$\left(\frac{x_m}{x}\right)^\alpha$$

where x_m is the minimum possible income (in our case, $120,000), x is any income greater than the minimum, and the positive parameter α is an inequality measurement called the Pareto index. As α increases, the proportion of extremely high income individuals gets smaller; Gastwirth (1972) suggests that α is around 2 in the U.S.. This study adopts the value of $\alpha = 2$ and randomly assigns each of the 62 respondents in the top income bracket to an income according to a Pareto distribution. For example, the number observations out of the 62 estimated to have an income greater than $250,000 is given by:

$$62 * \left(\frac{120,000}{250,000}\right)^2 \approx 14$$

Similarly, the function predicts that 12 people have incomes greater than $270,000. Therefore, two people would have incomes between $250,000 and $270,000. Thus, we randomly assign an income of $250,000 to two of the 62 respondents in the top income group. Repeating this process yields the cumulative income distribution that appears in Figure 4.1 on page 29. Again, it is worth emphasizing that this process only helps to make inferences about city and neighborhood level income distribution; who gets what income is not important, since these income estimates do not appear in any household-level analyses. Instead, they allow facilitate calculating more informative descriptive statistics as well as a number of measurements of inequality.

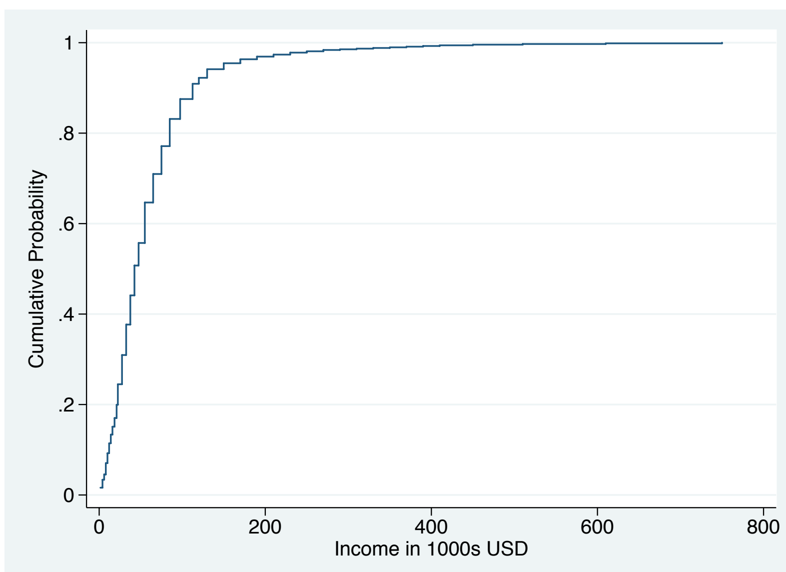


Figure 4.1: Cumulative household income distribution using estimated income

This study uses two common inequality measurements: the Gini coefficient and the Thiel index. The Gini coefficient is a ratio between 0 and 1, where 0 represents perfect equality, and 1 represents absolute inequality. The Thiel index also indicates perfect inequality when its value is 0, but the Thiel index can take infinitely large values. Following Gastwirth et al. (1986), both a lower-bound Gini coefficient as well as an upper-bound are calculated, where the lower-bound is the value of the Gini coefficient assuming perfect equality *within* income brackets, and the upper-bound is the value of the Gini coefficient assuming perfect inequality. This gives a range of all possible Gini coefficients, given the grouped data, and avoids the mis-measurements common to interpolated Gini coefficients. Applied to this data set, however, there is little difference between the lower and upper-bounds.

We use the method described by Thomas et al. (2001) for calculating Gini coefficients of education, where the Gini coefficient is given by:

$$\frac{1}{\mu}\sum_{i=2}^{n}\sum_{j=i}^{i-1} p_i|y_i - y_j|p_j$$

where μ is the average years of schooling across the population, p_i and p_j represent the proportions of the population with levels of schooling i and j, y_i and y_j represent the number of years of schooling for i and j, and n is the number of categories of educational attainment. We calculate the education Gini for each neighborhood, but since the Gini coefficient is sensitive to small population sizes, we adjust it by a factor of $\frac{1}{N-1}$ (Thomas et al., 2001). Here, N represents the number of observations in each neighborhood. The Thiel index of education, however, requires no such adjustment (Thomas et al., 2002). Table 4.2 gives summary statistics, and Table 4.3 gives neighborhood inequality calculations, both using the estimated values of income and years of education discussed above.[4] Finally, Table 4.4, starting on page 33, gives descriptive statistics for each of the neighborhoods.

In Missoula, the estimate of the average level of inequality (for both the lower and the upper

[4]Please see Appendix B for a map of the Neighborhood Councils and a key for the numbering system used in the tables to represent the councils.

Table 4.2: Summary statistics for inequality measurements

Variable	Mean	Std. Dev.	Min.	Max.
Lower-bound income Gini	0.398	0.074	0.224	0.526
Upper-bound income Gini	0.405	0.074	0.231	0.53
Thiel index on income	0.303	0.132	0.086	0.697
Education Gini	0.1	0.009	0.082	0.123
Thiel index on education (x10)	0.172	0.027	0.124	0.231
Observations		682		

bounded Gini coefficients) approximates 0.4, which is well below the 1998 national estimate of 0.553 published by the Federal Reserve Bank of Minneapolis (Rodríguez et al., 2002). The education Gini coefficient is much lower—around 0.1—but the U.S. policy of compulsory education explains this fully. When we look to Table 4.3, we can see that neighborhood 6 (South 39$^{\text{th}}$ Street) has the most equal distribution of income, and neighborhood 5 (Southgate Triangle) has the most equal distribution of educational attainment. Interestingly, these neighborhoods both have relatively low levels of average income and years of schooling, respectively. The Northside (neighborhood 17) has the highest degree of income inequality. Neighborhood 1, Grant Creek, features the highest level of educational inequality. Again, it is interesting to note that the mean number of years of education in Grant Creek is 15.95—nearly the equivalent of a 4-year post-secondary degree. The most equal distribution of education is in neighborhood 3 (Emma Dickenson / Orchard Homes), where the mean number of years of schooling is 13.71, the second lowest in city. Of course, this makes some sense, since most everyone attains a high school degree (or its equivalent) by law. If most everyone attains a minimum level of education but few go beyond that, the distribution is more equal, even if such a situation is not typically thought of as being equitable.

Table 4.3: Inequality measurements by neighborhood

	Neighborhood																
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Lower-bound income Gini	.37	.37	.41	.40	.29	.22	.38	.48	.46	.31	.41	.45	.50	.43	.39	.37	.53
Upper-bound income Gini	.38	.37	.42	.40	.30	.23	.38	.49	.47	.32	.42	.45	.51	.43	.39	.38	.53
Thiel index on income	.28	.25	.32	.27	.14	.08	.29	.43	.37	.17	.29	.34	.42	.32	.25	.24	.67
Education Gini	.12	.11	.08	.10	.09	.11	.10	.09	.09	.10	.10	.09	.11	.10	.11	.11	.10
Thiel index of education (x10)	.23	.20	.12	.20	.14	.18	.17	.16	.15	.15	.15	.14	.19	.18	.21	.18	.18

Table 4.4: Demographic statistics by neighborhood

Variable		Neighborhood (1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Prop. Fem.	M	0.439	0.475	0.585	0.450	0.425	0.641	0.375	0.610	0.450	0.425	0.525	0.500	0.550	0.475	0.525	0.600	0.475
	SD	0.502	0.506	0.499	0.504	0.501	0.486	0.490	0.494	0.504	0.501	0.506	0.506	0.504	0.506	0.506	0.496	0.506
	Min	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Max	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Age	M	48.2	38.8	39.7	43.4	44.8	55.2	47.8	46.2	55.6	48.8	41.7	40.4	43.0	42.5	50.2	56.0	39.3
	SD	16.9	16.8	16.4	20.0	19.1	20.5	11.0	14.4	15.2	20.0	16.6	17.2	20.6	18.9	18.2	15.8	15.7
	Min	19	19	19	19	19	19	30	21	18	20	19	18	19	19	20	20	20
	Max	85	94	77	81	86	89	76	78	87	88	83	81	86	76	90	90	76
Prop. Home-owner	M	0.732	0.400	0.561	0.475	0.575	0.923	0.925	0.756	0.9	0.775	0.6	0.4	0.425	0.325	0.7	0.9	0.475
	SD	0.449	0.496	0.502	0.506	0.501	0.270	0.267	0.435	0.304	0.423	0.496	0.496	0.501	0.474	0.464	0.304	0.506
	Min	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Max	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Years in Missoula	M	13.13	12.89	17.34	20.91	20.45	25.88	20.39	19.70	29.76	24.29	18.06	18.95	16.53	11.44	22.88	25.66	19.41
	SD	13.64	14.87	15.80	18.24	16.27	16.8	16.71	15.36	21.53	17.29	14.78	19.41	17.77	9.83	21.40	18.12	19.84
	Min	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Max	55	68	58	61	49	54	62	63	78	55	58	81	50	36	90	62	73
Years at Current Res.	M	5.71	6.41	5.83	8.56	10.34	14.12	7.71	8.82	13.92	14.83	7.16	7.23	9.16	4.85	12.08	13.1	8.65
	SD	5.34	11.95	8.95	12.99	12.41	14.14	7.29	10.28	13.99	14.64	10.0	11.1	13.17	6.0	14.03	11.6	16.25
	Min	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Max	22	65	46	55	45	50	25	40	52	50	40	54	49	24	50	42	70
Prop. Working	M	0.732	0.9	0.7	0.775	0.8	0.651	0.75	0.659	0.65	0.575	0.825	0.8	0.725	0.75	0.775	0.625	0.825
	SD	0.449	0.304	0.461	0.423	0.405	0.493	0.439	0.483	0.48	0.501	0.385	0.405	0.452	0.439	0.423	0.49	0.385
	Min	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Max	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Prop. Married	M	0.659	0.450	0.415	0.475	0.55	0.667	0.925	0.707	0.8	0.625	0.425	0.35	0.525	0.3	0.625	0.725	0.35
	SD	0.480	0.504	0.499	0.506	0.504	0.478	0.267	0.461	0.405	0.49	0.501	0.483	0.506	0.464	0.49	0.452	0.483
	Min	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Max	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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Variable		Neighborhood (1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
House-	M	2.42	2.43	2.46	2.25	2.3	2.7	3.2	3.2	2.5	2.8	2.7	2.3	2.9	1.9	2.2	2.4	2.3
hold	SD	1.45	1.32	1.25	1.17	1.09	1.5	1.18	1.7	1.06	1.33	1.57	1.27	1.27	1.25	1.25	1.13	1.01
Size	Min	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Max	7	6	6	5	5	8	7	9	6	6	9	6	6		6	5	4
Children	M	0.54	0.58	0.51	0.35	0.5	0.62	0.93	1.02	0.58	0.58	0.65	0.3	0.65	0.175	0.38	0.53	0.43
	SD	1.05	0.93	0.87	0.67	0.93	1.25	1.02	1.33	0.93	1.04	1.42	0.82	0.98	0.50	0.90	0.82	0.68
	Min	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Max	3	3	3	3	3	6	3	5	4	3	8	4	3	2	3	2	2
Years of	M	15.95	14.4	13.71	12.95	14.4	15.74	16	14.49	16.35	14.85	14.7	14.5	15.05	14.6	15.55	16.35	14.05
School	SD	3.51	2.94	2.26	2.56	2.49	3.05	2.97	2.6	2.9	2.68	2.66	2.55	3.07	2.76	3.22	3.1	2.81
	Min	12	8	12	8	12	12	12	8	12	12	12	12	12	8	8	12	12
	Max	22	22	22	18	22	22	22	22	22	22	22	22	22	22	22	22	22
Prop.	M	0.073	0.100	0.146	0.150	0.175	0.051	0.025	0.146	0.025	0.15	0.25	0.25	0.35	0.225	0.05	0.0	0.125
Student	SD	0.264	0.304	0.358	0.362	0.385	0.223	0.518	0.358	0.158	0.362	0.439	0.439	0.483	0.423	0.221	0.0	0.335
	Min	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Max	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
House-	M	84.79	41.24	44.5	39.83	48.76	58.65	113.75	82.57	114.14	62.45	42.14	38.0	53.45	32.95	50.45	78.16	48.36
hold	SD	66.41	34.5	43.17	32.45	25.11	23.69	115.14	92.96	112.79	35.53	34.5	33.03	54.28	29.2	36.27	62.94	93.56
Income	Min	5.999	1.499	1.499	1.499	1.499	11.999	22.499	5.999	18.499	1.499	3.999	1.499	1.499	1.499	1.499	5.999	3.999
(in $1000s)	Max	≥120	≥120	≥120	≥120	97.499	112.499	≥120	≥120	≥120	≥120	≥120	≥120	≥120	≥120	≥120	≥120	≥120
Observations		41	40	41	40	40	39	40	41	40	40	40	40	40	40	40	40	40

4.2 Patterns of participation in Missoula

The community and household information described above is intended to help make predictions about how households participate in civic life. Accordingly, the majority of the survey asks about household patterns of political and civic behavior. The questions about participation in local government—city councils, city boards and commissions, and neighborhood councils—exactly replicate those in a telephone survey commissioned by Missoula's Local Government Study Commission in November, 2005. This study conducted by the Behavior Research Center finds that over 20% of Missoulians personally attend neighborhood councils, 16% attend city council meetings, and 10% attend city board meetings. Additionally, nearly 40% watch city council meetings on MCAT—the city's public access television station—20% watch city board meetings, and 7% watch neighborhood council meetings(2005). The questionnaire replicates the Behavior Research Center's queries in order to compare and check whether these figures might be inflated due to sampling biases associated with telephone surveys, although we add the option of participating by reading a transcript of the meeting, too. Our survey also asks about volunteering, participation in political organizations, contacting public officials through writing or telephone, and writing letters to the editor of a newspaper. All questions refer to the activities of members of the respondent's household during the 12 months preceding the time they took the survey. Table 4.5 gives a cursory description of participation in Missoula.

About 33% of Missoulians participate in city council meetings in some way. Of those who do, 77% participate by watching it on television, and 27% of those who participated in city council meetings did so by attending in person. City board and commission meetings enjoy about half as much citizen engagement, most of which is solitary (63% participate via television or transcripts.). Interestingly, although neighborhood councils have the smallest proportion of participants, most of those who do participate do so by attending in person (72%), and only 24% watch the meetings on MCAT. Participation in home owners' associations is also relatively low, although our figure is likely to be understated, since there was no question to determine whether respondents live in an area where a home owners' association is present. 35% of respondents reported having contacted a public official—over the phone, in writing, or in person—during the year before they took the survey, although only 11.6% had written a letter to the editor of a newspaper. Nearly 60% reported that someone in their household had volunteered.

Table 4.5: Summary statistics of participation

Variable	Mean	Std. Dev.	Min.	Max.	Obs.
City council	0.334	0.472	0	1	682
—in person	0.268	0.444	0	1	228
—MCAT	0.772	0.421	0	1	228
—transcript	0.044	0.205	0	1	228
City boards & Commissions	0.173	0.379	0	1	682
—in person	0.415	0.495	0	1	118
—MCAT	0.602	0.492	0	1	118
—transcript	0.034	0.182	0	1	118
Home owners'	0.158	0.365	0	1	682
—in person	0.917	0.278	0	1	108
—transcript	0.102	0.304	0	1	108
Neighborhood council	0.119	0.324	0	1	682
—in person	0.722	0.451	0	1	79
—MCAT	0.244	0.432	0	1	78
—transcript	0.052	0.223	0	1	77
Contact public official	0.352	0.478	0	1	682
Editor	0.116	0.32	0	1	682
Political organizations	0.204	0.403	0	1	682
Volunteer	0.591	0.492	0	1	682
Other meeting	0.207	0.405	0	1	682

Because the theory predicts that heterogeneity in communities discourages participation involving groups, it will be useful to distinguish between those who do not participate at all, those who participate in civic life without any group interaction, and those who participate in person. A new variable captures this perspective on the kind of participation in which people engage. The variable takes on three values:

- 0: Respondent did not participate in any of the activities in any way

- 1: Respondent watched a meeting on MCAT, read a meeting's transcript, contacted a public official, or wrote a letter to the editor of a newspaper, but did not attend any meetings in person
- 2: Respondent participated by attending at least one meeting in person

Note two things about this variable. First, it does not reflect volunteer activity or involvement in political organizations, since it is not clear whether those activities are necessarily social or private. Second, although the values of this variable are mutually exclusive, respondents who are in category 2 (and attended in person) may have participated alone as well. A case could be made to further divide this category into those who participate only in person and those who participate both in person and alone. Whatever the theoretical merits to this, there is a practical barrier to adding such a 4^{th} category. The group of those who participate in person and alone would include only 9 respondents, which is too small to contribute to a meaningful analysis. Table 4.6 show the frequencies of our new variable, participation type.

Table 4.6: Frequency table for types of participation

	Variable	Frequency	Percentage	Cumulative Percentage
0	None	212	31.09	31.09
1	Alone	209	30.65	61.73
2	In person	261	38.27	100.00
	Total	682	100.00	

It is also informative to look at the demographics of respondents according to their type of participation. Table 4.7 on page 39 describes the characteristics of respondents by their participation type. Here we see that the population of those who participate in person has the highest average income, years of education, and proportion of homeowners. This group also has spent the most time in Missoula in general and their current residence, in particular. Additionally, the population of those who participate in person has the highest proportion of women. The case is quite the opposite for those who do not participate at all. These people have spent the fewest number of years in Missoula and their current residences, less than half are married, and they have the lowest average income and years of schooling. All of this supports the SES model described in Chapter 2, Section 2.2.2. However, it is still necessary to explore how the level of inequality in a community might effect participation. Unfortunately, the raw statistics on inequality, shown in the bottom rows of Table 4.7, are not helpful to this end. By abstracting from household behavior, and instead focusing briefly on trends within neighborhoods, the role of inequality on participation may become more clear.

Table 4.7: Summary statistics by participation type

	None (0)				Alone (1)				In person (2)			
Variable	**Mean**	**Std. Dev.**	**Min.**	**Max**	**Mean**	**Std. Dev.**	**Min.**	**Max**	**Mean**	**Std. Dev.**	**Min.**	**Max**
Proportion of pop. that is female	0.46	0.5	0	1	0.49	0.5	0	1	0.54	0.5	0	1
Age	41.75	19.72	19	94	46.44	17.52	19	89	49	16.47	18	90
Proportion of pop. that owns home	0.46	0.5	0	1	0.61	0.49	0	1	0.81	0.4	0	1
Years in Missoula	16.6	16.51	0.5	68	20.01	18.25	0.5	81	22.34	17.57	0.5	90
Years at current residence	7.07	11.59	0.5	65	9.54	12.07	0.5	54	10.93	12.19	0.5	70
Proportion of pop. that is working	0.72	0.45	0	1	0.78	0.42	0	1	0.71	0.46	0	1
Proportion of pop. that is married	0.49	0.5	0	1	0.55	0.5	0	1	0.64	0.48	0	1
Household size	2.35	1.11	1	6	2.47	1.32	1	9	2.71	1.45	1	9
Children	0.42	0.75	0	3	0.47	0.94	0	5	0.71	1.16	0	8
Est. years of schooling	13.99	2.61	8	22	14.9	2.95	8	22	15.69	3.03	8	22
Proportion of pop. in college	0.22	0.41	0	1	0.1	0.3	0	1	0.1	0.3	0	1
Est. household income (in 1000s)	46.936	52.651	1.5	≥ 120	57.885	69.439	1.5	≥ 120	74.605	70.872	1.5	≥ 120
Lower-bound income Gini	0.4	0.08	0.22	0.53	0.4	0.07	0.22	0.53	0.4	0.08	0.22	0.53
Upper-bound income Gini	0.4	0.07	0.23	0.53	0.41	0.07	0.23	0.53	0.4	0.08	0.23	0.53
Thiel index on income	0.3	0.14	0.09	0.7	0.31	0.13	0.09	0.7	0.3	0.13	0.09	0.7
Education Gini	0.1	0.01	0.08	0.12	0.1	0.01	0.08	0.12	0.1	0.01	0.08	0.12
Thiel index on education	0.17	0.03	0.12	0.23	0.18	0.03	0.12	0.23	0.17	0.03	0.12	0.23
Obs.	212				209				261			

A scatterplot of each neighborhood's proportion of non-participants, solo-participants, and group-participants against the inequality measurements, along with a fitted regression line, shows some indication of a relationship between the two phenomena. Figures 4.2– 4.4 perform this operation using the lower-bound Gini coefficient on estimated income, and Figures 4.5– 4.7 use the Thiel index on education. Beyond wishing to show this relationship for both income and education inequality, the choice of which inequality measures to show was arbitrary, since this visual relationship is consistent across all our inequality measurements.

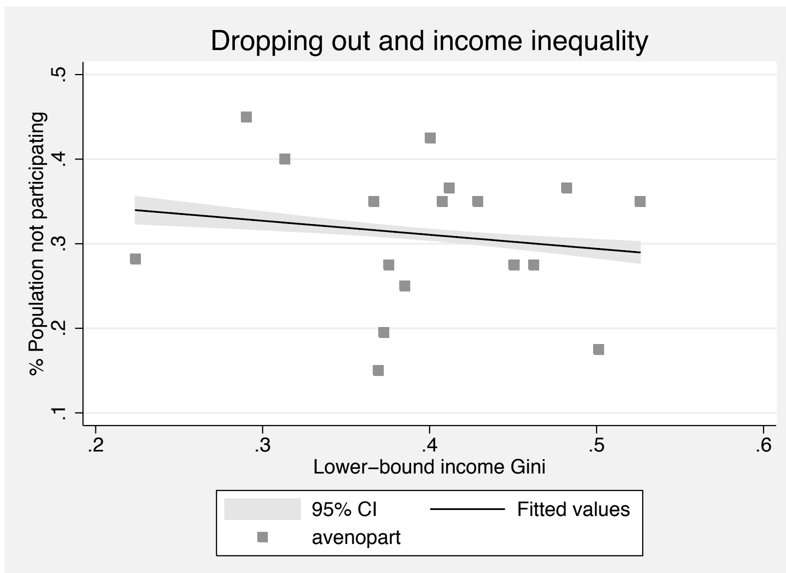

Figure 4.2: Fitted line and scatter of neighborhood % non-participants on income Gini

What this exercise suggests is that inequality does play a role in the way people participate in local government. As both income and education inequality increase, the percentage of the population that does not participate at all appears to decrease (Figures 4.2 and 4.5). This appears to be inconsistent with the theory outlined in Chapter 3, although that model only allows for a binary option: to participate or not to participate. In Missoula, the additional means to participation may change the outcome, even though the calculus may stay the same. What is clearly consistent with the theoretical model is the indication in Figures 4.3 and 4.6 of a positive relationship between inequality and participating alone. Neighborhoods with higher levels of inequality also have higher levels of solitary participation. Finally, the plots of

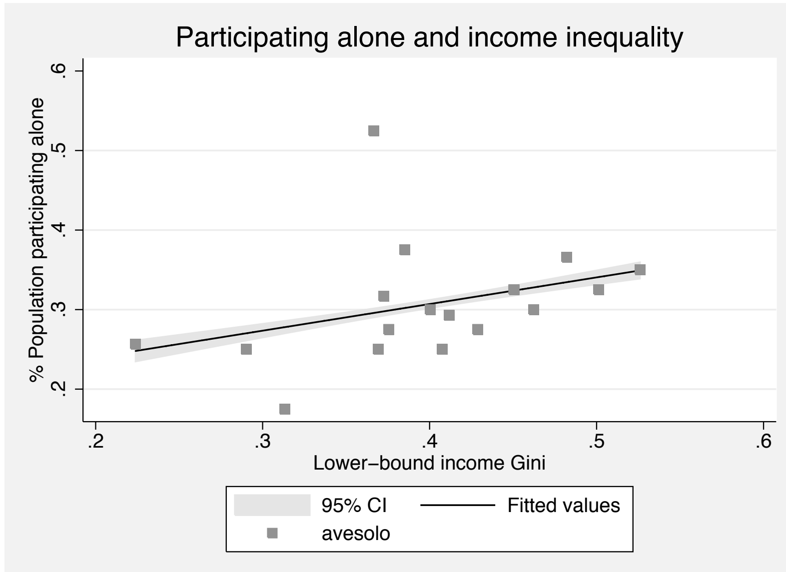

Figure 4.3: Fitted line and scatter of neighborhood % solo-participants on income Gini

the percentage of the neighborhood that participates in person on inequality have ambiguous implications.

It is important to stress, however, that although these fitted lines are useful diagnostic tools, they do not hold other variables constant. The next chapter develops an empirical strategy to test the implications of our model, as adapted to a three choice situation, and presents the results of a more formal econometric analysis.

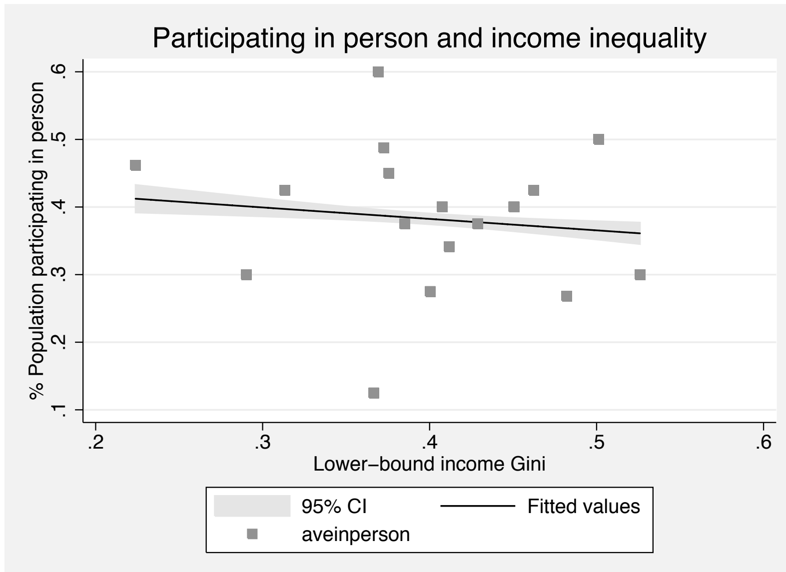

Figure 4.4: Fitted line and scatter of neighborhood % group participants on income Gini

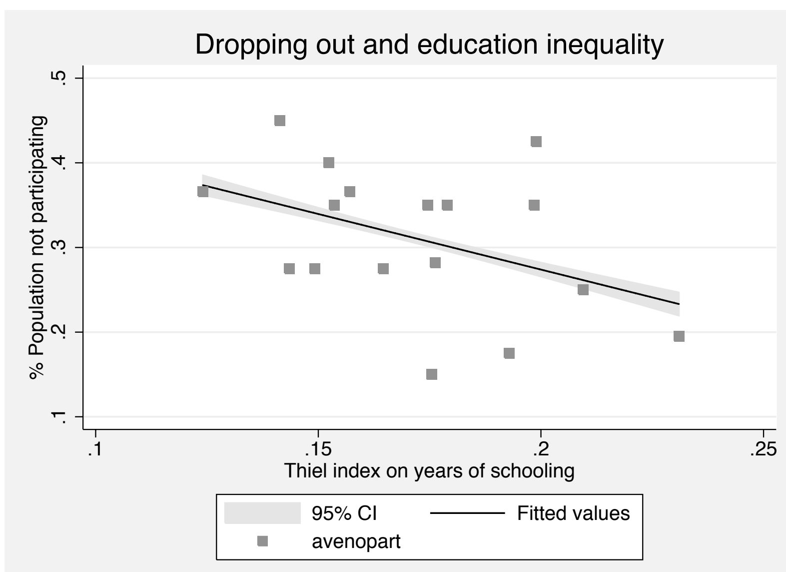

Figure 4.5: Fitted line and scatter of neighborhood % non-participants on education Thiel

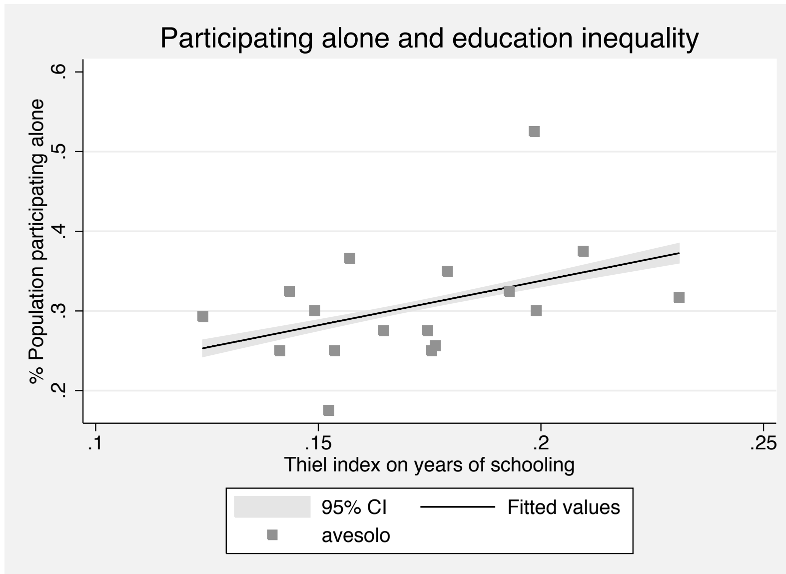

Figure 4.6: Fitted line and scatter of neighborhood % solo-participants on education Thiel

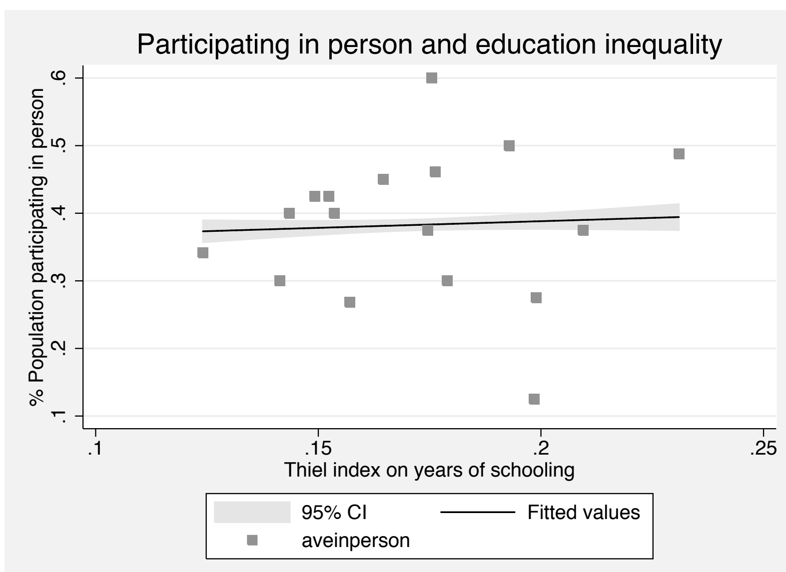

Figure 4.7: Fitted line and scatter of neighborhood % group participants on education Thiel

Chapter 5

Empirical Evidence: Method and Results

Recall from equation 3.4 on page 21 that an individual's decision to participate is modeled with an identity-augmented utility function adapted from Akerlof and Kranton (2000, 2002, 2005) and that overall participation decreases as heterogeneity (σ from the model) increases. We do not observe the level of utility, but only the respondents' participatory behavior. The theoretical model only allowed for a single choice between two options: to participate or not to participate. In Missoula, however, citizens have at least two choices between three options. After citizens first choose *whether* to participate, those who have not opted out make a second decision about *how* to participate. Now citizens can choose not to participate, to participate alone by watching a meeting on television or contact a public official, or to participate in traditional face-to-face interaction. Those whose identity costs outweighed their benefits would have chosen not to participate under the two-choice scenario, but under this three-choice scenario with the option of participating without direct human contact, they now have the option to gain some identity benefits from being involved in public life at a lower identity cost. As long as the identity payoffs from participating alone are greater than the identity payoffs of not participating at all, we might expect participation to increase when an additional avenue into civic life is introduced.

5.1 Empirical Strategy

The strategy, then, is to predict the likelihood that an individual, i, living in neighborhood j, will exhibit a certain pattern of participatory behavior. This dependent variable, participation type, takes on the values 0, 1, and 2, where 0 indicates that individuals did not participate in any of the surveyed activities, 1 indicates the individual participated alone, and 2 indicates the individual participated in person. The following general econometric specification to predicts how individuals participate in civic activities:

$$P_{ij} = \alpha X_{ij} + \beta H_j + \gamma Z_j + \epsilon_{ij} \tag{5.1}$$

where P is the type of participation, α, β, and γ are vectors of coefficients, X_{ij} is a vector of household characteristics, H_j is a measurement of neighborhood heterogeneity, and Z_j is a vector of other neighborhood characteristics. Table 5.1 on page 47 shows the specific variables within each vector. Although our theoretical model makes the simplifying assumption to hold economic costs of participation constant, in reality, these costs will vary, and we use household characteristics to proxy for the economic costs of participation. The variables in X_{ij} control for the respondent's gender, age, square of age, whether the respondent rents or owns, and whether the respondent had worked at all in the last six months. X_{ij} also accounts for the respondent's marital status, household size, and number of children. Finally, X_{ij} controls for the estimated years of schooling, whether the respondent is in college, and whether the respondent has a low, medium, or high household income.[1] Z_j controls for neighborhood

[1] "Low income" includes respondents who reported household incomes less than or equal to $24,999, "middle income" includes respondents who reported household incomes between $25,000 and $59,999, and "high income" includes respondents who reported incomes higher than $60,000. These categories come from the tri-modal distribution of income groups; "low income" and "high income" each include roughly 30% of the population,

characteristics such as the mean household size, mean estimated years of education, mean estimated income, and the number of households in the neighborhood. The heterogeneity variable, H_j, measures inequality in income and education. This corresponds to σ in our theoretical model and is our interest variable. We conduct a series of regressions, using the Gini and Thiel indices on both income and education, and expect the effect of all H_j to be negative for the outcome of not participating, positive for the outcome of participating alone, and negative for the outcome of participating in person. We estimate P, a polychotomous variable, with a multinomial logit model. This econometric model specifies that the predicted probability of an outcome Y such that a person will choose participation type k is:

$$Pr(Y = k|x) = \frac{e^{x\beta_{k|b}}}{\sum_{j=0}^{2} e^{x\beta_{j|b}}}$$

where b is the base outcome and j is number of possible outcomes ranging from 0 to 2. Results from this estimation appear in the following section.

5.2 Results

5.2.1 Income inequality

The next two sections give results from equation 5.1. The first regressions show the effect of a neighborhood's level of income inequality on the likelihood that a person living in that neighborhood will not participate at all, participate alone, or participate in person. Table 5.2 on page 50 gives the marginal effects of three multinomial logit models; model 1 uses the lower-bound Gini index to measure income inequality, model 2 uses the upper-bound Gini index, and model 3 uses the Thiel index. Raw coefficients appear in Table C.1 in Appendix C.

All 3 regressions pass the Wald and LR tests for combining outcome categories, so the null

and "medium income" includes the other 40%.

Table 5.1: Model variables arranged by vector

X_i	H_j	Z_j
Female	Lower-bound income Gini	Mean Household size
Age	Upper-bound income Gini	Mean years of education
Age^2	Thiel index of income	Mean income
Homeowner	Education Gini	Number of households
Working	Education Thiel index	
Married	Abs(individual inc. – mean inc.)	
Household size	Abs(individual educ. – mean educ.)	
Number of children	Abs(individual inc. – median inc.)	
Estimated years of schooling	Abs(individual educ. – median educ.)	
Student	Abs(individual inc. – maximum inc.)	
Low income	Abs(individual educ. – maximum educ.)	
High income	Abs(individual inc. – mean participant inc.)	
	Abs(indivdual educ. – mean participant educ.)	

Only a single variable in H_j appears in each regression hypothesis that categories can be collapsed (into a binary logit, for example) is rejected. Both the Hausman and the Small-Hsiao tests of the IIA assumptions[2] hold for Model 1, which uses the lower-bound income Gini index as its inequality measurement. However, the reader should be cautioned that the Small-Hsiao test does not hold for Model 2 when outcome 1 (participating alone) is omitted, and the Hausman test does not hold for model 3 when outcome 0 (not participating at all) is omitted. In all models, standard errors are clustered by neighborhood, which also corrects for heteroskedasticity using an adaptation of Huber and White's correction (Gutierrez and Drukker, 2006). Finally, results for all models are adjusted by sampling weights.

The results support the hypothesis that increases in income inequality would lead to a decrease in the likelihood that an individual would not participate at all when there is an option to participate alone. A 1 standard deviation increase in either the lower or upper-bound of the income Gini index implies a 4.4 percentage point decrease in the probability that someone will not participate at all, relative to the other options of participating alone or in person, holding all else constant. This is significant at the 1% level. A 1 standard deviation increase in the Thiel index on income implies a 3.3 percentage point decrease in the probability that someone will drop out, relative to the other two options and holding all else constant, and this is significant at the 10% level. In all three models, the income inequality measurements have positive signs for participating alone, yet none are statistically significant. There is, however, no indication that any of the three models supports the hypotheses that increasing inequality decreases group-based participation.

The other effects of the control variables are what might be expected. Gender has no significant effect on whether or how people participate in community activities, but people become more likely to participate both alone and in person, up to a certain point. During the survey, enumerators informally observed that most post-retirement age respondents reported dimin-

[2]The IIA (Independence of Irrelevant Alternatives) assumption states that the relative odds between two or more existing alternatives do not change change when additional outcomes are added.

ished or wholly discontinued participation after previously vigorous involvement in community matters. Many attributed this to there being no strong incentive to participate after their children left home, others suggested that they were allowing room for newer generations to shape civic life, still others reported a simple lack of interest or will. In all three models, the quality of being a homeowner decreases the probability of dropping out by 17 percentage points, relative to participating alone or in person, and it increases the probability of participating in person by 18 percentage points, relative to not participating at all or participating alone, *ceteris paribus*. This is significant at the 5% error level. On the other hand, the probability of participating alone increases by 11.4 percentage points, relative to the other two options, for those who have worked within the previous 6 months, holding all else constant. This is significant at the 10% error level. Surprisingly, the number of children under 18 years old is statistically insignificant, although the number of people in the respondent's household has a moderately significant negative effect (at the 10% error level) on the probability that an individual will not participate at all, relative to the options of participating alone or in person. Household size and number of children, however, are somewhat correlated (0.7878), and Wald tests confirmed joint significance in all the models.

Table 5.2: Marginal effects of income inequality on type of participation

	Multinomial Logit								
	Dependent variable = Participation Type								
	Model 1			Model 2			Model 3		
	None	Alone	In Person	None	Alone	In person	None	Alone	In person
Female	-0.0505	0.00748	0.0429	-0.0505	0.00751	0.0429	-0.0512	0.00778	0.0433
	(0.0299)	(0.0384)	(0.0278)	(0.0299)	(0.0384)	(0.0278)	(0.0298)	(0.0382)	(0.0280)
Age	-0.0210***	0.00677	0.0142*	-0.0210***	0.00678	0.0142*	-0.0217***	0.00697	0.0147*
	(0.00557)	(0.00651)	(0.00589)	(0.00557)	(0.00650)	(0.00589)	(0.00566)	(0.00652)	(0.00577)
Age^2	0.000193***	-0.0000618	-0.000131*	0.000193***	-0.0000619	-0.000131*	0.000201***	-0.0000637	-0.000137*
	(0.0000531)	(0.0000639)	(0.0000586)	(0.0000531)	(0.0000638)	(0.0000586)	(0.0000539)	(0.0000640)	(0.0000571)
Homeowner	-0.170**	-0.0229	0.180**	-0.169**	-0.0230	0.180**	-0.166**	-0.0242	0.178**
	(0.0546)	(0.0509)	(0.0614)	(0.0546)	(0.0510)	(0.0614)	(0.0547)	(0.0510)	(0.0612)
Years at	-0.00364	0.000741	0.00290	-0.00364	0.000739	0.00290	-0.00358	0.000679	0.00290
current res.	(0.00189)	(0.00221)	(0.00164)	(0.00189)	(0.00221)	(0.00163)	(0.00186)	(0.00220)	(0.00162)
Working	-0.0660	0.114*	-0.0467	-0.0661	0.114*	-0.0466	-0.0642	0.114*	-0.0478
	(0.0466)	(0.0501)	(0.0534)	(0.0465)	(0.0501)	(0.0534)	(0.0464)	(0.0499)	(0.0528)
Married	0.0866	-0.0269	-0.0628	0.0866	-0.0269	-0.0628	0.0892	-0.0276	-0.0649
	(0.0472)	(0.0591)	(0.0475)	(0.0472)	(0.0591)	(0.0475)	(0.0478)	(0.0592)	(0.0473)

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	Multinomial Logit								
	Dependent variable = Participation Type								
	Model 1			Model 2			Model 3		
	None	Alone	In Person	None	Alone	In person	None	Alone	In person
Household	-0.0511^{*}	0.0192	0.0320	-0.0512^{*}	0.0192	0.0320	-0.0520^{*}	0.0193	0.0327
size	(0.0245)	(0.0351)	(0.0403)	(0.0245)	(0.0351)	(0.0403)	(0.0242)	(0.0353)	(0.0402)
Number of	0.000564	-0.0416	0.0411	0.000599	-0.0417	0.0411	0.00195	-0.0425	0.0406
children	(0.0241)	(0.0412)	(0.0395)	(0.0241)	(0.0412)	(0.0395)	(0.0239)	(0.0413)	(0.0393)
Estimated yrs.	-0.0203^{*}	-0.000367	0.0207^{***}	-0.0203^{*}	-0.000355	0.0207^{***}	-0.0208^{*}	-0.000168	0.0209^{***}
of schooling	(0.0101)	(0.00799)	(0.00620)	(0.0101)	(0.00799)	(0.00620)	(0.0101)	(0.00796)	(0.00625)
Student	-0.0117	-0.149^{*}	0.150^{*}	-0.0118	-0.149^{*}	0.150^{*}	-0.0163	-0.146^{*}	0.152^{*}
	(0.0484)	(0.0723)	(0.0698)	(0.0484)	(0.0723)	(0.0698)	(0.0490)	(0.0722)	(0.0690)
Low income	0.0683	-0.00254	-0.0629	0.0679	-0.00232	-0.0628	0.0634	-0.000565	-0.0604
	(0.0783)	(0.0378)	(0.0660)	(0.0782)	(0.0377)	(0.0659)	(0.0781)	(0.0367)	(0.0660)
High income	0.0283	-0.110^{*}	0.0783	0.0283	-0.110^{*}	0.0783	0.0293	-0.110^{*}	0.0776
	(0.0328)	(0.0491)	(0.0408)	(0.0328)	(0.0491)	(0.0408)	(0.0334)	(0.0494)	(0.0413)
Lower-bound	-0.593^{***}	0.275	0.317						
Income Gini	(0.140)	(0.155)	(0.191)						
Upper-bound				-0.593^{***}	0.272	0.321			

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	Multinomial Logit								
	Dependent variable = Participation Type								
	Model 1			Model 2			Model 3		
	None	Alone	In Person	None	Alone	In person	None	Alone	In person
Income Gini				(0.142)	(0.154)	(0.191)			
Thiel index							-0.252*	0.131	0.122
of income							(0.122)	(0.0687)	(0.106)
Mean House-	0.0580	-0.00499	-0.0530	0.0608	-0.00666	-0.0541	0.0747	-0.00717	-0.0675
hold size	(0.0730)	(0.0505)	(0.0761)	(0.0729)	(0.0506)	(0.0758)	(0.0730)	(0.0508)	(0.0740)
Mean yrs.	-0.0777***	0.0208	0.0570	-0.0766**	0.0201	0.0565	-0.0788**	0.0241	0.0547
of education	(0.0234)	(0.0235)	(0.0325)	(0.0234)	(0.0236)	(0.0322)	(0.0295)	(0.0239)	(0.0347)
Mean	0.00246	-0.00000356	-0.00245*	0.00243	0.0000167	-0.00245*	0.00211	0.0000283	-0.00214
income	(0.00131)	(0.000736)	(0.00122)	(0.00131)	(0.000732)	(0.00121)	(0.00137)	(0.000685)	(0.00117)
Number of	-0.00165	0.00338	-0.00174	-0.00160	0.00338	-0.00177	-0.00348	0.00403	-0.000550
households	(0.00274)	(0.00344)	(0.00457)	(0.00276)	(0.00344)	(0.00459)	(0.00317)	(0.00320)	(0.00440)
N		682			682			682	
Pseudo R-square		0.1131			0.1131			0 .1117	

Standard errors in parentheses and clustered around neighborhood

Results adjusted for sampling weights

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Finally, it is interesting to note the effects of household income and the estimated number of years of schooling. First, in all three models, low income households are more likely to drop out from participation entirely than to participate alone or in person, although this effect is not statistically significant. The same is true of high income households, although the effect is statistically significant (at the 10% level) for the option of participating alone. Although household income has a mostly insignificant effect on whether or how individuals participate, the amount of schooling one has experienced is highly significant. As the years of education one has received increases, the probability that the individual will not participate at all decreases, relative to the options of participating alone or in person, *ceteris paribus*. This is significant at the 10% level, and a 1 standard deviation increase in years of education implies a 6.1 percentage point decrease in the probability that a person will drop out, given the alternative options of participating alone or in person. Furthermore, a 1 standard deviation increase in years of schooling implies a 6.2 percentage point increase in the probability that an individual will participate in person, given the other alternatives and holding all else constant. This is significant at the 1% error level.

While it is somewhat surprising that income and income inequality are not strongly significant, it could be the case that residents of Missoula, Montana look more to education for their identity. This might be due to the fact that highly skilled workers in Montana face the largest wage-cuts (Barrett, 1999), and with compressed wages, income differentials are smaller and less important. Additionally, since wage compression is greatest among the most highly skilled (and, by extension, mobile) workers, the fact that they elect to stay in Montana suggests that income is not the most important factor in Montanans' utility or identity. In Missoula, in particular, the presence of the university may cause a more natural rift between social groups. Rather than people identifying primarily as high or low income, they may identify as modestly or highly educated. The following section applies education to equation 5.1 to examine this further.

5.2.2 Educational inequality

Table 5.3 on page 55 shows results from equation 5.1 using educational inequality. The independent variables of interest are the Gini index and the Thiel index on estimated years of schooling; Model 4 in Table 5.3 uses the Gini, and Model 5 uses the Thiel index. As before, a multinomial logit model is used to predict the relative probability of dropping out of civic participation all together, participating alone, and participating in person. For both models, the Wald test and the LR test for combining outcome categories indicate that these three outcomes cannot be collapsed into a binomial regression. The IIA assumption holds for Model 4 under the Hausman and the Small-Hsiao tests, although Model 5 fails the Small-Hsiao test when the option of participating alone is omitted. Finally, both models are adjusted by sampling weights, and the standard errors are clustered by neighborhood, which also corrects for heteroskedasticity.

Compared to the previous models, those using educational inequality to proxy for a community's heterogeneity are more supportive of the hypothesis that increased inequality dissuades individuals from engaging in community development via groups. A 1 standard deviation increase in the education Gini index implies a 3 percentage point increase in the probability that an individual will participate alone, relative to the options of participating in person or not at all, *ceteris paribus*. Similarly, a 1 standard deviation increase in the Thiel index of education implies a 3.3 percentage point increase in the probability that someone will participate alone, given the other options. In both cases, these effects are significant at the 1% error level. Nevertheless, when given the option to participate alone—in addition to the option of participating in person—increasing education inequality decreases the probability that and individual will choose not to participate at all. Relative to the other options, the same 1 standard deviation increase in the education Gini and education Thiel indices imply 3.5 and 3.2 percentage point decreases, respectively, in the probability that an individual will drop out entirely, holding all else constant. These last effects are significant at the 10% error level.

So, as inequality increases, people participate more, but they do so alone.

Table 5.3: Marginal effects of education inequality on participation type

	Multinomial Logit					
	Dependent variable = Participation Type					
	Model 4			Model 5		
	None	Alone	In person	None	Alone	In person
Female	-0.0541	0.00907	0.0450	-0.0529	0.00868	0.0441
	(0.0301)	(0.0385)	(0.0283)	(0.0300)	(0.0386)	(0.0279)
Age	-0.0235***	0.00826	0.0153**	-0.0233***	0.00811	0.0152**
	(0.00559)	(0.00615)	(0.00579)	(0.00563)	(0.00622)	(0.00579)
Age^2	0.000220***	-0.0000771	-0.000143*	0.000218***	-0.0000755	-0.000142*
	(0.0000541)	(0.0000620)	(0.0000568)	(0.0000543)	(0.0000622)	(0.0000566)
Homeowner	-0.166**	-0.0246	0.179**	-0.166**	-0.0247	0.178**
	(0.0574)	(0.0513)	(0.0611)	(0.0575)	(0.0512)	(0.0609)
Years at	-0.00401*	0.000991	0.00301	-0.00399*	0.00103	0.00296
current res.	(0.00188)	(0.00215)	(0.00167)	(0.00187)	(0.00214)	(0.00166)
Working	-0.0654	0.114*	-0.0467	-0.0636	0.112*	-0.0469
	(0.0459)	(0.0506)	(0.0525)	(0.0460)	(0.0504)	(0.0522)
Married	0.0964*	-0.0317	-0.0687	0.0965*	-0.0321	-0.0683
	(0.0464)	(0.0586)	(0.0474)	(0.0465)	(0.0581)	(0.0472)
Household	-0.0561*	0.0219	0.0342	-0.0558*	0.0218	0.0340
size	(0.0250)	(0.0345)	(0.0410)	(0.0248)	(0.0344)	(0.0408)
Number of	0.00326	-0.0430	0.0398	0.00326	-0.0430	0.0397
children	(0.0241)	(0.0416)	(0.0396)	(0.0240)	(0.0414)	(0.0394)
Estimated yrs.	-0.0221*	0.000705	0.0214***	-0.0221*	0.000698	0.0214***
of schooling	(0.0106)	(0.00804)	(0.00636)	(0.0106)	(0.00800)	(0.00633)
Student	-0.0192	-0.143*	0.152*	-0.0215	-0.139*	0.151*

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	Multinomial Logit					
	Dependent variable = Participation Type					
	Model 4			Model 5		
	None	Alone	In person	None	Alone	In person
	(0.0475)	(0.0700)	(0.0692)	(0.0474)	(0.0695)	(0.0698)
Low income	0.0491	0.00802	-0.0557	0.0524	0.00448	-0.0552
	(0.0760)	(0.0375)	(0.0642)	(0.0772)	(0.0385)	(0.0643)
High income	0.0370	-0.115*	0.0750	0.0360	-0.115*	0.0759
	(0.0337)	(0.0498)	(0.0425)	(0.0337)	(0.0501)	(0.0426)
Educaton Gini	-3.848*	3.089***	0.759			
	(1.872)	(0.854)	(1.612)			
Thiel index				-1.187	1.220***	-0.0321
of education				(0.650)	(0.287)	(0.648)
Mean house-	0.0964	-0.0115	-0.0849	0.0766	0.0106	-0.0872
hold size	(0.0579)	(0.0526)	(0.0690)	(0.0557)	(0.0513)	(0.0707)
Mean yrs.	-0.0106	-0.0223	0.0329	-0.0229	-0.0186	0.0414
of education	(0.0343)	(0.0219)	(0.0360)	(0.0320)	(0.0189)	(0.0344)
Mean	0.000660	0.000823	-0.00148	0.00100	0.000613	-0.00162
income	(0.00107)	(0.000667)	(0.00100)	(0.00105)	(0.000676)	(0.00105)
Number of	-0.00107	0.00182	-0.000754	-0.000686	0.00113	-0.000440
households	(0.00385)	(0.00312)	(0.00438)	(0.00385)	(0.00299)	(0.00451)
N		682			682	
Pseudo R-square		0.1117			0.1121	

Standard errors in parentheses and clustered around neighborhood

Results adjusted for sampling weights

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The effects of the other control variables are consistent with what might be expected and what was discussed in the previous section. Holding everything else constant, homeowners are significantly less likely to drop out and more likely to participate in person, as are people with more years of schooling. Conversely, those who work and those with high household incomes are more likely to participate alone, *ceteris paribus*. Finally, with all else constant, a 1 standard deviation increase in the number of years one has lived at his or her current residence decreases the probability that the individual will choose not to participate at all by 4.8 percentage points, relative to the alternatives, in both models, and this is significant at the 10% error level.

5.2.3 Individual differences

Recall from equation 3.4 on page 21 that our theory specifies an individual's utility from participating is made smaller by $\bar{t}|c_i - c_j^*|$, or by the weighted absolute difference between that person's characteristics and the ideal characteristics of the community. Empirical tests of this theory can be difficult, however, if there is no clear proxy for the community's ideal and no clear indication of exactly what characteristics are pivotal in developing a sense of identity. This study assumes that individuals look to relative income and education levels to determine into which social category their characteristics best fit, but finding a good instrument for the ideal characteristics of a community is harder. Nevertheless, four general measurements were settled upon to proxy for the ideal: the neighborhood mean, the neighborhood median, the neighborhood maximum value, and the mean of those in the neighborhood who participate in person. All four are calculated for income and estimated years of education. Then, the absolute values of the differences between an individual's income (or years of education) and the mean, median, maximum, and participant mean income (or years of education) give 4 different approximations for the difference term ($|c_i - c_j^*|$) from the theoretical model. The first 3 measures assume individuals infer how groups might be composed by looking at their entire neighborhood, the 4^{th} measure assumes that people know something about the characteristics of those who all ready attend meetings in person.

The multinomial regressions follow from equation 5.1, but use the absolute value of the individual's distance from the ideal instead of traditional measurements of inequality. Each of the eight regressions passes the Wald and LR tests for combining outcome categories, and IIA assumptions hold under the Hausman and Small-Hsiao tests for nearly all of the models. The IIA assumption does not hold under the Small-Hsiao test when omitting the option of participating alone and using the absolute value of the difference between an individual's estimated years of education and the median years of education within the neighborhood. As before, sampling weights and standard errors clustered by neighborhood are used. For simplicity, Table 5.4 on page 59 gives the marginal effects of only the difference terms, our interest variables. Full tables for each of the regressions appear beginning on page 85 in Appendix C.

Unfortunately, none of the approximations of distance from the ideal appears to be appropriate. While the absolute value of the difference between individual income and the maximum income in the neighborhood has a significant effect on whether a person will drop out, given the other two choices, it is only significant at the 10% error level. There are at least four possible explanations for why these models do not support the theory. First, the neighborhood boundaries, as defined by the city of Missoula, may not correspond to the communities with which people identify. It may be more likely that individuals compare themselves to the larger population of Missoula or, alternately, those living on the same street, block, or subdivision. Informal observations support this explanation. Frequently, respondents would be surprised at the size of their neighborhood when showed a map of it. And despite being shown that map, when respondents were asked to compare their own household the others in their neighborhood, they would often begin by describing the other homes on the same street or block. Furthermore, only 32% of respondents said they knew their neighborhood's name, and of those who said they knew the name, only 63% gave the correct name. Second, there may be a behavioral asymmetry between people below the ideal and those above it. Since we take the absolute value of the distance from the ideal, the model does not differentiate between these two groups, and opposite behavior between them would bias the estimates.

Another possibility is that the mean, median, and maximum do not capture the set of ideal characteristics referred to in the theoretical model. Finally, of course, the results in Table 5.4 may not support the theory because the theory simply may be incorrect. Based on the results in Tables 5.2 and 5.3, however, measurement error seems a more likely explanation.

Future research might look for smaller and more natural spatial divisions with which people might identify, or it might stratify on cities or towns within a region, rather than neighborhoods within a single city. Additionally, future studies should look for more evidence about what a community's ideal set of characteristics is. Asking about who respondents consider to be leaders in their community, for example, could provide valuable insight into how people identify as members of a civic body and how that influences patterns of participation.

Table 5.4: Marginal effects of difference terms on participation type

			Dependent variable = Participation type			Pseudo
Model		Variable	None	Alone	In Person	R-square
6a	Abs	(individual inc. – mean neighborhood inc.)	-0.000432 (0.000340)	0.000184 (0.000330)	0.000248 (0.000369)	0.1104
6b	Abs	(individual ed. – mean neighborhood ed.)	-0.00343 (0.00891)	0.00450 (0.0112)	-0.00107 (0.00991)	0.1096
7a	Abs	(individual inc. – median neighborhood inc.)	-0.000444 (0.000331)	0.000179 (0.000390)	0.000266 (0.000375)	0.1105
7b	Abs	(individual ed. - median neighborhood ed.)	-0.00213 (0.00899)	0.0000562 (0.0104)	0.00207 (0.00840)	0.1095
8a	Abs	(individual inc. – maximum neighborhood inc.)	-0.000164* (0.0000831)	0.000111 (0.000116)	0.0000528 (0.0000910)	0.1105
8b	Abs	(individual ed. – maximum neighborhood ed.)	-0.00213 (0.00899)	0.0000562 (0.0104)	0.00207 (0.00840)	0.1095
9a	Abs	(individual inc. — mean inc. of neighborhood participants)	-0.000225 (0.000254)	0.000385 (0.000285)	-0.000160 (0.000357)	0.1103
9b	Abs	(individual ed. – mean ed. of neighborhood participants)	-0.00289 (0.00940)	0.00895 (0.0116)	-0.00606 (0.00872)	0.1100

Standard errors in parentheses and clustered around neighborhood
Results adjusted for sampling weights
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Chapter 6

Conclusion

This study began by adapting Akerlof and Kranton's identity-augmented utility model to explain how community-level heterogeneity and individual deviation from the ideal characteristics of one's social group can lead to decreased participation in local government and community development activities. The theory predicted that the further a person's characteristics are from the ideal—regardless of whether the characteristics are above or below the ideal—the smaller the benefits from participation and the less likely that person will be to participate. Furthermore, as the distribution of individual characteristics within a community gets wider, overall participation will drop from both sides of the distribution. The theory also predicted, however, that the negative effects of participation can be mitigated when civic institutions become more responsive to the input of constituents.

To test the implications of the theoretical model, data were gathered from over 680 households in the city of Missoula, Montana between July 2006 and January 2007. Respondents answered questions about socioeconomic status, participation behavior, perceptions about their relative socioeconomic position, as well as their political attitudes. Responses to questions on income and educational attainment were used to calculate inequality measurements for income and education within each of the 17 neighborhoods defined by the city.

Based on their responses to questions about participation history, respondents were categorized as either not participating at all, participating alone, or participating personally in groups. Next, we informally adapted the theoretical model to account for the additional option of participating alone and predicted that inequality could increase overall participation while still decreasing group participation, given this new category. Using a multinomial logit model and numerous estimates of wealth and educational inequality, we found that increases in inequality decrease the probability that people will drop out and increases the probability that they will participate alone. This effect was especially pronounced under educational inequality. To gain deeper understanding of this effect, subsequent research should aim to formalize the theoretical model of how inequality influences participation under a 3^{rd} option of participating alone, which is increasingly available given the predominance of electronic media and communication.

In some respects, the fact that educational inequality has a stronger impact on civic participation than income inequality is encouraging, since the policy implication is that governments can stimulate civic participation by directing more resources toward education and targeting those who traditionally receive the least amount of schooling. Such a program is underway, for example, in Mexico, where the government subsidizes girls' education more than boys' (who already are more likely to stay in school) under the *PROGRESA* program. Indeed, while staggeringly difficult, promoting universal education is less daunting a task than equalizing wages across all members of a population.

Tests of the effect of individual distance from community ideals were inconclusive, although the possible reasons for this offer some direction for ensuing research. Future studies should carefully consider other spatial references to which individuals may look when developing a sense of identity as members of a social or political group. These references could be broader, such as cities across a region, or they could be narrower, such as subdivisions, blocks, or streets within a city. Furthermore, additional attention should be paid to how people might conceive of community ideals and how social scientists might measure or proxy for those ideals. An obvious place to begin would be a thorough examination of elected leaders within communities. This could occur directly, by surveying leaders, or indirectly, by asking citizens about their conceptions of what qualities a leader should have.

Finally, an interesting implication of the theoretical model that did not get explored regards the way increased responsiveness of civic institutions to political voice might assuage the negative effects of inequality on participation. At a time when so many feel disenfranchised from the political decision making process, this question may become increasingly relevant to citizens and policy makers, alike.

Appendix A

The Survey

A.1 Survey design

A.1.1 Questionnaire development

The objective of the questionnaire was to profile the patterns of civic engagement, attitudes, and basic demographic information of its respondents. To facilitate comparison, questions regarding respondents' participation are identical to those in the earlier *Citizen Participation Survey of Missoula, Montana,* a telephone survey commissioned by the Missoula Local Government Study Commission and conducted by the Behavior Research Center (2005).[1] In Section 4, question 7 on trust, which Uslaner and Brown (2005) describes as "standard" and indicative of "...a worldview stressing optimism and a sense of control: [that] the world is a good place ..." [p. 871], comes from the General Social Survey (Davis et al., 2002). Demographic questions generally followed the format of the US Census, although we included 2 additional categories for the question regarding marital status to incorporate individuals who

[1] Specifically, the questions taken from the Behavior Research Center were Section 2, question 5 (a – c) and Section 3, question 4 (a). In the case of the latter, the filter and the follow-up were the author's additions.

were engaged and individuals in non-married partnerships. The political scale and associated questions on the last page were adapted from an election survey developed by American National Election Studies (2000).

The remaining questions are original. In composing and revising the questionnaire, we tried to account for all possible ways respondents might answer questions, and we paid particular attention to using neutral language and filters where appropriate. Teams of 2 enumerators first piloted the questionnaire on 9 subjects in order to identify logical inconsistencies, sources of linguistic confusion, omitted responses, and sources of respondents' negative emotional reactions (i.e., shame for lack of participation). During this pilot, respondents were asked to describe how they interpreted each question after it was asked and were encouraged to suggest ways to improve or clarify the question. Following extensive revision, a second pilot surveyed 9 new respondents. Objectives were similar to those of the first pilot, but respondents did not generally have the opportunity to offer feedback until the end of the session. After another round of revisions, we conducted a third pilot of the survey, revised accordingly, and settled on a final version. During the piloting stage, respondents were selected from friends, family, acquaintances, and colleagues. The final version of the questionnaire appears on page 65.

A.1.2 Sampling Method

The survey followed a stratified random sample, where the strata were a census of 17 neighborhoods in the city of Missoula. Within each stratum, 40 households were randomly selected. The randomized sampling followed the steps below:

1. Overlaying a map of each neighborhood with a grid, blacking out squares on the grid representing areas without residences[2], and numbering remaining squares on the grid.

[2]Satellite images from http://maps.google.com/ helped distinguish residential areas from commercial or non-populated areas.

2. Using the random-number generator on Stata Statistical Software to select 50 of the remaining squares.[3]

3. Starting at the selected point, enumerators used coin-flips to determine the side of the street and direction they would work, wrapping around dead ends if necessary, until finding a willing respondent. [4]

A.1.3 The Interview

Enumerators worked in teams of 2 for safety and support. Each enumerator took an online course and assessment in the ethical treatment of human subjects, hosted by The University of Montana Institutional Review Board. Accordingly, their primary responsibility was to insure that respondents were informed of their rights and the nature of the survey before giving their consent to take it. After gaining informed consent, 1 enumerated asked questions and recorded answers, and the other handed the respondent maps and supplementary cards. The entire survey took about 15 minutes, although interview times ranged from 10 minutes to almost an hour. The enumerators estimated a 30% – 45% response rate, although we neglected to formally record this. Of those who agreed to take the survey, approximately 5% – 7.5% stopped it early, almost exclusively due to an unwillingness to share information about household income.

A.2 The Questionnaire

The questionnaire appears on the next page. Enumerators read the introduction to every respondent and checked for understanding. They read text in bold face aloud, and directions

[3]The additional 10 squares accounted for the possibility that not every square would yield a respondent.

[4]For the case of apartment buildings, coin-flips would be used to determine the floor to be surveyed. Enumerators proceeded, knocking on every door (save for those prohibiting solicitation)

are in all capital letters. Certain questions refer to cards that begin on page 75. Each card has a number referring to the section and number of the question to which it corresponds.

Missoula Participation Survey

Jennifer Alix-Garcia & Benjamin Harris
Department of Economics
University of Montana

Your household was randomly selected to help in a University of Montana student thesis about how inequality and people's sense of identity with some groups, but not others, influences their decision to participate in local government. The survey has no commercial value, and will take less than 15 minutes. Your identity will remain entirely anonymous, and you may choose to stop the survey at any point. This survey is approved by the University of Montana, and its results will be summarized and available at the U of M Mansfield Library and Department of Economics by fall, 2007.

Summer, 2006

Missoula Participation Survey

Neighborhood Code:_____________
Address:__________________________
Surveyor Code:_____________
Date:_____________
Survey Number:_____________
Time:_____________

1 Demographics

Instructions. First, I am going to ask you some basic questions about you and your household. Please answer to the best of your knowledge and make educated guesses if necessary.

1. **How many years have you lived in Missoula?** IF LESS THAN A YEAR, CODE < 1. _____________
2. **How many years have you lived in your current residence?** IF LESS THAN A YEAR, CODE < 1. _____________
3. **Do you rent your home, or do you own it?**
   ☐ 1 Rent ☐ 2 Own
4. GENDER:
   ☐ 1 Male ☐ 2 Female
5. **How old are you?** _____________
6. **Please look at this card and tell me the number corresponding to the highest degree or level of schooling you have completed.** IF ANSWER < 6 $\Longrightarrow$ Q.8. _____________
7. **Are you currently a college student?**
   ☐ 1 Yes ☐ 2 No
8. **Have you been employed for pay in the past 6 months**?
   ☐ 1 Yes ☐ 2 No $\Longrightarrow$ Q. 10
9. **Please look at this card and tell me the number corresponding to your average work week.** THIS QUESTION REFERS TO THE PAST 6 MONTHS. _____________
10. **Please look at this card and tell me the number of the response that best describes your marital status.** _____________
11. **How many people live in your household?** _____________
12. **How many of these people are 18 or over?** THOSE OVER 18 YEARS OF AGE ARE CONSIDERED ADULTS. _____________

13. IF THERE ARE CHILDREN IN THE HOUSEHOLD: **How many of the children living in the household are under 5 years old?**____________

14. IF NO OTHER ADULTS LIVE IN THE HOUSEHOLD ⟹ Q.15. FOR THE FIRST OTHER ADULT IN THE HOUSEHOLD, COMPLETE QUESTIONS a-h. FOR SUBSEQUENT OTHER ADULTS, PLEASE ATTACH SUPPLEMENTARY QUESTIONS.

(a) **What is his/her gender?**

☐ 1 Male ☐ 2 Female

(b) **What is his/her age?** ________________________

(c) **Please look at this card and tell me the number corresponding to the highest degree or level of schooling this person has completed.** ________________________
IF ANSWER $< 6 \Longrightarrow$ e.

(d) **Is this person currently a college student?**

☐ 1 Yes ☐ 2 No

(e) **Has this person been employed for pay in the past 6 months**?

☐ 1 Yes ☐ 2 No ⟹ Q. g

(f) **Please look at this card and tell me the number corresponding to his/her average work week.** THIS QUESTION REFERS TO THE PAST 6 MONTHS. ____________

(g) **Please look at this card and tell me the number of the response that best describes this person's marital status.** ____________

15. Please look at this card and tell me the number of the income group that includes your household's total before-tax income in 2005. THIS FIGURE INCLUDES SALARIES, WAGES, PENSIONS, DIVIDENDS, INTEREST, AND ALL OTHER INCOME OF ALL THE ADULTS IN THE HOUSEHOLD. IF RESPONDENT SAYS "DON'T KNOW", PROBE WITH "WHAT WOULD BE YOUR BEST ESTIMATE?" ____________

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2 Community Participation

Instructions. Fewer than half of eligible Americans vote in Presidential elections, and participation in other democratic activities is also infrequent. I am going to ask you some questions about how you and your household participate in your community, but I want to emphasize that there is no right or wrong answer to a question.

1. **Are you registered to vote in the US?**

   ☐ 1 Yes ☐ 2 No ⟹ Q. 5

2. **Did you vote in the last presidential elections?**

   ☐ 1 Yes ☐ 2 No ☐ 9 Don't know/Can't remember

3. **Are you registered to vote in Missoula?**

   ☐ 1 Yes ☐ 2 No ⟹ Q. 5

4. **Did you vote in last November's election for mayor?**

   ☐ 1 Yes ☐ 2 No ☐ 9 Don't know/Can't remember

5. **The next set of questions concerns your household's participation over the past 12 months in various local government meetings. By participation, I mean watching a recording of the meeting on MCAT (our local public access television station), reading a transcript of the meeting, or actually attending in person. All three of these activities count equally as participating. I will ask you about a few different kinds of meetings.**

   (a) **City Council meetings?**

   ☐ 1 Yes ⟹ ☐ 1 In person ☐ 2 MCAT ☐ 3 Read transcript
   ☐ 2 No

   (b) **City Boards or Commissions?**

   ☐ 1 Yes ⟹ ☐ 1 In person ☐ 2 MCAT ☐ 3 Read transcript
   ☐ 2 No

   (c) **Homeowners' Association Meetings?**

   ☐ 1 Yes ⟹ ☐ 1 In person ☐ 2 MCAT ☐ 3 Read transcript
   ☐ 2 No

6. **In the last 12 months, have you (or any other adult) in your household attended a school board meeting?**

   ☐ 1 Yes ☐ 2 No

7. **Are there any other meetings related to local planning that you (or any other adult) in your household attended in the last 12 months?**

   ☐ 1 Yes ☐ 2 No

8. **In the last 12 months, have you (or any other adult) in your household contacted a public official** (LOCAL OR OTHERWISE) **to register a complaint or comment?**

   ☐ 1 Yes ☐ 2 No

9. **In the last 12 months, have you (or any other adult) in your household written a letter to the editor of a newspaper?**

   ☐ 1 Yes ☐ 2 No

10. **In the last 12 months, have you (or any other adult) in your household volunteered for any political activities (local or otherwise)?**

    ☐ 1 Yes ☐ 2 No

11. **In the last 12 months, have you (or any other adult) in your household participated in any other volunteer activities, such as at the Food Bank, River Cleanups, or through your religious community?**

    ☐ 1 Yes ☐ 2 No

    (a) **If you answered "yes" to the previous question, please list the volunteer activity or activities:**

    ____

    ____

5

3 Neighborhood participation

Instructions. In 1999, the city of Missoula established 17 neighborhood councils. They cover the entire city boundaries, and their purpose is to meet and report local issues and give local advice to the city council. Neighborhood councils are not the same as homeowners' associations. Now, to follow up after the previous section, I am going to ask you some questions about your neighborhood council

1. **Your neighborhood council meets under a specific name. Do you happen to know what that name is?**
   ☐ 1 Yes:____________________________________
   ☐ 2 No
   (a) DID THE RESPONDENT GIVE THE CORRECT NEIGHBORHOOD COUNCIL NAME?
   ☐ 1 Yes ☐ 2 No ☐ 9 Not applicable
2. **Do you know how to find out when and where your next neighborhood council meeting will be held?**
   ☐ 1 Yes $\Longrightarrow$ Q. 3 ☐ 2 No
   (a) **Is this because you have no desire to, or because you're not sure how find out about your neighborhood council?**
   ☐ 1 No desire ☐ 2 Not sure where to look
3. **To the best of your knowledge, have you or anyone in your household ever been contacted by your neighborhood council, either to invite you to an upcoming meeting or to inform you about important issues from recent meetings?**
   ☐ 1 Yes ☐ 2 No $\Longrightarrow$ Q. 4
   (a) **How were you contacted?** CHOOSE ALL THAT APPLY.
   ☐ 1 Mail ☐ 2 Newsletters ☐ 3 Telephone ☐ 4 In person
4. **Within the last 12 months, have you known about an upcoming neighborhood council meeting?**
   ☐ 1 Yes ☐ 2 No $\Longrightarrow$ Section 4
   (a) **Did you (or any of the other adults in your household) participate, either by watching MCAT, reading a transcript, or attending in person?**
   ☐ 1 Yes $\Longrightarrow$ ☐ 1 In person ☐ 2 MCAT ☐ 3 Read transcript
   ☐ 2 No
   (b) **If you knew about a meeting within the last 12 months, but chose not to participate, why didn't you? Please look at this card and tell me the number or numbers that best describe why you did not go.** CHOOSE ALL THAT APPLY.
   ____

4 Attitudes

Instructions. Finally, I am going to ask you questions about both your attitudes and how you perceive yourself in relation to others. Do not worry if you don't know exactly where you stand – we are interested in your impressions rather than your ability to exactly assess your position in relation to your neighbors.

SHOW THE RESPONDENT THE MAP OF HIS OR HER NEIGHBORHOOD FOR REFERENCE TO QUESTIONS 1–4.

1. **Compared to the rest of the households in *your neighborhood*, do you feel your household's income is far above average, above average, average, below average, or far below average?**

Far below average	Below average	Average	Above average	Far above average
☐	☐	☐	☐	☐
1	2	3	4	5

2. **Compared to the rest of the households in *your neighborhood*, do you feel the education of the adults in your household is far above average, above average, average, below average, or far below average?**

Far below average	Below average	Average	Above average	Far above average
☐	☐	☐	☐	☐
1	2	3	4	5

3. **Compared to the rest of the households in the city of *Missoula*, do you feel your household's income is far above average, above average, average, below average, or far below average?**

Far below average	Below average	Average	Above average	Far above average
☐	☐	☐	☐	☐
1	2	3	4	5

4. **Compared to the rest of the households in the city of *Missoula*, do you feel the education of the adults in your household is far above average, above average, average, below average, or far below average?**

Far below average	Below average	Average	Above average	Far above average
☐	☐	☐	☐	☐
1	2	3	4	5

5. We hear a lot of talk these days about liberals and conservatives. Please look at this list of political figures and organizations and a 7-point scale on which the political views that people might hold are arranged from extremely liberal (1) to extremely conservative (7). I'll need you to rate these people and organizations on that scale, and "don't know" is an option if you're unfamiliar with any or all of them.

(a) **Where would you place .... on this scale?**

	Extremely Liberal						Extremely Conservative	Don't know
George Bush	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 9
Brian Schweitzer	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 9
Max Baucus	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 9
Conrad Burns	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 9
Republican Party	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 9
Democratic Party	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 9

(b) **Where would you place yourself on this scale (give a number), or have you not thought about this?**

☐ ______________

☐ 9 Have not thought about it⟹(d)

(c) IF THE RESPONDENT ANSWERED # 4 **If you had to choose would you consider yourself a liberal or a conservative?**

☐ 1 Liberal ⟹ 6 ☐ 2 Conservative ⟹ 6

(d) IF THE RESPONDENT HAS NOT THOUGHT ABOUT IT: **If you had to choose would you consider yourself a liberal or a conservative?**

☐ 1 Liberal ☐ 2 Conservative

6. Regardless of your voting history, do you generally think of yourself as a Republican, a Democrat, an Independent, or do you not identify with a political party?

☐ 1 Republican ☐ 2 Democrat ☐ 3 Independent ☐ 4 Do not identify with a political party

7. Generally speaking, do you believe that:

☐ 1 Most people can be trusted ☐ 2 You cannot be too careful in dealing with people

THE END: THANK YOU VERY MUCH FOR PARTICIPATING IN THIS SURVEY

Education (1.6)

1. No schooling attended
2. Junior high school (8th grade)
3. High school (12th grade) or GED
4. Trade school or apprenticeship (includes military service)
5. Associate Degree
6. Bachelor's Degree
7. Post-baccalaureate
8. Master's Degree
9. Professional Degree (e.g., MD, DDS, DVM, LLB, JD)
10. Doctorate Degree

Average Number of Hours Worked in a Week (1.9)

1. Less than 10
2. 11–20
3. 21–30
4. 31–40
5. More than 40

Marital Status (1.10)

1. Single
2. Engaged
3. Married
4. Widowed
5. Divorced
6. In a long-term non-married partnership

Income (1.15)

1. None or less than $2,999
2. $3,000–$4,999
3. $5,000–$6,999
4. $7,000–$8,999
5. $9,000–$10,999
6. $11,000–$12,999
7. $13,000–$14,999
8. $15,000–$16,999
9. $17,000–$19,999
10. $20,000–$21,999
11. $22,000–$24,999
12. $25,000–$29,999
13. $30,000–$34,999
14. $35,000–$39,999
15. $40,000–$44,999
16. $45,000–$49,999
17. $50,000–$59,999
18. $60,000–$69,999
19. $70,000–$79,999
20. $80,000–$89,999
21. $90,000–$104,999
22. $105,000–$119,999
23. $120,000 and above

Reasons for Not Attending Neighborhood Council (3.4.b)

1. Cost of childcare
2. Cost of transportation
3. Lack of transportation
4. Lack of time or scheduling conflict
5. Did not feel like it was important
6. Did not feel like I would make a difference
7. Did not feel welcome
8. Other

Political Scale and List (4.5.a)

Extremely Liberal						Extremely Conservative
1	2	3	4	5	6	7

1. Bush
2. Schewitzer
3. Baucus
4. Burns
5. National Republican Party
6. National Democratic Party

Appendix B

Neighborhoods

In 1996, the City of Missoula voted to establish 17 Neighborhood Councils. Collectively, the councils cover the entire boundaries of the city, as shown in Figure B.1 on page 80. Neighborhood Councils are fora for closer communication between the City Council and the citizenry. As such, they serve in a primarily advisory capacity with little legal authority. Nevertheless, some councils have had considerable influence over public planning.[1] They also play an important role in nurturing community development projects—particularly beautification projects.

Throughout this study, we refer to the neighborhoods alternately by their city-designated names and by the arbitrary numbers assigned to them during the survey and data entry stages of the project. The number system, used mostly in tables to save space, is as follows:

1. Grant Creek
2. Westside

[1] For example, the Grant Creek Neighborhood Council spearheaded opposition to an existing gas station's proposal to begin offering electronic gambling machines. In 1995, the gas station's plans were withdrawn, specifically on account of the public outcry (Merriam, December 8, 2005).

3. Emma Dickenson / Orchard Homes
4. Franklin to the Fort
5. Southgate Triangle
6. South 39th Street
7. Miller Creek
8. Moose Can Gully
9. Farviews / Pattee Canyon
10. Lewis & Clark
11. Rose Park
12. Riverfront
13. University District
14. Heart of Missoula
15. Lower Rattlesnake
16. Upper Rattlesnake
17. Northside

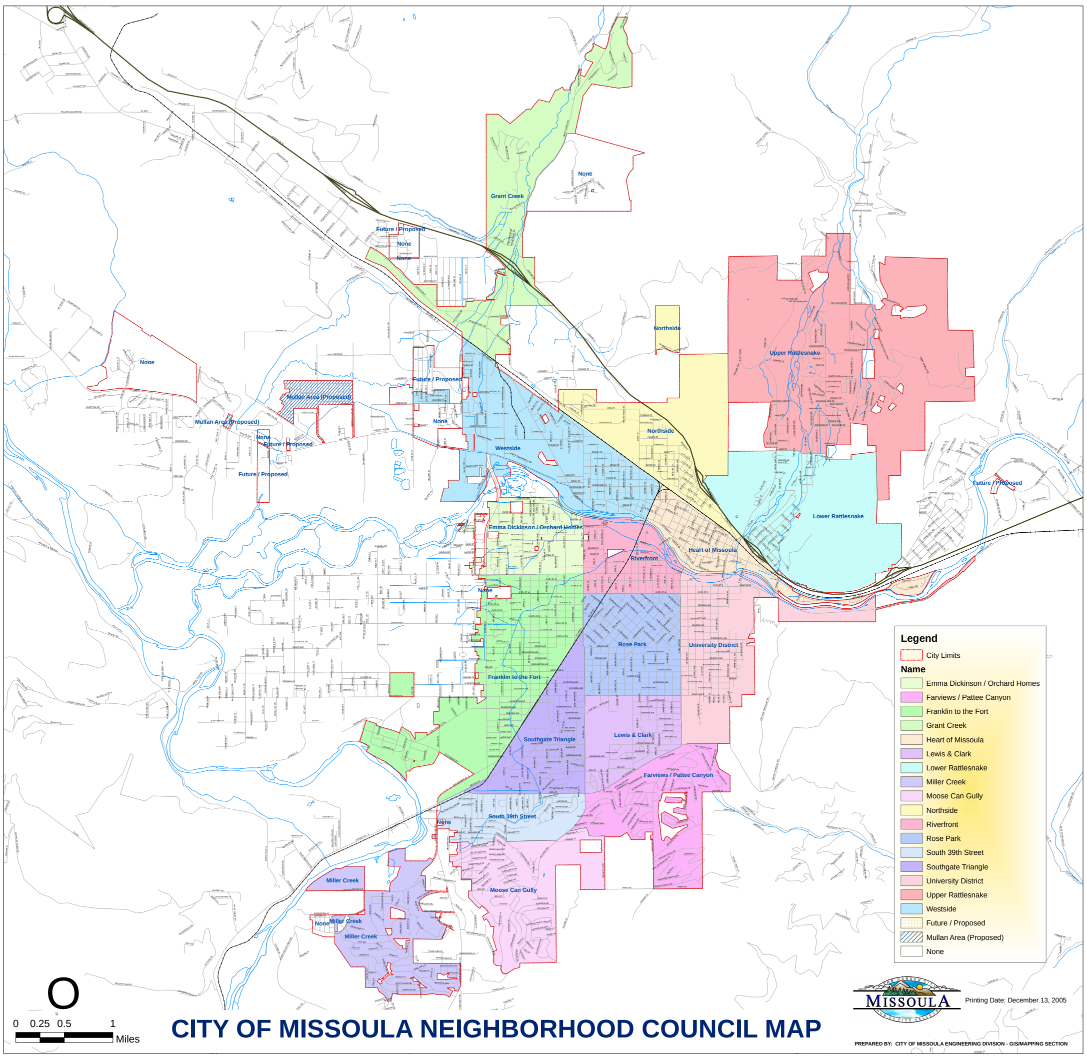

Figure B.1: Missoula Neighborhood Councils

Appendix C

Regression Tables

Table C.1: Coefficients for participation on income inequality

	Dependent variable = Participation type					
	Model 1		Model 2		Model 3	
	None	Alone	None	Alone	None	Alone
Female	-0.341*	-0.116	-0.342*	-0.116	-0.344*	-0.117
	(0.164)	(0.195)	(0.165)	(0.195)	(0.164)	(0.196)
Age	-0.130***	-0.0252	-0.130***	-0.0251	-0.134***	-0.0261
	(0.0376)	(0.0370)	(0.0376)	(0.0370)	(0.0371)	(0.0366)
Age^2	0.00120***	0.000235	0.00120***	0.000235	0.00124***	0.000246
	(0.000361)	(0.000366)	(0.000361)	(0.000366)	(0.000355)	(0.000362)
Homeowner	-1.213**	-0.657	-1.213**	-0.657	-1.191**	-0.655
	(0.381)	(0.337)	(0.381)	(0.337)	(0.377)	(0.335)
Years at	-0.0241*	-0.00715	-0.0240*	-0.00715	-0.0237*	-0.00731
current res.	(0.0105)	(0.0111)	(0.0105)	(0.0111)	(0.0103)	(0.0110)
Working	-0.119	0.509	-0.120	0.509	-0.107	0.511

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Dependent variable = Participation type						
	Model 1		Model 2		Model 3	
	None	Alone	None	Alone	None	Alone
	(0.305)	(0.304)	(0.305)	(0.304)	(0.300)	(0.302)
Married	0.564*	0.121	0.564*	0.121	0.579*	0.125
	(0.274)	(0.303)	(0.274)	(0.303)	(0.274)	(0.302)
Household size	-0.309	-0.0445	-0.309	-0.0445	-0.313	-0.0458
	(0.209)	(0.233)	(0.209)	(0.233)	(0.206)	(0.234)
Number of children	-0.132	-0.264	-0.132	-0.264	-0.124	-0.265
	(0.173)	(0.245)	(0.173)	(0.245)	(0.170)	(0.245)
Estimated yrs. of education	-0.149**	-0.0687*	-0.149**	-0.0686*	-0.151**	-0.0686*
	(0.0555)	(0.0312)	(0.0555)	(0.0312)	(0.0555)	(0.0311)
Student	-0.493	-0.953*	-0.494	-0.952*	-0.520	-0.954*
	(0.355)	(0.432)	(0.355)	(0.432)	(0.356)	(0.431)
Low income	0.467	0.197	0.466	0.198	0.439	0.195
	(0.488)	(0.262)	(0.487)	(0.262)	(0.487)	(0.258)
High income	-0.130	-0.597*	-0.130	-0.597*	-0.124	-0.596*
	(0.206)	(0.268)	(0.206)	(0.268)	(0.208)	(0.269)
Lower-bound Income Gini	-3.408**	-0.175				
	(1.053)	(1.053)				
Upper-bound income Gini			-3.423**	-0.197		
			(1.060)	(1.049)		
Thiel index of income					-1.398	0.0143
					(0.780)	(0.432)
Mean household size	0.405	0.157	0.420	0.156	0.516	0.197
	(0.521)	(0.348)	(0.520)	(0.347)	(0.516)	(0.341)

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	Dependent variable = Participation type					
	Model 1		Model 2		Model 3	
	None	Alone	None	Alone	None	Alone
Mean yrs.	-0.497**	-0.121	-0.491**	-0.122	-0.491*	-0.102
of education	(0.178)	(0.163)	(0.177)	(0.162)	(0.207)	(0.163)
Mean	0.0178*	0.00799	0.0177*	0.00803	0.0153	0.00704
income	(0.00858)	(0.00497)	(0.00855)	(0.00494)	(0.00870)	(0.00432)
Number of	-0.000929	0.0162	-0.000638	0.0163	-0.0120	0.0144
households	(0.0240)	(0.0243)	(0.0241)	(0.0243)	(0.0250)	(0.0222)
Constant	13.49***	2.901	13.39***	2.917	12.59***	2.547
	(3.196)	(2.482)	(3.182)	(2.466)	(3.609)	(2.453)
N	682		682		682	
Pseudo R-square	0.1131		0.1131		0.1117	

Standard errors in parentheses and clustered around neighborhood

Results adjusted for sampling weights

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C.2: Coefficients for participation on education inequality

	Dependent variable = Participation type			
	Model 4		Model 5	
	None	Alone	None	Alone
Female	-0.359*	-0.117	-0.352*	-0.116
	(0.165)	(0.197)	(0.162)	(0.197)
Age	-0.142***	-0.0234	-0.141***	-0.0238
	(0.0370)	(0.0352)	(0.0371)	(0.0354)
Age^2	0.00133***	0.000220	0.00132***	0.000224
	(0.000353)	(0.000352)	(0.000353)	(0.000352)
Homeowner	-1.188**	-0.657*	-1.183**	-0.656*

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	Dependent variable = Participation type			
	Model 4		Model 5	
	None	Alone	None	Alone
	(0.387)	(0.332)	(0.386)	(0.331)
Years at current res.	-0.0256*	-0.00665	-0.0253*	-0.00634
	(0.0109)	(0.0110)	(0.0109)	(0.0109)
Working	-0.114	0.510	-0.105	0.507
	(0.294)	(0.302)	(0.293)	(0.300)
Married	0.619*	0.123	0.618*	0.120
	(0.266)	(0.302)	(0.268)	(0.300)
Household size	-0.332	-0.0421	-0.330	-0.0415
	(0.215)	(0.233)	(0.213)	(0.233)
Number of children	-0.116	-0.265	-0.116	-0.265
	(0.172)	(0.246)	(0.171)	(0.246)
Estimated yrs. of education	-0.157**	-0.0671*	-0.156**	-0.0671*
	(0.0587)	(0.0303)	(0.0583)	(0.0303)
Student	-0.529	-0.943*	-0.539	-0.932*
	(0.353)	(0.429)	(0.357)	(0.431)
Low income	0.369	0.206	0.379	0.193
	(0.474)	(0.254)	(0.476)	(0.255)
High income	-0.0843	-0.606*	-0.0914	-0.610*
	(0.212)	(0.273)	(0.211)	(0.276)
Education Gini	-17.64	7.274		
	(12.35)	(5.604)		
Thiel index of education			-4.578	3.957
			(4.670)	(2.435)

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	Dependent variable = Participation type			
	Model 4		Model 5	
	None	Alone	None	Alone
Mean Household size	0.655	0.239	0.585	0.316
	(0.433)	(0.358)	(0.430)	(0.364)
Mean yrs. of education	-0.149	-0.177	-0.224	-0.193
	(0.234)	(0.155)	(0.221)	(0.144)
Mean income	0.00741	0.00740	0.00921	0.00719
	(0.00691)	(0.00420)	(0.00699)	(0.00453)
Number of households	-0.00177	0.00819	-0.00128	0.00498
	(0.0273)	(0.0210)	(0.0280)	(0.0212)
Constant	9.108**	2.798	9.283**	2.956
	(3.434)	(2.076)	(3.405)	(1.918)
N	682		682	
Pseudo R-square	0.1117		0.1121	

Standard errors in parentheses and clustered around neighborhood

Results adjusted for sampling weights

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C.3: Coefficients of participation on difference from mean

	Multinomial Logit: base outcome is participating in person			
	Dependent variable = Participation type			
	Model 6a		Model 6b	
	None	Alone	None	Alone
Female	-0.335*	-0.118	-0.352*	-0.118
	(0.162)	(0.189)	(0.162)	(0.195)
Age	-0.141***	-0.0258	-0.138***	-0.0251
	(0.0371)	(0.0367)	(0.0361)	(0.0372)

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	Multinomial Logit: base outcome is participating in person			
	Dependent variable = Participation type			
	Model 6a		Model 6b	
	None	Alone	None	Alone
Age^2	0.00132***	0.000244	0.00129***	0.000234
	(0.000352)	(0.000364)	(0.000342)	(0.000371)
Homeowner	-1.191**	-0.659*	-1.175**	-0.657*
	(0.378)	(0.333)	(0.375)	(0.333)
Years at current res.	-0.0241*	-0.00733	-0.0240*	-0.00728
	(0.0104)	(0.0112)	(0.0102)	(0.0111)
Working	-0.0959	0.519	-0.120	0.510
	(0.290)	(0.304)	(0.292)	(0.301)
Married	0.615*	0.129	0.593*	0.131
	(0.274)	(0.308)	(0.272)	(0.311)
Household size	-0.324	-0.0471	-0.317	-0.0465
	(0.209)	(0.236)	(0.206)	(0.234)
Number of children	-0.120	-0.262	-0.121	-0.264
	(0.169)	(0.245)	(0.169)	(0.246)
Estimated yrs. of education	-0.154**	-0.0688*	-0.153**	-0.0729*
	(0.0563)	(0.0304)	(0.0516)	(0.0298)
Student	-0.518	-0.961*	-0.503	-0.960*
	(0.351)	(0.437)	(0.348)	(0.434)
Low income	0.431	0.206	0.386	0.198
	(0.476)	(0.255)	(0.466)	(0.251)
High income	-0.0415	-0.594*	-0.0870	-0.595*
	(0.205)	(0.244)	(0.212)	(0.270)
Abs(income - mean)	-0.00251	-0.000232		

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	Multinomial Logit: base outcome is participating in person			
	Dependent variable = Participation type			
	Model 6a		Model 6b	
	None	Alone	None	Alone
	(0.00226)	(0.00198)		
Abs(education - mean)			-0.00999	0.0176
			(0.0539)	(0.0612)
Mean income	0.0112	0.00705	0.00927	0.00694
	(0.00880)	(0.00454)	(0.00803)	(0.00364)
Mean yrs. of education	-0.343	-0.107	-0.326	-0.107
	(0.196)	(0.153)	(0.203)	(0.151)
Mean house-size	0.682	0.200	0.697	0.205
	(0.501)	(0.344)	(0.499)	(0.348)
Number of households	-0.0112	0.0129	-0.0117	0.0123
	(0.0274)	(0.0218)	(0.0280)	(0.0219)
Constant	10.01^{**}	2.632	9.762^{**}	2.639
	(3.396)	(2.250)	(3.465)	(2.242)
N	682		682	
Pseudo R-square	0.1104		0.1096	

Standard errors in parentheses and clustered around neighborhood

Results adjusted for sampling weights

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C.4: Coefficients of participation on difference from median

	Multinomial Logit: base outcome is participating in person			
	Dependent variable = Participation type			
	Model 7a		Model 7b	
	None	Alone	None	Alone
Female	-0.335*	-0.117	-0.351*	-0.119
	(0.161)	(0.187)	(0.163)	(0.196)
Age	-0.139***	-0.0255	-0.139***	-0.0263
	(0.0369)	(0.0367)	(0.0360)	(0.0366)
Age^2	0.00130***	0.000242	0.00129***	0.000247
	(0.000351)	(0.000363)	(0.000340)	(0.000364)
Homeowner	-1.181**	-0.659*	-1.172**	-0.658*
	(0.376)	(0.334)	(0.376)	(0.334)
Years at current res.	-0.0244*	-0.00742	-0.0240*	-0.00732
	(0.0101)	(0.0114)	(0.0101)	(0.0112)
Working	-0.0923	0.520	-0.118	0.514
	(0.287)	(0.303)	(0.289)	(0.301)
Married	0.622*	0.130	0.590*	0.122
	(0.279)	(0.308)	(0.269)	(0.312)
Household size	-0.320	-0.0476	-0.318	-0.0457
	(0.207)	(0.236)	(0.206)	(0.234)

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	Multinomial Logit: base outcome is participating in person			
	Dependent variable = Participation type			
	Model 7a		Model 7b	
	None	Alone	None	Alone
Number of	-0.122	-0.261	-0.121	-0.264
Children	(0.169)	(0.245)	(0.169)	(0.245)
Estimated yrs.	-0.153**	-0.0688*	-0.148**	-0.0662*
of education	(0.0563)	(0.0305)	(0.0525)	(0.0318)
Student	-0.511	-0.958*	-0.504	-0.962*
	(0.353)	(0.439)	(0.348)	(0.435)
Low income	0.330	0.197	0.386	0.201
	(0.451)	(0.259)	(0.464)	(0.251)
High income	0.0862	-0.580*	-0.0876	-0.594*
	(0.199)	(0.234)	(0.211)	(0.270)
Abs(income - median)	-0.00262	-0.000305		
	(0.00208)	(0.00222)		
Abs(education - median)			-0.0151	-0.00655
			(0.0501)	(0.0530)
Mean	0.0108	0.00726	0.00923	0.00686
income	(0.00863)	(0.00462)	(0.00803)	(0.00360)
Mean yrs.	-0.346	-0.108	-0.330	-0.108

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	Multinomial Logit: base outcome is participating in person			
	Dependent variable = Participation type			
	Model 7a		Model 7b	
	None	Alone	None	Alone
of education	(0.197)	(0.155)	(0.201)	(0.153)
Mean house-	0.674	0.200	0.697	0.204
hold size	(0.503)	(0.343)	(0.499)	(0.348)
Number of	-0.0113	0.0129	-0.0119	0.0124
households	(0.0275)	(0.0219)	(0.0278)	(0.0219)
Constant	10.07^{**}	2.631	9.770^{**}	2.636
	(3.416)	(2.296)	(3.461)	(2.240)
N	682		682	
Pseudo R-square	0.1105		0.1095	

Standard errors in parentheses and clustered around neighborhood

Results adjusted for sampling weights

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C.5: Coefficients for participation on difference from maximum

	Multinomial Logit: base outcome is participating in person			
	Dependent variable = Participation type			
	Model 8a		Model 8b	
	None	Alone	None	Alone
Female	-0.358^{*}	-0.117	-0.351^{*}	-0.119
	(0.163)	(0.195)	(0.163)	(0.196)
Age	-0.136^{***}	-0.0266	-0.139^{***}	-0.0263

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	Multinomial Logit: base outcome is participating in person			
	Dependent variable = Participation type			
	Model 8a		Model 8b	
	None	Alone	None	Alone
	(0.0365)	(0.0367)	(0.0360)	(0.0366)
Age^2	0.00127***	0.000251	0.00129***	0.000247
	(0.000347)	(0.000364)	(0.000340)	(0.000364)
Homeowner	-1.174**	-0.657*	-1.172**	-0.658*
	(0.378)	(0.334)	(0.376)	(0.334)
Years at	-0.0243*	-0.00734	-0.0240*	-0.00732
current residence	(0.0102)	(0.0111)	(0.0101)	(0.0112)
Working	-0.114	0.512	-0.118	0.514
	(0.299)	(0.301)	(0.289)	(0.301)
Married	0.584*	0.127	0.590*	0.122
	(0.274)	(0.304)	(0.269)	(0.312)
Household	-0.318	-0.0462	-0.318	-0.0457
size	(0.205)	(0.234)	(0.206)	(0.234)
Number of	-0.119	-0.265	-0.121	-0.264
children	(0.169)	(0.244)	(0.169)	(0.245)
Estimated yrs.	-0.152**	-0.0688*	-0.148**	-0.0662*
of education	(0.0550)	(0.0307)	(0.0525)	(0.0318)
Student	-0.530	-0.954*	-0.504	-0.962*
	(0.352)	(0.433)	(0.348)	(0.435)
Low income	0.428	0.189	0.386	0.201
	(0.489)	(0.259)	(0.464)	(0.251)
High income	-0.168	-0.578*	-0.0876	-0.594*

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	Multinomial Logit: base outcome is participating in person			
	Dependent variable = Participation type			
	Model 8a		Model 8b	
	None	Alone	None	Alone
	(0.199)	(0.253)	(0.211)	(0.270)
Abs(income - maximum)	-0.000816	0.000176		
	(0.000468)	(0.000610)		
Abs(education - maximum)			-0.0151	-0.00655
			(0.0501)	(0.0530)
Mean	0.0163^{*}	0.00534	0.00923	0.00686
income	(0.00811)	(0.00561)	(0.00803)	(0.00360)
Mean yrs.	-0.427^{*}	-0.0818	-0.330	-0.108
of education	(0.211)	(0.172)	(0.201)	(0.153)
Mean house-	0.669	0.212	0.697	0.204
hold size	(0.462)	(0.347)	(0.499)	(0.348)
Number of	-0.0158	0.0138	-0.0119	0.0124
households	(0.0281)	(0.0223)	(0.0278)	(0.0219)
Constant	11.10^{**}	2.282	9.770^{**}	2.636
	(3.696)	(2.502)	(3.461)	(2.240)
N	682		682	
Pseudo R-square	0.1105		0.1095	

Standard errors in parentheses and clustered around neighborhood

Results adjusted for sampling weights

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C.6: Coefficients for participation on difference from mean of participants

	Multinomial Logit: base outcome is participating in person			
	Dependent variable = Participation type			
	Model 9a		Model 9b	
	None	Alone	None	Alone
Female	-0.344*	-0.131	-0.351*	-0.114
	(0.165)	(0.191)	(0.161)	(0.194)
Age	-0.139***	-0.0239	-0.138***	-0.0236
	(0.0372)	(0.0365)	(0.0365)	(0.0373)
Age^2	0.00130***	0.000222	0.00128***	0.000219
	(0.000353)	(0.000363)	(0.000347)	(0.000372)
Homeowner	-1.180**	-0.649	-1.173**	-0.648
	(0.377)	(0.333)	(0.372)	(0.333)
Years at	-0.0240*	-0.00722	-0.0241*	-0.00735
current res.	(0.0102)	(0.0112)	(0.0101)	(0.0110)
Working	-0.119	0.504	-0.117	0.514
	(0.294)	(0.304)	(0.294)	(0.298)
Married	0.599*	0.116	0.600*	0.140
	(0.276)	(0.307)	(0.270)	(0.311)
Household	-0.318	-0.0423	-0.319	-0.0488
size	(0.208)	(0.235)	(0.207)	(0.234)
Number of	-0.125	-0.267	-0.120	-0.264
children	(0.169)	(0.244)	(0.170)	(0.245)
Estimated yrs.	-0.153**	-0.0676*	-0.157**	-0.0726**
of education	(0.0553)	(0.0297)	(0.0556)	(0.0272)
Student	-0.506	-0.951*	-0.500	-0.952*

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	Multinomial Logit: base outcome is participating in person			
	Dependent variable = Participation type			
	Model 9a		Model 9b	
	None	Alone	None	Alone
	(0.347)	(0.431)	(0.347)	(0.429)
Low income	0.389	0.165	0.385	0.198
	(0.472)	(0.250)	(0.466)	(0.250)
High income	-0.0799	-0.609*	-0.0866	-0.591*
	(0.213)	(0.258)	(0.214)	(0.269)
Abs(income - participant)	-0.000369	0.00173		
	(0.00192)	(0.00189)		
Abs(education - participant)			0.00836	0.0478
			(0.0505)	(0.0584)
Mean income	0.00972	0.00478	0.00935	0.00648
	(0.00893)	(0.00481)	(0.00806)	(0.00401)
Mean yrs. of education	-0.333	-0.0979	-0.329	-0.109
	(0.198)	(0.153)	(0.200)	(0.150)
Mean household size	0.692	0.237	0.695	0.220
	(0.497)	(0.331)	(0.504)	(0.349)
Number of households	-0.0123	0.0108	-0.0120	0.0125
	(0.0274)	(0.0217)	(0.0279)	(0.0219)
Constant	9.865**	2.460	9.802**	2.534
	(3.446)	(2.312)	(3.429)	(2.254)
N	682		682	
Pseudo R-square	0.1103		0.1100	

Standard errors in parentheses and clustered around neighborhood

Results adjusted for sampling weights

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix D

STATA Code

```
# delimit;
clear;
cd "/Users/benjamincerf/Documents/Research Projects/In Progress/Master's
Thesis-Heterogeneity & Participation/Output/Survey/Results/Stata Programs/
Analysis 2";
use "/Users/benjamincerf/Documents/Research Projects/In Progress/Master's
Thesis-Heterogeneity & Participation/Output/Survey/Results/Stata Programs/
Analysis 2/MSLADATA1.dta";
capture log close;
log using "MSLA Analysis 4-20-07", replace text;

svyset, clear;
svyset _n [pweight = weight], strata(neighborhood);
drop if missyrs > age;

*************Cleanup;
replace political =0 if political == 2;
replace contact = 0 if contact == .;
replace editor = 0  if editor == .;
replace political = 0 if political == .;
```

```
replace volunteer = 0 if volunteer ==.;
replace estincome = estincome/1000;
move estincome usregister;
drop cmeaninc csdinc;
replace neighborhoodsize = neighborhoodsize/100;

**************Making income estimates;
gen estincome = 0;
replace estincome=1499.5 if income==1;
replace estincome=3999.5 if income==2;
replace estincome=5999.5 if income==3;
replace estincome=7999.5 if income==4;
replace estincome=9999.5 if income==5;
replace estincome=11999.5 if income==6;
replace estincome=13999.5 if income==7;
replace estincome=15999.5 if income==8;
replace estincome=18499.5 if income==9;
replace estincome=20999.5 if income==10;
replace estincome=22499.5 if income==11;
replace estincome=27499.5 if income==12;
replace estincome=32499.5 if income==13;
replace estincome=37499.5 if income==14;
replace estincome=42499.5 if income==15;
replace estincome=47499.5 if income==16;
replace estincome=54999.5 if income==17;
replace estincome=64999.5 if income==18;
replace estincome=74999.5 if income==19;
replace estincome=84999.5 if income==20;
replace estincome=97499.5 if income==21;
replace estincome=112499.5 if income==22;

***Estimate of Income assuming perfect horizontal inequality;


gen estincome2=0;
```

```
replace estincome2=3000 if income==2;
replace estincome2=5000 if income==3;
replace estincome2=7000 if income==4;
replace estincome2=9000 if income==5;
replace estincome2=11000 if income==6;
replace estincome2=13000 if income==7;
replace estincome2=15000 if income==8;
replace estincome2=17000 if income==9;
replace estincome2=20000 if income==10;
replace estincome2=22000 if income==11;
replace estincome2=25000 if income==12;
replace estincome2=30000 if income==13;
replace estincome2=35000 if income==14;
replace estincome2=40000 if income==15;
replace estincome2=45000 if income==16;
replace estincome2=50000 if income==17;
replace estincome2=60000 if income==18;
replace estincome2=70000 if income==19;
replace estincome2=80000 if income==20;
replace estincome2=90000 if income==21;
replace estincome2=105000 if income==22;

*Assigning 1 person from each bracket in each neighborhood
(where the obs in the bracket is >1) income at the high-end of
the bracket;

sort neighborhood income;
by neighborhood income: gen identifier=_n;
by neighborhood income: egen nsum=count(income);
by neighborhood income: replace estincome2=2999 if income==1 &
 identifier==1 & nsum>1;

replace estincome2=4999 if income==2 & identifier==1 & nsum>1;
replace estincome2=6999 if income==3 & identifier==1 & nsum>1;
```

```
replace estincome2=8999 if income==4 & identifier==1 & nsum>1;
replace estincome2=10999 if income==5 & identifier==1 & nsum>1;
replace estincome2=12999 if income==6 & identifier==1 & nsum>1;
replace estincome2=14999 if income==7 & identifier==1 & nsum>1;
replace estincome2=16999 if income==8 & identifier==1 & nsum>1;
replace estincome2=19999 if income==9 & identifier==1 & nsum>1;
replace estincome2=21999 if income==10 & identifier==1 & nsum>1;
replace estincome2=24999 if income==11 & identifier==1 & nsum>1;
replace estincome2=29999 if income==12 & identifier==1 & nsum>1;
replace estincome2=34999 if income==13 & identifier==1 & nsum>1;
replace estincome2=39999 if income==14 & identifier==1 & nsum>1;
replace estincome2=44999 if income==15 & identifier==1 & nsum>1;
replace estincome2=49999 if income==16 & identifier==1 & nsum>1;
replace estincome2=59999 if income==17 & identifier==1 & nsum>1;
replace estincome2=69999 if income==18 & identifier==1 & nsum>1;
replace estincome2=79999 if income==19 & identifier==1 & nsum>1;
replace estincome2=89999 if income==20 & identifier==1 & nsum>1;
replace estincome2=104999 if income==21 & identifier==1 & nsum>1;
replace estincome2=119999 if income==22 & identifier==1 & nsum>1;

drop identifier nsum;

****fitting the upper income bracket to a pareto distribution*****;
sort income;
by income: gen identifier=_n;

***assigned a random number to each of the 62 obs with inc>=120k
and used pareto dist. with alph=2;

replace estincome = 750000 if income == 23 & identifier == 10;
replace estincome = 610000 if income == 23 & identifier == 7;
replace estincome = 510000 if income == 23 & identifier == 38;
replace estincome = 450000 if income == 23 & identifier == 56;
replace estincome = 410000 if income == 23 & identifier == 33;
```

```
replace estincome = 390000 if income == 23 & identifier == 11;
replace estincome = 370000 if income == 23 & identifier == 49;
replace estincome = 350000 if income == 23 & identifier == 40;
replace estincome = 330000 if income == 23 & identifier == 9;
replace estincome = 310000 if income == 23 & identifier == 60;
replace estincome = 290000 if income == 23 & identifier == 41;
replace estincome = 270000 if income == 23 & (identifier == 26
| identifier == 17);
replace estincome = 250000 if income == 23 & (identifier == 8
| identifier == 35);
replace estincome = 230000 if income == 23 & (identifier == 4
| identifier == 46 | identifier == 13);
replace estincome = 210000 if income == 23 & (identifier == 61
| identifier == 57 | identifier == 28);
replace estincome = 190000 if income == 23 & (identifier == 27
 | identifier == 31 | identifier == 25 | identifier == 42);
replace estincome = 170000 if income == 23 & (identifier == 47
 | identifier == 52 | identifier == 44 | identifier == 36
 | identifier == 62 | identifier == 62 | identifier == 48);
replace estincome = 150000 if income == 23 & (identifier == 53
 | identifier == 30 | identifier == 29 | identifier == 55
 | identifier == 21 | identifier == 45 | identifier == 23
  | identifier == 43 | identifier == 2);
replace estincome = 130000 if income == 23 & (identifier == 14
   | identifier == 5 | identifier == 24 | identifier == 50
    | identifier == 1 | identifier == 32 | identifier == 15
    | identifier == 6 | identifier == 3 | identifier == 58
    | identifier == 16 | identifier == 34 | identifier == 12);
replace estincome = 120000 if income == 23 & (identifier == 18
    | identifier == 59 | identifier == 22 | identifier == 20
    | identifier == 54 | identifier == 51 | identifier == 39
    | identifier == 37 | identifier == 19);
drop identifier;
```

```
replace estincome2 = estincome if income == 23;

***Building a better gini;

***lower bound income gini;
sort neighborhood estincome;
by neighborhood: gen identifier = _n;
by neighborhood: egen sampsize = max(identifier);
by neighborhood: gen ci = sum(estincome);
by neighborhood: egen totinc = sum(estincome);
gen cumpop = identifier/sampsize;
gen cuminc = ci/totinc;
by neighborhood: gen X = cumpop[identifier+1]-cumpop;
by neighborhood: gen Y = cuminc[identifier+1] + cuminc;
gen XY = X*Y;
by neighborhood: egen secterm = sum(XY);
gen incomegini_l = abs(1-secterm);
drop XY X Y secterm cumpop cuminc ci identifier totinc sampsize ;

***Upper bound income gini;
sort neighborhood estincome2;
by neighborhood: gen identifier = _n;
by neighborhood: egen sampsize = max(identifier);
by neighborhood: gen ci = sum(estincome2);
by neighborhood: egen totinc = sum(estincome2);
gen cumpop = identifier/sampsize;
gen cuminc = ci/totinc;
by neighborhood: gen X = cumpop[identifier+1]-cumpop;
by neighborhood: gen Y = cuminc[identifier+1] + cuminc;
gen XY = X*Y;
by neighborhood: egen secterm = sum(XY);
gen incomegini_u = abs(1-secterm);
drop XY X Y secterm cumpop cuminc ci identifier totinc sampsize;
```

```
*****************Ed Gini******************************;

gen edyrs = 0;
replace edyrs = 8 if educ == 2;
replace edyrs = 12 if educ == 3;
replace edyrs = 14 if educ == 4 | educ == 5 | educ == 7;
replace edyrs = 16 if educ == 6;
replace edyrs = 18 if educ == 8;
replace edyrs = 22 if educ == 9 | educ == 10;

sort neighborhood edyrs;
by neighborhood: egen mu = mean(edyrs);
by neighborhood: gen identifier = _n;
by neighborhood: egen samplesize = max(identifier);

by neighborhood: egen p2 = max(identifier) if edyrs == 8;
by neighborhood: egen p3 = max(identifier) if edyrs == 12;
by neighborhood: egen p4 = max(identifier) if edyrs == 14;
by neighborhood: egen p5 = max(identifier) if edyrs == 16;
by neighborhood: egen p6 = max(identifier) if edyrs == 18;
by neighborhood: egen p7 = max(identifier) if edyrs == 22;

by neighborhood: egen cp2 = count(p2);
by neighborhood: egen cp3 = count(p3);
by neighborhood: egen cp4 = count(p4);
by neighborhood: egen cp5 = count(p5);
by neighborhood: egen cp6 = count(p6);
by neighborhood: egen cp7 = count(p7);

by neighborhood: gen p_2 = cp2 / samplesize;
by neighborhood: gen p_3 = cp3 / samplesize;
by neighborhood: gen p_4 = cp4 / samplesize;
by neighborhood: gen p_5 = cp5 / samplesize;
by neighborhood: gen p_6 = cp6 / samplesize;
```

```
by neighborhood: gen p_7 = cp7 / samplesize;


gen y_2 = 8;
gen y_3 = 12;
gen y_4 = 14;
gen y_5 = 16;
gen y_6 = 18;
gen y_7 = 22;

by neighborhood: gen sensitivity = (samplesize/(samplesize - 1));

gen edgini = sensitivity * ((1 / mu) * ((p_3 * (y_3 - y_2) * p_2) +
    (p_4 * (y_4 - y_2) * p_2)
+ (p_4 * (y_4 - y_3) * p_3) + (p_5 * (y_5 - y_2) * p_2) +
    (p_5 * (y_5 - y_3) * p_3) + (p_5 * (y_5 - y_4) * p_4) +
    (p_6 * (p_6 - y_2) * p_2)+ (p_6 * (y_6 - y_3) * p_3) +
    (p_6 * (y_6 - y_4) * p_4) + (p_6 * (y_6 - y_5) * p_5) +
    (p_7 * (y_7 - y_2) * p_2) + (p_7 * (y_7 - y_3) * p_3) +
     (p_7 * (y_7 - y_4) * p_4)+ (p_7 * (y_7 - y_5) * p_5) +
     (p_7 * (y_7 - y_6) * p_6)));

drop sensitivity samplesize mu y_* p_* p* identifier cp*;

****Thiel index for education (alpha = 1)*************;
sort neighborhood;
by neighborhood: gen identifier = _n;
by neighborhood: egen samplesize = max(identifier);
by neighborhood: egen mu = mean(edyrs);
gen inner = (edyrs/mu)*ln(edyrs/mu);
by neighborhood: egen sum = sum(inner);
gen edthiel = 10*(sum/samplesize);

drop mu identifier inner sum;
```

```
*******Thiel index for income (alpha = 1)***********;
by neighborhood: egen mu = mean(estincome);
gen inner = (estincome/mu)*ln(estincome/mu);
by neighborhood: egen sum = sum(inner);
gen thielincome = (sum/samplesize);

drop mu inner sum;
**************************************************;

***************************************************;

sort neighborhood;
by neighborhood: egen mi = mean(estincome);
replace meaninc = mi;
drop mi;
by neighborhood: egen medianinc = median(estincome);
by neighborhood: egen maxinc = max(estincome);

sort neighborhood;
by neighborhood: egen me = mean(edyrs);
replace meaned = me;
drop me;
by neighborhood: egen mededyrs = median(edyrs);
by neighborhood: egen maxedyrs = max(edyrs);

*************************************************;
***************Neighborhood Difference Terms;

sort neighborhood;
by neighborhood: egen memberinc = mean(estincome) if multipart == 2;
by neighborhood: egen mi = max(memberinc);
replace memberinc = mi if memberinc == .;
by neighborhood: egen memberedyrs = mean(edyrs) if multipart == 2;
by neighborhood: egen me = max(memberedyrs);
```

```
replace memberedyrs = me if memberedyrs == .;
drop mi me;

***uses the mean;
gen incomedif1 = abs(estincome - meaninc);
gen educdif1 = abs(edyrs - meaned);

***uses the median;
gen incomedif2 = abs(estincome - medinc);
gen educdif2 = abs(edyrs - mededyrs);

***uses the max;
gen incomedif3 = abs(estincome - maxinc);
gen educdif3 = abs(edyrs - mededyrs);

***uses the average of people who participate;
gen incomedif4 = abs(estincome - memberinc);
gen educdif4 = abs(edyrs - memberedyrs);

**********************(Multinomial Logit)************************;

gen multipart = 0;
replace multipart = 1 if ((ccmcat == 1 | cctranscript ==1 )
     & ccinperson == 0)| ((cbmcat == 1 | cbtranscript == 1)
     & cbinperson == 0) | (htranscript == 1 & hinperson == 0)
     | contact == 1 | editor == 1
| ((ncmcat == 1 | nctranscript == 1) & ncinperson == 0);
replace multipart = 2 if (ccinperson == 1 | cbinperson == 1
     | hinperson == 1 | ncinperson == 1 | othermeeting == 1);
*replace multipart = 3 if  ((ccinperson == 1 & ccmcat == 0
     & cctranscript == 0) | (cbinperson == 1 & cbmcat == 0
     & cbtranscript == 0) | (hinperson == 1 & htranscript ==0)
     | (ncinperson == 1 & ncmcat == 0 & nctranscript == 0)
     | othermeeting == 1);
```

```
******************************************************;

sum resyrs own female married age household estincome edyrs
     educ incomegini_l incomegini_u edgini if multipart == 0;
sum resyrs own female married age household estincome edyrs
     educ incomegini_l incomegini_u edgini if multipart == 1;
sum resyrs own female married age household estincome edyrs
     educ incomegini_l incomegini_u edgini if multipart == 2;

******************************************************;

***Education gini;

qui mlogit multipart female age sqage own resyrs working married
     household children edyrs student lowinc highinc edgini
     meanhousehold meaned meaninc neighborhoodsize
     [pweight = 1/prob], cluster(neighborhood) robust;
margeff, replace;
esto;

***Education Theil;

qui mlogit multipart female age sqage own resyrs working married
     household children edyrs student lowinc highinc edthiel
     meanhousehold meaned meaninc neighborhoodsize
     [pweight = 1/prob], cluster(neighborhood) robust;
margeff, replace;
esto;

esta * using tester.tex, se unstack replace;
esto clear;

***Income gini;
```

```
qui mlogit multipart female age sqage own resyrs working married
     household children edyrs student lowinc highinc incomegini_l
     meanhousehold meaned meaninc neighborhoodsize
     [pweight = 1/prob], cluster(neighborhood) robust;
margeff, replace;
esto;

qui mlogit multipart female age sqage own resyrs working married
     household children edyrs student lowinc highinc incomegini_u
     meanhousehold meaned meaninc neighborhoodsize
     [pweight = 1/prob], cluster(neighborhood) robust;
margeff, replace;
esto;

***Education Theil;

qui mlogit multipart female age sqage own resyrs working married
     household children edyrs student lowinc highinc thielinc
     meanhousehold meaned meaninc neighborhoodsize
      [pweight = 1/prob], cluster(neighborhood) robust;
margeff, replace;
esto;

esta * using incomeresults.tex, se unstack replace;
esto clear;



***Difference (from Neighborhood Mean);
mlogit multipart female age sqage own resyrs working married
      household children edyrs student lowinc highinc incomedif1
      meaninc meaned meanhousehold neighborhoodsize;
mlogtest, all;
fitstat;
```

```
qui mlogit multipart female age sqage own resyrs working married
      household children edyrs student lowinc highinc incomedif1
      meaninc meaned meanhousehold neighborhoodsize
      [pweight = 1/prob], cluster(neighborhood);
esto m1coef;
qui margeff;
esto m1mfx;

mlogit multipart female age sqage own resyrs working married household
      children edyrs student lowinc highinc educdif1 meaninc meaned
      meanhousehold neighborhoodsize;
mlogtest, all;
fitstat;

qui mlogit multipart female age sqage own resyrs working married household
      children edyrs student lowinc highinc educdif1 meaninc meaned
       meanhousehold neighborhoodsize [pweight = 1/prob],
       cluster(neighborhood);
esto m2coef;
qui margeff;
esto m2mfx;

esta m1coef m2coef using dif1coef.tex, se unstack scalars(r2_p) replace;
esta m1mfx m2mfx using dif1mfx.tex, se unstack scalars(r2_p) replace;
esto clear;

***Difference (from Neighborhood Median);
mlogit multipart female age sqage own resyrs working married household
       children edyrs student lowinc highinc incomedif2 meaninc meaned
       meanhousehold neighborhoodsize;
mlogtest, all;
fitstat;
```

```
qui mlogit multipart female age sqage own resyrs working married household
       children edyrs student lowinc highinc incomedif2 meaninc meaned
       meanhousehold neighborhoodsize [pweight = 1/prob],
       cluster(neighborhood);
esto m3coef;
qui margeff;
esto m3mfx;

mlogit multipart female age sqage own resyrs working married household
       children edyrs student lowinc highinc educdif2 meaninc meaned
       meanhousehold neighborhoodsize;
mlogtest, all;
fitstat;

qui mlogit multipart female age sqage own resyrs working married household
       children edyrs student lowinc highinc educdif2 meaninc meaned
        meanhousehold neighborhoodsize [pweight = 1/prob],
        cluster(neighborhood);
esto m4coef;
qui margeff;
esto m4mfx;

esta m3coef m4coef using dif2coef.tex, se unstack scalars(r2_p) replace;
esta m3mfx m4mfx using dif2mfx.tex, se unstack scalars(r2_p) replace;
esto clear;

***Difference (from Neighborhood Max);
mlogit multipart female age sqage own resyrs working married household
        children edyrs student lowinc highinc incomedif3 meaninc
        meaned meanhousehold neighborhoodsize;
mlogtest, all;
fitstat;

qui mlogit multipart female age sqage own resyrs working married
```

```
        household children edyrs student lowinc highinc incomedif3
        meaninc meaned meanhousehold neighborhoodsize
         [pweight = 1/prob], cluster(neighborhood);
esto m5coef;
qui margeff;
esto m5mfx;

mlogit multipart female age sqage own resyrs working married household
        children edyrs student lowinc highinc educdif3 meaninc meaned
        meanhousehold neighborhoodsize;
mlogtest, all;
fitstat;

qui mlogit multipart female age sqage own resyrs working married household
        children edyrs student lowinc highinc educdif3 meaninc meaned
        meanhousehold neighborhoodsize [pweight = 1/prob],
        cluster(neighborhood);
esto m6coef;
qui margeff;
esto m6mfx;

esta m5coef m6coef using dif3coef.tex, se unstack scalars(r2_p) replace;
esta m5mfx m6mfx using dif3mfx.tex, se unstack scalars(r2_p) replace;
esto clear;

***Difference (from average neighborhood participant);
mlogit multipart female age sqage own resyrs working married household
        children edyrs student lowinc highinc incomedif4 meaninc meaned
        meanhousehold neighborhoodsize;
mlogtest, all;
fitstat;

qui mlogit multipart female age sqage own resyrs working married household
        children edyrs student lowinc highinc incomedif4 meaninc meaned
```

```
        meanhousehold neighborhoodsize [pweight = 1/prob],
        cluster(neighborhood);
esto m7coef;
qui margeff;
esto m7mfx;

mlogit multipart female age sqage own resyrs working married household
        children edyrs student lowinc highinc educdif4 meaninc meaned
        meanhousehold neighborhoodsize;
mlogtest, all;
fitstat;

qui mlogit multipart female age sqage own resyrs working married household
        children edyrs student lowinc highinc educdif4 meaninc meaned
        meanhousehold neighborhoodsize [pweight = 1/prob],
        cluster(neighborhood);
esto m8coef;
qui margeff;
esto m8mfx;

esta m7coef m8coef using dif4coef.tex, se unstack scalars(r2_p) replace;
esta m7mfx m8mfx using dif4mfx.tex, se unstack scalars(r2_p) replace;
esto clear;

sort neighborhood;
by neighborhood: egen avepart = mean(multipart);

by neighborhood: egen solo = count(multipart) if multipart == 1;
by neighborhood: egen m = max(solo);
by neighborhood: replace solo = m if solo == .;
drop m;
gen avesolo = solo / samplesize;

by neighborhood: egen face2face = count(multipart) if multipart == 2;
```

```
by neighborhood: egen m = max(face2face);
by neighborhood: replace face2face = m if face2face == .;
drop m;
gen aveinperson = face2face / samplesize;

by neighborhood: egen none =  count(multipart) if multipart == 0;
by neighborhood: egen m = max(none);
by neighborhood: replace none = m if none == .;
drop m;
gen avenopart = none / samplesize;

scatter avenopart incomegini_l, title(Non-participants)
        subtitle(and income inequality)
xtitle(Lower-bound income Gini)
        ytitle(Proportion of neighborhood that never participates);
graph2tex, epsfile(lgini0);

scatter avenopart incomegini_u, title(Non-participants)
        subtitle(and income inequality)
xtitle(Upper-bound income Gini)
        ytitle(Proportion of neighborhood that never participates);
graph2tex, epsfile(ugini0);

scatter avenopart thielincome, title(Non-participants)
        subtitle(and income inequality)
xtitle(Thiel index on income)
        ytitle(Proportion of neighborhood that never participates);
graph2tex, epsfile(thiel0);

scatter avenopart edgini, title(Non-participants)
         subtitle(and education inequality)
xtitle(Education Gini)
         ytitle(Proportion of neighborhood that never participates);
graph2tex, epsfile(edgini0);
```

```
scatter avenopart edthiel, title(Non-participants)
        subtitle(and education inequality)
xtitle(Thiel index on education)
        ytitle(Proportion of neighborhood that never participates);
graph2tex, epsfile(edthiel0);

scatter avesolo incomegini_l, title(Participating alone)
        subtitle(and income inequality)
xtitle(Lower-bound income Gini)
        ytitle(Proportion of neighborhood that participates alone);
graph2tex, epsfile(lgini1);

scatter avesolo incomegini_u, title(Participating alone)
        subtitle(and income inequality)
xtitle(Upper-bound income Gini)
        ytitle(Proportion of neighborhood that participates alone);
graph2tex, epsfile(ugini1);

scatter avesolo thielincome, title(Participating alone)
        subtitle(and income inequality)
xtitle(Thiel index on income)
        ytitle(Proportion of neighborhood that participates alone);
graph2tex, epsfile(thiel1);

scatter avesolo edgini, title(Participating alone)
        subtitle(and education inequality)
xtitle(Education Gini)
        ytitle(Proportion of neighborhood that participates alone);
graph2tex, epsfile(edgini1);

scatter avesolo edthiel, title(Participating in person)
        subtitle(and education inequality)
xtitle(Thiel index on education)
```

```
        ytitle(Proportion of neighborhood that participates in person);
graph2tex, epsfile(edthiel1);

scatter aveinperson incomegini_l, title(Participating in person)
        subtitle(and income inequality)
xtitle(Lower-bound income Gini)
        ytitle(Proportion of neighborhood that participates in person);
graph2tex, epsfile(lgini2);

scatter aveinperson incomegini_u, title(Participating in person)
        subtitle(and income inequality)
xtitle(Upper-bound income Gini)
        ytitle(Proportion of neighborhood that participates in person);
graph2tex, epsfile(ugini2);

scatter aveinperson thielincome, title(Participating in person)
        subtitle(and income inequality)
xtitle(Thiel index on income)
        ytitle(Proportion of neighborhood that participates in person);
graph2tex, epsfile(thiel2);

scatter aveinperson edgini, title(Participating in person)
        subtitle(and education inequality)
xtitle(Education Gini)
        ytitle(Proportion of neighborhood that participates in person);
graph2tex, epsfile(edgini2);

scatter aveinperson edthiel, title(Participating in person)
        subtitle(and education inequality)
xtitle(Thiel index on education)
        ytitle(Proportion of neighborhood that participates in person);
graph2tex, epsfile(edthiel1);
```

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