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Beyond Majority Versus Minority: Bureaucracy, Distributional Outcomes, and a Racialized Multiethnic Society

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Bureaucracy, Intergroup Dynamics, and a Multiracial Social System

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Abstract

This study considers what aspects of an organization's racial composition affect distributional outcomes and whether such effects look different across racial groups. Drawing on theoretical insights regarding organizational and intergroup dynamics as well as the racialized social system in the U.S., I develop a set of original hypotheses. These hypotheses highlight several alternative ways that organizational demographic composition can be measured. I then conduct an empirical test using a large panel dataset of public organizations, which contains outcome measures for five different racial groups. For Latino and Asian clients, there are strong, positive associations between outcomes and the share of same-race bureaucrats. Latinos and African Americans also appear to enjoy slightly better outcomes when the organization's bureaucrats are more racially heterogeneous.

Keywords: race, ethnicity, representative bureaucracy, intergroup relations, diversity, education

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Around the world, racial and ethnic identities often form the basis for one of society's most important cleavages. These social cleavages make race a potentially important characteristic of individuals charged with executing governmental powers, whether in the context of a legislative body or an administrative arm of government. Indeed, existing scholarship indicates that the racial composition of government bodies can affect citizen perceptions of legitimacy (Scherer and Curry 2010) and can also have tangible effects on distributional outcomes associated with government activities (e.g., Preuhs 2006; Meier and Stewart 1992). A proper understanding of how race is associated with government outcomes requires attention to how racial identities affect interactions among individuals as well as consideration of the institutional dynamics at play within the organizations tasked with executing government policies. In other words, it is not straightforward to predict bureaucratic outcomes based on a simple tallying of who holds positions of power and which racial or ethnic groups these actors belong to. The relationship between the racial makeup of a government entity and salient outcomes may depend on factors such as how distinct minority groups relate to one another, socialization that occurs within an organization, and the manner in which the opinions of bureaucrats are aggregated into group-level decisions or procedures.

The theory of representative bureaucracy has provided the dominant framework for existing studies of how racial dynamics affect bureaucratic outcomes. This theory posits that the demographic makeup of a bureaucracy can provide a means of representing the interests of the public (Long 1952; Krislov 1974). One of the key assumptions of the theory is that bureaucrats who exhibit a given demographic characteristic will tend to advance the interests of members of

the public who share that demographic characteristic (Meier and Nigro 1976). Several empirical studies lend support to the notion that Latinos and African American clients sometimes experience better outcomes when they are served by bureaucrats who share their own race (e.g., Selden 1997; Meier et al. 2001). But since the theory is rooted in a language of shared demographic characteristics, conceptualizations of race in this literature rarely go beyond the simple binaries of same-race (relative to the client) versus different-race, or sometimes "minority" versus "majority."

More broadly, scholarship on race in public administration generally does not consider the extent to which all racial groups in a multiracial society can be described using a common explanation (e.g., bureaucrats favor those who share their racial identity) or if theories need to make tailored predictions that are specific to each racial group. Just as scholars in other fields have emphasized the need for conceptualizations of race that move beyond a simple black-white dichotomy (e.g., Bonilla-Silva 2004; Segura and Rodrigues 2006), public administration scholars need to consider whether racial dynamics within bureaucratic settings can be adequately explained using a simple dichotomy of same-race versus different-race (or majority versus minority). The growing attention to "intersectionality" in public administration promises to help us better understand how individuals are shaped simultaneously by multiple social identities (e.g., gender and race) (Bearfield 2009; Breslin, Pandey, and Riccucci 2017). But such studies do not solve the problem of a lack of attention to the potentially complex intergroup dynamics at play within a society where there are several distinct racial categories.

In this paper, I attempt to improve our understanding of intergroup dynamics in public administration by addressing two main research questions: (1) What aspects of a public organization's racial makeup most strongly affect citizen outcomes? (2) Are different racial

groups affected differently by the demographic composition of a government organization? Drawing on literatures in sociology and other disciplines, I consider how racial identities and group behaviors affect social dynamics in public organizations. Scholars in other literatures offer several (sometimes competing) explanations of how racial identities affect our social ordering. I attempt to clearly distinguish among a few alternative mechanisms by which racial identities might affect social behavior. I also show that different assumptions about racial dynamics in the U.S. can lead to different predictions regarding the effects of race in the context of government organizations. Different theoretical starting points can also lead to different measurement choices, so I emphasize the importance of distinguishing among competing measurement approaches when linking empirical study to theoretical discussions. Because different demographic measures can be correlated with one another, I argue that it is important to control for competing measures when trying to rule out rival explanations of results.

Given that racial and ethnic identities can be fluid and multidimensional, some features of intergroup behavior are probably highly context-dependent. This complexity makes it all the more important to carefully distinguish among competing explanations of intergroup relations, each of which may describe behavior more accurately under certain conditions. Careful study of intergroup relations in the context of public administration is crucial if we want to be able to draw conclusions about how racial/ethnic identities affect implementation of government policies.

In the following sections, I first draw on studies of racialized social systems, ingroup bias, contact theory, and cultural intelligence to formulate a set of competing hypotheses about how racial demographics are associated with bureaucratic outcomes. I then test these hypotheses using two large panel datasets of public organizations along with several different measures of

the demographic makeup of these organizations. In addition to examining results for African Americans and Latinos, I include in my analysis three racial groups (Asian, Native American, and white) which have received little attention in existing representative bureaucracy studies. My findings indicate the strength of same-race effects (particularly for Asians and Latinos) and also suggest that having a multiracial (diverse) staff may play a secondary role in shaping outcomes along racial lines by benefiting disadvantaged minority clients and harming white clients (in relative terms). I conclude by discussing the implications of my results and explaining how they can be used to inform future directions for research.

The U.S. Racial System and Bureaucrat Outcomes

Sociologists have described the contemporary U.S. as a racialized society that continues to advantage whites and disadvantage blacks, despite the elimination of many forms of legally sanctioned, overt discrimination (Bonilla-Silva 1997; Feagin 2013; Omi and Winant 2015). Under this racialized social system, many white Americans embrace ideals of colorblindness (Bonilla-Silva 2018) while at the same time benefiting from their racial status in ways that are sometimes subtle and covert. For example, despite antidiscrimination laws, randomized field experiments have demonstrated that white job applicants are considerably more likely than black or Latino applicants to receive callbacks from potential employers (Quillian et al. 2017). It may be that some people who act in a biased manner are unaware of their own bias, a possibility highlighted by recent work using Implicit Association Tests developed in social psychology (see Greenwald et al. 2009). Looking beyond the individual level, the concept of systemic racism highlights the possibility that some aspects of race relations are best understood by looking at institutions or systems (Feagin 2013). Supporting this view is work by scholars examining drug enforcement, social welfare assistance, and k-12 education, where they find policies and

bureaucratic practices that appear to be racially neutral on their face but which serve to disproportionately sanction or deny services to African Americans (Pettit and Western 2004; Schram et al. 2009; Meier, Stewart, and England 1989).

Scholars have struggled to agree on how racial groups other than whites and African Americans fit into the contemporary U.S. racial system. Bonilla-Silva (2004) created a framework that describes society as functioning with a triracial system consisting of whites, "collective blacks," and a third category in between, which he calls "honorary whites." In attempting to apply this framework, the imprecision of our society's racial categories becomes readily apparent. Bonilla-Silva argues that many (though not all) Native Americans are treated as part of the "collective blacks" category while many (not all) Asians and Latinos are considered to be part of the middle "honorary whites" category. All racial categories are generally considered by social scientists to be social constructs. As such, there are many ways in which the racial categories we commonly use are incomplete, and there is considerably heterogeneity within each racial category. Despite the difficulties associated with trying to define three racial categories, the triracial view is supported by work indicating a larger social distance between African Americans and whites than there is between Asians and whites or Latinos and whites (Lee and Bean 2007).

Bonilla-Silva's (2004) argument that there is a social hierarchy with three racial categories stands in contrast to some other approaches to explaining the contemporary racial system of the U.S. Xu and Lee (2013) explain two alternative frameworks that each employ a binary "color line" distinction: "Some propose the existence of a white/nonwhite divide, suggesting that the boundaries between whites and nonwhites [are] more important than differences among nonwhite groups.... Others suggest the emergence of a black/nonblack divide,

indicated by the continuing separation from blacks not only on the part of whites but also of other nonwhite racial groups." Xu and Lee themselves argue that a single continuum is unable to adequately account for the experiences of Asians and Latinos. In their view, Asians and Latinos commonly experience certain disadvantages in society that are of a distinct nature from those commonly experienced by blacks. While Asian Americans' average outcomes on some key social indicators (e.g., educational attainment, occupational prestige) can exceed average levels for whites (Barringer, Takeuchi, and Xenos 1990), there is evidence that Asians still face discrimination and negative perceptions relative to whites (Goto, Gee, and Takeuchi 2002; Xu and Lee 2013).

In the following subsections, I introduce a set of hypotheses grounded in theoretical claims found in various literatures. In light of the competing explanations of U.S. racial dynamics described above, I will often construct competing hypotheses below that are based on the following three alternative explanations of the contemporary social order: (1) the primary social division (in this bureaucratic context) is white versus nonwhite *(white/nonwhite color line)*, (2) the primary social division is black (or "collective black") versus nonblack *(black/nonblack color line)*, (3) there is stark social divisions between white and nonwhite as well as black (or "collective black") and nonblack *(triracial system)*.

Ingroup Bias and Same-Race Effects

Ingroup bias refers to the tendency of individuals to respond more positively to members of their ingroup (those who belong to their own social group) than to those who being to an out-group (are not in their own social group). Such bias has been widely observed and may function consciously or implicitly (Hewstone, Rubin, and Willis 2002). For example, someone might treat members of their own race better than people of other races because of racial animus towards

other races, because of subtle assumptions made about members of other groups, or simply because people feel more relaxed and comfortable around someone who shares their racial identify. It is worth noting that the basic logic of ingroup bias does not presuppose that some groups (e.g., whites) are advantaged over others in society; anyone, regardless of their social identity, can display a bias towards members of their own ingroup. I will consider in more detail below whether one would expect ingroup bias to function differently for different racial groups given the racialized U.S. social system.

Early studies of representative bureaucracy theory emphasized the potential existence of common values among those who share demographic characteristics (Long 1952; Krislov 1974; Meier and Nigro 1976; Selden 1997). But as more recent studies have shifted to emphasize examining service-oriented bureaucracies, ingroup bias may be a better conceptual explanation for many of the outcomes accounted for by the theory. Clients are expected to experience better outcomes when interacting with same-race bureaucrats because of more positive interpersonal interactions among those who share a racial identity. More positive interactions could result from ingroup bias exhibited by bureaucrats, or clients may be the ones who display an ingroup bias. Because of the important coproduction role that clients play in many service-oriented bureaucracies (Whitaker 1980; Sharp 1980), clients who are more receptive to working with a bureaucrat belonging to an ingroup may experience better policy outcomes when matched with a same-race bureaucrat. It is also worth noting that not all clients or all bureaucrats need exhibit ingroup bias in order for same-race matching effects to be realized in an organization. For example, if white bureaucrats display an ingroup bias, Asian clients will probably experience better outcomes if they served by Asian bureaucrats even if those Asian bureaucrats do not exhibit ingroup bias.

The potential existence of ingroup bias in bureaucratic organizations is troubling to many (Mosher 1968; Lim 2006), and attempts at limiting bureaucratic discretion are sometimes aimed at reducing discrimination or ingroup bias. In fact, one of the motivations sometimes offered for hiring additional minorities in government is a belief that minority bureaucrats will help to mitigate the ingroup bias exhibited by bureaucrats belonging to the majority racial group (see Nicholson-Crotty, Nicholson-Crotty, and Fernandez 2017; Lim 2006).

[Figure 1 about here]

Figure 1 illustrates the key conceptualizations of organizational demographics underlying my four hypotheses. The figure was constructed with the vantage point of an African American client in mind. The top-left pane shows an organization with only a few African American employees while the top-right pane shows an organization with several more African American employees. If there is ingroup bias exhibited by clients or bureaucrats in an organization, one would expect African American clients to experience better outcomes in the organization represented in the top-right pane. My first hypothesis essentially summarizes the main empirical hypothesis that has been tested in the existing representative bureaucracy literature:

> **H1**: For a given racial group, client/citizen outcomes will improve as the share of same-race bureaucrats increases *(ingroup bias hypothesis)*

Given widespread evidence of ingroup bias being displayed by members of even minimally-significant social groups in a variety of studies (Yamagishi et al. 2008; Hewstone, Rubin, and Willis 2002), I expect this hypothesis to apply to all racial groups in the U.S. However, this prediction is perhaps more controversial for whites than for other racial groups. White clients may experience smaller benefits from interacting with same-race bureaucrats since whites are in a privileged position in our racialized social system (Feagin 2013) and are perhaps

treated relatively well even by outgroups. Previous research suggests that additional minority bureaucrats can bring gains to minorities without harming outcomes for whites (Meier, Wrinkle, and Polinard 1999), suggesting a positive-sum game in which white clients may not need same-race bureaucrats in order to experience positive bureaucratic outcomes.

Given these various considerations, I expect that ingroup bias will be apparent for all racial groups but that the effects of ingroup bias will be less pronounced for whites. I also expect ingroup bias to have the largest effects on the groups that are most disadvantaged by the existing racial social system. Since there are generally larger disparities for clients of these groups, I expect that having a same-race bureaucrat will result in a larger net-gain for them than for clients of groups that are less disadvantaged. Under the triracial description of the U.S. racialized system, that would mean that ingroup effects should be largest for "collective blacks" and of moderate size for Asians and Latinos:

> **H1a**: Same-race performance effects will be most positive for African Americans and Native Americans, and least positive for whites, with effect sizes for Latinos and Asians falling somewhere in between *(triracial system & ingroup bias)*

If it is the case that the social difference between nonblack and black overwhelms differences among nonblack racial groups (white, Asian, and Latino), we might instead expect same-race effects to be small for all groups other than African Americans (and perhaps Native Americans). Thus, a black-nonblack color line (Lee and Bean 2007) would seem to suggest that H1a is not true and that instead:

> **H1b**: Whites, Latinos, and Asians will all experience similarly-sized performance effects from same-race bureaucrats that are less positive than the same-race

performance effect for African Americans *(black/nonblack color line & ingroup bias)*

A final possibility is that white/nonwhite is the primary social division. The creation of a white/nonwhite color line hypothesis requires a slightly different formulation than the two prior hypotheses offered under alternative frameworks. If all nonwhites view themselves as having a common identity as "people of color" (Hollinger 2005), then the boundaries of their ingroup might extend wide enough to incorporate all nonwhite individuals. The possibility of positive intra-minority intergroup effects within a bureaucracy has been raised in a study by Rocha and Hawes (2009). They found empirical evidence that Latino students benefited from having more African American teachers, and African American students benefited from Latino teachers. Government bureaucrats do not typically work in an environment where formal votes and majority rule govern decision making, so there is probably little incentive for minority bureaucrats to form coalitions in a strategic manner mimicking the "rainbow coalitions" studied by political scientists (Segura and Rodrigues 2006; Kim and Lee 2001). Instead, the extent to which African American clients benefit from the presence of Latino bureaucrats, for example, probably depends on how much overlap there is in the social identities or barriers to success faced by African Americans and Latinos. The second row of graphs in Figure 1 shows what it might look like for an African American to interact with a bureaucracy with few nonwhite bureaucrats and one with many nonwhite bureaucrats. Note that the white/nonwhite color line hypothesis for ingroup bias refers to a variable measuring the share of all nonwhite bureaucrats:

H1c: For a given racial group that is not white, client/citizen outcomes will improve as the share of nonwhite bureaucrats increases *(white/nonwhite color line & ingroup bias)*

Compositional Matching

My third hypothesis is also closely tied to the representative bureaucracy literature. The independent variable in H1 (the share of same-race bureaucrats) is often described in this literature using the term passive representation. However, this term is also used at times to refer to the extent to which a bureaucracy's demographic makeup mirrors its clients or the general public (e.g., Goode and Baldwin 2005; Pitts 2005). In the first use, we would say passive representation for African Americans increases as the share of African Americans increases. In the second use, we would say that an organization is passively representative (with regards to African Americans) if the percentage of African American bureaucrats is similar to the percentage of African American clients (or percentage of African Americans in the community). In order to avoid confusion, I use the term "compositional matching" to refer to the second type of passive representation. The third row of Figure 1 depicts an organization with a relatively low compositional match as well as one with a much higher compositional match.

While some scholars have argued that a compositional match is a normatively desirable trait for public organizations, the performance implications of a compositional match have been less widely considered. Early theoretical work on representative bureaucracy seems to emphasize the potential desirability of a compositional match based on notions of fairness, accountability, or democracy rather than efficiency (Long 1952; Krislov 1974). More recently, Pitts (2005; 2007) examines whether a compositional match is associated with better overall organizational performance and finds some evidence suggesting that it is (although he also finds a negative relationship with one set of measures). Theorizing about the effects of a compositional match on distributional outcomes is difficult since a strong compositional match could result in many or only a few same-race bureaucrats for a given group depending on the size of that group in the

population. For example, since American Indians are a very small minority in many locations, a strong compositional match may imply that there are very few same-race bureaucrats.

For the most part, focusing on the proportion of same-race bureaucrats (as in H1) strikes me as a more straightforward and plausible way of predicting bureaucratic outcomes. However, I can conceive of at least two ways in which a compositional match could be related to outcomes beyond what can be accounted for by assessing the share of same-race bureaucrats. First, it is possible that a strong compositional match will increase the legitimacy of an organization in the eyes of the public. Increased perceptions of legitimacy may in turn increase the willingness of citizens to coproduce positive bureaucratic outcomes with the organization. It is unclear, though, whether citizens will evaluate legitimacy through the lens of a compositional match. Existing studies of symbolic representation appear to emphasize the presence of bureaucrats who share the clients' demographic characteristics rather than a compositional match between the bureaucracy and the community (Theobald and Haider-Markel 2008; Riccucci, Van Ryzin, and Lavena 2014). Would an African American in an area where few African Americans live really trust an organization that had a high compositional match but few African American employees? Or would a Latino view an organization as illegitimate if it dramatically overrepresented Latinos in terms of its compositional match? One recent study of responses to an announcement about a recycling initiative found that individuals indicated they were more willing to coproduce when all names of officials/administrators mentioned in the announcement matched the respondent's gender versus when there was gender parity in the announcement (Riccucci, Van Ryzin, and Li 2016).

It is also possible that a strong compositional match could be a sign of management that cares about demographic representation. And whatever characteristics compel certain managers

to pursue a compositional match could be correlated with other values or actions that serve to benefit racial groups that are sometimes overlooked. If this is true, it would suggest that a compositional match may be positively associated with positive bureaucratic outcomes for racial minorities even though the compositional match may not causally affect distributional outcomes; instead, the compositional match would serve as evidence of other attributes of an organization that do have distribution consequences.

Though I do not necessarily expect that a compositional match will have performance consequences, I write the following hypothesis as a test of the argument for a compositional match affecting outcomes. I don't have any clear expectations regarding whether a compositional match would affect different racial groups differently.

> **H2**: For a given racial group, client/citizen outcomes will improve as the bureaucracy's compositional match increases *(compositional match hypothesis)*

Organizational Diversity

Diversity is another important lens through which one can understand the demographic characteristics of an organization. I use the term diversity throughout this article to refer to heterogeneity, or what Harrison and Klein (2007) call "variety." The bottom row of Figure 1 depicts two organizations with different levels of diversity. In the graph on the left side, a single racial group (Latino) dominates the organization, so it is not particularly diverse (heterogeneous). On the right side, no single group dominates, and the distribution of bureaucrats is fairly evenly distributed among whites, Latinos, and Asians. African Americans are substantially fewer in number than these other three groups, so diversity is not fully maximized in this example. But the bottom-right graph in Figure 1 still depicts an organization that is more diverse than the one in the bottom-left of Figure 1.

A substantial literature on the effects of diversity on performance exists among studies of private sector organizations. Demographic heterogeneity is theorized to simultaneously (1) increase a group's potential for conflict and (2) improve its capacity for innovation and problem solving due to a broader set of knowledge, ideas, and methods the group can draw on (Pelled, Eisenhardt, and Xin 1999; Watson, Kumar, and Michaelsen 1993). Given that these two effects push in opposite directions, it is perhaps unsurprising that empirical studies have found mixed evidence regarding the association between demographic diversity and performance (van Veelen and Ufkes forthcoming; Bunderson and Van der Vegt 2018; Page 2007). The handful of public administration studies on the link between diversity and performance also show mixed results (Pitts 2005; Choi 2009; Pitts and Jarry 2009; Opstrup and Villadsen 2015; Moon 2018; Ritz and Alfes 2018).

Existing work on diversity and performance has primarily focused on the effects diversity may have on employee outcomes (e.g., turnover, motivation, conflict, innovation) or on organizational (or team) efficiency. Noticeably absent from the literature is a focus on potential distributional effects among the public. While the focus on efficiency may be understandable within the generic management literature, the distributional effects of diversity are important to consider in the context of public administration.

Despite the focus on efficiency rather than distributional outcomes in the diversity-performance literature, diversity has historically been considered important as a means of potentially changing the attitudes and behaviors of those who find themselves in multiracial environments. The U.S. Supreme Court's decision to integrate public schools in *Brown v. Board of Education* has often been considered through the lens of its potential effects on children's interracial attitudes and behaviors (see Gurin, Nagda, and Lopez 2004). Diversity in an

organization creates increased opportunities for social contact among people of different races, which contact theory predicts will improve racial attitudes (Allport 1954). Indeed, a large body of empirical research supports the notion that social contact with another racial group serves to reduce prejudice by reducing anxiety about contact and increasing empathy for the outgroup (Pettigrew and Tropp 2006; 2008). Positive effects are expected to be strongest when contact occurs in a setting where (1) members of different groups are of equal social status, (2) individuals are pursuing common goals, (3) members of different groups must cooperate to achieve goals, and (4) there is support from authorities, laws, or customs (Pettigrew 1998). Interactions with coworkers in many work settings are likely to meet these conditions.

Prior work on representative bureaucracy theory has suggested that socialization processes within organizations or professions can have strong effects on bureaucratic behavior, even eliminating or reversing same-race effects (Wilkins and Williams 2008; 2009). The interracial contact facilitated through diverse bureaucracies may produce a similarly powerful socialization effect, perhaps reducing the prejudices or biases bureaucrats exhibit toward other racial groups. Recent studies have found some evidence that cross-cultural contact is positively associated with cultural intelligence, which describes one's ability to function effectively in multicultural settings (Kim and Van Dyne 2012; Engle and Crowne 2014). By building habits and behaviors that allow one to more effectively operate interpersonally in multicultural settings, bureaucrats can improve their ability to serve all clients effectively. While this potential positive effect may be counteracted to some extent by the negative effects diversity can have on overall performance by creating conflict, I formulate a hypothesis of general positive effects as a reference point from which I can build other hypotheses and evaluate empirical results:

H3: For a given racial group, client/citizen outcomes will improve as the racial diversity (heterogeneity) of bureaucrats increases *(diversity-contact hypothesis)*

Socialization that serves to improve bureaucrats' ability and desire to effectively serve clients of all cultures should create the largest gains for groups most disadvantaged under the current racialized social system. Based on the three alternative explanations of the contemporary racialized system identified earlier, I create three competing hypotheses regarding how diversity effects will be felt among different racial groups in the U.S.:

H3a: Diversity-performance effects will be most positive for African Americans and Native Americans, and least positive for whites, with effect sizes for Latinos and Asians falling somewhere in between *(triracial system & diversity effects)*

H3b: Whites, Latinos, and Asians will all experience similarly-sized performance effects from diversity that are less positive than the diversity-performance effect for African Americans *(black/nonblack color line & diversity effects)*

H3c: Latinos, Asians, African Americans, and Native Americans will all experience similarly-sized performance effects from diversity that are less positive than the diversity-performance effect for whites *(white/nonwhite color line & diversity effects)*

I have identified multiple ways that the demographic composition of a bureaucracy can affect outcomes for clients. However, there is no guarantee that the demographic composition of a bureaucracy will affect outcomes at all in any particular case, as Mosher (1968) noted with regards to values influencing bureaucratic decisions. Representative bureaucracy literature indicates that bureaucrats may be subject to rules, supervision, or socialization that constrains

their behavior, or a given demographic characteristic may not be salient to the bureaucrats' work (Keiser et al. 2002; Watkins-Hayes 2011; Wilkins and Williams 2008; 2009).

Empirically Distinguishing Among the Various Hypotheses/Measures

While the various hypotheses presented above and the corresponding measures of organizational demographics are conceptually distinct from one another, multiple conceptualizations of intergroup dynamics can sometimes be used to explain the same phenomena. This overlap results because the percentage of same-race bureaucrats (for a particular minority) is expected to often correlate with the percentage of nonwhite bureaucrats and with organizational diversity. Suppose for example that there is empirical evidence that African American clients receive better services from bureaucracies with more African American staff. This result might be explained by same-race ingroup bias. It might also be possible that the African American bureaucrats were only able to effectively improve service provision to African American clients because they had the support of their Latino colleagues (white/nonwhite color line). Alternatively, one might argue that bureaucracies with African American employees are more diverse which causes them to be more innovative, leading to better service provision to African American clients and, perhaps, others (diversity). This example illustrates how the three of the four approaches discussed above can easily overlap and indicates the ambiguity that can result from certain types of empirical observations.

Much of the existing empirical research on representative bureaucracy produces empirical findings like the example I provided and thus can be subject to multiple interpretations. Without controlling for the possible effects of diversity or total nonwhite bureaucrats, it is difficult to know whether or not a unique same-race representation effect is present. This suggests the need for a careful empirical test which can simultaneously consider the effects

associated with all four measures depicted in Figure 1. One study by Pitts (2005) does estimate performance effects for both representation and diversity simultaneously, but this study considers only overall performance effects, not distributional effects. The results indicated inconsistent performance effects for both representation and diversity, with each variable sometimes producing positive effects but sometimes negative ones. I build on the work of Pitts by considering whether diversity and the degree of compositional match have distributional effects and by including two additional measures of an organization's demographic makeup.

Data

Empirically testing my hypotheses requires a dataset that provides reliable outcome measures for multiple demographic subgroups of clientele as well as information about bureaucratic personnel and indicators that can control for other aspects of service provision quality. Furthermore, the data should describe organizations where bureaucrats exercise discretion over decisions that relate to issues which are salient along racial dimensions since bureaucrats' race is then expected to affect outcomes (see Keiser et al. 2002). Finally, a large dataset is needed to overcome the multicollinearity that will be present when simultaneously testing for the effects associated with the three hypotheses I outlined above. Schools provide an ideal setting for testing my hypotheses because of the substantial level of discretion exercised among frontline bureaucrats, the salience of race in the context of education (Meier and Stewart 1992), and the availability of large datasets meeting the requirements described above.

I utilize a panel dataset of annual school-level records for 7817 California public schools over a 13 year time period (2000-2012).[1] Data were obtained from the California Department of Education on all public schools, but I did not include charter schools or alternative schools in my datasets.[2] Schools are annually evaluated under the Academic Performance Index (API), which

combines performance data from multiple standardized exams into a single index ranging from 200 to 1000.

California is a racially diverse state. A plurality of public school students are Latino (48.2%), with the next largest racial group being white (29.4%).[3] There are also sizeable Asian (8.1%) and African American (7.6%) populations. There are also a small number of Native American (or Alaskan Native) students in each state (0.8%). The remainder (6.0%) identify as Pacific Islander, Filipino, or multiple/no response. While Latino students make up the largest share of the student population, the majority of teachers are white (over 60%), with the next largest group being Latino.

Dependent Variable

I wish to analyze the effect of bureaucratic demographics on outcomes for distinct client groups. Thus, I will run separate regressions for each racial/ethnic group for which there is data available: Latino, African American, Asian, Native American, and white. My dependent variable is school-level academic performance for the racial group being analyzed, using the API after rescaling so scores range from 20 to 100. Because test results are not publicly reported when an insufficient number of students take the standardized exams at a particular school (fewer than 50 or 11, depending on the year), the number of observations varies as I examine different racial groups. The large Latino student population enables me to examine over 61,000 cases when predicting Latino performance. On the other hand, most schools do not have enough Native American students to report performance data for this group, so fewer than 2000 observations are available for regressions of Native American student performance.

Measures of Teacher Race

I measure same-race representation as the percentage of teachers who belong to the racial group whose performance is being predicted in a particular model. I include both a linear and a squared term since some studies of representative bureaucracy suggest that a squared representation term should be included to account for the existence of a critical mass effect (Thompson 1976; Meier 1993; Meier, Wrinkle, and Polinard 1999). To test my white/nonwhite color line hypothesis for ingroup effects, I also measure the percentage of nonwhite teachers.

Like Pitts (2005), I measure diversity using a Blau index (as Harrison and Klein (2007) recommend when measuring variety), which I multiply by 100 in order to make the scale of the measure more comparable with my same-race representation measure. The index is calculated as follows:

$$Diversity = \left(1 - \sum_{i=1}^{6} {p_i}^2\right) \times 100$$

where p_i indicates the proportion of teachers in the school who belong to racial group i. Since there are six racial/ethnic categories (including an "other" category), the diversity measure is bounded by 0 and 83.3, with higher numbers indicating greater diversity. A value of 83.3 would indicate that 16.7% of the teachers belong to each of the six racial/ethnic categories. When the index is equal to 0, 100% of the teachers belong to a single racial/ethnic category.

Finally, I measure compositional match using Pitts's (2005) representation measure:

$$Compositional\ Match = \left(1 - \sum_{i=1}^{6} (s_i - p_i)^2\right) \times 100$$

where s_i indicates the proportion of students in the school who belong to racial group i and p_i indicates the proportion of teachers in the school who belong to racial group i. The compositional match measure is bounded by -100 and 100, with higher numbers indicating that

the teachers' racial makeup more closely mirrors the students. A value of 100 would indicate that for every racial group, the percentage of students was exactly the same as the percentage of teachers in that racial category (e.g., 10% of students are Native American, and 10% of teachers are Native American). If 100% of the students were in one racial category and 100% of the teachers belonged to a different racial category (e.g., all students are Latino and all teachers are white), the index would equal -100.

Table 1 shows the correlations among the main independent variables. The percentage of nonwhite teachers is moderately correlated with the percentage of Latino teachers (r=0.68), with African American teachers (r=0.59), and with Asian teachers (r=0.43). The compositional match is very weakly correlated with all other measures. Diversity is moderately correlated with Latino teachers (r=0.62), African American teachers (r=0.48), Asian teachers (r=0.47), and white teachers (r=-0.87). These correlations are high enough to suggest that a same-race representation measure could easily serve as a proxy for total nonwhite teachers or overall diversity, so it is important to control for these other measures of teacher demographics if one wants to rule out other potential explanations for why demographics are linked to outcomes.

[Table 1 about here]

Control Variables

A number of factors can affect student performance on standardized exams. I control for both indicators of the quality of educational services and characteristics of the students which are known to correlate with academic performance. Teacher quality is known to be a major factor influencing educational outcomes (Hanushek and Rivkin 2006). Since teacher race/ethnicity is used to measure my main independent variables of interest, it is particularly important to control for other teacher characteristics which may correlate with race/ethnicity. I rely on two measures

of teacher characteristics: the average number of years of teaching experience and the percentage of teachers who have obtained an advanced degree (Hanushek and Rivkin 2006; Cebula, Mixon, and Montez 2015). Because it is difficult to fully measure the overall quality of a school (or its teachers), I also control for the combined exam pass rate of students belonging to the other four racial groups.[4] I also include the student-to-teacher ratio in my models.

Beyond teachers and school resources, research suggests that students are influenced in the learning by their peers (see Hanushek, Kain, and Rivkin 2009). Thus, I control for the demographic characteristics of the student body. I measure the percentage of students who are white, African American, Asian, Native American, and other. Latino is the omitted category. I also control for the percentage of students who are eligible for free or reduced price lunch and for the size of the school using a logarithmic transformation of enrollment. In order to account for heteroskedasticity and correlated errors from my panel dataset, I cluster standard errors by school and include year fixed effects. I also run a set of models that include school fixed effects, which are not susceptible to bias due to omitted variables that are time-invariant.

Findings

Table 2 shows the results of my main models of student performance, and Table 3 shows models with school fixed effects. According to the R-squared values in Table 2, my main models explain between 60% and 81% of the variation in standardized test performance for all groups except Native American students. The lower explanatory power of the Native American student model (R-squared = 0.376) is probably due to the fact that most schools have very few Native American students, leading to greater variability in aggregated test results.

[Table 2, Table 3, and Figure 2 about here]

In four of the five equations in Table 2, at least one of the same-race teacher terms is significant. The nonlinear effects of representation can be clearly seen in Figure 2, which shows predicted exam scores for varying levels of same-race representation. The proper interpretation of these results is that they indicate how the predicted pass rate varies as the percentage of same-race teachers varies *while holding diversity, compositional match, and the percent nonwhite teachers constant* (except that there is no nonwhite variable to hold constant in the model for white students). While the effects are positive for at least part of the range of possible values for every group except Native Americans (for which results are statistically insignificant), the slope is only consistently positive across the range of observed values for Asians and Latinos. Thus, I consider there to be only mixed support for the general ingroup bias hypothesis (H1). As one can see in Figure 2, a 20 percentage-point change in the share of same-race teachers (approximately a 2-3 standard deviation change for Latinos, African Americans, and Asians) can easily be associated with a 2-3 point change in the API (which has a standard deviation of between 8 and 11 depending on the subgroup; theoretical range: 20-100). A 2-3 point improvement on the API would be noticeable but not huge. By way of comparison, a two standard deviation (39-unit) increase in share of teachers with an advanced degree is estimated to improve the API by anywhere from 0.3 (for Latinos; 39×.00723) to 2.4 points (for Asians; 39×.0616), depending on the racial group.

None of my sub-hypotheses predicted that same-race teacher effects would be strongest for Latinos and Asians, which makes the results in Figure 2 somewhat surprising. For African Americans, we see a U-shaped curve, which has been regarded as consistent with a critical mass hypothesis. African American teachers are estimated to reach a critical mass and have a positive marginal effect once they constitute 22% of the teaching force.[5] This means that the margin

effect of same-race teachers is negative for African Americans over much of the range of observed data, which is somewhat surprising, although not inconsistent with a few studies in the education literature, which has found somewhat mixed results (Dee 2004; Ehrenberg and Brewer 1995; Hanushek et al. 2005; Howsen and Trawick 2007). For Asian and white students, we see the opposite—an inverse U-shape. This pattern indicates diminishing returns rather than the critical mass effect found in prior studies (Thompson 1976; Meier 1993; Meier, Wrinkle, and Polinard 1999). Positive (marginal) effects of same-race representation are estimated to taper off to zero for Asians and whites at 34% and 40%, respectively. There is no evidence that same-race teachers have an effect for Native American students (the linear and squared terms are not jointly significant; $F=1.42$, $p=0.24$), although the small sample size means that statistical power is limited. When I include school fixed effects (Table 3), positive same-race effects are still found for Latinos and Asians. In the African American model with school fixed effects, both same-race teacher coefficients are now positive (and the linear term is significant), indicating that in this model same-race teachers have a uniformly positive marginal effect on African American student performance. The same-race teacher coefficients for whites are no longer significant in Table 3. Altogether, there is some support for the general ingroup bias hypothesis (H1), and the evidence of same-race teacher effects is strongest for Latinos and Asians.

Looking to the nonwhite teacher coefficient in Tables 2 and 3, it does not appear that students of color generally perform better when there are more nonwhite teachers (while holding the number of same-race teachers constant). Thus, H1c is generally unsupported. African American students are estimated to perform slightly *worse* when the share of nonwhite teachers is higher; the nonwhite teacher coefficient is also negative and significant for Latinos in the school fixed effects model. Asian students are the only group for whom nonwhite teachers have a

positive and statistically significant effect in any model, and this relationship disappears when school fixed effects are added.

My results also undercut the argument that students benefit directly from a compositional match. In my main models (Table 2), the coefficient for the compositional match variable is negative and statistically significant for Latinos, Asians, and whites. When school fixed effects are added (Table 3), the compositional match coefficient becomes insignificant in the Asian student model, and it switches signs (but is still statistically significant) in the white student model. These results are a bit inconsistent but do not support the notion that a compositional match leads to better outcomes for students of any racial group (except possibly whites).

The estimated effects of teacher diversity appear somewhat consistent with my theorizing. Diversity has a significant and positive effect for Latinos under both model specifications. A two standard deviation (37-unit) increase in the diversity measure is associated with an increase of about 0.7 points on the API for Latinos. This effect is more modest than the same-race effects described above, but it is still meaningful. Under my main specification (Table 2), diversity is estimated to have a similarly-sized positive effect for African American students, although this effect becomes insignificant under the school fixed effects model. Diversity has a negative effect on white students under both model specifications, and the estimated magnitude of that effect is at least twice the estimated effect size for Latinos, although the effect size differs substantially across the two models. Diversity also has a negative and significant effect for Asians in the fixed effects models. Given the positive effect of diversity on Latinos and its negative effect on whites, my results appear somewhat consistent with either hypothesis H3a (triracial system) or H3c (white/nonwhite color line). Diversity is associated with better bureaucratic outcomes for at least one group (Latinos) that is disadvantaged under our racialized

social system as described under the triracial system or the white/nonwhite color line framework. African Americans may also benefit from teacher diversity, and Asians may be harmed by it, although evidence for these effects is weaker.

In an online appendix, I also report results from a few additional models which serve as robustness checks. I try running fractional logit regression, autoregressive models, and models with a similar dataset of Texas public schools. The following results are fairly consistent across models. First, the share of same-race teachers is positively related to performance for Latinos and Asians. Second, the share of nonwhite teachers is negatively related to African American student performance. Third, the compositional match is negatively related to Latino performance (and perhaps positively related to white performance). Fourth, diversity is positively related to outcomes for Latinos and African Americans but negatively related to outcomes for whites.

Conclusion

This study has considered the manner in which (and what measures of) employee racial demographics are associated with bureaucratic outcomes as well as whether or not there are differences among different racial groups. Before discussing our results in more detail, it is worth briefly discussing some of the considerations one should make when trying to assess to what extent the associations I observe reflect direct causal relationships. There are at least three threats to direct causal inference. First, teachers may self-sort into different schools based on school performance (or related features). Studies in the education literature indicate that high-quality teachers and white teachers often sort into schools with more white students and already-high levels of performance (Jackson 2009; Hanushek, Kain, and Rivkin 1999). I would expect this process to negatively bias estimates of same-race and nonwhite teacher coefficients for models of minority student performance since a lack of white teachers may indicate that high-quality

white teachers left the school due to prior low levels of performance. A second concern is that school administrators who are particularly concerned with improving conditions for minority students may simultaneously adopt practices that serve to increase the share of minority teachers (or the compositional match) along with other interventions that boost performance among minority students (Favero and Molina 2018). If this pattern of behavior is prevalent among school administrators in my research setting, it should positively bias same-race, nonwhite, and/or compositional match coefficients in models for nonwhite students. A third potential concern is labor market forces that may cause correlations between teach quality and teacher demographics. For example, if being located near a historically black college that offers a teacher training program increases both the share of black teachers and the average teacher quality (due to increased supply of teachers), same-race teacher coefficients for black students could be positively biased. Labor market considerations could bias results in different directions depending on the nature of the processes at work. Future research should consider each of these three potential threats to causal inference as well as potential means of controlling for the omitted variables implied by such processes (if they do occur) in order to mitigate bias.

Keeping in mind the limitations implied by these potential threats to causality, the findings from my empirical tests provide potentially important insights regarding the link between the racial composition of a bureaucracy and its distributional outcomes. First, the strongest associations appear to be positive same-race effects for Latinos and Asians. If these relationships are causal, then hiring more same-race teachers is seemingly the most effective way (compared to hiring for nonwhite teachers, diversity, or compositional match) to boost performance outcomes for Latino and Asian students. This pattern is consistent with the notion that ingroup bias affects bureaucratic outcomes, with particularly strong effects for Latinos and

Asians. While none of the three main competing frameworks for describing our racialized social system led me to believe that Latinos and Asians would experience the strongest positive same-race effects, some have pointed out that members of both of these racial groups may be uniquely situated as "perpetual foreigners" within the U.S. society (Xu and Lee 2013). The lack of strong same-race effects for African Americans is surprising given persistent underperformance of African Americans in the education setting and a clear expectation from representative bureaucracy theory that same-race teachers should boost African American performance. Perhaps the teacher sorting mechanisms described above have negatively biased this slope. Future research should also consider other possibilities, such as labor market dynamics (see Podgursky, Monroe, and Watson 2004), neighborhood effects, or socialization processes. My main results for Native Americans were inconclusive, likely due to my small sample, although appendix results from the Texas dataset suggest that strong, positive same-race effects may be present for Native American students. Results of same-race tests for whites were fairly inconsistent, making it difficult to draw any firm conclusions about the implications of ingroup bias for the majority racial group in the U.S.

My results also support the notion that diversity (heterogeneity) has some fairly consistent relationships with distributional outcomes, although the positive diversity effects appear to be considerably smaller than the same-race effects for Latinos and Asians. Diversity is positively related to academic performance for Latinos and African Americans but negatively related to the performance of whites. This result is consistent with the notion that the social environment created by having a highly racially heterogeneous bureaucracy can improve outcomes for the most disadvantaged clientele groups. Though the finding that diversity helps Latinos and African Americans but not Asians does not adhere neatly to the triracial framework

offered by Bonilla-Silva (2004) (which suggests Latinos and Asians occupy a common space in our racialized social system), average Latino and African American performance lags substantially behind average performance for Asians (and whites) in the area of education. Thus, maybe Asians should instead be understood as occupying a position between Latinos and whites in educational settings. It is somewhat curious that only Latinos appear to consistently benefit from both same-race representation and diversity (heterogeneity). African Americans only benefit consistently from diversity while Asians only benefit consistently from same-race teachers. Given substantial evidence that the effects of racial demographics do differ across racial groups, future studies of race in public administration should carefully consider whether findings apply to each relevant racial category rather than assuming all minority groups will experience effects similarly.

Two final measures of a bureaucracy's demographics yielded no consistent evidence of positive effects. The share of nonwhite bureaucrats is not positively related to outcomes for any minority racial group and is actually negatively related to African American student performance. This result suggests that—at least in this context—minority clients do not benefit from the presence of minority bureaucrats who do not share their own race. For example, Latinos would not be expected to benefit from swapping out white teachers for African American or Asian teachers. If all minority clients could benefit from the hiring of bureaucrats belonging to any minority group, this would suggest the possibility for positive-sum gains among distinct minority groups. Instead, there appears to be tradeoffs for managers and policymakers trying to improve performance for minority groups since the demographic composition of an organization is (definitionally) zero-sum. Increasing the share of same-race bureaucrats for Asians requires decreasing the share of same-race bureaucrats for some other group. Perhaps results would look

different in contexts more conducive to the formation of a common nonwhite identity within the organization.

A compositional match between the racial makeup of an organization's clientele and its workforce yielded only one consistent empirical result for minority students—a modest negative association with Latino performance. It is difficult to conceive of how a compositional match would harm performance (while other demographic measures are held constant), so perhaps this relatively small effect is merely the result of unmodeled nonlinearities related to student demographic characteristics (since student demographics are used in computing this measure). It is also worth noting that from a manager's standpoint, improving the compositional match of the employee workforce often involves increasing same-race representation for certain minority groups, which does appear to sometimes benefit some of those minorities (i.e., Latinos and Asians). What my results do not support is the notion that a compositional match offers benefits to minority clients *above and beyond the potential benefits offered by increasing the share of same-race bureaucrats (or increasing employee heterogeneity)*. Similarly, the absence of positive effects from a compositional match means there is no reason to expect that the benefits Latino clients experience from increasing the share of Latino bureaucrats taper off once the share of Latino bureaucrats exceeds the share of Latino clients. At least in my sample, measures of same-race teachers and teacher diversity are simply better for predicting student outcomes (by race) than a measure of the organization's compositional match. As such, a compositional match may not generally be the best way to measure a bureaucracy's demographic makeup *when trying to empirically model distributional outcomes*, even if a compositional match is considered desirable due to normative ideals regarding representation and equity.

One important organizational dynamic that has been given considerable attention by prior scholars and that merits a brief discussion here is the potential need for a critical mass of minority employees before their presence can begin having a positive effect on outcomes. My findings partially confirm and partially challenge this critical mass effect that others have found. For African Americans and Latinos in my sample, the marginal effect of same-race representation does appear to become more positive as their presence becomes larger, as one would expect if a critical mass was necessary. However, the marginal effect of African American teachers on African American students is negative across the range of most observations in my sample. The logic of a critical mass would seem to suggest that same-race representation has no (or little) effect until a critical mass is reached, not that the marginal effect will ever be negative. Furthermore, for Asians and whites, I find that same-race representation generally has an initially positive effect but that it is subject to diminishing returns. Perhaps this suggests that for Asian and white students, a small number of same-race teachers is sufficient to make the organization sensitive to the needs of these students. Once representation is large enough that the group's interests are brought to the attention of the organization, additional representation may become less important (although it is hard to understand why the relationship would turn negative for whites). This could be an indication that intergroup dynamics function differently for whites and Asians since they occupy a different location in the racialized social system than Latinos and African Americans. Future research should further explore this issue.

How might this study help to inform research in contexts other than U.S. education? First, employee racial demographics likely matter for outcomes in the context of U.S. education in part because employees enjoy substantial discretion, and education is a policy area where race is highly salient. In a setting with less employee discretion (see Watkins-Hayes 2011) or where

race is less salient, it may be that no measure of bureaucratic racial composition will be related to outcomes. Second, the manner in which societies function with regards to racial or ethnic categories differs widely. The fact that many results differ by racial category in my study highlights the importance of understanding the unique characteristics of particular racial or ethnic groups in whatever setting one studies bureaucracy and racial/ethnic divisions. Some common patterns may emerge with respect to, for example, a general ingroup bias or some effect generally found among groups that are relatively disadvantaged by their society. Similar trends may also be observed when examining other types of social groupings (e.g., gender, veteran status, class, sexual orientation). Third, settings where minorities are overrepresented among frontline workers may function somewhat differently than the setting I observe, in which whites are overrepresented. In such settings, disparities may be more likely to emerge from formal rules and structures rather than from interpersonal biases or patterns of behavior. Fourth, whatever the setting, it may be important to control for same-race representation when estimating the distributional effects of compositional match or diversity. In many settings, measures of diversity and compositional match are likely to correlate fairly strongly with measures of same-race representation, meaning that omission of a same-race variable could cause problems of omitted variable bias when predicting outcomes for a particular group. In my sample, when only one teacher demographic measure is included at a time (see online appendix), results are fairly similar to my main models for same-race and nonwhite teacher effects but differ noticeably for compositional match and diversity. This suggests that it is indeed important to control for same-race bureaucrats when trying to estimate the effects of compositional match or diversity.

Endnotes

[1] In most years, fewer than 4500 schools were able to be included in the sample because prior to 2010 student performance results were only reported for student subgroups with at least 50 students.

[2] Schools were only retained in the dataset if the Educational Option Code indicated a traditional school. I also dropped schools where the reported student-to-teacher ratio was larger than 50 and where the reported number of teachers with advanced degrees exceeded the total number of teachers.

[3] All student demographic figures listed in this paragraph are for 2007 (http://dq.cde.ca.gov/dataquest/EnrollEthState.asp?Level=State&TheYear=2006-07&cChoice=EnrollEth1&p=2).

[4] I computed the pass rate for other racial groups as a weighted average of the pass rates for all racial groups for which data was available (except for the excluded racial group). Data was available for two small racial subgroups (Filipino, Pacific Islanders) beyond the five racial groups I consider here, but this data was not used to compute the measure of other students' performance. Weights were determined according to the number of students enrolled in the school who belonged to each racial group.

[5] The inflexion point was found using the formula $-\beta_1/(2 \times \beta_2)$, where β_1 is the coefficient for the linear term and β_2 is the coefficient for the squared term. African American: $.0765/(2 \times .00173) = 22.1$; Asian: $-.184/(2 \times -.00272) = 33.8$; White: $-.141/(2 \times -.00175) = 40.3$.

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Table 1. Correlations of Teacher Measures

	% Latino	% African American	% Asian	% Native American	% White	% Nonwhite	Compositional Match
% Nonwhite	0.68	0.59	0.43	0.03	-1.00		
Compositional Match	-0.01	-0.01	0.04	0.02	0.04	-0.04	
Diversity	0.62	0.48	0.47	0.09	-0.87	0.87	-0.09

Table 2. Effects of Teacher Race on Student Performance – Main Models

	Latino	*African American*	*Asian*	*Native American*	*White*
Teachers:					
% Same-Race	0.0359*	-0.0765*	0.184*	-0.291	0.141*
	(0.0124)	(0.0161)	(0.0278)	(0.176)	(0.0341)
% Same-Race^2	0.000569*	0.00173*	-0.00272*	0.0148	-0.00175*
	(0.000204)	(0.000257)	(0.000618)	(0.00975)	(0.000383)
% Nonwhite	-0.00243	-0.0412*	0.0517*	0.0246	
	(0.00464)	(0.00545)	(0.00848)	(0.0290)	
Compositional Match	-0.0319*	0.00799	-0.0406*	-0.0322	-0.0102*
	(0.00421)	(0.00463)	(0.00686)	(0.0220)	(0.00435)
Diversity	0.0192*	0.0216*	-0.0150	0.000318	-0.0732*
	(0.00612)	(0.00843)	(0.0110)	(0.0329)	(0.0205)
Avg. Years Experience	-0.00387	0.000970	0.00887	0.184*	0.176*
	(0.0132)	(0.0162)	(0.0257)	(0.0789)	(0.0143)
% with Adv. Degree	0.00723*	0.0259*	0.0616*	0.0264	0.0210*
	(0.00225)	(0.00293)	(0.00421)	(0.0138)	(0.00251)
Other Students' Performance	0.614*	0.0858*	0.00744*	0.0357*	0.0301*
	(0.00803)	(0.00129)	(0.000951)	(0.00645)	(0.000999)
Student-Teacher Ratio	-0.00133	-0.0108	0.206*	0.119	-0.0523*
	(0.0125)	(0.0149)	(0.0244)	(0.0644)	(0.0144)
Students:					
% White	0.0699*	-0.0995*	0.174*	0.322*	0.0410*
	(0.00746)	(0.00908)	(0.0145)	(0.0603)	(0.00757)
% African American	0.211*	-0.0724*	-0.115*	0.132	0.274*
	(0.00734)	(0.00818)	(0.0195)	(0.0745)	(0.0126)
% Asian	-0.0182*	-0.165*	0.0773*	0.384*	-0.0196*
	(0.00553)	(0.00885)	(0.00917)	(0.0554)	(0.00591)
% Native American	0.00144	0.0351	-1.627*	0.0642	-0.232*
	(0.0303)	(0.0509)	(0.198)	(0.0486)	(0.0408)
% Other	0.0649*	-0.0733*	0.0425*	0.176*	0.0138
	(0.00639)	(0.00901)	(0.0105)	(0.0480)	(0.00763)
% Low Income	-0.0121*	-0.0324*	-0.126*	-0.0552*	-0.0965*
	(0.00228)	(0.00347)	(0.00564)	(0.0156)	(0.00325)
Log(Enrollment)	-0.00189*	-0.00114*	-0.00355*	0.000575	-0.00219*
	(0.000117)	(0.000115)	(0.000219)	(0.000453)	(0.000159)
Adj R-sqr	0.763	0.811	0.599	0.376	0.613
N	61047	23656	25503	1661	55272

Observations are measured at the school-year level; panel spans from 2000 to 2012. Dependent variable is the Academic Performance Indicator (by student subgroup), which (theoretically) ranges from 20 to 100 (rescaled from 200-1000). Clustered standard errors in parentheses. Constant and year dummies not shown. * $p<0.05$ (two-tailed)

Table 3. Effects of Teacher Race on Student Performance – Fixed Effects Models

	Latino	*African American*	*Asian*	*Native American*	*White*
Teachers:					
% Same-Race	0.00752	0.0225*	0.0477*	-0.0402	0.0113
	(0.00602)	(0.0113)	(0.0109)	(0.140)	(0.0146)
% Same-Race^2	0.00118*	0.000179	-0.000229	0.00170	-0.000272
	(0.000118)	(0.000169)	(0.000248)	(0.00538)	(0.000163)
% Nonwhite	-0.00840*	-0.00996*	-0.00115	0.0374	
	(0.00240)	(0.00390)	(0.00350)	(0.0336)	
Compositional Match	-0.0317*	0.00586	-0.00217	0.0383	0.0150*
	(0.00220)	(0.00365)	(0.00354)	(0.0296)	(0.00200)
Diversity	0.0162*	-0.00205	-0.0134*	-0.0189	-0.0332*
	(0.00304)	(0.00606)	(0.00529)	(0.0444)	(0.00868)
Adj R-sqr	0.809	0.684	0.585	-0.212	0.626
N	61047	23656	25503	1661	55272

Two-way fixed effects (for the year and for the school) and control variables were included. Clustered standard errors in parentheses. * $p<0.05$ (two-tailed)

Figure 1. Characterizing Bureaucratic Demographics (Relative to African Americans)

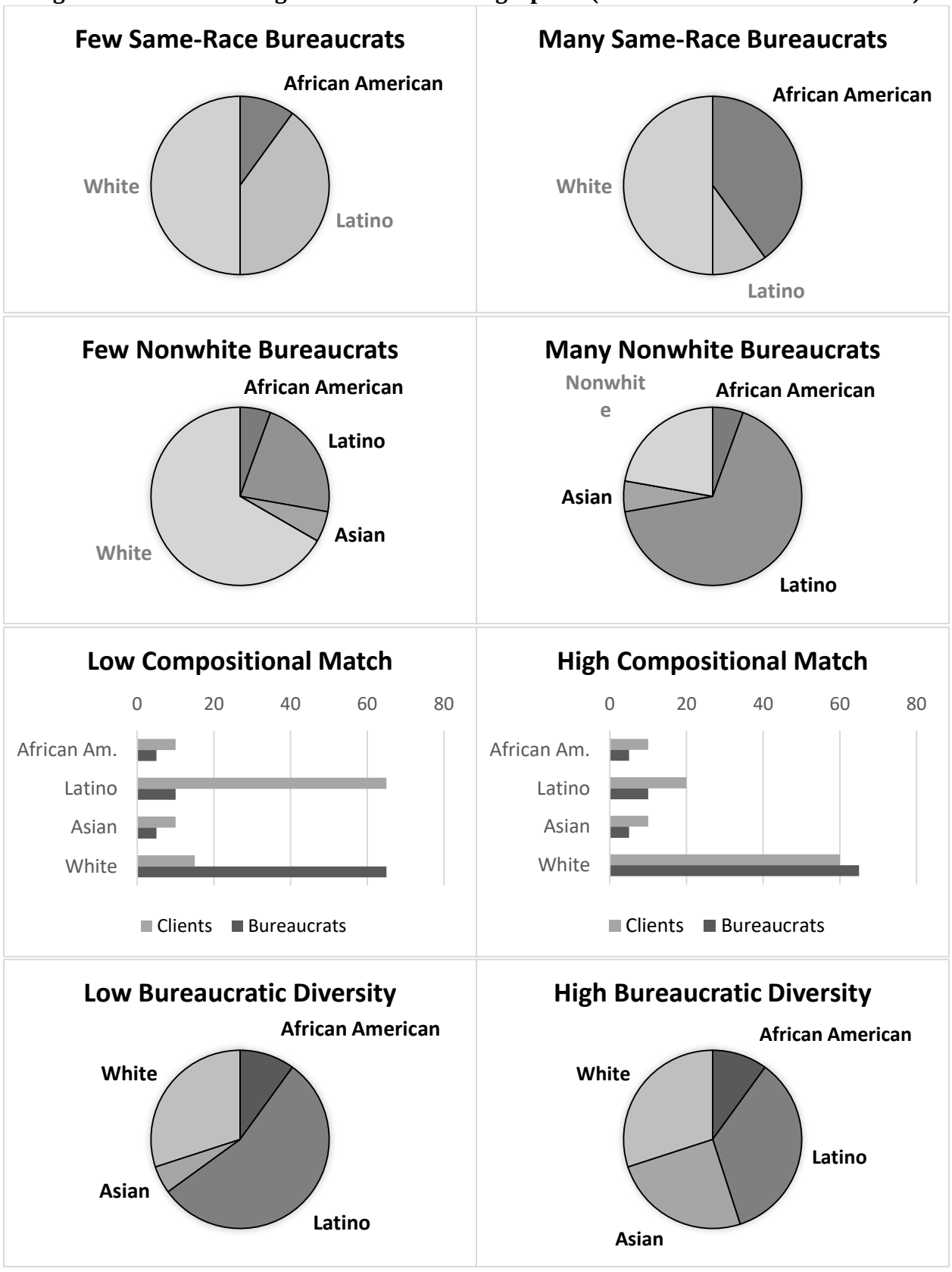
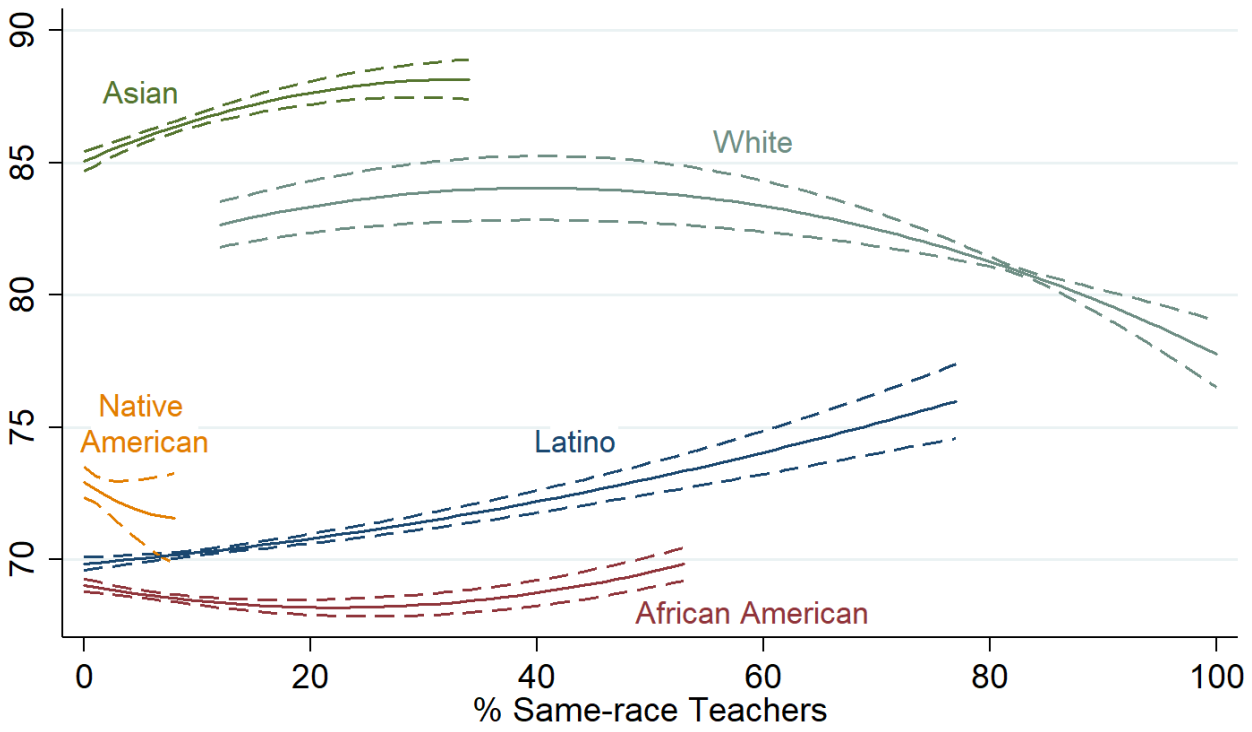


Figure 2. Predicted API Across Varying Percentages of Same-Race Teachers



Online Appendix

Appendix Part I. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
API:					
Latino	61,049	70.44363	9.556545	27.6	99.5
African American	23,656	68.7713	10.86397	33	100
Asian	25,503	86.14179	9.919728	31.5	100
Native American	1,661	72.69073	8.769663	36	98.7
White	55,273	80.93429	8.074956	45.1	100
Teachers:					
% Hispanic	65,163	11.64297	11.15872	0	100
% African American	65,163	4.434217	9.127041	0	100
% Asian	65,163	4.963801	6.982718	0	100
% Native American	65,163	0.58482	1.484272	0	40
% White	65,163	75.22831	18.89862	0	100
% Nonwhite	65,163	24.77169	18.89862	0	100
Compositional Match	65,163	64.4694	24.66421	-83.2463	100
Diversity	65,163	34.88915	18.67018	0	81.65681
Average Years Experience	65,163	13.14313	3.477372	0.052632	28.11111
% with Advanced Degrees	65,163	41.84587	19.59473	0.961538	100
Other Students' Performance:					
Latino	65,161	78.75634	10.41859	31.5	100
African American	65,163	758.1956	101.3961	298	998.1818
Asian	65,163	389.8756	170.9641	36	980
Native American	65,163	363.1845	159.697	37.73816	903.4267
White	65,162	672.4929	157.0253	44.7	1000
Student-Teacher Ratio	65,163	16.28461	4.262243	1.080645	49.625
Students:					
% Latino	65,163	41.22152	23.17508	0	98.89095
% White	65,163	33.60561	22.89575	0	97.41936
% African American	65,163	8.446293	10.74858	0	96.30607
% Asian	65,163	9.892351	13.54445	0	100
% Native American	65,163	0.890277	2.566512	0	82.67716
% Other	65,163	5.943954	6.921844	0	100
% Low Income	65,163	43.08822	31.02285	0	104.121
Log(Enrollment)	65,163	675.5584	517.2479	23	4295

Pairwise Correlations:

	Latino API	Af. Am. API	Asian API	Nat. Am. API	White API	% Hispanic T	% Af. Am. T
Latino API	1						
Af. Am. API	0.9049	1					
Asian API	0.7924	0.7986	1				
Nat. Am. API	0.6507	0.6133	0.5717	1			
White API	0.8007	0.8048	0.8258	0.637	1		
% Hispanic T	-0.0535	-0.0335	-0.1994	-0.0081	-0.1238	1	
% Af. Am. T	-0.2091	-0.3682	-0.3071	-0.0922	-0.1739	0.1232	1
% Asian T	0.0336	0.0167	-0.0205	0.0199	0.139	0.0446	0.0387
% Nat. Am. T	-0.0686	-0.048	-0.1029	-0.253	-0.1129	-0.0209	-0.0159
% White T	0.1031	0.2494	0.2095	0.0697	0.067	-0.679	-0.5901
% Nonwhite T	-0.1031	-0.2494	-0.2095	-0.0697	-0.067	0.679	0.5901
Comp. Match	0.1141	0.0965	0.204	0.2429	0.1878	-0.0118	-0.0119
Diversity	-0.1295	-0.2658	-0.272	-0.0546	-0.1015	0.6239	0.4774
Avg. Exper.	0.2138	0.3123	0.1392	0.121	0.1896	-0.1415	-0.1898
Adv. Deg.	0.2065	0.2712	0.2974	0.2158	0.2029	0.0479	0.0204
Latino Oth S Perf	0.7665	0.9064	0.9252	0.7557	0.9478	-0.1824	-0.4607
Af. Am. Oth S Perf	0.9155	0.8729	0.8842	0.7528	0.9087	-0.237	-0.3235
Asian Oth S Perf	0.1437	0.2311	-0.163	-0.0588	-0.0784	0.5603	0.0479
Nat. Am. Oth S Perf	0.1284	0.1875	-0.1291	0.0197	-0.1018	0.5898	0.076
White Oth S Perf	0.6945	0.6637	0.7286	0.6007	0.6304	-0.1005	-0.4946
Stu-Tea Rat.	-0.0457	0.0165	0.067	0.2567	-0.0695	-0.0174	0.0246
% Latino S	-0.2022	-0.1313	-0.3037	-0.0439	-0.3122	0.6252	0.1708
% White S	0.1793	0.341	0.3733	0.21	0.2105	-0.5055	-0.4125
% Af. Am. S	-0.1923	-0.4129	-0.3934	-0.0647	-0.2137	0.0329	0.7099
% Asian S	0.0881	0.0873	0.0576	0.1576	0.2566	-0.1563	-0.1114
% Nat. Am. S	-0.0563	-0.0223	-0.2456	-0.4069	-0.1292	-0.0755	-0.0752
% Other S	0.2244	0.1578	0.1252	0.0873	0.1876	-0.1385	-0.0637
% Low Income	0.0482	-0.0208	-0.3224	-0.2246	-0.1911	0.4082	0.2213
Log(Enrollment)	-0.2711	-0.2368	-0.1963	0.2685	-0.222	0.0703	0.0913

	% Asian T	% Nat. Am. T	% White T	% Nonwhite T	Comp. Match	Diversity	Avg. Exper.
% Asian T	1						
% Nat. Am. T	-0.0452	1					
% White T	-0.4295	-0.0317	1				
% Nonwhite T	0.4295	0.0317	-1	1			
Comp. Match	0.0354	0.0207	0.0416	-0.0416	1		
Diversity	0.4686	0.0879	-0.8736	0.8736	-0.0894	1	
Avg. Exper.	-0.0425	0.0192	0.225	-0.225	0.0761	-0.2305	1
Adv. Deg.	0.0084	-0.0222	-0.0437	0.0437	0.0401	0.0629	0.1515
Latino Oth S Perf	0.1126	-0.0877	0.2973	-0.2973	0.1915	-0.2949	0.27
Af. Am. Oth S Perf	0.1097	-0.0857	0.2538	-0.2538	0.2734	-0.2696	0.2511
Asian Oth S Perf	0.1549	-0.0074	-0.4573	0.4573	-0.5722	0.4791	-0.0626
Nat. Am. Oth S Perf	-0.0465	-0.0076	-0.4021	0.4021	-0.5583	0.4106	-0.086
White Oth S Perf	0.1171	-0.0611	0.2699	-0.2699	0.1216	-0.2788	0.2115
Stu-Tea Rat.	-0.0484	0.019	0.0097	-0.0097	-0.0182	0.0148	-0.0154
% Latino S	-0.0591	0.0019	-0.4532	0.4532	-0.59	0.4504	-0.1452
% White S	-0.31	0.0059	0.6813	-0.6813	0.6574	-0.7147	0.2094
% Af. Am. S	0.0293	-0.0005	-0.4085	0.4085	-0.0716	0.3836	-0.221
% Asian S	0.5782	-0.0464	-0.0851	0.0851	-0.0314	0.1408	0.0492
% Nat. Am. S	-0.0889	0.2468	0.1059	-0.1059	0.0366	-0.1155	0.0459
% Other S	0.0795	-0.026	0.0257	-0.0257	-0.04	0.0276	0.0237
% Low Income	0.0469	0.0258	-0.4053	0.4053	-0.4083	0.3808	-0.0685
Log(Enrollment)	-0.0254	0.0281	-0.0735	0.0735	0.0245	0.1449	-0.0466

	Adv. Deg.	Latino Oth S Perf	Af. Am. Oth S Perf	Asian Oth S Perf	Nat. Am. Oth S Perf	White Oth S Perf	Stu-Tea Rat.
Adv. Deg.	1						
Latino Oth S Perf	0.1939	1					
Af. Am. Oth S Perf	0.2042	0.9042	1				
Asian Oth S Perf	0.0482	-0.0497	-0.185	1			
Nat. Am. Oth S Perf	0.0551	-0.1138	-0.2348	0.923	1		
White Oth S Perf	0.1379	0.7927	0.7376	0.0365	-0.0375	1	
Stu-Tea Rat.	0.1646	-0.0217	-0.0348	-0.0049	-0.0136	-0.0014	1
% Latino S	-0.0095	-0.3432	-0.4855	0.8265	0.9144	-0.2228	0.0181
% White S	0.0056	0.3702	0.3904	-0.7201	-0.642	0.3257	0.0141
% Af. Am. S	-0.0319	-0.5139	-0.3196	-0.0683	-0.0342	-0.7126	-0.0513
% Asian S	0.0085	0.2989	0.3257	-0.1091	-0.3841	0.3627	0.0164
% Nat. Am. S	-0.0787	-0.093	-0.0772	-0.0565	-0.0863	-0.0304	-0.0634
% Other S	0.0756	0.1723	0.2219	-0.0451	-0.1015	0.0765	-0.0362
% Low Income	-0.0431	-0.2538	-0.2407	0.6152	0.6269	-0.1987	-0.0583
Log(Enrollment)	0.1878	-0.2065	-0.2279	-0.0473	-0.0511	-0.1562	0.4789

	% Latino S	% White S	% Af. Am. S	% Asian S	% Nat. Am. S	% Other S	% Low Income
% Latino S	1						
% White S	-0.6848	1					
% Af. Am. S	0.0139	-0.4161	1				
% Asian S	-0.3963	-0.1621	-0.1165	1			
% Nat. Am. S	-0.108	0.0975	-0.0661	-0.0871	1		
% Other S	-0.289	-0.0877	0.0294	0.1196	-0.0587	1	
% Low Income	0.6083	-0.5626	0.2145	-0.2103	0.0385	-0.1116	1
Log(Enrollment)	0.0504	-0.0427	0.0102	0.015	-0.0795	-0.0432	-0.1074

Appendix Part II. Robustness Checks

General summary: No major changes in substantive results are found when fractional logit regression is used instead of linear least squares regression. When a lagged dependent variable is included as a predictor (see O'Toole and Meier 1999), results change somewhat but not dramatically. More specifically, same-race effects remain similar for Latinos and African Americans (but become insignificant results for Asians and whites); diversity effects become insignificant for Latinos but remain substantively similar to my main models for African Americans (positive effect) and whites (negative effect); compositional match is significantly and positively related to performance for African Americans and whites but is negatively (and significantly) related to Latino performance. The results for Texas are remarkably similar to California when it comes to same-race and diversity effects, except there are some significant results for Native Americans, which generally mimic the result for Latinos. The results for the nonwhite teachers and compositional match differ somewhat in Texas, with some mixed support for hypotheses H1c (Latinos appear to benefit from nonwhite teachers) and H2 (African Americans and whites appear to benefit from greater compositional match).

Fractional logit regression:

	Latino	African American	Asian	Native American	White
Teachers:					
% Same-Race	0.00212*	-0.00279*	0.0168*	-0.0142	0.0112*
	(0.000648)	(0.000783)	(0.00216)	(0.00855)	(0.00227)
% Same-Race^2	0.0000273*	0.0000786*	-0.000281*	0.000733	-0.000145*
	(0.0000108)	(0.0000124)	(0.0000461)	(0.000459)	(0.0000261)
% Nonwhite	0.000370	-0.00202*	0.00796*	0.00145	0
	(0.000255)	(0.000271)	(0.00108)	(0.00158)	(.)
Compositional Match	-0.00200*	0.000324	-0.00544*	-0.00183	-0.00161*
	(0.000237)	(0.000242)	(0.000709)	(0.00115)	(0.000330)
Diversity	0.000994*	0.00121*	-0.00170	0.000149	-0.00594*
	(0.000322)	(0.000439)	(0.00105)	(0.00167)	(0.00142)
Pseudo R2	0.027	0.036	0.062	0.012	0.027
N	61047	23656	25503	1661	55272

Fractional logit regression was used. Clustered standard errors in parentheses. Control variables, constant, and year dummies not shown. * $p<0.05$

Lagged Dependent Variable:

	Latino	African American	Asian	Native American	White
Lagged Dependent Variable	0.767*	0.613*	0.861*	0.620*	0.839*
	(0.00350)	(0.0106)	(0.00349)	(0.0299)	(0.00366)
Teachers:					
% Same-Race	0.0229*	-0.0245*	0.0105	-0.117	0.0184
	(0.00406)	(0.00887)	(0.00540)	(0.108)	(0.0136)
% Same-Race^2	-0.000117	0.000620*	-0.0000951	0.00234	-0.000270
	(0.0000661)	(0.000141)	(0.000105)	(0.00451)	(0.000149)
% Non-White	0.00302	-0.0212*	0.000764	0.00425	0
	(0.00184)	(0.00371)	(0.00277)	(0.0174)	(.)
Compositional Match	-0.00713*	0.00602*	-0.00284	0.000626	0.00263*
	(0.00161)	(0.00302)	(0.00194)	(0.0151)	(0.00134)
Diversity	0.00267	0.0102*	0.00172	-0.0133	-0.0151*
	(0.00211)	(0.00502)	(0.00308)	(0.0227)	(0.00770)
Adj R-sqr	0.919	0.892	0.936	0.619	0.907
N	53154	17672	19895	866	47927

Clustered standard errors in parentheses. Control variables, constant, and year dummies not shown. * $p<0.05$

Texas (results shown on next page):

Data were obtained from the Texas Education Agency on all public schools, but I did not include charter schools or alternative schools in my datasets. Schools were identified as alternative schools if they were evaluated under the Alternative Education Accountability standards. I also dropped Texas schools that reported spending more than $28,000 or less than $1000 per pupil on instructional expenditures or that reported a student-teacher ratio larger than 35 or smaller than 2.86 because such schools appeared to typically be career centers or some other type of alternative school. It is difficult to imagine a regular school that could produce such extreme values for these variables. During the time period covered by the Texas dataset, students in grades 3-11 were required to take an annual standardized exam called the Texas Assessment of Knowledge and Skills (TAKS). The dependent variable is simply the percentage of students within the subgroup who pass all portions of the TAKS exam in a given year. Instructional expenditures are measured in $1000s per pupil.

	Latino	African American	Asian	Native American	White
Teachers:					
% Same-Race	0.134*	-0.149*	0.397*	1.009*	0.618*
	(0.0289)	(0.0293)	(0.115)	(0.411)	(0.0656)
% Same-Race^2	0.000464	0.00279*	-0.0320*	-0.0496*	-0.00378*
	(0.000306)	(0.000339)	(0.0104)	(0.0190)	(0.000744)
% Non-White	0.0538*	-0.0659*	-0.0394	-0.168	
	(0.0222)	(0.0324)	(0.0347)	(0.136)	
Compositional Match	-0.135*	0.0590*	0.0163	0.00881	0.110*
	(0.0257)	(0.0232)	(0.0292)	(0.112)	(0.0232)
Diversity	0.0736*	0.0300*	0.00422	0.124*	-0.146*
	(0.0126)	(0.0145)	(0.0172)	(0.0491)	(0.0360)
Avg. Salary ($1000s)	0.602*	0.315*	0.0414	-0.198	-0.201*
	(0.0329)	(0.0388)	(0.0585)	(0.136)	(0.0267)
Avg. Years Experience	-0.483*	-0.421*	-0.179*	0.0243	0.312*
	(0.0358)	(0.0428)	(0.0560)	(0.171)	(0.0303)
% Turnover	-0.141*	-0.0871*	-0.0139	-0.103	-0.119*
	(0.0175)	(0.0240)	(0.0426)	(0.110)	(0.0135)
Other Students' Performance	0.754*	0.961*	0.545*	0.641*	0.507*
	(0.00894)	(0.0103)	(0.0172)	(0.0459)	(0.00573)
Instructional Expenditures	-0.667*	0.133	-0.388	0.0628	-0.204
	(0.148)	(0.159)	(0.287)	(0.457)	(0.117)
Student-Teacher Ratio	0.812*	0.476*	-0.116	-0.192	0.178*
	(0.0551)	(0.0621)	(0.0897)	(0.239)	(0.0459)
Students:					
% White	0.292*	-0.239*	-0.145*	-0.119	-0.248*
	(0.0370)	(0.0332)	(0.0382)	(0.150)	(0.0312)
% Black	0.278*	-0.125*	0.0343*	-0.1000*	-0.00651
	(0.0160)	(0.0161)	(0.0141)	(0.0450)	(0.00838)
% Asian/Pacific Islander	0.246*	-0.0526*	0.106*	-0.113	-0.0903*
	(0.0206)	(0.0196)	(0.0238)	(0.105)	(0.0124)
% Native American	0.325*	0.472*	-0.391	-0.382	-0.277*
	(0.153)	(0.230)	(0.394)	(0.355)	(0.120)
% Low Income	0.0833*	-0.0363*	-0.0820*	-0.0377	-0.120*
	(0.00738)	(0.00935)	(0.0135)	(0.0335)	(0.00554)
Log(Enrollment)	-3.917*	-1.571*	2.519*	0.0179	-0.588*
	(0.206)	(0.252)	(0.318)	(0.868)	(0.167)
Adj R-sqr	0.592	0.587	0.422	0.234	0.574
N	34920	26924	10380	2314	33001

Observations are measured at the school-year level; panel spans from 2005 to 2010. Dependent variable is the percentage of students who pass all subjects of the Texas Assessment of Knowledge and Skills (by student subgroup). Clustered standard errors in parentheses. Constant and year dummies not shown. * $p<0.05$

Appendix Part III. Including Only One Demographic Measure at a Time

	Latino	African American	Asian	Native American	White
% Same-Race	0.0132[1]	-0.0777*	0.155*	-0.287	0.0234
	(0.00975)	(0.0133)	(0.0246)	(0.170)	(0.0139)
% Same-Race^2	0.000306[1]	0.00134*	-0.00229*	0.0138	-0.000294*
	(0.000170)	(0.000213)	(0.000585)	(0.00964)	(0.000107)
Adj R-sqr	0.762	0.810	0.596	0.376	0.612
N	61047	23656	25503	1661	55272

Clustered standard errors in parentheses. Control variables, constant, and year dummies not shown. * p<0.05
[1] coefficients jointly significant at alpha=0.05

	Latino	African American	Asian	Native American
% Nonwhite	0.00564	-0.0169*	0.0249*	-0.00202
	(0.00308)	(0.00378)	(0.00646)	(0.0207)
Adj R-sqr	0.761	0.810	0.594	0.374
N	61047	23656	25503	1661

Clustered standard errors in parentheses. Control variables, constant, and year dummies not shown. * p<0.05

	Latino	African American	Asian	Native American	White
Compositional Match	-0.00000728	-0.00553	-0.00559	-0.0178	0.00475
	(0.00238)	(0.00304)	(0.00492)	(0.0176)	(0.00309)
Adj R-sqr	0.761	0.809	0.593	0.374	0.612
N	61047	23656	25503	1661	55272

Clustered standard errors in parentheses. Control variables, constant, and year dummies not shown. * p<0.05

	Latino	African American	Asian	Native American	White
Diversity	0.00475	-0.0156*	0.0168*	-0.0128	0.0137*
	(0.00328)	(0.00467)	(0.00658)	(0.0199)	(0.00405)
Adj R-sqr	0.761	0.810	0.593	0.374	0.612
N	61047	23656	25503	1661	55272

Clustered standard errors in parentheses. Control variables, constant, and year dummies not shown. * p<0.05