ISSN No. 2454 - 1427

CDE
October 2018

The Measurement and Mismeasurement of Social Difference

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Working Paper No. 294

http://www.cdedse.org/pdf/work294.pdf

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Rohini Somanathan

1. Introduction

Measures of social difference are commonplace in mainstream research in the quantitative social sciences. They are used to "explain" collective outcomes ranging from voluntary contributions in elementary schools to civil wars. Heterogeneous communities appear to experience lower rates of investment and economic growth, restrict spending on public goods, limit income redistribution, exhibit less interpersonal trust, and suffer higher rates of crime and environmental degradation.[1]

Several mechanisms are proposed to link heterogeneity and underperformance. Citizens vote for lower taxes if public spending choices are made by leaders who do not share their preferences (Alesina, Baqir & Easterly 1999). Cooperation is more difficult to achieve because social sanctions operate most effectively within groups (Miguel & Gugerty 2005). Communities might waste their collective resources in struggles for power rather than in the production of public goods and it is easier to organize conflict around ethnic than around class lines (Esteban & Ray 2008; Caselli & Coleman 2013). There may be active discrimination against ethnic minorities due to fears of cultural contamination (Adida, Laitin & Valfort 2016). Or, those in mixed societies may feel simply feel socially isolated, "hunker down," and disengage from the collective enterprise (Putnam 2007).

[1] See, for example, Easterly & Levine 1997, 1204: "In the case of Sub-Saharan Africa, economic growth is associated with low schooling, political instability, underdeveloped financial systems, distorted foreign exchange markets, high government deficits, and insufficient infrastructure. Africa's high ethnic fragmentation explains a significant part of most of these characteristics."

These theories have been tested using data gathered by national statistical agencies and independent teams of researchers. The standard source for within-country data is the national census. Multi-country studies have additionally used ethnographic studies and language trees to construct data sets that include many hundreds of ethnic, linguistic and religious groups (Alesina et al. 2003; Fearon 2003; Montalvo & Reynal-Querol 2005). The distribution of the population across groups is used to generate community-level indices of heterogeneity such as Polarization and Ethno-Linguistic Fractionalization (ELF). Armed with a large number of data points on these measures and collective outcomes related to cooperation and conflict, innumerable papers have tested the hypothesis that heterogeneity hurts. [2]

This body of research on the effects of social identity is based on two premises. First, the categories of classification that we use are individually and socially relevant. Second, group membership determines our preferences and proclivities, and groups cannot easily cooperate to further common goals. These assumptions have resulted in a dangerously simplistic view of successful communities as particular types of demographic maps. They have hampered our understanding of when and how diverse societies flourish because we have not adequately distinguished between the chosen and inherited aspects of identity, and have come to view diversity as a disadvantage that must be managed. Instances of successful integration in firms, neighborhoods, and schools are analyzed as aberrations with no general lessons for institutional design or public policy.

I draw upon recent research in the social sciences to challenge these assumptions. The historiography of social classification reveals many influences on identity labels. Census data reflect both demographics and political ideas about which differences should be recorded. We

[2] Banerjee, Iyer & Somanathan 2008 and Alesina & La Ferrara 2005 summarize major contributions in this literature.

have counts by race and Hispanic origin in the United States, nationalities and languages in Europe, castes and religions in India, and color in Central and South America. Taxonomies have also changed over time and many countries now allow their residents to self-classify. The United States has introduced mixed-race options and several South American states have new questions on Afro descent. Studies that compare responses for individuals across years and alternative survey formats find that those of mixed race are most likely to shift among available alternatives. Responses to questions on race and ethnicity are also influenced by the order in which they are asked. It is therefore unclear what measures of community heterogeneity based on these data represent.

Lieberman and Singh (2017) classify census procedures in around 150 countries since the eighteenth century. They show that ethnic counting significantly increased in the nineteenth century with the spread of colonialism and this institutionalization of social cleavages provided "ethnic entrepreneurs" an opportunity to mobilize civil conflict along these lines. The act of ethnic classification seems to directly influence intergroup conflict by making specific identities salient.

New longitudinal data sets that link census tracts with income and employment outcomes also challenge the heterogeneity hypothesis by identifying poverty rather than demography as the critical determinant of well-being. When racial and ethnic groups face very different opportunities, racially homogenous minority neighborhoods also tend to have high poverty rates. Tax data show that those who start their working lives in segregated neighborhoods have lower relative earnings if they are black, Hispanic, or American Indian. This helps explain the more limited mobility of black workers in the income distribution. They have smaller probabilities of moving out of the bottom of the income distribution and higher chances of sliding back when

they are in upper income classes (Akee, Jones & Porter 2017).

The main policy response to ghettos has been to help some families exit to safer neighborhoods with better-functioning school systems. The Moving to Opportunity (MTO) program of the U.S. Department of Housing and Urban Development in the 1990s is the best-known example of this kind. While the program did not target race, the intersection of race and poverty resulted in a high fraction of vouchers going to African-American or Hispanic females, many of whom signed up to get their children away from gangs and drugs. The program resulted in sizable gains in the health and employment prospects of young children but had negative effects on adolescents who were disrupted at a critical age (Chetty, Hendren & Katz 2016; Ludwig et al. 2012). Tommie Shelby's recent book (*Dark Ghettos: Injustice, Dissent, and Reform*) sharply criticizes this approach because, rather than addressing grossly unequal social structures and the stereotypes that go with them, it blames their victims and deprives them of dignity and agency.

Chetty et al. (2018) directly provide evidence on the importance of racial bias in determining black-white income gaps. They use longitudinal data for almost the entire U.S. population from 1989 to 2015 and show that wage gaps exist even within neighborhoods and after controlling for parental income. Most importantly from the perspective of this volume, areas with relative racial equality are those where there is little racial bias among whites as measured by the Implicit Association Tests discussed in detail in Lai and Banaji's chapter.

When Alesina, Baqir, and Easterly (1999) studied public goods and social divisions in the United States two decades ago, and set the tone for much of the literature on the negative effects of community heterogeneity, these types of data and the related evidence was not available. The correlation between heterogeneity and public spending did not seriously account for

neighborhood poverty and all that went with it. Housing markets had priced many minority communities out of attractive neighborhoods into racially mixed urban counties that were also poor, and it was difficult to disentangle the effects of poverty and heterogeneity in the cross-sectional data sets that were available.

Laboratory and field experiments have also provided new insights into collective decision making. We see, both with undergraduates in the U.S. universities and community groups in post-conflict societies in Africa, that deliberation in the democratic process matters. Groups that actively choose policies are more likely to cooperate with each other (Dal Bó, Foster & Putterman 2010). Mixed groups find it harder to agree, but if they are supported in this process, they choose more effective leaders because they cannot rely on traditional social networks and have to find new ways of communicating and aggregating information (Fearon, Humphreys & Weinstein 2015).

Re-examining the literature on identity and community performance in the light of these new findings can help us better understand the links between social difference and domination, the theme of this volume.

The remainder of this chapter is in five parts. The next section provides a comparative account of the collection of social data, highlighting differences in classification across countries and over time. Section 3 is a case study of India, where contests over classification have been both violent and political because they determine access to the world's largest affirmative action program. Section 4 discusses how commonly used measures of heterogeneity convert demographics into indices of difference. Section 5 deals with the problem of mismeasurement. Mismeasurement arises on multiple fronts: the collection of identity data, the indices based on these data, and specification of models that link demographics and community performance. I

conclude with some implications of my analysis for the collection and use of social data.

2. Categories of Difference

Most countries collect some form of social data. Race, religion, caste, ancestry, nationality, language, and color are all used in different combinations. The types of data collected, the coarseness of categories used for tabulation, and how citizens respond to questions on social background all vary. In some countries, census questionnaires allow individuals to self-report their group in response to open-ended questions about identity while in others, enumerators are given strict instructions on how to classify ambiguous responses. There have also been several changes in format and content over time. When waves of immigration have brought in new ethnicities and nationalities, statistical agencies have often incorporated them into their questionnaires.

The United Nations Statistical Division has an archive of forms and data for countries that conduct census operations. Morning (2008) examined 138 questionnaires around the year 2000 and finds that eighty-seven of them collect some type of ethnic information. This excludes those with questions on religion, language, and legal citizenship that are also common markers of group identity. Over half of the 138 questionnaires explicitly use the term *ethnicity*, 20 percent (mainly in Europe) use *nationality*, and 15 percent (mainly in South America) record indigenous origins. *Race* is used mostly in former slave-holding societies.

Lieberman and Singh (2017) examine over a thousand census questionnaires administered by 156 countries between 1800 and 2005. They find a steady increase in ethnic enumeration throughout the nineteenth century and in the decades leading up to the Second World War. In this period, over 85 percent of censuses enumerated ethnicity. After the war, there

was resistance to ethnic classification, particularly in Europe, and by the 1990s, only two out of three countries asked about ethnicity. Since then the trend has been upward once again.

Enumeration histories within continents also reveal interesting contrasts. The United States and Canada are a good example. The first U.S. census in 1790 distinguished white males and females, all other free persons, and enslaved people. Its main purpose was to determine representation in the legislature and taxation. Native Americans, who were not taxed, were excluded. *Color* appeared in 1850, when whites, blacks, and mulattoes were enumerated. *Race* appeared as an explicit question in 1870. In the years that followed, under pressure from race scientists, many terms were introduced to denote mixtures.[3] The arrival of large numbers of Asian and Latino immigrants led to new categories. Chinese, Japanese, Korean, Mexican, Hindu, Cuban, Vietnamese, and Asian Indian were added as options in the race question after these groups entered the country. These labels would typically come under the heads of language or nationality in other countries.

Starting in 1970, race and ethnicity in the United States has been self-reported and the methodology and results of the census have been challenged in and out of court. There have been allegations of systematically undercounting poor and minority households with implications for the funding and representation of these groups (Anderson & Fienberg 2000). In both 1980 and 1990, millions of Americans reported themselves as *Other* under the race question, and multiracial populations complained about being unable to properly self-classify. These challenges led to a 1997 federal directive that expanded the number of categories and allowed

[3] Nobles 2000 quotes from the instructions given to enumerators of the 1870 census: "It must be assumed that, where nothing is written in this column, 'White' is to be understood. The column is always to be filled. Be particularly careful in reporting the class *Mulatto*. The word here is generic, and includes quadroons, octoroons, and all persons having any perceptible trace of African blood. Important scientific results depend upon the correct determination of this class in schedules 1 and 2."

multiple responses to the race question in the following census.[4]

Canada has a similar history of immigration and has also been collecting census data since the late eighteenth century, but statistical agencies have been more open-minded on what constitutes identity. Until the middle of the twentieth century, the census asked about race. In 1951, this was replaced with a question on *ethnic origin* with options for race, religion, and country of origin. This was unlike the United States where both race and ethnicity continued to be asked as separate questions. Canadian was a possible option, although it was discouraged by enumerators until 1971 and these responses were not tabulated. Starting in 1986, counts for Canadian were made available and in that year 0.5 percent of the population chose this ethnicity. By 1996 about a third of the population had decided that this was their main ethnicity (Boyd 1999).

The Canadian census has also experimented changing the order in which respondents see options for the ethnic origin question. French appears before English in some years and not others. In 2011, in the face of much protest by academic bodies, the long form of the census with ethnicity questions was made voluntary. If non-response bias varies by ethnicity, these data will no longer provide unbiased estimates of the ethnic distribution of the population.[5]

Europe's attitude to collecting social statistics after the Second World War was shaped by its experience with ethnic conflict in the interwar period. Anti-Semitism and its disastrous effects in the thirties led European countries to prohibit the collection of ethnic data. Today, most countries in Western Europe restrict themselves to the collection of data on country of birth for

[4] Yanow 2015, chaps. 2–4.

[5] Stevens, Ishizawa & Grbic 2015 summarizes changes in U.S. and Canadian censuses over time. The editorial opinion in the July 2010 *Nature*, which appeared just before the 2011 census, criticizes the move from mandatory to voluntary reporting of ethnicity in Canada.

individuals and their parents. In some countries, mostly in central and eastern Europe, questions on language, religion, and ethnicity are asked, but are considered sensitive and remain optional. Russia made the entire census optional in 2002.[6]

For Latin America, *National Colors* by Mara Loveman traces the history of population enumeration in nineteen countries. In the colonial period, ethnic counts were used for conscription to forced labor and taxation. After independence from Spain and Portugal, racial distinctions were condemned by most national leaders. Yet, when census operations began, the four categories of white, black, Indian, and mixed were recorded in most countries. Racial mixing and the presence of indigenous populations distinguished these nations from their colonizers and recording these categories in the census asserted the new nationhood. In fact, after the Mexican Revolution of 1910, the order in which racial data was tabulated also changed to emphasize the new balance of power. Indigenous populations were listed first, followed by mixed, and then white. After 1950, most censuses in the continent stopped recording race and some replaced this with language. By 1970, no country other than Cuba recorded race. Since then, race has once again appeared on census forms, largely in response to local and international pressures to actively bridge racial gaps in opportunities. Almost all countries now have questions on Indigenous and African descent.[7]

Brazil has been especially well studied because its successful political movement, Movimento Negro, created a new Afro-Brazilian consciousness. This led to the adoption of race-based affirmative action programs in prestigious public universities, starting around the turn of

[6] Simon 2012 provides a useful tabulation of the data collected by statistical agencies in the European countries in the census closest to the year 2000 (Table 1, 1369–75).

[7] See Loveman 2014, tables 6.1 and 7.1a for a list of censuses and countries that have recorded race since the early nineteenth century and figure 5.1 for the changes in tabulation in Mexico.

this century. The Brazilian census historically used a classification of social groups based on color: white, brown/mulatto, black, and yellow. In 1991, it added a fifth category of indigenous.

Several recent studies have compared respondent responses in different formats to ask how well these categories capture present day social identities. I return to these in section 5.

This account of the many approaches to gathering social data could go on. Israel records religion and birthplace but not ethnicities such as Arab, although this is the most salient contemporary divide in the region. Rwanda, in its attempt at nation-building after the genocide in 1994, outlawed the use of ethnic labels like Hutu and Tutsi. These were occupations in the pre-colonial period and classified as ethnicities by Belgian colonizers.[8] The main takeaway from this historical account of enumeration is that the categories in which social data are recorded are subjective, idiosyncratic, and determined by many of the same forces that shape other indicators of community success. It is hard to justify their treatment as exogenous determinants of community outcomes.

Several countries have recently changed their policies on collecting social data in an attempt to balance privacy concerns, rising costs of the census, and a commitment to address discrimination. There has been some convergence across countries. Those with a long history of recording identity are making these questions optional and open-ended while European nations have started tracking group inequalities. One-third of respondents in New Zealand and two-thirds in Poland completed their most recent census forms online and Canada has made the long-form of the census voluntary. On the other hand, the Diversity Barometer has been introduced in Belgium, the Integration Barometer in Denmark, and the Trajectories and Origins Survey on Living Conditions in France. The most recent Eurobarometer survey on discrimination took

[8] Goldscheider 2002 compares Israel, Canada, and the United States. For Rwanda, see Wimmer 2013, 53–54, for ethnic distinctions under colonial rule, and Eramian 2014 for changes after 1994.

place in 2015 and covered twenty-eight member states and 27,718 respondents from across the social spectrum (Kukutai, Thompson & McMillan 2015; European Commission 2017).

3. Caste, Identity, and the Indian Census: A Case Study

Nowhere is the official classification of social groups more contentious than in India. Over the years, hundreds of caste groups have petitioned the government for a change in status, and promises for recategorization appear on most political manifestos. Current controversies are the combined result of colonial and precolonial attempts at enumeration and the commitment to large-scale affirmative action after political independence.

Census operations first started in India under British rule in the 1860s and were carried out at ten-year intervals starting in 1881.[9] There were elaborate listings by occupation and caste as early as 1600, under the Mughals, but these were primarily for taxation since taxes varied by occupation and local influence (Guha 2003).[10]

With British rule, enumeration became a means to understand Indian society in order to govern and control it more effectively. British officials wrote obsessively about caste, turning British India into what Nicholas Dirks (2001, 6) has termed an "ethnographic state." There was however much confusion about the meaning of caste, about whether it should be self-reported and how one should reconcile small differences in spelling and big swings in numbers across census years.

[9] Some regions did enumerate populations before the British Crown took over from the East India Company in 1858. For example, there are counts available for districts in Western India from 1826.

[10] Guha 2003, 153, notes that "dominant communities often won exemption from taxes, while special levies existed on subordinate ones … Grocers, grain dealers, tobacco vendors, sellers of colored powder, lac dealers, low-caste weavers, other weavers, etcetera, all were enumerated and taxed at different rates."

In 1885, Eustace Kitts published *Compendium of the Castes and Tribes Found in India* from the census reports of the British Provinces for 1881. Enumerators for that census were given instructions to count the number of each caste in order to lay "a foundation for further research into the little-known subject of Caste" but Kitts admits that they encountered a "mighty maze without a plan" (Kitts, 1995, v). In the years that followed, caste statistics became more elaborate and administrators continued to grapple with the relationship between caste names, language, religion, and occupation. In some provinces and for some years, all religions were subdivided by caste, in other cases, caste was admissible only for Hindus.

In 1881, enumerators were asked to report numbers of all castes above 100,000 people in their province and to use their local knowledge to determine whether some of the reported names were synonyms. Castes were listed alphabetically. In 1891, castes were grouped under what was believed to be their traditional occupation, so for example the census listed martial castes, pastoral castes, and major landowners, irrespective of the fractions of these groups currently pursuing those occupations.

The 1901 enumeration went back to an alphabetical listing and was far more elaborate than any of the other censuses. Herbert Risley, an enthographer, was in charge and used the opportunity provided by endogamous caste groups to examine his theories on the physical basis for race. Descriptions of the skulls and noses of different castes add considerably to the bulk of the 1901 census report. The number of castes recorded in the Census of India, General Report, went up from 204 in 1881 to 718 in 1901, and back down to 256 in 1931. These were only those castes that were considered significant for the country as a whole. Provincial reports recorded many more. In 1911 and 1921, castes continued to be alphabetically listed but attention was once

again restricted to larger caste groups to avoid “an undue expenditure of time and labor.”[11]

In 1931, caste was once again grouped by occupation to “avoid the dispersion of closely connected castes involved in an alphabetical arrangement” and all provinces were asked to compile figures only for those castes that the `”local government considered of sufficient importance.” The 1931 census also mentions a campaign against caste returns based on their role in perpetuating an oppressive system. A response of *caste nil* was accepted for the first time in this year and was chosen by two million people. Nearly all of them were from Bengal, where social reform movements, such as the Brahmo Samaj, were taking root.

In spite of the confusion surrounding social classification in the colonial period, the statistics collected had profound effects on state policy after Independence in 1947.

At the time, no household data was available on either assets, income, or consumption, but a caste enumeration was available from the 1931 census. Census reports also had elaborate descriptions of the lifestyle of various castes, their relative position in society, the clothes they wore, the food they ate, and their role in the village society. These were the basis for drawing boundaries between privilege and disadvantage in India. The most significant legacy of the 1931 census is its list of “exterior castes.” Census officials in each province had been asked to list castes who “suffered disability on account of being debarred from temples, schools or wells” (*Census of India, 1931,* App. 1, p. 471).

Based on these “data,” the new Constitution in 1950 created schedules for two categories of disadvantaged groups: the Scheduled Castes (SCs) and the Scheduled Tribes (STs). The Constitution mandated quotas in parliament, and later education and employment, in proportion to their population shares. For each census year following this, enumerators would ask

[11] All figures and quotes have been taken from the General Report for the relevant census year.

households their caste if they claimed to be either an SC caste or an ST tribe. They would only enter them as such if their caste name appeared on the list and if their religion was Hindu, Buddhist, or Sikh. All other religious groups were, ineligible, irrespective of their caste or tribe. In particular, Muslims, who are currently 14 percent of the Indian population, or Christians, who are 2 percent, were kept outside these schedules and the ambit of affirmative action.

In addition to the SC and ST classification, a new category of Other Backward Classes (OBCs) was created in 1955, with two thousand caste groups. These are not enumerated by the census but survey data do record membership. They are also eligible for affirmative action with a quota of 27 percent in all federal employment and seats in public universities. Some Muslim groups are now included under the OBCs.

Through this categorization, the state created a new layer of identities which sat above the more complex and tangled layer of caste. There are over eight hundred groups in the SC and ST lists.[12] They are typically endogamous, and have very different levels of education and access to the modern sector of the Indian economy. I return to these differences and their implications for justice in section 5.

4. Measures of Difference

The two previous sections have illustrated the historically contingent nature of identity as recorded in census data. In this section, I abstract from the difficulties of drawing social boundaries and discuss two commonly used measures of community cohesion given a distribution of the population across well-defined groups.

[12] Arriving at the total number of castes is not straightforward because lists are published separately for each of the twenty-nine Indian states and also change from one census year to the next. See Kumar and Somanathan 2016 for one method of combining them to arrive at the above number.

The Ethnolinguistic Fractionalization Index (ELF) most popularly used as proxy for the ability of communities to cooperate on policies that jointly affect them. It is defined as the sum of squares of all groups subtracted from unity. With *n* groups and s_i denoting the fraction of group i in the population of interest, the ELF is computed as:

$ELF = 1 - \sum_{i=1}^{n} s_i^2$ or equivalently $\sum_{i=1}^{n} s_i\,(1 - s_i)$

This measure takes the value of zero with a single large group, and increases in the total number of equal-sized groups in the population. The ELF happens to be the probability that two randomly chosen people in a population will be of the same group. If we view collective action as emerging from sharing of ideas in chance meetings between group members, this seems a reasonable measure.

The fractionalization measure is highest for populations with a large number of very small groups while group conflict is usually associated with clashing identities and competing interests of salient groups. Polarization measures place higher weights on larger groups and are maximized in a population with two equally sized groups. Joan Esteban and Debraj Ray have proposed a family of polarization measures to measure the propensity for conflict in a society. Empirical work on conflict based on these measures commonly uses the following variant, found in Esteban and Ray (2011, equation 5, p. 1348).

$P = \sum_{i=1}^{n} s_i^2\,(1 - s_i)$

Since within-group inequality in outcomes does not enter either the fractionalization or polarization indices, and all groups enter symmetrically, both measures implicitly assume that groups are unitary and equidistant from each other in some social space.

Country studies on the effects of ethnic diversity use census classifications to construct these measures. For example, Alesina and co-authors (2003) in their study of U.S. counties use

the three race categories of white, black, and other for 1960 and the fivefold classification with two additional categories of American Indian and Asian/Pacific Islander for 1990. Banerjee, Iyer, and Somanathan (2008) combine census data from 1931 to 1991 to generate caste and religious fractionalization measures for districts in India. Many localized studies also collect primary data from their respondents. Miguel and Gugerty (2005) administer questionnaires in two districts of Kenya to examine whether ethnically heterogeneous primary schools receive lower parental contributions.

Cross-country research relies on ethnic and linguistic graphs constructed by teams of researchers. The *Atlas Narodov Mira* was one of the earliest attempts at a multicountry listing of ethnicity. It was created by Soviet ethnographers in the 1960s and lists 910 ethnolinguistic groups across the world. Alternative data sets have now been provided by Alesina et al. (2003), Fearon (2003), and Montalvo and Reynal-Querol (2005), among others. Each of these differ in their classification criteria and coverage. Major sources used are the *Encyclopedia Brittanica*, the CIA *World Factbook*, Library of Congress Country Studies, and the *World Christian Encyclopedia*.

5. The Problem of Mismeasurement

With the necessary background in place, I now turn to my main arguments for why research across multiple disciplines calls for a re-examination of how we collect and use social data.

I consider the problem of mismeasurement at three levels. First, in the drawing of social boundaries, I consider examples from the United States, Brazil, and India that illustrate fluidity of reported identities and their response to economic incentives. The second source of

mismeasurement is in the indices discussed in the previous section that collapse data on identity into proxies for the likelihood of cooperation. Finally, I argue that the models used to predict the effects of heterogeneity on community performance are misleading in that they ignore the type of evidence that is most useful in building cooperation in diverse social environments.

a. Fluid Identities

There has already been excellent scholarship on the contingent nature of social boundaries. Over a number of years, Rogers Brubaker, Charles Tilly, Andreas Wimmer, and many others have provided theoretical principles and historical accounts of boundary-making and its effects.[13] I restrict myself here to quantitative examples from three of the world's largest democracies: the United States, Brazil, and India.

In the United States, the federal directive of 1997 allowed respondents to list two or more races in addition to the five categories that were previously available. The data from the following two census years are comparable in that the format of the race question remained the same. In the 2000 census 2.4 percent of the population listed two or more races and the bulk of these respondents were in three states: California, Texas, and New York. In 2010, this number went up by over two million or 32 percent, with the largest increase in the *White and Black* category (Jones & Bullock 2013).

Liebler et al. (2017) link individual responses for about half the population in the two census years. Figure 2, reproduced from their aptly named article "America's Churning Races" reveals the fluidity of identity among sizable sections of the population. They find about 6 percent switched racial categories, and Hispanics, American Indians, younger populations, and

[13] See for example Tilly 2003; Brubaker 2009; and Wimmer 2013.

those reporting two or more races in either year were disproportionately represented in this group.

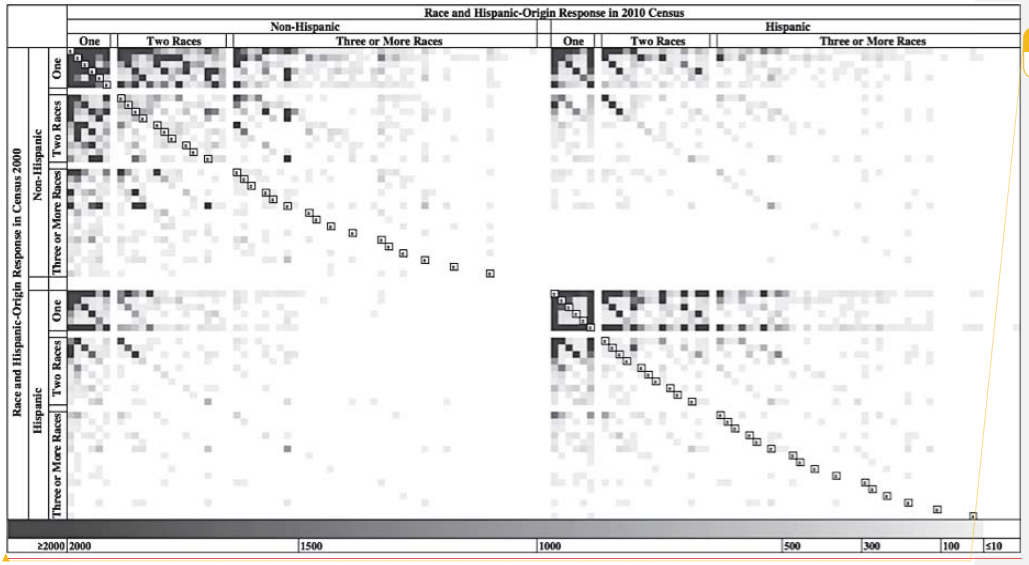

Figure 1: Changes in responses to questions on race and Hispanic-origin using linked U.S. Census data for 2000 and 2010. Sample size of 162 million individuals. Reproduced from Liebler et al. 2017.

The above findings caution us against the use of identity measures in statistical analyses of the type common in the heterogeneity and public goods literature. Considering the distribution of mixed-race responses by age and geography, it is certainly plausible that individuals are more likely to report themselves of mixed race in environments where these responses are most socially acceptable. The fraction doing so, while rising fast, is still small enough to be swamped in a study of U.S. counties or school districts. In other words, it may well be that the most progressive and dynamic localities in terms of racial integration are ignored as outliers in studies of heterogeneity using large data sets.[14]

[14] The ordering of questions on ethnicity has also been shown to alter the distribution of responses. In 1987,

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My second example is of Brazil. As described in section 2, Brazil has historically used a classification of race based on color, and 99 percent of the population classify as either white, brown, or black in all census years. The Brazilian Statistical Agency responsible for the census periodically conducts household surveys that have an open-ended question asking the respondent to identify their color and another question (later in the survey) asking them to identify themselves using the census classification. A comparison of responses across formats shows many Brazilians using non-census categories and for given skin color, classification biases vary by both age and education.[15]

The politics of classification over the last two decades is especially interesting. Affirmative action was first introduced in two public universities in Rio de Janeiro in 2001 and then adopted in many others over the next decade. The legislation did not however use census categories but instead used a dichotomous White-Black distinction and the term *Negro*, clarifying that this included the *Pardo* (Brown) and *Preto* (Black) categories of the census.

Francis and Tannuri-Pianto (2013) examine the effect of quotas on racial self-classification by surveying students in the University of Brasilia before and after the introduction of quotas in 2004. They use photographs of students from their secondary school identity cards to classify them by color and then ask them to self-classify during an online interview. They find that the introduction of affirmative action has polarized responses. After the introduction of quotas, higher fractions of lighter skin tone quintiles (based on the photographs) classify

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the U.S. Census Bureau conducted a randomized experiment in which the order of the race and Hispanic origin questions were reversed for about half of a sample of 515 respondents. Putting the Hispanic origin question before race increased the numbers responding to this question and also reduced the numbers checking Other in the race question; Anderson & Fienberg, 2000.

[15] See Bailey & Telles 2006, and Powell & Silva 2018 for a comparison of responses in alternative formats. Monk 2016 shows that inequality in education by color is much greater than by census category.

themselves as White and the darker quintiles classify themselves as Black. Bailey (2008) uses data from a national public opinion survey and also finds that the mention of quotas for *negros* doubles the number of respondents who claim that category in an open-format question.

As my final illustration of identity mis-measurement, I consider the recent challenges to the category of Backward Classes in India. As described in section 2, in the 1950s, the Indian state has created a fourfold overlay of official identities consisting of the Scheduled Castes, the Scheduled Tribes, the Other Backward Classes (OBCs) and a fourth residual category, often labeled as General or Unreserved. The first three groups are collectively called the Backward Classes. The census estimates only the first two scheduled categories, which together form 23 percent of the population. The OBCs are estimated at somewhere between 50 and 70 percent. The SCs, STs, and OBCs each have separate education and employment quotas under India's affirmative action program.

At the time of the original classification, there was very limited data on the economic standing of the many hundreds of caste groups in India. The lines separating large landowning classes such as the Brahmans and the Rajputs were clear, but differences among the rest were hard to measure. The list of Scheduled Castes was drawn up to include groups that had experienced untouchability and the Scheduled Tribes were those who were isolated in remote villages. The colonial census documented literacy rates by caste but little else, and since access to schooling was very limited in the colonial period, the castes and tribes in these schedules looked similar.

Since 1961, the census has tracked educational attainment for these groups. Figure 2 shows school completion rates in 1961 and 2001 for the fifteen largest groups in the SC and ST categories. In 1961, none of the SCs and only one ST group had more than 1 percent of its

population graduating from high school. In 2001, graduation rates were still below 1 percent for the Musahars among the SCs, while they were close to 20 percent among the more successful groups. Inequalities among the STs were more muted, but still substantial. The policies that were designed to promote equal opportunity now have very unequal impact, benefitting the relatively prosperous among the scheduled groups who have enough schooling to take advantage of quotas in higher education and employment. The category of Scheduled Castes, which was once relatively homogeneous in terms of educational attainment is no longer so. There appear to be not one, but many operational identities within this broad group. While there is broad agreement that affirmative action has been accompanied by some convergence between the scheduled and non-scheduled groups, there has also been considerable divergence within the scheduled categories.

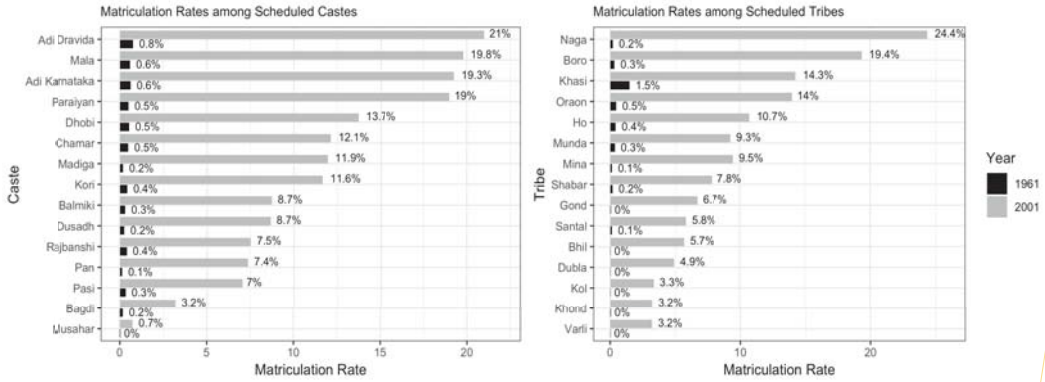

Figure 2. School completion rates for 1961 and 2001 for the fifteen Scheduled Castes and Scheduled Tribes in 1961 with the largest populations in 1961.

The gains experienced by selected castes have led to fierce battles for reclassification. I have previously referred to this phenomenon as the Demand for Disadvantage (Somanathan 2010 and 2017). Associations for powerful groups such as the Gujars of North India have mobilized to lobby for inclusion in ST lists. In 2008, quotas for university seats were extended

Unknown

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to the Other Backward Classes (OBCs). In that year, 147 groups petitioned for inclusion in OBC list and sixty-seven of these succeeded. Each year, there are a few more. The basis for the appeal is either that the caste in question is simply a synonym or a sub-caste of one already on the schedules or that they live in similar conditions or share the same culture.[16] Committees are formed to consider these cases, they hold public hearings and collect information. With no workable definition of backwardness, it is impossible to engage in its systematic measurement. Political exigency often leads to acquiescence.

The powerful Jat community of North India, led by its rich farmers, has been petitioning for about a decade for access to affirmative action quotas in universities and government jobs. An agitation by them in 2016 left thirty dead and two hundred injured. Travel was crippled and property worth millions destroyed. On March 20, 2017, the Jat planned an agitation in the capital of Delhi that was expected to draw a million protestors. Borders to Delhi were thick with police and families of children taking their school-leaving exams were reported as moving closer to exam locations to ensure they reached them in time. After assurances of compromise by state officials at the last minute, the agitation was called off and the city started to breathe again after several days under the threat of chaos and riots. Until the next time.[17]

The latest large-scale agitation is by the Patels, a large and important community in Gujarat who are also known for their motel chains on the east coast of the United States. They have changed the discourse on identity and affirmative action in India by suggesting that one way out of the classification dilemma is to dismantle the system of quotas entirely. The Indian experience has shown us the highly political nature of social data in a high-stakes environment.

Each of these countries has a different lesson to offer on classification. The case of the

[16] These numbers are from the annual reports of the National Commission for Backward Classes.

[17] From reports in *The Hindu Daily* on March 19 and 20, 2017.

U.S. census shows us that significant numbers of individuals, particularly those of mixed race, are ambiguous about their identity even when there are no stakes involved. The case of Brazil shows us that policies alter incentives to classify and can dichotomize race even in a society which celebrated racial mixing. The Indian case illustrates the politicization of classification debates and their interactions with inequality.

I now turn, more briefly, to the two other sources of mismeasurement.

b. Problematic Proxies

The Fractionalization and Polarization indices described in section 4, and other measures of heterogenity, treat groups as symmetric and equidistant. Neither social proximity nor hierarchy are taken into account. Consider two U.S. cities: one 90 percent white and 10 percent black, and the other 90 percent black and 10 percent white. Our indices would take the same value in these two cases. Those even slightly familiar with the urban landscape in the United States will know how different the poverty levels and the urban environment are likely to be in these cities.

New longitudinal data sets and evidence on policy experiments that have moved households out of very poor neighborhoods suggest strong negative effects of racial segregation among the poor. Randall Akee et al. (2017) match tax returns for all filers between 2000 and 2014 with census data on where they live. They find that racially segregated communities found their incomes declining in relative terms over this period and that starting an employment career in a segregated community is particularly detrimental for blacks, Hispanics, and American Indians. They also find that black workers experience the highest rates of immobility in the poorest earnings quintile and the highest rates of sliding out of the richest quintile when they

happen to be there.[18]

Studies based on the Moving to Opportunity (MTO) experiment of the U.S. Department of Housing experiment of the 1990s examine benefits of moving out of segregated, high poverty neighborhoods. Over four thousand families with children in five major cities were part of the experiment. All of them lived in "extreme poverty" neighborhoods defined as those in which at least 40 percent of residents have incomes below the federal poverty threshold. One treatment arm was provided with vouchers to move out to a neighborhood with a poverty rate of lower than 10 percent. Chetty, Hendren, and Katz (2016) find positive long-term effects on college attendance and earnings for those with the MTO vouchers and children under the age of thirteen and disruptive negative effects for adolescents. Ludwig et al. find improvements in subjective well-being and a decline in chronic health disorders. Baseline surveys asked all MTO adults their reasons for signing up for the program. Three-quarters listed getting away from gangs and drugs as one of their top two reasons for wanting to move (Ludwig et al. 2012, 1506). Evidence on the MTO program is relevant for our debate on heterogeneity because many households willingly moved to areas with fewer neighbors of their own race in order to improve other aspects of their social environment.

These findings are consistent with surveys by sociologists who find that while white households prefer segregated neighborhoods, black households state preferences for neighborhoods that are racially mixed, with 50:50 black-white often preferred to other compositions. This asymmetry is not surprising given the enormous differences in average wealth and the quality of public services in white and black neighborhoods (Krysan et al. 2009).

Models with racial and ethnic composition as the main determinant of community

[18] Akee, Jones & Porter 2017: mobility matrices are on p. 23 and results on racial segregation on pp. 27–29.

outcomes without adequate controls for the social environment and the quality of public services are therefore grossly mis-specified. The most pressing collective action problems of families in poor neighborhoods are not centered around how much to contribute for a Christmas party or any other community activity. These families are trying, just like everyone else, to provide their children safe and productive school environments and equip them for work *outside* the neighborhoods in which they are raised. This requires a broader system of social cooperation. The chapters by Allen, Rogers, and Wingo in this volume focus on the normative apparatus needed to move towards this.

c. Deliberative Democracy

I discuss two experiments that show that decision-making processes rather than just the policies that emerge from them matter for cooperation. The first is a laboratory experiment involving undergraduates at Brown University conducted in 2006. Students are assigned to groups in which they play prisoner's dilemma games. They can modify the game by voting on a fine to encourage cooperation. They can also vote for a zero fine. A computer then either allows the group the fine that was chosen by majority vote or assigns them a fine (which may be the one chosen by them). Results show that levels of cooperation are 40 percent higher when fines are democratically chosen rather than imposed on the group. Participants find the democratic process valuable in addition to any policy benefits that it generates (Dal Bó, Foster & Putterman 2010).

The second experiment was undertaken in two districts of northern Liberia a couple of years after the end of civil war in 2003. As part of a community-driven reconstruction program, the UK government funded forty-two randomly selected communities out of a total of eighty-

three communities. The selected communities received funds for a new infrastructure project. To be eligible, they needed to choose the project and select community representatives to handle the funds. Fearon, Humpreys, and Weinstein (2015) present results from a public goods game played with twenty-four adults in each of eighty-three communities. In half of these villages, the group playing the game consisted only of women. In the other half, there were mixed groups with equal numbers of men and women. They compare the levels of cooperation in the control villages (those that did not receive the development assistance) with those in the treatment villages. Their most interesting finding is that the treatment-control difference in the level of measured cooperation is greatest in the mixed groups. In the absence of any possibility of funds coming into the village, they have much lower levels of cooperation than the women's groups. However, when they need to cooperate for the benefit of the village, they are very successful. The authors argue that a community's capacity to cooperate can be changed over a relatively short period of time and with a relatively modest intervention. Leaders in the mixed communities were more active in building consensus and sharing information on the benefits of cooperation.

Both experiments highlight the importance of fostering deliberation in collective decision making.

6. Final Thoughts

Given the multifaceted nature of identity and the various historical, political, and ideological influences on its classification by the state, it seems inevitable that social differences will be mismeasured. Social statistics however also allow us to detect and document systematic differences in outcomes across groups and help us assess whether a democracy is

serving all of its people. How do we trade off costs and benefits? Should we collect social data through comprehensive enumeration projects such as national censuses? If so, what types of state policies should be based on these data?

Social data can be effectively used to equalize opportunity only if official classifications of groups are socially relevant and when policies that aim to equalize do not themselves create perverse incentives for identity manipulation.

Recent reforms by some nations that remove identity questions from the mandatory census forms and allow open-ended responses to questions on social background seem steps in the right direction.

In addition, researchers using these data could benefit from greater attention to the processes by which these data are gathered and from broadening their hypotheses to include collaborative rather than just competitive interactions between individuals and groups. The few experiments that have been conducted on strengthening democratic process give us reason to be optimistic. Differences in origin and ancestry need not translate into social distances. In a world where firms and universities are becoming increasingly international and actively seeking out talent from various cultural backgrounds, social scientists should also go beyond modelling communities as spaces where ethnicities have to negotiate what are presumed to be their inherent differences.

In his memoir, Benedict Anderson describes discovering his Irish ancestry only in his thirties. Until then, “Identity was mainly connected with mathematics or the forensic investigation of a corpse” (Anderson 2016, 6). Perhaps true justice in diverse democracies would allow us to ignore and acknowledge identity with equal ease.

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