

# Joining, Leaving, and Staying in the American Indian/Alaska Native Race Category Between 2000 and 2010

Carolyn A. Liebler<sup>1</sup> · Renuka Bhaskar<sup>2</sup> ·  
Sonya R. Porter (née Rastogi)<sup>2</sup>

Published online: 17 March 2016  
© Population Association of America 2016

**Abstract** Conceptualizing and operationalizing American Indian populations is challenging. Each census for decades has seen the American Indian population increase substantially more than expected, with indirect and qualitative evidence that this is due to changes in individuals' race responses. We apply uniquely suited (but not nationally representative) linked data from the 2000 and 2010 decennial censuses ( $N = 3.1$  million) and the 2006–2010 American Community Survey ( $N = 188,131$ ) to address three research questions. First, to what extent do American Indian people have different race responses across data sources? We find considerable race response change, especially among multiple-race and/or Hispanic American Indians. Second, how are people who change responses different from or similar to those who do not? We find three sets of American Indians: those who (1) had the same race and Hispanic responses in 2000 and 2010, (2) moved between single-race and multiple-race American Indian responses, and (3) added or dropped the American Indian response, thus joining or leaving the enumerated American Indian population. People in groups (1) and (2) were relatively likely to report a tribe, live in an American Indian area, report American Indian ancestry, and live in the West. Third, how are people who join a group different from or similar to those who leave it? Multivariate models show general similarity between joiners and leavers in group (1) and in group (2). Population turnover is hidden in cross-sectional comparisons; people joining each subpopulation of American Indians are similar in number and characteristics to those who leave it.

---

**Electronic supplementary material** The online version of this article (doi:10.1007/s13524-016-0461-2) contains supplementary material, which is available to authorized users.

---

✉ Carolyn A. Liebler  
liebler@umn.edu

<sup>1</sup> Department of Sociology, University of Minnesota, 909 Social Sciences Building, 267 19th Avenue South, Minneapolis, MN 55455, USA

<sup>2</sup> U.S. Census Bureau, Washington, DC, USA

**Keywords** American Indian · Census · Racial identification · Error of closure · Linked data

## Introduction

Most demographers expect a population to increase only when births and immigrants outnumber deaths and emigrants. This straightforward balancing equation has been challenged by the American Indian<sup>1</sup> case, which highlights another possibility: namely, population growth through changing racial identification.<sup>2</sup> Although the American Indian population grew at a relatively conventional pace from 1890 through 1950 (see Fig. 1), a major shift occurred in 1960 when census respondents could first self-identify their race,<sup>3</sup> resulting in a 52 % net increase in the number of enumerated American Indians (Passel 1976; Thornton 1987). This number has continued to grow remarkably. Hundreds of thousands more American Indians have been counted each census than expected based on births and migration.<sup>4</sup> Demographers, as well as qualitative researchers investigating the phenomenon, have concluded that people have been changing their race response to include American Indian.

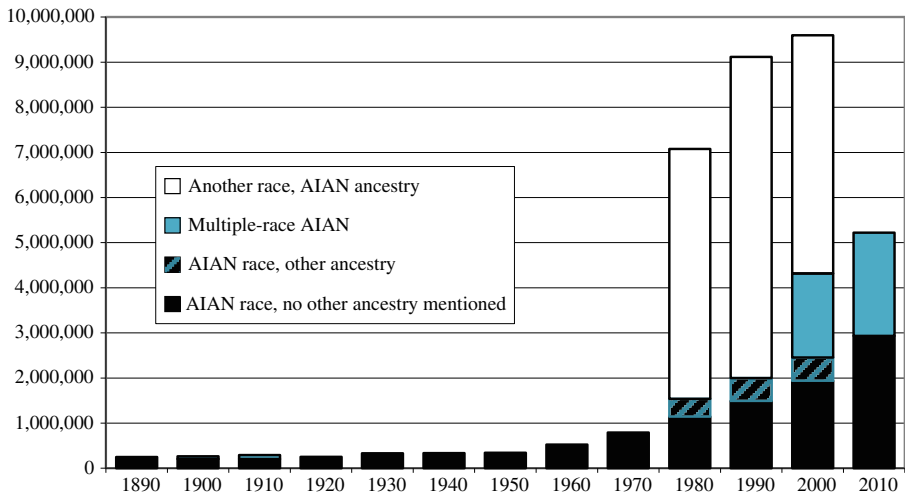
The difference between the number of American Indians expected each year and the number enumerated—the “error of closure”—has been followed with interest since the 1970s, but researchers have had very limited data on which to base their studies. Because censuses are cross-sectional, only net population changes could be assessed, and compositional change could be viewed only in the aggregate (Glick and Han 2015; Liebler and Ortyl 2014; Perez and Hirschman 2009). “New American Indians” were deduced to include many former whites with relatively high education and/or from areas far from large American Indian populations (Eschbach et al. 1998; Liebler and Ortyl 2014). Qualitative sociologists have interviewed former whites who began (re)identifying as American Indian (Fitzgerald 2007; Jacobs 2015; Liebler 2001; Nagel 1996; Sturm 2011). With little available evidence, the characteristics of those who left the American Indian category have not been studied. However, numerous policies and programs (e.g., allotment, boarding schools, and out-adoption) encouraged assimilation by people of American Indian descent and may have discouraged many from reporting this heritage.

<sup>1</sup> We use “American Indian” to describe a person who reported “American Indian or Alaska Native” (AIAN) in the race question on the census form. Unless specified, we are referencing the entire group regardless of whether other races were also reported and regardless of Hispanic origins. Our study includes those reported as American Indian in the race question in the 2000 and/or the 2010 census. We do not assume that they always have or always will report American Indian (or be reported as this). We use the person’s time-specific race response to describe him/her. For instance, if someone reported American Indian in 2000 and white in 2010, we refer to him/her as non-American Indian in 2010.

<sup>2</sup> We use “racial identification” and “race response” to mean the response given on the decennial census form. This is not necessarily the same as a person’s racial identity, although they are probably related.

<sup>3</sup> We apply the terms “race” and “Hispanic origin” in congruence with the federal statistical definitions used to collect the data (Office of Management and Budget 1997). Each questionnaire used here included one question about Hispanic origin (one response allowed) and one question about race (multiple responses invited).

<sup>4</sup> Population growth from identity change has been evident in other indigenous groups (e.g., Guimond et al. 2014; Kukutai and Didham 2009).



**Fig. 1** American Indians and Alaska Natives (AIANs), by identification: 1890–2010. Sources: 1890: U.S. Census Office, *Indians Taxed and Indians Not Taxed in the United States (except Alaska) at the Eleventh Census: 1890* (Washington, DC: GPO 1894), as cited in Shoemaker (1999:4); 1900–2000: Decennial censuses from the Integrated Public Use Microdata Series ([ipums.org/usa](http://ipums.org/usa); Ruggles et al. 2010); 2010: Humes et al. (2011). Note that multiple-race responses were possible only in 1900, 1910, 2000, and 2010. The ancestry question was asked in 1980–2000 only. Reprinted with permission from Liebler (2010a: Fig. 1)

Within this research tradition, we break new ground. We construct a longitudinal data set with information on approximately 3.1 million people who reported (or were reported as)<sup>5</sup> American Indian in the 2000 census, the 2010 census, or both.<sup>6</sup> For those who also participated in the American Community Survey (ACS) in 2006 through 2010 ( $N = 188,131$ ), we have substantial supplementary data. With linked longitudinal data about individuals, we move beyond the study of net change to explore the composition of countervailing flows of people into and out of the American Indian response category.

Our research questions are threefold. First, to what extent do people change race responses to include or exclude American Indian? The answer addresses the common assumption that race responses are stable over time. Second, how are people who change race responses different from or similar to those who do not? They may have varied identities as well as distinct race-related experiences. Third, to what extent are those who join an American Indian subgroup (e.g., non-Hispanic, single-race American Indian) different from or similar to those who leave it? Differences between “joiners” and “leavers” may point to reasons why people change responses. If the groups are similar, joiners and leavers may be two views of a single group with dynamic identity experiences. Programs serving the point-in-time American Indian population can do so if joiners and leavers are similar, despite flux in identification.

<sup>5</sup> Responses might not be self-reports, although we simplify our prose by writing as though they are self-reports. Using case selection, we ensure that these are self-reports or reports by someone else in the household (probably the householder or his/her spouse; Sweet 1994), although enumerators visited some homes and could influence responses.

<sup>6</sup> The census counted 4.1 million American Indians in 2000 (Grieco and Cassidy 2001) and 5.2 million in 2010 (Humes et al. 2011). For reasons described later herein, our linked data are not nationally representative.

We find that a large number of individuals changed their race response to include or exclude American Indian, and this is particularly true among those who also reported a Hispanic origin and/or another race. We also find that people who changed their race response to include/exclude American Indian differ from those who keep the same response across the two censuses, particularly in terms of their connections to other American Indians measured in terms of whether they reported a tribe or American Indian ancestry and whether they live in American Indian areas. Finally, we find many similarities between joiners and leavers in terms of both numbers and characteristics.

This research is important for both practical and theoretical reasons. We intend to aid analysts, policy makers, and the public in understanding American Indians in 2000 and 2010 (see Lujan 2014). We give disaggregated information about joiners, stayers, leavers, Hispanics, non-Hispanics, single-race responses, and multiple-race responses. Our multivariate analyses provide new evidence of characteristics accompanying each response pattern—evidence relevant to theories about racial identity and the social construction of race (e.g., Wimmer 2008).

### **American Indians: Exceptions or Forerunners?**

In research on identity change and response change, part-American Indians have been shown to shift responses more often than people who report black, Asian, white, and/or Hispanic heritage (Campbell and Troyer 2007; Doyle and Kao 2007; Dusch and Meier 2012; Harris and Sim 2002; Hitlin et al. 2006; Singer and Ennis 2003; U.S. Census Bureau 1993). Are American Indians fundamentally different? In agreement with Snipp (1997), we think not. Instead, we see American Indians as representing the vanguard; other groups may well follow in their path. For example, like American Indians, people in Asian American and Hispanic American groups are increasingly forming unions across racial and ethnic lines (Wang 2012); and as greater numbers of Hispanics and Asians form successive generations in the United States (i.e., fourth-generation), racial and ethnic changes may become more common within these groups. Questions of identity and socially defined group boundaries are likely to expand for many racial/ethnic groups in coming years. How each group is measured will also continue to affect the social construction of race and group boundaries (e.g., Humes and Hogan 2015; Omi and Winant 1994; Prewitt 2013; Snipp 1997). Pacific Islanders and multiple-race respondents from all race groups already show a high level of race response change across the 2000 to 2010 period (Liebler et al. 2014).

At the same time, American Indians are not the same as other racial/ethnic groups in the United States. What it means to be American Indian is complicated by the existence of tribal governments, indigenous homelands, tribal enrollment blood quantum requirements, and political relationships with the federal government. A person deciding whether to mark American Indian as his or her race has extra dimensions to consider: “American Indian” includes sometimes knotty political and/or legal statuses (and related contested identities) that are not at issue in nonindigenous groups (see Robertson 2013; U.S. Census Bureau 2008:v).

In this complex milieu, millions of people with American Indian heritage report it to the Census Bureau in an ancestry question but not in the race question (see Fig. 1). Over the centuries, many policies and practices have strongly urged American Indian

assimilation, fostering an atmosphere of stigma that may still affect some. Also, as Senator Elizabeth Warren's experiences illustrate, part-whites who claim indigenous heritage can be heavily criticized for seeming to try to benefit from minority status (e.g., Seelye 2012). For part-black American Indians, twin pressures discourage an American Indian response: part-blacks are often seen as "just" black (Davis 2005; Khanna and Johnson 2010), and part-American Indians are much less often seen as American Indian (Gullickson and Morning 2011; Snipp 1989, 2003).

The Hispanic American Indian category contains a variety of people, including at least four groups. Some Hispanic American Indians have, for example, one Hispanic parent and one American Indian parent. Some have a mestizo identity and, in an effort to convey this identity on the census form, mark a combination of Hispanic, American Indian, white, and perhaps black.<sup>7</sup> Some South and Central American indigenous people<sup>8</sup> mark the "American Indian or Alaska Native" check box on the race question; most of these people were reported Hispanic.<sup>9</sup> And some South or Central American indigenous people reported their tribe on the form without marking the American Indian check box. These responses<sup>10</sup> were coded as American Indian in post-enumeration processing, in accordance with the federal definition of American Indian (Office of Management and Budget 1997).<sup>11</sup>

## Prior Research

### To What Extent Do People Change Responses to Include or Exclude American Indian?

Do people change their racial identification to/from American Indian? How common is this? Based on the demographic balancing equation, Passel (1976) calculated the expected net increase from 1960 and 1970 to be 202,000, but the 1970 census count of American Indians was 67,000 higher than this. Passel suggested that part of this error of closure was due to changes in racial identification from white in 1960 to American

<sup>7</sup> Nation-building projects in Latin America often promoted ideologies about *mestizaje* or *mestizo*—racial and cultural mixture or fusion (Kearney 2000; Miller 2004; Telles and Bailey 2013).

<sup>8</sup> Many Latin American countries recently legally recognized indigenous groups (Telles and Bailey 2013). There are about 400 indigenous groups in Latin America and the Caribbean (Montenegro and Stephens 2006), and more than 40 million of 500 million Latin Americans self-identify as indigenous (Telles and Bailey 2013). Many are bound to their indigenous heritage through language and political, social, and cultural ties (Gonzalez 1994; Montenegro and Stephens 2006). Although some live on (often remote) tribal lands or rural areas, an increasing share live in urban areas (Dahl and Jensen 2002; Del Popolo et al. 2007; Roldán Ortega 2004). As a whole, they are relatively poor and have worse social and health outcomes (Kearney 2000; Psacharopoulos and Patrinos 1994).

<sup>9</sup> Among American Indians whose only reported tribe was from South or Central America, 86 % reported Hispanic in the 2000 census, and 94 % did so in the 2010 census.

<sup>10</sup> People who listed a tribe anywhere in the race question were coded as American Indian race in post-enumeration processing. Of 244,761 people reporting a Central or South American tribe in the 2010 census, only 38 % marked the "American Indian or Alaska Native" check box. Of the 3,195,538 who reported a North American tribe, 84 % marked the box. Our linked decennial sample has higher proportions who marked the check box: 46 % and 98 %, respectively.

<sup>11</sup> The federal definition of American Indian or Alaska Native is "A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment" (Office of Management and Budget 1997:58,789).

Indian in 1970. As illustrated in Fig. 1, large errors of closure continued to appear in subsequent decades: 366,000 between 1970 and 1980 (Passel 1997; Passel and Berman 1986), 181,000 between 1980 and 1990 (Harris 1994), and just over 1 million between 1990 and 2000 (Liebler and Ortyl 2014). These studies and others (Eschbach 1993, 1995; Eschbach et al. 1998; Harris 1994) have pointed to changes in racial classification as a primary factor causing these errors of closure.

Researchers using smaller longitudinal data sets have found lower rates of race response consistency among people giving American Indian responses compared with those reporting white, black, or an Asian group (Dusch and Meier 2012; Singer and Ennis 2003; U.S. Census Bureau 1993). For example, two-fifths of 1990 census American Indians reported a different race in the post-census reinterview (U.S. Census Bureau 1993). More than one-quarter of non-Hispanic American Indians and more than three-quarters of Hispanic American Indians gave a different race/Hispanic response between the 2000 census and the 2000 CPS (del Pinal and Schmidley 2005). One-third of single-race American Indian youth in 1994/1995 reported a different race six to eight years later (Doyle and Kao 2007).

Most prior researchers could not study multiple-race responses and did not disaggregate by Hispanic origin (Eschbach et al. 1998; Harris 1994; Passel 1976, 1997; Passel and Berman 1986). Liebler and Ortyl (2014) are the exception. Using cross-sections of the 1990 and 2000 censuses, they deduced that many newly identified Hispanic American Indians were relatively young. They also demonstrated that some 1990 single-race American Indians must have reported multiple races in 2000.

Not all racial reclassification is due to identity changes. Response change can also be a result of a different person within the household filling out the form, individuals making a mistake when filling out their form, individuals purposely misreporting their race, or an outsider replying for a nonresponsive household (Compton et al. 2012; Porter et al. 2015; Rockquemore and Brunsma 2002). Most of these issues could affect all groups, so the particularly high level of response change among American Indians is probably not entirely driven by these factors.

Other measurement issues may disproportionately affect American Indians because of the particularly complex set of forces (described earlier) that construct who is socially seen as American Indian. A survey instrument may not be fully able to capture complex racial identity experiences. Relatedly, a survey response category that draws responses from a heterogeneous set of people may not fully reflect the identities of those who list it as their identification, potentially resulting in response fluidity.

### **How Are People Who Change Responses Different From or Similar to Those Who Do Not?**

What are the characteristics of people who change their race response to/from American Indian? Are they different from those who are consistent in identification and, if so, how? Prior quantitative and qualitative researchers (e.g., Eschbach et al. 1998; Sturm 2011) have provided a few answers to these questions.

### *Consistent Responses*

Although known to be mutable, racial identity is generally thought to be central to self-conception. A consistent race and Hispanic-origin response (whatever the details)<sup>12</sup> may indicate a relatively strong attachment to the group. A person who gives the same race and Hispanic responses in 2000 and 2010—a “stayer” in our study—may have a relatively strong sense of American Indian identity and may experience the social world accordingly. Indigenous connections to traditional or legal homelands (Liebler 2010b) and “thick ties” to race groups (Cornell and Hartmann 2007) suggest that stayers might more often report a tribal affiliation, live in an American Indian area, and report American Indian ancestry.

### *Changing Responses*

**New Personal Circumstances** People who change their response may have experienced changes in circumstance that influenced self-conception or others’ perception of them (Cooley 1902). Given the impact of local area characteristics on race responses (Eschbach 1993; Kana’iaupuni and Liebler 2005; Liebler 2010b; Xie and Goyette 1997), we anticipate that residential mobility spurs response instability, especially if the residential locations have different racial compositions or culturally relevant meanings. Children in 2000 who moved out of their parents’ homes by 2010 may report a different race for themselves than was previously recorded. Other life changes could also potentially affect race responses, including marriage, divorce, discrimination experiences, or new information about family heritage.

**Terminology** People who do not read English well or who are less educated may find the census questions and federal definitions challenging or confusing, potentially resulting in response change from one census to the other. Noncitizens<sup>13</sup> and new immigrants may be unsure of the social meaning of each race group in the U.S. context and have shifting understandings as they spend more time in the United States. Some people—such as newly immigrated indigenous Central and South Americans—might face more than one of these barriers.

**Variation in Source of Information** Observed response changes could also reflect a difference in opinion about what race(s) best describe a person (Song 2003). Enumerators are common in American Indian areas (Bates 2008), and the mail-out form is usually filled out by one member of the household for everyone in the household (Sweet 1994). The multiple facets of race (e.g., observed versus self-identified race) do not necessarily align (Harris and Sim 2002; Porter et al. 2015), and thus variation in the source of the information about a person’s race(s) may cause variation in the content of that information.

<sup>12</sup> The decision of whether to give a single-race response or to report multiple races is based on heritage and also on political and legal considerations, community connections, and other factors (see Liebler 2001; Robertson 2013).

<sup>13</sup> Foreign-born individuals who have gone through the citizenship process have had considerable experience with the U.S. system and may have substantial understanding of U.S. social practices.



## How Are Joiners Different From or Similar to Leavers?

Our third research task is to understand differences and similarities between those who join and those who leave American Indian subgroups.

### *Differences*

People who join a subgroup might be distinct from those who leave the same subgroup. For example, people who reported single-race American Indian in 2010 but not in 2000 might have newly heightened American Indian identity because they recently moved to a densely American Indian area or recently married an American Indian (Eschbach 1993; Kana'iaupuni and Liebler 2005; Lieberson and Waters 1993; Loveman and Muniz 2007). A different change in local or family context could suppress an American Indian race response.

### *Similarities*

Joiners and leavers might be similar if there are certain types of people who are likely to change race responses.

**Identity Flexibility and White Privilege** Many whites in the United States experience their European ethnicities as relatively symbolic or optional,<sup>14</sup> causing cross-time fluctuations in the number reporting each European ancestry group (Gans 1979; Hout and Goldstein 1994; Lieberson and Waters 1993; Waters 1990). After centuries of mixing, many people who identify and live as white have American Indian ancestors (Liebler 2010a; Snipp 1989; Waters 1990). If some of these people turn a symbolic or an optional ethnicity lens to their non-European ancestors, they may decide to mark American Indian race (at least for a time). Eschbach et al. (1998) and Liebler and Ortyl (2014) found that the “new” American Indians in previous censuses have an education profile similar to that of whites.

**Self-Conception Mismatched With Questionnaire** Translating complex identities into answers to fixed-choice questions can be a challenge. If a person changes her opinion about the best way to convey her self-conception on a census form, this could cause response change. For example, the Census Bureau does not require tribal enrollment in order to be considered American Indian, but other federal agencies (e.g., the Indian Health Service) do require enrollment. A non-enrolled but self-identified American Indian might assume that she does not qualify as American Indian on the census but later learn that she does fit the census definition and so change her response. Also, someone with a mestizo identity might be unsure of whether to mark white, American Indian, and Hispanic, or to mark Hispanic and Some Other Race (or another combination of responses), and might change her opinion on this issue over time.

<sup>14</sup> Relatedly, socioeconomic privilege could make a race response change from white to minority seem especially costless because the person is buffered from the harshest costs of color.



**Multiple Salient Heritages** Prior research about people with more than one salient racial heritage shows that many have dynamic racial identities and relatively nonstable patterns of race response (e.g., Harris and Sim 2002; Rockquemore and Brunsma 2002, 2008; Root 1996). This may be especially true of people whose parents are of different races if they have relatively extensive experience with the race groups represented by their parents. Consistent with this, we expect some people to have fluid race reports that reflect fluid identities.

## Data, Case Selection, Methods, and Measures

### Linked Data

The U.S. Census Bureau Center for Administrative Records Research and Applications (CARRA) created the restricted-access data set we used for this study. CARRA used probabilistic record linkage techniques (Fellegi and Sunter 1969) and personal information (name, sex, date of birth, and address; see Wagner and Layne 2014) to strictly assign<sup>15</sup> a unique identifier—a protected identification key (PIK)—to data sources including the census and ACS.<sup>16</sup> The data were anonymized and can be used only for statistical and research purposes. We used the PIKs to link individuals' census and ACS records into a longitudinal data set. Linking people in the 2000 census with their own responses in the 2010 census gave a data set with about 200 million people.

Our linked data do not include all people. Some people do not receive a unique PIK (e.g., if their personal information was incomplete or not unique). PIK assignment rates are lower for Hispanics and nonwhites than for non-Hispanic whites (Bond et al. 2014). A person counted in 2000 who died or left the country by 2010 could not be in these data, nor could someone who was not yet born or did not live in the United States in 2000. Some individuals who were present were not enumerated in one of the censuses (Lujan 2014; Mule 2012; U.S. Census Bureau 2003) and were therefore also left out of our data.

### Case Selection

To select cases for this study from the linked decennial census data, we began with all people whose race response included American Indian in the 2000 census and/or the 2010 census: 4,140,582 people. We made a series of exclusions (described in Table 1) to further reduce the chances of false links and to constrain the extent of response changes resulting from enumeration issues. After case selection, our linked decennial data include 3,059,818 people whose

<sup>15</sup> An estimated 1 % of links were to the wrong person (Layne et al. 2014).

<sup>16</sup> The decennial data has not been through data perturbation. We ensure disclosure avoidance using disclosure review. The ACS data has undergone data perturbation, causing some response mismatch between the decennial and ACS data points.

**Table 1** Number of cases excluded during decennial linked data case selection

Description	Number
Persons in linked data whose race response included AIAN in the 2000 and/or the 2010 census	4,140,582
Case selection exclusions (multiple exclusions can apply)	
Data gathered from a neighbor or other proxy respondent	131,789
Person lived in group quarters and thus likely drawn from administrative records <sup>a</sup> or an unfamiliar person	156,825
Race or Hispanic origin information was edited or imputed (because it was nonstandard, unclear, or missing)	614,376
Person was reported to age less than 8 years or more than 12 years between decennial censuses	135,616
All age data was imputed in 2000 and/or 2010	94,286
Sex in 2010 did not match sex in 2000	36,944
Sex data was imputed in 2000 and/or 2010	98,111
Census 2000 response was Some Other Race and another race and thus is subject to processing errors <sup>b</sup>	115,795
2010 race and Hispanic data were collected with an alternative questionnaire <sup>c</sup>	7,749
Persons in linked data whose race response included AIAN in 2000 and/or 2010, after exclusions	3,059,818

Note: AIAN = American Indian/Alaska Native.

Sources: 2000 and 2010 U.S. censuses.

<sup>a</sup> See Chun and Gan (2014).

<sup>b</sup> See U.S. Census Bureau (2007) for more information.

<sup>c</sup> For more information on alternative questionnaires, see Compton et al. (2012).

race report included American Indian in the 2000 census and/or the 2010 census. The information we have about these 3.1 million people is limited to the few questions that were on the decennial census short questionnaires. We supplement this information by including ACS responses for 188,131 people (after case selection) who participated in the ACS between 2006 and 2010.

## Representativeness

The people in our study are *all* the people in the linked data who fit the case selection criteria. Results are not weighted estimates, and our data are not nationally representative.<sup>17</sup> Compared with the full census counts of American Indians in 2000 and 2010 (shown in Table A1 in Online Resource 1), people in our decennial linked data were more often non-Hispanic, female, reported a tribe, and/or lived in an American Indian area (as defined in Table 2). Because Hispanics have a relatively low response rate to the race question (Ríos et al. 2014), they were disproportionately excluded. Females have slightly higher response rates than males (Rastogi et al. 2014), a difference that is magnified

<sup>17</sup> We do not use ACS weights. Because they account for factors such as survey nonresponse and sampling strategies but do not adjust for record linkage and case selection, they would not make the data representative.

when data sources are linked. Using an address when assigning a PIK favors people who move less often, thus reducing the PIK rates for males ages 20 to 50 (Rastogi and O'Hara 2012).

## Methods

To improve knowledge and to coincide with common methods of operationalizing “American Indian,” we divide people into four subgroups for analysis: (S1) non-Hispanic, single-race American Indian, (S2) non-Hispanic, multiple-race American Indian, (S3) Hispanic, single-race American Indian, and (S4) Hispanic, multiple-race American Indian. Subgroups describe a response at a point in time. A person could be in S1 in 2000 and S2 in 2010, for example, or could be in none of the subgroups in 2000 or in 2010 (e.g., by reporting single-race white).

We use logistic and multinomial logistic regression models to address our second and third research questions, which focus on differences among joiners, stayers, and leavers. Dependent variables for all models reflect race and Hispanic responses in the censuses of 2000 and 2010 only. We explain the dependent variable for each model when introducing the results of the model. So that we can include measures of education, marital status, and labor force participation, we include only people ages 25 and older in the multivariate models.<sup>18</sup> Descriptive statistics include people of all ages (except as noted).

## Measures

We include measures of individuals' demographic, socioeconomic, and geographic characteristics as independent variables in our analysis. See Table 2 for details about coding.

## Results

### To What Extent Do People Change Responses to Include or Exclude American Indian?

Race responses are not necessarily stable across a person's lifetime: a high proportion of people in our data changed their racial identification to/from American Indian over the 2000 to 2010 period, as shown in the off-diagonal cells in Table 3. Less than one-third of ever-American Indian people in the data had the same race/Hispanic response in 2000 and 2010. The remainder changed their race and/or Hispanic response across the decade. In other words, although their responses may reflect their identity at the time, it is not safe to assume that the race and Hispanic-origin responses of people in our study will be the same from one

<sup>18</sup> Alternate versions of all multivariate models with fewer independent variables but including people of all ages are available on request. Also, descriptive statistics for only people ages 25 and older are available on request.

**Table 2** Construction of independent variables

Measure	Definition <sup>a</sup>
Sex	= Female or male. Answer is required to match across sources.
Age	= Age of the person in five categories: 0–9, 10–24, 25–39, 40–64, 65 or older.
Citizenship	= Citizenship status coded as (a) U.S. citizen by birth or naturalization, or (b) non-U.S. citizen.
English Language Ability	= English language ability coded into two categories as (a) speaks English only, speaks English “very well,” or was age 4 in the ACS <sup>b</sup> or (b) speaks English “well,” “not well,” or “not at all.”
Income Relative to Poverty	= Family income in relation to poverty line, ranging from 0 (no income) to 999 (income is 999 % of poverty line). A small number of children in uncommon family structures were not assigned a value by the U.S. Census Bureau, so we assigned each their age-specific mean value for the descriptive tables. People under age 25 are excluded from the multivariate models shown here.
Education	= Educational attainment for people ages 25 and older coded into five categories: (a) less than high school; (b) high school diploma or equivalent degree (GED); (c) some college or associated degree; (d) bachelor’s degree; or (e) graduate or professional degree.
Labor Force Participation	= Labor force participation for people ages 25 and older based on responses to a series of ACS questions. We use the following categories: (a) employed in the labor force; (b) in the labor force but not employed; and (c) not in the labor force.
Marital Status	= Marital status for adults ages 25 and older categorized as currently married; widowed, separated, or divorced; or never married.
Race and Hispanic Origin in the ACS	= Indicates whether the ACS race/Hispanic origin response matches the subgroup of focus. For example, when describing the S1 group, this indicates whether the person reported non-Hispanic, single-race American Indian in the ACS.
American Indian Ancestry	= Indicates an American Indian/Alaska Native response to ACS question on ancestry: “What is this person’s ancestry or ethnic origin?”
Any Tribe Response	= Indicates that there was any response in the fill-in-the-blank space for “enrolled or principal tribe” within the decennial census race questions; <sup>c</sup> see Liebler and Zacher (2012).
Central/South American Tribe	= Indicates that only Central and/or South American tribes were named in the “enrolled or principal tribe” response area. <sup>c</sup>
American Indian Area	= Indicates whether they lived in an “American Indian area,” which we define as a place that is a census-defined American Indian or Alaska Native area <sup>d</sup> or a census block with at least 20 % American Indian population that year. We coded by year as (a) in 2000, (b) in 2010, (c) in both, or (d) in neither.
Residential Migrant	= Indicates residential migration, defined here as (a) reported on the ACS that the person lived in a different residence one year ago or (b) the person’s state of residence varies across the three data sources.
Region	= Region of residence in the ACS year.

<sup>a</sup> All information is drawn from the ACS unless specified.

<sup>b</sup> The ACS asks English language proficiency only for those ages 5 and older.

<sup>c</sup> When comparing joiners and leavers within subgroups, we measure tribe responses given in the year the individual was in the focal subgroup.

<sup>d</sup> See U.S. Census Bureau (1994). In 2000, about one-fifth of people living in census-defined American Indian and Alaska Native areas were American Indian (21.7 %). In 2010, the median rose to 26.7 %.

census to another. Response change might affect any point-in-time measure of race; this has been shown to affect multiple race responses, Pacific Islander responses, and race responses of those who report Hispanic origins (del Pinal and Schmidley 2005; Harris and Sim 2002; Liebler et al. 2014).

Four patterns of response change in Table 3 stand out. First, a large proportion of people in our data (45 %) moved between a single-race response and a multiple-race response. This type of response move is consistent with prior research on identity flux in multiracial people (Harris and Sim 2002; Rockquemore and Brunnsma 2008; Root 1996).

Second, some people (20 % in our data) changed their response from one single-race response to another. This was particularly common among Hispanic American Indians; of those who were consistently identified as Hispanic, 52 % changed their race response between American Indian and either white or Some Other Race. Note that most people in our decennial linked data (94 %) reported Hispanic/non-Hispanic consistently across censuses.

Third, the number of people joining and leaving each subgroup is similar in size. For example, 1,046,000 people in our data reported non-Hispanic, single-race American Indian in 2000. Of these, 158,000 were reported as non-Hispanic, single-race white in 2010. They were replaced in the non-Hispanic, single-race American Indian category in 2010 by 173,000 people who were reported as non-Hispanic, single-race white in 2000. Without longitudinal data, the 15,000-person difference would be the only evidence of these large, countervailing flows.

Fourth, each American Indian subgroup has a low proportion who stayed in the group. Of people in our data who ever reported non-Hispanic, single-race American Indian, 47 % joined or left this group between the 2000 and the 2010 censuses.<sup>19</sup> Among Hispanic and/or multiple-race American Indians in our data, more than 85 % joined or left over the period.<sup>20</sup> If this pattern holds in other data, the total number of people reported as American Indian at one point in time reflects only a fraction of the number of people ever reported as American Indian.

In a closer look at these 3.1 million people, we disaggregate each subgroup's joiners, leavers, and stayers by age and sex (see Table A2 in Online Resource 1). Hispanic, multiple-race American Indians are a young group, and many children moved into or out of this category before their teenage years. Maybe this multifaceted response reflects an early stage of identity development (Erickson 1968), or perhaps a parent reported the child's race in 2000 but the (former) child self-reported in 2010. More broadly, we see that response changes are not the sole experience of a certain age group or sex; a wide variety of people are involved in response change.

To get a third measure of reported race, we next incorporate the race responses given by/for those who also participated in the ACS; see Fig. 2 and Table A3 (Online Resource 1). Some race response change occurred even among people we label "stayers" using census responses.<sup>21</sup> For example, all people in rows 1, 4, and 21 of Fig. 2 (53,495 people) reported single-race American Indian in both censuses, but only those in row 1 (45,869 people) also reported this in the ACS.<sup>22</sup> Again, we see that a

<sup>19</sup> A total of 1,365,025 people in our decennial linked data reported non-Hispanic, single-race American Indian in 2000 or 2010 (=1,045,627 + 1,042,724 - 723,326). Of these, 723,326 gave the same report both times. Thus, 723,326 / 1,365,025 = 53 % of people in S1 were stayers.

<sup>20</sup> Stayers represented 13 % of the people in S2, 11 % of those in S3, 9 % of those in S4.

<sup>21</sup> We use the ACS-decennial linked data in Fig. 2 and Tables 4–8. Throughout the article, we define joiners, stayers, and leavers using only information from the decennial censuses of 2000 and 2010. We take into account ACS race responses in our multivariate analyses.

<sup>22</sup> A small proportion of ACS race response changes may be due to data perturbation and not the respondent.

**Table 3** Race/ethnicity responses in 2000 and 2010 among American Indians in the decennial sample of linked data from the 2000 and 2010 census

Race and Ethnicity in 2010														
Non-Hispanic						Hispanic								
Race and Ethnicity in 2000														
	Single-Race			Multiple-Race			Single-Race			Multiple-Race				
	Total	White	Black	AIAN	Other	Any Other	White and AIAN	White	Black	AIAN	SOR	White and AIAN	Other AIAN+	Else
Total	3,059,818	523,708	87,428	1,042,724	27,160	650,450	234,836	81,899	4,879	168,481	57,462	71,546	71,786	37,459
<b>Non-Hispanic</b>														
<b>Single-race</b>														
White	622,316			173,415		404,209	19,997			6,917		13,248	4,530	
Black	139,108			22,793		1,910	107,491			852		147	5,915	
AIAN	1,045,627	158,178	16,307	<b>723,326</b>	5,413	99,910	12,042	4,800	265	14,324	3,068	2,651	2,336	3,007
Any other	24,864			5,094		1,276	16,672			458		155	1,209	
<b>Multiple-race</b>														
White and AIAN	575,680	339,481	1,074	87,809	1,035	<b>134,523</b>	<b>3,081</b>	2,511	21	1,120	478	1,970	411	2,166
Other AIAN+	179,635	10,446	67,267	7,166	19,262	<b>1,821</b>	<b>50,460</b>	219	583	184	194	60	1,705	20,268
<b>Hispanic</b>														
<b>Single-race</b>														
White	83,101			4,449		2,400	626			41,046		21,529	13,051	
Black	6,146			225		39	597			1,674		141	3,470	
AIAN	163,775	5,557	615	11,221	460	1,094	398	49,825	1,696	<b>32,531</b>	44,747	6,260	4,885	4,486
SOR	104,586			3,971		679	539			63,136		14,944	21,317	

Table 3 (continued)

Race and Ethnicity in 2010		Hispanic												
		Non-Hispanic					Hispanic							
Race and Ethnicity in 2000	Total	Single-Race		Multiple-Race			Single-Race		Multiple-Race					
		White	Black	White	Black	Other AIAN+	White	Black	White	Black	Other AIAN+			
Multiple-race														
White and AIAN	59,341	8,914	65	1,769	114	1,555	132	21,525	87	4,837	6,448	<b>9,923</b>	1,691	2,281
Other AIAN+	26,594	1,132	2,100	365	876	83	1,404	3,019	2,227	772	2,527	<b>271</b>	<b>6,567</b>	5,251
Else	29,045			1,121		951	21,397			630	247		4,699	

Notes: AIAN = American Indian/Alaska Native; SOR = Some Other Race; Other AIAN+ = another multiple-race response that includes AIAN. Else = any other race/Hispanic origin response. Bold cells highlight the stayers in each of the four subgroups.

Sources: 2000 and 2010 U.S. censuses.



point-in-time measure of race does not necessarily match measures at other points in time; race responses are subject to change.

For each of the 24 possible race response patterns in our ACS-decennial linked data, we show the proportion who (1) reported Hispanic origins, (2) lived in an American Indian area, (3) reported a tribe, and (4) were children. Hispanic American Indians predominate among those who changed from a single-race American Indian response to a non-American Indian response (rows 9 and 10) or vice versa (rows 15 and 16). Consistently reporting American Indian (including adding or dropping other race responses; rows 1–8) is associated with living in an American Indian area and reporting a tribe.<sup>23</sup>

### **How Are People Who Change Responses Different From or Similar to Those Who Do Not?**

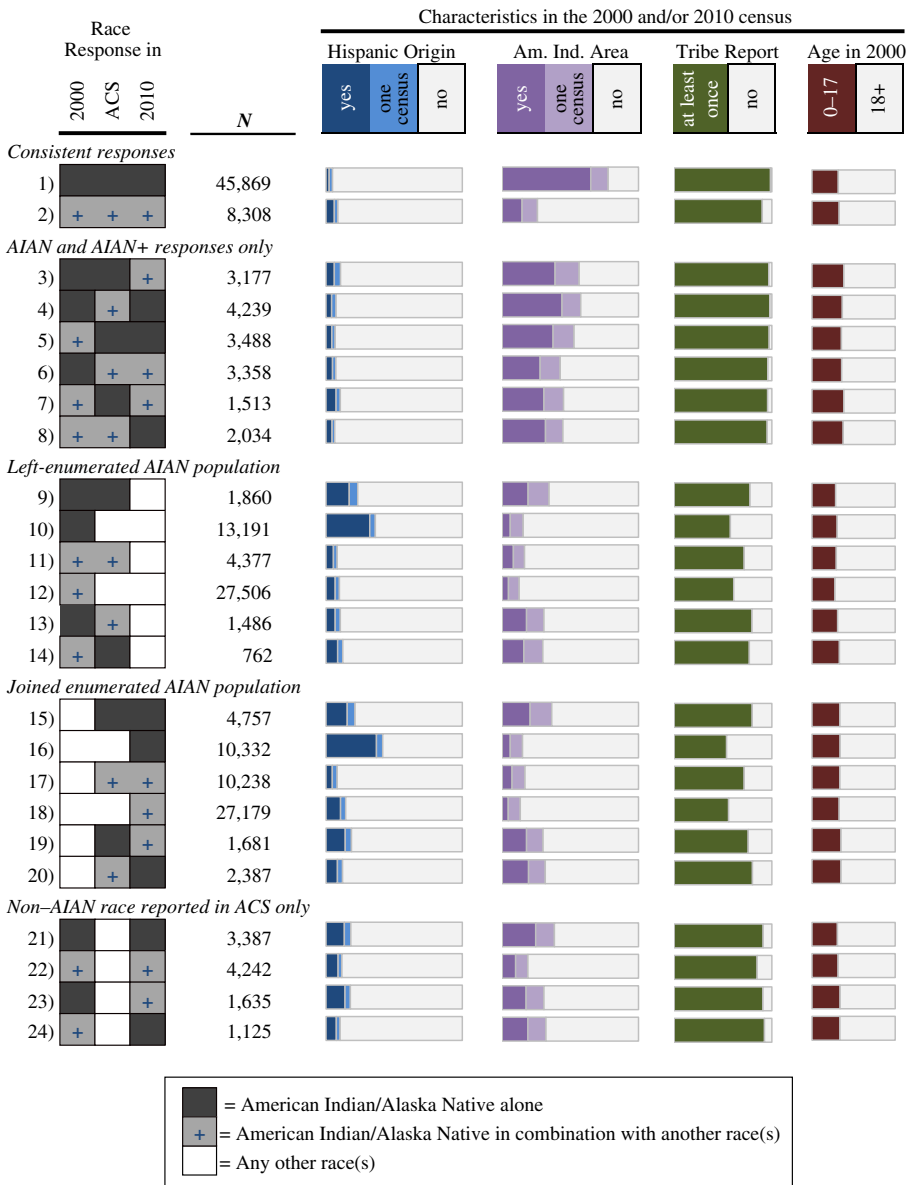
Our second research question asks how stayers (people who gave the same race and Hispanic reports in both censuses) compare with people whose census responses changed. Table 4 and Table A4 (Online Resource 1) show characteristics of leavers, stayers, and joiners in each subgroup of American Indians within the ACS-decennial linked data. These tables show, for example, that people who reported multiple-races including American Indian (S2 and S4) tended to have more education than those who ever reported single-race American Indian (S1 and S3).

Prior research on joiners (e.g., Eschbach et al. 1998; Sturm 2011) led us to expect some differences between those who changed responses and those who did not. We find evidence of some differences between stayers and changers. In each subgroup, residential migration was slightly more common among leavers and joiners than stayers. Those who left a subgroup tended to have left an American Indian area, and those who joined a subgroup tended to have moved to one. This is consistent with prior research relating homelands and indigenous identities (Eschbach 1995; Kana'iaupuni and Liebler 2005; Liebler 2010b; Memmott and Long 2002).

Hispanic and non-Hispanic American Indians show differences in terms of English language proficiency, education level, and citizenship status. Hispanic American Indians with low English proficiency often change responses, but the few non-Hispanic American Indians who are not proficient in English are more often S1 stayers. Similarly, in the Hispanic American Indian subgroups (S3 and S4), low education is associated with response change; in the non-Hispanic S1 group, lower education is associated with response stability. In S3 and S4, Hispanic foreign-born noncitizens often had different responses from one census to another, but no pattern is evident among the few non-Hispanic noncitizen American Indians. In sum, the four subgroups hold different types of people and should be studied separately when possible.

Besides identifying the response changers, statistics in Table 4 describe characteristics of stayers. When stayers differ from joiners and leavers, cross-sectional numbers

<sup>23</sup> People in rows 1–8 and 21–24 (American Indian in both censuses) can have a recorded “enrolled or principal tribe” in 2000 and/or in 2010, while those in rows 9–20 (American Indian in one census) can have a recorded tribe in only one census. We code *any* write-in response as a “tribe report.”



**Fig. 2** Race responses in the 2000 census, the 2006–2010 five-year American Community Survey (ACS), and the 2010 census. Hispanic responses and response changes are not taken into account in this table

give inaccurate estimates of stayer characteristics. For example, compared with S1 joiners and leavers, relatively few adults who stayed in S1 were married. Thus, a cross-sectional point-in-time view would show a higher marriage rate for non-Hispanic, single-race American Indians in 2010 than was true of those who had this response in both 2000 and 2010.

To learn whether differences between stayers and changers are statistically significant, we apply multivariate models in two ways. First, we use multinomial logistic

**Table 4** Characteristics of four subgroups of American Indians, by response stability: Percentages

	S1: Non-Hispanic				S2: Non-Hispanic				S3: Hispanic				S4: Hispanic			
	Single-Race AIAN		Multiple-Race AIAN		Single-Race AIAN		Multiple-Race AIAN		Single-Race AIAN		Multiple-Race AIAN		Single-Race AIAN		Multiple-Race AIAN	
	Leavers	Stayers	Joiners	Leavers	Stayers	Joiners	Leavers	Stayers	Joiners	Leavers	Stayers	Joiners	Leavers	Stayers	Joiners	
<b>Sex and Age</b>																
Female	52	53	51	53	56	53	52	54	52	54	52	54	54	55	54	
Male	48	47	49	47	44	47	48	46	48	46	48	46	46	45	46	
Age 0–9	3	3	4	3	4	4	4	5	4	5	4	6	9	5	5	
Age 10–24	26	26	28	23	26	27	32	32	32	32	33	36	43	37	37	
Age 25–39	23	20	19	19	16	20	22	23	24	23	24	22	18	23	23	
Age 40–64	38	40	39	42	41	39	36	36	33	36	33	30	25	30	30	
Age 65 or older	10	11	10	13	13	11	6	5	6	5	6	6	4	4	5	
<b>Citizenship and English Language Ability</b>																
U.S.-born and/or U.S. citizen	99	100	100	99	100	100	88	96	88	96	88	94	98	92	92	
Foreign-born noncitizen	1	0	0	1	0	0	12	4	12	4	12	6	2	8	8	
Speaks English “very well” or only	99	94	99	98	99	99	78	91	78	91	78	89	95	86	86	
Speaks English less than “very well”	1	6	1	2	1	1	22	9	22	9	22	11	5	14	14	
<b>Poverty (range 0–999)</b>																
Mean income as a % of poverty line	326	274	333	347	349	332	273	310	281	344	350	316	316	316	316	
<b>Education (ages 25+ only)</b>																
Less than high school	14	19	14	12	9	13	33	19	30	17	8	20	20	20	20	
High school diploma or GED	30	33	31	29	26	28	27	27	29	23	19	24	24	24	24	
Some college	36	35	36	37	39	37	28	38	28	35	40	34	34	34	34	
Bachelor’s degree	12	9	13	14	15	14	7	10	8	15	18	14	14	14	14	

Table 4 (continued)

	S1: Non-Hispanic			S2: Non-Hispanic			S3: Hispanic			S4: Hispanic		
	Single-Race AIAN			Multiple-Race AIAN			Single-Race AIAN			Multiple-Race AIAN		
	Leavers	Stayers	Joiners	Leavers	Stayers	Joiners	Leavers	Stayers	Joiners	Leavers	Stayers	Joiners
Graduate or professional degree	7	4	6	8	11	8	4	5	4	10	15	8
Labor Force (ages 25+ only)												
In the labor force, employed	60	57	61	59	57	59	64	63	66	68	71	66
In the labor force, not employed	5	7	5	5	5	5	7	6	7	5	5	7
Not in the labor force	35	36	34	36	37	36	30	30	27	27	24	27
Marital Status (ages 25+ only)												
Currently married	62	57	63	61	59	58	60	59	61	58	58	57
Widowed, separated, or divorced	24	23	24	24	27	27	22	21	21	20	22	22
Never married	14	20	13	14	15	15	18	20	19	21	20	21
Race/Hispanic Response in ACS												
Same as stayers in this subgroup	23	86	39	17	60	30	10	51	19	12	48	16
Different from stayers in subgroup	77	14	61	83	40	70	90	49	81	88	52	84
AIAN Ancestry												
AIAN ancestry reported at all	60	92	69	42	63	49	22	61	26	21	38	25
No AIAN ancestry reported	40	8	31	58	37	51	78	39	74	79	62	75
Connection to AIAN Communities												
Reported a tribe in at least one census	81	99	81	70	90	68	54	87	55	60	82	57
Did not report a tribe in 2000 or 2010	19	1	19	30	10	32	46	13	45	40	18	43
Central/South American tribe in 2000 or 2010	1	0	0	1	0	0	21	16	21	17	13	17
Lived in American Indian area both censuses	20	63	23	11	16	11	7	15	7	3	5	4

**Table 4** (continued)

	S1: Non-Hispanic			S2: Non-Hispanic			S3: Hispanic			S4: Hispanic		
	Single-Race AIAN			Multiple-Race AIAN			Single-Race AIAN			Multiple-Race AIAN		
	Leavers	Stayers	Joiners	Leavers	Stayers	Joiners	Leavers	Stayers	Joiners	Leavers	Stayers	Joiners
In American Indian area in 2000 but not 2010	9	6	4	7	5	3	5	6	2	5	4	2
In American Indian area in 2010 but not 2000	4	7	10	3	6	8	2	7	6	2	6	5
Not in American Indian area in 2000 or 2010	66	24	63	80	73	78	86	72	85	90	86	89
Residence												
Residential migrant	18	9	16	16	14	17	13	13	15	16	14	17
No indication of residential migration	82	91	84	84	86	83	87	87	85	84	86	83
In Northeast	8	3	7	12	9	12	9	5	11	11	11	14
In Midwest	23	19	22	26	25	25	10	11	11	13	15	12
In South	39	29	46	36	31	37	26	18	25	22	15	23
In West	29	49	26	26	34	26	55	66	53	53	59	51
Total N	19,922	50,345	19,220	36,145	12,690	41,764	6,255	1,680	6,373	3,523	997	5,880
Total N, Ages 25+	14,034	35,538	13,022	26,701	8,986	29,074	4,036	1,068	4,016	2,044	473	3,390

*Notes:* AIAN = American Indian/Alaska Native. Leavers are in the subgroup in 2000 but not 2010. Joiners are in the subgroup in 2010 but not 2000. Stayers are in the subgroup in both censuses. ACS race/ethnicity response is not taken into account in this classification.

*Sources:* 2000 and 2010 U.S. censuses and 2006–2010 five-year ACS data.

regression models<sup>24</sup> (shown in Table 5) to predict joining or leaving each subgroup, relative to staying in that group. Second, we compare stayers with people making various common response moves. In Table 6, we compare the characteristics of non-Hispanic American Indians who stayed in S1 or S2 with those who made one of three response moves: (1) between single-race and multiple-race American Indian, (2) between single-race American Indian and single-race white, and (3) between multiple-race American Indian and single-race white. We present a similar model about Hispanic American Indians in Table 7, comparing S3 and S4 stayers with those who changed (1) between single-race or multiple-race American Indian and single-race white, and (2) between single-race or multiple-race American Indian and single-race Some Other Race.

Tables 5, 6, and 7 show substantial and significant differences between stayers and those who changed responses across the decade. Measures related to nativity and group connections (noncitizen, English skills, race/ancestry reports in the ACS, tribe reported, and living in an American Indian area) are especially able to distinguish stayers from others.

Our independent variables are particularly effective at parsing non-Hispanic American Indian stayers from joiners/leavers, as shown by the relatively high values of  $r^2$  (.39 for S1 in Table 5, and .45 in Table 6). Connections to land and tribe are powerfully predictive of race response patterns among non-Hispanic American Indians, including people who switched between multiple-race and single-race American Indian race responses (but were consistently non-Hispanic). They were relatively likely to report a tribe, report American Indian ancestry, and/or live in an American Indian area compared with people who left the American Indian group entirely and also compared with S2 stayers.

Measured characteristics are somewhat less effective at distinguishing Hispanic American Indian joiner/leavers from stayers (as seen in the  $r^2$  values in Table 7 and also models about S3 and S4 in Table 5). Hispanic American Indian stayers (S3 and S4 in Table 7) were much more likely to report American Indian ancestry, report a tribe, or live in an American Indian area than those who changed responses to/from Hispanic, single-race white or Hispanic, single-race Some Other Race.

In sum, people in our data who changed their race response between 2000 and 2010 were significantly and substantively different than those who did not. Changers who gave a non-American Indian response in 2000 or 2010 (single-race white or Some Other Race) were also notably different from those who consistently reported American Indian (either as stayers or by moving between single- and multiple-race American Indian responses). Like non-Hispanic stayers (S1 and S2), people who moved between non-Hispanic, multiple-race and single-race American Indian (moved between S1 and S2) were more likely to report a tribe, live in an American Indian area, and report American Indian ancestry than were people who changed to/from non-Hispanic white.

<sup>24</sup> Relative risks ( $\exp(\beta)$ ) that are below 1.0 show a negative relationship. For example, in Table 5, those who were never married were significantly less likely to leave S1 than they were to stay in this subgroup ( $\exp(\beta) = 0.75$ ). Relative risks above 1.0 show the opposite: people who did not report a tribe in either census were more than five times as likely ( $\exp(\beta) = 5.63$ ) to be S1 leavers than to be S1 stayers.

**Table 5** Four multinomial logistic regression models predicting membership in the leaver or joiner group, as opposed to the stayer group: Ages 25 and older

	S1: Non-Hispanic, Single-Race AIAN		S2: Non-Hispanic, Multiple-Race AIAN		S3: Hispanic Single-Race AIAN		S4: Hispanic, Multiple-Race AIAN	
	Leaver exp( $\beta$ )	Joiner exp( $\beta$ )	Leaver exp( $\beta$ )	Joiner exp( $\beta$ )	Leaver exp( $\beta$ )	Joiner exp( $\beta$ )	Leaver exp( $\beta$ )	Joiner exp( $\beta$ )
Intercept	0.06***	0.06***	0.56***	1.20**	0.47***	1.07	0.59	2.25*
Female	0.93**	0.93**	0.89***	0.85***	0.96	0.93	0.70**	0.69***
Age 40–64	0.73***	0.89***	0.88***	0.76***	1.03	0.83*	0.90	0.82
Age 65 or older	0.67***	0.83***	0.81***	0.61***	1.03	0.94	0.89	0.65*
Foreign-born non-citizen	0.56***	0.56***	0.89	0.69	1.09	1.31	0.82	1.00
Speaks English less than “very well”	0.36***	0.38***	1.23	0.94	1.30*	1.42**	1.24	1.64*
Income 0 to 100 % of poverty line	0.84***	0.90*	0.94	0.99	1.14	0.97	0.90	0.97
Income 101 to 200 % of poverty line	0.92*	0.99	1.02	1.06	0.91	0.93	1.00	0.99
Income more than 300 %	0.98	1.04	1.04	0.97	1.00	1.01	0.96	0.80
Less than high school	1.01	0.93	1.14**	1.25***	1.08	0.96	1.50	1.45
Some college	1.04	1.00	0.94	0.98	0.93	0.86	0.86	0.87
Bachelor’s degree or higher	1.09*	1.02	0.82***	0.87***	0.87	0.87	0.74	0.70*
Widowed, separated, or divorced	1.03	0.96	0.89***	1.05	1.19	1.14	1.06	1.13
Never married	0.75***	0.75***	0.87***	0.92*	1.05	1.01	1.09	1.03
In the labor force, not employed	0.98	0.93	0.87*	0.90	1.09	1.12	1.07	1.33
Not in the labor force	1.11**	1.03	0.96	0.97	0.93	0.87	1.10	1.12
ACS race/Hisp = different from stayers	10.88***	5.05***	6.23***	2.82***	6.13***	2.61***	6.62***	3.79***
No AIAN ancestry reported	1.89***	1.51***	1.35***	1.14***	2.09***	1.81***	1.16	0.81
Did not report a tribe in either census	5.63***	6.86***	2.82***	3.48***	3.29***	3.54***	2.61***	3.53***



Table 5 (continued)

	S1: Non-Hispanic, Single-Race AIAN		S2: Non-Hispanic, Multiple-Race AIAN		S3: Hispanic Single-Race AIAN		S4: Hispanic, Multiple-Race AIAN	
	Leaver exp( $\beta$ )	Joiner exp( $\beta$ )	Leaver exp( $\beta$ )	Joiner exp( $\beta$ )	Leaver exp( $\beta$ )	Joiner exp( $\beta$ )	Leaver exp( $\beta$ )	Joiner exp( $\beta$ )
Central/South American tribe in 2000 or 2010					1.36**	1.40**	1.20	1.58**
Not in American Indian area in 2000 or 2010	3.59***	4.04***	1.36***	1.37***	0.80	0.90	1.50	1.28
In American Indian area in 2000 but not 2010	3.07***	1.51***	1.82***	0.74***	1.17	0.41***	2.33	0.59
In American Indian area in 2010 but not 2000	1.40***	3.18***	0.57***	1.70***	0.26***	0.91	0.84	1.66
Residential migrant	1.19***	1.07	1.14***	1.10**	1.08	1.12	1.19	1.11
In Northeast	1.34***	1.59***	1.18***	1.25***	1.22	1.58**	0.97	1.10
In Midwest	1.19***	1.32***	1.16***	1.14***	1.00	1.25	1.07	0.98
In South	1.65***	2.41***	1.45***	1.54***	1.27*	1.35**	1.30	1.45*
N in dependent variable category	14,034	13,022	26,701	29,074	4,036	4,016	2,044	3,390
R <sup>2</sup>		.3931		.1356		.1604		.1025

Notes: AIAN = American Indian/Alaska Native. Numbers represent relative risk of being a leaver or joiner, as opposed to being a stayer in that subgroup. In all models, the comparison groups are male, age 25–39, U.S. citizen, speaks English very well or only, income 201 % to 300 % of poverty level, married, high school diploma or GED, employed in the labor force, ACS race/Hispanic response same as stayers, AIAN ancestry reported, reported a tribe in 2000 and/or 2010, never reported a Central or South American tribe, in an American Indian area, did not move residences, and in the West region.

Sources: 2000 and 2010 U.S. censuses and 2006–2010 five-year ACS data.

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$

**Table 6** Predictors of five patterns of race response by non-Hispanics (comparison category is S1 stayer) ages 25 and older

Race response in one census (non-Hisp.):		AIAN	AIAN	AIAN +
Race response in other census (non-Hisp.):	S2 Stayer (AIAN+)	AIAN +	W	W
	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )
Intercept	0.03***	0.10***	0.04***	0.03***
Female	1.11***	0.98	0.82***	0.90***
Age 40–64	1.13***	0.78***	0.82***	0.93**
Age 65 or older	1.38***	0.80***	0.68***	0.97
Foreign-born non-citizen	0.32***	0.63*	0.25***	0.11***
Speaks English less than “very well”	0.26***	0.24***	0.20***	0.19***
Income 0 to 100 % of poverty line	0.82***	0.79***	0.88**	0.78***
Income 101 to 200 % of poverty line	0.92	0.92*	0.98	0.96
Income more than 300 % of poverty line	1.04	1.05	1.12***	1.03
Less than high school	0.69***	0.79***	0.99	0.89***
Some college	1.21***	1.06	0.95	1.05
Bachelor’s degree or higher	1.64***	1.23***	0.95	1.11***
Widowed, separated, or divorced	1.11**	0.97	0.94*	1.00
Never married	0.94	0.75***	0.54***	0.67***
In the labor force, not employed	1.14*	0.86*	1.00	1.00
Not in the labor force	1.22***	1.14***	1.11***	1.16***
No AIAN ancestry reported	4.75***	2.05***	5.91***	10.24***
Did not report a tribe in 2000 or 2010	4.33***	1.81***	12.85***	16.41***
Not in American Indian area	9.15***	3.92***	10.57***	20.97***
In American Indian area in 2000 or 2010	3.08***	2.13***	4.02***	5.65***
Residential migrant	0.91*	1.03	1.23***	1.02
In Northeast	2.09***	1.71***	2.07***	2.48***
In Midwest	1.28***	1.43***	1.67***	1.64***
In South	1.95***	2.32***	4.12***	3.40***
<i>N</i> in dependent variable category	8,986	9,080	14,948	37,745
<i>R</i> <sup>2</sup>		.4470		

*Notes:* AIAN = single-race American Indian/Alaska Native. AIAN+ = multiple-race American Indian/Alaska Native. W = single-race white. Numbers represent the relative risk of having this response pattern, as opposed to being an S1 Stayer (non-Hispanic, single-race American Indian in both censuses; *N* = 35,868). In all models, the comparison groups are male, age 25–39, U.S. citizen, speaks English very well or only, income 201 % to 300 % of poverty level, married, high school diploma or GED, employed in the labor force, ACS race/Hispanic response same as stayers, AIAN ancestry reported, reported a tribe in 2000 and/or 2010, in an American Indian area, did not move residences, and in the West region.

*Sources:* 2000 and 2010 U.S. censuses and 2006–2010 five-year ACS data.

\**p* < .05; \*\**p* < .01; \*\*\**p* < .001

They seem to have “thicker ties” to American Indians (Cornell and Hartman 2007) than those who left the American Indian group entirely.

**Table 7** Predictors of four patterns of race response among Hispanics (comparison category is S3 Stayer), age 25 and older

Race response in one census (Hispanic):		AIAN or AIAN+	AIAN or AIAN+
Race response in other census (Hispanic):	S4 Stayer (AIAN+)	W	SOR
	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )
Intercept	0.06***	0.08***	0.17***
Female	1.31*	0.91	0.82*
Age 40–64	0.93	1.00	0.74***
Age 65 or older	1.49	1.53**	0.72*
Foreign-born non-citizen	1.01	1.15	1.41*
Speaks English less than “very well”	0.67	1.17	1.70***
Income 0 to 100 % of poverty line	1.07	1.02	0.96
Income 101 to 200 % of poverty line	0.86	0.83	0.85
Income more than 300 % of poverty line	1.32	1.19	1.01
Less than high school	0.53**	0.93	1.01
Some college	1.41*	0.94	0.90
Bachelor’s degree or higher	2.39***	1.10	0.89
Widowed, separated, or divorced	1.28	1.30*	1.24*
Never married	1.06	0.97	0.87
In the labor force, not employed	0.97	1.05	0.88
Not in the labor force	0.86	0.91	0.81*
No AIAN ancestry reported	3.23***	6.18***	6.23***
Did not report a tribe in 2000 or 2010	1.06	5.22***	6.96***
Central/South American tribe in 2000 or 2010	0.70*	1.52***	2.71***
Not in American Indian area	2.25**	7.83***	3.77***
In American Indian area in 2000 or 2010	1.31	3.72***	1.86**
Residential migrant	0.99	1.14	1.01
In Northeast	2.01**	1.29	1.64**
In Midwest	1.30	1.23	1.03
In South	1.12	2.01***	1.27*
<i>N</i> in dependent variable category	473	4,790	4,581
<i>R</i> <sup>2</sup>		.2341	

*Notes:* AIAN = single-race American Indian/Alaska Native. AIAN+ = multiple-race American Indian/Alaska Native. W = single-race white. SOR = single-race Some Other Race. Numbers represent the relative risk of having this response pattern as opposed to being an S3 Stayer (Hispanic, single-race American Indian in both censuses; *N* = 1,080). In all models, the comparison groups are male, age 25–39, U.S. citizen, speaks English very well or only, income 201 % to 300 % of poverty level, married, high school diploma or GED, employed in the labor force, ACS race/Hispanic response same as stayers, AIAN ancestry reported, reported a tribe in 2000 and/or 2010, never reported a Central or South American tribe, in an American Indian area, did not move residences, and in the West region.

*Sources:* 2000 and 2010 U.S. censuses and 2006–2010 five-year ACS data.

\**p* ≤ .05; \*\**p* ≤ .01; \*\*\**p* ≤ .001

**Table 8** Odds of joining an American Indian subgroup (vs. leaving the same subgroup), by the race/Hispanic response given in the non-AIAN year, ages 25 and older

AIAN Subgroup	S1: Non-Hispanic, Single-Race AIAN			S2: Non-Hispanic, Multiple-Race AIAN			S3: Hispanic, Single-Race AIAN			S4: Hispanic, Multiple-Race AIAN		
	AIAN+	W	Else	AIAN	W	Else	SOR,H	W,H	Else	SOR,H	W,H	Else
Race and Hispanic Response when not in that AIAN subgroup	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )
Intercept	0.83*	2.23***	0.77	2.28***	2.48***	2.40***	4.54***	2.02**	2.25***	11.22***	2.59**	3.34***
Female	0.96	1.02	1.00	1.04	0.92***	0.96	0.96	0.97	1.05	1.07	1.03	0.96
Age 40-64	1.45***	1.14**	1.25*	0.70***	0.92**	0.87**	0.86	0.89	0.79*	0.98	0.83	1.14
Age 65 or older	1.57***	1.08	1.34*	0.64***	0.80***	0.75***	1.03	1.05	0.96	0.75	0.63*	1.07
Foreign-born non-citizen	1.32	1.03	0.83	0.89	1.20	0.74*	1.04	1.33*	1.22	0.87	1.06	1.64
Speaks English less than "very well"	0.94	1.51	0.85	1.14	1.11	0.66***	1.01	1.12	0.88	1.12	1.37*	0.88
Income 0 To 100 % of poverty line	1.04	1.08	1.19	0.96	1.11*	0.96	1.01	0.67**	0.94	0.89	1.17	1.06
Income 101 To 200 % of poverty line	0.97	1.11	1.22	1.03	1.04	1.03	1.12	0.98	0.87	0.68	0.99	1.13
Income more than 300 % of poverty line	1.08	1.00	1.14	0.94	0.93*	0.97	1.20	0.91	0.97	0.63*	0.88	0.93
Less than high school	0.78***	0.94	1.14	1.29***	1.06	1.06	0.82*	0.97	0.86	0.95	0.83	0.96
Some college	0.91	0.99	0.99	1.09	1.03	0.98	1.06	0.91	0.79*	1.06	0.91	1.00
Bachelor's degree or higher	0.87*	1.02	0.91	1.14*	1.09**	0.88	1.36*	1.02	0.78	1.12	0.75*	1.03
In the labor force, not employed	1.04	0.96	0.83	0.97	1.01	1.10	1.18	1.13	0.94	1.08	1.12	1.59*
Not in the labor force	0.98	0.92*	1.03	1.02	0.99	1.08	0.94	1.01	0.91	1.13	1.14	1.01
Widowed, separated, or divorced	0.85**	0.94	1.25*	1.18**	1.18***	1.13*	1.01	0.89	1.05	1.19	0.92	1.16
Never married	1.03	0.95	1.32**	0.98	1.01	1.14*	0.95	1.25*	0.80	0.72	1.13	1.02
ACS race/Hisp = different from stayers	0.55***	0.36***	0.50***	0.57***	0.44***	0.37***	0.42***	0.41***	0.44***	0.64	0.60**	0.46***
No AIAN ancestry reported	0.90	0.69***	0.89	1.38***	0.80***	0.80***	0.58***	0.76*	0.84	0.62	0.64**	0.69***
Not in American Indian area in AIAN year	1.04	0.92	1.16	0.87**	0.86***	1.16	1.24	0.94	1.10	1.06	0.94	0.88
Did not report a tribe in AIAN year	0.99	1.03	1.42***	1.06	1.27***	1.17***	0.83	1.01	0.93	1.21	1.29*	1.05

**Table 8** (continued)

AIAN Subgroup	S1: Non-Hispanic, Single-Race AIAN		S2: Non-Hispanic, Multiple-Race AIAN		S3: Hispanic, Single-Race AIAN		S4: Hispanic, Multiple-Race AIAN	
	AIAN+	W	AIAN	W	SOR,H	W,H	SOR,H	W,H
Race and Hispanic Response when not in that AIAN subgroup	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )	exp( $\beta$ )
Central/South American tribe in AIAN year								
Residential migrant	0.99	0.87**	1.04	0.99	0.88	0.81	1.05	0.99
In South in AIAN year	1.46***	1.32***	0.75***	1.14***	1.35**	1.32**	1.31*	1.51***
In Northeast in AIAN year	1.01	1.12	1.07	1.14***	1.25	1.38*	1.39	1.34
In Midwest in AIAN year	1.17**	1.02	1.26	0.88*	1.26	1.81***	1.18	1.13
N in model	9,080	14,948	3,028	9,080	3,144	2,902	1,437	1,888
R <sup>2</sup>	.038	.070	.042	.033	.063	.040	.048	.038

*Notes:* AIAN+ = multiple-race American Indian/Alaska Native. AIAN = single-race American Indian/Alaska Native. W = non-Hispanic, single-race white. WH = Hispanic, single-race white. Numbers represent relative risk of being a joiner as opposed to being a leaver from that subgroup. In all models, the comparison groups are stayed in the same AIAN subgroup, male, age 25–39, U.S. citizen, speaks English very well or only, income 201 % to 300 % of poverty level, married, high school diploma or GED, in the labor force, ACS race/Hispanic response same as stayers, AIAN ancestry reported, reported a tribe in 2000 and/or 2010, never reported a Central or South American tribe, in an American Indian area, did not move residences, and in the West region.

*Sources:* 2000 and 2010 U.S. censuses and 2006–2010 five-year ACS data.

\* $p \leq .05$ ; \*\* $p \leq .01$ ; \*\*\* $p \leq .001$

## How Are Joiners Different From or Similar to Leavers?

People who joined a particular subgroup of American Indians over the decade may have had different experiences than those who left the same subgroup. In prior research on joiners (e.g., Liebler 2001; Sturm 2011), some joiners have spoken of an identity awakening spurred by relocation or new family history information. Prior researchers have not been able to study leavers.

Joiners and leavers appear very similar to each other in Tables 4 and 5. To explore this more deeply, we next show disaggregations of each group of response changers—for example, those moving between S2 and S1 separate from those in S2 who changed to/from non-Hispanic white—and we present descriptive statistics about each group in Tables A5–A9 in Online Resource 1. Table 8 shows 12 logistic regression models predicting joining a subgroup rather than leaving it (stayers are excluded).

Models in Table 8 show that joiners were significantly different from leavers in some ways in all groups, with cross-group variation in the specifics of these differences. At the same time, model fit for all 12 models in Table 8 is poor, with  $r^2$  ranging from .02 to .07. This means that within a particular response pattern, those who move in one direction (e.g., from S3 to Hispanic, single-race white) are very similar to those who move in the opposite direction (e.g., from Hispanic, single-race white to S3), at least with respect to the characteristics measured here. This model fit is especially poor in comparison with our other analyses using these same variables to distinguish between other types of response change.

Similarities between joiners and leavers could indicate that the census snapshots caught them at different points in a generally dynamic experience. Prior research outlined earlier suggests that joiners and leavers who otherwise report non-Hispanic white would be similar to one another. Qualitative researchers have found that people with fluid identities give multiple-race responses sometimes and single-race responses at other times (Rockquemore and Brunsma 2008; Root 1996). Based on our models' inability to distinguish joiners from leavers, we conclude that these scenarios are plausible and bear further study.

## Discussion and Conclusion

Researchers have known for decades that the American Indian population grows not only through births, deaths, and migration but also through changes in how people report their race on the census form (e.g., Liebler and Ortyl 2014; Passel 1976, 1997). Until now, it has not been possible to learn characteristics of those who joined the population, whether anyone left the population by changing race responses, and/or the level of response stability. Our research has closed these gaps. We used high-quality, large-scale linked data to study race and Hispanic response changes among people who reported American Indian in the 2000 or 2010 census or both. We addressed three questions. To what extent do people join or leave subgroups of American Indians? How are joiners and leavers different from or similar to stayers? And how are joiners different from or similar to leavers?

We found substantial changes in race responses in our data. Almost one-half of the non-Hispanic, single-race American Indians in 2000 left this subgroup and were replaced by others by 2010. A much higher fraction of Hispanic and multiple-race American Indians left and were replaced; in these groups, response change is vastly more common

than response stability. Similarly high levels of response change have been found among other multiple-race groups and among Pacific Islanders (Liebler et al. 2014).

People in our data who changed race responses (joiners and leavers) had different characteristics than those who kept the same response across two measures a decade apart (stayers). Stayers were generally distinct from response changers in terms of measured connections to other American Indians, including tribe response, ancestry response, and living in an American Indian area (some changers also have these attributes). This suggests that stayers have had different race-related life experiences than those who changed responses.

By further disaggregating joiners and leavers into subgroups, we revealed multiple dynamic processes involving racial fluidity. For example, those who changed between a single-race white response and an American Indian response had a different demographic profile than those who moved between multiple-race and single-race American Indian responses. Our results support the decision to separate investigations of formerly white American Indians (e.g., Fitzgerald 2007; Sturm 2011) from studies of people who consistently report American Indian but sometimes report an additional race or races (e.g., Liebler 2001).

We found substantial similarities in the number and characteristics of people who made a particular response move (e.g., from Hispanic, single-race American Indian to Hispanic, single-race white) and others who made the inverse move. We used multivariate models to distinguish characteristics of people in inverse groups. The models have very poor fit, perhaps indicating that joiners and leavers are engaged in similar identity processes and simply are captured in our data at different points in the process. This complicates the search for reasons that people change race responses; social movements like Red Power (Nagel 1996), for example, are thought to cause mostly unidirectional response change (i.e., joining) and thus cannot give a complete explanation of our findings. Programs serving American Indians may not notice this large-scale churning of individuals into and out of the populations they serve because of similarities between those who join and those who leave the population of self-defined American Indians.

Our research has important caveats and limitations. First, response changes do not necessarily mean identity changes. Some are due to false links, differences in post-enumeration processing across the two censuses, differences in opinion about what would be a “correct” response, or mistakenly marking the wrong box(es) when filling out the form. Second, we are not able to study those with an American Indian identity that was not reported in the census race question. Third, our results overrepresent response stability in two ways. First, because of case selection and limitations of linked data, our data include relatively many non-Hispanics, tribe reporters, and people in American Indian areas—characteristics shared by people with stable responses. Second, we focus on only two measures of a person’s race over an entire decade even though further response changes are possible (and evident in the ACS data).

Our results have theoretical, practical, and policy-related implications. We contribute to conceptual understandings of racial identity and racial fluidity by identifying characteristics of three groups of American Indians who seem to have distinct identity and response fluidity experiences:

1. *Stayers*: People who keep the same American Indian race/Hispanic response.



2. *Joiners/leavers who stay in the American Indian category:* People who sometimes report single-race American Indian and other times report multiple-race American Indian.
3. *Joiners/leavers who enter/exit the American Indian category:* People who add or drop the American Indian race response entirely.

People in groups 1 and 2 show substantial cultural connections to American Indians: many live in an American Indian area and/or report a tribe. Further research is necessary to understand whether the joiners and leavers in groups 2 and 3 are captured at different points in a common identity experience; this would explain why their characteristics are so similar.

Our results show diversity within the “American Indian” population. Many American Indians already know of this diversity, and our work provides important validation and documentation. Our work can also help researchers, policy makers, and tribal leaders more effectively interpret census data about American Indians. For example, because we find similarities between people who consistently report non-Hispanic American Indian (even if they add/drop other race responses), researchers should consider including multiple-race American Indians in their analyses. Grouping multiple-race American Indians instead with other multiple-race respondents (e.g., black-whites) may result in unnecessarily separating similar individuals (single-race and multiple-race non-Hispanic American Indians) into two groups. More generally, researchers should also be careful when making claims about American Indians as a whole, given the diversity that exists within this group.

The American Indian case may show the future of race response change for people of many racial and ethnic groups (Liebler et al. 2014). We expect response change to increase for all groups as more unions are formed across racial and ethnic boundaries and as greater proportions of other groups (e.g., Hispanics and Asians) become grandchildren and great grandchildren of immigrants. In these situations, there may be more conversations and social processes defining what makes a person a “real” Hispanic or Asian, and response change could follow.

Although efforts to improve race and ethnicity questions continue (see Compton et al. 2012; Humes and Hogan 2015; Prewitt 2013), these are complex and personal social constructs, and it is possible that no point-in-time measure of race or ethnicity will be able to meet the goal of “categoriz[ing] individuals into the same groups over a long period of time” (Humes and Hogan 2009:112). Researchers designing questions to measure race and ethnicity should consider the possibility of response change, and multiple measures of race should be incorporated into data collection and analysis whenever possible. Analysts from all fields would benefit from conceptualizing and operationalizing a person’s race as having a past, present, and future (as is done for marital status, work, and residence, for example), rather than acting as if race were an unchanging trait. The dynamics of race exposed in this research lend an unfamiliar dimension of complexity to the study of groups such as American Indians, but this should not deter researchers from engaging the issue (see Espey et al. 2014). Rather, with new knowledge about the extent of these dynamics, we can employ repurposed strategies and theories to gain more realistic insights into our complex social world.

**Acknowledgments** This article is released to inform interested parties of research and to encourage discussion. The views expressed are those of the authors and not necessarily those of the U.S. Census Bureau. At various stages of this research, we have benefited from thoughtful comments from many people, including C. Matthew Snipp, Amy O'Hara, James Noon, Leticia Fernandez, Sharon Ennis, Julia Rivera Drew, Catherine Fitch, Liying Luo, Caren Arbeit, Susan Mason, J. Trent Alexander, Jenifer Bratter, and Mary Campbell. We also thank the American Indian and Indigenous Studies Workshop and the Inequality and Methods Workshop, both at the University of Minnesota, for sponsoring helpful discussions of this research. The University of Minnesota's Minnesota Population Center provided important support for the first author through programs made possible by an NIH Center Grant (R24HD041023).

## References

- Bates, N. (2008). *2010 Census AIAN audience segmentation and evaluation* (2010 Census Integrated Communications Research Memoranda Series No. 6). Washington, DC: U.S. Census Bureau. Retrieved from <http://www.census.gov/2010census/partners/pdf/C2POMemoNo6.pdf>
- Bond, B., Brown, J. D., Luque, A., & O'Hara, A. (2014). *The nature of bias when studying only linkable person records: Evidence from the American Community Survey* (Center for Administrative Records Research and Applications Working Paper #2014-08). Washington, DC: U.S. Census Bureau.
- Campbell, M. E., & Troyer, L. (2007). The implications of racial misclassification by observers. *American Sociological Review*, *72*, 750–765.
- Chun, A. Y., & Gan, J. (2014). *Analysis of the source of group quarters enumeration data in the 2010 census*. Paper presented at the 2014 American Statistical Association's Joint Statistical Meetings: Survey research methods session, Alexandria, VA.
- Compton, E., Bentley, M., Ennis, S., & Rastogi, S. (2012). *2010 census race and Hispanic origin alternative questionnaire experiment* (DSSD 2010 CPEX Memorandum Series #B-05-R, 2010 Census Planning Memoranda Series #211). Washington, DC: U.S. Census Bureau.
- Cooley, C. H. (1902). *Human nature and the social order*. New York, NY: Scribner's Sons.
- Cornell, S., & Hartmann, D. (2007). *Ethnicity and race: Making identities in a changing world* (2nd ed.). Thousand Oaks, CA: Pine Forge Press.
- Dahl, J., & Jensen, M. (2002). Pueblos indígenas y urbanización [Indigenous peoples and urbanization]. *Asuntos Indígenas: Pueblos Indígenas y Urbanización*, *3*(4/02), 4–7.
- Davis, F. J. (2005). *Who is black? One nation's definition* (10th Anniversary ed.). University Park: Pennsylvania State University Press.
- del Pinal, J., & Schmidley, D. (2005). *Matched race and Hispanic origin responses from census 2000 and Current Population Survey February to May 2000* (Population Division Working Paper No. 79). Washington, DC: U.S. Census Bureau.
- Del Popolo, F., Oyarce, A. M., Ribotta, B., & Rodriguez, J. (2007). *Indigenous peoples and urban settlements: Spatial distribution, internal migration and living conditions*. Santiago, Chile: Latin American and Caribbean Demographic Centre (CELADE) Population Division.
- Doyle, J. M., & Kao, G. (2007). Are racial identities of multiracials stable? Changing self-identification among single and multiple race individuals. *Social Psychology Quarterly*, *70*, 405–423.
- Dusch, G., & Meier, F. (2012). *2010 Census Content Reinterview Survey evaluation report* (2010 Census Program for Evaluations and Experiments). Washington, DC: U.S. Census Bureau.
- Erikson, E. H. (1968). *Identity: Youth and crisis*. New York, NY: Norton & Co.
- Eschbach, K. (1993). Changing identification among American Indians and Alaska Natives. *Demography*, *30*, 635–652.
- Eschbach, K. (1995). The enduring and vanishing American Indian: American Indian population growth and intermarriage in 1990. *Ethnic and Racial Studies*, *18*, 89–108.
- Eschbach, K., Supple, K., & Snipp, C. M. (1998). Changes in racial identification and the educational attainment of American Indians, 1970–1990. *Demography*, *35*, 35–43.
- Espey, D. K., Jim, M. A., Richards, T. B., Begay, C., Haverkamp, D., & Roberts, D. (2014). Methods for improving the quality and completeness of mortality data for American Indians and Alaska Natives. *American Journal of Public Health*, *104*(S3), S286–S294.
- Fellegi, I. P., & Sunter, A. B. (1969). A theory for record linkage. *Journal of the American Statistical Association*, *64*, 1183–1210.
- Fitzgerald, K. (2007). *Beyond white ethnicity: Developing a sociological understanding of Native American identity reclamation*. New York, NY: Lexington Books.

- Gans, H. (1979). Symbolic ethnicity: The future of ethnic groups and cultures in America. *Ethnic and Racial Studies*, 2, 1–20.
- Glick, J. E., & Han, S. Y. (2015). Socioeconomic stratification from within: Changes within American Indian cohorts in the United States: 1990–2010. *Population Research and Policy Review*, 34, 77–112.
- Gonzalez, M. L. (1994). How many indigenous people? In G. Psacharopoulos & H. A. Patrinos (Eds.), *Indigenous people and poverty in Latin America: An empirical analysis* (pp. 21–39). Washington, DC: The World Bank.
- Grieco, E., & Cassidy, R. (2001). *Overview of race and Hispanic origin* (Census 2000 Brief No. C2KBR/01-1). Washington, DC: U.S. Census Bureau.
- Guimond, E., Robitaille, N., & Senécal, S. (2014). Another look at definitions and growth of Aboriginal populations in Canada. In F. Trovato & A. Romaniuk (Eds.), *Aboriginal populations: Social, demographic, and epidemiological perspectives* (pp. 97–118). Alberta, Canada: University of Alberta Press.
- Gullickson, A., & Morning, A. (2011). Choosing race: Multiracial ancestry and identification. *Social Science Research*, 40, 498–512.
- Harris, D. (1994). The 1990 census count of American Indians: What do the numbers really mean? *Social Science Quarterly*, 75, 580–593.
- Harris, D., & Sim, J. J. (2002). Who is multiracial? Assessing the complexity of lived race. *American Sociological Review*, 67, 614–627.
- Hitlin, S., Brown, J. S., & Elder, G. H., Jr. (2006). Racial self-categorization in adolescence: Multiracial development and social pathways. *Child Development*, 77, 1298–1308.
- Hout, M., & Goldstein, J. (1994). How 4.5 million Irish immigrants became 40 million Irish Americans: Demographic and subjective aspects of the ethnic composition of white Americans. *American Sociological Review*, 59, 64–82.
- Humes, K., & Hogan, H. (2009). Measurement of race and ethnicity in a changing, multicultural America. *Race and Social Problems*, 1, 111–131.
- Humes, K., & Hogan, H. (2015). Do current race and ethnicity concepts reflect a changing America? In R. Bangs & L. E. Davis (Eds.), *Race and social problems: Restructuring inequality* (pp. 15–38). New York, NY: Springer Science + Business Media.
- Humes, K., Jones, N., & Ramirez, R. (2011). *Overview of race and Hispanic origin: 2010* (2010 Census Brief No. C2010BR-02). Washington, DC: U.S. Census Bureau.
- Jacobs, M. R. (2015). Urban American Indian identity: Negotiating Indianness in northeast Ohio. *Qualitative Sociology*, 38, 79–98.
- Kana'iaupuni, S., & Liebler, C. A. (2005). Pondering poi dog: The importance of place to the racial identification of mixed-race Native Hawaiians. *Ethnic and Racial Studies*, 28, 687–721.
- Kearney, M. (2000). Transnational Oaxacan indigenous identity: The case of Mixtecs and Zapotecs. *Identities: Global Studies in Culture and Power*, 7, 173–195.
- Khanna, N., & Johnson, C. (2010). Passing as black: Racial identity work among biracial Americans. *Social Psychology Quarterly*, 73, 380–397.
- Kukutai, T., & Didham, R. (2009). In search of ethnic New Zealanders: National naming in the 2006 census. *Social Policy Journal of New Zealand*, 36, 46–62.
- Layne, M., Wagner, D., & Rothhaas, C. (2014). *Estimating record linkage false match rate for the Person Identification Validation System* (Center for Administrative Records Research and Applications Working Paper 2014–02). Washington, DC: U.S. Census Bureau.
- Lieberson, S., & Waters, M. (1993). The ethnic responses of whites: What causes their instability, simplification, and inconsistency? *Social Forces*, 72, 421–450.
- Lieber, C. A. (2001). *Fringes of American Indian identity* (Unpublished doctoral dissertation). Department of Sociology, University of Wisconsin–Madison, Madison, WI.
- Lieber, C. A. (2010a). A group in flux: Multiracial American Indians and the social construction of race. In K. O. Korgen (Ed.), *Multiracial Americans and social class* (pp. 131–144). New York, NY: Routledge Press.
- Lieber, C. A. (2010b). Homelands and indigenous identities in a multiracial era. *Social Science Research*, 39, 596–609.
- Lieber, C. A., & Ortyl, T. (2014). More than one million new American Indians in 2000: Who are they? *Demography*, 51, 1101–1130.
- Lieber, C. A., Rastogi, S., Fernandez, L. E., Noon, J. M., & Ennis, S. R. (2014). *America's churning races: Race and ethnic response changes between census 2000 and the 2010 census* (Center for Administrative Records Research and Applications Working Paper No. 2014–09). Washington, DC: U.S. Census Bureau.
- Lieber, C. A., & Zacher, M. (2012). American Indians without tribes in the twenty-first century. *Ethnic and Racial Studies*, 36, 1910–1934.

- Loveman, M., & Muniz, J. O. (2007). How Puerto Rico became white: Boundary dynamics and intercensus racial reclassification. *American Sociological Review*, 72, 915–939.
- Lujan, C. C. (2014). American Indians and Alaska Natives count: The U.S. Census Bureau's efforts to enumerate the Native population. *American Indian Quarterly*, 38, 319–341.
- Memmott, P., & Long, S. (2002). Place theory and place maintenance in indigenous Australia. *Urban Policy and Research*, 20, 39–56.
- Miller, M. (2004). *Rise and fall of the cosmic race: The cult of mestizaje in Latin America*. Austin: University of Texas Press.
- Montenegro, R. A., & Stephens, C. (2006). Indigenous health in Latin America and the Caribbean. *Lancet*, 367, 1859–1869.
- Mule, T. (2012). *Census coverage measurement estimation report: Summary of estimates of coverage of persons in the United States* (DSSD 2010 Census Coverage Measurement Memorandum Series #2010-G-01). Washington, DC: U.S. Census Bureau.
- Nagel, J. (1996). *American Indian ethnic renewal: Red power and the resurgence of identity and culture*. New York, NY: Oxford University Press.
- Office of Management and Budget. (1997). Revisions to the standards for the classification of federal data on race and ethnicity. *Federal Register*, 62, 58781–58790.
- Omi, M., & Winant, H. (1994). *Racial formation in the United States: From the 1960s to the 1990s* (2nd ed.). New York, NY: Routledge.
- Passel, J. (1976). Provisional evaluation of the 1970 census count of American Indians. *Demography*, 13, 397–409.
- Passel, J. (1997). The growing American Indian population, 1960–1990: Beyond demography. *Population Research and Policy Review*, 16, 11–31.
- Passel, J., & Berman, P. (1986). Quality of 1980 census data for American Indians. *Social Biology*, 33, 163–182.
- Perez, A., & Hirschman, C. (2009). Estimating net interracial mobility in the United States: A residual methods approach. *Sociological Methodology*, 39, 31–71.
- Porter, S. R., Liebler, C. A., & Noon, J. M. (2015). An outside view: What observers say about others' races and Hispanic origins. *American Behavioral Scientist*. Advance online publication. doi:10.1177/0002764215613397
- Prewitt, K. (2013). *What is your race? The census and our flawed efforts to classify Americans*. Princeton, NJ: Princeton University Press.
- Psacharopoulos, G., & Patrinos, H. A. (1994). *Indigenous people and poverty in Latin America: An empirical analysis*. Washington, DC: The World Bank.
- Rastogi, S., Fernandez, L. E., Noon, J. M., Zapata, E., & Bhaskar, R. (2014). *Exploring administrative records use for race and Hispanic origin item non-response*. Paper presented at the United Nations Economic Commission for Europe, Conference of European Statisticians: Work Session on Statistical Data Editing, Paris, France. Retrieved from [http://www.unece.org/fileadmin/DAM/stats/documents/ece/ces/ge.44/2014/mtgl/Topic\\_4\\_USA\\_Rastogi\\_rev1.pdf](http://www.unece.org/fileadmin/DAM/stats/documents/ece/ces/ge.44/2014/mtgl/Topic_4_USA_Rastogi_rev1.pdf)
- Rastogi, S., & O'Hara, A. (2012). *2010 census match study* (2010 Planning Memoranda Series No. 247). Washington, DC: U.S. Census Bureau.
- Rios, M., Romero, F., & Ramirez, R. (2014). *Race reporting among Hispanics: 2010* (Population Division Working Paper No. 102). Washington, DC: U.S. Census Bureau.
- Robertson, D. (2013). A necessary evil: Framing an American Indian legal identity. *American Indian Culture and Research Journal*, 37(4), 115–139.
- Rockquemore, K., & Brunsma, D. (2002). Socially embedded identities: Theories, typologies, and processes of racial identity among black/white biracials. *Sociological Quarterly*, 43, 335–356.
- Rockquemore, K., & Brunsma, D. (2008). *Beyond black: Biracial identity in America* (2nd ed.). Thousand Oaks, CA: Sage.
- Roldán Ortiga, R. (2004). *Models for recognizing indigenous land rights in Latin America* (Biodiversity Series, Paper No. 99). Washington, DC: International Bank for Reconstruction and Development/World Bank.
- Root, M. P. P. (1996). *The multiracial experience: Racial borders as the new frontier*. Thousand Oaks, CA: Sage.
- Ruggles, S., Alexander, J. T., Genadek, K., Goeken, R., Schroeder, M. B., and Sobek, M. (2010). *Integrated public use microdata series: Version 5.0 [Machine-readable database]*. Minneapolis: University of Minnesota.
- Seelye, K. Q. (2012). The caucus; Warren says she told schools of Indian ancestry. *The New York Times*. Retrieved from <http://query.nytimes.com/gst/fullpage.html?res=950DEEDEF3EF932A35755C0A9649D8B63>

- Shoemaker, N. (1999). *American Indian population recovery in the twentieth century*. Albuquerque: University of New Mexico Press.
- Singer, P., & Ennis, S. (2003). *Census 2000 Content Reinterview Survey: Accuracy of data for selected population and housing characteristics as measured by reinterview* (Census 2000 Evaluation B.5). Washington, DC: U.S. Census Bureau.
- Snipp, C. M. (1989). *American Indians: The first of this land*. New York, NY: Russell Sage.
- Snipp, C. M. (1997). Some observations about racial boundaries and the experiences of American Indians. *Ethnic and Racial Studies*, 20, 668–689.
- Snipp, C. M. (2003). Racial measurement in the American Census: Past practices and implications for the future. *Annual Review of Sociology*, 29, 563–588.
- Song, M. (2003). *Choosing ethnic identity*. Malden, MA: Blackwell.
- Sturm, C. (2011). *Becoming Indian: The struggle over Cherokee identity in the twenty-first century*. Santa Fe, NM: School for Advanced Research Press.
- Sweet, E. (1994). *Who fills out the census questionnaire study* (1990 DSSD REX Memorandum Series #PP-9). Washington, DC: U.S. Census Bureau.
- Telles, E., & Bailey, S. (2013). Understanding Latin American beliefs about racial inequality. *American Journal of Sociology*, 118, 1559–1595.
- Thornton, R. (1987). *American Indian holocaust and survival: A population history since 1492*. Norman: University of Oklahoma Press.
- U.S. Census Bureau (1894). *Indians taxed and Indians not taxed in the United States (except Alaska) at the eleventh census: 1890*. Washington, DC: U.S. Government Printing Office.
- U.S. Census Bureau (1993). *Content Reinterview Survey: Accuracy of data for selected population and housing characteristics as measured by reinterview* (1990 Census of Population and Housing Evaluation and Research Reports #1990 CPH-E-1). Washington, DC: U.S. Census Bureau.
- U.S. Census Bureau. (1994). American Indian and Alaska Native areas. In *Geographic areas reference manual* (pp. 5-1–5-18). Retrieved from <http://www2.census.gov/geo/pdfs/reference/GARM/Ch5GARM.pdf>. Accessed 17 Feb 2016.
- U.S. Census Bureau. (2003). *Technical assessment of A.C.E Revision II*. Washington, DC: U.S. Census Bureau. Retrieved from <http://www.census.gov/dmd/www/pdf/ACETechAssess.pdf>
- U.S. Census Bureau (2007). *2000 Census of population and housing technical documentation* (Summary File No. SF1/14). Washington, DC: U.S. Census Bureau.
- U.S. Census Bureau. (2008). *2007 American Indian and Alaska Native tribal consultations* (2010 American Indian and Alaska Native Program, Final report). Washington, DC: U.S. Census Bureau. Retrieved from [http://www.census.gov/aian/pdf/CensusFinalReport\\_07\\_color-hi\\_res.pdf](http://www.census.gov/aian/pdf/CensusFinalReport_07_color-hi_res.pdf)
- Wagner, D., & Layne, M. (2014). *The Person Identification Validation System (PVS): Applying the Center for Administrative Records Research and Applications' (CARRA) record linkage software* (Center for Administrative Records Research and Applications Working Paper No. 2014–01). Washington, DC: U.S. Census Bureau.
- Wang, W. (2012). *The rise of intermarriage: Rates, characteristics vary by race and gender*. Washington, DC: Pew Social & Demographic Trends.
- Waters, M. (1990). *Ethnic options: Choosing identities in America*. Berkeley: University of California Press.
- Wimmer, A. (2008). The making and unmaking of ethnic boundaries: A multilevel process theory. *American Journal of Sociology*, 113, 970–1022.
- Xie, Y., & Goyette, K. (1997). The racial identification of biracial children with one Asian parent: Evidence from the 1990 census. *Social Forces*, 76, 547–570.