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Socioeconomic Stratification from Within: Changes Within American Indian Cohorts in the United States: 1990–2010

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Abstract Socioeconomic inequality in the United States persists with disparities in education, earnings, and health evident across racial and ethnic groups. Somewhat less attention has been given to the importance of inequality within minority racial and pan-ethnic groups. This paper considers the increasing divergence of socioeconomic status within cohorts of American Indian and Alaskan Native (AIAN) adults in the United States. The analyses rely on US Census data for 1990, 2000, and 2010 to examine the relative contribution of demographic change and change in self-identification to the size of AIAN adult cohorts over time. Decomposition analyses demonstrate that declines in poverty within the AIAN cohorts are largely attributable to the more advantaged status of individuals who select AIAN in combination with other racial identifications.

Keywords American Indian population · Multiracial identification · US Census · Decomposition

Socioeconomic inequality in the United States has risen in recent years with persistent disparities in education, earnings, and health across racial and ethnic groups (e.g., Adler and Rehkopf 2008; Flores and Lin 2013; Iceland 2003; Ross et al. 2012; West Coast Poverty Center 2010). Among racial and ethnic groups, American Indian and Alaska Natives (AIAN), as defined in the US Census, experience the highest levels of poverty in the United States today (Huyser et al. 2014; Mccartney et al. 2013) while food insecurity, poor health, and low education levels continue to be persistent problems (Fischer and Stoddard 2013; Pardilla et al. 2014). Much of this is a legacy of discrimination and barriers to upward mobility

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that contribute to a long standing history of low economic status (Nagel 1995; Snipp 1989).

Although poverty rates remain quite high among AIAN individuals, there was apparent progress in recent decades. Poverty rates for the group declined throughout the 1990s falling from 31 % in 1989 to 26 % in 1999. There was very little change in poverty rates for American Indians and Alaska Natives thereafter according to estimates from the 2007–2011 American Community Survey. This apparent decline and leveling off of poverty occurred at the same time that national poverty rates remained relatively constant from 12.8 % in 1989 to 12.4 % in 1999 with a rise to 16 % nationally in 2009 (Bishaw and Iceland 2003; Bureau of the Census 1990; Hoynes et al. 2006; Mccartney et al. 2013).

Certainly these changes in poverty could reflect real improvements in the economic status of the American Indian and Alaska Native group between 1990 and 2000. Economic expansion in the 1990s could have led to changes in individual economic well-being. But there may also have been changes in the composition of the group over time. Changes in racial and ethnic identification co-occurred with declining poverty throughout this time period. It is possible that improvements in economic well-being reflect changes in the underlying composition of the group rather than individual mobility. This is a particularly important caveat when focusing on differences occurring in the United States throughout the 1990s and 2000s because these decades mark a significant change in the way data on race and ethnicity were collected. If more individuals self-identify as members of the AIAN group and these individuals' socioeconomic status are comparatively high, there will be an improvement in the socioeconomic profile of the group overall. As policy makers consider the underlying causes and potential remedies for persistent poverty, it is important to understand the extent to which improvements or declines in economic status are the result of real changes in individual well-being or the result of compositional changes within racial and ethnic groups.

This paper addresses the change in the size and economic status of AIAN cohorts in the United States. This diverse group, combining individuals who self-identify with American Indian tribes, indigenous Latino groups, and Alaskan Eskimos and Aleuts (Snipp 1989; Liebler and Ortyl 2014), is designated in the US Census and American Community Survey data. Using this definition, there has been significant increase in the size of the AIAN population from the 1960 US Census forward that outpaces what would have been expected from rates of natural increase (Eschbach et al. 1998; Liebler and Ortyl 2014). Shifts in racial and ethnic identification and adoption of previously stigmatized identities contributed to this growth (Snipp 1989). Additionally, the United States Census allowed individuals to report more than one racial identification for the first time in 2000 which may have encouraged more individuals to identify as American Indian or Alaska Native than in previous years when only one racial identification could be reported (Liebler and Ortyl 2014). This paper focuses on how changes in the size and composition of AIAN adult cohorts over time are also associated with changes in economic status. The analyses follow adult cohorts of AIAN individuals in the United States from 1990 through 2010 and address the role of compositional change in the cohort on differences in poverty over time.

Changing Definitions of Race and Changes in Socioeconomic Status

There has been a significant increase in the size of the AIAN population from the 1960 US Census going forward. Population groups change in size due to four factors: births, deaths, immigration, and social construction of self-identification. The first three of these factors are part of the fundamental equation of population growth. A straightforward analysis can identify how much change in a population subgroup we would expect based on the number of births to the group, minus the number of deaths of group members (i.e., natural increase) plus the addition of new immigrants. Previous analyses of the AIAN population demonstrate that only a small part of the change in the population from 1960 to 1980 was attributable to natural increase or net migration (Perez and Hirschman 2009).

Beyond natural increase and net migration, group membership can also change through changes in self-identification. Race and ethnicity are largely socially constructed and therefore subject to re-definition across time and place (Harris and Sim 2002; Nagel 1994). The impact of change in self-identification on the size of the group is difficult to quantify (Hirschman et al. 2000). The increasing visibility and political activism among American Indians likely contributed to an increase in individuals identifying as American Indian in the 1970s and 1980s (Nagel 1995; Passel 1997; Snipp 1989). Additionally, increases in intermarriage and appreciation of multiracial backgrounds may increase the number of children identified as American Indian (Qian and Lichter 2007).

Another large change in the size and composition of the AIAN population occurred by 2000. Recognizing the increases in interracial marriage and the increased social awareness of biracial and multiracial identities, the United States changed the way it asked about race in the 2000 decennial census and allowed individuals to self-identify with more than one race. Providing the opportunity to select more than one race had the advantage of reducing nonresponse but had little impact on overall racial composition of the United States population (Hirschman et al. 2000). Approximately 2.4 % of the US population selected more than one racial identification in 2000, and 3 % did so in 2010 (Jones and Bullock 2012). Although this is a relatively small proportion of the population, including multiracial individuals had a much larger impact on the size of minority groups in the United States (Perez and Hirschman 2009). Among those selecting AIAN as their racial identity, roughly 40 % selected more than one racial group when answering the 2000 US Census (Liebler and Ortyl 2014).

Beyond the influence on the size of the group, there has been less attention to whether the option to select more than one race could also change socioeconomic status of the group. Those who select more than one race may have more options when it comes to their perceived race or ethnicity. For these individuals, minority identification is symbolic and self-selected rather than imposed from the outside (Gans 1979). If this symbolic identification is chosen by those who are more advantaged, there will be an apparent improvement in the socioeconomic status of the group when multiracial individuals are included in analyses. There is some indication that this occurred among the AIAN population. Individuals identifying as AIAN in 2000 appeared more socioeconomically advantaged than those in previous

decades. For example, there were greater increases in the number of American Indians with college education than would have been expected based on observations from 1990 (Liebler and Ortyl 2014). Huyser et al. (2010) demonstrate that individuals who self-identify as AIAN in combination with another race are disadvantaged relative to non-Hispanic Whites, but their socioeconomic attainment is higher than those who self-identified as single-race AIAN (Huyser et al. 2014). This suggests that any improvements in socioeconomic status over time among the AIAN population should be considered in light of the disparities within this population as well as in relation to other minority groups.

Focusing on adult cohorts of American Indian and Alaskan Natives in the United States between 1990 and 2010, the analyses presented here address the extent to which improvements in socioeconomic well-being among these AIAN cohorts can be attributed to the inclusion of cohort members who selected AIAN as one of multiple racial identities when compared to a cohort composed exclusively of those who select AIAN as their only racial identification. The analyses also identify the characteristics of these groups that account for the gap in well-being within the AIAN cohorts.

The focus on cohorts first sets out to document the change in the size of AIAN adult cohorts in the United States over time. Increases in cohort size that are not accounted for by mortality or migration result from changes in racial self-identification of cohort members. But the focus here is not just on the relative size of the AIAN cohorts but on the changing socioeconomic profile as well. The gold standard for assessing improvements in socioeconomic status is analyses of individual longitudinal data. With such data, we would be able to observe individuals as they change or retain their racial identification, and we could directly assess changes in individual socioeconomic status. Unfortunately, few longitudinal datasets contain sufficient numbers of American Indian and Alaskan Native individuals for this approach.

Therefore, to estimate the changes in socioeconomic status over time, we rely on repeated cross-sectional data for individuals in the same age cohort and assess changes in the socioeconomic status of the cohort from 1990 to 2000 and 2000 to 2010. In this way, we can compare poverty rates when the cohort is defined as those who identify AIAN as their single race to the rates observed when the cohort is redefined to include multiracial AIAN individuals in the cohort (in 2000 and 2010). Multivariate decomposition then quantifies the amount of change in poverty within an AIAN adult age cohort due to change in the underlying compositional characteristics of the cohort and which compositional characteristics are most important for explaining these trends.

Data and Methods

To assess the changes in the socioeconomic status of the AIAN population from 1990 to 2010, the analyses proceed at two levels. The first analytic step is to describe the size and composition of adult AIAN cohorts in the United States.

Focusing on cohorts allows us to observe the changes in the characteristics of the same group of individuals, and focusing on working age adults helps limit the influence of other life course transitions on poverty (i.e., movement out of the parental home, completion of schooling, movement out of the labor force into retirement, and others). Four age cohorts are examined: (1) cohort 15–24 in 1990: individuals age 15–24 in 1990, 25–34 in 2000, and 35–44 in 2010; (2) cohort 25–34 in 1990: individuals age 25–34 in 1990, 35–44 in 2000, and 45–54 in 2010; (3) cohort 35–44 in 1990: individuals age 35–44 in 1990, 45–54 in 2000, and 55–64 in 2010; and (4) cohort 45–54 in 1990: individuals age 45–54 in 1990, 55–64 in 2000, and 65–74 in 2010. Cohort membership is based on the selection of the American Indian or Alaskan Native category when answering the race question. This first step follows the example of Perez and Hirschman (2009) who employ a revised version of traditional demographic accounting comprised of population size, birth, death, migration, and unmeasured sources of population change (error of closure). Our focus is on the last element, error of closure, which represents the amount of change accounted for by factors other than fertility and mortality including any mobility in racial self-identification. In other words, changes in the composition of our cohorts not accounted for by mortality or migration are reflected in error of closure component of the decomposition.

Data for the first analytic step come from the 1990, 2000, and 2010 decennial census summary file 2 (U.S. Census Bureau). Analyses adjusting for mortality rely on age-specific death rates reported by the National Center for Health Statistics (NCHS) (CDC 2013a, b). Life tables are created for adjustment purpose, and death rates in 1995 and 2005 are used. Each year is the middle year of each period, 1990–2000 and 2000–2010. Due to the lack of information about death rates specifically for AIAN in 1995, death rates for 'other race' category in the same year are used for the calculation. For 2000, death rates for AIAN are used. We do not need to consider births in our demographic accounting because we focus only on adults. However, we do need to adjust for in-migration to the AIAN population because foreign-born adult cohort members may move into the United States and self-identify as AIAN thus increasing the size of the cohort. We rely on data from the nativity question in the IPUMS (i.e., foreign born) to assess the number of new AIAN arrivals in the age cohort during the decade.

The demographic accounting allows us to assess the expected size of the AIAN cohorts assuming that no one changed their self-selected racial identification. This accounting cannot assess the characteristics of those who 'become' AIAN cohort members and the subsequent role of these changes on poverty within the cohorts. Therefore, the analyses proceed with a second analytic step conducted at the individual level. Here, we compare the poverty status of AIAN individuals in 1990 (i.e., those who selected American Indian or Alaskan Native as their racial identification) with the poverty status of the same age cohort in 2000. For the 2000 observations, we consider individuals who identify only as AIAN and individuals who select AIAN either alone or in any combination with other racial identification. Comparing these two groups, referred to as 'AIAN-single race' and 'AIAN-all' throughout the text, demonstrates increasing disparities in socioeconomic status that occur along with changes in the composition of the AIAN population. To follow the

patterns of the same cohort in the next decade, we also examine the disparities in the poverty status between AIAN-single race in 2000 and AIAN-all in 2010. Data for these analyses come from 5 % sample of the 1990 and 2000 decennial census provided by IPUMS (Ruggles et al. 2010). For 2010 data, we use 2010 American Community Survey one-year estimates. Multivariate analyses of the socioeconomic disparities within the AIAN cohort then reveal which characteristics are associated the trends in poverty within the cohorts.

The focal outcome is a dichotomous indicator of poverty indicating that family income is at or below the poverty threshold. There are alternative measures of income and economic well-being (see Huyser et al. 2014), but this measure provides a comparable metric across all of the time periods under investigation. We compare the probability of living at or below poverty with logistic regression models for members of the same cohort in 1990–2000 and again for 2000–2010. The predictor variables in these models include measures that have been shown to be associated with a greater probability of reporting multiracial AIAN identification (Huyser et al. 2010). Younger AIAN individuals, those who live in urban areas and those who live off reservations tend to have higher socioeconomic attainment than their counterparts (Huyser et al. 2010; Eschbach et al. 1998). Therefore, predictor variables in the logistic regression models include education (less than high school vs. higher levels of education), marital status (currently married vs. other marital status), nativity (birth place of the respondent in three categories: U.S.-born, born in Mexico or other Central and South American countries, and born in any other country), language use in the home (English only, any American Indian language, and other languages), and residential location. Residential location is important because individuals from traditional American Indian areas are more likely to report a single racial identification and a tribal identification than those living outside these traditional areas (Liebler 2010). At the same time, the largest increases in multiracial populations occur in the western and southern regions of the United States with significant presence of multiracial AIAN individuals in some of the same locations as AIAN individuals historically (Liebler and Zacher 2012). Here, we include two dummy variables reflecting current residential location. First, we include a single indicator for residence in a metropolitan area versus non-metropolitan areas. Second, we include an indicator for residence in a State with a historical American Indian presence. These include Alaska, Arizona, Idaho, Michigan, Minnesota, Montana, Nebraska, Nevada, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Oregon, South Dakota, Utah, Washington, Wisconsin, and Wyoming. This same list of States is employed by Passel (1997) and includes several locations with the greatest proportions of multi-race AIAN individuals by 2010 (Alaska, Oklahoma and Washington) (Jones and Bullock 2012).

To determine the extent to which changes in poverty among AIAN individuals between 1990 and 2000 (and again for 2000–2010) are a result of the changing composition of the AIAN cohort as individuals change their racial identification (i.e., as multiracial AIAN cohort members are included in 2000 or 2010), we rely on decomposition analyses of logistic regression models predicting poverty. This approach is designed to compare change for two groups. The decomposition analysis is repeated to examine differences in poverty status first between 1990

AIAN-single race and 2000 AIAN-single race and then between 1990 AIAN-single race and 2000 AIAN-all. And the identical decomposition analysis is conducted for the same cohort in 2000 and 2010. The Blinder–Oaxaca decomposition technique for non-linear regression model decomposes the differential in the prevalence of cohort members below the poverty line between the two comparison groups. This counter-factual approach separates differences between two groups into two components: (1) endowment effect: the amount of change over time in poverty attributable to the differences in composition, such as the proportion of cohort members with less than a high school education, and (2) the residual effect: the amount of the change attributable to the differences in coefficients, such as the influence of education on the probability of living below the poverty line (Sinning et al. 2008; Coulson and Dalton 2010; Powers et al. 2011; Van Hook et al. 2004).

The 'mvdcmp' command in STATA is specifically designed for use with non-linear models, such as logit, probit, poisson, negative binomial, and complementary log–log (Powers et al. 2011). Another feature of mvdcmp command is that it provides the detailed decomposition results and standard errors for characteristics component and coefficient component. This provides the relative impact of each predictor on the differential in poverty between groups. Further, mvdcmp command also overcomes the problem caused by the selection of a reference category when dummy variables are included in the models. To maximize this feature, the normalization option for categorical variables with three or more categories is used. Finally, because there may be important gender differences in the selection of a multiracial identity and differences in the determinants of poverty, analyses are conducted separately for men and women.

Results

Cohort Size

Following guidance from previous work focused on shifts in the size of the AIAN population (see Liebler and Ortyl 2014, for a recent example), the first task here is to identify changes in the size of specific AIAN adult cohorts. We compare changes in the size of four age cohorts: Cohort 15–24 in 1990, cohort 25–34 in 1990, cohort 35–44 in 1990, and cohort 45–54 in 1990. A cohort analysis helps identify where in the life course, individuals are most likely to select a multiracial identity and which AIAN cohorts have been most impacted by the inclusion of multiracial individuals.

Figure 1 presents the size of adult male AIAN cohorts for those selecting AIAN alone as their racial identification, the only option in 1990, and the size of the same cohort including anyone who selects an AIAN identification whether alone or by indicating more than one race including AIAN in the following years. Increases in the size of each cohort are largely attributable to the increase in individuals identifying as AIAN in combination with another race. More individuals self-identify as AIAN when there is an option to select more than one racial

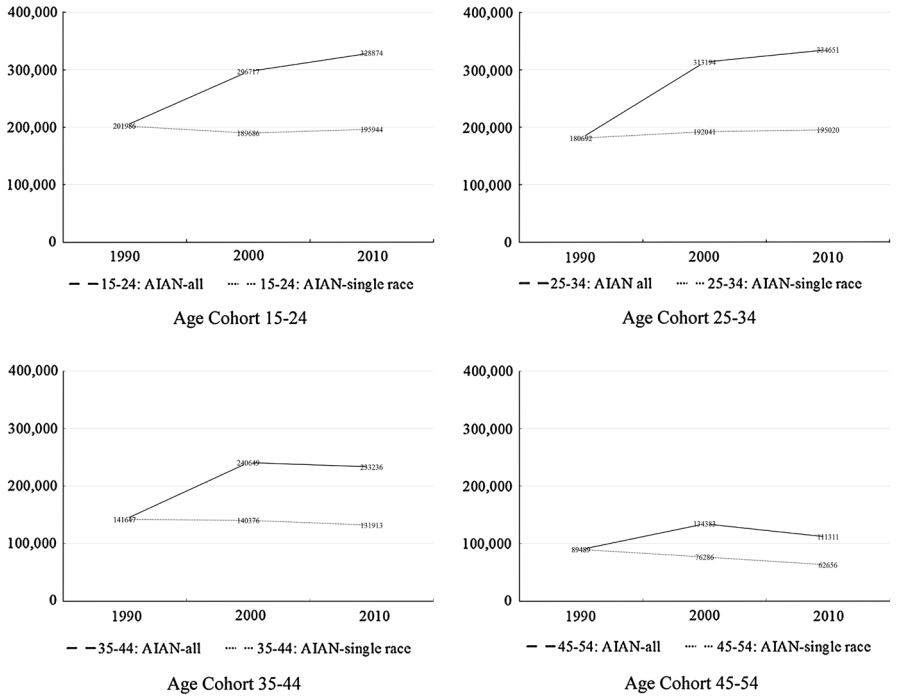

Fig. 1 Observed size of AIAN population by age cohorts, AIAN-single race versus AIAN-all, 1990, 2000, and 2010, male

identification. All four cohorts see an increase in their size between 1990 and 2000 with the inclusion of multiracial AIAN cohort members. For the younger cohorts, this increase continues into 2010 although not to the same extent it did between 1990 and 2000. For the older cohorts, there is little additional increase beyond 2000. The results are very similar when we examine the size of the same age cohorts for women (not shown).

We next address the potential size of the AIAN cohorts if we only adjust the 1990 AIAN cohorts for changes in mortality and migration that occurred between 1990–2000 and 2000–2010. The results indicate that only the youngest cohort would increase slightly in size, due to more in-migrants who identify as American Indian than deaths to the cohort, from 1990 to 2000. All of the other age cohorts would have decreased in size over time if no one changed their racial identification. There are also more AIAN-single race individuals in 2000 for the 25–34 (1990) cohort than would be predicted based on mortality and in-migration alone. There were 192,041 AIAN-single race individuals counted in that cohort in 2000. The predicted number of cohort members for 2000 based on the cohort size in 1990 and mortality and migration is only 182,649 individuals. There are much smaller gains in cohort size between 2000 and 2010. Similar results are obtained when we focus on AIAN female cohorts (not shown) (Fig. 2).

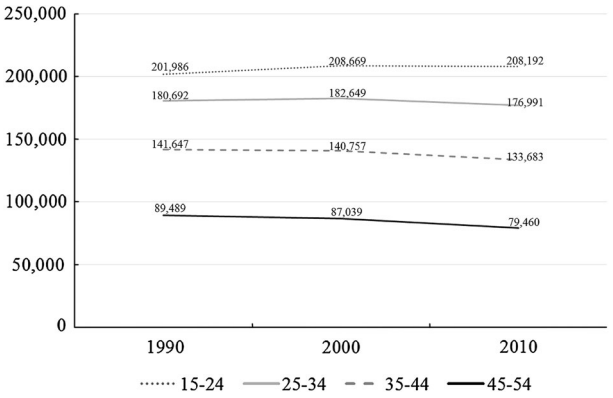

Fig. 2 Observed AIAN population in 1990 and predicted size of AIAN population in 2000 and 2010 adjusted for mortality and migration, male

Socioeconomic Well-Being

The option to select AIAN in combination with other races contributed to the increase in the size of the AIAN cohorts, particularly young cohorts. There is far less change in the size of these cohorts after 2000 when the option to select more than one race is introduced. This increase in the size of adult AIAN cohorts may also be associated with changes in socioeconomic status among these cohorts. If those individuals who identify as AIAN in combination with other races in 2000 are more advantaged than their counterparts who select the single-race AIAN category, the average level of socioeconomic attainment will rise for the cohort. Accordingly, the next step is to analyze the socioeconomic well-being of AIAN cohorts and consider the extent to which those individuals who select AIAN in combination with other race groups are changing the socioeconomic profile of the adult AIAN cohorts. For this analysis, we focus on one young age cohort, 25–34 in 1990, which showed noticeable increases in the size between 1990 and 2000 and modest increase between 2000 and 2010. This cohort also represents adults moving through their prime working years. This is preferable to focusing on a younger cohort still completing their transitions to adulthood or an older cohort that is moving out of the labor force because these cohorts may experience greater changes in poverty associated with life course events. Full analyses for these other cohorts are included in the Appendix section for reference.

There are several differences in the characteristics of cohort members who identify as AIAN-single race and those who identify as AIAN-all (alone or in combination with another race). Table 1 presents the summary of descriptive statistics of the cohort age 25–34 in 1990 by gender. The columns labeled as "Dif. 1" and "Dif. 2" in this table compare the differences in socioeconomic status and demographic characteristics of the cohort in 1990 when compared to the same age cohort in 2000 if we only include those who identify as AIAN-single race and again when compared to cohort members in 2000 now including everyone who identifies as AIAN (AIAN-all). The "Dif. 3" and "Dif. 4" columns of Table 1 make the same

Table 1 Summary statistics, cohort 25–34 in 1990

	(1) 1990 AIAN-single race	(2) 2000 AIAN-single race	(3) 2000 AIAN-all	Dif. 1 (2)–(1)	Dif. 2 (3)–(1)	(4) 2000 AIAN-single race	(5) 2010 AIAN-single race	(6) 2010 AIAN-all	Dif. 3 (5)–(4)	Dif. 4 (6)–(4)
Panel A (male)										
Poverty (≤100)										
Mean	0.29	0.24	0.20	−0.05	−0.09	0.24	0.26	0.24	0.02	0.00
SD	(0.45)	(0.43)	(0.40)			(0.43)	(0.44)	(0.43)		
Education (≤high school)										
Mean	0.22	0.22	0.19	0.00	−0.03	0.22	0.20	0.19	−0.02	−0.03
SD	(0.41)	(0.41)	(0.39)			(0.41)	(0.40)	(0.39)		
Married										
Mean	0.48	0.56	0.56	0.08	0.08	0.56	0.53	0.52	−0.04	−0.04
SD	(0.50)	(0.50)	(0.50)			(0.50)	(0.50)	(0.50)		
Nativity										
US-born										
Mean	0.95	0.91	0.90	−0.04	−0.05	0.91	0.92	0.91	0.01	0.00
SD	(0.22)	(0.29)	(0.29)			(0.29)	(0.27)	(0.29)		
Mexico, C./S. America-born										
Mean	0.02	0.07	0.07	0.05	0.05	0.07	0.07	0.07	−0.01	0.00
SD	(0.13)	(0.26)	(0.25)			(0.26)	(0.25)	(0.25)		
Other										
Mean	0.03	0.02	0.03	−0.01	0.00	0.02	0.01	0.02	0.00	0.01
SD	(0.18)	(0.12)	(0.17)			(0.12)	(0.11)	(0.14)		
Language										
English										
Mean	0.74	0.69	0.75	−0.05	0.01	0.69	0.71	0.78	0.02	0.08

Table 1 continued

	(1) 1990 AIAN-single race	(2) 2000 AIAN-single race	(3) 2000 AIAN-all	Dif. 1 (2)–(1)	Dif. 2 (3)–(1)	(4) 2000 AIAN-single race	(5) 2010 AIAN-single race	(6) 2010 AIAN-all	Dif. 3 (5)–(4)	Dif. 4 (6)–(4)
SD	(0.44)	(0.46)	(0.43)			(0.46)	(0.45)	(0.42)		
American Indian										
Mean	0.18	0.12	0.07	−0.06	−0.11	0.12	0.16	0.09	0.04	−0.03
SD	(0.39)	(0.33)	(0.26)			(0.33)	(0.37)	(0.28)		
Other										
Mean	0.08	0.18	0.17	0.10	0.09	0.18	0.12	0.13	−0.06	−0.05
SD	(0.26)	(0.39)	(0.38)			(0.39)	(0.33)	(0.34)		
Residence										
In Metropolitan area										
Mean	0.51	0.56	0.64	0.05	0.13	0.56	0.53	0.60	−0.03	0.04
SD	(0.50)	(0.50)	(0.48)			(0.50)	(0.50)	(0.49)		
In Indian states										
Mean	0.61	0.57	0.47	−0.04	−0.14	0.57	0.59	0.48	0.02	−0.09
SD	(0.49)	(0.49)	(0.50)			(0.49)	(0.49)	(0.50)		
Panel B (female)										
Poverty (≤100)										
Mean	0.33	0.23	0.20	−0.10	−0.13	0.23	0.24	0.23	0.01	0.00
SD	(0.47)	(0.42)	(0.40)			(0.42)	(0.43)	(0.42)		
Education (≤high school)										
Mean	0.20	0.19	0.16	−0.01	−0.04	0.19	0.15	0.14	−0.03	−0.05
SD	(0.40)	(0.39)	(0.36)			(0.39)	(0.36)	(0.34)		
Married										
Mean	0.53	0.57	0.56	0.04	0.03	0.57	0.50	0.49	−0.06	−0.08

Table 1 continued

	(1) 1990 AIAN-single race	(2) 2000 AIAN-single race	(3) 2000 AIAN-all	Dif. 1 (2)–(1)	Dif. 2 (3)–(1)	(4) 2000 AIAN-single race	(5) 2010 AIAN-single race	(6) 2010 AIAN-all	Dif. 3 (5)–(4)	Dif. 4 (6)–(4)
SD	(0.50)	(0.50)	(0.50)			(0.50)	(0.50)	(0.50)		
Nativity										
US-born										
Mean	0.97	0.93	0.93	−0.04	−0.04	0.93	0.93	0.93	−0.01	0.00
SD	(0.18)	(0.25)	(0.26)			(0.25)	(0.26)	(0.25)		
Mexico, C./S. America-born										
Mean	0.01	0.05	0.05	0.04	0.04	0.05	0.05	0.05	0.00	0.00
SD	(0.11)	(0.22)	(0.21)			(0.22)	(0.22)	(0.21)		
Other										
Mean	0.02	0.02	0.03	0.00	0.01	0.02	0.02	0.02	0.00	0.01
SD	(0.15)	(0.12)	(0.16)			(0.12)	(0.13)	(0.15)		
Language										
English										
Mean	0.77	0.72	0.78	−0.05	0.01	0.72	0.70	0.78	−0.02	0.06
SD	(0.42)	(0.45)	(0.41)			(0.45)	(0.46)	(0.41)		
American Indian										
Mean	0.17	0.12	0.07	−0.05	−0.10	0.12	0.18	0.10	0.05	−0.03
SD	(0.37)	(0.33)	(0.26)			(0.33)	(0.38)	(0.30)		
Other										
Mean	0.06	0.15	0.15	0.09	0.09	0.15	0.12	0.12	−0.03	−0.03
SD	(0.25)	(0.36)	(0.36)			(0.36)	(0.33)	(0.33)		

Table 1 continued

	(1) 1990 AIAN-single race	(2) 2000 AIAN-single race	(3) 2000 AIAN-all	Dif. 1 (2)–(1)	Dif. 2 (3)–(1)	(4) 2000 AIAN-single race	(5) 2010 AIAN-single race	(6) 2010 AIAN-all	Dif. 3 (5)–(4)	Dif. 4 (6)–(4)
Residence										
In Metropolitan area										
Mean	0.50	0.56	0.64	0.06	0.14	0.56	0.53	0.62	−0.03	0.06
SD	(0.50)	(0.50)	(0.48)			(0.50)	(0.50)	(0.49)		
In Indian states										
Mean	0.63	0.58	0.48	−0.05	−0.15	0.58	0.61	0.48	0.03	−0.10
SD	(0.48)	(0.49)	(0.50)			(0.49)	(0.49)	(0.50)		

Numbers are weighted

comparisons for this cohort in the time period between 2000 and 2010. The comparisons are made for men (Panel A) and women (Panel B) separately.

The economic status of the cohort changes over time. In 1990, 29 % of AIAN men age 25–34 were living in poverty. By 2000, 24 % of the men in this cohort who identified as AIAN-single race (i.e., as their only racial identification) were in poverty. However, if all men in the cohort who identify as AIAN regardless of their other racial identities (i.e., the AIAN-all group) are included, poverty appears even lower (20 %). In other words, there is some economic improvement among this cohort but the improvement is largest when multiracial AIAN men are included. The differences in poverty are much smaller between 2000 and 2010. If we only include the AIAN-single race individuals, poverty increases from 24 to 26 %. Poverty levels would not change over this time period if all men in this age group who identify as AIAN (AIAN-all) are included. The same patterns are observed among women as well (see Table 1 for Panel B). These results are also consistent with the socioeconomic patterns of mono- and multiracial AIAN individuals observed in prior work (Huyser et al. 2014; Huyser et al. 2010).

Just as the poverty status of the cohorts is different when multiracial AIAN individuals are included, the demographic and geographic distribution of the cohorts varies with and without these individuals. For example, there is little difference in the education levels of AIAN-single race individuals in the cohort between 1990 and 2000. But, there is an improvement in education by 2000 if the definition of AIAN includes those who select AIAN in combination with any other racial identification. 22 % of men in the 25–34-year-old cohort had less than a high school education, and this drops to 19 % in 2000 but only when we include those who select any AIAN identification in the cohort. There is also a change in the nativity composition of the cohort. The proportion of the cohort that is US-born declines from 95 to 90 % from 1990 to 2000. The increase in immigration from Mexico, Central and South America likely contributes to this shifting nativity composition over time. There is also a decrease in the use of American Indian languages in the household over time for this cohort. This decline in the use of an American Indian language in the household is larger, however, when multiracial AIAN individuals are included in the cohort (ex: 18 % for the 25–34-year-old men in 1990 to 12 % for the 'AIAN-single race' cohort in 2000 and only 7 % when all cohort members who identify as AIAN are included). A similar pattern is observed for geographic distribution. There is an overall increase in cohort members living in metropolitan areas, but the increase is greatest when cohort membership includes all AIAN individuals. Finally, the proportion of the cohort residing in a state with a historically large American Indian population decreases between 1990 and 2000, but once again, the decrease is more substantial for the 'AIAN-all' group than the 'AIAN-single race' group. And these patterns of the changes in the demographic and geographic characteristics of the cohort are similar for the 2000 and 2010 period.

The next step is to identify which characteristics of the cohort predict poverty status in 1990, 2000, and 2010. Table 2 presents logistic regression results predicting poverty status among cohort members. The analyses are again conducted separately for men (Panel A) and women (Panel B). The results are presented as

Table 2 Logistic regression predicting poverty, cohort 25–34 in 1990

Variables	1990 AIAN-single race		2000 AIAN-single race		2000 AIAN-all		2000 AIAN-single race		2010 AIAN-single race		2010 AIAN-all	
	Odds	SE	Odds	SE	Odds	SE	Odds	SE	Odds	SE	Odds	SE
Panel A (male)												
Education (≤high school)	2.25**	0.03	**2.71****	0.03	**2.59****	0.03	2.71**	0.03	**2.38****	0.03	**2.41****	0.03
Married	0.58**	0.01	**0.46****	0.01	**0.43****	0.00	0.46**	0.01	**0.36****	0.00	**0.27****	0.00
Nativity (ref. US-born)												
Mexico, C./S. America-born	0.65**	0.03	0.70**	0.02	**0.78****	0.02	0.70**	0.02	**0.51****	0.02	**0.59****	0.01
Other	1.12**	0.04	**0.70****	0.04	**0.77****	0.02	0.70**	0.04	**0.94****	0.04	**0.80****	0.03
Language (ref. English)												
American Indian	2.16**	0.03	**1.95****	0.03	2.18**	0.03	1.95**	0.03	**1.37****	0.02	**1.49****	0.02
Other	1.78**	0.04	1.71**	0.03	1.75**	0.02	1.71**	0.03	**1.38****	0.03	**1.38****	0.02
Residence												
In metro	0.67**	0.01	0.65**	0.01	**0.59****	0.01	0.65**	0.01	0.66**	0.01	0.65**	0.01
In Indian states	1.47**	0.02	**1.19****	0.02	**1.19****	0.01	1.19**	0.02	**0.95****	0.01	**0.98****	0.01
Constant	0.33**	0.00	0.34**	0.01	0.33**	0.00	0.34**	0.01	0.55**	0.01	0.57**	0.01
Pseudo R^2	0.08			0.08	0.08		0.08		0.08		0.10	
N	179,782		197,363		342,531		197,363		168,435		325,559	
Panel B (female)												
Education (≤high school)	3.30**	0.04	**3.55****	0.05	**3.62****	0.04	3.55**	0.05	**2.85****	0.04	**2.76****	0.03
Married	0.25**	0.00	0.25**	0.00	**0.23****	0.00	0.25**	0.00	**0.29****	0.00	**0.22****	0.00
Nativity (ref. US-born)												
Mexico, C./S. America-born	1.25**	0.07	**0.88****	0.03	**0.94***	0.02	0.88**	0.03	**0.38****	0.01	**0.56****	0.02
Other	0.79**	0.03	**1.34****	0.06	**1.12****	0.03	1.34**	0.06	**0.92****	0.04	**1.06****	0.03
Language (ref. English)												
American Indian	1.84**	0.03	1.81**	0.03	**1.94****	0.03	1.81**	0.03	**1.02****	0.02	**1.10****	0.02

Table 2 continued

Variables	1990 AIAN-single race		2000 AIAN-single race		2000 AIAN-all		2000 AIAN-single race		2010 AIAN-single race		2010 AIAN-all	
	Odds	SE	Odds	SE	Odds	SE	Odds	SE	Odds	SE	Odds	SE
Other	1.17**	0.03	1.21**	0.02	**1.38****	0.02	1.21**	0.02	**1.45****	0.03	1.15**	0.02
Residence												
In metro	0.65**	0.01	**0.71****	0.01	**0.69****	0.01	0.71**	0.01	**0.89****	0.01	**0.95****	0.01
In Indian states	1.36**	0.02	**1.15****	0.01	**1.18****	0.01	1.15**	0.01	1.18**	0.02	**1.21****	0.01
Constant	0.64**	0.01	0.43**	0.01	**0.40****	0.00	0.43**	0.01	0.42**	0.01	0.42**	0.00
Pseudo R^2	0.14		0.12	0.13			0.12		0.09		0.10	
N	185,863		204,560		363,435		204,560		188,022		350,924	

Numbers are weighted; Bold indicates coefficient significantly different from AIAN-single race in 1990 or 2000 ($p < 0.05$)

* $p < 0.05$; ** $p < 0.01$, two tailed

odds ratios to facilitate comparison over time and by definition of AIAN cohort membership (i.e., AIAN-single race or AIAN-all).

The results of the logistic regression models suggest some modest change in the predictors of poverty between 1990 and 2010 as indicated in bold. But differences over time are magnified when multiracial AIAN individuals are included in the cohort in 2000 and in 2010 (AIAN-all). So, for all groups, having less than a high school education, residing in a non-English language household and living in a state with a higher AIAN population are all significantly associated with a greater likelihood of living below poverty. Being currently married, born in Mexico or other Central American country and living in a metropolitan area are associated with a lower likelihood of poverty. By 2000, when we consider only those who select AIAN-single race, education, and marital status are slightly larger predictors of poverty and language use and living in an Indian state appear less important as predictors of poverty status. We see very similar results when we include all AIAN individuals in the cohort in 2000. In other words, the predictors of poverty may alter somewhat between 1990 and 2000, but they appear largely similar in 2000 for both AIAN cohort member definitions. And predictors of poverty appear largely similar in 2010. The patterns are very similar for women although we note that education and marital status tend to have larger associations with the likelihood of living in poverty for women than for men across cohorts.

Decomposition

The logistic regression models predicting poverty suggest that there is variation in the role of some characteristics on predicting poverty among AIAN individuals between 1990 and 2010. Education, for example, appears to be an even more important predictor in 2000 than in 1990, and living in an historically Indian state is less predictive of poverty. But none of these characteristics appear to be very differentially predictive of poverty whether the cohort definition is constrained to those who select AIAN-single race or when everyone who identifies as AIAN either alone or in combination with other racial identifications is included in the cohort. The decrease in poverty over time observed in Table 1 is likely more related to changes in the composition of the AIAN cohorts brought about by including those identifying as AIAN in 2000 and in 2010 once individuals could select more than one racial identity. In other words, it seems likely that the changes in poverty among AIAN cohorts over time are due, at least in part, to the new self-selection into AIAN cohorts than a real decline in poverty brought about by improved access to resources or human capital by individuals over time.

Blinder–Oaxaca decomposition quantifies how much of the difference in poverty status over time is due to the changes in composition effects (i.e., the changing characteristics of cohort members) or coefficient effects (i.e., the changing role of those characteristics in predicting poverty). The compositional changes that we observed in descriptive statistics (Table 1) are captured by the first component while the differences in the association with poverty of these demographic and geographic characteristics observed in the results of the logistic regression models (Table 2) are contained in the second component. The sum of these two quantified components would be exactly the

same with an observed difference in poverty status between two groups. Table 3 summarizes the decomposition of the difference in poverty status over time for the 1990 25–34-year-old cohort. The first panel summarizes these results for men and the second panel summarizes the results for women. The first comparison is between those who select AIAN as their only racial identification in 1990 and single-race AIAN cohort members in 2000. Recall from Table 1 that the difference in poverty is a decline of 5 % points. The decomposition analyses indicate that that about a third of this difference is due to changes in the composition of the cohort. The second comparison is between those who select a single race in 1990 and all cohort members who select AIAN as a racial identification in 2000. Recall from Table 1 that there is a 9 % point decline in poverty for these groups. The decomposition analyses indicate that the composition effect accounts for 46 % of the difference in poverty over time. In other words, the decomposition results indicate a larger endowment or composition effect when we include individuals who select AIAN in combination with another race in the 2000 cohort than when the 2000 cohorts are restricted to those who select AIAN-single race. The decomposition results for women in the same cohort show similar patterns as well. The changes in poverty between 2000 and 2010 were much smaller than between 1990 and 2000. The decomposition for this period suggests that about one third of the very small increase in poverty for the AIAN-single race cohort members is again attributable to compositional differences in the cohort over time. The change in poverty when comparing the single-race AIAN cohort in 2000 to the AIAN-all cohort in 2010 is exceedingly small. In this case, compositional changes would have lowered poverty while the role of the predictors of poverty would have acted in the opposite direction when poverty in fact remained essentially flat.

The comparatively large compositional effects on changes in poverty observed between 1990 and 2000 stem from individual and family level predictors as well as the geographic distribution of the AIAN cohort members. This can be seen in the full detail of the decomposition of each variable in Table 4. Here, for example, comparing the 1990 male cohort to the AIAN-all 2000 cohort demonstrates that differences in marital status (8 % more report that they are married when AIAN-all are included), education (3 % fewer individuals with less than a high school education), and home language use (11 % fewer reporting that an American Indian language is spoken at home) are the primary factors associated with the apparent decline in poverty. There is also a significant impact of the shift in geographic distribution when we include AIAN-all in the cohort in 2000. In this case, 13 % more of the cohort are living in metropolitan areas in 2000 while 14 % fewer reside in states with traditionally large American Indian populations. These compositional shifts attributable to the changes in the definition of AIAN cohort membership then help explain the declines in poverty in the cohort between 1990 and 2000.

Between 2000 and 2010 for the same cohort of 25–34 males in 1990, similar compositional shifts attributable to the changes in the definition of AIAN cohort membership help explain the gap in poverty status between AIAN-single race and AIAN-all. The results show that the impact of changes in marital status (4 % fewer reporting that they are married), education (3 % fewer individuals with less than a high school education), home language use (8 % more reporting that English is spoken at home) are still important factors There is also a continued significant

Table 3 Summary of decomposition results, cohort 25–34 in 1990

	1990 AIAN-single race vs. 2000 AIAN-single race		1990 AIAN-single race vs. 2000 AIAN-all		2000 AIAN-single race vs. 2010 AIAN-single race		2000 AIAN-single race vs. 2010 AIAN-all	
Decomposition, Panel A (male)								
Compositional effect								
Coef.	−0.0152**	32.8 %	−0.0389**	46.1 %	0.0070**	33.6 %	−0.0020**	−268.9 %
SE	(0.0004)		(0.0004)		(0.0003)		(0.0002)	
Coefficient effect								
Coef.	−0.0312**	67.2 %	−0.0455**	53.9 %	0.0138**	66.4 %	0.0027*	368.9 %
SE	(0.0014)		(0.0013)		(0.0014)		(0.0012)	
Total								
Coef.	−0.0464**	100.0 %	−0.0844**	100.0 %	0.0208**	100.0 %	0.0007	100.0 %
SE	(0.0014)		(0.0012)		(0.0014)		(0.0012)	
Decomposition, Panel B (female)								
Compositional effect								
Coef.	−0.0193**	20.1 %	−0.0363**	29.6 %	0.0058**	69.7 %	0.0050**	−143.8 %
SE	(0.0003)		(0.0004)		(0.0002)		(0.0002)	
Coefficient effect								
Coef.	−0.0765**	79.9 %	−0.0863**	70.4 %	0.0025*	30.3 %	−0.0084**	243.8 %
SE	(0.0014)		(0.0013)		(0.0013)		(0.0011)	
Total								
Coef.	−0.0958**	100.0 %	−0.1225**	100.0 %	0.0083**	100.0 %	−0.0035**	100.0 %
SE	(0.0013)		(0.0012)		(0.0013)		(0.0011)	

Source U.S. Decennial Census 5 % sample, 2000 & American Community Survey 2010 single-year

Numbers are weighted

Table 4 Detailed decomposition results, cohort 25–34 in 1990

Panel A (male)	1990 AIAN-single race vs. 2000 AIAN-single race		1990 AIAN-single race vs. 2000 AIAN-all		2000 AIAN-single race vs. 2010 AIAN-single race		2000 AIAN-single race vs. 2010 AIAN-all	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Due to difference in compositions								
Education (≤high school)	0.0001**	0.0000	−0.0046**	0.0000	−0.0030**	0.0001	−0.0035**	0.0002
Married	−0.0112**	0.0002	−0.0116**	0.0001	0.0075**	0.0001	0.0065**	0.0003
Nativity								
US-born	−0.0018**	0.0001	−0.0013**	0.0001	0.0006	0.0001	0.0000**	0.0000
Mexico, C./S. America-born	−0.0013**	0.0002	−0.0006**	0.0001	0.0008**	0.0001	0.0002**	0.0000
Other	0.0003**	0.0001	0.0000**	0.0000	−0.0001**	0.0000	0.0000	0.0000
Language								
English	0.0037**	0.0001	−0.0008**	0.0000	−0.0009**	0.0000	−0.0023**	0.0002
American Indian	−0.0029**	0.0001	−0.0062**	0.0002	0.0009**	0.0001	−0.0006**	0.0000
Other	0.0027**	0.0002	0.0019**	0.0002	−0.0014**	0.0002	−0.0005**	0.0001
Residence								
In metro	−0.0039**	0.0001	−0.0117**	0.0002	0.0028**	0.0001	−0.0020**	0.0001
In Indian states	−0.0010**	0.0001	−0.0040**	0.0002	−0.0002**	0.0000	0.0002*	0.0001
Due to difference in coefficients								
Education (≤high school)	0.0069**	0.0006	0.0049**	0.0005	−0.0047**	0.0006	0.0030**	0.0024
Married	−0.0177**	0.0012	−0.0227**	0.0010	−0.0230**	0.0020	0.0347**	0.0263
Nativity								
US-born	0.0214**	0.0045	0.0098**	0.0036	0.0005	0.0044	−0.0016	0.0029
Mexico, C./S. America-born	0.0006**	0.0001	0.0007**	0.0001	−0.0037**	0.0005	0.0014	0.0011
Other	−0.0018**	0.0002	−0.0016**	0.0002	0.0008**	0.0001	−0.0003	0.0002
Language								

Table 4 continued

Panel A (male)	1990 AIAN-single race vs. 2000 AIAN-single race		1990 AIAN-single race vs. 2000 AIAN-all		2000 AIAN-single race vs. 2010 AIAN-single race		2000 AIAN-single race vs. 2010 AIAN-all	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
English	0.0057**	0.0016	0.0002	0.0014	0.0219	0.0014	−0.0131	0.0100
American Indian	−0.0017**	0.0005	0.0003	0.0004	−0.0033**	0.0004	0.0015	0.0012
Other	0.0001	0.0002	−0.0001	0.0002	−0.0009	0.0006	0.0012	0.0010
Residence								
In metro	−0.0021	0.0015	−0.0102**	0.0012	0.0010	0.0016	0.0000	0.0010
In Indian states	−0.0214**	0.0019	−0.0201**	0.0016	−0.0212**	0.0018	0.0132	0.0101
Constant	−0.0211**	0.0055	−0.0066	0.0044	0.0463**	0.0061	−0.0374	0.0293

Numbers are weighted

* $p < 0.05$; ** $p < 0.01$, two tailed

impact of the shift in geographic distribution such that 4 % more of the cohort are living in metropolitan areas in 2010 while 9 % fewer reside in states with traditionally large American Indian populations.

Discussion

As the social construction of race and ethnicity changes in the United States, so too does observed social stratification by race. The analyses presented here provide an example of the importance of changing definitions of race and ethnicity for understanding improvements in socioeconomic well-being for one group. The results also have important implications for evaluating progress toward racial/ethnic equity in the United States. To understand if policy or programs are effective at ameliorating poverty within vulnerable subgroups in the population, it is important to consider how the very definition of group membership also changes.

The descriptive analyses presented here demonstrate that when the opportunity to select more than one racial identification was presented in 2000, the recorded size of the AIAN cohorts grew considerably above what would be expected based on the size of the AIAN cohorts in 1990 and the demographic drivers of population growth (i.e., mortality and migration) over one decade. These increases suggest that individuals who had not previously identified as AIAN were increasingly choosing to self-identify as AIAN over time (Eschbach et al. 1998; Liebler and Ortyl 2014; Passel 1997). The results here confirm that these patterns persist across age cohorts, but the younger adult cohorts increased in membership the most. This likely demonstrates (1) a greater prevalence of AIAN individuals with parents from different racial backgrounds among younger cohorts and (2) a greater acceptance of a multiracial identity among younger adults.

Along with changes in the size of these cohorts changes in the socioeconomic status of AIAN cohorts over time are larger than they would have been without the additions of new, more advantaged, cohort members. Regardless of the racial definition adopted, the AIAN cohorts experienced a decrease in poverty between 1990 and 2000 with greater declines in poverty among women than men. But the decrease in poverty is larger when we include multiracial individuals in the definition of the AIAN cohort in 2000 than when only those who select AIAN as their only racial identification are included in 2000. The multivariate decomposition indicates that multiracial cohort members have different characteristics from cohort members who identify as single-race AIAN, and these characteristics help explain nearly half of the observed reduction in poverty between 1990 and 2000. There is a larger increase in the proportion of the cohort with a high school education or more when multi- and single-race AIAN cohort members are included. There are fewer cohort members speaking an American Indian language in the home or living in a state with a historically larger American Indian population when multi-race AIAN individuals are included in the cohort. These compositional characteristics are also associated with lower poverty levels. Any conclusions about the extent to which the AIAN population in the United States has experienced improvements in socioeconomic well-being or greater access to resources must attend to the possibility that individuals are not experiencing improvements but rather are now

joined by those who were already more advantaged. Poverty levels changed much less between 2000 and 2010, but the results here demonstrate that there are more advantaged cohort members among those selecting more than one race in this period as well.

There are some important caveats to these analyses. We cannot directly observe individual changes in racial identification or individual improvement in socioeconomic well-being. Although following age cohorts with cross-sectional data give us some insight into change over time, we still cannot follow individual members of the cohort over time. We cannot determine, for example, whether some of the single-race AIAN individuals in 2000 had identified as another race entirely in 1990. We cannot determine which AIAN multiracial individuals identified in 2000 also identified as single-race AIAN in 1990 and which of these individuals are completely new cohort members by coming into the AIAN category in 2000 for the first time. Unfortunately, many of the existing longitudinal studies which can provide insight into individual status attainment trajectories over time do not include sufficient samples of AIAN individuals.

The results of this work confirm that any assessment of change in socioeconomic attainment and well-being by race and ethnicity must attend to the possible changes in the social construction of the very categories used to measure such stratification. Although disparities in income and health are still great across the racial divide regardless of the definitions employed, underlying changes in self-identification can alter the extent to which we would want to conclude that significant improvement in well-being is actually occurring. Multiracial individuals occupy a unique position in the larger racial hierarchy in the United States. They may have higher socioeconomic status than their monoracial minority counterparts but often do not achieve the same status as the monoracial majority placing them at greater risk for poor socioeconomic and health status. This stratification puts today's multiracial youth populations at a disadvantage relative to their majority group monoracial peers but perhaps better positioned for more positive outcomes when compared to their monoracial peers from historically disadvantaged groups (Bratter and Damaske 2013; Fischer and Stoddard 2013; Ramisety-Mikler and Ebama 2011). But such assessments assume that individuals self-identifying as multiracial will continue to do so regardless of improvements or declines in their own socioeconomic status over time. The decomposition analyses presented here demonstrate that a significant proportion of improvement in status is due to the inclusion of multiracial individuals in AIAN cohorts. This result promotes caution when assessing progress in the United States toward equality in wealth, health, and overall well-being. This is particularly true for the smallest groups that are often excluded from analyses and yet are disproportionately impacted by even small changes in racial identification.

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Appendix

See Tables 5, 6, 7, 8, 9, and 10.

Table 5 Descriptive statistics, cohort 15–24 in 1990

	Panel A (male)					Panel A (female)				
	(1) 2000 AIAN-single race	(2) 2010 AIAN-single race	(3) 2010 AIAN-all	Dif. 1 (2)–(1)	Dif. 2 (3)–(1)	(4) 2000 AIAN-single race	(5) 2010 AIAN-single race	(6) 2010 AIAN-all	Dif. 3 (5)–(4)	Dif. 4 (6)–(4)
Poverty (≤100)										
Mean	0.24	0.29	0.25	0.05	0.02	0.28	0.28	0.25	0.01	−0.03
SD	(0.42)	(0.45)	(0.43)			(0.45)	(0.45)	(0.43)		
Education (≤high school)										
Mean	0.20	0.20	0.18	0.00	−0.02	0.17	0.17	0.14	0.00	−0.03
SD	(0.40)	(0.40)	(0.38)			(0.37)	(0.37)	(0.35)		
Married										
Mean	0.46	0.45	0.48	−0.01	0.02	0.50	0.47	0.48	−0.03	−0.01
SD	(0.50)	(0.50)	(0.50)			(0.50)	(0.50)	(0.50)		
Nativity										
US-born										
Mean	0.89	0.89	0.88	−0.02	−0.01	0.92	0.91	0.91	−0.01	−0.01
SD	(0.31)	(0.33)	(0.32)			(0.27)	(0.29)	(0.29)		
Mexico, C./S. America−born										
Mean	0.09	0.11	0.10	0.02	0.01	0.06	0.08	0.07	0.02	0.01
SD	(0.29)	(0.31)	(0.30)			(0.24)	(0.27)	(0.26)		
Other										
Mean	0.02	0.02	0.02	0.00	0.01	0.02	0.010	0.02	0.00	0.00
SD	(0.13)	(0.14)	(0.15)			(0.14)	(0.12)	(0.14)		

Table 5 continued

	Panel A (male)					Panel A (female)				
	(1) 2000 AIAN-single race	(2) 2010 AIAN-single race	(3) 2010 AIAN-all	Dif. 1 (2)–(1)	Dif. 2 (3)–(1)	(4) 2000 AIAN-single race	(5) 2010 AIAN-single race	(6) 2010 AIAN-all	Dif. 3 (5)–(4)	Dif. 4 (6)–(4)
Language										
English										
Mean	0.70	0.69	0.76	0.00	0.06	0.71	0.70	0.76	−0.01	0.05
SD	(0.46)	(0.46)	(0.43)			(0.45)	(0.46)	(0.43)		
American Indian										
Mean	0.12	0.14	0.08	0.03	−0.03	0.13	0.16	0.09	0.03	−0.04
SD	(0.32)	(0.35)	(0.27)			(0.33)	(0.36)	(0.28)		
Other										
Mean	0.19	0.16	0.16	−0.02	−0.03	0.16	0.14	0.15	−0.02	−0.01
SD	(0.39)	(0.37)	(0.37)			(0.37)	(0.35)	(0.36)		
Residence										
In Metropolitan area										
Mean	0.58	0.57	0.63	−0.01	0.05	0.57	0.57	0.65	−0.01	0.07
SD	(0.49)	(0.50)	(0.48)			(0.49)	(0.5)	(0.48)		
In Indian states										
Mean	0.58	0.58	0.50	0.00	−0.09	0.61	0.64	0.53	0.02	−0.09
SD	(0.49)	(0.49)	(0.50)			(0.49)	(0.48)	(0.50)		

Numbers are weighted

Table 6 Logistic regression predicting poverty, cohort 15–24 in 1990

Variables	Panel A (male)						Panel B (female)					
	2000 AIAN-single race		2010 AIAN-single race		2010 AIAN-all		2000 AIAN-single race		2010 AIAN-single race		2010 AIAN-all	
	Odds	SE	Odds	SE	Odds	SE	Odds	SE	Odds	SE	Odds	SE
Education (≤high school)	2.81**	0.04	**3.24****	0.05	**3.04****	0.03	3.28**	0.05	**3.92****	0.06	**3.82****	0.05
Married	0.68**	0.01	**0.38****	0.00	**0.35****	0.00	0.29**	0.00	**0.32****	0.00	**0.26****	0.00
Nativity (ref. US-born)												
Mexico, C./S. America-born	0.62**	0.02	0.60**	0.02	0.64**	0.01	0.79**	0.02	**0.55****	0.02	0.74**	0.02
Other	0.77**	0.04	**1.37****	0.05	**0.88****	0.03	0.64**	0.03	**1.39****	0.07	0.70**	0.02
Language (ref. English)												
American Indian	1.68**	0.03	1.65**	0.03	**1.90****	0.03	1.71**	0.03	**1.09****	0.02	**1.09****	0.02
Other	1.56**	0.03	**1.30****	0.03	1.60**	0.02	1.46**	0.03	**1.6****	0.04	**1.63****	0.02
Residence												
In metro	0.52**	0.01	**0.77****	0.01	**0.69****	0.01	0.70**	0.01	0.72**	0.01	**0.55****	0.01
In Indian states	1.18**	0.02	1.22**	0.02	1.16**	0.01	1.31**	0.02	**1.05****	0.01	**1.05****	0.01
Constant	0.33**	0.00	0.43**	0.01	0.44**	0.00	0.47**	0.01	0.54**	0.01	0.61**	0.01
Pseudo R^2	0.07		0.09		0.09		0.10		0.10		0.12	
N	186,093		175,353		322,835		180,086		178,996		339,236	

Numbers are weighted; Bold if the coefficient is significantly different from the one for AIAN-single race in 2000 ($p < 0.05$)

* $p < 0.05$; ** $p < 0.01$, two tailed

Table 7 Summary of decomposition, 15–24 cohort in 1990

	2000 AIAN-single race vs. 2010 AIAN-single race		2000 AIAN-single race vs. 2010 AIAN-all	
Decomposition, Panel A (male)				
Compositional effect				
Coef.	0.0023**	4.5 %	−0.0201**	−112.0 %
SE	(0.0002)		(0.0002)	
Coefficient effect				
Coef.	0.0489**	95.5 %	0.0381**	212.0 %
SE	(0.0014)		(0.0012)	
Total				
Coef.	0.0512**	100.0 %	0.0180**	100.0 %
SE	(0.0014)		(0.0012)	
Decomposition, Panel B (female)				
Compositional effect				
Coef.	0.0036**	54.1 %	−0.0135**	52.7 %
SE	(0.0002)		(0.0002)	
Coefficient effect				
Coef.	0.0031*	45.9 %	−0.0121**	47.3 %
SE	(0.0014)		(0.0012)	
Total				
Coef.	0.0067**	100.0 %	−0.0257**	100.0 %
SE	(0.0014)		(0.0012)	

Source U.S. Decennial Census 5 % sample, 2000 & American Community Survey 2010 single-year

Numbers are weighted

Table 8 Descriptive statistics, cohort 35–44 in 1990

	(1) 1990 AIAN-single race	(2) 2000 AIAN-single race	(3) 2000 AIAN-all	Dif. 1 (2)–(1)	Dif. 2 (3)–(1)	(4) 2000 AIAN-single race	(5) 2010 AIAN-single race	(6) 2010 AIAN-all	Dif. 3 (5)–(4)	Dif. 4 (6)–(4)
Panel A (male)										
Poverty (≤100)										
Mean	0.23	0.19	0.16	−0.04	−0.07	0.19	0.21	0.18	0.02	−0.01
SD	(0.42)	(0.39)	(0.37)			(0.39)	(0.41)	(0.39)		
Education (≤high school)										
Mean	0.19	0.20	0.17	0.01	−0.02	0.20	0.18	0.15	−0.02	−0.05
SD	(0.39)	(0.40)	(0.38)			(0.40)	(0.39)	(0.35)		
Married										
Mean	0.63	0.62	0.62	−0.01	−0.01	0.62	0.58	0.59	−0.04	−0.03
SD	(0.48)	(0.49)	(0.48)			(0.49)	(0.49)	(0.49)		
Nativity										
US-born										
Mean	0.96	0.93	0.93	−0.03	−0.03	0.93	0.94	0.94	0.00	0.01
SD	(0.19)	(0.25)	(0.26)			(0.25)	(0.24)	(0.24)		
Mexico, C./S. America-born										
Mean	0.01	0.05	0.04	0.04	0.03	0.05	0.04	0.04	0.00	−0.01
SD	(0.11)	(0.22)	(0.20)			(0.22)	(0.20)	(0.19)		
Other										
Mean	0.02	0.02	0.03	0.00	0.01	0.02	0.02	0.02	0.00	0.00
SD	(0.16)	(0.13)	(0.16)			(0.13)	(0.14)	(0.15)		
Language										
English										
Mean	0.75	0.70	0.77	−0.05	0.02	0.70	0.72	0.79	0.02	0.09

Table 8 continued

	(1) 1990 AIAN-single race	(2) 2000 AIAN-single race	(3) 2000 AIAN-all	Dif. 1 (2)–(1)	Dif. 2 (3)–(1)	(4) 2000 AIAN-single race	(5) 2010 AIAN-single race	(6) 2010 AIAN-all	Dif. 3 (5)–(4)	Dif. 4 (6)–(4)
SD	(0.43)	(0.46)	(0.42)			(0.46)	(0.45)	(0.41)		
American Indian										
Mean	0.17	0.13	0.07	−0.04	−0.10	0.13	0.16	0.09	0.03	−0.04
SD	(0.38)	(0.34)	(0.26)			(0.34)	(0.37)	(0.28)		
Other										
Mean	0.08	0.17	0.16	0.09	0.08	0.17	0.12	0.12	−0.05	−0.05
SD	(0.27)	(0.38)	(0.36)			(0.38)	(0.33)	(0.33)		
Residence										
In Metropolitan area										
Mean	0.51	0.56	0.64	0.05	0.13	0.56	0.52	0.60	−0.03	0.04
SD	(0.50)	(0.50)	(0.48)			(0.5)	(0.5)	(0.49)		
In Indian states										
Mean	0.58	0.55	0.45	−0.03	−0.13	0.55	0.58	0.47	0.03	−0.08
SD	(0.49)	(0.50)	(0.50)			(0.50)	(0.49)	(0.50)		
Panel B (female)										
Poverty (≤100)										
Mean	0.25	0.19	0.17	−0.06	−0.08	0.19	0.21	0.20	0.02	0.01
SD	(0.43)	(0.39)	(0.37)			(0.39)	(0.41)	(0.40)		
Education (≤high school)										
Mean	0.19	0.19	0.15	0.00	−0.04	0.19	0.19	0.15	0.00	−0.04
SD	(0.39)	(0.39)	(0.36)			(0.39)	(0.39)	(0.35)		
Married										
Mean	0.60	0.57	0.57	−0.03	−0.03	0.57	0.49	0.48	−0.07	−0.09

Table 8 continued

	(1) 1990 AIAN-single race	(2) 2000 AIAN-single race	(3) 2000 AIAN-all	Dif. 1 (2)–(1)	Dif. 2 (3)–(1)	(4) 2000 AIAN-single race	(5) 2010 AIAN-single race	(6) 2010 AIAN-all	Dif. 3 (5)–(4)	Dif. 4 (6)–(4)
SD	(0.49)	(0.50)	(0.50)			(0.50)	(0.50)	(0.50)		
Nativity										
US-born										
Mean	0.97	0.94	0.94	−0.03	−0.03	0.94	0.93	0.94	−0.01	0.00
SD	(0.18)	(0.23)	(0.23)			(0.23)	(0.25)	(0.24)		
Mexico, C./S. America-born										
Mean	0.01	0.04	0.03	0.03	0.02	0.04	0.05	0.04	0.01	0.00
SD	(0.10)	(0.19)	(0.18)			(0.19)	(0.21)	(0.19)		
Other										
Mean	0.02	0.02	0.02	0.00	0.00	0.02	0.02	0.02	0.00	0.00
SD	(0.15)	(0.14)	(0.16)			(0.14)	(0.14)	(0.15)		
Language										
English										
Mean	0.76	0.71	0.79	−0.05	0.03	0.71	0.71	0.81	0.00	0.10
SD	(0.43)	(0.45)	(0.41)			(0.45)	(0.45)	(0.39)		
American Indian										
Mean	0.17	0.13	0.07	−0.04	−0.10	0.13	0.17	0.09	0.04	−0.04
SD	(0.37)	(0.33)	(0.25)			(0.33)	(0.38)	(0.29)		
Other										
Mean	0.07	0.16	0.14	0.09	0.07	0.16	0.12	0.10	−0.04	−0.06
SD	(0.26)	(0.37)	(0.35)			(0.37)	(0.32)	(0.30)		

Table 8 continued

	(1) 1990 AIAN-single race	(2) 2000 AIAN-single race	(3) 2000 AIAN-all	Dif. 1 (2)–(1)	Dif. 2 (3)–(1)	(4) 2000 AIAN-single race	(5) 2010 AIAN-single race	(6) 2010 AIAN-all	Dif. 3 (5)–(4)	Dif. 4 (6)–(4)
Residence										
In Metropolitan area										
Mean	0.51	0.55	0.64	0.04	0.13	0.55	0.52	0.61	−0.03	0.06
SD	(0.50)	(0.50)	(0.48)			(0.5)	(0.5)	(0.49)		
In Indian states										
Mean	0.58	0.57	0.46	−0.01	−0.12	0.57	0.59	0.47	0.02	−0.11
SD	(0.49)	(0.49)	(0.50)			(0.49)	(0.49)	(0.50)		

Numbers are weighted

Table 9 Logistic regression predicting poverty, cohort 35–44 in 1990

Variables	1990 AIAN-single race		2000 AIAN-single race		2000 AIAN-all		2000 AIAN-single race		2010 AIAN-single race		2010 AIAN-all	
	Odds	SE	Odds	SE	Odds	SE	Odds	SE	Odds	SE	Odds	SE
Panel A (male)												
Education (≤high school)	2.27**	0.04	**2.47****	0.04	**2.66****	0.03	2.47**	0.04	**2.60****	0.05	2.57**	0.04
Married	0.37**	0.01	**0.33****	0.00	**0.30****	0.00	0.33**	0.00	**0.30****	0.00	**0.28****	0.00
Nativity (ref. US-born)												
Mexico, C./S. America-born	0.83**	0.05	**1.21****	0.04	**1.05**	0.03	1.21**	0.04	1.15**	0.05	**1.02****	0.03
Other	0.68**	0.03	**1.42****	0.07	**1.35****	0.04	1.42**	0.07	**0.54****	0.04	**0.72****	0.03
Language (ref. English)												
American Indian	2.43**	0.04	**2.13****	0.04	**2.29****	0.04	2.13**	0.04	**1.69****	0.03	**1.93****	0.04
Other	1.61**	0.04	**1.23****	0.03	**1.27****	0.02	1.23**	0.03	1.26**	0.03	**1.38****	0.03
Residence												
In metro	0.80**	0.01	**0.68****	0.01	**0.66****	0.01	0.68**	0.01	**0.74****	0.01	**0.80****	0.01
In Indian states	1.34**	0.02	**1.16****	0.02	**1.06****	0.01	1.16**	0.02	**1.03****	0.02	1.13**	0.01
Constant	0.33**	0.01	**0.32****	0.01	**0.33****	0.00	0.32**	0.01	0.39**	0.01	0.33**	0.00
Pseudo R^2	0.09		0.10		0.10		0.10		0.10		0.10	
N	138,611		142,200		259,799		142,200		124,054		230,629	
Panel B (female)												
Education (≤high school)	3.79**	0.06	**3.58****	0.06	3.70**	0.05	3.58**	0.06	**2.94****	0.05	**2.70****	0.04
Married	0.22**	0.00	**0.26****	0.00	0.22**	0.00	0.26**	0.00	0.27**	0.00	**0.21****	0.00
Nativity (ref. US-born)												
Mexico, C./S. America-born	0.61**	0.05	**0.76****	0.03	0.62**	0.02	0.76**	0.03	**1.64****	0.06	**1.36****	0.05
Other	0.85**	0.04	**1.14****	0.05	**1.02**	0.03	1.14**	0.05	**1.57****	0.07	**0.98****	0.03
Language (ref. English)												
American Indian	1.88**	0.03	**2.27****	0.05	**2.31****	0.05	2.27**	0.05	**1.68****	0.03	**1.64****	0.03

Table 9 continued

Variables	1990 AIAN-single race		2000 AIAN-single race		2000 AIAN-all		2000 AIAN-single race		2010 AIAN-single race		2010 AIAN-all	
	Odds	SE	Odds	SE	Odds	SE	Odds	SE	Odds	SE	Odds	SE
Other	1.36**	0.04	1.40**	0.03	1.42**	0.02	1.40**	0.03	**0.90****	0.03	**0.80****	0.02
Residence												
In metro	0.60**	0.01	**0.69****	0.01	**0.64****	0.01	0.69**	0.01	0.66**	0.01	**0.74****	0.01
In Indian states	1.49**	0.02	**1.09****	0.02	**1.02**	0.01	1.09**	0.02	1.11**	0.02	1.08**	0.01
Constant	0.44**	0.01	0.31**	0.01	0.34**	0.00	0.31**	0.01	0.36**	0.01	0.42**	0.00
Pseudo R^2	0.09		0.10		0.10		0.13		0.12		0.12	
N	138,611		142,200		259,799		149,695		130,219		257,416	

Numbers are weighted; Bold indicates coefficient significantly different from AIAN-single race in 1990 or 2000 ($p < 0.05$)

* $p < 0.05$; ** $p < 0.01$, two tailed

Table 10 Summary of decomposition, 35–44 cohort in 1990

	1990 AIAN-single race vs. 2000 AIAN-single race		1990 AIAN-single race vs. 2000 AIAN-all		2000 AIAN-single race vs. 2010 AIAN-single race		2000 AIAN-single race vs. 2010 AIAN-all	
Decomposition, Panel A (male)								
Compositional effect								
Coef.	−0.0020**	4.8 %	−0.0204**	30.4 %	0.0077**	39.9 %	−0.0104**	163.2 %
SE	(0.0003)		(0.0004)		(0.0003)		(0.0003)	
Coefficient effect								
Coef.	−0.0401**	95.2 %	−0.0469**	69.6 %	0.0116)**	60.1 %	0.0040**	−63.2 %
SE	(0.0015)		(0.0014)		(0.0015)		(0.0013)	
Total								
Coef.	−0.0421**	100.0 %	−0.0673**	100.0 %	0.0193**	100.0 %	−0.0064**	100.0 %
SE	(0.0015)		(0.0013)		(0.0015)		(0.0012)	
Decomposition, Panel B (female)								
Compositional effect								
Coef.	−0.0003	0.5 %	−0.0199**	24.9 %	0.0237)**	101.1 %	0.0097**	67.0 %
SE	(0.0003)		(0.0004)		(0.0003)		(0.0003)	
Coefficient effect								
Coef.	−0.0562**	99.5 %	−0.0600**	75.1 %	−0.0003	−1.1 %	0.0048**	33.0 %
SE	(0.0014)		(0.0013)		(0.0014)		(0.0012)	
Total								
Coef.	−0.0565**	100.0 %	−0.0799**	100.0 %	0.0235**	100.0 %	0.0144**	100.0 %
SE	(0.0014)		(0.0012)		(0.0014)		(0.0012)	

Source U.S. Decennial Census 5 % sample, 2000 & American Community Survey 2010 single-year

Numbers are weighted

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