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Validating the White Flight Hypothesis: Neighborhood Racial Composition and Out-Migration in Two Longitudinal Surveys

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Abstract: Empirical research assessing the link between neighborhood racial composition and out-migration has largely relied on a single sample from the Panel Study of Income Dynamics (PSID). In this article, we validate these models by comparing estimates from the PSID to estimates from identical models based on internal Census data from the Survey of Income and Program Participation (SIPP). Doing so serves two purposes: (1) as a replication exercise for findings with major implications for racial/ethnic inequality and (2) as an expansion of the scope of 'flight' models to test mobility models among contemporary samples of white, black, Latino, and Asian households. Results from these models indicate that white households' migration responses to minority racial concentrations are substantively similar in SIPP and PSID, with the likelihood of out-migration among whites increasing as minority shares grow, albeit weaker in SIPP than the PSID. Results for black householders are comparable across samples, with blacks demonstrating a tendency to leave Hispanic neighborhoods. Results for Hispanic households are, however, divergent between the SIPP and PSID, potentially reflecting differences in the representativeness of the samples. Lastly, the results from SIPP reveal that the mobility behaviors of Asian households are largely indifferent to neighborhood racial composition.

Keywords: white flight; residential mobility; out-migration; residential segregation

Replication Package: Programs to replicate the PSID analysis are available online at https://osf.io/3rvfa/. These files require authorization to use restricted-access PSID geocodes, managed by the University of Michigan (see https://simba.isr.umich.edu/restricted/RestrictedUse.aspx).

O^{FTEN} described as the linchpin of racial/ethnic inequality, residential segregation has been a defining feature of U.S. cities for more than a century (Bobo 1989). One of the most prominent explanations for the development and maintenance of segregation is the unwillingness of white households to share neighborhoods with racial/ethnic minorities. Yet, the rapid diversification of U.S. cities (Lee et al. 2015), increasingly tolerant racial attitudes (Schuman et. al. 1997), and the convergence of racial gaps in socioeconomic outcomes (Collins and Margo 2006; Smith and Welch 1989) bring into question the magnitude of its role in maintaining segregation.

Not only have whites' mobility decisions and behaviors likely changed considerably over the last several decades, their relative size is also rapidly declining. In 1970, for example, more than 8 in 10 Americans were non-Hispanic white; but that share has shrunk to 6 in 10 today and the Census Bureau projects that the U.S. population will reach minority-majority status within the next 30 years (Colby and

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Ortman 2015). By contrast, the expansion of the Asian and Hispanic populations has been sharp, contributing heavily to the rapid diversification of American communities. This new racial/ethnic reality raises important questions not just about the continued role of "white flight" in shaping segregation, but also how the mobility decisions of newer, and growing, ethnoracial groups—especially Asians and Hispanics—are affected by local racial contexts. Answers to these questions have important implications not just for emerging patterns of residential segregation, but for understanding the contours of an evolving color line (see Pais, South, and Crowder 2009).

Virtually all nationally representative empirical work on neighborhood outmigration and racial context in the United States over the last two decades has used a single sample of households: the Panel Study of Income Dynamics (PSID) (see Crowder 2000; Crowder, Pais, and South 2012; South and Crowder 1997, 1998; South, Crowder, and Pais 2008). Although the PSID has been an invaluable resource for understanding neighborhood inequality (see Sharkey 2013), the sample is based on an initial frame drawn in 1967 (Morgan and Smith 1969) and there have been few comparisons of the neighborhood race/ethnic data in PSID with other nationally representative surveys, despite the potential impacts of the dated sample and the cumulative effects of selective attrition on survey estimates.¹

This poses two challenges to our understanding of residential mobility and segregation: (1) the racial contexts and mobility responses of PSID respondents may not generalize to the contemporary U.S. population structure, and (2) the PSID subsample of newer ethnic subpopulations, including Asians and Hispanics, is both too small and qualitatively distinct, given the 1967 sampling frame, to draw conclusions about their mobility behaviors.

Our purpose in this study is to evaluate these challenges by comparing "flight" models generated from the PSID with equivalent models based on a sample of U.S. households from restricted-access Survey of Income and Program Participation (SIPP) data. More specifically, we align the PSID and SIPP samples over the same time interval and structure the files in order to draw meaningful comparisons of estimates from identical mobility models. The results of these analyses will (1) provide evidence for the usefulness of PSID for drawing conclusions about the current U.S. population structure and (2) demonstrate the utility of using SIPP for residential mobility research.

Background

"White flight," or the aversion of whites to living in neighborhoods with sizable numbers of minorities, is a central component of theories of racial residential segregation dating back several decades. Early work on neighborhood change emphasized the role of invasion and succession, first described by the Chicago School of sociologists. The theory describes how immigrants and minorities move into older neighborhoods in the heart of cities, whereas the more socioeconomically advantaged move to outer rings of the city with newer housing (Park 1936; Park and Burgess 1925). Later work by Schelling (1971) focused on the importance of small differences in preferences for neighborhood diversity among whites and described how these small differences in preferences could lead to large-scale neighborhood change. In Schelling's view, whites hold varying preferences for having minority neighbors although there is ultimately a "tipping point" where the neighborhood composition reaches a threshold past which all whites move out of the neighborhood. This process begins when minorities move into a neighborhood and the least-tolerant whites move out. As more minorities replace these whites, the neighborhood begins to turnover until the "tipping point" is reached. Schelling's tipping point and his view of the nonlinear nature of neighborhood change have had a lasting impact on understanding the role of neighborhood race/ethnic composition on neighborhood out-migration (Card, Mas, and Rothstein 2008; Clark 1991; Crowder 2000; Frey 1979).

Despite the importance of "white flight" for theories of neighborhood change, isolating the role of neighborhood ethnoracial composition on neighborhood outmigration has long been challenged by the use of aggregate cross-sectional data rather than individual-level data with controls for other variables related to outmigration. This changed with the introduction of the Panel Study of Income Dynamics, a long-running longitudinal survey with restricted-access neighborhood geocodes, as a source of data for studying the microlevel underpinnings of residential segregation.

Using data from the Panel Study of Income Dynamics, past research has consistently confirmed that whites are more likely to migrate out of neighborhoods as the size of the minority population in the neighborhood increases (Crowder 2000; Crowder and South 2008; Pais, Crowder, and South 2012). The effects are similar whether the minority group is black or Hispanic, although the likelihood of out-migration is greater when multiple minority groups are present in a neighborhood (Crowder 2000; Pais et al. 2012). Moreover, the effects of neighborhood out-migration are often attenuated by the supply of nearby neighborhoods, as whites are less likely to move when surrounding neighborhoods have larger proportions of minorities, thereby limiting the number of acceptable neighborhoods for which to move (Crowder and South 2008). These relationships persist after controlling for demographic and socioeconomic characteristics of individuals known to be associated with migration. Taken together, these findings have provided strong support for the view that the aversion of whites to living in neighborhoods with sizable numbers of minorities is an important force in maintaining neighborhood residential segregation by race and ethnicity.

However, the applicability of these findings to explain more recent trends in residential segregation is less clear. Black/white segregation, although still substantial in magnitude, has declined considerably since the 1980s (Logan and Stultz 2011). These shifts may have been driven by declines in housing discrimination (Turner et al. 2013), increasingly tolerant racial attitudes (Schuman et. al. 1997), and some convergence of racial gaps in socioeconomic outcomes (Collins and Margo 2006; Smith and Welch 1989). Immigration is also changing neighborhood dynamics. Asian and Hispanic segregation from whites has remained steady since the 1980s as the population size of these groups has exploded (Logan and Stultz 2011). The continued segregation of Asians and Hispanics from whites may be driven by recently-arrived immigrants, who are increasingly moving into metropolitan areas with limited histories of immigration (Hall 2013). Similarly, processes of gentrification and displacement create and reinforce structures of both integration and segregation (Freeman 2009; Freeman et al. 2023; Hwang and Ding 2020). Still, neighborhoods are becoming more racially and ethnically diverse and all racial/ethnic groups have experienced greater exposure to neighborhood diversity (Farrell and Lee 2011). The dynamics underlying the shift to greater neighborhood diversity are less clear, with some studies finding that this trend may be driven by increasing diversity among nonwhite groups, as whites continue to avoid neighborhoods with substantial numbers of minorities (Farrell and Lee 2011). These patterns challenge the view that segregation can be understood by observing the preferences and mobility behaviors of whites alone and point to an increased need to look at the mobility patterns of diverse race/ethnic groups by varying neighborhood contexts.

Some research has examined the neighborhood out-migration patterns of Hispanics and Hispanic ethnoracial groups in response to ethnoracial neighborhood composition. In one of the first articles to reexamine "white flight" from a multiethnic perspective, Pais, South, and Crowder (2012) argue that the decisions minority households make about when and where to move may be just as affected by neighborhood race/ethnic diversity as they are for white households. Using PSID data from 1990 to 1995 that were briefly augmented with a sample of Hispanics, Pais et al. (2012) examine neighborhood out-migration for non-Hispanic whites, non-Hispanic blacks, Mexicans, Puerto Ricans, and Cubans. The authors find continued evidence that whites are more likely to move out of neighborhoods with larger numbers of minorities. However, they also find evidence that blacks, Mexicans, and Puerto Ricans are more likely to out-migrate as the neighborhood white population expands. Additionally, they find some evidence of "minority flight," with Cubans being more likely to leave neighborhoods with greater numbers of blacks. Mexicans and Puerto Ricans are less likely to leave neighborhoods as the black population increases, whereas blacks' mobility decisions are not impacted by ethnoracial composition. This article provided an important step looking at relationships between neighborhood race/ethnic composition and out-migration.

Unfortunately, the added Hispanic sample from the PSID was dropped over cost concerns in the mid-1990s, meaning that more recent analysis of these data is not possible. The current PSID includes the original sample drawn in the late 1960s, and the ability of the survey to capture patterns of neighborhood out-migration for the current US population is in doubt, largely because the sample does not include recently-arrived immigrants. Moreover, there has been no comparable data set from which to compare the PSID estimates.

Research Objectives

This project provides an update and expansion of how neighborhood racial contexts shape out-migration for a contemporary sample of U.S. households that includes representative samples of whites, blacks, Asians, and Hispanics. To do so, we use data from the Survey of Income and Program Participation (SIPP) to construct models of out-migration and compare these estimates to equivalent models from the PSID. This comparison provides a useful evaluation of a data source that has served as a fundamental role in our understanding of residential segregation.

Data

To test these questions, we use data from the 2008 SIPP and from recent waves of the Panel Study of Income Dynamics linked to block group data from the 2010 decennial census. The 2008 SIPP is a longitudinal survey with an initial sample of 50,000 households living in noninstitutionalized residential settings in the United States. Respondents were interviewed every four months for five years, and the survey followed original sample members when they changed addresses. Census Field Representatives have a detailed protocol for locating respondents who have moved by relying on the National Change of Address Database as well as neighbors and relatives. When respondents cannot be interviewed, because they either refuse to continue with the survey, have moved out of sample, or have moved and cannot be located, Field Representatives record the specific reason for the noninterview. This information can be used to determine if a respondent left the sample because of a move or for other reasons. The frame for the SIPP is the Master Address File (MAF), which is maintained by the U.S. Census Bureau and is the source of addresses for the American Community Survey, other demographic surveys, and the decennial census. The MAF is updated using the U.S. Postal Service's Delivery Sequence File and various automated, clerical, and field operations.

The PSID is the longest-running nationally representative longitudinal sample of the U.S. population with an initial sample of about 5,000 households. The sample has grown over the years to just over 9,000 households in 2015. Similar to SIPP, the sample only includes those living in noninstitutionalized residential settings. Although the procedures for tracking movers have changed over the years, in general, PSID follows original sample members when households split or children move out and form new households. All people living at an address with an original sample person are interviewed. In this way, the PSID sample is constantly updated through residential moves, marriage, and childbearing. In an attempt to update the sample, an immigrant refresher sample of about 500 households was added in 1997 that included post-1968 immigrant families. The PSID began as an annual survey but switched to interviews every other year in 1997.

Both surveys suffer from sample attrition. The year-to-year sample attrition in PSID is relatively modest, but cumulative sample attrition since the inception of the survey is more substantial (McGonagle et al. 2012). Although SIPP panels are relatively short and include recently drawn samples, the large sample size of the survey can make tracking respondents a difficult and cost-prohibitive task. In 2008, sample attrition reached 53 percent by the end of the SIPP panel (U.S. Census Bureau 2016).² That both surveys have problems with sample attrition points to a universal problem with longitudinal surveys and is one reason why comparing estimates from multiple surveys is important.

To compare estimates from the two surveys, we overlap the survey periods and migration intervals, use the same contextual data on race/ethnic neighborhood composition, and code our independent variables measuring demographic and socioeconomic characteristics in a similar fashion. The longitudinal nature of both surveys makes it possible to construct equivalent migration periods. Our SIPP analysis focuses on the years 2009, 2010, and 2011 using data from several waves of the 2008 SIPP. The PSID analysis focuses on the same years, 2009 to 2011, using data from the 2009, 2011, and 2013 PSID waves. We focus our analysis on this time period because the Census Bureau undertook a unique process of clerical (geo)coding SIPP respondents that facilitated tracking of moves down to the block-group level. We chose a three-month or quarter-year migration interval to include the largest number of moves across both surveys. The SIPP interviews are conducted every four months and respondents are allowed to report one move during this period, meaning respondents can move multiple times within a one-year period. Although PSIDs are collected biennially, we are able to construct equivalent migration intervals using the dates of reported migration events. More specifically, we reformat the PSID data into quarterly intervals and use the month and year of the last move to identify moves between intervals. When a respondent has changed residences between interview periods, data are collected on the month and year of the last move. Using the month and year moved variables, we create quarter-year migration intervals in PSID that match the same time period for SIPP.

Our primary outcome variable of interest is neighborhood out-migration measured as whether the respondent moves out of the census block group of origin during the quarter-year period.³ Because our analysis is primarily interested in how race/ethnic context shapes decisions about mobility, we remove certain types of moves from the sample that are likely driven by other factors. SIPP includes information on why respondents leave the sample, which allows us to both separate out respondents leaving because they move to group quarters and those leaving for other reasons.⁴ We also code within-block-group movers as nonmovers for the purposes of our analysis, as these respondents are not moving to new neighborhoods.

We chose to limit the sample to householders to avoid double-counting moves made by members of the same family (e.g., children and spouses). Additionally, using householders allows us to count respondents who are not householders at one interview period but are householders at another interview period (e.g., marital dissolution or kids moving out of the household). The surveys differ in the identification of householders. The householder in SIPP is the household respondent whose name is on the deed/mortgage or lease to the home.⁵ In PSID, the householder, in the case of married couples, is always the husband. Nevertheless, any impact of these differences should be minimal, as key covariates are expressed as pooled household measures or are highly interrelated among adult household members (e.g., between husband and wife).

Our measures of neighborhood race/ethnic context are derived from aggregated block-group estimates from the 2010 Decennial Census linked to block-group identifiers for householders on the PSID and SIPP. The four main explanatory variables in our analysis indicate the portion of the block group that is minority (i.e., not non-Hispanic white), non-Hispanic black, Hispanic, and non-Hispanic Asian. These neighborhood-level indicators will show the relationship between different ethnoracial compositions of neighborhoods and neighborhood out-migration. We also incorporate statistical controls for demographic characteristics known to be related to residential mobility. These include, nativity status, age (in years), marital status (1 = married or long-term cohabiting union, 0 otherwise), the presence of children in the home, educational attainment (in years of schooling), log family income, whether the housing unit (at the start of the interval) is owner occupied, and Census region. Although there are some differences in question wording, each of these measures is present in both surveys.⁶

We limit our PSID and SIPP comparison analysis to three major racial/ethnic groups: non-Hispanic whites (i.e., "whites"), non-Hispanic blacks ("blacks"), and Hispanics. Estimates for non-Hispanic Asians ("Asians") are provided for the same survey period using SIPP. By using a quarter-year migration interval, each respondent can contribute multiple records to the analysis. The SIPP sample includes 24,000 white householders, 4,800 black householders, 3,700 Hispanics, and 1,500 Asians.⁷ The PSID sample includes 4,092 white householders, 2,800 black householders, and 441 Hispanics.

Programs to replicate the PSID analysis are available online at https://osf.io/ 3rvfa/. These files require authorization to use restricted-access PSID geocodes, managed by the University of Michigan (see https://simba.isr.umich.edu/ restricted/RestrictedUse.aspx. The programs to replicate the SIPP analysis are accessible for researchers with access to the confidential SIPP data, available through the Federal Statistical Research Data Centers.

Analysis Plan

The initial analysis examines the relationship between neighborhood racial/ethnic context and neighborhood out-migration for white, black, and Hispanic house-holders using the SIPP and the PSID, and for Asians using the SIPP. We estimate separate logit models of out-migration for each of the race/ethnic groups as functions of each measure of neighborhood race/ethnic composition. In line with past research suggesting that flight dynamics follow an S-shaped curve (Crowder 2000), we express neighborhood racial/ethnic composition as third-order polynomials to capture nonlinear patterns in the associated between neighborhood compositions and out-migration. To facilitate interpretation and to provide meaningful comparisons across models, we report marginal effects at means (MEMs) or the slope of the cubic curve for the average group respondent living in the average neighborhood, holding all other covariates at their means. We also present predicted probabilities to visualize the propensities of moving at different race/ethnic neighborhood concentrations. All reported standard errors are clustered on individuals.

To account for potential differences in the sociodemographic composition of respondents across the two surveys, we also reestimate the MEMs for the PSID sample using the SIPP means for all covariates. These estimates show the probability of moving at different racial/ethnic concentrations for a person with the same characteristics in both SIPP and PSID, rather than comparing the average person in PSID to the average person in SIPP. By comparing the estimates for PSID using both the PSID and SIPP means to those from SIPP, we can better isolate the role of individual differences in the characteristics of respondents across surveys in our estimates.

In our models comparing SIPP and PSID, we show unweighted data, as much of the past published research using PSID presents unweighted numbers. Additionally, the purpose of this article is to compare differences in the PSID and SIPP samples rather than differences in how the surveys are weighted.⁸

Results

Before comparing the PSID and SIPP estimates of the effect of race/ethnic composition on neighborhood out-migration, Table 1 presents unweighted descriptive statistics on demographic and economic characteristics, race/ethnic neighborhood composition, and regional location for whites, blacks, Hispanics, and Asian householders in both surveys.⁹ The unweighted descriptive statistics for both surveys support these findings. In both PSID and SIPP, whites are more likely to be homeowners, have higher incomes, and live in neighborhoods with fewer minorities than blacks and Hispanics. In SIPP, Asian householders are more likely to have a college degree (58 percent to 36 percent) and have greater monthly incomes (\$6,870 to \$6,300) than white householders but live in neighborhoods with greater percentages of minorities (54 percent minority for Asians to 25 percent minority for whites). When comparing across race/ethnic groups in SIPP, both Hispanic and black householders live in neighborhoods that are majority own group, but the average block group of an Asian householder in SIPP is only about 22 percent Asian.

Of particular interest to this article is the extent to which racial/ethnic groups' demographic, economic, and locational characteristics differ across the two surveys. These differences will reveal the extent to which the PSID sample is comparable to the more recently drawn SIPP sample and potentially help explain observed differences in the relationship between neighborhood out-migration and residential mobility. In Table 1, important differences between the PSID and SIPP samples are readily apparent. White, black, and Hispanic householders in the PSID are more likely to be younger, to be married, and to have young children than their counterparts in SIPP. For example, 62 percent of white householders, 57 percent of black householders, and 55 percent of Hispanic householders in PSID are ages 35 and over compared to 85 percent of white householders, 83 percent of black householders, and 74 percent of Hispanic householders in SIPP. Importantly, consistent with expectations that Hispanics in PSID will have deeper U.S. roots, these householders are considerably more likely to be native born than are those in SIPP.

Table 1 also indicates some important socioeconomic differences between the samples. Although white householders have similar levels of homeownership and college completion in PSID and SIPP, differences between the samples of black householders are more substantial. In particular, the descriptive statistics reveal that although 39 percent of black households in PSID are homeowners, 50 percent of those in SIPP are. Similarly, 12 percent of blacks in PSID have completed a college degree, but 19 percent have in SIPP. Socioeconomic differences in the Hispanic samples are fairly modest, with about half of householders in both surveys owning homes, and similarly low shares having completed a college degree.

 Table 1: Descriptive statistics by householder's race/ethnicity.

	Whites		Blacks		Hispanic		Asian	
	Mean	SD	Mean	SD	Mean	n SD	Mea	n SD
PSID								
Native-Born	0.98	0.13	0.99	0.11	0.43	0.49		
Female-Head	0.20	0.40	0.48	0.50	0.22	0.41		
Married	0.66	0.47	0.33	0.47	0.68	0.47		
Kids Younger than 18	0.36	0.48	0.47	0.50	0.61	0.49		
Ages 35-54	0.27	0.44	0.35	0.49	0.33	0.47		
Ages 55 and Older	0.35	0.48	0.22	0.42	0.22	0.41		
Homeowner	0.71	0.45	0.39	0.49	0.52	0.50		
College Degree	0.34	0.47	0.12	0.32	0.10	0.30		
Household Income (logged)	7.35	10.78	3.56	3.26	4.29	3.65		
Percent Minority	20.15	18.48	68.94	27.80	74.11	24.12		
Percent Black	6.03	10.91	53.54	31.91	6.52	11.35		
Percent Hispanic	8.35	11.51	11.05	17.00	60.47	28.92		
Percent Asian	3.28	5.51	2.33	5.19	4.83	8.21		
Region								
Northeast	0.17		0.08		0.06			
Midwest	0.31		0.18		0.09			
South	0.31		0.68		0.25			
West	0.20		0.07		0.60			
N of Person-Quarter Year Intervals	als 53,152		3	34,685		5,449		
N of Respondents	4,	,092	2	2,800		441		
SIPP								
Native-Born	0.94	0.24	0.89	0.31	0.52	0.50	0.21	0.41
Female-Head	0.52	0.50	0.65	0.48	0.53	0.50	0.43	0.49
Married	0.54	0.50	0.32	0.47	0.56	0.50	0.66	0.47
Kids Younger than 18	0.26	0.44	0.30	0.46	0.50	0.50	0.36	0.48
Ages 35-54	0.38	0.49	0.41	0.49	0.49	0.50	0.48	0.50
Ages 55 and Older	0.47	0.50	0.42	0.49	0.25	0.44	0.32	0.46
Homeowner	0.75	0.43	0.50	0.50	0.51	0.50	0.61	0.49
College Degree	0.36	0.48	0.19	0.39	0.12	0.33	0.58	0.49
Household Income (logged)	6.30	17.88	3.74	6.86	4.01	7.78	6.87	9.73
Percent Minority	25.14	21.64	71.48	26.91	69.21	26.78	53.70	27.48
Percent Black	7.64	12.65	51.45	31.90	9.78	14.79	8.92	12.93
Percent Hispanic	10.65	14.56	14.34	18.60	52.04	29.88	19.19	19.85
Percent Asian	4.15	6.64	3.05	6.15	4.87	8.76	21.68	21.35
Region								
Northeast	0.22		0.18		0.13		0.23	
Midwest	0.24		0.18		0.09		0.12	
South	0.33		0.56		0.36		0.20	
West	0.21		0.07		0.42		0.44	
N of Person-Quarter Year Intervals ¹	210	0,000	40	,000	30.	,000	12	2,000
N of Respondents	24	,000	4,	800	3,2	700	1	,500

¹Unweighted SIPP counts are rounded to meet the Census Bureau's disclosure avoidance guidelines.

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Differences between the samples also extend to the racial/ethnic composition of the neighborhoods (measured at the block group level) of survey respondents. Householders in SIPP are modestly more likely to reside in nonwhite neighborhoods than those in the PSID. For example, white, black, and Hispanic householders in PSID are more likely to reside in neighborhoods with members of their own group compared to those in SIPP. It is possible these differences stem from differences in regional residence across the two surveys. Whites, blacks, and Hispanics in PSID are less likely to live in the Northeast and more likely to live in Midwest states than those in SIPP. Hispanics in PSID are far more likely to live in Western states (60 percent) than are Hispanics in SIPP (42 percent).

Collectively, the descriptive statistics indicate that sampled white householders in SIPP and PSID have broadly similar demographic profiles, but those in the former are more likely to live in nonwhite neighborhoods. Black householders in the two surveys are noticeably distinct in their socioeconomic resources, with those in PSID tending to be relatively less advantaged. Lastly, Hispanic householders in PSID have deeper generational ties in the United States and are more likely to be living with children. Although variation in these characteristics is likely to influence mobility patterns, it is unclear whether these sample differences contribute to differences in the impacts of neighborhood race/ethnic composition on neighborhood out-migration for the two surveys. The proceeding analyses will seek to answer this question by comparing the SIPP estimates of neighborhood out-migration to comparable estimates from the PSID.

Multivariate Models Comparing PSID and SIPP

Tables 2, 3, and 4 present the results of unweighted logistic regression models for SIPP and PSID predicting a move to a different block group during a three-month calendar period for white, black, and Hispanic householders by origin block-group race composition (i.e., percent minority, percent black, percent Asian, percent Hispanic). Table 5 shows comparable models for the SIPP sample of Asians. The results are reported as marginal effects at the means (MEMs), which can be interpreted as the average change in the probability of block group mobility that corresponds with a one-unit change in a predictor variable, holding all other variables at their means. The MEMs for the PSID models are calculated using both the PSID sample means and the SIPP sample means shown in Table 1 to better align respondents in the two surveys. The neighborhood race/ethnic composition measures are expressed as third-order polynomials to capture nonlinear patterns in the association between neighborhood composition and out-migration. These coefficients represent the average of the total effect of race/ethnic composition (the sum of linear, squared, and cubic effects) on block-group-to-block-group migration across householders. Separate models are run for each race/ethnic group by each measure of neighborhood composition with and without controls for individual characteristics and region of residence.

Beginning with the models in Table 2 for white householders, the results for both the PSID and SIPP indicate a heightened likelihood of changing neighborhoods as the percentage of non-White racial group members increases. For both surveys,

	PSID			SI	PSID-SIPP	
	(1)	(2)	(3)	(4)	(5)	
	Unadjusted	Adjusted	SIPP mean	Unadjusted	Adjusted	3 vs. 5
(1) Percent minority	0.054*	0.013*	0.020*	0.047*	0.006*	*
	(0.007)	(0.005)	(0.005)	(0.003)	(0.002)	
(2) Percent Black	0.070*	0.012	0.016 ⁺	0.087^{*}	0.015^{*}	
	(0.017)	(0.011)	(0.010)	(0.007)	(0.004)	
(3) Percent Hispanic	0.099*	0.016	0.018 ⁺	0.094*	0.016^{*}	
	(0.016)	(0.010)	(0.010)	(0.007)	(0.004)	
(4) Percent Asian	0.126*	0.039 ⁺	0.036*	0.106*	0.021*	
	(0.028)	(0.020)	(0.018)	(0.011)	(0.007)	
Controls	No	Yes	Yes	No	Yes	
Ν	53,152	53,152	53,152	210,000	210,000	

Table 2:	Marginal	effects at	means of block	group	o racial	shares (%)	on out-mi	gration:	white	househc	olders
						· · · · · · · · · · · · · · · · · · ·						

+ p < 0.10; * p < 0.05. Coefficients and standard errors are multiplied by 100.

most of these estimates hold true even in the face of statistical controls related to neighborhood racial composition and mobility. The unadjusted estimates for the first model, which assess the relationship between block-group percent minority and out-migration, show a positive relationship between minority neighborhood shares and migration out of origin block group for the PSID sample (0.00054) and the SIPP sample (0.00047). These nearly identical effects imply that a ten-percent point increase in neighborhood minority shares is associated with an increase in the likelihood of changing neighborhoods of about 0.005, which is equivalent to 0.5 percentage points. Although this may seem like a small effect, the average quarterly migration rate for white households is about 0.015, which leads to an effect size of about 0.0005/0.015 = 0.033, implying that a one-point increase in the share of a respondent's block group that is nonwhite increases the likelihood of moving by about 3.3 percent. Given that neighborhood change occurs over years and even decades, the aggregate impact of the increased mover rate for white households as the minority share of a neighborhood increases may have substantial impacts on the race and ethnic structure of the neighborhood.

With the addition of statistical controls in model 2 that are related to neighborhood composition and migration, the effect of minority neighborhood share decreases to 0.00013 in the PSID sample and 0.00006 in the SIPP sample, but the effects remain statistically significant (p < 0.01, and p < 0.001, respectively) in both surveys. Using the SIPP means for the PSID sample increases the effect of percent minority on neighborhood out-migration to 0.00020, or about three times the size of the effect from SIPP.

For each of the additional measures of neighborhood race/ethnic composition for both the PSID and SIPP samples, out-migration for white householders increases as the origin block-group share of blacks, Hispanics, and Asians increases. The statistical controls explain a portion of the positive association between origin neighborhood race/composition and mobility, but the controls never completely attenuate the effect, suggesting that white householders' mobility responses to minority neighborhood shares are not explained by differences in the characteristics of the householders living in these areas. Most importantly, the estimates are very similar in both the PSID and SIPP models, particularly when the means are aligned between the samples. The difference in the SIPP and PSID estimates for percent minority may be driven by a heightened tendency for PSID whites to migrate in the face of growing Asian populations, or by differences across the surveys in white householders' mobility responses to other race groups not directly assessed in this article but captured in the minority category. White migration away from black and Hispanic neighbors, by contrast, is remarkably consistent between the two samples.

In Figure 1, we plot predicted probabilities of percent minority, percent black, percent Hispanic, and percent Asian on neighborhood out-migration for white householders in SIPP and PSID. The estimates are based on the PSID SIPP means model and SIPP adjusted model in Table 2, with all covariates held at their respective means. The probabilities represent the estimated out-migration rates for the average white householder living in neighborhoods with different shares of ethnoracial groups. The predicted probabilities are particularly useful for visualizing the curvilinear associations between neighborhood composition and out-migration. The migration curves for whites in both samples are generally quite similar until nonwhite racial group shares exceed about 60 percent. Below this point, the migration curves indicate that—for white householders in PSID and SIPP—the tendency to change block groups increases with minority shares up to rather modest levels (about 20 percent for SIPP and 10 percent for PSID), before the curves largely flatten. The effects are usually larger for PSID than SIPP. Estimated migration rates for the two samples deviate strongly at the upper ends of nonwhite racial group shares, but it is important to remember that very few whites live in these areas and so the right tails of the curves are estimated with little precision.

Table 3 reports corresponding model estimates for black householders. The models indicate that overall minority shares (i.e., and by extension, white shares) are not associated with black mobility behavior in either survey, when controls are included. However, models exploring links between migration and specific groups point to some consistent findings. First, black mobility appears not to be influenced by black neighborhood shares, with the marginal effect on percent black being very small and statistically nonsignificant. By contrast, black householders in both SIPP and PSID have elevated rates of out-migration as Hispanic shares expand, with the point estimates in the two samples being virtually identical. There is also some evidence that black mobility increases with Asian shares, although the estimate in PSID is only statistically significant for the unadjusted model.

In Figure 2, we show the predicted probabilities of percent minority, percent black, percent Hispanic, and percent Asian on neighborhood out-migration for black householders in SIPP and PSID using SIPP means for all covariates. The migration curves for black householders highlight the curvilinear nature of the relationship between neighborhood racial composition and black out-migration and show remarkable consistency in the associations across samples. Black outmigration is largely unrelated to overall minority and black population shares but is more strongly associated with Hispanic concentrations. In both SIPP and PSID, migration among black householders increases as Hispanic shares increase from



Figure 1: Predicted probabilities of out-migration, by block-group race/ethnic composition for white house-holders. *Notes*: Predicted probabilities of outmigration are plotted for 10-percent point increments of neighborhood race composition. Errors bars represent 95 percent confidence intervals and are only shown for estimates with statistically significant differences between the PSID (SIPP means) and SIPP models.

about 0 to 10 percent, and then sharply increases at the upper end of the Hispanic neighborhood distribution.

In both surveys, the relationship between percent Asian and out-migration is positive and the slope is steep for neighborhoods less than 10 percent Asian in SIPP and 20 percent Asian in PSID, but the relationship reverses to negative and the likelihood of out-migration steadily declines in neighborhoods with greater proportions of Asians. Taken together, the positive relationship between percent Hispanic and percent Asian on neighborhood out-migration in neighborhoods with modest numbers of these groups, suggests that evidence of "black flight" from these neighborhoods operates consistently across samples.

The regression models presenting associations between race/ethnic neighborhood compositions and out-migration for Hispanic householders for PSID and SIPP are presented in Table 4. These models shed light on the representativeness of the PSID Hispanic sample, which was drawn prior to large-scale Latino immigration in the 1990s. Accordingly, it is not surprising that the two samples produce distinct estimates of the relationship between neighborhood racial context and Hispanic migration behaviors. Although the estimates in SIPP and PSID all operate in the same direction, their magnitudes differ. More specifically, the sample of Hispanic



Figure 2: Predicted probabilities of out-migration, by block-group race/ethnic composition for black house-holders. *Notes*: Predicted probabilities of outmigration are plotted for 10-percent point increments of neighborhood race composition. Errors bars represent 95 percent confidence intervals and are only shown for estimates with statistically significant differences between the PSID (SIPP means) and SIPP models.

	PSID			SI	PSID-SIPP	
	(1)	(2)	(3)	(4)	(5)	
	Unadjusted	Adjusted	SIPP mean	Unadjusted	Adjusted	3 vs. 5
(1) Percent minority	0.024*	0.009	-0.003	-0.012	0.000	
· · ·	(0.009)	(0.007)	(0.005)	(0.007)	(0.004)	
(2) Percent Black	0.011	0.007	-0.005	-0.018^{*}	-0.002	
	(0.009)	(0.007)	(0.005)	(0.008)	(0.005)	
(3) Percent Hispanic	0.054^{*}	0.025*	0.024*	0.054^{*}	0.023*	
•	(0.017)	(0.012)	(0.011)	(0.011)	(0.008)	
(4) Percent Asian	0.087^{+}	0.035	0.026	0.132*	0.059*	
. ,	(0.047)	(0.036)	(0.028)	(0.034)	(0.024)	
Controls	No	Yes	Yes	No	Yes	
Ν	34,685	34,685	34,685	39,500	39,500	

 Table 3: Marginal effects at means of block group racial shares (%) on out-migration: Black householders.

p < 0.10; p < 0.05. Coefficients and standard errors are multiplied by 100.



Figure 3: Predicted probabilities of out-migration, by block-group race/ethnic composition for Hispanic householders. *Notes*: Predicted probabilities of outmigration are plotted for 10-percent point increments of neighborhood race composition. Errors bars represent 95 percent confidence intervals and are only shown for estimates with statistically significant differences between the PSID (SIPP means) and SIPP models.

householders in PSID appears to be considerably more sensitive to neighborhood racial composition than does the sample of Hispanic householders SIPP, with positive estimates on minority and black shares that are substantially larger in the PSID sample than in the SIPP sample. Similarly, the negative association between Hispanic migration and Hispanic neighborhood concentration is larger in PSID than in SIPP, but this difference is not statistically significant.

The differences in the estimates between samples are reflected in their estimated migration curves, shown in Figure 3. In the SIPP sample, predicted Hispanic out-migration appears to be largely indifferent to minority and Asian shares. In the PSID sample, by contrast, there is a tendency for Hispanic householders to change neighborhoods as minority and Asian shares grow to modest levels. The one somewhat consistent finding across the two samples is found in the Hispanic migration curves for neighborhood black concentrations. Although the "peak" of the initial response differs in SIPP and PSID, the positive relationship between migration and black shares is apparent in both surveys.

Lastly, although PSID lacks a sufficient sample of Asian householders, we are able to estimate mobility models for Asians in SIPP. These estimates are shown in Table 5 and generally indicate a very weak to nonexistent relationship between



Figure 4: Figure 4: Predicted probabilities of out-migration, by block-group race/ethnic composition for Asian householders. *Notes*: Predicted probabilities of outmigration are plotted for 10-percent point increments of neighborhood race composition.

	PSID			SI	PSID-SIPP	
	(1)	(2)	(3)	(4)	(5)	
	Unadjusted	Adjusted	SIPP mean	Unadjusted	Adjusted	3 vs. 5
(1) Percent minority	-0.064	-0.033^{+}	-0.051	-0.042	-0.018	+
•	(0.023)	(0.018)	(0.018)	(0.008)	(0.005)	
(2) Percent Black	0.196	0.116*	0.127	0.072	0.022+	*
	(0.063)	(0.047)	(0.043)	(0.019)	(0.012)	
(3) Percent Hispanic	-0.058^{*}	-0.028	-0.025^{+}	-0.025	-0.012^{*}	
	(0.023)	(0.019)	(0.014)	(0.009)	(0.006)	
(4) Percent Asian	0.236	0.079	0.107	0.079	0.012	
	(0.090)	(0.065)	(0.069)	(0.029)	(0.020)	
Controls	No	Yes	Yes	No	Yes	
Ν	5,449	5,449	5,449	30,000	30,000	

Table 4: Marginal effects at means of block group racial shares (%) on out-migration: Hispanic householders.

+ p < 0.10; * p < 0.05. Coefficients and standard errors are multiplied by 100.

	SIPP		
	(4)	(5)	
	Unadjusted	Adjusted	
(1) Percent minority	-0.022	-0.012	
-	(0.016)	(0.009)	
(2) Percent Black	0.050 ⁺	-0.005	
	(0.028)	(0.015)	
(3) Percent Hispanic	-0.001	0.004	
· · ·	(0.013)	(0.009)	
(4) Percent Asian	-0.015	-0.010	
	(0.013)	(0.007)	
Controls	No	Yes	
N	12,000	12,000	

Table 5: Marginal effects at means of block group racial shares (%) on out-migration: Asian householders.

+ p < 0.10; * p < 0.05. Coefficients and standard errors are multiplied by 100.

Asian mobility and neighborhood racial composition. Although there is a small and significant positive bivariate association between Asian migration and black shares, this association is completely attenuated by the incorporation of basic demographic and socioeconomic controls. Figure 4 plots the migration curves for Asian householders. Generally speaking, the curves are consistent with the marginal effects and suggest no apparent relationship between migration and neighborhood racial context. The one exception is for black racial shares, which have no relationship with Asian out-migration in lower side of the distribution and are plausibly indicative of a pattern of flight from modest black concentrations, although the latter finding is not statistically significant.

Conclusion

We began this research with the goal of updating and expanding past research on how neighborhood race/ethnic context shape out-migration in the United States. The United States is rapidly diversifying and much all of the past research on race/ethnic context and neighborhood out-migration is derived from the Panel Study of Income Dynamics, with a sample that was drawn in the 1960s. Our purpose has been to validate these findings by comparing estimates of neighborhood migration generated from PSID to a more recent sample of households drawn from the Survey of Income and Program Participation. Specifically, we generate comparable models of the relationship between neighborhood racial composition and out-migration using restricted-access PSID data and internal SIPP data for samples of white, black, and Hispanic householders. We are also able to generate corresponding estimates for Asian householders in SIPP, a group whose mobility behaviors have been understudied.

On balance, despite differences in the demographic, economic, and locational characteristics of householders in PSID and SIPP, the estimates of race/ethnic context and neighborhood out-migration are similar. This is true for whites who show

consistency across the two samples in their tendency to move out of neighborhoods as black, Hispanic, and Asian shares of neighborhoods increase. There was some evidence that this relationship is weaker for whites in SIPP compared to PSID when looking at out-migration as the minority share increases, but the overall pattern of neighborhood out-migration and minority share was the same. It is important to note that although this pattern of "white flight" is apparent, it is most apparent in dominantly white neighborhoods—that is, when minority shares expand from 0 to 20 percent. This finding is mostly consistent with prior work identifying the "s-shaped" relationship minority concentrations and white mobility (e.g., Crowder 2000).

Estimates from both samples also point to processes of minority flight in which out-migration of black households increases with Hispanic shares, and the outmigration of Hispanic households increases with expanding black concentrations. Although the magnitude of these migration responses is relatively modest, they may attenuate the overall trend of growing residential integration between blacks and Hispanics (see Lichter, Parisi, and Taquino 2015).

Despite the broad similarities in the migration models between samples, one noteworthy difference is apparent. Namely, the estimates of the relationship between neighborhood racial composition and out-migration are substantially larger for Hispanics in the PSID than in the SIPP. This difference may well be attributable to random sampling error; however, it may also originate from a Hispanic sample in PSID that is more deeply rooted in American society, habituated to the U.S. racial order, and thus more responsive to changes in neighborhood racial composition. Consistent with this argument, the descriptive profile of Hispanics in PSID is less immigrant than those in SIPP (also see Duffy and Sastry 2012), likely due to the initial sample being drawn before mass immigration from Latin America. It is important to note that although our models—like virtually all prior work—rely on unweighted samples, applying provided adjustment weights only slightly narrows the descriptive gaps in nativity and region between the samples. Moreover, models based on weighted samples produce estimates in PSID that remain substantially larger than those in SIPP.

The large sample of SIPP respondents also gives us flexibility to explore the migration behaviors of Asian households, which have previously not been tested. Results from these models show consistently that Asian migration is indifferent to local racial composition, with estimates of the association between racial/ethnic group concentrations and out-migration that are precisely null. Given steady growth in Asian populations, and substantial heterogeneity in their socioeconomic profiles and settlement patterns, we encourage future research to further explore the residential choices and preferences of Asian households.

The implications of these findings are likely to extend beyond our focus on neighborhood out-migration to the broader body of research on neighborhood effects. Specifically, the close similarity in the estimates for white and black households serves as an important validation for the long-standing reliance on PSID for understanding the processes and consequences of neighborhood inequality. More broadly, this exercise highlights the continued salience of racial structures in shaping the migration decision making process and to the broader spatial foundations that shape inequality and mobility (see Galster and Sharkey 2017).

Notes

- 1 For comparisons of PSID and other surveys on measures of family income, see Gouskova et al. (2010); for consumer expenditures, see Andreski et al. (2014); for wealth and wealth inequality, see Pfeffer et al. (2016); and for health estimates, see Insolera and Freedman (2017).
- 2 The 2008 panel ran for 16 waves (5 years), which was longer than the originally planned 12 waves (4 years). Sample attrition at the end of wave 12 was about 43 percent.
- 3 All analyses in this article were run at the block-group and tract levels, and results are comparable. We chose to report the block-group estimates as these were slightly more precise than the tract estimates.
- 4 We classify observations as mobility if a respondent in SIPP was reported as "moving" out of sample but had missing a destination block-group code, under the assumption that these are interblock moves.
- 5 If two people are listed on the deed/mortgage or lease, the first person listed is identified as the householder.
- 6 The family income variable in PSID is the sum of three variables measuring taxable income, transfer income (excluding social security income), and social security income, for the household head and spouse and other family members. The SIPP family income variable covers the same broad categories as PSID for all members of the family, but with much more specificity, collecting data on personal earnings, property income, and other incomes, along with more than 30 variables for means-tested cash transfer income from various programs.
- 7 Unweighted SIPP counts are rounded per the Census Bureau's disclosure avoidance process.
- 8 Weighted estimates of all multivariate models comparing neighborhood race/ethnic context and out-migration across the two surveys were run and compared to the unweighted versions. Because we account for many demographic characteristics used in weighting in our models, the weighted estimates are comparable to the unweighted estimates for both surveys.
- 9 Statistics from surveys are subject to sampling and nonsampling error. For technical documentation and more information about SIPP data quality, please visit the SIPP website's Technical Documentation page.

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