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Abstract

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Disciplines

Finance and Financial Management

CONSPICUOUS CONSUMPTION AND RACE*

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Using nationally representative data on consumption, we show that Blacks and Hispanics devote larger shares of their expenditure bundles to visible goods (clothing, jewelry, and cars) than do comparable Whites. These differences exist among virtually all sub-populations, are relatively constant over time, and are economically large. While racial differences in utility preference parameters might account for a portion of these consumption differences, we emphasize instead a model of status seeking in which conspicuous consumption is used as a costly indicator of a household's economic position. Using merged data on race and state-level income, we demonstrate that a key prediction of the status-signaling model -- that visible consumption should be declining in reference group income -- is strongly borne out in the data for each racial group. Moreover, we show that accounting for differences in reference group income characteristics explains most of the racial difference in visible consumption.

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I. Introduction

In his famous study of consumption during the Gilded Age, Veblen (1899) argued that "Consumption is evidence of wealth, and thus becomes honorific, and …failure to consume a mark of demerit," dubbing consumption that aims to demonstrate one's economic position to observers "conspicuous consumption." [1] In this paper, we study households' consumption of items that are readily observable in anonymous social interactions, and that are portable across those interactions. We refer to these goods as "visible consumption." Prompted by both Veblen's insight that the consumption and display of these items communicates information about economic status, and the fact that few easily observable variables are as strongly correlated with economic status as is an individual's race, we investigate a series of questions about visible consumption and race.

A large body of anecdotal evidence suggests that Blacks devote a larger share of their overall expenditures to consumption items that are readily visible to observers than do otherwise similar Whites. Automobiles, clothing, and jewelry are examples of these forms of "visible" consumption. To date, however, there has been little formal economic analysis on the degree to which these racial differences in consumption patterns actually exist in the data, what accounts for them if they do, and what the consequences of any such differential expenditures might be.[2] We address these questions in this paper.

The first part of our paper documents differences by race in expenditures devoted to visible consumption items. Using data from the Consumer Expenditure Survey (CEX) from 1986-2002, we show that although, unconditionally, racial minorities and Whites spend approximately the same fraction of their expenditures on visible consumption, Blacks and

[1] In fact, pre-dating Veblen's analysis by a 140 years, Adam Smith argued that the desire for rank, and the display of wealth associated with it, is nearly a universal feature of human behavior (Smith [1759]).

[2] One exception is an early piece by Alexis (1970), who examined racial differences in consumption patterns between 1935 and 1960 using data from the Consumer Purchases Survey: 1935-1936 and early waves of the Federal Reserve's Survey of Consumer Finances. Similar to the findings we present below, Alexis found that Blacks were much more likely to spend on clothing (as a share of total expenditures) than similar Whites. Outside of economics, there is also limited work on the consumption patterns of Blacks. Examples include Mullins (1999), Lamont and Molnar (2001), and Chambers (2006).

Hispanics spend about 25 percent more on visible goods, after accounting for differences in permanent income. These expenditure differences are found for all sub-groups except older households. We find that these racial gaps have been relatively constant over the past seventeen years, and that spending on housing or differential treatment in the housing market cannot explain these patterns. Finally, the gaps are economically large: the absolute annual dollar differential for visible consumption is on the order of $1,900, which is a non-trivial quantity given Black and Hispanic average income.

Because of an inter-temporal budget constraint, spending devoted to visible consumption must be diverted from some alternative use. We show that the higher visible spending of racial minorities is drawn from both future consumption and all other categories of current consumption, with Blacks consuming less than Whites in essentially every other expenditure category (aside from housing) to maintain higher visible consumption.[3]

What theoretical explanation accounts for these facts? One argument is that racial differences in expenditures on visible items derive simply from racial differences in preferences - that minorities spend more on jewelry, cars, and apparel because they like these items more than Whites. This argument is consistent with the basic facts, but it essentially tautological. Moreover, an argument centered on racial differences in preferences yields no prediction that is falsifiable in the data. An alternative explanation assumes that utility functions are the same across races, but that some feature of the economic environment makes people from different races place different marginal valuations on visible consumption items. Apart from the fact that such an explanation does not simply assume that Blacks behave differently from Whites because they have different preferences, an argument of this form yields additional, empirically testable predictions beyond the basic facts described above that should hold *within* a racial group.

[3] As discussed below, housing may be considered a visible good. In fact, we do find that Blacks and Hispanics spend more on housing than do comparable Whites. Our results (in terms of dollar magnitudes) are slightly stronger if we include housing as a component of visible consumption. However, given the large literature on racial differences in housing (which can explain housing expenditure differences), we err on the side of caution by excluding housing from our base measure of visible goods.

Our alternative explanation borrows from the extensive theoretical literature on the demand for social status. According to the signaling version of this literature, individuals derive utility from status, which depends on others' beliefs about their income (Ireland 1994; Glazer and Konrad 1995; Bagwell and Bernheim 1996). While income (or wealth) is not observed, visible consumption is. The level of an individual's conspicuous consumption can be expected to depend on the income distribution from which his income is drawn – his reference group. In particular, to the extent that visible consumption signals useful information about unobserved income, visible consumption should rise in own income, and, to the extent being associated with a poorer reference group has negative informational consequences, visible consumption should fall in the income of the reference group. Applying these insights, we argue that a status-signaling model will predict racial differences in visible consumption even if there are no racial differences in preferences. Since Whites and racial minorities belong to reference groups with different income distributions, persons with similar incomes will face different incentives to signal by consuming visibly. Importantly, if status-signaling is indeed a determinant of visible consumption, the predictions about the negative relationship between visible expenditures and higher average reference group income should apply not only *across* races but also *within* any given race in communities with different average incomes.

To assess empirical support for the status-signaling argument, we combine data about expenditures from the CEX with income data from the Current Population Survey (CPS). We define an individual's reference group as persons of the individual's race living in his state. Strikingly, we find that, consistent with the status argument, there is a strong negative association between visible spending and the mean income of one's reference group *within* races. That is, analysis performed on a sample of White households finds the same pattern as separate analyses conducted for racial minorities: increases in mean income of one's own race in the state are associated with reduced visible spending, holding one's own income constant. As a falsification test of the status and reference group conjecture, we relate household visible spending to mean

incomes of *other* groups in the state and find either no effect or very modest positive effects. Additionally, we relate household *non-visible* spending to reference average income and find no systematic relationship. The results for average reference group income remain qualitatively the same if we simultaneously control for the dispersion of reference group income, which theory suggests should also affect visible spending, although the predicted effect is ambiguous.

We next turn to the question: Do differences in reference group income explain the racial expenditure gaps that are our main focus? In a series of regressions, we show that accounting for the mean (and to a smaller degree the dispersion) of income in a household's race/state reference group explains most of the racial gap in visible spending. This conclusion is robust to a variety of alternative sample modification and specification tests. Importantly, it is also robust to the addition of state fixed effects, which account for regional differences across all groups in the propensity to visibly consume.

On the whole, the paper's results point to an important role for consumption items, apart from their direct consumption value. Although this exhibitionistic motivation has long been discussed in economics, we are aware of very little formal evidence on the question, especially in terms of the racial differences that are our focus.[4] Over the last decade, economists and sociologists have provided considerable empirical support for the notion that individuals care about their relative position in their community, often using evidence about subjective well being.[5] Our work complements this literature in that we are able to link consumption patterns to social concerns by analyzing economic behavior directly. Perhaps more importantly, our specific focus on racial differences in consumption and our results about the potential role played by the use and display of visible items suggest that a deeper understanding of the racial gaps in wealth, savings, and consumption that have long bedeviled economists and others will require further exploration of the issues raised in this paper.

[4] Notable recent exceptions include Ravina (2005) and Kapteyn et al. (2006).
[5] Recent examples include Luttmer (2005), Clark and Oswald (1996), McBride (2001), and Dynan and Ravina (2007). See also the survey by Kahneman and Krueger (2006) and references therein.

II. Data

Our primary source of data for studying racial differences in consumption patterns comes from the 1986–2002 CEX, collected by the United States Department of Labor. The CEX is an on-going rotating panel dataset, in which participating households are interviewed up to five times at three-month intervals. In any given calendar quarter there are approximately 5,000 households in the survey, with some households entering the survey and others exiting. The initial interview collects household demographic information, which is updated during subsequent interviews to reflect any changes in household composition. Information on income during the previous twelve months is collected during the second and fifth interviews. Additionally, the second through fifth interviews each collects detailed household expenditure information for the three calendar months immediately preceding the interview.

Like previous users of CEX data, we aggregate to the consumption categories proposed by Harris and Sabelhaus (2000). We use the CEX family-level extracts made available by the National Bureau of Economic Research (NBER).[6] Appendix Table A.1 lists the fifteen broad consumption categories used in the paper and their relationship to the 47 categories in the Sabelhaus and Harris files. All data are deflated to 2005 dollars using the June CPI-U.

Our primary analysis sample consists of a total of 49,363 households, with heads-of-household between 18 and 49 years old.[7] There are 37,289 White households, 6,766 Black households, and 5,308 Hispanic households. To mitigate the effects of measurement error in the expenditure categories, the unit of analysis is the *average* quarterly expenditure in a consumption category over the period that the household is in the sample. Descriptive statistics for the sample, by race, are provided in Table 1.

[6] The Data Appendix discusses in detail the NBER CEX family extracts, the details of our sample selection criteria, and the 47 specific expenditure categories included in the Sabelhaus and Harris consumption classification.

[7] In some specifications, we explore the robustness of our results by examining the consumption patterns of older households and the sensitivity of our results to excluding younger households.

Our focus in this paper is on visible consumption expenditures – items for which spending is readily *observable* and highly *portable* across a variety of interactions, including anonymous ones. Also, we want to identify goods with the characteristic that individuals who consume more of them are believed to be of better economic circumstances, on average, than individuals who consume less of such goods. Simple introspection suggests what these items are likely to be, but rather than simply asserting what those items are, we conduct an anonymous online survey of 320 students at the University of Chicago's Harris School and Graduate School of Business. After providing basic demographic information, respondents were asked how close their interaction with someone would have to be in order to ascertain whether that person's spending on various expenditure categories was above average. The details of our survey and a discussion of its results can be found on the online Robustness Appendix to this paper posted on the QJE web site. Consistent with both common sense and the results of our survey, our analysis treats visible consumption as expenditures on apparel (including accessories such as jewelry), personal care, and vehicles (excluding maintenance).

Note that one especially important item is housing. Our survey evidence suggests that housing is both reasonably observable and that it is perceived to have high income elasticity. Our concern is that racial differences in housing expenditures might derive from differential treatment in the housing market – a phenomenon that has been the focus of a large literature.[8] Differential treatment in the housing market could, by itself, cause minorities to have very different housing expenditures than Whites, even absent conspicuous or exhibitionistic considerations. Previewing our later results, we find that minorities spend more on housing than do comparable Whites, implying that if housing expenditures were lumped together with other visible spending the overall estimated difference in visible expenditures we estimate would be

[8] There is evidence that minorities face significantly higher rejection rates for mortgages, which serves to limit their access to owner-occupied housing (see Munnell et al. [1996] and Charles and Hurst [2002]). Moral hazard considerations cause rental prices to exceed the flow cost from owning an otherwise identical unit, so households who rent will pay more for housing services, all else equal, than those who own.

slightly larger. However, given the concerns about differential treatment in the housing market, we adopt the conservative policy of excluding housing from the measure of total spending in most of our main results. For the most part, we always treat housing separately, except for some robustness specifications in which we assess how the results are affected when housing expenditures are lumped in with overall visible spending.

Appendix Table A.2 summarizes expenditures in our CEX sample on visible and other goods. Overall, visible consumption expenditures comprise roughly 12 percent of household total expenditures, while spending on food and shelter represent roughly 20 percent and 25 percent, respectively, of total expenditures. The table shows that some CEX households spend nothing on some expenditure categories over their time in the survey. Thus, whereas nearly all households spend on food, housing, entertainment services, and visible goods, 57 percent of households spent nothing on education, and around 20 percent spent nothing on alcohol and tobacco.[9]

III. Racial Differences in Conspicuous Consumption

Standard consumption theory suggests that total household expenditures should be related to the household's permanent income (Modigliani and Brumberg 1954; Friedman 1957): households with lower permanent incomes should consume less, all else equal. Likewise, differences in family size should also affect household consumption. To explore racial differences in visible expenditures in our CEX sample, the regression one would want to estimate is:

$$(1) \qquad \ln(visible_i) = \beta_0 + \beta_1 Black_i + \beta_2 Hispanic_i + \varphi\left(Permanent\ Income\right)_i + \theta X_i + \eta_i,$$

where $Black_i$ and $Hispanic_i$ are indicator variables denoting whether a household head is Black or Hispanic, respectively; $Permanent\ Income$ is the household's permanent income, and X_i is a

[9] One thing to note from Appendix Table A.2 is that the share of visible expenditures out of total expenditures is constant across races at 12 percent. These statistics do not imply that the consumption of visible goods is constant across races. The reason is that visible goods are luxuries (i.e., estimated slopes of within-race Engel curves are much larger than one). Given that Whites, on average, are much richer than Blacks and Hispanics, the Engel curves would predict that Whites should allocate a much bigger share of their expenditures to visible goods. In the section that follows, we estimate all differences in visible spending by race conditioning on household income.

vector of controls designed to measure differences in age, family structure, and other demographic variables across households. This vector consists of a quadratic in the age of the household head, household wealth controls, year effects, and indicator variables for the number of adults in the household, the number of total family members in the household, marital status, whether the household head is male, urbanicity, MSA residence, and Census region.[10]

In order to estimate (1), one needs a good measure of household permanent income. The CEX asks households to report their various sources of income as household enter the survey. Many authors have shown that the CEX income data are of poor quality – something we find as well. As Table I shows, total family income, defined to include labor assets and transfer income, is missing for 27 percent of the sample. The CEX does not attempt to impute the missing income data. More importantly, Table I also shows that for those reporting positive income, White households have 67 percent higher total income than Black households and 61 percent higher total income than Hispanic households. These numbers are not consistent with those from other micro data sources designed to measure labor income. For example, using data from the Current Population Survey (CPS) for a similar time period and making similar sample restrictions, the comparable racial differences in total family income are 51 and 37 percent, respectively. Since the CEX's income measures are not of especially high quality – particularly along racial dimensions – they are unlikely to accurately reflect racial differences in household permanent income needed for estimation of (1).

Theory suggests a solution to the problem of poor quality CEX income data. Notice that the Permanent Income Hypothesis implies that total expenditure is an especially good proxy for a household's permanent income. Fortunately, CEX expenditure data are of much higher quality than its income data. The racial differences in total expenditures from the CEX line up nearly exactly with the racial differences in total family income from the CPS. Specifically, as seen in

[10] For household wealth, we use the log of liquid assets if liquid assets are positive and a dummy for whether the household has positive liquid assets as controls. Liquid assets are defined as checking, saving, stock, and bond holdings.

Table 1, Whites consume 50 percent more and 38 percent more than Blacks and Hispanics, respectively.

However, proxying for permanent income with the log of total expenditures in (1) raises two problems. First, since expenditure components are jointly determined in models of lifecycle consumption, total expenditures are endogenous in an equation for any *particular* component of expenditures such as visible expenditures. Second, there is the purely statistical concern that measurement error in the components of consumption will be related to measurement error in total expenditures.

Given these problems, in our CEX sample we estimate

$$(2) \quad \ln(visible_i) = \beta_0 + \beta_1 Black_i + \beta_2 Hispanic_i + \varphi \ln\left(Total\ Expenditure\right)_i + \theta X_i + \eta_i$$

and instrument for the log of total expenditures using the vector of current and permanent income controls, $Income_i$. This vector consists of an indicator variable for whether current income is non-missing, the log of current income if non-missing, a cubic in the level of current income, three indicator variables for education, and a series of one-digit industry and occupation codes. Reassuringly, our CEX results are very robust to alternative instrument sets in (2), and in each case the F-stats on the instrument set are so large as to render irrelevant any "weak-instrument" concerns.

Table II shows the results of our estimation. When we estimate (2) with only the race dummies and no other controls, Blacks and Hispanics are found to spend less on visible items than comparable Whites, by 38 and 24 percent, respectively (row 1). These results simply reflect the unconditional means of visible expenditures, by race, reported in the first row of Appendix Table A.2. As we show below, spending on visible goods increases with income, and Blacks and Hispanics have much lower incomes than do Whites.

The regressions in rows (2)-(4) of Table II control for permanent income in various ways. The specification in row (2) simply adds the vector $Income_i$. As expected, the addition of these

income controls (whose limitation as a measure of permanent income we have already discussed) increases both the Black and White visible expenditure differences relative to the results shown in row (1). In row (3), we add the log of total expenditures rather than $Income_i$. Once this arguably better proxy for permanent income is added to the regression, we find that Blacks and Hispanics consume 31 percent and 26 percent more visible goods than Whites with similar permanent income. Next, given the concerns outlined above about using total expenditures as a control in a regression for a specific component of expenditures, we instrument the log of total expenditures with the vector $Income_i$ in row (4). The results in row (4) are similar to those in row (3). Specifically, we find that Blacks and Hispanics spend 22 and 19 percent more, respectively, on visible goods than White households with similar permanent income.

In rows (5)-(6) of the table we add a full set of time and demographic controls to the specification. These rows show that the addition of time and demographic controls does not appreciably change the estimated racial differences in visible spending. In our preferred estimate (row (6) of Table II), Blacks and Hispanics spend 26 percent and 23 percent more, respectively, on visible goods than do otherwise similar Whites.[11]

Although to conserve space we do not report point estimates for the non-race coefficients, two results are worth noting. First, the propensity to purchase visible goods declines sharply with age for all races. Second, we find that visible goods are luxury goods. Specifically, the estimated coefficient on the log of total expenditures from the regression shown in row (6) of Table II is 1.5 (standard error = 0.03), implying that a 1 percent increase in total expenditures results in a 1.5 percent increase in visible expenditures. The luxury property of visible goods suggests why it is essential to control for permanent income when measuring racial differences in visible good expenditures. It also explains why there is no *unconditional* racial difference in the share of

[11] All of our results are robust to controlling for nonlinear measures of total expenditures. For example, if we re-estimate the specification shown in row (6) of Table II including both the log of total expenditures and the square of the log of total expenditures, the estimated coefficients on the Black and Hispanic indicator variables remain essentially unchanged at 0.27 and 0.24, respectively.

spending devoted to visible goods: Blacks spend more than Whites on visible goods at every level of permanent income, but in unconditional comparisons this is obscured by the fact that Whites, with their higher incomes, consume more of these luxury goods.

The racial difference in visible expenditures is large in absolute dollars. Appendix Table A.2 shows that, on average, Whites spend about $7,160 on visible items *per year*. The finding that Blacks and Hispanics spend 26 percent more than comparable Whites on visible goods therefore implies that Blacks and Hispanics spend, on average, roughly $1,900 per year more on visible goods than their White counterparts. Since the CEX under-reports total household consumption relative to data from the National Income and Product Accounts, this estimate is likely a lower bound. To put these magnitudes in perspective, data from the March CPS shows that, for the 1990-2002 period, Black and Hispanic households had average incomes, respectively, of $42,500 and $48,300 in 2005 dollars. Outlays on visible goods thus represent a substantial fraction of the overall budget of minorities.

Figure I plots the estimated non-linear visible expenditures Engel curves for Blacks and Whites separately. To generate the Engel curves, we regress log visible expenditures on log total expenditures and log total expenditures squared, separately for Blacks and Whites. As above, we instrument log total expenditures and log total expenditures squared with the vector *Income*. The figure shows that for both Blacks and Whites, on average, visible expenditures are luxury goods. Also, at every level of log total expenditures Blacks spend more on visible goods then their White counterparts.[12] Notice further that the two Engle curves are parallel over most of the total expenditures range, mitigating concerns that the main results derive in some way from a fundamental difference in the shapes of these relationships across race.

[12] One may ask whether there are differences in "price" effects that cause Blacks to spend more on visible goods than comparable Whites. For example, if Blacks were discriminated against in the market for visible goods, Blacks with a given income would pay more for those items than comparable Whites. General discrimination cannot explain the results in Table II, which control for total expenditures directly. As a result, the correct interpretation of our results should lead to the question of why Blacks and Hispanics allocate a greater share of their expenditures to visible goods. There is no evidence that, relative to other goods, Blacks and Hispanics pay higher prices for clothing, jewelry, and personal care items than similar Whites.

The finding that racial minorities exhibit a greater propensity to consume visible goods is robust to a variety of alternative specifications and restrictions, including restricting the sample to households with positive current income, excluding households with less than $23,200 a year in total expenditures (the 25th percentile of the expenditure distribution), excluding households under the age of 24, varying the specific components of the instrument set $Income_i$, including log expenditures on housing as an additional control, and restricting the sample to include only those who completed all four CEX surveys.

Additionally, the racial differences in visible spending are found in all sub-groups in our sample. For example, single Black men, single Black women, and married Black households consume 32 percent more, 28 percent more, and 22 percent more than their respective White counterparts. The racial differences in visible spending are statistically larger among single men than is the substantial gap among married households. Similar patterns are found among Hispanics. We find racial differences in visible spending within all education groups, and the gap for those with only a high school education (-0.30) is not statistically different from the gaps for those with at least a college degree (-0.23). The racial visible spending difference *does* diminish sharply with age. Among households aged 18-34 the Black-White conditional gap in visible spending is 30 percent, which declines to 23 percent for households aged 35-49, and declines further to only 15 percent for households aged 50-69.[13]

Table III presents estimated race differences for the separate components of visible consumption, namely, vehicles, clothing, and personal care, in the CEX. Panel A presents results for the full sample, while Panel B presents results for the sample of households that own a vehicle. In both samples, Blacks and Hispanics spend significantly more on both personal care and clothing and jewelry than comparable Whites. For vehicle spending the results are more nuanced. In the overall sample, both Blacks and Hispanics spend less on cars than do Whites.

[13] The online Robustness Appendix presents results for various alternative specifications and sub-samples.

Among vehicle owners, however, Blacks in the CEX spend around 12 percent *more* on vehicles than comparable Whites. The fact that Blacks and Hispanics, all else equal, are less likely to own vehicles explains why the racial difference in vehicle spending is not found for the full sample. The lower vehicle ownership among Blacks and Hispanics is likely the result of two factors: the fact that Blacks and Hispanics are more likely to live in city centers and, as a result, have lower vehicle needs, and the fact that liquidity constraints may prevent Blacks and Hispanics from making a sufficient down payment to purchase a vehicle.

If minority households spend more on visible goods than White households with the same permanent income and demographics, on what expenditures are they spending less? The inter-temporal budget constraint implies that the observed higher spending on conspicuous goods must come either from another component of current consumption and/or from future consumption (i.e., current savings). Table IV looks at the conditional differences in spending on other consumption categories. Along with visible consumption, these consumption categories comprise the universe of consumption expenditures in the CEX and are described in Appendix Table A.1. The coefficients in Table IV come from a regression identical to that reported in row (6) of Table II, except that the dependent variable is now the log of the particular consumption category and Tobit models are estimated for categories with a high incidence of zero expenditure.

The first striking fact from Table IV is that there is no evidence that Blacks and Hispanic allocate a higher percentage of their spending than Whites to *any* consumption category other than visible goods and housing. In fact, aside from utilities, Blacks spend less than similar Whites on *all* other consumption categories. Some of the differences are small, such as the very small differences between Blacks and Whites in food expenditures. However, Blacks spend 16 percent less on education, approximately 29 percent less on entertainment, and 50 percent less on health. Similar patterns emerge for Hispanics.

Both Blacks and Hispanics spend slightly more on housing expenditures for housing and utilities than their White counterparts, while at the same time spending much less on home

furnishings. As we have noted, housing may itself be a visible good, which would explain why it is associated with similar expenditure patterns to those for jewelry, clothing, and vehicles. However, as discussed above, it is also possible that there may be discrimination against racial minorities in the housing market. To provide conservative estimates of conspicuous spending differences, we exclude housing from our measure of visible goods.

To confirm the patterns depicted above about racial consumption differences, we also estimate a variety of models using the data from the Panel Study of Income Dynamics (PSID). This exercise is important partly to establish whether our main results are found in another nationally representative data source with information on consumption. Moreover, as noted previously, although the CEX is the primary source of data on consumption expenditures in the U.S., and thus serves as our main data source, it is not designed to measure household income. By contrast, the PSID provides excellent measures of household income over multiple years, so it is possible to carefully control for permanent income in our regressions. The limitation of the PSID is that, until recently, it only contained limited measures of household consumption. Starting in 2005, the survey added an expanded set of expenditure questions, including some questions about the visible items we study. Currently, these measures are available for only the 2005 wave.

Using data from the 2005 PSID we can examine racial differences in consumption patterns for these limited set of categories using a different measure of permanent income. These estimates can then be compared to those from the CEX, where permanent income is proxied by total expenditures. We restrict the 2005 wave of the PSID to meet the same age and other restrictions used for the CEX sample.[14] We estimate versions of (1) using the log of clothing expenditures as the dependent variable. Our proxy for the household's permanent income is the

[14] Full sample selection and other details about the PSID sample are provided in the online Robustness Appendix. We also discuss additional visible expenditures results from the PSID data beyond the estimates of cross-race differences given here. We also present results about the distribution of retail establishments by the racial makeup of the zip code with data from the County Business patterns. This evidence is only suggestive, but it does show a higher incidence of business devoted to selling visible items like clothing in zip codes with higher numbers of racial minorities.

average of total annual family income between 1999 and 2005 for the years that the household was in the sample.

Table V presents the results for the measures available in the PSID. Row (1) presents the estimated racial difference in clothing expenditures when no controls are added to regression (1). As in the CEX, lower overall income among Blacks means that they tend to spend less on clothing than do Whites, on average. The specification in row (2) controls for permanent income and for the full set of demographic controls used in earlier regressions. The results for clothing are similar to the preferred CEX estimates: Blacks in the PSID spend 24 percent more on clothing than do comparable Whites. Row (3) presents results for the price of new car purchases – the only other visible spending we can sharply identify in the 2005 PSID data. The estimate suggests that Blacks bought cars that were 12 percent more expensive than did similar Whites. Perhaps because of the small sample size, the effect is not statistically significant at conventional levels, but it is reassuringly similar to the corresponding estimate from the CEX data. Similarly reassuring are the other PSID estimates in the table, which indicate that, as in the CEX, Blacks in the PSID spend *less* than similar Whites on food (row 4), entertainment (row 5), and other transportation (row 6).

The fact that the PSID estimates, which control directly for permanent income using high quality panel data on income, correspond well with our preferred CEX estimates suggests that the approach of using total expenditures as a proxy for permanent income and then instrumenting it using available income measures captures variation in permanent income quite well. Indeed, as seen in Figure II, the distributions, by race, of total expenditures from the CEX are remarkably similar to the distributions of household permanent income, by race, in the PSID.

In summary, we find that Blacks and Hispanics spend roughly 30 percent more on visible expenditures (cars, clothing, jewelry, and personal care items) than do otherwise similar Whites. These patterns are similar across all sub-groups of the population (with the notable exception that the differential racial propensity to consume visibly declines sharply with age), across the two

nationally representative surveys in which this can be studied, and with different methods of controlling for household permanent income. Strikingly, while minority households consume more visible goods than comparable Whites, they consume less than or the same amount as Whites of all other consumption categories aside from housing.

IV. Status and Conspicuous Consumption

What explains these differences in visible spending? Racial differences across dimensions as diverse as cuisine, music, and popular entertainment suggest that the consumption patterns above could derive, in part, from differences in tastes. We eschew this essentially tautological explanation, however, and investigate instead whether racial consumption differences can be reconciled within a framework in which no racial preference differences are assumed. We draw on insights from the literature spawned by the seminal work of Veblen (1899) and Smith (1759), which centers on the idea that individuals care about their status – the economic position that others ascribe to them. In this framework, conspicuous consumption is a form of signaling in the sense demonstrated by Spence (1973). We briefly outline a signaling model of visible consumption, and discuss its testable implications.[15]

Consider an economy in which individuals belonging to group k have incomes y_i^k drawn from a known distribution with density $f_k(y)$ and support on the interval $\left[y_{\min}^k, y_{\max}^k\right]$. Income is not publicly observed, and is used to finance consumption of two goods: c, which is observed by outsiders, and $(y-c)$, which is not. Each agent has the same utility, given by:

$$v\left(y_i^k - c_i^k\right) + u\left(c_i^k\right) + w\left(s_i^k\right), \tag{3}$$

[15] Other formulations of a person's utility from visible goods are determined by how personal consumption of the good compares to the average consumption or income in some reference group. See Deusenberry (1949) for an important early treatment. The NBER working paper version of our paper outlines a model of this form. The main predictions discussed in this section about how the mean income of one's reference group affects visible spending can also be derived within this alternate class of models.

where u, v, and w are each concave and twice continuously differentiable. In (3), status, s_i^k, reflects society's inference about $i's$ income based on things observed about the person. It follows that $s_i^k = E\left[y_i^k \mid c_i^{k*}, k \right]$, where c_i^{k*} is $i's$ equilibrium visible consumption, and k is his group. In the separating equilibrium of this model, each agent chooses consumption so as to maximize (3) subject to his budget set, and society's beliefs about income are correct for each individual, that is, $s_i\left(c_i^{k*}\left(y_i^k\right)\right) = y_i^k$. Recent theoretical work studies models of this form, formally characterizing the equilibrium and key comparative statics.[16] We summarize and provide some intuition for these results.

Equilibrium spending on conspicuous goods, c_i^{k*}, is strictly increasing in y_i. The relationship is concave if utility from status is sufficiently more concave than that for the two other components of utility. Otherwise, visible spending rises with income in a convex fashion. Importantly, since the income of the poorest person in a group is correctly assessed, in equilibrium this person has no incentive to engage in greater consumption of the visible good than would be true if there were no signaling motive whatsoever.

What does the theory say about the relationship between c_i^{k*} and changes (or differences) in the income distribution of a group in the perfectly revealing equilibrium? There are two results. The first is that as the *dispersion* of a group's income distribution increases, the effect on average conspicuous spending in the group is theoretically ambiguous. The intuition for the ambiguous result is as follows. Suppose that there is a redistribution in which income is transferred from A to a richer person B and group income dispersion increases. Since c_i^* is strictly increasing in y_i, conspicuous spending will decrease for A and increase for B.

[16] See Mailath (1987), Ireland (1994), and especially Glazer and Konrad (1996) for formal treatments of models of this form. Our framework borrows most from the work of Glazer and Konrad (1996), who study the signaling value of observable charitable donations rather than consumption. Otherwise, our framework is virtually identical to theirs. See their paper for a formal derivation of the predictions discussed here.

However, since the relationship between c_i^* and y_i may be either concave or convex, the relative magnitude of the (absolute value of the) decrease in visible spending for A and the increase in visible spending for B is ambiguous.[17]

The other result about the distribution of group income is unambiguous: if poorer persons are added to a group so that the support of the group's income distribution becomes $\left[y_{\min} - \theta, y_{\max} \right]$ with $\theta > 0$, and *average* group income falls, then conspicuous spending *rises* at every level of income. The intuition is that as poorer people are added to a population, persons of every level of income must now signal more to distinguish themselves from those immediately poorer than them, since those people are themselves now compelled to spend more to distinguish themselves from persons who are even poorer still.

The framework outlined above is quite general. Depending on the situation, different types of expenditures may be visible to observers. More importantly, the reference groups *k* represent, in theory, *any* type of grouping into which a population can be sorted. Depending on the situation, observers will know more or less about the distribution from which other individuals' un-observed income is drawn. In other words, the particular reference group k that is used to draw inferences about individual income will vary from one context to another. The key prediction is that information about one's reference group influences observers' inferences about one's income, and thus interacts with the optimal choice of signaling expenditures.

The patterns in Figure II showing that Blacks have a much lower permanent income, on average, than Whites suggest that the higher relative visible spending of Blacks is consistent with the main prediction of a status model if race is the only exogenous observable characteristic that helps one infer an individual's socioeconomic position. But, even in a random anonymous

[17] It has also been shown that equilibrium conspicuous signaling is invariant to a *replication* of the distribution of income. That is, conspicuous signaling should be unaffected by differences in the *size* of groups, all else equal. See Glazer and Konrad (1996).

situation, an observer of a Black (White) person will typically know more about the person's income than that it is drawn from the national income distribution of Blacks (Whites). At a minimum, the observer knows that the person's income is likely drawn from the Black (White) income distribution in the state where the person resides.[18] If *k* is taken to represent different race/state cells, several interesting testable predictions from the status-signaling model follow.

First, differential visible spending should be observed not only *across* races based on the mean and dispersion of racial incomes, but also among persons *of the same race* in different states. Further, the overall income distribution in different states should not determine visible spending for a given race; only the income distributions of people in the state of a person's own race should matter. Finally, if visible spending is truly driven by status-seeking behavior, the estimated racial differences in visible spending shown in the previous section would be eliminated, or at least substantially reduced, if controls for the mean and dispersion of the person's race/state cell were added to the regressions. We analyze these implications below.[19]

V. Empirical Tests of Conspicuous Consumption Model

5.A. Explaining Within-Race Conspicuous Consumption Differences

Before conducting separate within-race analyses of conspicuous spending behavior, we explore whether there is evidence to support the idea that persons of a given level of income, and belonging to a particular race/state cell, spend more on visible goods than do similar persons belonging to race/state cells with higher average income. Using the same CEX sample described

[18] In fact, observers likely have more detailed spatial information than a person's state. We define reference groups with respect to state because the state is the lowest level of spatial aggregation available in our CEX data. In the Robustness Appendix, we use the PSID data to explore the sensitivity of our empirical results to the use of finer levels of spatial aggregation.

[19] The signaling interpretation for conspicuous spending may also account for the fact that conspicuous consumption differences decline with age, as shown in Section III. Younger persons, given their greater involvement in marriage and other social markets as they search for spouses and friends, are likely more concerned than their older counterparts about outsiders' assessments of their wealth and should be more likely to conspicuously consume as a result.

above, we estimate the following regression of the total visible spending of an individual *i* of race *r* living in state *s*: [20]

$$\ln(visible_{isr}) = \beta_0 + \delta_{sr}\left(\Gamma_s * \Gamma_r\right) + \varphi \log(Total\ Expenditure_i) + \theta X_i + \eta_i, \quad (4)$$

where Γ_s and Γ_r are vectors of state and race effects, respectively; and where, as in previous regressions, log total expenditures proxies for permanent income and is instrumented for with the vector *Income (described above)*. Figure III plots the estimated effects δ_{sr} against the mean level of income for the particular race/state cell as estimated in the Current Population Survey. We use data from the 1990 through the 2002 March Current Population Surveys (CPS) to compute the mean labor income of White males by state.[21] To be consistent with our CEX sample, we restrict the CPS sample to only include individuals between the ages of 18 and 49 (inclusive).

Two results are striking in Figure III. First, there is a negative and strongly statistically significant relationship between the mean income of a race/state cell and average spending on visible items among persons in that cell, relative to similar persons belonging to other race/state groupings. This result, estimated across all race/state cells, is consistent with the prediction of the status-seeking model. Notice also that the distribution of visible expenditures for different race/age cells supports the cross-race evidence presented earlier: Black race/state cells have lower permanent incomes and higher visible spending, White race/state cells have substantially higher permanent incomes and lower visible spending, and Hispanic race/state cells are, on average, between those for Blacks and Whites on both dimensions.

[20] Otherwise, the controls are identical to those used in row (6) of Table II, and the sample restrictions are the same as discussed above.

[21] The labor income of adult men of a person's state/race cell is our main measure of average reference group income. We also tried several alternative measures for reference group income, including total family income and total family labor of all persons of the individual's race/state cell. In all that follows, the results are essentially unchanged under these alternative income specifications. We use the CPS to estimate our measure of the mean income of the reference group within each state as opposed to the CEX data because of both the large sample sizes available in the CPS and the better quality income data.

What is the evidence about visible spending for people of the same race? To answer this question we estimate *separately for each race* the regression given by

$$\ln(visible_{ik}) = \beta_0 + \delta_1\left(\mu_k^y\right) + \delta_2\left(D_k^y\right) + \varphi Expenditure_i + \theta X_i + \eta_i, \quad (5)$$

where *k* is a race/state cell for the particular race, and μ_k^y and D_k^y are, respectively, the (log of) the mean and dispersion of income for persons in the race/state cell. As before, we instrument for $Expenditure_i$ using the vector $Income_i$. Henceforth, we measure the dispersion of income in a race/state by the coefficient of variation—a dimensionless measure of dispersion. As noted previously, mean and dispersion are estimated from CPS income.

Table VI presents results for Whites in the CEX. Column (1) of Table VI shows that the base estimate of δ_1 is a strongly statistically significant -0.60. This implies that doubling mean state income of Whites reduces visible expenditures of Whites by 60 percent, all else equal. The specification in the second column adds the coefficient of variation. In this regression, we continue to find that average income of Whites in a White household's state is associated with lower visible spending, all else equal. Indeed, the point estimate on mean reference group income is larger than the specification in column (1). These basic results for average reference group income in columns (1) and (2) are strongly consistent with the main prediction of the status-signaling model. Higher dispersion in reference group income is shown to lower White visible spending, with an effect that is strongly statistically significant in column (2). As discussed above, the theory is ambiguous about the sign of the effect of reference group income dispersion on visible spending.

A potential concern about the results in the first two columns is that there may be some factor correlated with average state income that mechanically causes reduced spending on visible goods. Differences across states in housing prices represent one such factor. Consider a state where the price of housing is high, all else equal. Individuals with a given level of income in that state will spend more for the same amount of housing, and less on other consumption items

including perhaps visible items. To account for this, we control directly for the individual's log housing expenditures in our estimation of (5). Given the endogeneity of individuals' expenditures on housing with respect to their total and visible expenditure decisions, we instrument individual housing expenditures with the mean value of house prices in the household's state of residence.[22] We compute the mean value of house prices using data from the 1990 and 2000 U.S. Census. For households in the CEX from 1986-1994, we use the 1990 Census average state house price; for CEX households from 1995-2002, we use the 2000 Census average state house price.[23]

Column (3) of Table VI shows the results from including log individual housing prices (instrumented with state housing prices) as an additional control. We find that controlling for individual housing expenditures reduces slightly the estimated effect of both the mean and dispersion of reference group income on Whites' visible spending. Both effects, however, remain significant after controlling for housing expenses.

Apart from concerns about state-level differences in housing costs, there is a possibility that a state's level of income might be related to the menu of prices its residents pay for different consumption items. For example, the generosity of transfer or insurance programs might vary with a state's average level of income. If so, Whites with the same level of income in different states would effectively pay different prices for and consume different amounts of various consumption items in the different states. In particular, we would expect to find a negative pattern between state income and levels of expenditure for other items.

The specifications in columns (4) and (5) are identical to those in column (3), except the outcome variables are, in turn, the log of food expenditures and the log of all expenditures minus reported visible and housing expenditures. In stark contrast to the results for visible goods, we

[22] The first-stage relationship between housing expenditures and state housing prices is very strong, with F-stats on the excluded instruments well in excess of 50.
[23] The ordinal relationship across states in average housing prices is so strong that it does not matter if instead we used only the 1990 house price or only the 2000 price.

find no evidence of a negative relationship between higher average reference group income and these expenditures among Whites. Indeed, food expenditures *increase* with state income for Whites. For total non-visible expenditures, we find no evidence of any systematic relationship between Whites' propensity to spend on these items across states and mean levels of White incomes in the state. Overall, for Whites, the sharp negative relationship between visible expenditures and mean reference group income does not exist for other categories of expenditures. These results provide strong support for the main unambiguous prediction of the status-signaling model that visible spending is negatively related to the economic status of the reference group from which a person's income is drawn, all else equal.

Table VII presents within-race estimates for a pooled sample of Blacks and Hispanics. We pool together Blacks and Hispanics to increase the sample size for our estimation. However, aside from larger standard errors, the point estimates in the pooled regression are similar to the point estimates we get if we restrict the sample to include only Blacks or only Hispanics. The measure of μ_k^y used for the results in Table VII is the mean income of either Black men in the state if the household head is Black, or the mean income of Hispanic men in the state if the household head is Hispanic. The results indicate that among racial minorities, visible spending is lower the higher the mean income of racial minorities in the state. The point estimate indicates that a doubling of the average of minority incomes lowers minority visible spending by 44 percent, all else equal.

In the second column we add the dispersion of reference group income to the regression. The estimated effect of μ_k^y in this regression is still strongly negative. Interestingly, unlike the White regressions, we find that greater dispersion of reference group income is associated with lower visible spending for minorities. Although we have stressed a reluctance to rely on racial preference differences to explain our results, recall that the sign of the dispersion has been shown theoretically to depend crucially upon the relative curvatures of the different components of the

utility function. We cannot reject the possibility that this curvature might differ across races, which would explain the difference in the income dispersion results.

We control for the log of individual housing expenditures – instrumented with mean state housing prices - in column (3) of Table VII, and find that the estimated effect of both the mean and dispersion of reference group income remains essentially unchanged. In column (4) of Table VII, we include the mean income of all men in the state as an additional regressor. Strikingly, we continue to find that Blacks and Hispanics have lower visible expenditures when the mean income of their race-based reference group is higher. However, if the mean income of all men in the state increases, holding the mean income of men from the person's own race constant, visible expenditures increase.

The final two columns of the table repeat the exercise conducted earlier for Whites: we estimate the same regression as in column (3), but now with food expenditures and all non-visible plus housing spending as the outcomes. The results are very similar to those for Whites. There is some evidence that food spending varies positively with average reference group income; but for total non-visible spending, the very small point estimates indicate that the qualitative impact of higher mean reference group incomes of expenditures is zero.

Overall, the within-race results are strongly consistent with the status-signaling model outlined above. If the mean income of a person's own race/state cell increases, the person spends less on visible expenditures, all else equal. This fact is found among Whites, Blacks, and Hispanics, and persists even after controlling for differences in housing expenditures across states.

V.B. Explaining Racial Differences in Visible Expenditures

We analyze next whether the racial differences in visible consumption presented earlier in the paper can be reconciled by a status model with the key features described in the previous section. Using the same methods as described above, we re-estimate equation (2) -- with which

we earlier documented the differences in visible spending across races, --but now add to that regression, for each individual, the mean and coefficient of variation of income in the household's race/state cell. This regression assesses whether Blacks or Hispanics, holding their own income and the mean income of the racial peer group constant, have the same visible expenditures as Whites, all else equal. The results are shown in Table VIII. Column (1) displays the results from row (6) of Table II in which we do not control for features of reference group income distribution. Without reference group income controls, observationally equivalent Black and Hispanic male-headed households consume 26 and 23 percent more on visible goods, respectively, than do Whites.

The regression in column (2) continues to exclude reference group income but now adds state fixed effects. The estimated effects of 0.28 and 0.25 show that the state fixed effects have no influence on the estimated racial gaps in visible expenditures. In the third column we add, for each individual, the average income of their race/state reference group and exclude the state fixed effects. This regression shows dramatically that our control for reference group income explains nearly the entire gap in spending across races. Both the Black and Hispanic point estimates are quantitatively tiny and statistically indistinguishable from zero. Column (4) adds state fixed effects to the regression in the third column, and the fifth column adds both state fixed effects and the coefficient of variation of reference group income. The results in both of these specifications are qualitatively the same as the results in column (3). In summary, the results show that the visible expenditure differences between Blacks and Hispanics versus Whites vanish once we control for the average income of the race/state cells from which individuals' incomes are drawn. Importantly, the results also indicate that it is not some generic trait of the state that explains the conspicuous consumption gap, but rather the incomes of individuals' racial reference groups specifically.

Income distributions of reference groups are not exogenously assigned in our regressions. In practice, persons who differ in ways unrelated to conspicuous preferences may choose to

locate in one place versus another. Could our results be explained by systematic sorting whereby, for example, persons whose high discount rates make them buy more visible items than investment goods locate in states where the mean income for their racial group is high? Lacking instrumental variables for location in our regressions, we cannot rule out this possibility, but two empirical facts suggest it is unlikely. First, the results in Table IV indicate that racial minorities spend *less* than comparable Whites on tobacco and alcohol – goods most consumed by those with high discount rates. Second, contrary to what a sorting story would imply, Tables VI and VII find *no* relationship between spending devoted to all non-visible, non-food items and average income in race/state cells.

On the whole, these results are strongly consistent with the predictions of the models of status and conspicuous consumption discussed in Section IV. This simple model appears to explain differences in individual visible consumption within and across races, and does so without requiring that there be systematic differences in preferences by race. Race is important only insofar as it provides information to an observer about the income distribution from which a person's income is drawn, creating in the process a differential incentive for people of different races to engage in conspicuous signaling.

VI. Conclusion

In this paper we document divergent patterns of expenditures on visible consumption goods across races. Consistent with popular perception, we find that minorities spend more on conspicuous items than Whites, controlling for differences in income. A variety of estimates show that these visible expenditure differences are relatively large and are associated with substantial diversion of resources from other uses, such as health care and education.

Next, we argue that one does not need to appeal to cultural or racial differences in preferences to understand this evidence. Specifically, we outline a model of status-seeking and conspicuous consumption in which individuals use conspicuous spending as a signal of income.

Consistent with results from a growing theoretical literature that suggest visible consumption should rise as poorer persons are added to a reference group, we find that visible consumption both within and across races falls as the mean of reference group income rises. This finding is buttressed by additional tests that show racial consumption spending differences are sharply reduced when we control for the mean and dispersion of reference group income, which jointly provide a powerful empirical measure of the reference distribution. Of course, our results do not rule out the possibility that there may yet be racial differences in utility parameters that act in combination with the effects we have identified.

Note that the random, anonymous social interactions that are the focus of our paper constitute only a subset of the possible interactions that people care about. Depending on the interaction, an observer will already have finer or coarser information about the particular income distribution from which the person's income happens to be drawn, meaning that the relevant reference groups across different interactions may be narrower or broader than the race/state cells we study. Further, the specific types of goods used to signal economic position in different interactions may also be different than the items in this paper. For example, among friends or family status-signaling might be effected with home furnishings, entertainment durables, or spending on children's education – expenditures that only intimates have an opportunity to observe. Interesting avenues for future work include an investigation of which specific types of conspicuous consumption matter in different contexts, and whether people choose their neighbors with an eye to satisfying status considerations.

Our findings on status-signaling may have policy implications. Recent authors have suggested that a desire for social status informs such behavior as the spending on weddings in rural India (Bloch , Rao, and Desai 2003), or the expenditures of recent immigrants (Chung and Fisher 2001). That these status-related expenditures may represent inefficient transfers from spending on goods such as healthcare, education, or savings has been forcefully argued by Frank (2000). Ireland (1994) investigates whether the provision of monetary rather than certain in-kind

transfers may lead to superior outcomes, since the receipt and use of money communicates much less negative information about economic position than is true of observable in-kind benefits. Our results on conspicuous spending and race offer further evidence that understanding the complicated nature and possible consequences of status-signaling is an important area for future work.

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Data Appendix

For our primary analysis, we use the extracts of the Consumer Expenditure Survey (CEX), compiled by Harris and Sabelhaus (2000) and available online through the National Bureau of Economic Research (NBER).[24] The NBER CEX files are available from 1980Q1 – 2003Q1, and we use data from 1986 to 2002. The year 1986 is the first year that the CEX data included unique family identifiers, which we need to merge key additional information from the BLS's raw CEX data files. The NBER CEX extracts were intended to provide a condensed version of original data that was consistent over time. The extracts include information from the CEX family files, member files, the detailed expenditure files, and the detailed income files. The extracts aggregate spending over 500 detailed items in the raw data into 47 spending categories. Our analysis further aggregates spending into 15 categories, as summarized in Appendix Table A1. The 15 categories we use in this paper comprise the universe of all expenditure categories in the NBER CEX files. We restrict the NBER-CEX data to include only household heads (ensuring that there is only one observation per household in our data). After deletions, our sample includes 49,363 households, comprising 37,289 White households, 6,766 Black households, and 5,308 Hispanic households.

We briefly summarize any modifications and restrictions we imposed on the data.

- The NBER CEX files do not include state of residence, Hispanic origin, city size, number of adults in the household, and number of quarters that the household participated in the survey. We download these key variables from the CEX raw files and merged them with the analysis sample manually.

- As is standard in the literature, we compute a measure of housing service flows. For renters, this is the rent for their home/apartment; for homeowners, this is the homeowner's report of the rental equivalence of their home. In the analysis, we experiment with other measures of housing flow services, such as setting it to 6% of the homeowner's housing value. The results are unaffected.

- The analysis uses two measures of vehicle spending: a "limited" measure that includes only net outlays (mostly down payments) associated with the initial purchase of the vehicle, and an "expanded" measure that includes the repayment of principle on vehicle loans, spending on maintenance, leasing, repairs, storage and rental, and spending on tires, tubes, accessories, and other parts.

- Our measure of housing services spending includes spending on the rental of household furniture and spending on home maintenance (such as paint, roof repair and replacement), home remodeling (adding an addition), and home decorating (wall-to-wall carpeting, replacement of hard wood floors). The inclusion of these categories is an artifact of the NBER CEX files. The measure of rent paid for tenant-occupied dwellings in the NBER CEX files combines a broad set of housing expenditures aside from rent paid and as a result, it is impossible to disaggregate the data at a finer level.

[24]See http://www.nber.org/data/ces_cbo.html for the data files. See http://www.nber.org/ces_cbo/Cexfam.doc for corresponding documentation. All data and code used to generate the results in this paper can be found at http://faculty.chicagogsb.edu/erik.hurst/research/race_and _consumption_data_page.html.

- The NBER CEX files report the sum of spending in a variety of categories across all quarters that the household participated in the survey. Households surveyed for two quarters will therefore have only half the total expenditures of otherwise identical households participating for all four quarters. The NBER CEX files do not include an indicator variable for the number of quarters that the household participated in the survey, although a summary variable indicates that less than 50% of the sample completes all fours surveys. After manually merging in the exact number of quarters that the household participated in the survey, we re-express the spending data on a per-quarter basis where per-quarter spending in a given category is computed as the NBER-CEX data spending in a given category divided by the number of quarters that the household participated in the survey.

We made the following restrictions to the CEX sample:

- We include only households reporting themselves as Black, White, or Hispanic. We treat mixed race heads as Hispanics in our analysis. This has no effect on the results, as the results are the same if we exclude these households.

- We exclude households with total expenditures of over $400,000 per year (in $2005). These 98 households are the top 0.1% percent of the total expenditures distribution.

- We exclude households that changed their state of residence during the year; in which the head's education is missing (4,134 households); and where the household's region is missing (617 households);

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Table I
Descriptive Statistics of CEX Full Sample

	All	White	Black	Hispanic
Age	35.7	35.9	35.8	34.5
Education < 12	0.11	0.06	0.14	0.38
Education = 12	0.30	0.28	0.38	0.29
Education: Some College	0.29	0.30	0.31	0.21
Education: College or More	0.30	0.36	0.16	0.11
Married	0.55	0.58	0.35	0.61
Family Size	2.9	2.8	3.0	3.7
Number of Adults	1.9	1.9	1.8	2.2
Fraction with Zero/Missing Income	0.27	0.26	0.31	0.25
Total Family Income | Income > 0	$57,800	$63,800	$38,400	$39,800
Quarterly Total Expenditure	$10,700	$11,600	$7,700	$8,400
Sample Size	49,363	37,289	6,766	5,308

Notes: Data from the 1986 – 2002 waves of the Consumer Expenditure Survey (CEX). All expenditures are averaged over all quarters that the household remained in the survey. The sample includes all households where the head is between the ages of 18 and 49 (inclusive) and where the head reported their race as being White, Black, or Hispanic over all quarters in the sample. We also restrict the data to households that did not change their state during their sample period and who have non-missing values for the head's educational attainment, total household family size, and Census region where the household resides. All amounts are in 2005 dollars. In this table, age and education refer to the household head.

Table II
Estimated Black-White Gap in Log Visible Expenditures With and Without Income, Expenditure, and Demographic Controls

Regression Controls Included	Black Coefficient	Hispanic Coefficient
1. No Additional Controls	-0.38	-0.23
	(0.04)	(0.04)
2. Specification 1 Plus Income Controls	-0.03	0.14
	(0.03)	(0.04)
3. Specification 1 Plus Log Total Expenditure	0.31	0.26
	(0.03)	(0.06)
4. IV Regression where Log Total Expenditure is Instrumented with Income Controls	0.23	0.20
	(0.03)	(0.05)
5. Specification 4 Plus Time Dummies	0.24	0.21
	(0.03)	(0.05)
6. Specification 5 Plus Demographic and Wealth Controls	0.26	0.23
	(0.02)	(0.05)

Notes: See the note to Table I for sample description and relevant sample sizes. The table reports the coefficient on the race dummies from a regression of the log of household visible consumption on race dummies and other controls. Specification 2 includes the log of current household income, if income is positive, a cubic in the level of current household income, a dummy for whether current household income is positive, as well as dummies for the education level (four categories), occupation (1-digit), and industry (1-digit) of the household head. Specification 3 re-estimates specification 1 including the log of total household expenditures as an additional regressor. Specification 4 is an IV regression where log total expenditures is instrumented with the income controls (added in specification 2). Specification 5 is the same as specification 4 but also includes year dummies. Specification 6 is the same as specification 5 but also includes a quadratic in age of the household head, a dummy if the household head is male, a married dummy, Census region dummies, a dummy if the household lived in an MSA, an urban dummy, wealth controls, and a series of separate dummies for the number of adults and children in the household. See Section III for a full description of these regressions. Robust standard errors (clustered at the state level) are reported in parentheses.

Table III
Racial Differences in Log Spending on Specific Visible Items, Controlling for Income, Expenditure, and Demographic Controls

	A. Full Sample		B. Positive Car Spending	
Visible Consumption Sub-Category	Black Dummy	Hispanic Dummy	Black Dummy	Hispanic Dummy
Clothing/Jewelry	0.38	0.41	0.36	0.37
	(0.03)	(0.04)	(0.04)	(0.02)
Personal Care	0.73	0.43	0.81	0.42
	(0.05)	(0.03)	(0.06)	(0.05)
Cars (Limited)	-0.43	-0.29	0.12	0.09
	(0.07)	(0.10)	(0.04)	(0.06)
Cars (Including maintenance)	-0.46	-0.34	0.09	0.04
	(0.10)	(0.17)	(0.03)	(0.05)

Note: For panel A, the sample and specification are the same as the sample and specification used in Row 6 of Table II except for the fact that the dependent variable is a sub-component of visible consumption (cars, clothing and jewelry, or personal care). The sample for panel B is the same as the sample for panel A except for the further restriction that the household must report owning at least one automobile (sample size = 11,900 households). The limited measure of car spending includes only initial outlays for new or used cars. The expanded car spending measure includes the initial outlays plus expenditures on car services and the principal component of their vehicle loan payment. See the Data Appendix for more details on the two car measures. Our primary measure of visible consumption only includes the limited measure of car spending. Robust standard errors (clustered at the state level) are in parentheses.

Table IV
Differences in Log Expenditures by Category Among Blacks, Hispanics, and Whites

	A. IV Regressions	
Log Expenditure Category	Black Coefficient	Hispanic Coefficient
Housing	0.03	0.13
	(0.02)	(0.03)
Utilities	0.09	-0.02
	(0.03)	(0.02)
Food	-0.06	0.06
	(0.02)	(0.02)
Other Transportation	-0.15	-0.02
	(0.03)	(0.04)
Entertainment Services	-0.29	-0.36
	(0.03)	(0.05)
Home Furnishings [a]	-0.18	0.09
	(0.04)	(0.05)
Education [a]	-0.16	-0.30
	(0.10)	(0.12)
Entertainment Durables [a]	-0.35	-0.17
	(0.05)	(0.05)
Health [a]	-0.51	-0.48
	(0.05)	(0.06)
Alcohol and Tobacco [a]	-1.04	-1.04
	(0.05)	(0.05)

Notes: The sample and specification are the same as those used in row (6) of Table II except for the fact that the dependent variable is the log of all other consumption categories. These consumption categories are defined in Appendix Table A.1. The consumption categories denoted with a superscript 'a' have a non-trivial fraction of the respondents reporting zero spending on these categories in a given year (see Appendix Table A.2). For these categories, we estimate the specification using a Tobit and report the corresponding unconditional marginal effects. Robust standard errors (clustered at the state level) are in parentheses.

Table V
Differences in Log Expenditures by Category Across Blacks and Whites, PSID Data

Log Expenditure Category	Coefficient on Black Dummy	Sample Size
Visible Spending		
1. Clothing Expenditures, No Additional Controls	-0.07	3,928
	(0.07)	
2. Clothing Expenditures, Full Controls	0.24	3,928
	(0.07)	
3. Price of Recent Car Purchase, Full Controls	0.12	1,882
	(0.09)	
Other Spending Categories		
4. Food Expenditures, Full Controls	-0.12	4,167
	(0.03)	
5. Entertainment, Full Controls	-0.33	3,724
	(0.08)	
6. Other Transportation, Full Controls	-0.09	3,708
	(0.06)	

Notes: The sample includes all households in the 2005 wave of the Panel Study of Income Dynamics where the head is between the ages of 25 and 49 (inclusive). The sample is also restricted to include only households where the head is either Black or White. The table displays the coefficient on the Black dummy of a regression of log spending for different consumption categories on a race dummy only (specification in row 1) and a race dummy, the log of household permanent income, a cubic in the age of the household head, a dummy for the sex of the household head, a marital status dummy, and a vector of family size, number of children, and region dummies (specifications in rows 2-6). For our measure of permanent income, we average total household annual family income between 1999 and 2005 for the years that that the household was in the sample. See Section III for complete details. Sample sizes differ across the specifications given that we restricted each specification to only include households with positive spending on the given category. Nearly all the sample conducted some spending on food expenditures and clothing, and nearly all consumed some form of entertainment and other transportation. The purchasing of a vehicle during the prior three years was limited to roughly 50% of the sample. All data are weighted using the PSID core family weights. Robust standard errors (clustered at the state level) are in parentheses.

Table VI
Within-White Differences in Visible Expenditure By Mean Income of Own Race Within a State

	Dependent Variable				
	Log Visible Expenditure			Log Food Expenditure	Log Total Expenditure Less Visible and Housing Expenditures
	(1)	(2)	(3)	(4)	(5)
Log of Mean Income of Own Race in State	-0.60	-0.70	-0.58	0.23	-0.01
	(0.14)	(0.14)	(0.13)	(0.06)	(0.05)
Coefficient of Variation of Income for Own Race in State		-0.72	-0.63	0.59	-0.06
		(0.30)	(0.28)	(0.10)	(0.03)
Log of Individual Housing Expenditures			-0.13	0.01	-0.15
			(0.06)	(0.03)	(0.02)

Notes: The sample in the table is the same as that used in Table II except for the additional restriction that it only include White households (n = 37,289). For column (1), the specification is the same as in row (6) of Table II except for the following two changes: the race dummies are dropped as regressors and the log of mean total household labor income of White men in the household's state of residence is included as a regressor. In column (2), we also add the coefficient of variation for total labor income of White men in the household's state of residence. In column (3), we add in the log of individual housing prices as an additional regressor. We instrument individual housing expenditures with the mean level of housing prices in the individual's state of residence. See Section V for a discussion of how we use CPS data to compute the mean and standard deviation of total labor income for men by state and for a discussion of how we use data from the 1990 and 2000 U.S. Census to compute state housing prices. Columns (4) and (5) repeat the specification shown in column (3) with two different dependent variables. In column (4), the dependent variable is the log of household food spending. In column (5), the dependent variable is the log of household total spending less spending on visible goods and less spending on housing. Robust standard errors (clustered at the state level) are shown in parentheses.

Table VII
Within-Black and -Hispanic Differences in Visible Expenditure By Mean Income of Own Race Within a State

	Dependent Variable					
	Log Visible Expenditure				Log Food Expenditure	Log Total Expenditure Less Visible and Housing Expenditures
	(1)	(2)	(3)	(4)	(5)	(6)
Log of Mean Income of Own Race in State	-0.44	-0.51	-0.45	-0.64	0.12	-0.02
	(0.13)	(0.12)	(0.13)	(0.15)	(0.08)	(0.03)
Coefficient of Variation of Income for Own Race in State		0.25	0.26	0.26	-0.14	-0.02
		(0.17)	(0.18)	(0.17)	(0.07)	(0.04)
Log of Individual Housing Expenditures			-0.09	-0.16	0.16	-0.14
			(0.08)	(0.09)	(0.04)	(0.03)
Log Mean Income of All in State				0.60		
				(0.31)		

Notes: The sample in the table is the same as that used in Table II except for the additional restriction that it only include Black and Hispanic households (n = 12,074). For column (1), the specification is the same as in row (6) of Table II except for the following two changes: the race dummies are dropped as regressors and the log of mean total household labor income of men of the household's same race in the household's state of residence is included as a regressor. In column (2), we also add in the coefficient of variation for total labor income of the household's same race in the household's state of residence. In Column (3), we add in the log of individual housing prices as an additional regressor. We instrument individual housing expenditures with the mean level of housing prices in the individual's state of residence. In column (4), we add the log of mean total labor income for all men in the household's state of residence. See Section V for a discussion of how we use CPS data to compute the mean and standard deviation of total labor income for men by state and for a discussion of how we use data from the 1990 and 2000 U.S. Census to compute state housing prices. Columns (5) and (6) repeat the specification shown in column (3) with two different dependent variables. In column (5), the dependent variable is the log of household food spending. In column (6), the dependent variable is the log of household total spending less spending on visible goods and less spending on housing. Robust standard errors (clustered at the state level) are shown in parentheses.

Table VIII
Racial Differences in Log Visible Expenditures after Controlling for Mean Group State Income, Including Own Income, Expenditure, and Demographic Controls

	(1)	(2)	(3)	(4)	(5)
Black Coefficient	0.26	0.28	-0.03	-0.005	-0.04
	(0.02)	(0.02)	(0.07)	(0.07)	(0.07)
Hispanic Coefficient	0.23	0.26	-0.01	-0.01	-0.04
	(0.05)	(0.03)	(0.08)	(0.06)	(0.07)
Log of Mean Own Group Income in State			-0.53	-0.51	-0.52
			(0.12)	(0.11)	(0.11)
Coefficient of Variation of Income for Own Race in State					0.17
					(0.12)
State Fixed Effects Included	No	Yes	No	Yes	Yes

Notes: The table shows the results of the regression of log visible consumption on race dummies and a full set of income, total expenditures, demographic, and year controls. These controls are the same as those used in the regression displayed in row (6) of Table II (see the note to Table II for details). The first column of this table replicates the results shown in row (6) of Table II. In the second column, we include state fixed effects. In the third column, we add the log of mean total household income for men of the household's same race in the household's state of residence as an additional control (but exclude state fixed effects). In the fourth column, we include both state fixed effects and the log of mean income for the household's own race within their state of residence. In column (5), we include the coefficient of variation of income for one's own race within their state of residence. Robust standard errors (clustered at the state level) are in parentheses.

Appendix Table A.1
Aggregation of the NBER CEX Files

Our Spending Categories	*Corresponding NBER CEX Spending Categories*
Visible Spending Components	
Clothing/Jewelry	Clothing and Shoes (029), Clothing Services (030), Jewelry and Watches (031)
Personal Care	Toilet Articles and Preparations (032), Barbershops, Beauty Parlors, and Health Clubs (033)
Vehicle (Limited)	Net Outlay on New and Used Motor Vehicles (052)
Vehicle (Expanded)	Net Outlay on New and Used Motor Vehicles (052), Repair, Leasing, Greasing, Washing, Parking, Storage, and Rental (054), Reduction of Principal on Vehicle Loan (096), Tires, Tubes, Accessories, and Other Parts (053)
Other Spending Components	
Housing	Tenant-Occupied Nonfarm Dwellings – Rent (including the rental of furniture and appliances) (034), Rental Equivalence of Owned Home (075)
Food	Food Off-Premise (023), Food On-Premise (024), Food Furnished Employees (025)
Utilities	Electricity (038), Gas (039), Water and Other Sanitary Services (040), Fuel Oil and Coal (040), Telephone (042)
Other Transportation	Vehicle Gasoline and Oil (055), Bridge, Tunnel, Ferry, and Toll Roads (056), Auto Insurance (057), Mass Transit Systems (058), Taxicab, Railway, Bus, and Other Travel (059)
Entertainment Services	Recreation Services (060), Books and Maps (061), Magazines, Newspapers, Nondurable Toys (062)
Entertainment Durables	Recreation and Sports Equipment (063)
Alcohol and Tobacco	Tobacco Products (026), Alcohol Off-Premise (027), Alcohol On-Premise (028)
Household Furnishings	Furniture and Durable Household Equipment (036)
Education	Higher Education (066), Nursery, Elementary and Secondary Education (067), Other Education Services (068)
Health	Prescription Drugs (044), Opthalmic Products and Orthopedic Appliances (045), Physicians, Dentists, Other Medical Professionals (046), Hospitals (047), Nursing Homes (048), Health Insurance (049)
Other	Nondurable Household Supplies and Equipment (037), Domestic Service, Other Household Operation (043), Business Services (050), Expense of Handling Life Insurance (051), Pari-Mutuel Net Receipts (065), Religious and Welfare Activities (069)

Note: A full description of the NBER CEX consumption categories can be found online at http://www.nber.org/ces_cbo/Cexfam.doc. The category number from the NBER CEX files are in parentheses.

Appendix Table A.2
Mean Quarterly Expenditure (in 2005 dollars), Percent with Positive Expenditures, and Expenditure Shares by Consumption Category, by Race

	All	White	Black	Hispanic
Visible Expenditures	1,670	1,790	1,260	1,320
	0.99	0.99	0.99	0.99
	0.12	0.12	0.12	0.12
Shelter Expenditures	2,500	2,670	1,830	2,150
	0.99	0.98	0.99	0.99
	0.25	0.25	0.26	0.28
Food Expenditures	1,660	1,730	1,300	1,630
	1.00	1.00	1.00	1.00
	0.18	0.17	0.21	0.22
Utility Expenditures	740	760	730	650
	0.99	0.99	0.99	0.99
	0.08	0.07	0.11	0.09
Vehicle Service Expenditures	800	870	580	540
	0.88	0.93	0.71	0.80
	0.07	0.07	0.06	0.05
Other Transportation Expenditures	670	710	500	580
	0.98	0.99	0.96	0.97
	0.07	0.07	0.06	0.07
Entertainment Service Expenditures	580	660	290	330
	0.98	0.99	0.95	0.95
	0.05	0.07	0.04	0.04
Health Expenditures	410	470	250	270
	0.85	0.89	0.74	0.76
	0.04	0.04	0.03	0.03

Notes: See the notes to Table I for full sample description. See Appendix Table A.1 for the definition of each consumption category. For each consumption category, the first row shows the average spending *per quarter* in that category (in 2005 dollars, rounded to the nearest ten dollars), the second row shows the fraction of households with positive spending in the consumption category, and the third row shows the share of expenditures in the consumption category out of total expenditures. Columns 1-4, respectively, show the relevant statistics for the total population, a sample with White heads, a sample with Black heads, and a sample of Hispanic heads.

Appendix Table A.2 (continued)

	All	White	Black	Hispanic
Home Furnishing Expenditures	310	350	190	220
	0.83	0.86	0.71	0.79
	0.03	0.03	0.02	0.02
Education Expenditures	250	290	170	120
	0.43	0.46	0.35	0.30
	0.02	0.02	0.02	0.01
Entertainment Durable Expenditures	250	290	110	140
	0.80	0.85	0.64	0.72
	0.02	0.02	0.01	0.02
Alcohol/Tobacco Expenditures	210	240	120	120
	0.82	0.86	0.68	0.70
	0.02	0.03	0.02	0.02
Other Expenditures	650	730	400	360
	0.92	0.95	0.86	0.85
	0.05	0.05	0.04	0.03
Sample Size	49,363	37,289	6,766	5,308

Appendix Table A.3
Mean and Standard Deviation of Male Labor Income by Race and State Using CPS Data

	All		White		Black		Hispanic	
	Mean	Coefficient of Variation	Mean	Coefficient of Variation	Mean	Coefficient of Variation	Mean	Coefficient of Variation
AL	30,346	1.13	35,071	1.06	17,809	1.15	26,371	0.84
AK	40,425	0.97	43,715	0.90	31,985	1.35	40,835	1.12
AZ	33,421	1.17	38,440	1.11	26,070	0.81	23,664	1.30
AR	26,983	1.11	29,215	1.07	15,905	1.05	22,339	1.32
CA	36,057	1.19	45,185	1.08	27,050	1.27	24,456	1.16
CO	39,302	1.08	42,132	1.04	24,826	1.07	29,310	1.26
CT	44,472	1.06	47,665	1.02	24,922	1.05	28,062	1.50
DE	35,153	0.98	38,148	0.95	25,390	1.01	26,864	1.04
DC	35,396	1.33	60,269	1.06	22,847	1.20	23,020	1.40
FL	32,577	1.17	36,898	1.12	20,492	1.16	26,844	1.23
GA	34,767	1.11	40,551	1.03	24,363	1.26	28,050	0.95
HI	33,651	0.98	36,828	0.99	31,158	0.84	29,573	0.82
ID	31,728	1.07	33,275	1.07	11,511	1.40	21,417	0.85
IL	37,934	1.07	42,859	1.00	22,434	1.25	26,981	1.17
IN	34,380	0.99	35,432	0.97	23,032	1.01	27,290	1.17
IA	32,685	0.97	33,480	0.96	20,041	0.92	21,260	0.90
KS	34,921	1.09	36,422	1.09	26,793	0.85	27,561	1.04
KY	31,597	1.15	32,379	1.15	21,102	0.94	26,878	1.08
LA	30,775	1.16	35,643	1.07	17,460	1.11	30,640	1.18
ME	31,690	1.11	31,677	1.11	29,120	0.77	53,447	0.83
MD	40,196	1.05	46,347	0.95	27,443	1.24	31,327	1.21
MA	39,941	1.08	42,208	1.05	23,961	1.45	21,414	1.11
MI	37,748	1.04	40,029	1.00	22,252	1.17	30,429	1.16

Note: The table shows the means and coefficient of variation for male labor income by race and state from the 1990-2002 CPS. Data are averaged over the entire sample period and are reported in 2005 dollars. The sample used is males aged 18-49 (inclusive). All data are weighted using the CPS weights.

Appendix Table A.3 (continued)

	All		White		Black		Hispanic	
	Mean	Coefficient of Variation	Mean	Coefficient of Variation	Mean	Coefficient of Variation	Mean	Coefficient of Variation
MN	38,178	1.09	39,522	1.07	22,868	1.16	24,157	0.96
MS	26,868	1.13	32,271	1.01	17,432	1.32	31,987	0.82
MO	33,532	1.11	34,943	1.08	21,879	0.93	27,648	1.39
MT	27,262	0.98	28,016	0.95	24,632	0.64	24,904	1.05
NE	33,525	0.95	34,673	0.95	22,279	0.95	23,320	0.82
NV	36,396	1.05	40,452	0.98	25,241	1.19	26,510	1.20
NH	39,982	1.03	39,972	1.03	36,794	1.10	37,150	1.21
NJ	43,518	1.09	48,838	1.01	26,872	1.40	28,339	1.15
NM	28,031	1.04	34,296	0.95	31,239	0.91	23,175	1.07
NY	36,352	1.21	42,313	1.13	21,773	1.25	23,598	1.30
NC	33,008	1.08	36,642	1.04	22,577	1.08	23,312	1.02
ND	30,138	1.04	31,107	1.02	21,750	0.55	24,257	0.80
OH	36,285	1.05	38,046	1.02	22,082	1.24	30,821	1.07
OK	30,990	1.14	33,472	1.12	20,827	0.99	23,458	0.96
OR	34,682	1.08	36,645	1.04	28,994	1.75	20,376	1.03
PA	35,639	1.10	37,553	1.07	20,066	1.28	27,075	1.27
RI	36,161	1.08	38,216	1.05	23,707	1.06	20,225	1.30
SC	31,515	1.02	35,637	0.95	21,183	1.06	29,305	1.23
SD	29,268	1.04	30,517	1.02	21,588	0.78	25,887	0.86
TN	30,840	1.22	33,051	1.19	20,726	1.28	24,628	0.98
TX	34,065	1.15	42,797	1.02	23,671	1.27	23,733	1.23
UT	34,127	1.02	35,382	1.01	21,800	0.87	24,749	0.91
VT	33,152	0.97	33,344	0.97	10,801	1.72	38,846	0.87
VA	38,667	1.07	42,737	1.03	24,949	1.03	34,833	1.16
WA	38,229	1.08	39,699	1.03	33,986	2.12	23,616	0.99
WV	26,352	1.11	26,534	1.07	15,257	1.26	24,327	0.95
WI	36,256	0.97	37,812	0.95	19,243	1.14	25,236	1.15
WY	33,842	0.97	34,564	0.96	24,369	0.89	28,919	0.81

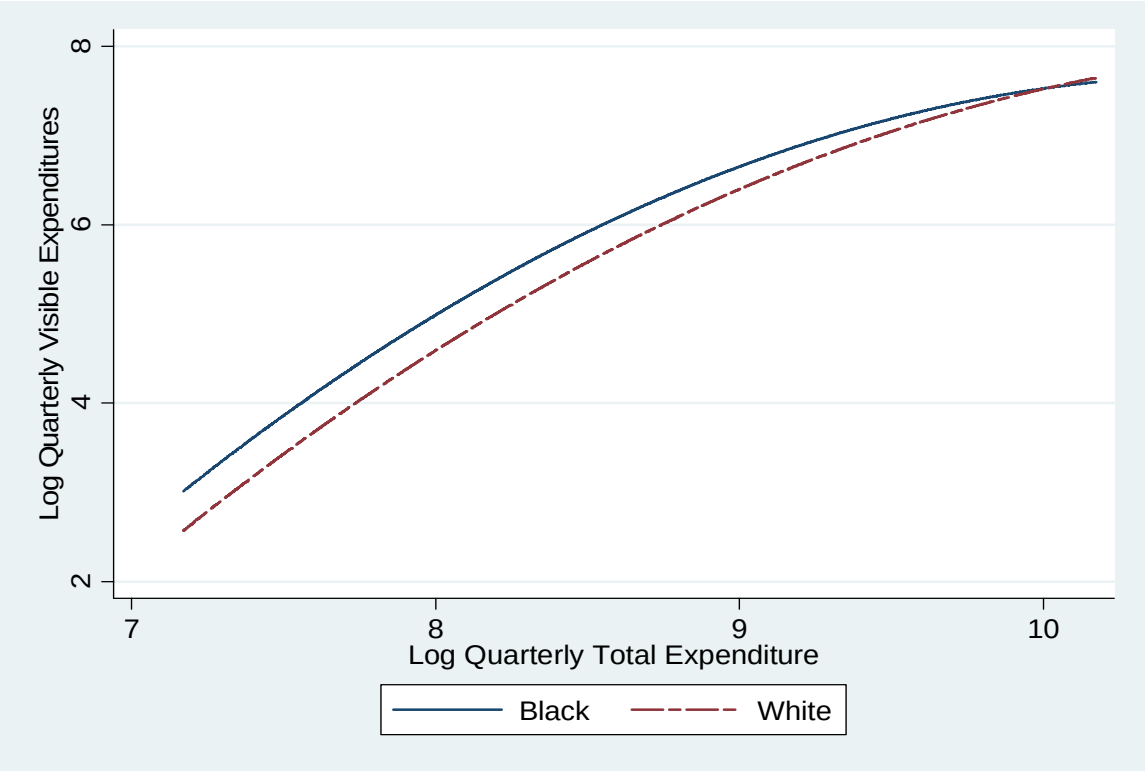

Figure I
Estimates of Non-Linear Visible Good Engel Curves:
Estimated Separately for Blacks and Whites

Notes: The figure shows the Engle Curve estimates of log visible expenditures on a quadratic in log total expenditures separately for Blacks (solid line) and Whites (dotted line) using data from the CEX. Log total expenditures and log total expenditures squared are instrumented using the same vector *Income* described in the notes to Table II. The regressions are estimated over a similar range populated by both Black and White households: households with quarterly total expenditure greater than $1,300 and less than $26,200 (in 2005 dollars). These total expenditures cutoffs are approximately the 1st percentile of the White quarterly total expenditure distribution and the 99th percentile of the Black quarterly total expenditure distribution, respectively.

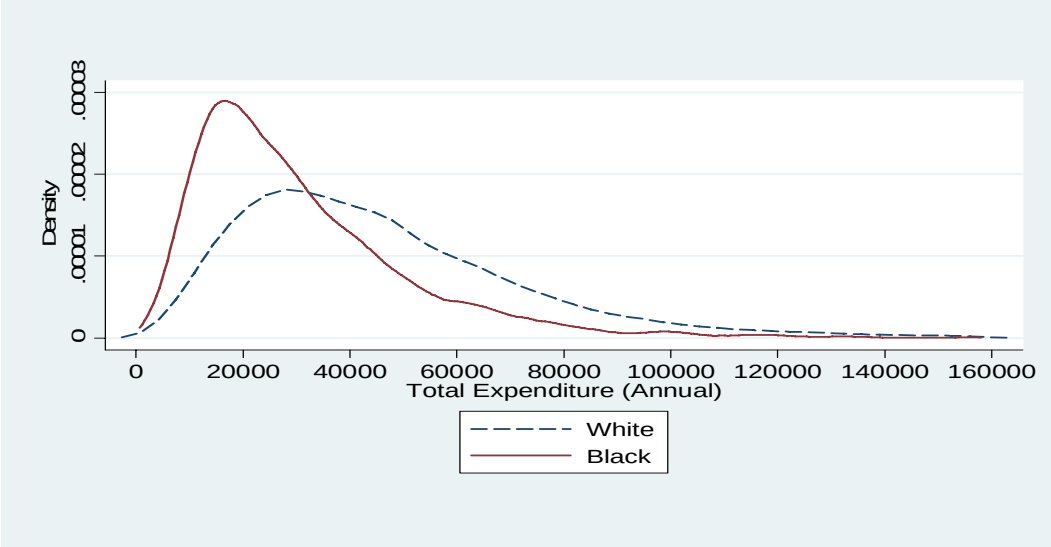

Figure II.A
Kernel Density of Black and White Annual Expenditures (CEX)

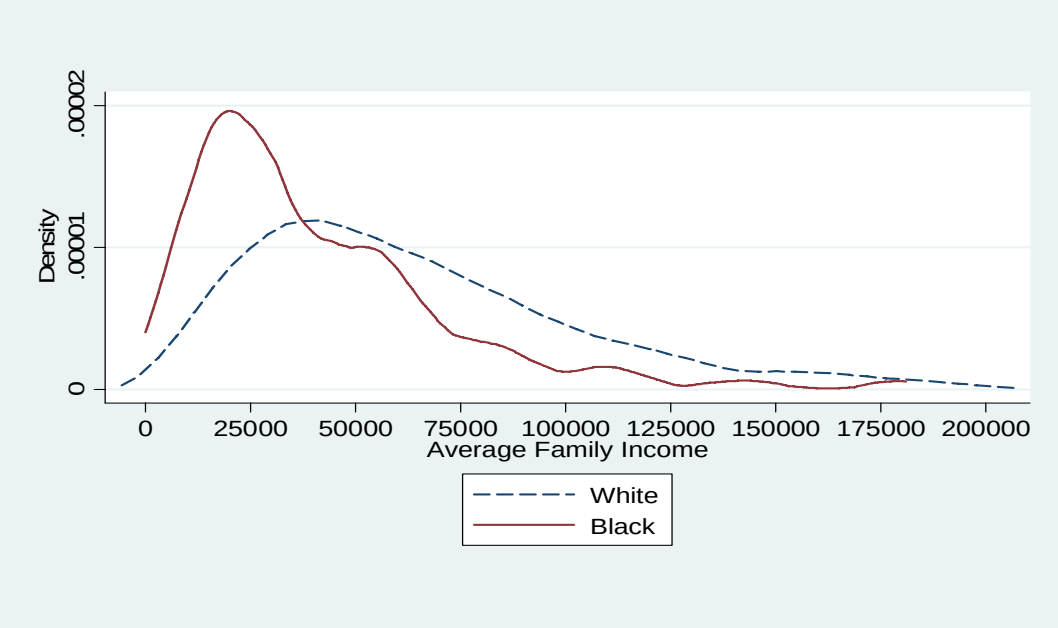

Figure II.B
Kernel Density of Black and White Annual Family Income (PSID)

Notes: The figures show the kernel density of total annul expenditures from the CEX (panel A) and average family income from the PSID (panel B) separately for Blacks and Whites. The samples used for the kernel estimation are the same samples as described in the notes to Table I (for the CEX) and Table V (for the PSID). Likewise, the measures of total expenditures and total family income are also described in Section III.

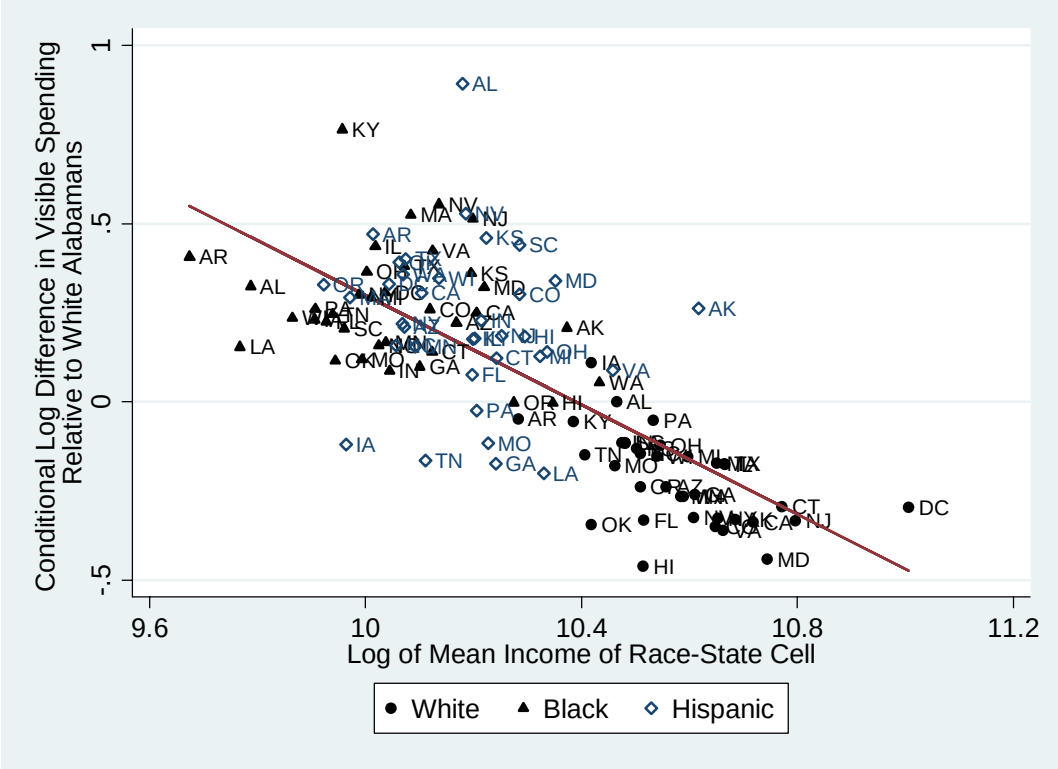

Figure III
Relationship between Conditional Log Visible Spending and Log of Mean Income, by Race/State Cells

Notes: The figure plots the log of mean male labor income of race-state cells against the conditional log difference in visible spending of race-state cells. The mean of male labor income for each race/state cell is computed using CPS data as described in the note to Appendix Table A3. Visible spending shown for race/state cells are dummies estimated on race/state interactions in a regression of log visible spending on race/state dummies, total expenditure controls (instrumented with current income controls), and demographics. The regression uses CEX data and is identical to the regression described in row (6) of Table II aside from the fact that the race dummies are replaced with race/state dummies. The omitted race/state dummy in the regression is White Alabamans, so conditional visible spending in each cell is relative to White Alabamans. The figure presents results for 114 race-state cells. For the years studied, the CEX does not interview households from ME, MT, ND, RI, SD, WV, and WY, so there is no spending on households from these states. In addition, the number of observations for some race/state cells (Blacks in Utah, for example) was very tiny. We therefore exclude observations from DE, ID, NE, NH, UT, and VT from the data. The remaining sample covers 37 states plus DC, for three racial groups.