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Conspicuous Consumption and Race

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Abstract

This paper documents racial differences in visible consumption – clothing, jewelry and cars. We find that Blacks and Hispanics devote larger shares of their expenditure bundles to these items than do comparable Whites. We show that these differences exist among virtually all sub-populations, that they are relatively constant over time, and that they are economically large. We present a model of "conspicuous consumption" in which visible goods serve as a signal of individual's unobserved income and, consequently, social status. In the model, the status payoff is proportional to relative income, so at a given level of income status is more important for individuals where their reference group is poorer. The fraction of income spent on conspicuous goods is therefore increasing in households' own income, but decreasing in their peer-group's average income. We test this prediction using cross-state variation in average incomes for different race groups. Within the White population, visible consumption shares increase in own family income and decline in the mean income of individuals of the same race within a state. The same is true for Blacks and Hispanics. We then demonstrate that controlling for the average income of the reference social group eliminates most of the conspicuous consumption differences across races: Blacks spend more on visible goods because their local communities are on average poorer than those of similar Whites. We conclude with an assessment of the role of conspicuous consumption in explaining observed lower spending by racial minorities on items likes health and education, and on lower rates of wealth accumulation for racial minorities.

1. Introduction

In his famous study of consumption during the Gilded Age, Veblen (1899) speculated that, for the particular individuals he studied, "Consumption is evidence of wealth, and thus becomes honorific, and …failure to consume a mark of demerit." This notion that an aim of consumption was to demonstrate one's economic position to observers, Veblen dubbed "conspicuous consumption". Veblen's focus was on the very wealthy, but nothing in the main thrust of his argument requires that the phenomenon he identified apply to these households exclusively.[1] In this paper, we study households' consumption of items which are readily observable in social interactions, and which are portable across interactions. We call these goods "visible consumption". Prompted by Veblen's insight that the consumption and display of these items communicates information about economic status, and by 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 expenditure to consumption items that are readily visible to outside observers than do whites. Automobiles, clothing, and jewelry are examples of these forms of "visible" consumption. There has to date, however, been little formal analysis by economists of 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

[1] In fact, predating Veblen's analysis by a hundred and forty 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 (1969)).

of any such differential expenditure might be.[2, 3] 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 the period of 1986-2002, we show that although unconditionally racial minorities and whites spend approximately the same fraction of their resources on visible consumption, Blacks and Hispanics spend thirty five percent more on visible goods, once accounting for differences in permanent income. These differences exist for all groups of Blacks and Hispanics, except for older Black families. We find that these racial gaps have been relatively constant over the past seventeen years. And, we show that spending on housing or differential treatment in the housing market cannot explain these patterns. Finally, the gaps are economically large: the absolute level annual dollar differential for visible consumption is on the order of $2000, which is a non-trivial quantity given Black and Hispanic average income.

The requirement that all households must satisfy an intertemporal budget constraint means that spending devoted to visible consumption must be diverted from some alternative use. Reduced spending on specific types of current consumption on the one hand or lower savings (future consumption) on the other are the two possibilities. We show that the higher visible spending of racial minorities seems to come equally out of both future consumption and all categories of current consumption: blacks consume

[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: 1935-36 and early waves of the Federal Reserve's Survey of Consumer Finances. Like what we document below, Alexis found that Blacks were much more likely to spend on clothing (as a share of total expenditure) than similar Whites.

[3] Add in references to the literature outside of economics (sociology, anthropology, and marketing).

less that whites in essentially every other expenditure category (aside from housing) to maintain higher visible consumption.

What theoretical argument can account for these facts? We eschew the essentially tautological position of arguing that minorities spend more on jewelry, cars and apparel because they like these items more than do whites. Instead, we assess what might generate differences in the marginal valuation for these goods if the direct utility flow derived from them were equal across race.

In the second part of the paper, we argue that a model of conspicuous consumption, in which agents are motivated by an impulse similar to that first described by Veblen, might account for these patterns. Our specific argument is that all individuals care about how they are viewed and treated by others. This treatment -- or respect -- is in turn determined by the assessment those others form of the person's probable income or income position. Income is unknown, but costly indicators of income in the form of visible consumption can be "purchased". An observer sees what a person consumes and also knows the distribution of incomes in the group from which the person is drawn, and conditions his treatment of the person accordingly. Under the intuitive assumption that relative position is more important to wealthier individuals, agents from groups with low mean income will be inclined to spend larger shares of their overall expenditure on visible items than would otherwise be true. We stress that race per se, is not of value in determining these conspicuous consumption patterns, beyond its possible role in determining the individual's social group. That is, if our argument is correct, the higher observed visible consumption among blacks derives from the lower group wages of blacks and not from a racial difference in the preference for particular items. And, it also

means that precisely the same patterns (higher visible consumption) should be found among whites for whom there is a lower group mean.

To test the model, we combine data from the CEX expenditure sample with data about the distribution of income, by race, in respondents' states calculated from the Current Population Survey (CPS). The basic idea is that visible consumption should be declining as the income of one's reference group goes up. We treat those of one's own race, living in the state, as the relevant reference group. Strikingly, we show that, consistent with our argument, there is a strong negative association between visible spending and the mean income of one's reference group for *all* races. That is, analysis performed on a sample of only White households, shows the same thing as the analysis done for racial minorities separately: increases in mean own race income in the state is associated with reduced visible spending. As a falsification test of our reference group notion, we related household visible spending to mean incomes of *other* groups in the state, and find either no effect or very modest positive effects for the racial minority groups.

We regard this within-race evidence as being strongly supportive of the notion that a non-trivial component of visible spending is motivated by the mechanism outlined in our model. We then turn to the obvious next step: Does accounting for the effects of 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 level of a household reference group in the state explains almost the entire racial gap in visible spending. This conclusion is robust to a variety to 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 alternative role for consumption items apart from their direct consumption value. Although this exhibitionistic component has been long talked about in economics, we are aware of very little formal evidence brought to bear on the question.[4] Our work represents a first step in that direction. Perhaps more importantly, our specific focus on racial differences in consumption, and our results about the large potential role played by the use and display of visible items suggests 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.

2. Data

To examine racial differences in consumption patterns, we use data 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 survey. The initial interview collects household demographic information, which is updated during subsequent interviews to reflect any changes in household composition. Information on annual 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

[4] Notable recent exceptions include Ravina (2005) and Kapteyn et al (2006).

calendar months immediately preceding the interview. The detailed expenditure information can be aggregated up to a broader set of consumption categories for the household.

Like previous users of CEX data, we aggregate to the consumption categories proposed by Sabelhaus and Harris (2000). Specifically, we use the CEX family level extracts made available from the National Bureau of Economic Research (NBER).[5] The Data Appendix discusses in detail our use of the NBER CEX family extracts and the details of our sample selection criteria. In additional, we discuss in detail the specific expenditure items included in the Sabelhaus and Harris consumption category classification. All data are deflated to 2005 dollars using the June CPI-U.

Our primary analysis sample includes only Black, White, or Hispanic households, with household heads between the ages of 18 and 49, inclusive. 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. To mitigate the effects of measurement error in the expenditure categories, the unit of analysis is the *average* quarterly expenditure within a consumption category over the period that the household is in the sample. There is thus only one observation per household in the sample. The median household provides expenditure information for all four quarters for which they were scheduled to participate in the CEX. However, nearly forty-five percent of households provide expenditure information for less than four quarters. If the household is only in the survey for two quarters, we average their spending on a given category over the two quarters they participated. If the household was in the survey for four quarters, we averaged spending on a given category over the

[5] See http://www.nber.org/data/ces_cbo.html for data and documentation.

four quarters they participated. As a robustness check, we show that our results remain unchanged if we focus our analysis only on those households who participated in all four scheduled consumption interviews.

We make three additional sample restrictions to the data. First, we restrict the sample to include only those households who remained in the same state during their participation in the survey. This restriction in necessary given that in Section 5 we will be matching survey respondents in the CEX to mean income levels by state using data from the Current Population Survey (CPS). Second, we also exclude from the sample any individual from a state which has less than 30 minorities in the CEX during the entire sample period. These states include Idaho, Montana, New Hampshire, North Dakota, Rhode Island, South Dakota, Vermont, West Virginia, and Wyoming.[6] The reason for this restriction is that in the second half of the paper we compare racial consumption patterns conditional on the mean income of Blacks, Whites and Hispanics in their state residence. Lastly, we exclude households with missing observations on any of the control variables used in any of our specifications.[7] These restrictions leave us with a sample of 60,539 households, comprised of 45,525 White households, 8,563 Black households, and 6,724 Hispanic households.

Descriptive statistics for the sample by race are shown in Table 1. There are a few things to note with respect to Table 1. First, nearly 25 percent of the sample has missing total family annual income where total annual income is defined to include labor,

[6] Some of these states are excluded because the CEX does not sample in those states while other states are omitted because of the lack of minorities within the State.

[7] The exclusion of households with missing demographic data does not apply to missing income. It has been well documented that approximately ten percent of CEX respondents have missing income (see Stephens 2005). Below, we discuss how we deal with households who report missing income. However, it should be noted that our base results (with only income and total expenditure controls) are not sensitive to whether or not we exclude households who have missing demographic or income information.

asset and transfer income. Over a similarly defined sample, less than one percent of households in the March Current Population Survey (the survey conducted by the Bureau of Labor Statistics to measure labor market outcomes) between the years of 1990 and 2002 had zero or negative reported annual total family income. It is well documented that the CEX has many more missing income observations compared to surveys designed to measure income like the Current Population Survey (CPS). Second, for those who report positive income levels, White households have sixty-six percent higher total income than Black households and sixty percent more than Hispanic households. The comparable numbers from the CPS are fifty one and thirty seven percent, respectively. The racial total expenditure differences from the CEX, however, line up closely the income numbers from the CPS. Specifically, as seen in Table 1, Whites consume forty-eight percent more and thirty-three percent more than Blacks and Hispanics, respectively.

Appendix Tables A1 shows information on the expenditure categories by race. We define visible consumption to consist of household expenditures on apparel (including accessories such as jewelry), expenditures on personal care, and outlays for the purchase of cars and trucks. These consumption categories are distinguished from other consumption categories in two important ways. First, the consumption of these goods is easily *observable*. Second, these goods are highly *portable* and, as a result, can be observed by many different types of individuals (e.g., employers, friends, potential mates, etc.). These traits are particularly pronounced for apparel and personal care. In almost every situation, an encounter with an individual allows one to observe their consumption of clothing and jewelry. Likewise, the type of car one drives is also observable by others

in many common encounters, although cars are not as perfectly portable as the other two items.

Some may classify spending on housing as being a component of visible consumption. However, we do not include housing as a component of our visible consumption measure because housing is not portable across different social interactions. Nonetheless, as part of a robustness exercises below, we will thoroughly explore racial differences in housing outlays and their importance for our results.

One issue that is evident from appendix table A1 is that not all households have expenditures in all consumption categories during their time in the CEX. For example, while nearly all households spend on food, housing, entertainment services, and visible goods only 41 percent, 74 percent and 85 percent of households spend on education, alcohol and tobacco, and health care, respectively. The large prevalence of zeros in these consumption categories will need to be addressed in our empirical analysis.

Table A1 also shows the quarterly spending by consumption category by race for households in our sample and the share of expenditure in each consumption category relative to total expenditures. Visible consumption expenditures comprise roughly 12 percent of household total expenditures. Food spending and shelter spending comprise roughly 18 percent and 23 percent, respectively, of total expenditures.

3. Racial Differences in Conspicuous Consumption

To document a set of facts about the differences in consumption patterns across races, we estimate the following specification on a pooled sample of Black, White, and Hispanic household heads:

$$\ln(visible_i) = \beta_0 + \beta_1 Black_i + \beta_2 Hispanic_i + \gamma Income_i + \varphi Expenditure_i + \theta X_i + \eta_i \quad (3.1)$$

where $Black_i$ is a dummy variable if household head i is Black, $Hispanic_i$ is a dummy variable if household head i is Hispanic, and $Income_i$ is a vector of income controls for household i including the log of total family income, a cubic in the level of total family income, and a dummy variable equal to one if total family income is zero. Total family income includes the sum of all labor and non-labor income earned by all members of the household. We set the log of total family income equal to zero if total family income was zero. $Expenditure_i$ is a vector of total expenditure variables for household i including the log of total expenditures and a cubic in the level of total expenditure. We include expenditure controls to proxy for the household's permanent income. According to the permanent income hypothesis, the level of current consumption should depend on lifetime (permanent) income and not simply current income. X_i is a vector of demographic controls including a quadratic in age, education dummies, dummies for the number of adults in the household, dummies for the number of total family members in the household, a marriage dummy, a dummy variable equaling one if the household head is male, a dummy equaling one if the household lives in an urban area, a dummy equaling one if the household lives in an MSA, census region dummies, a set of year dummies indicating which year the household was in the survey, and household wealth controls.[8]

The OLS estimates from this regression are shown in Table 2. It should be noted that Appendix Table A1 shows that one percent of the sample reports zero average expenditures on visible goods during their time in the sample. Given the small

[8] 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.

occurrence of zeros in visible expenditures in our sample, it makes no difference if we estimate (1) via OLS setting the log visible expenditures to zero for those with zero visible expenditure or via a Tobit estimator.

If (1) is estimated including only the race dummies and excluding all of the other controls, Blacks consume 37 percent *less* visible consumption and Hispanics consume 21 percent *less* visible consumption than comparable Whites (Row 1 of Table 2). This is not surprising given that spending on visible goods increases with income (shown below) and Blacks and Hispanics, on average, have much lower incomes than Whites (Table 1). Including controls for both current income increases the coefficients on both race dummies (Row 2). But, as discussed above, current income is measured very poorly within the CEX. Moreover, consumption theory predicts that permanent income drives consumption decisions, not current income. As discussed above, we use total expenditures to proxy for permanent income. In Row 3, we show that by including both current income and total expenditure controls, the coefficient on the Blacks and Hispanic dummies indicate that Black and Hispanics consume 25 percent and 22 percent more visible goods than Whites with similar permanent income.

Notice that including a full set of demographic controls does little to change the racial difference in visible consumption patterns after controlling for income and expenditure (see results in Rows 4 - 6).[10] For example, in Row 4 we add education controls to the current income and total expenditures controls. After controlling for other aspects of permanent income (in particular, total expenditures), education controls do not

[10] The results are nearly identical if instead of pooling Whites, Blacks and Hispanics together we instead estimate the Black coefficient on a sample that only includes Whites and Blacks and the Hispanic coefficient on a sample that only includes Whites and Hispanics.

alter the estimated racial differences in visible expenditures. Our education controls include three dummy variables indicating whether the household head had a high school diploma, some college experience, or a college degree or greater. The omitted education category is less than a high school degree. Using our full set of controls (Row 6), the estimated racial differences increase slightly as compared to the results shown with just the income and expenditure controls. Specifically, Blacks and Hispanics consume 29 percent more visible goods than comparable Whites.

Although not shown in the tables, a few interesting patterns emerge from the coefficients on the demographic controls. First, conditional on permanent income controls and other demographics, the propensity to purchase visible goods declines sharply with age. For example, relative to households with heads between 18 and 20, households where the head is between the ages of 20 and 24 are 60 percent less likely to spend on visible goods. The comparable coefficients on the age dummies for 25-29 year olds, 20-34 year olds, and 45 to 49 year olds are, respectively, -80 percent, -96 percent, and -107 percent. Likewise, women are 20 percent more likely to spend on visible goods than their male counterparts. The results indicate that households with higher levels of education were more likely to spend on visible items. These last results would seem to suggest that visible expenditure items are luxury goods, something directly assessed below.

Figure 1 plots the visible expenditure Engel curves for both Black and White households. To estimate these equations, we take a different (but related) empirical strategy. For Blacks and Whites separately, we regress the log of visible expenditures on the log of current household income where we instrument current household income with

the total expenditure and education controls, discussed above. In doing so, we are plotting log visible expenditures against a measure of the household's permanent income.[11] The results in Figure 1 are consistent with the results in Table 2. First, for both Blacks and Whites, visible expenditures are luxury goods. The coefficient on log income in the IV regressions for Blacks and Whites, respectively, were 1.5 and 1.8 (p-value of both < 0.001). Second, Blacks, at every level of income, spend more on visible goods then their White counterparts.[12] At the median level of income for the sample, Blacks consume roughly 30 percent more on the visible goods than Whites. This is nearly identical to the results shown in Table 2.[13]

The results are extremely robust to a variety of alternative specifications and restrictions, including restricting the sample to households with positive current income, excluding households with less than $16,000 a year in total expenditures, excluding households under the age of 24, including log expenditures on housing shelter as an additional control, restricting the sample to include only those who completed all four CEX surveys, including occupation dummies, and including city size controls. These specifications are discussed in the Data Appendix and are shown in Appendix Table A2.

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[11] When estimating this equation, we restrict the sample to those with positive current household income. After that, we truncate the top and bottom one percent for both the Black and the White sample. We plot the Engel curves for both Blacks and Whites in figure 1 over the support of the Black sample.

[12] One question that we will continue to address throughout the paper is whether there are differences in "price" effects which cause Blacks to spend more on visible goods than comparable Whites. For example, if Blacks were discriminated against in the market for visible goods, one would expect Blacks with a given income to potentially pay more for those items than Whites with the same income. General discrimination (perhaps due to the ability to acquire credit at a low rate) cannot explain the results in Table 2 given that we are controlling for total expenditures directly. As a result, the correct interpretation of our results should be 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.

[13] Our focus has been analyzing difference in spending patterns between Blacks, Hispanics, and Whites. We also explored differences in spending patterns between Asians and Whites. Asians, on average, spend 10 percent *less* on visible goods than Whites with similar permanent income and demographics. Given the large amount of heterogeneity within the Asian population, we excluded them from our tests of conspicuous consumption discussed in the following sections. However, given that mean Asian income is slightly higher than mean White income, our theory outlined in Section 4 would predict less conspicuous consumption among Asians relative to Whites, all else equal.

Table 3 reports the race coefficient from (1) for a variety of different population sub-samples. These results include the same set of controls as used in row 6 of Table 2. When splitting the sample by sex and marital status, the racial difference in vehicle consumption remains large among the sub samples of single men, single women, and married households. For example, Black (Hispanic) single men consume 31 percent (37 percent) more visible goods than similar White single men. The comparable differences for Black and Hispanic single women, relative to White single women, were 27 percent and 24 percent, respectively.

Rows 4-7 of Table 3 show the racial gap in visible consumption *within* different educational groups. The results indicate that racial differences in visible consumption are found within all educational groups, although the magnitudes of the differences vary slightly for different education levels. We find that black households headed by someone with only a high school degree consume 34 percent more visible goods than a comparable White household, conditional on income, total expenditure and demographics. The comparable Black-White gap in visible expenditures for households headed by someone with at least a college degree is 25 percent. The gradient in the racial gap in visible consumption with respect to education is steeper between Whites and Hispanics. Among households headed by a person with only a high school degree, Hispanics consume 27 percent more visible goods than comparable Whites. Among college graduates, the gap falls to 11 percent.

In Rows 8 – 10 of Table 3, we explore how the racial gap in visible expenditures changes with age. On average, the racial gap in visible expenditures found among 18-34 years is nearly identical – for both Blacks and Hispanics – to the racial gap found

among 35 – 49 year olds. Using fine age ranges up through the age of 49, the same patterns hold. However, as seen in Row 10, for Black households older than 49, the racial gap starts to diminish sharply. Specifically, for households between 50 and 69, Blacks consume only 18 percent more visible goods than comparable Whites. Moreover, the propensity to consume visibly declines steadily over this age range with the racial gap for households in their sixties being smaller than the racial gap for households in their fifties. Likewise, the racial gap for households in their fifties is smaller than the racial gap found among households under the age of 50.

Although we do not present the results in Table 3, we find that the racial gap in the propensity to consume visible goods has been relatively constant during the period between 1984 and 2002. For example, the racial gap in visible consumption between Blacks and Whites for our main analysis sample, conditional on income, expenditure, and demographics, was 30 percent for the sub-period of 1986-1990 and was 31 percent for the sub-period of 1999-2002.

Table 4 shows that within each of the three visible consumption categories – vehicles, clothing, and personal care – Blacks and Hispanics spend much more than their White counterparts. Panel A looks at the full sample While Panel B looks only at a sample of household who report owning a vehicle. In both of the samples, Blacks and Hispanics spend significantly more on both personal care and clothing and jewelry than comparable Whites. Vehicle spending differences, however, only occur among vehicle owners. Moreover, the vehicle differences only occur in our expansive measure of vehicle spending which includes not only spending on the vehicle itself at the time of

purchase (limited vehicle measure) but also includes spending on customization and monthly principle payments on the vehicle loan.

The reason that racial differences occur only among vehicle owners is the result of Blacks and Hispanics, all else equal, having a lower probability of vehicle ownership. The lower vehicle ownership among Blacks and Hispanics is likely the result of two factors. First, Blacks and Hispanics are more likely to live in city centers and, as a result, have lower vehicle needs. Second, liquidity constraints may prevent Blacks and Hispanics from making a sufficient down payment to purchase a vehicle. Among, vehicle owners, however, Blacks spend 15 percent more on vehicles (including customization) than comparable Whites.[14]

The magnitudes of the racial difference in visible expenditures in absolute dollars are large. The average amount of visible expenditures for Whites is $8,704 per year (Appendix Table A1). The estimated coefficients from row 6 of Table 2 indicate that Blacks and Hispanics spend 29 percent than do comparable Whites. These coefficients imply that Blacks and Hispanics spend $2,524 per year more on visible goods than their White counterparts. This estimate is likely a lower bound given that the CEX has been found to under report total household consumption relative to data from the National Income and Product Accounts (see Laitner and Silverman 2005). To put these magnitudes in perspective, average labor income in the March CPS over the 1990 and 2002 time period was, in 2005 dollars, $42,500 and $48,300, respectively, for Black and

[14] We have also conducted a similar analysis using PSID data to explore differences in vehicle wealth holdings between Blacks and Whites. The PSID tracks the value of the household vehicle wealth (cars, trucks, motorcycles, etc.) at their re-sale value. Such a measure includes the value of all car accessories (tires, rims, etc.). Blacks, conditional on five year average income, demographics, and total wealth, have roughly 15 percent more vehicle wealth than Whites. These results are consistent with the results shown in Table 5.

[16] It has been well documented that Blacks save less than Whites of similar income and demographics (see, for example, Bound et al (2002), Oliver and Shapiro (1995)). We will examine the impact of racial differences in visible consumption expenditures on racial differences in wealth accumulation below in Section 6.

Hispanic households. If all of the additional spending on these visible goods were allocated to savings (an extreme assumption for illustrative purposes), Black saving rates for households between the ages of 18 and 50 would increase by nearly 6 percentage points while Hispanic savings rates would increase by over 5 percentage points per year.

If minority households are spending more on visible goods relative to White households with similar income, total expenditures, and demographics, on what expenditures are they spending less? The intertemporal budget constraint implies that it must come from either other form of current consumption or from future consumption (i.e. current savings). Table 5 looks at the differences in other current consumption across the races. The coefficients in this table come from a regression similar to (1) where the dependent variable of log visible expenditures is replaced by the log of other different consumption categories. Otherwise, the regression is exactly the same as the one reported in row 5 of Table 2. Given the prevalence of zeros in some consumption categories, we estimate (1) for some consumption categories using a Tobit estimator. These categories are noted in Table 5.

The first striking fact from Table 5 is that there is no evidence that Blacks and Hispanic consume much more than Whites (in percentage terms) on any other consumption category aside from visible goods and housing.[16] In fact, aside from housing, Blacks spend less than similar Whites on *all* other consumption categories. Some of the differences are small. For example, there only appears to be very small differences between Blacks and Whites in food expenditures. However, Blacks spend 30 percent less on education, approximately 50 percent less on entertainment services and durables, and 60 percent less on health spending. Similar patterns emerge for Hispanics.

Both Blacks and Hispanics spend more on housing expenditures for shelter and utilities than their White counterparts, while at the same time spending much less on home furnishings. One interpretation may be that housing is itself a visible good, and as a result reveals similar expenditure patterns to those for cars, clothing, and vehicles. Alternatively, there is evidence that minorities face significantly higher rejection rates for mortgages (see Munnell et al. (199x) and Charles and Hurst (2002)) which serves to limit their access to owner occupied housing. 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. Given the large literature on racial segregation and racial discrimination in housing, we therefore treat housing as a distinct category. Also, as we did in the robustness specifications in row 5 of Table A2 (robustness specifications), we sometimes include housing expenditures as a control in explaining racial differences in consumption patterns within different consumption categories.

In summary, in this section of the paper we have presented a set of facts about the consumption patterns of Blacks and Hispanics versus Whites. In particular, Blacks and Hispanics spend 29 percent more on visible expenditures (cars, clothing, jewelry, and personal care items) than otherwise similar Whites. These patterns are roughly similar across all sub groups of the population with one exception – the racial propensity to consume visible goods diminishes sharply for Blacks as households near retirement. While minority households consume much more visible goods than comparable Whites, they consume equal amounts or less of all other consumption categories aside from housing.

4: A Theory of Conspicuous Consumption

In this section we present a simple model of conspicuous consumption based on preferences for social status within a community. We are especially interested in status – or respect – that is forthcoming from random, anonymous interactions in society. Thus, while it is undoubtedly true that people care about how they are viewed by their friends, family members and colleagues, the fact that these individuals have much finer information about their economic or social position renders the mechanism studied below irrelevant for those more intimate social interactions. A focus on random anonymous interactions also highlights the key traits of portability and observability of the forms of expenditure we study, and explains why housing (or home furnishings) are treated separately in our analysis. Only intimate people are likely to observe these expenditures, and their very intimacy makes it likely that it is basis on which they form their status beliefs.

We assume a continuum of households with incomes distributed continuously on $[y^{\min}, y^{\max}]$. Consumers' preferences are separable in two consumption goods and status:

$$u(y-c)+\alpha u(c)+s,$$

where u is increasing and concave, c is conspicuous (visible) consumption and hence y-c is the "inconspicuous consumption" - e.g. food, health, education, or saving and s is

given by the outcome of the status contest described below. For simplicity assume that the function u is the same in both cases.[17]

We posit that, in a world with perfect information, an individual's status would equal the ratio of his/her income to their reference group's (G) average income:

$$s^i = \frac{y^i}{E\left[y^i \mid G \right]}.$$

The status function is similar to the notion of "relative income" as in Duesenberry (1949) as well as "capitalist spirit" preferences of Bakshi and Chen (1996), and can be viewed as a simplified version of preferences in which status is given by relative wealth rank, such as Robson (1992) and Cole et al. (1992, 1995)[18]. This specification of preferences captures the idea that "social esteem" earned by a person within a given community is proportional to his or her endowment, relative to that of the community.

The demand for this form of social status is consistent with broad evidence of the influence of the individual income relative to average income of some reference group on (self-reported) individual well-being (e.g. Clark and Oswald (1996), McBride (2001), Luttmer (2005), Dynan and Ravina (2007)). On the other hand, it could be interpreted as a reduced form of preferences defined over some other good, whose consumption is not mediated through markets and instead is "assigned" based on some alternative mechanism, such as matching. The latter interpretation of positional concerns is stressed by Postlewaite (1998), and is analyzed in detail in Cole et al. (1992, 1995) as well as

[17] We focus on a static model to provide the intuition about the mechanism that relates conspicuous consumption to the mean level of income of an individual's "peer (reference) group". We discuss the extension to a dynamic model below when we address racial differences in savings rates. Differences in household saving will occur if the racial gap in status or the importance of status diminishes with age. Support for the declining importance of conspicuous consumption between races was documented in the previous section.

[18] In economies where wealth rank determines status the first-order effect is typically captured by the relative wealth – e.g. Corneo and Jeanne (1999), Roussanov (2007).

Corneo and Jeanne (1998). As an example, suppose the community as a whole possesses a good that is in fixed supply, and is distributed between the individuals in the amounts proportional to their wealth. Then s^i, defined above, is proportional to the amount of this good consumed by individual *i*. One can imagine a "mating" scenario in which wealthier individuals are able to attract a greater number of mates than poorer ones.

The simple preference specification above possesses the important feature that the marginal utility of relative income is higher for richer individuals. In other words, marginal utility of wealth is higher when the average wealth of the social group is lower. This assumption on preferences is key for the results that follow. Intuitively, it means that relative income considerations are more important to the wealthy, while for the poor, consumption of goods and services is a more pressing concern than social status. In a sense, status itself has a luxury good property. Similarly, Friedman and Savage (1948) and Becker et. al. (2005) argue that higher social position raises marginal utility of wealth. There is some empirical support for such a "getting ahead of the Joneses" model of preferences from the survey data (McBride (2001)); it also arises in a calibrated model of risk-taking and entrepreneurial portfolio choice under social status preferences developed in Roussanov (2007).

Individual endowments (e.g. income or wealth) are typically unobservable. However, consumers can signal their wealth through visible (conspicuous) consumption, i.e. since *c* is visible, it can be used by the public to infer the person's (endowment) type and assign social status:

$$s^i = \frac{E\left[y^i \mid c^i, G \right]}{E\left[y^i \mid G \right]}.$$

In Veblen's language, the ``basis on which good repute in any highly organized industrial community ultimately rests is pecuniary strength; and the means of showing pecuniary strength, and so of gaining or retaining a good name, are leisure and a conspicuous consumption of goods.'' (pp. …)

In a signaling equilibrium the consumption of rich individuals must be sufficiently high to prevent the poorer ones from emulating them and thus blurring the signal. Then the signal is fully revealing such that:

$$E\left[y^i \mid c^i, G \right] = y^i$$

Thus the model of conspicuous consumption is a version of the standard labor-market signaling model of Spence (1973). In this environment the appropriate notion of a signaling equilibrium is the outside observers' estimate of an individual's income based on that individual's consumption of visible goods, which coincides with the true income. Following Ireland (1994), it can be shown that given the above preferences, both the monotonicity and the initial value condition are satisfied. The monotonicity (single crossing condition) states that conspicuous consumption is increasing in income. The initial value condition is that the poorest individuals do not signal, i.e. their consumption of visible goods is the same as it would be without signaling, either if wealth was directly observable or if status concerns were absent altogether, and therefore solves:

$$c_{min} = argmax\left[u\left(y_{min} - c \right) + \alpha u\left(c \right) \right].$$

Indeed, since the equilibrium is fully revealing, the lowest income individuals always get the lowest status. Therefore there is no reason for them to distort their consumption bundle.

Let $g(c) = E\left[w^i \mid c, G \right]$ be the society's inference function. Under the assumptions above, as shown by Mailath (1987), the existence of separating equilibrium implies that *g* is a differentiable function. In what follows, we show that such a function indeed exists in particular parametric specification, which we characterize. Ireland (1994) and Cole et. al. (1995), whose models are very similar to ours, provide rigorous discussion of the signaling equilibrium with a continuum of income types.

Parametric example: logarithmic utility

Let $\mu_G = E\left[w^i \mid G \right]$ be the average wealth of the social group (we will suppress the G subscript throughout the theoretical discussion). Each individual solves

$$\max_c \left[\log (\text{y-c}) + \alpha \log (\text{c}) + \frac{\text{g (c)}}{\mu} \right],$$

so that the first order condition is satisfied:

$$\frac{\alpha}{c} - \frac{1}{y-c} + \frac{g'(c)}{\mu} = 0.$$

In equilibrium, $g\,(\text{c}) = \text{y}$, so that the conspicuous consumption policy must satisfy the ODE:

$$g'(c) = \mu \left(\frac{1}{g(c) - c} - \frac{\alpha}{c} \right)$$

Via a change of variables, define $c = xy$, where x is the expenditure share of conspicuous goods, and correspondingly define $w(x) = y\left(c(x)\right) = y$. As a result, we can express the equation above in terms of x such that:

$$w'(x) = \mu\left(\frac{1}{1-x} - \frac{\alpha}{x}\right)$$

Solving this by integration yields

$$w(x) = \mu\int\left(\frac{1}{1-x} - \frac{\alpha}{x}\right)dx + C = -\mu ln(1-x) - \mu\alpha lnx + C,$$

where the integration constant is pinned down by the initial condition

$$w^{-1}(y_{min}) = x_{min} = \frac{\alpha}{1+\alpha}.$$

Consequently, the model predictions that the conspicuous consumption share x is increasing in individual income and decreasing in mean income of their reference group, μ (holding the minimum income in the community y_{min} constant). Thus, within a given population conspicuous consumption has the luxury good property - its share in total expenditure (not just the absolute amount) is increasing in income. At the same time, holding the income level of a household fixed, its conspicuous consumption will be higher in a poorer community. It follows that not only is (perceived) income an increasing function of conspicuous consumption share (and, consequently, that conspicuous consumption is increasing in income), but that the conspicuous consumption distortion is decreasing in average income μ. In other words, the share of income devoted to conspicuous consumption depends only on the individual's income relative to the average income of the community, but not the absolute income level. Figure 2 presents the resulting Engel curves in the case where income is distributed continuously on (0,45] with α=1 for a range of mean incomes. The Engel curve for the conspicuous

good is given by $x(y) = w^{-1}(y)$, since the inference function is invertible by the nature of the signaling equilibrium.

As seen from Figure 2, holding own income constant, visible consumption shares are decreasing in the mean income of one's reference group. This prediction follows from the fact that under the preferences above the marginal status payoff is greater when the reference income level μ_G is lower (the "getting ahead of the Joneses" property). This key cross-sectional prediction follows in the case of a more general utility over consumption (e.g. power). Importantly, in the case of logarithmic preferences the conspicuous consumption shares depend only on the relative incomes of the rich and the poor. Therefore, the prediction that conspicuous consumption varies with average wealth in a community is not inconsistent with scale independence and can be invariant to aggregate economic growth as long as the absolute income levels grow in lock-step.

In fact, this prediction can be made more general if we allow the minimum level of income in a community to vary positively with its average income. Empirically, social groups differ not only average income, but also in supports of their income distributions. As shown by Ireland (1994) in a setting similar to ours, lowering minimum income level of a social group increases conspicuous consumption by its members, since richer individuals are willing to pay even more to distinguish themselves when the poor are particularly impecunious. Thus, as long as higher income social groups do not include individuals with lowest incomes, the prediction that poorer communities spend more on signaling can be strengthened. The latter assumption is quite natural, as wealthier communities typically have higher costs of entry (e.g., larger, more expensive homes) that exclude individuals who are too poor to afford them.

An interesting consequence of our analysis is that, while the same income provides an individual with higher status in a poorer community than in a wealthier community, it is not necessarily true that it also yields a higher level of utility in the signaling equilibrium. Indeed, the cost of distorting the consumption bundle in favor of visible goods can be high enough to overcome the status benefit. Thus, being part of a poorer community can be most disadvantageous to its wealthiest members, who could be better off in a richer community where they do not need to waste resources on ``proving themselves'' to be worthy in the eyes of the others. This suggests that status effects can survive in economies in which communities are endogenous and individuals can optimally choose whether to be ``first in village or second in Rome,'' trading off the benefits of status against the costs of displaying it (see Damiano et. al. (2004) for a related model of group formation).

The model of conspicuous consumption as a signaling device formulated above is consistent with much of the existing literature on social status concerns. Our main innovation is to emphasize the key testable implication of the signaling model: that the share of income devoted to visible consumption good, at a given income level, is greater when the individual's reference social group is on average poorer. Testing this prediction empirically is the main focus of the remainder of this paper.

5: Empirical Tests of Conspicuous Consumption Model

Explaining Within Race Conspicuous Consumption Differences

One key implication of the model put forth in the previous section is that the propensity to consume visible goods, all else equal, declines when the mean income of one's reference group increases. Our theory, if correct, would apply to within race

differences in visible expenditures as well as potentially explaining cross race differences.

To test our theory, we begin by focusing on within White differences in visible expenditures. We use state level variation in mean state income for men as our measure of μ. That is, we assume that the mean income of Whites within a particular state is described by the total income received by men. Our results are robust if to a variety of alternate specifications including using total income of all whites within the state as our measure of μ. Holding income, total expenditures, and other demographic variables constant, the theory of conspicuous consumption discussed above predicts that White households in states where Whites have low mean income should have higher amounts of visible consumption. To test this prediction, we begin by estimating the following specification:

$$\ln(visible_i) = \beta_0 + \Gamma_j State_j + \gamma Income_i + \varphi Expenditure_i + \theta X_i + \eta_i \qquad (5.1)$$

where $State_j$ is a vector of state dummies and $\mathbf{\Gamma_j}$ is the vector of coefficients on those state dummies. Otherwise, the controls are identical to those used in Row 6 of Table 2. The restrictions imposed on the sample are the same as discussed above with the additional restriction that in this regression we only include household headed by Whites. In Figure 3a, we plot the coefficients on the state dummies ($\mathbf{\Gamma}$) from a regression such as (5.1) against the mean income of white males from state *j*. We use data from the 1990 through the 2002 March Current Population Surveys (CPS) to compute the mean income of White males by state. We impose similar sample restrictions as the sample restrictions used for our CEX data. Our sample is mainly restricted households with a head aged between 18

and 49 (inclusive). These restrictions are discussed in depth in the Data Appendix. We use the CPS to compute our measure of μ_G (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.

Figure 3a shows that there is a strong relationship between the propensity of households headed by Whites to consume visible goods within a state and the mean state income of White men. Alabama was the omitted state in the estimation of (2). For example, Figure 3a says that, holding income, total expenditure, and demographics constant, White Texans consume 20 percent less visible goods than White Alabamans. The mean income of households headed by White men in Texas is nearly $10,000 a year higher than the mean income of households headed by White men in Alabama. We also report the regression line (weighted by the number of observations by state in the sample used to estimate (2)) of the estimated state dummy coefficients against mean state income. The coefficient on mean state income is negative and statistically significant. The coefficient implies that, on average, increasing mean state income by $10,000 reduces the amount of visible consumption by 17 percent. Lastly, the R-squared of the regression of the state visible expenditure fixed effect against mean state income among whites is 0.35.

One concern about the results in the Figure 3a is that there are potentially other components of the consumption bundle whose prices are correlated with the mean state income. Consider housing, for example. Consider a state where the price of housing is high, all else equal. Individuals in that state, of a given income, will be observed to spend more for the same amount of housing, given the higher housing price. As a result,

expenditures on other consumption items for persons in that state will be lower. So, one reason that spending on visible goods on high mean income states is lower is that housing expenditures are higher. To examine the relationship between housing expenditures and mean state income, we re-estimate (5.1) replacing the dependent variable with the household's housing shelter outlays. Figure 3b plots the coefficients on the state dummies from this regression against mean state income of whites. As conjectured, housing expenditures at the state level, conditional on individual income and total expenditures, are much higher in states with high mean state income.

To explore whether the results in Figure 3a are driven by differences in housing expenditures across states, we re-estimate (5.1) including the individual's actual housing expenditures as an additional regressor. We then plot the coefficients on the state dummies in the visible expenditure regression (adjusted for housing spending) in Figure 3c. Differences in housing expenditures across states explain a little less than twenty percent of the negative relationship between visible expenditures and mean state income documented in Figure 3a. Specifically, if we regress the state dummies against mean state income, we find that a $10,000 increase in mean state income reduces visible expenditure purchases by 13 percent (p-value < 0.01). The incremental R-squared of this regression falls from 0.35 to 0.27. In summary, there is still a strong negative relationship between visible spending and mean state income among whites even after controlling for differences in housing expenditures.

One concern about the results in Figures 3a and 3c is that there are other factors at the state level that cause the prices of visible goods to differ systematically across states in a way that is correlated with state income. For example, if there is partial consumption

insurance at the state level, average income in the state is relevant for individual consumption in addition to individual income due to risk sharing. To explore this concern, we examine differences in food expenditures across states. Our hypothesis is that the distribution of food at the retail level is similar to the distribution of visible goods at the retail level. Figure 3d plots the coefficients on the state dummies from a regression similar to 5.1 where the dependent variable was log food expenditures as opposed to log visible expenditures. This regression also included log housing expenditures as an additional control. Notice, that unlike visible expenditures, food expenditures increase slightly with state income for Whites.

Figure 3e plots the state fixed effects from a regression of entertainment service expenditures on individual income, total expenditures, demographic and housing expenditures and Figure 3f plots the state fixed effects from a regression of non-housing/non-visible expenditures on individual income, total expenditures, demographic and housing expenditures. Both of these regressions show that there is no systematic relationship between either entertainment services or the remainder of the household's expenditure bundle and mean state income. Overall, for Whites, the negative relationship between visible expenditures and mean state income is not found among either food expenditures, entertainment services, or total expenditures less visible goods and housing. The results from Figures 3a-3f provide strong support for our model's conjecture that visible spending is negatively related to the economic status of one's peers, holding individuals characteristics constant.

Table 6 reports the coefficients from the regression analog of (5.1) using the CEX data. We replace the state dummies, however, with the mean income of households

headed by white men in the state (our measure of μ_G). As above, the mean income by state is computed using CPS data. Specifically, we estimate:

$$\ln(visible_i) = \beta_0 + \delta \ln(\mu_j) + \gamma Income_i + \varphi Expenditure_i + \theta X_i + \eta_i \qquad (5.2)$$

Otherwise, the estimation of (5.2) is identical to the estimation of (5.1). Column 1 of Table 7 shows our base estimate of δ to be -0.81 implying a doubling of mean state income of White men reduces visible expenditures of White men by 81 percent, all else equal (p-value < 0.01). This coefficient roughly translates to the relationship between the state fixed effect and mean state income estimated in Figure 3a.

In column 2 of Table 6, we include housing expenditures as an additional control and the coefficient still remains large and statistically different from zero. In column 3, we include the mean income of all men in the state (not just Whites) as an additional control. Our theory says that households should respond negatively with their visible consumption to the mean income level of their reference group. If reference groups are defined along racial lines, households visible consumption should not be related to the mean income of other racial groups within their state. There is weak evidence of this in Column 3. White men do respond statistically to the mean income of White men and there is no statistical relationship between their consumption and the mean income of other racial groups in the state. However, we cannot rule out that the coefficient on the income of White men (row 1) is different from the coefficient on the income of all men (row 3).

In column 4 of Table 6 we also include measures of the log of the variance of the income of White men in state *j* relative to the mean income of White men in state j as an additional control. In this specification, the estimate on the variance is negative. A more

disperse population weakens the propensity to consume visibly, all else equal. Notice, all the other coefficients remain constant between the specifications shown in columns 2 and 4.

Table 7 shows that the same patterns hold within Blacks and Hispanics. Specifically, we re-estimate an equation similar to (5.1) on a sample that either contains only Blacks (column 1 of Table 7), only Hispanics (column 2 of Table 7), or a pooled sample of Blacks and Hispanics (column 3-6 of Table 7). In column 1 (2), our measure of μ_G is the mean income of Black (Hispanic) males in state *j*. In our pooled regression in column 3, our measure of μ_G is the mean income of either Black men in state *j* if the household head is Black or the mean income of Hispanic men in state *j* if the household head is Hispanic. The results show that for both the Black (column 1) and the Hispanic (column 2) samples, the coefficient on μ is negative and large. Moreover, the coefficients on μ_G are similar between Blacks and Hispanics, suggesting that a doubling of mean state income of the race based reference group leads to a 50 (70) percent decline in the propensity of Blacks (Hispanics) to spend on visible goods, all else equal. The results are nearly identical in the pooled regression, although the coefficients are much more precisely estimated. A doubling of the mean income of a person's reference group within their state results in a 52 percent reduction in visible spending (p-value < 0.01).

In column 4, we include log housing expenditures as an additional control. The results are robust to this inclusion. A doubling of mean income of the reference group within the state results in a 33 percent reduction in visible spending. In column 5, we also include the mean income of all men in the state as an additional regressor. We find that Blacks and Hispanics respond negatively with respect to their visible expenditures as

the mean income of their race-based reference group increases (estimated coefficient = -0.60 with a p-value < 0.01). However, if the mean income of all men in the state increases holding the mean income of men from your race constant, visible expenditures increase (coefficient = 0.61, *p*–value = 0.04).

In column 6, we also add a measure of the standard deviation of income within the state relative to mean income within the state (by race). The relative standard deviation measure is positive, but not statistically different from zero.

Overall, the mechanism put forth in our model explains differences in visible spending of individuals within a given race. If the mean income of those of a person's own race within their state increases, the person's spending has lower visible expenditures, all else equal. This fact is found among Whites, among Blacks and among Hispanics and persists even after controlling for differences in housing expenditures across states.

5B. Explaining Across Race Differences in Visible Expenditures

To explore whether our model in Section 4 can explain the cross race differences in visible spending patterns, we estimate the following:

$$\ln(visible_i) = \beta_0 + \beta_1 Black_i + \beta_2 Hispanic_i + \delta \ln(\mu_G) \\ \gamma Income_i + \varphi Expenditure_i + \theta X_i + \eta_i \qquad (5.3)$$

Equation (5.3) is identical to (1.1) except for the inclusion of $\ln(\mu_G)$ as an additional regressor where μ_G is the mean level of the individual's racial group in state *j*. This

regression assesses whether Blacks or Hispanics, holding their own income and the mean income of the racial per group constant, have the same visible expenditures as Whites, all else equal. The results are shown in Table 8. Column 1 re-displays the results from row 6 of Table 2 (without including ln(μ) as a control). Specifically, without our conspicuous consumption controls, conditional on income, total expenditures, and demographics, Blacks and Hispanics male-headed households consume 29 percent more on visible goods than Whites.

In column 2 of Table 9, we include state fixed effects in our estimation of (5.3) (however, still excluding ln(μ_G) as a control). State fixed effects have essentially no effect on the estimated racial gaps in visible expenditures. Specifically, controlling for state fixed effects, Black and Hispanic male headed households consume roughly 31 percent more than similar Whites.

The results in column 3 are most interesting. In column 3, we re-estimate (5.3) including ln(μ_G) as an additional regressor (still including state fixed effects). Recall, μ_G is a measure of the mean income of one's reference group, which is defined at the state/race level. Controlling for our measure of conspicuous consumption explains nearly the entire gap in spending across races. Specifically, the estimated coefficient on the Black dummy falls from 0.29 to 0.03 after controlling for our proxy for the desire to consume conspicuously. Likewise, the Hispanic dummy falls from 0.29 to 0.04. In summary, Blacks and Hispanics consume nearly exactly the same amount of visible goods as do Whites, after controlling for the mean income of their racial reference group along with income, total expenditure and demographics. Column 4 shows that the

inclusion of the standard deviation of the income of one's peers does little to change the conclusions from column 3.

In summary, these results are strongly consistent with the predictions of the simple model of conspicuous consumption discussed in section 4. That 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. The only role plaid by race is in determining one's reference group

6. Conspicuous Consumption Implications

In this section, we empirically explore the implications of our conspicuous consumption model for explaining racial differences in educational spending, health care spending, and savings. By the definition of the intertemporal budget constraints, increases in spending on conspicuous consumption items in the current period, all else equal, must yield lower spending on other consumption items within the period or result in lower savings and, consequently, lower consumption in the future.

To begin, we explore how much of the racial differences in other consumption categories (as documented in section 3) can be explained by racial differences in spending on visible goods. To do this, we re-estimate the regressions in Table 5 with two additional controls: the share of total spending allocated to housing and the share of spending allocated to visible goods. We use the share variables so as not to confound the fact that spending within almost all broad consumption categories increase with income. Given that income and total expenditure controls were already included in our estimation of the results in Table 5, adding in the share variables answers the thought experiment:

holding income and total expenditure constant, what happens to spending on other consumption categories if the share of expenditure to either housing or visible goods increase?

The results of these regressions are shown in Table 9. In Panels A, B, and C, we explore the effects of increased spending on visible goods in explaining the racial gap in education spending, health care spending, and food spending, respectively. Our baselines specifications are regressions of the log of spending within the consumption category (e.g., education, health, food) on the full set of income, expenditure, and demographic controls used in the estimate presented in Table 5, along with a Black and Hispanic dummy variable. The table presents only the coefficients on the Black and Hispanic dummies. For ease of comparison, we re-display our baseline results in Table 9 (rows 1).

As in Table 5, the regressions are estimated on our main sample and as a result, the results from the baseline specification in Table 9 are identical to the results presented in Table 5. Rows 2 include the housing share of expenditures as an additional control. We include the housing share of expenditure to account for potential differences in housing costs between races of similar income and demographics due to potential discrimination in housing markets. For the most part, including differences in housing expenditures explains little of the racial gaps in education spending, health care spending, and food spending. Specifically, after controlling for housing expenditures, Blacks still spend 30 percent less on education and 59 percent less on health care than comparable Whites. And as in Table 5, there is a 5 percent difference in food spending between similar Blacks and Whites once conditioning on housing expenditures.

However, including controls for the share of spending on visible goods explains a significant amount of the racial gap in health care and education spending for both Blacks and Hispanics. Specifically, the Black-White gap in education gap falls by over half (nearly 17 percentage points) and the Black-White gap in health care falls by 20 percent (nearly 8 percentage points) once controlling for differences in spending on conspicuous goods.

We also explore racial differences in food and housing spending after controlling for differences in spending on visible goods. Controlling for differences in the share of expenditures allocated to visible goods, we find that the Black propensity to consume food and housing, relative to similar Whites, increases by 3 and 4 percentage points respectively. The comparable increases for Hispanics were 3 and 4 percentage points.

Appendix Table A1 shows that the average quarterly spending on education, health care, food and housing for households in our sample were, respectively, $309, $505, $2,051, and $2,629. The estimates in Table 9 imply that the increased spending in visible consumption results in about $50 less spending per quarter on education by Blacks (0.17 * 309), about $45 less spending per quarter on health care by Blacks (0.09 * $505), about $61 less spending per quarter on food by Blacks (0.03 * $2,051), and about $105 less spending per quarter on housing by Blacks, compared to otherwise similar Whites. In total, this represents $1,052 per year in actual spending declines on these four consumption categories.[19] In the previous section, we found that Blacks spent an additional $2,000 on visible goods compared to similar Whites. Our results in Table 9

[19] The range comes from the fact that we summed the spending declines across the four categories, converted them to annual numbers by multiplying by four and realizing that some people have commented that the CEX underestimates total expenditures by upwards of fifty percent. As a result, we multiplied the actual decline by 2. This is analogous to the procedure used in the previous section to explore the magnitudes of the level differences in visible expenditures between Blacks, Whites and Hispanics.

suggest that nearly half of the increased spending on visible goods diverted resources from spending on education, health care, food and housing compared to Whites with similar income, total expenditures, and demographics. From a policy perspective, increased spending on visible goods by minorities diverts resources from spending on health care, education, housing, and food. This implies that policies that try to eradicate the racial gaps in spending on these categories must recognize that the differences exist partly because of households' (optimal) decision to consume conspicuously.

In the final part of our paper, we explore potential differences in savings behaviors across races. If the importance of status diminishes with age, households would optimally choose to fund current conspicuous spending out of both current and future income. The results in Table 2 seem to suggest that the racial gap in visible expenditures diminish once households are over the age of 50. In order to explore this information, we use data from the Panel Study of Income Dynamics (PSID) that has detailed information on household wealth holdings as well as easily accessible identifiers for the households' state of residence. Before exploring the PSID data, we wish to note that the analysis we employed above using the CEX data did not allow us to explore differences in saving rates by race. The reason is that all of our regressions conditioned on total expenditures, which we used as a proxy for permanent income. However, if minorities engage in more conspicuous consumption when young, their total expenditures at each level of permanent income would exceed that of comparable whites. . The PSID data allows us to create better income-based measures of permanent income -- an important requirement for properly assessing the effects of conspicuous consumption on racial differences in wealth accumulation.

Row 1 of Table 10 shows the raw mean difference in wealth holdings between Blacks and Whites in the 1999 wave of the PSID. The measure of wealth is total net worth including housing wealth but absent and private or public pension wealth (see Hurst et al 1996 for a full description of the PSID net worth measure). This unconditional wealth gap is in line with others how have examined differences in wealth accumulation between Blacks and Whites. Controlling for a cubic in permanent income (as proxied by five year average income and education dummies) along with demographics such as marital status, change in marital status, and the composition of the family explains roughly 60 percent of the unconditional gap in wealth holdings between Blacks and Whites. The fact that permanent income and demographics explains two-thirds of the Black-White wealth gap is consistent with the results in the literature (see Bound et al. (2002) and the cites within).

In row 3 of Table 10, we also control for state fixed effects. Notice, controlling for state fixed effects does little to change the measured gap in wealth accumulation between Blacks and Whites conditional on permanent income and demographics. In row 4, we include $\ln(\mu_G)$ as an additional regressor where μ_G is defined as above. In this instance, controlling for the mean income of one's reference group at the state/race level dramatically reduces the measured difference in wealth holdings between Blacks and Whites with similar permanent income and demographics. Specifically, roughly 60% of the unexplained racial gap in wealth holdings after controlling for permanent income and demographics can be explained after including our measure of the desire to consume conspicuously.

Again, we do not want to put too much emphasis on the causal relationship between conspicuous consumption and wealth holdings from the results in Table 10. However, it does appear that the mechanism that leads Blacks to consume more conspicuous goods than their White counter parts could also explain some of the well documented Black-White wealth gap.

7. Conclusion

This paper contributes to the study of household consumption on several levels. We have documented the divergent patterns of expenditure on visible consumption goods between blacks and Hispanics on the one hand, and the white population on the other. Consistent with popular perception (the "bling effect"), we find that minorities spend more on conspicuous items that whites, controlling for differences in income. We argue that one does not need to appeal to cultural differences or racial differences in preferences to understand this evidence. We present a theory of status-seeking and signaling via conspicuous consumption that rationalizes the difference in visible consumption across races by focusing on the fact that black and Hispanic communities are on average poorer than white ones. In our model, the only role played by race in determining conspicuous consumption is that it helps to identify the relevant reference group for a given individual. Whether the race- and state- based reference group definition that we use proxies for a truly race-specific social networks determining social status (in which case there is still some role for culture or prejudice) or instead captures the fact that at the local level black and Hispanic communities are segregated (while the underlying concept

of social network itself is race-blind) is an interesting question that could be addressed in future research.

In any case, there are wide-ranging potential implications of our results. We test and confirm the key prediction of the theory that the payoff to signaling status is higher in a poorer community, holding individual income level fixed. Since this prediction stems from the assumed property that marginal value of relative position is higher for wealthier individuals, the empirical results lend support for this way of representing preferences for social status. In turn, these preferences also make predictions for other aspects of household financial behavior beyond the consumption and saving decisions: for example, it implies different attitudes towards idiosyncratic risks and towards risks that are common to the individual's reference group. Potential implications include gambling behavior and under-diversification of investment portfolios, as explored in Roussanov (2007).

Finally, the support that our results yield to the status-based view of conspicuous consumption has implication for welfare and policy design. Status-signaling models typically imply equilibrium over-consumption of visible goods at the expense of inefficient reduction in other outlays, such as those financing education, health, and saving, as identified in our analysis (Frank (1984, 1985a, b), Ireland (1994)). One consequence is that the provision of certain benefits (such as those associated with health care and education expenditures) in kind might lead to a superior outcome than that attained through monetary transfers. At the same time, participation in means-tested social programs, if observable, is a signal associated with being a poor type, giving rise to a stigma attached to such programs. Ireland (1994) provides a careful analysis of these

issues. Combining these theoretical insights with the empirical understanding of status seeking is a promising area of future research that should help to provide quantitative evaluation of various social programs.

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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 which were posted on the web by the National Bureau of Economic Research (NBER).[20] The NBER CEX files are available from 1980Q1 – 2003Q1. Our analysis is restricted to the years between 1986 through 2002. We start our analysis in 1986 because that is the first year that the CEX data included unique family identifiers. Prior to that, household identifiers in the CEX were repeated across years. This restriction is made for simplicity given that, as discussed below, we needed to merge additional information (particularly state of residence) into the NBER CEX files using the raw CEX data available from the Bureau of Labor Statistics (BLS). Our sample ended in 2002 given that was the last full year available from the NBER CEX files.

For a full description of the NBER CEX files, see http://www.nber.org/ces_cbo/Cexfam.doc. Some of the key features of these files are as follows. First, the NBER CEX extracts include information from the CEX family files, member files, the detailed expenditure files, and the detailed income files. The goal of the extracts was to have a condensed version of the original data where the organization is consistent over time. This is why we used the NBER CEX files as opposed to the raw data from BLS. The goal of this paper is to measure spending differences between Blacks, Whites and Hispanics by category. Having the categories measured consistently over time is essential for our analysis. Second, the spending information for each household was aggregated across all the years in which they participated in the survey.

[20] See http://www.nber.org/data/ces_cbo.html for the data files.

As a result, each household in the survey is only included once. For example, if the household provided expenditure information for all four quarters for which they were to participate in the survey, those spending amounts would be summed together to provide a measure of total expenditure for the household over one full year. Doing so helps to mitigate measurement error across the individual quarterly expenditure observations. Third, the CEX raw data contains upwards of 500 detailed spending items. Again, to mitigate measurement error and to provide consistency across time given the changing nature of the survey, the NBER CEX files aggregate the spending categories within the raw CEX files to only 47 spending categories.

Appendix Table A3 lists the 47 spending categories within the NBER CEX files and the 15 aggregate spending categories we analyze in the paper. The 15 categories we use in this paper is the universe of all expenditure categories in the NBER CEX files. There are a few points worth noting about our aggregation and the aggregation in the NBER CEX files. First, as is standard in the literature, we compute a measure of housing service flows. For renters, their housing service flows are captured by the rent they pay for their home/apartment. For homeowners, housing services are computed using the home owner's report of the rental equivalence of their home.[21]

Second, our measure of spending on housing services also 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

[21] Specifically, homeowners are asked "If someone were to rent your home today, how much do you think it would rent for monthly, unfurnished and without utilities?" We also experimented with other measures of the housing service flow for home owners. Specifically, we assumed housing service flows were six percent of the homeowners housing value. The results were nearly identical to the ones reported in this paper using the rental equivalence measure.

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. Because the rental category includes the rental of furniture while the purchase of furniture is included in a separate category, one may observe Black spending on housing services being higher than Whites if Blacks are more likely to rent furniture than Whites. For this reason, in some of our specifications, we explore racial differences in an aggregate housing category (which sums together spending on housing services and home furnishings).

Third, it is also hard to compute a measure of the household's spending on their vehicle itself separate from their spending on the maintenance of the vehicle. This may be important if Blacks are more likely to both live and work in urban areas reducing their driving needs (which would reduce their need for vehicle maintenance). Our most limited measure of vehicle purchases include only net outlays associated with purchasing a new or used vehicle. These are primarily spending that occurs with the down payment of the vehicle. Our more expansive measure of vehicle spending includes three additional components. 1) the repayment of principle on vehicle loans, 2) spending on maintenance, leasing, repairs, storage and rental, and 3) spending on tires, tubes, accessories and other parts. This expanded category includes components that are definitely related to vehicle usage (such as car maintenance and parts) but it also includes car lease payments and car customization through accessories, car stereo equipment, and car wheels and rims. For completeness, we explore both the limited and expanded measure of visible expenditures. Our primary measure of visible expenditures presented

in Tables 1 – 3 only include the limited measure of vehicle spending. In Table 4, we explore differences between the limited and expanded measures of vehicle spending.

We also made one other set of modifications to the NBER CEX files. The NBER CEX files do not include the following variables that were essential for our analysis: state of residence, Hispanic origin, city size, the number of adults in the household, and the number of quarters that the household participated in the survey. As a result, we downloaded the CEX raw files and merged in the variables manually.

The number of quarters that the household participated in the survey was extremely important to our analysis. The NBER CEX files report the sum of spending in a variety of categories across all quarters that the household participated in the survey. That means households who only participated in the survey for two quarters will have only half the total expenditure as an otherwise identical household who participated in the survey for all four quarters. Complicating matters is the fact that the NBER CEX files do not include an indicator variable for the number of quarters that the household participated in the survey (although, they do include a variable indicating whether the household participated in all four quarters). Once we manually merged in the number of quarters that the household participated in the survey, we re-expressed the spending data on a per-quarter basis where per-quarter spending in a given category was computed as the NBER-CEX data spending in a given category divided by the number of quarters that the household participated in the survey.

Also, we restricted the NBER-CEX data to include only household heads (ensuring that there was only one observation per household in our data). This was necessitated by the fact that the NBER-CEX data is available at the individual level.

Given that a given household has multiple individuals, we excluded repetitive observations.

Lastly, we made the following sample restrictions. First, we only included households who reported themselves as Black, White and Hispanic. White and Black households are identified as distinct categories within the CEX. However, households could classify themselves as either White and Hispanic or Black and Hispanic. Any households of mixed race were considered Hispanic within our analysis. This assumption had no impact on any of the results reported in the paper. In particular, our results are robust to excluding such households. We also excluded households with total expenditures of over $400,000 per year (in $2005). This restriction truncates the top 0.1% percent of the total expenditure distribution (98 households). We also exclude any households that changed their state of residence during the year or who had head with missing education (4,134 households) or the household had missing region information (617 households). Finally, we exclude from the sample any individual from a state which has less than 30 minorities in the CEX during the entire sample period. These states include Idaho, Montana, New Hampshire, North Dakota, Rhode Island, South Dakota, Vermont, West Virginia, and Wyoming. The reason for this restriction is that in the second half of the paper we compare racial consumption patterns conditional on the mean income of Blacks, Whites and Hispanics in their state residence. Our sample analysis included 60,539 households, consisting of 45,525 White households, 8,563 Black households, and 6,724 Hispanic households.

Table 1:
Descriptive Statistics of CEX Full Sample

	All	White	Black	Hispanic
Age	35.5	34.7	35.5	34.4
Education < 12	0.11	0.06	0.14	0.38
Education = 12	0.30	0.28	0.39	0.29
Education: Some College	0.29	0.30	0.31	0.21
Education: College or More	0.30	0.35	0.16	0.11
Married	0.55	0.57	0.35	0.60
Family Size	2.9	2.7	3.0	3.7
Number of Adults	1.9	1.9	1.8	2.2
Fraction with Zero Income	0.26	0.25	0.30	0.24
Total Family Income | Income > 0	$57,014	$63,087	$37,930	$39,446
Total Avg. Quarterly Expenditure	$12,572	$13,574	$9,198	$10,201
Sample Size	60,539	45,525	8,563	6,724

Notes: Data from the 1986 – 2002 waves of the Consumer Expenditure Survey (CEX). All expenditures are average over all quarters that the household remained in the survey. Sample includes all individuals between the ages of 18 and 49 (inclusive) where the head consistently reported their race as being either White, Black or Hispanic over all quarters in the sample. We also restricted the data to households that did not change their state during their sample period and who had non-missing values for their educational attainment, family size, and region. All dollar amounts are in 2005 dollars.

Table 2: Estimated Black-White Gap in Log Visible Expenditures With and Without Income, Expenditure, and Demographic Controls

Regression Controls Included	Black Coefficient	Hispanic Coefficient	Adjusted R-squared
1. No Additional Controls	-0.37 (0.04)	-0.21 (0.04)	0.01
2. Only Current Income Controls	-0.09 (0.03)	0.03 (0.04)	0.14
3. Specification 2 Plus Expenditure Controls	0.25 (0.03)	0.22 (0.05)	0.54
4. Specification 3 Plus Education Controls	0.25 (0.03)	0.22 (0.05)	0.54
5. Specification 4 Plus Time Dummies	0.27 (0.03)	0.25 (0.05)	0.55
6. Specification 5 Plus Demographic and Wealth Controls	0.29 (0.02)	0.29 (0.05)	0.57

Notes: See note to Table 1 for sample description and relevant sample sizes. The table reports the coefficient on the Black dummy from a regression of the log of visible consumption on a race dummy and other controls. Specification 2 includes the log of current income, if income is positive, a cubic in the level of current income, and a dummy for whether current income was positive. Specification 3 also includes the log of total expenditure, and a cubic in the level of total expenditure. Specification 4 also includes three education dummies (exactly high school, some college, or college or more). Specification 5 also includes year dummies. Specification 6 also includes a quadratic in age, a male dummy, a married dummy, census regions dummies, a MSA dummy, an urban dummy, wealth controls, and a series of separate dummies for the number of adults and children in the household. Robust standard errors (clustered at the state level) are reported in parentheses.

Table 3: Differences in Visible Consumption between Blacks, Whites, and Hispanics, Conditioned on Income, Expenditure and Demographic Controls

Sample	Black Coefficient	Hispanic Coefficient
1. Single Men (n = 13,043)	0.31 (0.04)	0.37 (0.05)
2. Single Women (n = 16,720)	0.27 (0.03)	0.24 (0.06)
3. Married Households (n = 30,776)	0.29 (0.03)	0.28 (0.05)
4. Education of Head < 12 (n = 6,650)	0.30 (0.05)	0.41 (0.05)
5. Education of Head = 12 (n = 18,014)	0.34 (0.03)	0.27 (0.07)
6. Education of Head >12 & < 16 (n = 18,169)	0.29 (0.02)	0.22 (0.06)
7. Education of Head >= 16 (n = 17,706)	0.25 (0.04)	0.11 (0.04)
8. Age of Head Between 18 and 34 (n = 29,995)	0.31 (0.03)	0.30 (0.05)
9. Age of Head Between 35 and 49 (n =30,544)	0.29 (0.03)	0.30 (0.05)
10. Age of Head Between 50 and 69 (n = 24,159)	0.18 (0.04)	0.25 (0.07)

Notes: Sample restrictions are the same as described in the note to Table 1. Additional sample restrictions are described in each row of the table. The regressions in this table have the same controls as in row 6 of Table 2. Robust standard errors (clustered at the state level) are in parenthesis.

Table 4: Estimation of Log of Visible Consumption Sub Category on Black and Hispanic Dummies with Income, Expenditure and Demographic Controls

	I. Full Sample		II. Automobile Owners	
Visible Consumption Sub-Category	Black Dummy	Hispanic Dummy	Black Dummy	Hispanic Dummy
Clothing/Jewelry	0.28	0.34	0.27	0.34
	(0.03)	(0.03)	(0.04)	(0.03)
Personal Care	0.58	0.33	0.60	0.28
	(0.05)	(0.04)	(0.05)	(0.03)
Cars (Limited)	-0.10	0.03	-0.02	0.09
	(0.06)	(0.12)	(0.07)	(0.13)
Cars (Expanded)	-0.41	-0.25	0.15	0.01
	(0.09)	(0.18)	(0.04)	(0.08)

Note: For column I, sample and specification are the same sample and specification used in Row 6 of Table 2 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 column II are the same for column I except for the further restriction that the household must report owning at least one automobile. 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 car services and the principal component of the vehicle loan payment. See the Data Appendix for the complete discussion of 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 5: Differences in Log Expenditures by Category between Blacks, Hispanics and Whites

Log Expenditure Category	Black Coefficient	Hispanic Coefficient
Housing	0.05	0.06
	(0.03)	(0.03)
Utilities	0.13	-0.02
	(0.02)	(0.02)
Food	-0.05	0.05
	(0.02)	(0.02)
Other Transportation	-0.15	-0.01
	(0.03)	(0.04)
Home Furnishings [a]	-0.20	0.01
	(0.03)	(0.04)
Education [a]	-0.29	-0.86
	(0.03)	(0.04)
Entertainment Services	-0.40	-0.39
	(0.03)	(0.03)
Entertainment Durables [a]	-0.53	-0.27
	(0.05)	(0.04)
Health [a]	-0.60	-0.47
	(0.05)	(0.06)
Alcohol and Tobacco [a]	-0.95	-1.13
	(0.07)	(0.05)
Other	-0.08	-0.38
	(0.04)	(0.08)

[a] Indicates that the specification was estimated via a Tobit estimator given the non-trivial fraction of respondents who report zero spending on the category within a given year (see Table A1). Otherwise, specification was estimated via OLS.

Notes: Sample and specification for the results in this table are the same as the sample and specification shown in Row 6 of Table 2 except that the dependent variable of log visible consumption is replaced with the log of another expenditure category. Robust standard errors (clustered at the state level) are in parentheses.

Table 6: Log Visible Expenditures on Average State Income Controls For Male Head Households, Including Own Income, Expenditure and Demographic Controls

	(1)	(2)	(3)	(4)
Log of Mean Income of White Men in State	-0.81	-0.57	-0.47	-0.64
	(0.16)	(0.14)	(0.23)	(0.13)
Log of Mean Income of All Men in State			-0.19	
			(0.28)	
Log of Housing Expenditures		-0.25	-0.25	-0.25
		(0.02)	(0.02)	(0.02)
Log Relative Standard Deviation of White Men				-0.71
				(0.29)
p-value difference of Log of Mean Income of White Men vs. Log of Mean Income of All Men in State			0.57	

Notes: Sample in the table is the same as used in Tables 2 except for the additional restriction that it only includes White households (n =). For column (1), the specification is the same as in row 6 of Table 2 except for the following two changes: the race dummies are dropped as regressors and the log of mean income of White Men in the household's state of residence is included as a regressor. In column (2), we add in log housing shelter expenditures as an additional control. In Column (3), we add both log housing shelter expenditures and log mean income of all men in the household's state of residence as an additional control. The p-value indicating whether the coefficient on log of mean White male income within the state and the coefficient on log mean income for all males within the state is shown in the fifth row of the table. In column (4), we include log housing shelter expenditures and the standard deviation of White male income in the household's state of residence. Log relative standard deviation is computed as the log standard deviation of income for white men in a state divided by the log of mean income of white men in a state. See the data appendix for a discussion of how we used CPS data to compute the mean income statistics by state of residence. Robust standard errors (clustered at the state level) are shown in parentheses.

Table 7: Log Visible Expenditures on Average State Income Controls For Black and Hispanic Men, Including Own Income, Expenditure and Demographic Controls

	(1)	(2)	(3)	(4)	(5)	(6)
Log of Mean Income of Black Men in State	-0.50					
	(0.25)					
Log of Mean Income of Hispanic Men in State		-0.70				
		(0.35)				
Log of Mean Own Group Income in State			-0.52	-0.33	-0.60	-0.43
			(0.13)	(0.10)	(0.14)	(0.23)
Log Mean Income of All Men					0.61	
					(0.31)	
Log of Housing Expenditures				-0.28	-0.28	-0.28
				(0.02)	(0.02)	(0.02)
Log Relative Standard Deviation of Own Group Income in State						0.32
						(0.22)
p-value difference of Log of Mean Income of White Men vs. Log of Mean Income of All Men in State					0.007	

Notes: This table shows the coefficients from regressions similar to those estimated in Table 6. However, unlike Table 6, this table includes only Black men in the sample (column; n =), Hispanic men in the sample (column 2; n =), or pooled Black and Hispanic men in the sample (columns 3 – 6; n =). Log of Mean Income of Black Men or Hispanic Men is computed using data from the CPS and is matched to households in the CEX using state identifiers. Log of mean own group income in the state is the Black mean if the respondent is Black and is the Hispanic mean if the household is Hispanic. Robust standard errors (clustered at the state level) are in parentheses.

Table 8: Racial Differences Log Visible Expenditures After Controlling for Mean Group State Income, Including Own Income, Expenditure and Demographic Controls

	(1)	(2)	(3)	(4)
Black Coefficient	0.29	0.31	0.03	0.02
	(0.02)	(0.05)	(0.06)	(0.06)
Hispanic Coefficient	0.29	0.31	0.04	0.02
	(0.03)	(0.04)	(0.05)	(0.05)
Log of Mean Own Group Income in State			-0.52	-0.51
			(0.10)	(0.10)
Log of Relative Standard Deviation of Own Group Income in State				0.22
				(0.14)
State Fixed Effects Included	No	Yes	Yes	Yes

Notes: 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 2 (see the note to table 2 for details). The first column of this table replicates the results shown in Row 6 of Table 2. In the second column, we include state fixed effects. In the third column, we include both state fixed effects and the log of mean own group income within the state of residence. The log of mean own group income in the state is defined in the note to Table 7. In column 4, we include the log of relative standard deviation of income for one's own group within their state of residence. This variable is also defined in the not to Table 7. Robust standard errors are in parentheses.

Table 9: Racial Differences in Education, Health Care, Food Expenditures, and Housing Expenditures, With and Without Controls for Visible Spending

Controls	Black Coefficient	Hispanic Coefficient
Panel A: Dependent Variable is Log Education Spending		
1. Baseline	-0.29	-0.85
	(0.08)	(0.09)
2. Baseline plus Housing Share of Total Expenditures	-0.30	-0.79
	(0.08)	(0.09)
3. Baseline plus Housing Share of Total Expenditures and Visible Expenditure Share of Total Expenditures	-0.13	-0.63
	(0.08)	(0.09)
Panel B: Dependent Variable is Log Health Care Spending		
1. Baseline	-0.60	-0.47
	(0.03)	(0.03)
2. Baseline plus Housing Share of Total Expenditures	-0.59	-0.44
	(0.03)	(0.03)
3. Baseline plus Housing Share of Total Expenditures and Visible Expenditure Share of Total Expenditures	-0.52	-0.37
	(0.03)	(0.03)
Panel C: Dependent Variable is Log Food Spending		
1. Baseline	-0.05	0.05
	(0.02)	(0.02)
2. Baseline plus Housing Share of Total Expenditures	-0.05	0.05
	(0.02)	(0.03)
3. Baseline plus Housing Share of Total Expenditures and Visible Expenditure Share of Total Expenditures	-0.02	0.09
	(0.02)	(0.02)
Panel D: Dependent Variable is Log Housing Spending		
1. Baseline	0.06	0.07
	(0.03)	(0.03)
2. Baseline plus Visible Expenditure Share of Total Expenditures	0.10	0.11
	(0.03)	(0.03)

Table 10: Racial Differences Wealth Levels After Controlling for Mean Group State Income, Including Own Permanent Income and Demographic Controls (1999 PSID Data)

Controls In Addition to the Black Dummy	Coefficient on Black Dummy
1. Only a Black Dummy	-97,046 (9,054)
2. Permanent Income and Demographic Controls	-40,138 (8,711)
3. Permanent Income and Demographic Controls, Plus State Fixed Effects	-34,289 (9,202)
4. Permanent Income and Demographic Controls, Plus Log of Mean Own Group Income in State	-15,862 (15,365)
Dependent Variable	Total Net Worth Less Vehicle Net Worth
Sample Size	2,019

Notes: Data come from the 1994 – 1999 Waves of the Panel Study of Income Dynamics (PSID). Table reports the coefficient on a Black dummy from a regression of total net worth less vehicle wealth on a Black dummy and a series of additional controls. In Row 1, the only control in the regression is the Black dummy. In Row 2, we also include permanent income and demographic controls. Our permanent income measure is total family labor income averaged over all years the household was in the sample between 1994 and 1999. We include a quartic in permanent income in the regression. Our demographic controls include a quadratic in age, education dummies, family size dummies, dummies for the number of children in the household, marital status dummies, and a male dummy. The log of mean own group income in the state is the same as defined in the previous tables. The sample is restricted to all Black and White households in the 1999 PSID between the ages of 18 and 49 (inclusive). The top/bottom five percent of the wealth distribution is truncated.

Appendix Table A1:
Mean Quarterly Expenditure (in 2005 dollars), Percent with Positive Expenditures, and Expenditure Shares by Consumption Category, by Race

	All	White	Black	Hispanic
Visible Expenditures	2,029	2,176	1,538	1,681
	0.99	0.99	0.99	0.99
	0.12	0.13	0.12	0.12
Shelter Expenditures	2,629	2,785	2,031	2,358
	0.98	0.98	0.99	0.99
	0.23	0.23	0.25	0.26
Food Expenditures	2,051	2,142	1,584	2,045
	1.00	1.00	1.00	1.00
	0.18	0.17	0.20	0.22
Utility Expenditures	908	929	886	796
	0.99	0.99	0.99	0.99
	0.08	0.07	0.11	0.08
Vehicle Service Expenditures	907	994	674	621
	0.87	0.91	0.70	0.78
	0.06	0.06	0.05	0.05
Other Transportation Expenditures	886	950	640	776
	0.98	0.99	0.96	0.97
	0.07	0.07	0.07	0.07
Entertainment Service Expenditures	774	899	379	447
	0.98	0.99	0.95	0.95
	0.06	0.06	0.04	0.04
Health Expenditures	505	569	297	343
	0.85	0.88	0.73	0.75
	0.04	0.04	0.03	0.03

Notes: See notes to Table 1 for full sample description. See the discussion in the data appendix for the definition of each consumption categories. For each consumption category, the first row shows the average spending *per quarter* in that category (in 2005 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 A1 (continued):
Mean Expenditure (in 2005 dollars), Percent with Positive Expenditures, and Expenditure Shares by Consumption Category, by Race

	All	White	Black	Hispanic
Home Furnishing Expenditures	386	429	245	280
	0.82	0.85	0.71	0.79
	0.03	0.03	0.02	0.02
Education Expenditures	309	354	200	159
	0.41	0.45	0.34	0.30
	0.02	0.02	0.02	0.01
Entertainment Durable Expenditures	301	352	135	175
	0.80	0.84	0.63	0.71
	0.02	0.02	0.01	0.01
Alcohol/Tobacco Expenditures	194	217	133	118
	0.74	0.78	0.61	0.62
	0.02	0.02	0.02	0.01
Other Expenditures	689	778	453	399
	0.91	0.93	0.85	0.83
	0.04	0.05	0.04	0.03
Sample Size	60,539	45,252	8,563	6,724

Table A2: Alternate Estimates of the Differences in Visible Consumption Between Blacks, Hispanics, and Whites, Conditioned on Income and Demographic Controls

Specification	Black Coefficient	Hispanic Coefficient
1. Restrict Current Household Income > 0 (n = 38,733)	0.29 (0.03)	0.28 (0.05)
2. Restrict Total Expenditure > $4,000/quarter (n = 52,026)	0.31 (0.02)	0.27 (0.05)
3. Restrict Age to be between 24 and 49 (inclusive) (n = 53,285)	0.31 (0.02)	0.30 (0.05)
4. Restrict Sample to Only Those With 4 completed CEX surveys (n=30,400)	0.30 (0.02)	0.27 (0.05)
5. Include Log Housing Expenditure Control (n = 60,539)	0.30 (0.02)	0.30 (0.04)
6. Include Occupation Dummies (n = 48,862)	0.29 (0.02)	0.27 (0.05)
7. Restrict Years 1996 – 2003 (n = 30,219)	0.32 (0.04)	0.32 (0.05)
8. Restrict Years 1996 – 2003: With City Size Controls (n = 30,219)	0.36 (0.03)	0.36 (0.03)

Notes: This table examines the robustness of the results show in row 6 of Table 2. Aside from the changes noted, the regressions in this table are identical to the ones presented in row 6 of Table 2. Robust standard errors (clustered at the state level) are shown in parentheses.

Appendix Table A3: Aggregation of the NBER CEX Files Analyzed in this Paper

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)

A full description of the NBER CEX categories can be found at:
http://www.nber.org/ces_cbo/Cexfam.doc

Figure 1:
The conspicuous goods' Engel curves for Blacks and Whites (data)

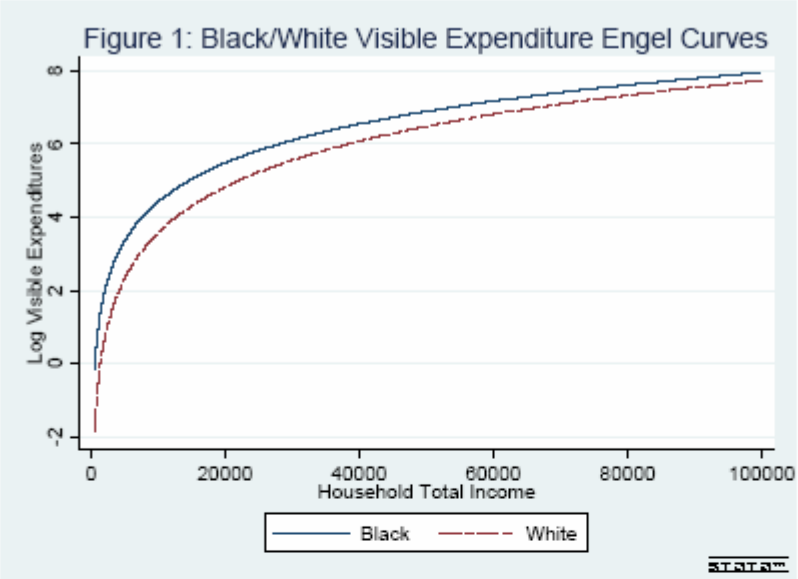


Figure 2:
The conspicuous goods' Engel curves
across social groups with varying mean incomes μ (model)

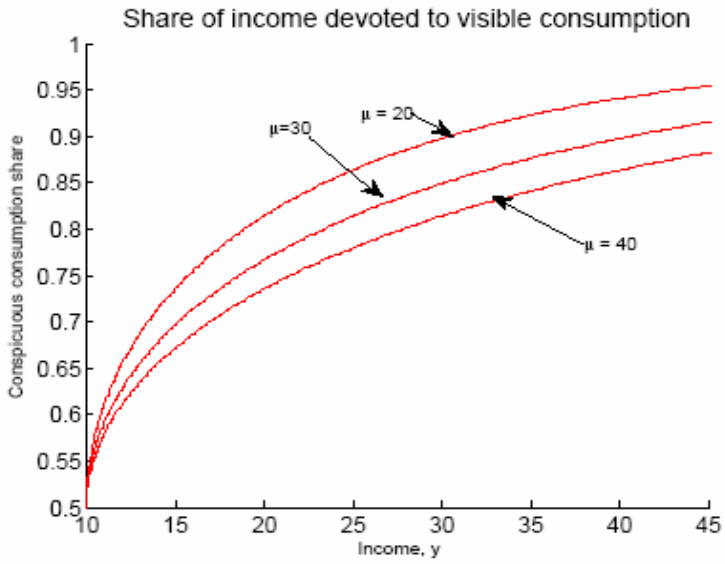
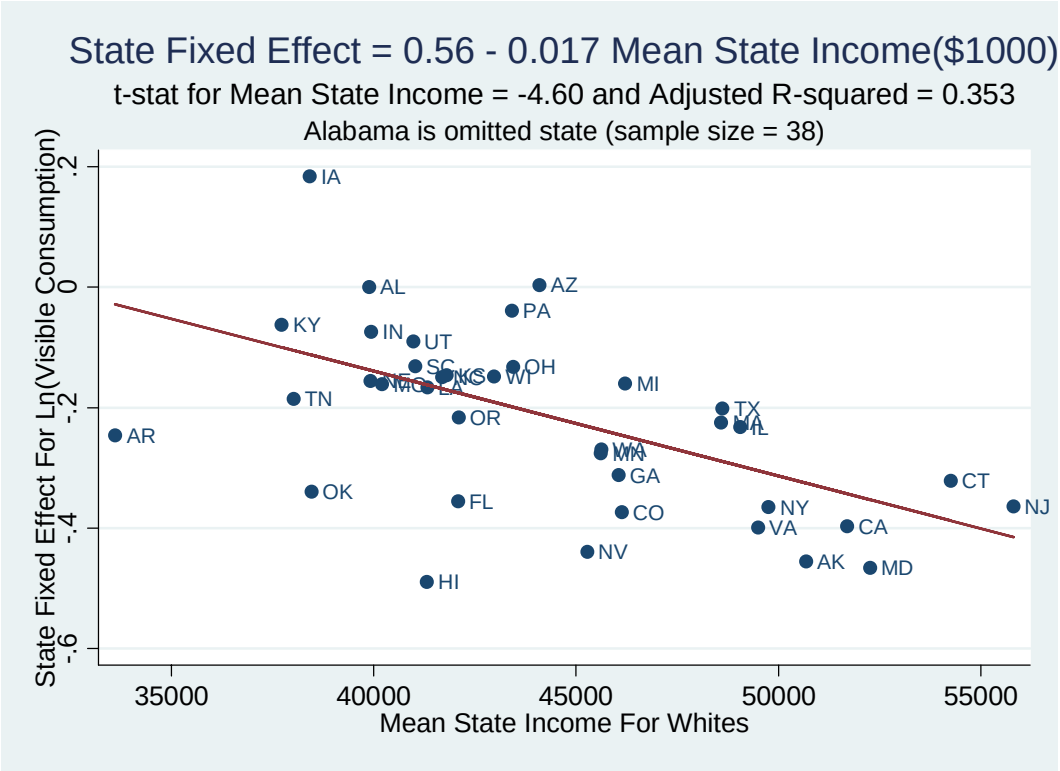
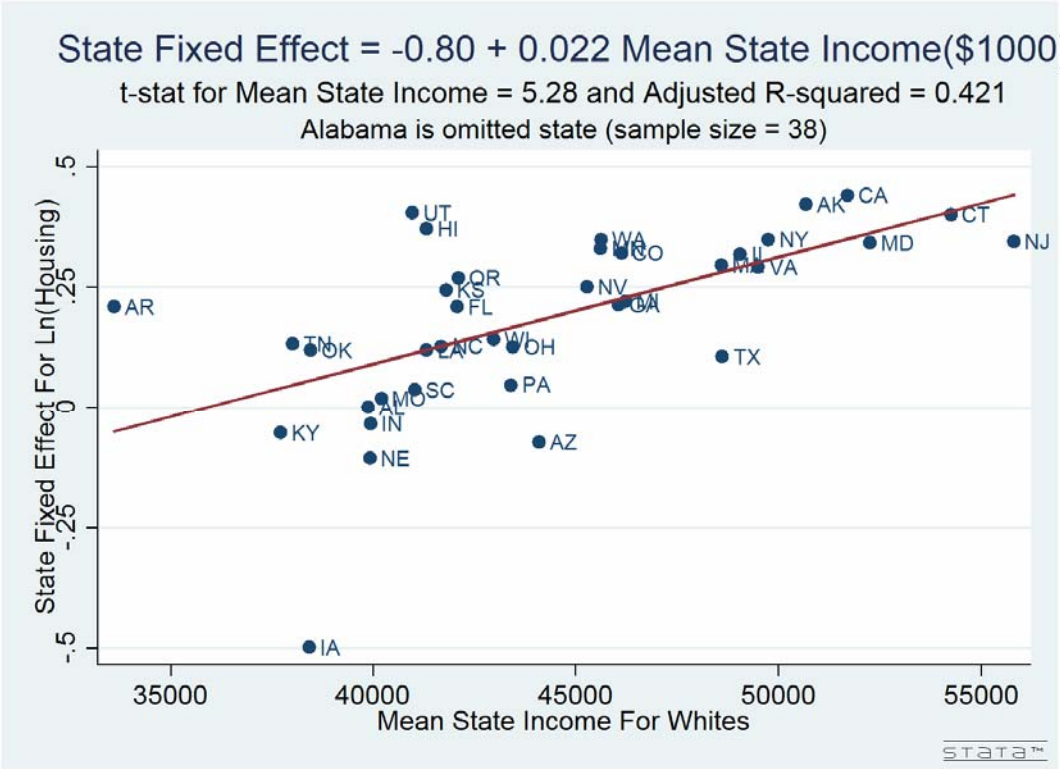


Figure 3a:
Visible Expenditures State Fixed Effects vs. State Mean Income (Whites Only)



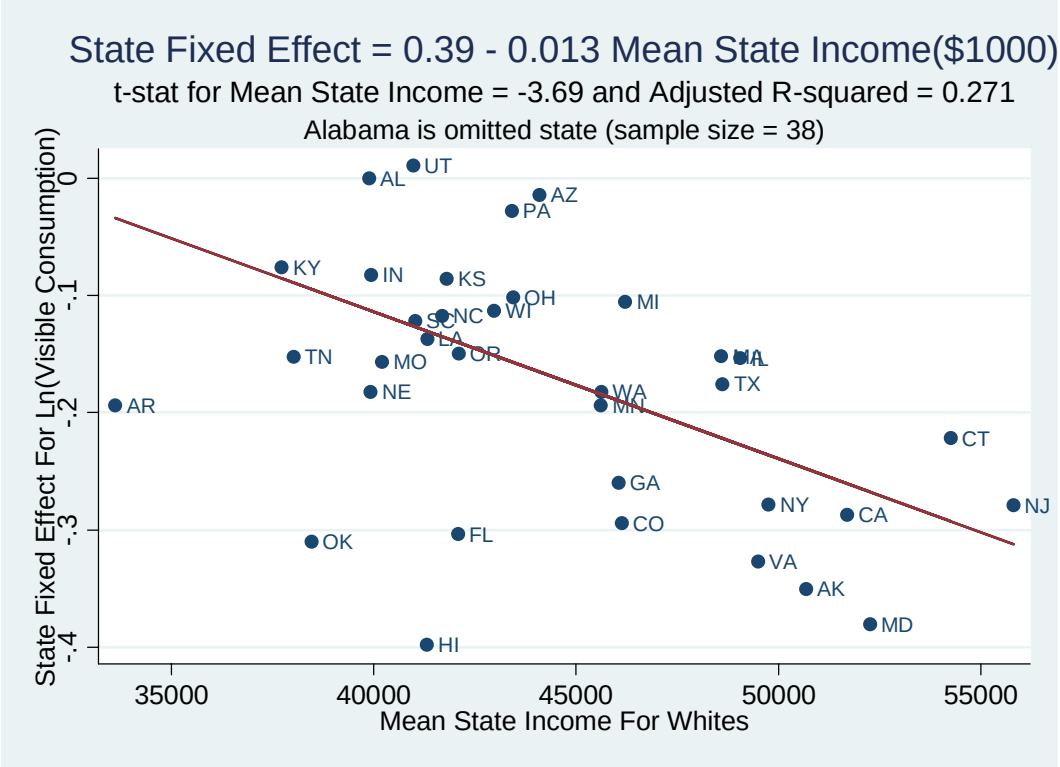
Note: This figure plots the coefficients on state fixed effect from a regression of log visible spending on state fixed effects and income, expenditure, and demographic controls for White households against mean income of White males in the corresponding state. The sample and controls are otherwise identical to the one used in Row 6 of Table 2. Alabama was the omitted state fixed effect. All state fixed effect coefficients (vertical axis) are percentage differences from an otherwise identical household from Alabama. A regression line is fitted through the data weighting each point by the number of observations from each state from the regression sample. Only 38 states were included in the regression due to the fact that some states are not sample in the CEX. See Data Appendix for a complete discussion.

Figure 3b:
Housing Expenditures State Fixed Effects vs. State Mean Income (Whites Only)



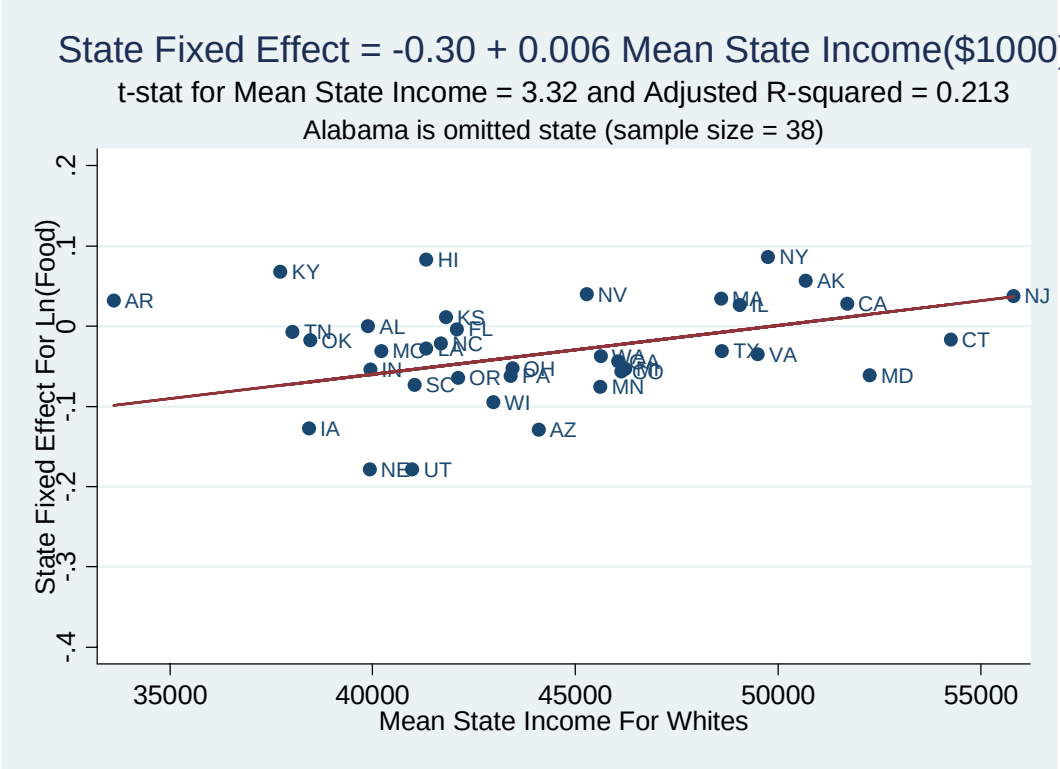
Note: This figure plots the coefficients on state fixed effect from a regression of log housing shelter spending on state fixed effects and income, expenditure, and demographic controls for White households against mean income of White males in the corresponding state. The sample and controls are otherwise identical to the one used in Row 6 of Table 2. Alabama was the omitted state fixed effect. All state fixed effect coefficients (vertical axis) are percentage differences from an otherwise identical household from Alabama. A regression line is fitted through the data weighting each point by the number of observations from each state from the regression sample. Only 38 states were included in the regression due to the fact that some states are not sample in the CEX. See Data Appendix for a complete discussion.

Figure 3c:
Visible Expenditures State Fixed Effects vs. State Mean Income
Adjusting for Differences in Housing Expenditures (Whites Only)



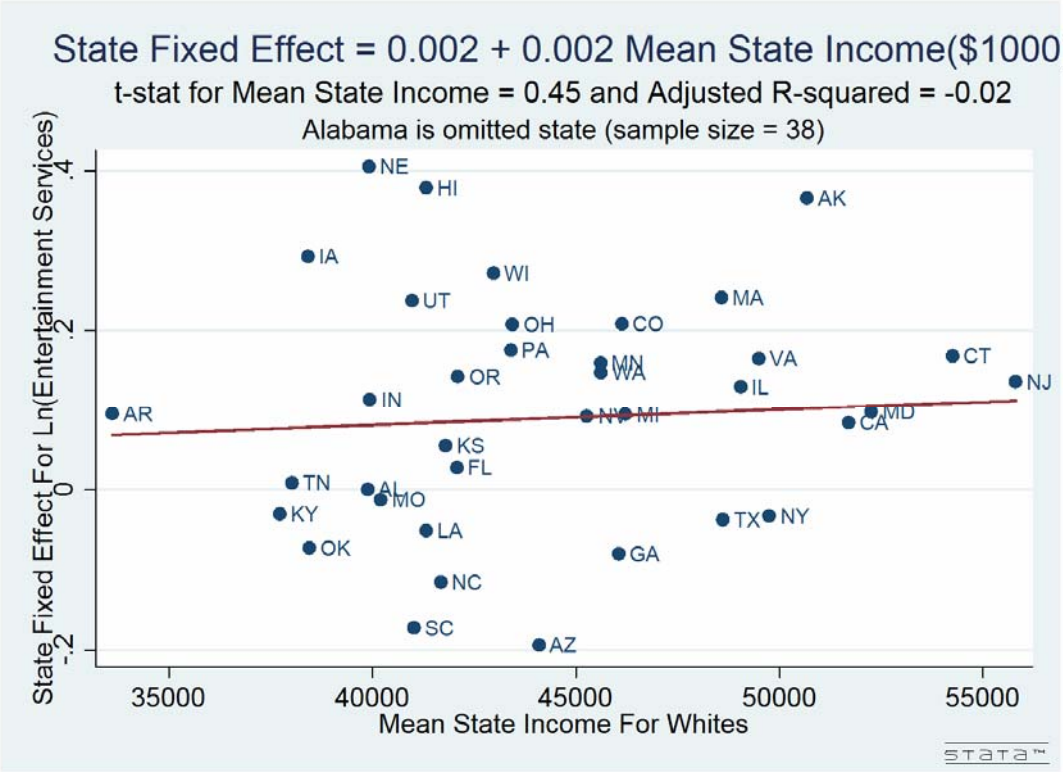
Note: This figure plots the coefficients on state fixed effect from a regression of log visible spending on state fixed effects and income, expenditure, demographic controls and housing expenditures for White households against mean income of White males in the corresponding state. The sample and controls are otherwise identical to the one used in Row 6 of Table 2. Alabama was the omitted state fixed effect. All state fixed effect coefficients (vertical axis) are percentage differences from an otherwise identical household from Alabama. A regression line is fitted through the data weighting each point by the number of observations from each state from the regression sample. Only 38 states were included in the regression due to the fact that some states are not sample in the CEX. See Data Appendix for a complete discussion.

Figure 3d:
Food Expenditures State Fixed Effects vs. State Mean Income
Adjusting for Differences in Housing Expenditures (Whites Only)



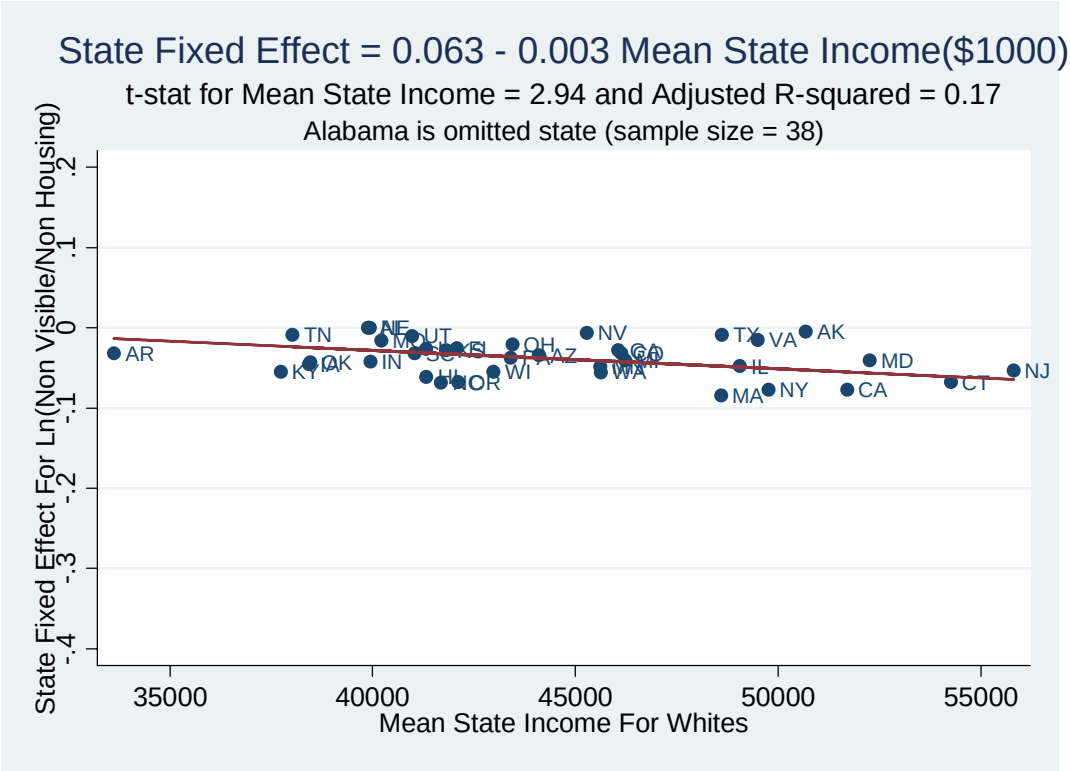
Note: This figure plots the coefficients on state fixed effect from a regression of log food spending on state fixed effects and income, expenditure, demographic controls, and housing expenditures for White households against mean income of White males in the corresponding state. The sample and controls are otherwise identical to the one used in Row 6 of Table 2. Alabama was the omitted state fixed effect. All state fixed effect coefficients (vertical axis) are percentage differences from an otherwise identical household from Alabama. A regression line is fitted through the data weighting each point by the number of observations from each state from the regression sample. Only 38 states were included in the regression due to the fact that some states are not sample in the CEX. See Data Appendix for a complete discussion.

Figure 3e:
Entertainment Services State Fixed Effects vs. State Mean Income
Adjusting for Differences in Housing Expenditures (Whites Only)



Note: This figure plots the coefficients on state fixed effect from a regression of log entertainment service expenditures on state fixed effects and income, expenditure, demographic controls, and log housing shelter expenditures for White households against mean income of White males in the corresponding state. The sample and controls are otherwise identical to the one used in Row 6 of Table 2. Alabama was the omitted state fixed effect. All state fixed effect coefficients (vertical axis) are percentage differences from an otherwise identical household from Alabama. A regression line is fitted through the data weighting each point by the number of observations from each state from the regression sample. Only 38 states were included in the regression due to the fact that some states are not sample in the CEX. See Data Appendix for a complete discussion.

Figure 3f:
Non Visible/Non Housing Expenditure State Fixed Effects vs. State Mean Income Adjusting for Differences in Housing Expenditures (Whites Only)



Note: This figure plots the coefficients on state fixed effect from a regression of log total expenditure less housing shelter and visible expenditures on state fixed effects and income, expenditure, demographic controls, and log housing shelter expenditures for White households against mean income of White males in the corresponding state. The sample and controls are otherwise identical to the one used in Row 6 of Table 2. Alabama was the omitted state fixed effect. All state fixed effect coefficients (vertical axis) are percentage differences from an otherwise identical household from Alabama. A regression line is fitted through the data weighting each point by the number of observations from each state from the regression sample. Only 38 states were included in the regression due to the fact that some states are not sample in the CEX. See Data Appendix for a complete discussion.