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Veblen goods and urban distinction: The economic geography of conspicuous consumption

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Abstract

A fundamental observation of 21st century cities is that they have become great centers of consumption. In this paper, we seek to understand the geographic variation in consumer behavior. Using Consumer Expenditure Survey (CE), we analyze how consumption differs across 21 major U.S. metropolitan areas, and the association between urban characteristics and consumption. We extend previous geographic analysis of consumption to include luxury goods that are socially visible (conspicuous consumption) and luxury goods that are relatively less visible (inconspicuous consumption). Our analysis shows that conspicuous consumption is more sensitive to an urban context than is inconspicuous consumption.

KEYWORDS
conspicuous consumption, consumer city, metropolitan distinction, Veblen good

1 | INTRODUCTION

A fundamental observation of 21st century cities is that they have become great centers of consumption. Within economic geography, consumption has been explored through three frameworks: that of amenities (Diamond, 2016; Glaeser, Kolko, & Saiz, 2001), that of high-end, luxury retail consumption that is primarily associated with urban living (Clark, 2004; Currid-Halkett, 2013; Handbury, 2012; Wrigley & Lowe, 1996), and that of the commodification of cultures (Fainstein & Judd, 1999; Zukin, 1989, 1998, 2008). Some argue that cities' ability to generate consumer options is part and parcel of their success (Clark, 2004; Diamond, 2016; Glaeser et al., 2001; Handbury, 2012), whereas others suggest that amenities are a key driver in the attraction of skilled human capital (Florida, 2002). Still others observe the coopting of culture and its translation into a commodity as a part of urban economic development (Zukin, 1989). Although extant quantitative studies of metropolitan consumer options lump them together as a large "amenities" variable associated with growth and skills, we argue that there is a much greater distinction across cities in their consumer behavior, and the distinctive patterns are closely related with the socioeconomic and industrial mix of cities. In short, the relationship between consumption of individual households and surrounding urban context must be unbundled.

This study focuses on understanding both the individual determinants and the contextual determinants of the consumption of luxury goods and those that reveal status. In doing so, this study will be the first to focus on the consumption of two classes of luxury goods that might be differentially affected by a metropolitan areas attributes. The study

that comes closest to this one is Charles and Lundy (2013). Using similar data, the study interrogated the relationship between inequality and consumption patterns and found a greater consumption of basic goods in cities with higher inequality. They also found that lower income groups exhibit higher levels of conspicuous consumption in high median income cities, but they did not explore the relationship between the urban context and both luxury goods that are socially visible (conspicuous consumption) and the ones that are relatively less visible (inconspicuous consumption), which is the key interest of this paper.

Classically, conspicuous consumption is defined as the consumption of visible luxury goods for the purposes of revealing status (Charles, Hurst, & Roussanov, 2009; Heffetz, 2011, 2012; Veblen, 1899), and we define "inconspicuous consumption" as the consumption of more subtle expensive goods such as education, retirement, gardening services, and travel. Previous literature suggest that these might be posited to vary across places due to socially motivations and other factors (Berger & Ward, 2010; Currid-Halkett, 2017; Postrel, 2008). For example, Heffetz (2011, 2012) and Charles et al. (2009) found distinctions in conspicuous consumption across race and class. Although we establish inconspicuous consumption as a new unique category of goods, others have looked at nonvisible luxury spending patterns. Most famously, Bourdieu (1984) found symbolic types of consumption that suggested social position. Most recently, Currid-Halkett (2017) argued that wide-scale conspicuous consumption of material goods has encouraged the purchase of less obvious spending behavior by upper income groups, particularly in the acquisition of cultural capital. Over the past 20 years, Currid-Halkett (2017) found a notable decline in conspicuous consumption among the top 1% and a dramatic uptick in spending on education, childcare, healthcare, and other forms of "inconspicuous consumption."

In this analysis, we use data from the Consumer Expenditure Survey (CE) in 21 metropolitan areas to test what are the individual- and the metropolitan-level characteristics that are associated with the consumption of visible and hidden luxury goods. The analysis uses both metropolitan-level fixed effects and random effects models to analyze the areas and the characteristics that are linked to conspicuous and inconspicuous consumption. We find that metropolitan-level amenities, income inequality, and segregation influence conspicuous consumption, but do not influence other forms of consumption. This finding suggests that the consumption of status goods is influenced by social context. In other words, our purchase of goods that signal social differentiation is, in part, motivated by others.

2 | LITERATURE REVIEW

Since Adam Smith's *The Theory of Moral Sentiments* (1759) (Smith, 1759) and Thorstein Veblen's *The Theory of the Leisure Class* (1899), scholars have sought to understand how consumer behavior reveals socioeconomic position (Deaton, 1992; Deaton & Muellbauer, 1980; Galbraith, 1958; Heffetz, 2011; Leibenstein, 1950; Rank, Hirschl, & Foster, 2014; Simmel, 1957, among others). In the past several decades, however, the study of consumption has begun to unpack the role of myriad different variables in shaping consumer choices, including race (Charles et al., 2009), age (Cook & Settensten, 1995; Lee, Hanna, Mok, & Wang, 1997), gender (De Ruijter, Treas, & Cohen, 2005), generational position (Norum, 2003), and even food consumption patterns (Yen, 1993; Zan & Fan, 2010). Others have sought to tease out the influence of children (Lino & Carlson, 2010) and marriage (Walden, 2002) on consumption practices. In the tradition of Deaton and Muellbauer (1980) and Piketty (2014), a number of scholars have looked at consumer behavior as it relates to inequality (Aguilar & Bils, 2015; Currid- Halkett, 2017; Krueger & Perri, 2006; Lee & Painter, 2016; Rank et al., 2014; Sherman, 2017).

Within the extant literature on consumption, a seminal line of inquiry is the study of why people buy what they do for reasons that transcend practicality. What Thorstein Veblen called "conspicuous consumption" is the purchase of goods that do not exhibit additional utility or functionality but offer status and reveal socioeconomic position (Veblen, 1899). Drawing from Veblen, some of the earlier work in this area focused on the role of price in influencing consumers. The phenomenon that Leibenstein (1950) and Bagwell and Bernheim (1996) termed "Veblen effects" suggests that increased price reveals luxury and encourages conspicuous consumption. The larger body of research on conspicuous consumption argues that while, as a general rule, rich households spend more on these socially visible goods than poor

households, other variables also influence status spending. For example, Charles et al. (2009) found that, controlling for income levels, blacks and Hispanics spend more than whites on conspicuous consumption and argued that this pattern is explained by relatively lower income among racial minorities. The utility from spending more on conspicuous goods depends on with whom people compare themselves. For example, Heffetz (2011, 2012) showed that the demands for conspicuous goods are coming from visibility of items and how the visibility differs across demographic groups. Heffetz argued that wealthier people gain greater utility out of conspicuous consumption due to the greater number of socially visible milieus in which they are able to display these items. As one important aspect of status consumption is revealing one's economic position vis-à-vis others, the role of negative peer effects has also been explored (Bertrand & Morse, 2016; Luttmer, 2005; Rayo & Becker, 2007). Being friends with or in close geographic proximity to wealthier households both increases spending and financial duress and decreases happiness (Easterlin, 2007; Kahneman & Deaton, 2010).

Although much work studying consumer behavior considers the expense of goods as a proxy for conspicuous consumption, there is an emerging line of research that studies "inconspicuous consumption," which is defined as subtle, luxury goods and services that are not overtly materialistic but that also act as social signifiers (Berger & Ward, 2010; Currid-Halkett, 2017; Eckhardt, Belk, & Wilson, 2015; Postrel, 2008; Sullivan & Gershuny, 2004). Education, travel, gym memberships, retirement, and efforts toward attaining cultural capital are cited examples of inconspicuous consumption. Bourdieu's (1984) study of taste and the role of what he called "habitus" suggests that many markers of status are contextual, construed, and rely on information more so than simply price or materiality. In Bourdieu's analysis, much of status is derived from prosaic activities and consumption habits embedded into daily life not simply expensive material objects. For example, reading *The New York Times* or discussing particular books or wines is more suggestive of cultural capital rather than economic. Lamont's (1992) study of "symbolic capital" expands this idea, where she argued that norms and practices create boundaries across income and social groups (what Khan & Jerolmack [2013] call a "learned form of capital"). These boundaries are often cultural and vis-à-vis one's peer group rather than for the purposes of revealing status to a wider population. Holt (1998) took Bourdieu's framework and applied it to the United States, concluding that consumer behavior and class do not always adhere to Veblen effects, but rather we make consumer decisions that rely on socioeconomically exclusive information. Currid-Halkett (2017) defined these goods as "more subtle, less materialistic forms of conveying status…Sometimes these consumption choices aren't even intended to display status at all" (Currid-Halkett, 2017, p. 49). Currid-Halkett discussed these less explicit consumption choices as primarily a means to improve quality of life or acquire cultural capital, and whether or not intentional, the ability to consume them (e.g., hiring a nanny or gardener, music lessons) signals social status (pp. 49–77).

The geography of consumer behavior and its implications have been studied through the framework of the "consumer city" (Glaeser et al., 2001). From this perspective, the supply of certain goods and services can play an important role in attracting and retaining certain group of people as they will ultimately move to community that can maximize their personal utility (Hirschman, 1970; Tiebout, 1956). Indeed, Glaeser et al.'s (2001) pioneering work found that metros with greater bundles of consumer amenities are more productive and attract greater stocks of high human capital. Also through a geographic lens, Clark (2004) looked at how different bundles of amenities, which he called "scenes" within the "city as entertainment machine," draw different types of human capital and labor pools. Handbury (2012) and Handbury and Weinstein (2015) took this line of inquiry into a more detailed study of particular consumer items. They found that luxury goods are cheaper in urban areas, suggesting economies of scale for affluent populations, while the bigger cities provide the greater product availability as well (Glaeser, 2011). Others have considered the standardization of the luxury consumer experience across metro areas (Crewe & Lowe, 1995; Wrigley & Lowe, 1996). Diamond (2016) argued that urban "hidden amenities" such as public space and human capital, rather than material goods, drive increases in city real estate prices. More broadly, Zukin (1989, 1995, 1998, 2008) has studied the role of culture as a commodity in shaping cities and their identities, particularly looking at how consumerism creates "authenticity" and fuels gentrification processes. The trickle-down consumption, or expenditure cascades, describes how consumption patterns of elites may influence consumption behaviors of middle-income families. This type of behavior is particularly pronounced in conspicuous goods consumption, which reshapes community identification (Bertrand & Morse, 2016; Charles & Lundy, 2013; De Giorgi, Frederiksen, & Pistaferri, 2016; Frank, Levine, & Dijk, 2014). Recent work

suggests that conspicuous consumption affects real estate prices, which will ultimately influence mobility and distribution of workers (Lee & Mori, 2016; Zahirovic-Herbert & Chatterjee, 2011). Currid-Halkett (2014, 2017) found that metro areas engage in significantly different consumer behavior, particularly around status goods and argued that these differences help explain distinctions in urban identity.

More generally, however, our understanding of the observed differences in consumer behavior across cities and regions and their implications is an understudied area of research in economic geography. Although there is an emerging line of inquiry studying the relationship between consumption and geography, there is limited, if any, work done on the relationship between status consumption and geography. Given that the "value" of conspicuous consumption is derived significantly from the physical and social contexts in which it is consumed, it is significant to explore these interactions within the urban milieu and the possible geographical variations of the phenomenon. In this paper, we seek to unpack the geographic variations of consumer behavior across metros and how this may inform our understanding of urban differences and economic development. Specifically, we study these relationships looking at both conspicuous and inconspicuous consumption, and seek to understand the interaction between consumer behavior and economic geography. What discrete variables might explain differences in consumerism across metro areas? How might our understanding of these dynamics illuminate our understanding of cities and their differences more generally?

3 | METHOD AND DATA

To understand how different types of consumption are associated within surrounding urban context in which an individual household is located, we estimate both metropolitan fixed effects and random effects models that include metropolitan-level characteristics as regressors. The fixed effects models enable us not only to control for time invariant characteristics of metropolitan areas, but also to determine the extent to which patterns of different forms of consumption are not explained by individual characteristics. The metropolitan fixed effects allow systematic patterns in the unobserved variation across the metropolitan areas in the sample. The random effects models enable us to examine how and what urban characteristics are associated with the consumption patterns across cities.

The metropolitan fixed effects model is of the form:

$$y_{ijt} = \boldsymbol{X}'_{\boldsymbol{ijt}}\beta + \alpha_j + \tau_t + \varepsilon_{ijt} \tag{1}$$

where y_{ijt} is the log of consumption of a household i in a metropolitan area j in a year t. The models are estimated for three dependent variables: conspicuous consumption, inconspicuous consumption, and other expenditures. $\boldsymbol{X}_{\boldsymbol{ijt}}$ is a vector of demographic and socioeconomic characteristics of a household i in a metropolitan area j in a year t, α_j is a time-invariant city fixed effect, and τ_t is a year fixed effect. The city fixed effects are of particular interest as they absorb any systemic differences in consumption patterns across cities, holding other factors constant. We estimate models separately for conspicuous consumption, inconspicuous consumption, and other spending to determine how much city differences account for differences in each category of consumption. The sampling weights are used in the regression to account for sampling design, and robust standard errors are used to correct for heteroscedasticity.

Given the multilevel structure of the model, we can decompose the variance in each of our consumption outcomes into the within- and between-metropolitan area components. When we consider the model above as a random-intercept model, the metro- and household-level error terms α_j and ε_{ijt} are assumed to be i.i.d. with variances ψ (between-subject variance) and θ (within-subject variance), respectively. The (conditional) intraclass correlation, ρ, can be defined as the ratio of between-subject variance to overall variance ($\psi / \psi + \theta$). This variance decomposition is informative for the purpose of examining the fraction of the total variance in conspicuous and inconspicuous consumption that is attributed to the variance across metropolitan areas.[1]

[1] We thank an anonymous reviewer for highlighting this point.

Although the fixed effects model enables us to determine to what extent spending patterns differ at the metropolitan level, we cannot infer what explains such differences across metropolitan areas from the model. To explore what metropolitan area characteristics explain geographic variation in consumer behavior, we estimate random effects models that include metropolitan area level urban characteristics as well as household-level individual attributes:

$$y_{ijt} = \boldsymbol{X}'_{\boldsymbol{ijt}}\boldsymbol{\beta} + \boldsymbol{N}'_{\boldsymbol{jt}}\boldsymbol{\gamma} + \tau_t + \zeta_j + \epsilon_{ijt} \quad (2)$$

where $\boldsymbol{N_{jt}}$ is a vector of metropolitan area characteristics of metropolitan area j in year t. The random intercept ζ_j represents unobserved heterogeneity at the metropolitan area level.[2] All other individual household-level variables are the same as before. The assumption in the random effects model is that the independent variables are uncorrelated with the error term.[3]

The primary source of data used in this study is the 2007–2014 Consumer Expenditure Survey (CE) from the Bureau of Labor Statistics (BLS), a quarterly survey of the consumer habits of Americans categorized by age, race, marital status, income, and educational attainment, among other variables. The data set contains the most comprehensive and reliable source of information on consumption expenditures (Bee, Meyer, & Sullivan, 2015; Li, Schoeni, Danziger, & Charles, 2010) and has long been used in studying consumers and their buying behaviors in the United States (Bertrand & Morse, 2016; Charles et al., 2009; Heffetz, 2011). The CE Interview Public-Use Microdata (PUMD) provides individual consumer unit-level consumption behaviors with hundreds of standardized expenditure item codes (referred to as the Universal Classified Codes, UCCs), and its detailed information on households enable us to analyze consumption expenditures across cities while controlling for household characteristics, including demographic and socioeconomic status.[4] Annualized expenditures are adjusted for inflation to 2016 dollars.

The dependent variables in this study are specified as the log of the amount of money spent on conspicuous consumption, inconspicuous consumption, and other spending.[5,6] In this paper, we define conspicuous consumption as socially visible material goods that reveal social position and inconspicuous consumption as less explicitly materialistic, less socially visible luxury consumer goods and services. Although previous research on conspicuous consumption focuses precisely on income elasticity and visibility (Charles et al., 2009; Heffetz, 2011, 2012), our selection approach links more directly to Veblen (1899) and his original definition of the term that focuses more generally on social display and potential to reveal socioeconomic position. This approach allows us to include the previous definitions (e.g., cars, personal care, and clothing/jewelry) along with a wider swath of material goods that may be used for social status (e.g., alcoholic beverages at restaurants or on trips, cellular phone), irrespective of income level (cf. Currid-Halkett, 2017). Our classification also enables us to sort out less visible consumption items (e.g., repair and tailoring services of apparel, mattress, and personal care services) within the major consumption categories that were classified as conspicuous in previous literature.[7]

Although conspicuous consumption is a well-established term in the literature, we also study the relationships of inconspicuous consumption with household characteristics and surrounding urban context. Drawing from Berger and Ward (2010) and Currid-Halkett (2017), we categorize luxury goods that are not directly visible and more subtle as

[2] The Breusch–Pagan's Lagrange multiplier test strongly rejects the null hypothesis of a zero metropolitan area level variance and favors the fixed or random effects model over ordinary least squares (OLS) analysis. Although the Hausman test statistic favors the fixed effects model over the random effects model, the random effects model allows for testing the impact of metropolitan-level characteristics directly.

[3] If the manner in which households sort into metropolitan areas is correlated with household characteristics, this assumption is violated. We will test the validity of this assumption in the section that includes alternative tests.

[4] In this paper, the terms consumer unit, family, and household are used interchangeably.

[5] The log terms were used to account for skewness in expenditures. Alternative specifications of the dependent variable did not alter the primary findings in the study, and the results are shown in the additional tests section.

[6] While using the log terms, we drop the households with zero expenditure in any of the expenditure categories (10.4%). As many of them are in the lowest decile of the income distributions, the findings of this paper might be generalized to the most of the U.S. households except those extremely poor families. Other than Seattle (5.8%), Minneapolis (6.1%), New York (19.3%), and Miami (21.0%), the share of censored households was relatively consistent across cities. We address this potential issue later by employing Tobit regressions.

[7] Although this paper proposes this particular classification to align with Veblen's original intent, we also test whether the results are similar when the approach of Heffetz (2011) is used.

inconspicuous. Currid-Halkett (2017) defined inconspicuous consumption as "goods and services purchased for the sake of making one's life easier, improving well-being (both intellectual and physical)" (p. 49). Other expenditures are defined as total expenditures less conspicuous and inconspicuous consumption. Using the UCC of the CE, we apply these definitions to each of consumption items of a household and aggregate them up to the three categories. The resulting consumption categories are shown in Table 1.

TABLE 1 List of conspicuous and inconspicuous consumption items

Consumption categories and UCC
Conspicuous consumption
Food
Meals at restaurants, carry-outs, and other (790410), Catered affairs (190902), Food on out-of-town trips (190903)
Alcoholic beverages
Alcoholic beverages at restaurants, taverns (790420), Alcoholic beverages purchased on trips (200900)
Housing
Cellular phone and service (270102), Household textiles (280110-280900), Sofas (290210), Living room chairs (290310), Living room tables (290320), Kitchen, dining room furniture (290410), Infants' furniture (290420), Outdoor furniture (290430), Wall units, cabinets, and other occasional furniture (290440), Floor coverings, nonpermanent (320111), Refrigerator (300111, 300112), Cooking stoves, ovens (300311, 300312), Flatware (320330), Dinnerware, glassware, serving pieces (320345), Window coverings (320120), Infants' equipment (320130), Outdoor equipment (320150), Lamps, lighting fixtures, ceiling fans (320221), Clocks and other household decorative items (320233), Office furniture for home use (320901), Indoor plants, fresh flowers (320903), Luggage (430130)
Apparel and services
Men and boys (360110–370904), Women and girls (380110–390902), Children under 2 (410110–410901), Footwear (400110–400310), Watches (430110), Jewelry (430120)
Transportation
New/used cars (450110, 460110), New/used trucks (450210, 460901), New/used motorcycles (450220, 460902), Car/truck finance charges (510110–510902), Car/truck lease payments (450310–450414)
Entertainment
Televisions (310140), Personal digital audio players (310314), Stereos, radios, speakers, and sound components (310316), Boat without motor and boat trailers (600121), Purchase of boat with motor (600132)
Personal care products and services
Wigs and hairpieces (640130)
Inconspicuous consumption
Alcoholic beverages
Beer and wine (790310), Other alcoholic beverages (790320), Beer, wine, other alcohol (790330)
Housing
Property management (230901, 230902), Management and upkeep services for security (340911, 340912), Babysitting and child care (340211, 340212), Care for elderly, invalids, handicapped, etc. (340906), Adult day care centers (340910), Day care centers, nursery, and preschools (670310), Housekeeping services (340310), Gardening, lawn care service (340410), Household laundry and dry cleaning, sent out (340520), Home security system service fee (340915), Lodging on out-of-town trips (210210), Mattress and springs (290110)
Apparel
Shoe repair and other shoe service (440110), Alteration, repair, and tailoring of apparel (440130), Watch and jewelry repair (440150), Apparel laundry and dry cleaning not coin-operated (440210)
Transportation
Airline fares (530110), Taxi fares and limousine services on trips (530411, 530412), Ship fares (530901), Automobile service clubs (620113)
Healthcare
Physician's services (560110), Dental services (560210), Eye care services (560310)

(Continues)

TABLE 1 (Continued)

Consumption categories and UCC
Entertainment
Recreation expenses, out-of-town trips (610900), Social, recreation, health club membership (620111), Fees for participant sports (620121), Participant sports, out-of-town trips (620122), Movie, theater, amusement parks, and other (620211, 620212), Play, theater, opera, concert (620213), Movies, parks, museums (620214), Admission to sporting events (620221), Admission to sports events, out-of-town trips (620222), Fees for recreational lessons (620310), Other entertainment services, out-of-town trips (620903), Musical instruments and accessories (610130), Rental and repair of musical instruments (620904), Rental of video cassettes, tapes, films, and discs (620912), Pet purchase, supplies, medicine (610320), Pet services (620410), Vet services (620420), Toys, games, arts and crafts, and tricycles (610110), Stamp and coin collecting (610140), Playground equipment (610120), Rental noncamper trailer (520904), Rental of boat (520907, 620906), Rental of motorized camper (620909, 620921), Rental of other RV's (620919, 620922), Docking and landing fees (520901), Athletic gear, game tables, and exercise equipment (600210), Bicycles (600310), Camping equipment (600410), Hunting and fishing equipment (600420), Winter sports equipment (600430), Water sports equipment (600901), Other sports equipment (600902), Rental and repair of miscellaneous sports equipment (620908), Film (610210), Photo processing (620330), Repair and rental of photographic equipment (620905), Photographic equipment (610230), Photographer fees (620320), Live entertainment for catered affairs (680310),
Rental of party supplies for catered affairs (680320)
Personal care products and services
Personal care services (650310)
Reading
Newspaper, magazine by subscription (590310, 590410), Books (590220, 590230), Encyclopedia and other sets of reference books (660310)
Education
College tuition (670110), Elementary and high school tuition (670210)
Miscellaneous
Legal fees (680110), Accounting fees (680902), Dating services (680904), Vacation clubs (680905), Credit card memberships (620112), Shopping club membership fees (620115)
Cash contributions
Cash contributions to charities and other organizations (800821), Cash contributions to church, religious organizations (800831), Cash contribution to educational institutions (800841), Cash contribution to political organizations (800851)

Note: Among the UCCs for apparel and services, uniforms were excluded (e.g., men's uniforms (360901), boy's uniforms (370903), women's uniforms (380902), and girl's uniforms (390901)).

The variables of interest in this paper are the metropolitan characteristics that influence households' consumption behavior. Starting in the second quarter of 2006, the CE Interview PUMD began providing identifiers for 21 major metropolitan areas, referred to as the primary sampling units (PSUs), with a population greater than 1.5 million.[8] Using the 21 city identifiers, we are able to study how consumption differs across the major cities in the United States. Also, based on the counties contained in each metropolitan area, we link additional data to determine associations between what cities offer and how it links to what its inhabitants tend to consume.

Among the metropolitan characteristics, annual population estimates and population density per square mile are drawn from the Census Bureau's decennial census and national population estimates. The dissimilarity index was calculated at census tract level for the metropolitan areas using the 2009–2015 American Community Survey (ACS) 5-Year Estimates. The index measures the degree of residential segregation between households in the top income quintile in each city in each year and others.[9] The Gini coefficient and median household income by racial/ethnic group are calculated based on the 2007–2014 ACS 1-Year Public Use Microdata Sample (PUMS). For median income, we assigned

[8] The PSUs consist of counties (or parts thereof) or groups of counties. The boundaries have been consistent from 2006 to 2014. The detailed list of counties for those PSUs is provided in Table A1 in the Appendix. In this paper, the terms cities, metropolitan statistical areas, and primary sampling units are used interchangeably.

[9] We also tested other income thresholds such as top 10% and absolute dollar term ($200,000 in 2016 dollars). The results were consistent across those variables.

the median income of householder's racial/ethnic group and the one of other groups to examine the role of reference group income.[10]

The association between urban amenities and consumption, suggested by Glaeser et al. (2001), is examined by using location quotient (LQ) of food service and drinking places industry (NAICS 722). The index was used to represent relative concentration or specialization of restaurants and drinking places of a city based on the 2007–2014 County Business Pattern. Following Glaeser et al. (2001) and Albouy (2008), we use the mean temperature in January and number of days with greater than or equal to 0.1 in. of precipitation to capture natural amenities of metropolitan areas based on the National Climatic Data Center's the Monthly/Annual Climatological Summary data.

Lastly, cost of living differences across cities are addressed by using the 2008–2014 Regional Price Parities (RPPs) provided by the Bureau of Economic Analysis.[11] Because the index comprises the data on goods/services and rents, we include two cost of living variables, on goods and rents, in the model. The descriptive statistics of all metropolitan area level variables used in this study are presented in Table 2.

We also include household-level covariates that have been considered as major determinants of consumption behavior. These include age, sex, race/ethnicity, marital status, and occupation of reference person, family size, whether having a child or children, log of current family income (in 2016 dollars), log of total expenditure, log of financial wealth, the highest education between reference person and his or her spouse, number of earners in household, units in structure, and housing tenure status.

4 | RESULTS

4.1 | Descriptive statistics

Table 3 presents descriptive statistics on income and expenditures for the sample of consumer households from 2007 to 2014 by 21 cities, or PSUs. As is evident in Table 3, there are substantial differences in income and consumption across the metropolitan areas. For example, on average, residents in Washington, DC, spent the most on conspicuous goods ($13,196 in 2016 dollars); the lowest average conspicuous consumption could be found among the New Yorkers ($6,963). These differences may simply reflect the levels of income and total expenditures in a metropolitan area. In contrast to the substantial gap in average expenditure on conspicuous consumption, the share of total expenditure spent on conspicuous consumption by residents in New York was 11.5% of total expenditures on all goods, and residents in Washington, DC, allocate 12.8% of their total expenditures to conspicuous consumption. The greatest share of conspicuous consumption is among residents of Phoenix, who spend about 15.1%; the lowest share is among residents of New York City at 11.5%. The highest inconspicuous consumption was again reported in Washington, DC ($11,538); the lowest was found in Miami ($4,285). As the share of total expenditures, residents in Seattle reported the highest inconspicuous consumption share (12.3%), whereas residents in Miami had the lowest share (6.8%). The share of expenditures spent on other items ranges from 74.4% (Seattle) to 81.3% (Miami).

Notably, the cities with lower housing costs tend to have a larger share of conspicuous consumption. For example, the top five metropolitan areas by conspicuous consumption share are Phoenix (15.1%), Dallas (14.8%), Detroit (14.4%), Houston (14.4%), and Chicago (13.6%) that have relatively lower housing costs, which might suggest the ability to spend a larger share of household income on luxury items. However, the same relationship does not apply with the consumption of less visible luxury goods. The top five cities ranked by the inconspicuous consumption share are Seattle (12.3%), Washington, DC (12.0%), Minneapolis (11.9%), Hartford (11.2%), and Boston (11.1%), which includes

[10] Some metropolitan areas have borders that do not align with the Public-Use Microdata Area (PUMA), which is the geographic unit used in the PUMS files. In these cases, we used the adjusted weights for the households within those PUMAs using the numbers of housing units as weights. Similar approach can be also found in Albouy and Lue (2015).

[11] The RPPs were used as a cost-of-living index rather than the consumer price index (CPI), since the latter one cannot be used for comparison among the areas. The time periods not covered by the RPPs were estimated by using the percentage changes in the CPI-U index in each metropolitan area since the CPI measures how much prices change over time in an individual metropolitan area.

TABLE 2 Mean values for metropolitan level variables, by primary sampling units (PSUs)

	Pop. (in 000s)	Pop. density	Median household income				
			White	Black	Asian and PI	Hispanic	Other
Atlanta	5,273	698.4	65,199	42,801	68,268	40,390	50,622
Baltimore	2,104	834.8	80,323	47,037	87,513	61,031	55,996
Boston	7,429	742.2	72,562	45,064	79,141	35,744	51,270
Chicago	9,543	1,304.9	72,772	36,833	80,597	49,870	52,134
Cleveland	2,879	799.7	55,769	27,964	67,402	36,968	36,879
Dallas	6,591	644.7	68,673	40,082	75,961	42,265	51,070
Detroit	5,336	817.1	59,351	32,282	80,571	43,104	42,186
Hartford	8,051	1,102.4	87,781	55,415	104,655	53,551	64,283
Houston	6,032	683.3	75,581	40,682	77,624	43,757	54,176
Los Angeles	12,907	2,662.0	79,209	43,435	71,222	48,627	63,507
Miami	4,319	1,389.9	62,166	39,165	69,395	43,831	53,278
Minneapolis	3,498	449.7	68,006	30,192	67,976	44,250	44,697
New York	8,243	27,237.2	76,464	43,391	57,058	37,128	56,566
Newark	6,967	1,587.2	84,671	48,990	109,779	51,728	63,378
Philadelphia	6,503	1,103.5	72,836	38,655	72,686	39,098	50,471
Phoenix	4,242	291.2	61,214	42,284	70,888	41,642	43,123
Riverside	5,079	174.5	66,082	51,553	80,597	52,058	56,679
Seattle	4,065	564.7	69,486	44,085	73,276	47,839	56,106
San Diego	3,120	741.8	74,473	50,838	82,533	47,493	64,827
San Francisco	7,483	1,017.8	88,584	47,198	96,526	56,479	71,369
Washington, DC	5,937	870.1	94,505	64,982	102,532	66,789	81,429

	Gini coef.	Dissimilarity index	Restaurants and bars LQ	Temp. in Jan (°F)	No. of rainy days	Regional price parities	
						Goods	Rents
Atlanta	45.9	36.4	1.06	43.4	107.9	98.0	96.0
Baltimore	44.3	33.3	1.04	33.6	119.9	101.0	115.6
Boston	46.1	33.9	0.92	30.2	126.9	98.7	141.5
Chicago	46.2	36.6	0.93	24.0	133.5	103.2	117.4
Cleveland	45.2	36.7	0.96	26.9	161.5	94.0	82.4
Dallas	45.9	40.6	1.02	46.7	81.1	97.8	99.8
Detroit	45.3	38.1	1.02	24.8	136.4	98.7	91.2
Hartford	47.2	35.1	0.83	28.9	129.0	97.8	111.5
Houston	47.1	41.9	1.01	52.6	95.3	97.5	98.9
Los Angeles	47.9	39.1	0.99	59.1	32.3	103.3	169.2
Miami	48.6	39.0	1.05	68.9	140.1	99.4	130.5
Minneapolis	43.5	32.6	0.88	14.3	115.3	101.2	111.0
New York	52.8	39.0	0.82	33.2	126.5	107.8	155.1
Newark	46.5	38.6	0.74	32.8	122.3	100.3	127.3
Philadelphia	46.1	38.3	0.85	34.1	121.8	103.1	112.9
Phoenix	44.4	38.9	1.06	54.3	33.0	100.0	103.5

(Continues)

TABLE 2 (Continued)

	Gini coef.	Dissimilarity index	Restaurants and bars LQ	Temp. in Jan (°F)	No. of rainy days	Regional price parities	
						Goods	Rents
Riverside	43.9	37.2	1.19	56.4	29.9	99.4	126.4
Seattle	43.6	32.0	0.96	41.6	160.3	105.6	127.1
San Diego	45.1	35.8	1.12	57.8	36.0	103.3	167.6
San Francisco	46.8	35.4	0.98	52.2	63.9	109.5	183.2
Washington, DC	44.0	37.3	0.95	36.8	116.9	105.9	165.9

Note: All figures are inflation adjusted to 2016 dollars. Gini coefficient and dissimilarity index are multiplied by 100. The location quotients are computed for "Food Services and Drinking Places (NAICS 722)." The values are averages from 2007 to 2014.

metropolitan areas that have high housing costs. Given this apparent pattern, we will examine whether housing cost affects conspicuous/inconspicuous consumption not only by inclusion of regional housing cost index into the models but also by conducting additional tests with alternative dependent variables.

On the other hand, the variation in conspicuous and inconspicuous consumption might be partially explained by the characteristics of residents, such as age and educational attainment. For example, the metropolitan areas with younger heads of household (e.g., Phoenix, Houston, and Dallas) tend to spend more money on conspicuous goods compared to those cities with more seniors (e.g., Cleveland, Hartford, and Philadelphia). The cities with relatively well-educated people (e.g., Washington, DC, Baltimore, and San Francisco) tend to have lower share of expenditures on conspicuous goods, and cities with opposite characteristics (e.g., Dallas, Houston, and Phoenix) tend to have the higher share. In the analysis below, we estimate models to determine what characteristics are associated with the level of consumption.

4.2 | Individual determinants of consumption

We first present the estimates of individual determinants of conspicuous consumption across three models in Table 4. Model 1 contains no fixed effects or random effects. Model 2 contains the metropolitan fixed effects, and Model 3 contains the metropolitan-level characteristics and random effects. Table 5 presents the same models with inconspicuous consumption as the dependent variable.

Most results on the determinant of individual household characteristics conform to expectations and to what has been found in previous studies. The amount of money spent on conspicuous consumption, which consists of many durable goods (e.g., car and furniture), tends to decrease with age, whereas that on inconspicuous consumption, which includes housekeeping and healthcare services, exhibits a U-shaped curve, suggesting the impacts of age. On average, Hispanic households spend 9.0% more money on conspicuous goods and services, whereas other racial/ethnic groups are not statistically different from non-Hispanic whites. However, racial/ethnic minority groups spend less money on inconspicuous consumption, ranging from 5.8% (African American) to 18.1% (Hispanic). These differences in consumption between groups might be at least partially explained by the differences in preferences and in status-seeking behavior (Charles et al., 2009; Heffetz, 2012).

The relationship between education and the consumption of both conspicuous and inconspicuous consumption is consistent with other literature on conspicuous consumption (Currid-Halkett, 2017). Invisible luxury goods are much more likely to be consumed by those with high levels of education (Table 5). At the same time, levels of conspicuous consumption decline with education (Table 4). This suggests that education may alter decisions of households to save more for retirement or purchase more insurance, which do not reveal their social status (Currid-Halkett, 2017), but that have long-term impacts.

Finally, we note that the coefficients on total expenditures in both Tables 4 and 5 are above unity. This estimated elasticity is consistent with the conclusion that both conspicuous and inconspicuous goods are luxury goods.

TABLE 3 Descriptive statistics on income and consumption by primary sampling units (PSUs)

	Family income	Total spending	Amount of dollars spent on			% of total expenditures		
			Cons	Incons	Other	Cons	Incons	Other
All 21 PSUs	78,142	61,666	10,193	8,243	43,231	12.9	10.0	77.1
	(85,123)	(54,067)	(23,781)	(19,776)	(30,157)	(12.4)	(11.6)	(16.5)
Atlanta	74,053	53,365	9,174	6,483	37,707	13.4	9.0	77.5
	(73,753)	(42,710)	(20,886)	(12,978)	(24,237)	(12.1)	(10.1)	(15.1)
Baltimore	93,405	61,588	9,157	8,151	44,280	11.9	10.1	78.1
	(104,928)	(48,836)	(19,143)	(16,786)	(29,573)	(11.8)	(10.9)	(15.6)
Boston	84,259	65,294	10,730	9,488	45,076	12.4	11.1	76.5
	(90,317)	(60,985)	(31,790)	(21,824)	(29,456)	(12.6)	(11.5)	(16.3)
Chicago	78,006	61,963	10,791	8,641	42,531	13.6	10.6	75.9
	(80,045)	(49,719)	(22,663)	(16,641)	(27,057)	(13.1)	(11.0)	(16.2)
Cleveland	63,115	50,382	8,911	5,903	35,568	12.8	8.7	78.5
	(66,345)	(40,554)	(19,778)	(10,455)	(23,551)	(13.0)	(28.1)	(30.7)
Dallas	72,641	57,965	11,175	6,462	40,328	14.8	9.1	76.2
	(70,638)	(44,200)	(23,494)	(10,335)	(25,435)	(13.5)	(9.2)	(15.6)
Detroit	67,335	54,642	10,252	7,072	37,318	14.4	10.1	75.6
	(74,621)	(43,326)	(22,397)	(12,680)	(23,539)	(13.3)	(10.6)	(16.3)
Hartford	91,004	75,146	11,878	11,263	52,005	12.4	11.2	76.4
	(92,361)	(61,741)	(25,024)	(24,486)	(33,274)	(12.4)	(11.4)	(16.3)
Houston	78,696	60,802	11,894	7,709	41,199	14.4	9.5	76.1
	(107,089)	(54,200)	(28,431)	(14,922)	(27,713)	(13.3)	(9.7)	(15.8)
Los Angeles	67,668	58,543	9,268	8,065	41,210	12.8	9.6	77.6
	(74,339)	(55,473)	(22,055)	(27,743)	(28,411)	(11.8)	(12.3)	(16.4)
Miami	52,603	48,332	8,175	4,285	35,872	11.9	6.8	81.3
	(55,419)	(52,645)	(25,767)	(11,772)	(29,726)	(12.3)	(8.5)	(15.1)
Minneapolis	77,595	60,024	10,470	8,694	40,860	13.4	11.9	74.7
	(78,954)	(51,059)	(25,120)	(16,591)	(24,783)	(13.2)	(11.6)	(16.7)
New York	60,272	49,431	6,963	6,829	35,639	11.5	8.8	79.7
	(73,475)	(48,664)	(15,190)	(22,669)	(25,538)	(10.6)	(11.4)	(15.9)
Newark	92,308	68,375	10,359	8,928	49,088	12.0	9.7	78.3
	(95,241)	(56,016)	(26,085)	(19,293)	(29,531)	(11.4)	(10.5)	(15.1)
Philadelphia	69,109	57,055	8,845	7,582	40,628	11.8	9.5	78.7
	(77,221)	(48,313)	(20,374)	(17,865)	(26,928)	(12.0)	(10.9)	(15.9)
Phoenix	62,506	55,073	10,894	6,453	37,726	15.1	10.0	74.9
	(67,628)	(46,590)	(23,219)	(10,030)	(30,361)	(14.8)	(10.3)	(17.2)
Riverside	66,992	56,633	9,174	5,791	41,669	12.6	8.6	78.8
	(67,037)	(41,733)	(21,153)	(9,676)	(26,324)	(12.2)	(9.2)	(14.7)
Seattle	76,967	68,141	11,255	10,180	46,706	13.3	12.3	74.4
	(69,322)	(64,381)	(23,500)	(32,436)	(40,129)	(12.3)	(11.5)	(16.1)
San Diego	75,847	58,951	8,499	6,838	43,614	11.9	9.2	78.9
	(69,248)	(43,500)	(17,954)	(11,889)	(27,283)	(11.0)	(9.9)	(14.6)

(Continues)

TABLE 3 (Continued)

	Family income	Total spending	Amount of dollars spent on			% of total expenditures		
			Cons	Incons	Other	Cons	Incons	Other
San Francisco	99,310	73,547	10,809	10,515	52,223	12.2	11.0	76.8
	(110,581)	(66,681)	(22,406)	(25,313)	(41,851)	(11.5)	(11.5)	(15.7)
Washington, DC	114,800	78,600	13,196	11,538	53,866	12.8	12.0	75.3
	(105,386)	(61,272)	(29,959)	(18,801)	(31,873)	(12.4)	(11.4)	(16.0)

Note: All figures are inflation adjusted to 2016 dollars. The sampling weight variables in the Consumer Expenditure Survey data are used to make the estimates nationally representative. The sample includes consumer units in the primary sampling units from 2007 to 2014.

4.3 | Metropolitan fixed effects

Despite the large set of household-level controls and year fixed effects, the metropolitan area where people are living remains a strong predictor for explaining conspicuous consumption (Table 6). For example, Bostonians on average spend 15.3% less on conspicuous goods compared to their counterparts in Chicago, controlling for household characteristics. The metropolitan areas with the largest fixed effects are Detroit, Dallas, and Cleveland, and the metropolitan areas with the smallest effect are Boston, Washington, DC, and San Francisco. The places with the largest fixed effects on inconspicuous consumption are Seattle, Minneapolis, and Phoenix; the smallest fixed effects are observed in Newark, Miami, and San Diego.

The results of the variance decomposition show that the conditional intraclass correlation from the conspicuous consumption model is 0.0126, whereas that from the inconspicuous model is 0.0062. This indicates that the proportion of total variance in conspicuous consumption that is explained by between-metropolitan areas component (1.26%) is more than double than what is explained for inconspicuous consumption (0.62%). Although both shares are small, the magnitude is in line with the proportion of the variance explained by the between-metropolitan area share for other economic resources such as wage and income, which range from 1.0 to 12.1% in developed countries (Kemeny & Storper, 2012; Shorrocks & Wan, 2005).[12]

In sum, the results of the household-level analysis indicate that consumption does differ across cities, accounting for individual household characteristics, and that these differences among cities are larger for conspicuous consumption. The latter part can be explained by the fact that the value and meaning of conspicuous goods are created and determined within a social context and the interactions that occur in situ. These results suggest that conspicuous consumption is an inherently *urban* feature (Simmel, 1903; Veblen, 1899). The less dramatic results for inconspicuous consumption are a corollary to this result: inconspicuous consumption has less visible impact and the motivations for spending may be less oriented around social positioning than quality of life (Currid-Halkett, 2017). Thus, the particular social and urban context may matter less for inconspicuous consumption. In the next section, we examine how the much of the variation across cities in conspicuous and inconspicuous consumption can be explained by the urban context and variables within.

4.4 | Random-effects models

To determine which metropolitan characteristics are correlated with consumption patterns, we estimate random effects models with controls for various city attributes. In the model, we include four types of metropolitan characteristics that may influence consumer behavior based on previous research: urban size and population density (Diamond,

[12] We conducted similar variation decomposition analyses for age, race/ethnicity, and education by clustering the sample by each of them instead of metropolitan areas (see Appendix Table A5). For conspicuous consumption, the share of between-race/ethnicity (0.29%) or between-education attainment (0.49%) variation was smaller than the cross-metro variation (1.26%), though the share of variance that could be explained by between-age variance (5.25%) was larger. For inconspicuous consumption, the larger intraclass correlation could be found in education (4.35%) and age group (2.01%), while that for metropolitan area (0.62%), and race/ethnicity (0.51%) was smaller.

TABLE 4 Regression results (dependent variable: log of conspicuous consumption)

	Model 1		Model 2		Model 3	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
Age of householder (ref: 15–24)						
25–34	−0.140	***	−0.146	***	−0.147	***
34–44	−0.277	***	−0.277	***	−0.281	***
45–54	−0.379	***	−0.371	***	−0.376	***
55–64	−0.441	***	−0.428	***	−0.433	***
65–74	−0.429	***	−0.414	***	−0.418	***
75 and over	−0.590	***	−0.569	***	−0.575	***
Female householder	−0.027	**	−0.023	***	−0.023	**
Race/ethnicity of householder (ref: non-Hispanic white)						
African American	0.017		−0.001		−0.130	**
Asian and Pacific Islander	−0.024		−0.002		0.010	
Hispanic	0.090	***	0.087	***	−0.027	
Other	−0.037		−0.027		−0.094	
Marital status of householder (ref: married couple)						
Widowed	−0.043		−0.037	*	−0.038	
Divorced	0.007		0.009		0.007	
Separated	0.010		0.015		0.015	
Never married	0.048	*	0.061	***	0.058	**
Composition of earners (ref: single earner)						
No earners	−0.003		−0.007		−0.006	
Dual earners	−0.042		−0.041	*	−0.041	
Other cases	−0.007		−0.007		−0.006	
Household size	−0.023	***	−0.024	***	−0.024	***
Having a child/children	−0.065	***	−0.062	***	−0.063	***
Highest education (ref: high school dropouts)						
High school graduate	−0.029		−0.021		−0.023	
Some college	−0.005		−0.001		−0.001	
Bachelor's degree	−0.069	**	−0.057	***	−0.057	**
Master's degree or higher	−0.151	***	−0.136	***	−0.136	***
Occupation (ref: manager, professional)						
Admin, sales, and tech	0.015		0.015		0.015	
Service	0.014		0.016		0.014	
Operator and assembler	0.006		0.001		0.002	
Mechanic and mining	−0.048	*	−0.044	*	−0.042	*
Farming and fishing	0.032		0.051		0.045	
Missing occupation info.	−0.031		−0.030	*	−0.033	
Units in structure (ref: single-family housing)						
Multifamily housing	0.034	*	0.050	***	0.052	***
Mobile home or other	0.134	***	0.136	***	0.135	***
Owner	−0.008		−0.017	*	−0.017	

(Continues)

TABLE 4 (Continued)

	Model 1		Model 2		Model 3	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
log(income)	−0.010	*	−0.009	**	−0.008	
log(wealth)	−0.002		−0.001		−0.001	
Missing wealth info.	−0.004		0.004		0.005	
log(total expenditures)	1.357	***	1.374	***	1.375	***
MSA fixed effects	No		Yes		No	
MSA characteristics	No		No		Yes	
MSA random effects	No		No		Yes	
Year fixed effects	Yes		Yes		Yes	
Number of observations	85,815		85,815		85,815	
Adj. *R*-squared	0.539		0.545		0.544	

Note: $^{*}P < 0.05$, $^{**}P < 0.01$, $^{***}P < 0.001$. The sample includes consumer units in the primary sampling units from 2007 to 2014. The consumer units with zero expenditure on conspicuous, inconspicuous, or other consumption are excluded. The robust standard errors are used to correct for heteroscedasticity.
In the Consumer Expenditure Survey, Metropolitan Statistical Areas (MSAs) are defined as the BLS's Primary Sampling Units (PSUs). The list of counties for those MSAs/PSUs is provided in Table A1 in the Appendix.

2016; Handbury, 2012; Handbury & Weinstein, 2015; Simmel, 1903), socioeconomic metropolitan area characteristics (Charles & Lundy, 2013; Charles et al., 2009), urban amenities (Clark, 2004; Florida, 2002; Glaeser et al., 2001), and natural amenities (Albouy, 2008; Glaeser et al., 2001).

The results of the random effects models are shown in Table 7. The first column in Table 7 indicates that city size (population) and population density are positively associated with conspicuous consumption. This result corroborates Glaeser and Gottlieb (2006) who found that consumer options are strongly associated with urban density. As Simmel (1903) noted more than a hundred years ago, greater anonymity in the bigger and denser cities may paradoxically heighten the need to accentuate individual differences. Although increased economies of scale might enable those bigger cities to provide more diverse conspicuous goods and services at cheaper prices (Handbury, 2012; Handbury & Weinstein, 2015), "trickle-down consumption" may make not only top earners but also middle class spend more money on those items (Bertrand & Morse, 2016; Di Giorgi et al., 2016; Frank et al., 2014).

Holding other covariates constant, including city size and population density, income and population distributions within a city are also strong predictors of conspicuous consumption. There is a negative relationship between income inequality, measured by the Gini coefficient, and conspicuous consumption. Using slightly different methods and data, Charles and Lundy (2013) found a similar negative association between income inequality and visible goods (e.g., vehicles and jewelry). The same authors found a positive association between income inequality and expenditures on food and shelter, which they explain by noting that households in high-inequality metropolitan areas (e.g., New York, Miami, and Los Angeles) tend to allocate more money on necessary goods (food and shelter) and thus less on conspicuous goods, compared to the families in low-inequality areas (e.g., Minneapolis, Phoenix, and Riverside). On the other hand, residential segregation, measured by the dissimilarity index, is positively related to conspicuous consumption. The more income segregated cities (e.g., Houston, Dallas, and Los Angeles) may have stronger notions of social class, which may influence their residents to spend more money on conspicuous consumption as a positioning device than people in relatively less income segregated cities (e.g., Baltimore, Minneapolis, and Seattle).

The coefficients on median income of own race/ethnic group within a metropolitan area and median income of others groups are consistent with the theories of status signaling and conspicuous consumption suggested by Charles et al. (2009). In this paper, the authors argued that people may have different incentives to spend money on conspicuous goods as individuals belong to different group. For example, racial/ethnic minority persons may have greater needs to buy status goods because they want to distinguish themselves from their own racial/ethnic group that has relatively

TABLE 5 Regression results (dependent variable: log of inconspicuous consumption)

	Model 1		Model 2		Model 3	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
Age of householder (ref: 15–24)						
25–34	−0.219	***	−0.216	***	−0.217	***
34–44	−0.298	***	−0.289	***	−0.296	***
45–54	−0.259	***	−0.248	***	−0.253	***
55–64	−0.218	***	−0.205	***	−0.210	***
65–74	−0.079		−0.063	*	−0.070	
75 and over	0.107		0.123	***	0.117	
Female householder	0.096	***	0.096	***	0.097	***
Race/ethnicity of householder (ref: non-Hispanic white)						
African American	−0.070	**	−0.058	***	−0.170	**
Asian and Pacific Islander	−0.167	***	−0.165	***	−0.157	***
Hispanic	−0.181	***	−0.167	***	−0.263	***
Other	−0.027		−0.040		−0.091	
Marital status of householder (ref: married couple)						
Widowed	0.081	**	0.086	***	0.083	**
Divorced	−0.020		−0.021		−0.021	
Separated	0.049		0.047		0.051	
Never married	0.055	*	0.056	***	0.054	**
Composition of earners (ref: single earner)						
No earners	−0.173	***	−0.176	***	−0.170	***
Dual earners	−0.176	***	−0.180	***	−0.174	***
Other cases	−0.287	***	−0.289	***	−0.285	***
Household size	−0.070	***	−0.070	***	−0.071	***
Having a child/children	0.205	***	0.207	***	0.207	***
Highest education (ref: high school dropouts)						
High school graduate	0.132	**	0.145	***	0.137	***
Some college	0.315	***	0.319	***	0.315	***
Bachelor's degree	0.428	***	0.439	***	0.431	***
Master's degree or higher	0.551	***	0.564	***	0.558	***
Occupation (ref: manager, professional)						
Admin, sales, and tech	−0.033	*	−0.033	**	−0.034	**
Service	−0.105	***	−0.099	***	−0.104	***
Operator and assembler	−0.151	***	−0.156	***	−0.158	***
Mechanic and mining	−0.116	**	−0.120	***	−0.116	**
Farming and fishing	−0.113		−0.114	*	−0.115	
Missing occupation info.	−0.102	***	−0.100	***	−0.103	***
Units in structure (ref: single-family housing)						
Multifamily housing	0.090	***	0.101	***	0.101	***
Mobile home or other	0.072		0.068	**	0.070	*
Owner	0.309	***	0.313	***	0.310	***

(Continues)

TABLE 5 (Continued)

	Model 1		Model 2		Model 3	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
log (income)	0.007		0.008	*	0.008	
log (wealth)	0.031	***	0.030	***	0.031	***
Missing wealth info.	0.213	***	0.204	***	0.209	***
log (total expenditures)	1.472	***	1.477	***	1.477	***
MSA fixed effects	No		Yes		No	
MSA characteristics	No		No		Yes	
MSA random effects	No		No		Yes	
Year fixed effects	Yes		Yes		Yes	
Number of observations	85,815		85,815		85,815	
Adj. *R*-squared	0.530		0.532		0.531	

Note: $^{*}P < 0.05$, $^{**}P < 0.01$, $^{***}P < 0.001$. The sample includes consumer units in the primary sampling units from 2007 to 2014. The consumer units with zero expenditure on conspicuous, inconspicuous, or other consumption are excluded. The robust standard errors are used to correct for heteroscedasticity.
In the Consumer Expenditure Survey, Metropolitan Statistical Areas (MSAs) are defined as the BLS's Primary Sampling Units (PSUs). The list of counties for those MSAs/PSUs is provided in Table A1 in the Appendix.

low income in their residence. The results in Table 7 confirm this narrative: Conspicuous consumption is negatively associated with the median income of own racial/ethnic group within the same metropolitan area but not with the median income of other groups.

Not all urban characteristics are related to conspicuous consumption. Although the LQ for restaurants and bars is positively associated with conspicuous consumption, natural amenities such as average temperature in January and number of rainy days are not related with consumption patterns. The cost of housing is found to be negatively correlated with conspicuous consumption, which is likely due to households possessing less discretionary income.

Although there are many associations between conspicuous consumption and metropolitan area characteristics, there are only few urban characteristics that are related to inconspicuous consumption (city size and median income of own race/ethnic group) and other consumption (income inequality and median income of own race/ethnic group). Metropolitan characteristics are most likely to predict conspicuous, status-driven consumption. Our analysis suggests that the differences across consumption types in those relationships indicate that a specific urban context in important with regard to socially visible status consumption.

5 | ADDITIONAL TESTS

As noted earlier, there are a number of important assumptions inherent in this analysis that are important to provide additional evidence on their validity.

First, we recognize that the classification of a particular luxury good as conspicuous and inconspicuous is subject to interpretation. To test whether alternative definitions might influence the results, we use the Heffetz (2011)'s visibility index and total expenditure elasticity to determine conspicuous and inconspicuous consumption.[13] Heffetz (2011) measured visibility of 31 consumption categories through a nationally representative survey of 480 U.S. adults and examined the relationship between the visibility and income elasticities. The proposed index measures how long it would take for respondents to notice others spend more than average on a certain item (1.0 = almost immediately;

[13] Heffetz's (2011) survey and visibility index are based on the consumption categorization that was proposed by Harris and Sabelhaus (2005). To be consistent with Heffetz (2011), we aggregated our consumption data from 2007 to 2014 into the Harris and Sabelhaus' (2005) consumption categories and used the visibility index and total expenditure elasticity in Heffetz (2011).

TABLE 6 Summarized results of the fixed-effects regressions

	ln (conspicuous)			ln (inconspicuous)			ln (other)		
Dependent variable:	**Coef.**	**S.E.**	**Sig.**	**Coef.**	**S.E.**	**Sig.**	**Coef.**	**S.E.**	**Sig.**
Metropolitan area FEs (ref.: Chicago)									
Atlanta	0.042	(0.017)	*	−0.038	(0.023)		−0.015	(0.005)	**
Baltimore	−0.104	(0.021)	***	−0.082	(0.027)	**	0.014	(0.006)	*
Boston	−0.153	(0.016)	***	0.005	(0.019)		0.019	(0.005)	***
Cleveland	0.071	(0.021)	***	−0.036	(0.027)		−0.022	(0.006)	***
Dallas	0.107	(0.014)	***	0.016	(0.020)		−0.012	(0.004)	**
Detroit	0.116	(0.016)	***	0.004	(0.021)		−0.027	(0.005)	***
Hartford	−0.162	(0.015)	***	−0.074	(0.019)	***	0.050	(0.004)	***
Houston	0.054	(0.016)	***	0.040	(0.022)		−0.017	(0.005)	***
Los Angeles	−0.053	(0.013)	***	0.024	(0.017)		0.016	(0.004)	***
Miami	−0.042	(0.021)	*	−0.192	(0.027)	***	0.025	(0.006)	***
Minneapolis	−0.052	(0.018)	**	0.110	(0.023)	***	−0.024	(0.006)	***
Newark	−0.135	(0.015)	***	−0.209	(0.020)	***	0.061	(0.004)	***
New York	−0.048	(0.016)	**	−0.049	(0.021)	*	0.023	(0.004)	***
Philadelphia	−0.097	(0.015)	***	−0.077	(0.019)	***	0.026	(0.004)	***
Phoenix	0.075	(0.020)	***	0.080	(0.026)	**	−0.036	(0.007)	***
Riverside	−0.040	(0.017)	*	−0.033	(0.023)		0.032	(0.005)	***
San Diego	−0.122	(0.018)	***	−0.090	(0.024)	***	0.056	(0.005)	***
San Francisco	−0.175	(0.015)	***	−0.031	(0.019)		0.058	(0.004)	***
Seattle	−0.070	(0.017)	***	0.131	(0.022)	***	0.014	(0.005)	**
Washington, DC	−0.139	(0.015)	***	0.007	(0.019)		0.035	(0.005)	***
Intraclass correlation		0.0126			0.0062			0.0160	
Number of observations		85,815			85,815			85,815	
Adj. *R*-squared		0.545			0.532			0.855	

Note: $^{*}P < 0.05$, $^{**}P < 0.01$, $^{***}P < 0.001$. The sample includes consumer units in the primary sampling units from 2007 to 2014. The consumer units with zero expenditure on conspicuous, inconspicuous, or other consumption are excluded. The robust standard errors are used to correct for heteroscedasticity.

0.75 = a short while after; 0.5 = a while after; 0.25 = a long while after; and 0). Based on the visibility index and total expenditure elasticity of each consumption category presented in Heffetz (2011), we repeated the regression models using alternative definitions of conspicuous/inconspicuous consumption.[14] Table 8 compares estimated coefficients for the models based on our categories and the ones based on the Heffetz (2011), varying thresholds for visibility index and income elasticities. In the table, the second to fourth columns compare the results varying by visibility index threshold, whereas the fifth and sixth columns compare them varying by income elasticities. In both the fixed effects and the random effects model, the estimated coefficients have strikingly similar magnitudes and statistical significance. For the random effects model, the signs and magnitudes of estimated coefficients are quite similar, whereas the models based on our own consumption categories tend to show stronger statistical significances. This suggests that the measure of conspicuousness and inconspicuousness is robust across alternative definitions.

A second test concerns the specification of the dependent variable for consumption. Although log of consumption has often been used as measure of consumption behavior in previous literature (e.g., Bertrand & Morse, 2016; Charles et al., 2009), substantial income gaps existing across cities may suggest that it is the share, rather the amount that

[14] Heffetz's (2011) visibility index and consumption categories are shown in Table A2 in Appendix.

TABLE 7 Summarized results of the random effects regressions

	ln (conspicuous)			ln (inconspicuous)			ln (other)		
Dependent variable:	**Coef.**	**S.E.**	**Sig.**	**Coef.**	**S.E.**	**Sig.**	**Coef.**	**S.E.**	**Sig.**
Metropolitan characteristics									
log (population)	0.041	(0.014)	**	0.090	(0.037)	*	−0.015	(0.009)	
log (population density)	0.053	(0.013)	***	0.020	(0.028)		−0.010	(0.007)	
Gini coefficient (%)	−0.020	(0.006)	***	−0.021	(0.012)		0.006	(0.003)	*
Dissimilarity index (%)	0.012	(0.004)	**	−0.008	(0.009)		−0.001	(0.002)	
log (own race's income)	−0.241	(0.052)	***	−0.203	(0.069)	**	0.058	(0.017)	***
log (other race's income)	0.005	(0.062)		0.004	(0.092)		0.044	(0.029)	
Restaurants and bars LQ	0.371	(0.135)	**	0.255	(0.249)		−0.084	(0.060)	
Avg. temp in Jan (°F)	0.000	(0.001)		−0.000	(0.002)		0.000	(0.000)	
No. of rainy days	−0.000	(0.000)		−0.000	(0.000)		0.000	(0.000)	
RPP (goods)	0.003	(0.003)		0.006	(0.004)		−0.001	(0.001)	
RPP (rents)	−0.002	(0.000)	***	−0.001	(0.001)		0.000	(0.000)	*
Number of observations		85,815			85,815			85,815	
Adj. *R*-squared		0.544			0.531			0.855	

Note: $^{*}P < 0.05$, $^{**}P < 0.01$, $^{***}P < 0.001$. The sample includes consumer units in the primary sampling units from 2007 to 2014. The consumer units with zero expenditure on conspicuous, inconspicuous, or other consumption are excluded. The robust standard errors are used to correct for heteroscedasticity.

captures the consumer behaviors better. Cost of living can be treated in an alternative way considering that it may substantially influence the amount of money that is available for spending after paying for housing; substantial amount of vehicle-related spending may drive the patterns found in the regression results, so it might be worthwhile to check whether conspicuous consumption excluding it presents similar patterns.

To address these issues, we repeated the regressions with various forms of the dependent variables: (a) the ratio of conspicuous consumption to total expenditures (%), (b) the share of total expenditures less housing costs that are spent on conspicuous consumption (%), and (c) log of conspicuous consumption less vehicle-related expenditures.[15] The regression results show that the estimated coefficients are largely unaffected (Table 9). That is, while there are some differences in statistical significance, the relative magnitudes and signs of estimated coefficients from those models are generally consistent with those found in our main analysis.

Finally, there might be some concerns about generalizing the results from the 21 metropolitan areas in the sample. For example, some may argue that the results are mainly driven by those New Yorkers and Angelenos, given their distinctive urban characteristics and substantial number of residents. Thus, we repeat our main analysis with the sample excluding those areas. Also, there are concerns that households may sort into metropolitan area in systematic ways that would influence our estimates of the determinants of conspicuous and inconspicuous consumption. For example, it might be the case that households that sort into coastal cities have different tastes for various types of consumption. To that end, we estimate separate samples of coastal and noncoastal residents.[16] The assumption in these models is that the tastes are similar within these two subsamples.

Table 10 presents evidence of the differences in estimates of metropolitan-level characteristics on conspicuous and inconspicuous consumption. In general, the coefficients on metro characteristics that determine conspicuous

[15] Housing costs consist of mortgage interest and charges, property taxes, maintenance, repairs, insurance, and other expenses for owners and rent, maintenance, insurance, and other expenses for renters; vehicle-related expenditures are made up of the money spent on buying, financing, and leasing cars and trucks.

[16] Those metropolitan areas in coastal area are Baltimore, Boston, Hartford, Los Angeles, Miami, Newark, New York, Philadelphia, Riverside, San Diego, San Francisco, Seattle, and Washington, DC. The metropolitan areas in noncoastal area are Atlanta, Chicago, Cleveland, Dallas, Detroit, Houston, Minneapolis, and Phoenix.

TABLE 8 Summarized regression results, consumption categories based on Heffetz's (2011) visibility index and total expenditure elasticity

(A) Fixed effects models (dependent variable: log of conspicuous consumption)												
	Own definition		Heffetz (2011) $V > 0.5, e_y > 1.0$		Heffetz (2011) $V > 0.6, e_y > 1.0$		Heffetz (2011) $V > 0.67, e_y > 1.0$		Heffetz (2011) $V > 0.5, e_y > 0.5$		Heffetz (2011) $V > 0.5, e_y > 1.5$	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
Metropolitan area FEs (ref.: Chicago)												
Atlanta	0.042	*	−0.030		0.024		−0.089	**	−0.029		−0.125	
Baltimore	−0.104	***	−0.085	***	−0.115	***	−0.187	***	−0.081	***	−0.003	
Boston	−0.153	***	−0.047	***	−0.152	***	−0.134	***	−0.029	*	−0.030	
Cleveland	0.071	***	0.042	*	0.075	**	0.107	**	0.016		0.147	
Dallas	0.107	***	0.044	***	0.093	***	−0.012		0.039	**	−0.009	
Detroit	0.116	***	0.047	**	0.063	***	0.044		0.051	***	0.034	
Hartford	−0.162	***	−0.128	***	−0.163	***	−0.207	***	−0.120	***	−0.197	***
Houston	0.054	***	0.000		0.015		−0.089	**	−0.006		0.046	
Los Angeles	−0.053	***	−0.054	***	−0.059	***	−0.249	***	−0.063	***	−0.228	***
Miami	−0.042	*	−0.192	***	−0.150	***	−0.295	***	−0.201	***	−0.355	***
Minneapolis	−0.052	**	0.006		0.005		0.011		0.013		0.162	*
Newark	−0.135	***	−0.155	***	−0.167	***	−0.242	***	−0.158	***	−0.158	**
New York	−0.048	**	−0.074	***	−0.034		−0.156	***	−0.079	***	−0.278	***
Philadelphia	−0.097	***	−0.057	***	−0.106	***	−0.100	***	−0.054	***	−0.048	
Phoenix	0.075	***	0.005		0.024		−0.052		0.002		−0.021	
Riverside	−0.040	*	−0.077	***	−0.031		−0.159	***	−0.088	***	−0.268	***
San Diego	−0.122	***	−0.140	***	−0.102	***	−0.287	***	−0.161	***	−0.275	***
San Francisco	−0.175	***	−0.126	***	−0.145	***	−0.317	***	−0.116	***	−0.342	***
Seattle	−0.070	***	−0.005		−0.024		−0.111	***	0.002		−0.024	
Washington, DC	−0.139	***	−0.115	***	−0.141	***	−0.271	***	−0.110	***	−0.233	***
Number of observations	85,815		88,427		78,286		60,773		93,865		18,643	
Adj. *R*-squared	0.545		0.641		0.498		0.378		0.651		0.399	

(Continues)

TABLE 8 (Continued)

(B) Fixed effects models (dependent variable: log of inconspicuous consumption)												
	Own definition		Heffetz (2011) $V < 0.5, e_y > 1.0$		Heffetz (2011) $V < 0.4, e_y > 1.0$		Heffetz (2011) $V < 0.33, e_y > 1.0$		Heffetz (2011) $V < 0.4, e_y > 0.5$		Heffetz (2011) $V < 0.4, e_y > 1.5$	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
Metropolitan area FEs (ref.: Chicago)												
Atlanta	−0.038		−0.064	**	0.074	**	0.035		0.048	***	0.111	
Baltimore	−0.082	**	−0.113	***	−0.011		−0.023		−0.009		0.025	
Boston	0.005		0.002		−0.059	**	0.019		0.017		−0.042	
Cleveland	−0.036		0.086	**	0.003		0.004		0.000		−0.022	
Dallas	0.016		0.039		0.170	***	0.132	***	0.109	***	−0.037	
Detroit	0.004		0.169	***	0.095	***	0.078	***	0.099	***	−0.016	
Hartford	−0.074	***	0.037	*	0.005		0.125	***	0.029	***	0.014	
Houston	0.040		0.106	***	0.210	***	0.273	***	0.130	***	0.046	
Los Angeles	0.024		−0.004		0.027		0.099	***	−0.090	***	0.121	*
Miami	−0.192	***	−0.288	***	−0.295	***	−0.121	***	−0.100	***	0.231	**
Minneapolis	0.110	***	0.157	***	0.223	***	0.075	**	0.048	***	−0.077	
Newark	−0.209	***	−0.035		−0.163	***	−0.082	***	−0.030	***	0.227	***
New York	−0.049	*	0.179	***	−0.042		0.103	***	−0.185	***	−0.375	***
Philadelphia	−0.077	***	−0.083	***	−0.068	**	−0.062	**	−0.003		0.061	
Phoenix	0.080	**	0.074	**	0.088	**	0.074	*	0.022		−0.029	
Riverside	−0.033		0.025		0.076	**	0.214	***	−0.037	***	0.016	
San Diego	−0.090	***	−0.009		0.021		0.094	***	−0.075	***	−0.134	*
San Francisco	−0.031		−0.005		−0.052	*	0.068	**	−0.085	***	−0.020	
Seattle	0.131	***	0.191	***	0.193	***	0.190	***	0.009		−0.027	
Washington, DC	0.007		0.063	**	0.085	***	0.078	***	−0.014		−0.107	*
Number of observations	85,815		88,427		78,286		60,773		93,865		18,643	
Adj. *R*-squared	0.532		0.457		0.384		0.342		0.693		0.244	

(Continues)

TABLE 8 (Continued)

(C) Random effects models (dependent variable: log of conspicuous consumption)												
			Heffetz (2011)									
	Own definition		$V > 0.5, e_y > 1.0$		$V > 0.6, e_y > 1.0$		$V > 0.67, e_y > 1.0$		$V > 0.6, e_y > 0.5$		$V > 0.6, e_y > 1.5$	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
Metropolitan characteristics												
log (population)	0.041	**	0.072	***	0.039	**	0.071	***	0.079	***	0.040	
log (population density)	0.053	***	0.021		0.042	*	0.004		0.014		−0.033	
Gini coefficient (%)	−0.020	***	−0.019	**	−0.017	**	−0.013	**	−0.017	**	−0.021	
Dissimilarity index (%)	0.012	**	0.002		0.006		0.003		0.000		−0.000	
log (own race's income)	−0.241	***	−0.275	***	−0.259	***	−0.440	***	−0.291	***	−0.254	
log (others' income)	0.005		−0.016		−0.003		−0.001		0.006		−0.255	
Restaurants and bars LQ	0.371	**	0.155		0.335	*	0.162		0.156		−0.293	
Avg. temp in Jan (°F)	0.000		−0.001		−0.001		−0.003	***	−0.001		−0.002	
No. of rainy days	−0.000		−0.000		−0.000		−0.000		−0.000		−0.000	
RPP (goods)	0.003		0.003		0.006		0.007	**	0.004		0.005	
RPP (rents)	−0.002	***	−0.001	*	−0.002	***	−0.002	***	−0.001		−0.002	
Number of observations	85,815		88,427		78,286		60,773		93,865		18,643	
Adj. *R*-squared	0.544		0.641		0.498		0.378		0.651		0.400	

(Continues)

TABLE 8 (Continued)

(D) Random effects models (dependent variable: log of inconspicuous consumption)												
			Heffetz (2011)									
	Own definition		$V < 0.5, e_y > 1.0$		$V < 0.4, e_y > 1.0$		$V < 0.33, e_y > 1.0$		$V < 0.4, e_y > 0.5$		$V < 0.4, e_y > 1.5$	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
Metropolitan characteristics												
log (population)	0.090	*	−0.023		0.032		0.015		0.035	*	0.151	*
log (population density)	0.020		0.028		0.045		−0.006		−0.035		−0.040	
Gini coefficient (%)	−0.021		−0.005		−0.027		0.016		−0.003		−0.027	
Dissimilarity index (%)	−0.008		0.007		0.002		−0.001		0.007		−0.002	
log (own race's income)	−0.203	**	−0.411	**	−0.117		−0.089		−0.045		0.094	
log (others' income)	0.004		0.285	*	0.164		0.280	*	0.104	*	−0.130	
Restaurants and bars LQ	0.255		0.169		0.496		0.505		0.090		−0.651	
Avg. temp in Jan (°F)	−0.000		−0.004		−0.002		−0.000		−0.001		0.007	***
No. of rainy days	−0.000		−0.000		−0.001		−0.000		0.000		0.000	
RPP (goods)	0.006		0.006		0.007		0.003		−0.002		−0.004	
RPP (rents)	−0.001		−0.000		−0.002	*	−0.002		−0.001	**	−0.001	
Number of observations	85,815		88,427		78,286		60,773		93,865		18,643	
Adj. *R*-squared	0.531		0.455		0.381		0.339		0.693		0.244	

Note: $^{*}P < 0.05$, $^{**}P < 0.01$, $^{***}P < 0.001$. The sample includes consumer units in the primary sampling units from 2007 to 2014. The consumer units with zero expenditure on conspicuous, inconspicuous, or other consumption are excluded. The robust standard errors are used to correct for heteroscedasticity.

TABLE 9 Summarized regression results with alternative dependent variables

(A) Fixed effects model								
	ln (conspicuous)		% Total expenditures		% (Total exp.—housing)		ln (conspicuous—vehicle)	
Dependent variable:	**Coef.**	**Sig.**	**Coef.**	**Sig.**	**Coef.**	**Sig.**	**Coef.**	**Sig.**
Metropolitan area FEs (ref.: Chicago)								
Atlanta	0.042	*	0.674	**	0.369		0.003	
Baltimore	−0.104	***	−0.883	**	−1.145	***	−0.117	***
Boston	−0.153	***	−1.450	***	−2.048	***	−0.161	***
Cleveland	0.071	***	1.413	***	0.989	**	−0.056	**
Dallas	0.107	***	1.150	***	0.712	**	0.067	***
Detroit	0.116	***	1.567	***	1.143	***	−0.006	
Hartford	−0.162	***	−2.214	***	−2.230	***	−0.128	***
Houston	0.054	***	0.871	***	0.304		0.021	
Los Angeles	−0.053	***	−1.256	***	−0.737	***	−0.024	
Miami	−0.042	*	−0.293		−0.290		−0.076	***
Minneapolis	−0.052	**	−0.043		−0.539		−0.119	***
Newark	−0.135	***	−2.013	***	−1.597	***	−0.103	***
New York	−0.048	**	−1.140	***	−0.378		0.037	*
Philadelphia	−0.097	***	−1.108	***	−1.485	***	−0.101	***
Phoenix	0.075	***	1.532	***	1.198	***	−0.019	
Riverside	−0.040	*	−0.866	***	−0.664	*	−0.036	*
San Diego	−0.122	***	−2.153	***	−1.819	***	−0.095	***
San Francisco	−0.175	***	−2.769	***	−2.512	***	−0.104	***
Seattle	−0.070	***	−1.374	***	−1.662	***	−0.031	
Washington, DC	−0.139	***	−2.018	***	−2.092	***	−0.120	***
Number of observations	85,815		85,815		85,815		85,453	
Adj. *R*-squared	0.545		0.144		0.147		0.458	
(B) Random effects model								
	ln (conspicuous)		% Total expenditure		% (Total exp.—housing)		ln (conspicuous—vehicle)	
Dependent variable:	**Coef.**	**Sig.**	**Coef.**	**Sig.**	**Coef.**	**Sig.**	**Coef.**	**Sig.**
Metropolitan characteristics								
log (population)	0.041	**	0.331		0.340		0.048	**
log (population density)	0.053	***	0.368		0.802	***	0.056	***
Gini coefficient (%)	−0.020	***	−0.201	*	−0.248	**	−0.008	
Dissimilarity index (%)	0.012	**	0.142	*	0.120	*	0.005	
log (own race's income)	−0.241	***	−2.636	***	−2.283	*	−0.167	***
log (others' income)	0.005		−1.217		−0.755		0.113	*
Restaurants and bars LQ	0.371	**	3.959	*	4.207	*	0.326	**
Avg. temp in Jan (°F)	0.000		−0.009		−0.004		0.001	
No. of rainy days	−0.000		−0.001		−0.005		−0.000	
RPP (goods)	0.003		0.012		0.011		0.007	*
RPP (rents)	−0.002	***	−0.023	***	−0.025	***	−0.002	***

(Continues)

TABLE 9 (Continued)

(B) Random effects model								
	ln (conspicuous)		% Total expenditure		% (Total exp.—housing)		ln (conspicuous—vehicle)	
Dependent variable:	**Coef.**	**Sig.**	**Coef.**	**Sig.**	**Coef.**	**Sig.**	**Coef.**	**Sig.**
Number of observations	85,815		85,815		85,815		85,453	
Adj. *R*-squared	0.544		0.143		0.147		0.458	

Note: $^{*}P < 0.05$, $^{**}P < 0.01$, $^{***}P < 0.001$. The sample includes consumer units in the primary sampling units from 2007 to 2014. The consumer units with zero expenditure on conspicuous, inconspicuous, or other consumption are excluded for the models in the first to third columns. For the last column, the consumer units with zero expenditure on conspicuous consumption less vehicle-related consumption are excluded as well. The robust standard errors are used to correct for heteroscedasticity.

TABLE 10 Summarized regression results with different subsample and estimation method

Conspicuous consumption										
	Base		Exclude NY and LA		Coastal cities		Noncoastal cities		Tobit model (*dy/dx*)	
	Coef.	**Sig.**	**Coef.**	**Sig.**	**Coef.**	**Sig.**	**Coef.**	**Sig.**	**Coef.**	**Sig.**
Metropolitan characteristics										
log (population)	0.041	**	0.078	**	0.024		0.165		0.191	***
log (population density)	0.053	***	0.014		0.058	***	−0.019		0.084	***
Gini coefficient (%)	−0.020	***	−0.019	*	−0.019	***	−0.020	*	−0.068	***
Dissimilarity index (%)	0.012	**	0.008	*	0.004		0.002		0.005	
log (own race's income)	−0.241	***	−0.219	**	−0.173	***	−0.298	**	−0.335	***
log (others' income)	0.005		0.029		0.025		0.015		−0.015	
Restaurants and bars LQ	0.371	**	0.553	**	0.165		−0.106		0.598	***
Avg. temp in Jan (°F)	0.000		−0.000		0.002	**	0.001		0.001	
No. of rainy days	−0.000		−0.000		−0.000		−0.000		−0.001	***
RPP (goods)	0.003		0.002		0.000		0.001		0.005	*
RPP (rents)	−0.002	***	−0.002	***	−0.001	*	−0.005	*	−0.004	***
Number of observations	85,815		59,161		56,636		29,179		95,735	
Adj. *R*-squared	0.544		0.553		0.533		0.572		0.124	
Inconspicuous consumption										
	Base		**Exclude NY and LA**		**Coastal cities**		**Noncoastal cities**		**Tobit model (*dy/dx*)**	
	Coef.	**Sig.**	**Coef.**	**Sig.**	**Coef.**	**Sig.**	**Coef.**	**Sig.**	**Coef.**	**Sig.**
Metropolitan characteristics										
log (population)	0.090	*	0.102	***	0.209	***	0.144		0.252	***
log (population density)	0.020		−0.160	***	0.088	***	−0.171		0.005	
Gini coefficient (%)	−0.021		−0.014		−0.041	***	−0.028		−0.053	***
Dissimilarity index (%)	−0.008		−0.002		−0.020	***	0.009		−0.020	***
log (own race's income)	−0.203	**	−0.096		−0.219	**	0.120		−0.454	***
log (others' income)	0.004		0.154		0.081		−0.057		−0.061	
Restaurants and bars LQ	0.255		0.026		0.736	***	−0.726		0.154	

(Continues)

TABLE 10 (Continued)

Inconspicuous consumption										
	Base		Exclude NY and LA		Coastal cities		Noncoastal cities		Tobit model (*dy/dx*)	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
Avg. temp in Jan (°F)	−0.000		−0.000		−0.001		−0.000		−0.005	***
No. of rainy days	−0.000		0.001	*	0.001	***	0.000		−0.001	***
RPP (goods)	0.006		0.003		0.006	***	0.002		−0.003	
RPP (rents)	−0.001		−0.001		−0.001		−0.003		0.002	**
Number of observations	85,815		59,161		56,636		29,179		95,735	
Adj. *R*-squared	0.531		0.532		0.538		0.522		0.112	

Note: $^{*}P < 0.05$, $^{**}P < 0.01$, $^{***}P < 0.001$. The sample includes consumer units in the primary sampling units from 2007 to 2014. The consumer units with zero expenditure on conspicuous, inconspicuous, or other consumption are excluded for the models in the first to fourth columns. For the last column, a Tobit model was estimated, and the corresponding marginal effects are reported. The robust standard errors are used to correct for heteroscedasticity.

consumption are similar across samples suggesting differential sorting does not influence the model estimates. Minor differences include the importance of January temperature in coastal cities and the insignificant impact of the measure of segregation.

However, the estimates of metro characteristics on inconspicuous consumption are very different across samples. Metro characteristics do not predict any inconspicuous consumption in noncoastal metropolitan areas, suggesting that individual determinants are salient there. On the other hand, most metro characteristics are significant in coastal cities. We believe this result may be due to the context specificity of some forms of inconspicuous consumption. As the literature suggests, and most recently Currid-Halkett (2017) argued, inconspicuous consumption is often a means to attain cultural capital—whether music lessons, reading certain newspapers, or travel experiences. The value of this cultural capital is often determined by specific social environments more than objective measures. Unlike more obvious and objective forms of conspicuous consumption (e.g., luxury cars, expensive watches), the value of inconspicuous consumption is more socially specific—what offers social positioning in one place may not transfer to another. Thus, inconspicuous consumption is determined by unique, place-specific characteristics rather than constant variables across different geographies.

An additional measurement issue concerns the fact that many categories of consumption have zero values. To account for left censorship at zero, we estimate Tobit models and display marginal effects in Table 10. There are some changes in magnitudes and statistical significance of coefficients, but the overall patterns are similar.

6 | CONCLUSION

In this study, we unbundled the relationship between consumption and the metropolitan context in which a household resides. We do this by using the Consumer Expenditure Survey (CE) to estimate how individual consumption patterns vary across 21 major metropolitan areas. In doing so, our approach is innovative in its granular specificity to the study of consumption in both the analysis of between-cities consumption and the particular consumption habits associated with these differences. To our knowledge, this is the first study that empirically measures the geographical differences in consumption across an array of different types of consumption, and quantifies the variables that might explain these distinctions.

We find that there are discrete differences in consumer behavior in the three forms of consumption we study: conspicuous consumption, inconspicuous consumption, and general expenditures. However, the most interesting story is that of conspicuous consumption. We find that metropolitan area strongly influences such spending, but has little

effect on the other categories of consumption outside of coastal cities. Our work quantifies and articulates the role of conspicuous consumption and social positioning in cities and the variables that influence this type of spending. In this study, the evidence stops short of identifying causality, although many robustness checks give some confidence in the associations that are estimated here. However, future research is needed to unpack some of these causal impacts.

The implications from this and future work are important to understand the extant literature on the connection between consumption and economic development. The work on the interaction between consumption and economic development highlights the role of amenities, retail, and the transformation of culture into a commodity. These processes are thought to be at least partially responsible for how cities attract skilled labor pools (Florida, 2002). For example, Diamond (2016) found that these luxury cities with high human capital offer "hidden amenities," one of which is the desire for educated human capital to be located near each other. Our understanding of the role of consumption thus far has been relegated to specific qualitative case studies (particularly of New York City) and quantitative analysis that offers broad generalizations around amenities and human capital. In short, the variables underpinning this relationship have not been fully explored in comparative detail across a wide scale of metro areas. Although amenities are thought to explain human capital mobility, our work indicates that cities offer significantly different amenities from one another, which suggests perhaps different motivations for human capital mobility. Yet, the link between cities and their differentiated offerings is not new. Almost 700 years ago, Ibn Khaldun wrote, "Certain cities have crafts that others lack" (Ibn Khaldun, 2005).[17] Although much has changed in the social value of particular types of consumption, more broadly this observation remains as true in the 21st century as it did in 1377. Ibn Khaldun went on to write that the activities within a city interact and necessitate each other and what comes of them. Our work and others' are making steps toward understanding why and how these differences might influence the flows of human capital from one place to another.

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APPENDIX

TABLE A1 Geographic areas in the consumer expenditure survey's primary sampling units

PSU	PSU name	Definition (county, state)
A109	New York, NY	Bronx, Kings, New York, Queens, Richmond, NY
A110	New York-Connecticut Suburbs	Fairfield, Hartford, Litchfield, Middlesex, New Haven, Tolland, CT; Dutchess, Nassau, Orange, Putnam, Rockland, Suffolk, Westchester, NY
A111	New Jersey Suburbs	Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, Warren, NJ
A102	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD	New Castle, DE; Cecil, MD; Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Salem, NJ; Bucks, Chester, Delaware, Montgomery, Philadelphia, PA
A103	Boston-Brockton-Nashua, MA-NH-ME-CT	Windham, CT; Bristol, Essex, Hampden, Hampshire, Middlesex, Norfolk, Plymouth, Suffolk, Worcester, MA; York, ME; Hillsborough, Merrimack, Rockingham, Strafford, NH
A207	Chicago-Gary-Kenosha, IL-IN-WI	Cook, DeKalb, Du Page, Grundy, Kane, Kankakee, Kendall, Lake, McHenry, Will, IL; Lake, Newton, Porter, IN; Kenosha, WI
A208	Detroit-Ann -Arbor-Flint, MI	Genesee, Lapeer, Lenawee, Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, Wayne, MI
A210	Cleveland-Akron, OH	Ashtabula, Cuyahoga, Geauga, Lake, Lorain, Medina, Portage, Summit, OH
A211	Minneapolis-St. Paul, MN-WI	Anoka, Benton, Carver, Chisago, Dakota, Hennepin, Isanti, Ramsey, Scott, Sherburne, Stearns, Washington, Wright, MN; Pierce, St. Croix, WI
A312	Washington, DC-MD-VA-WV	District of Columbia, DC; Calvert, Charles, Frederick, Montgomery, Prince George's, Washington, MD; Alexandria city, Arlington, Clarke, Fairfax, Fairfax city, Falls Church city, Fauquier, Fredericksburg city, King George, Loudoun, Manassas Park city, Manassas city, Prince William, Rappahannock, Spotsylvania, Stafford, Warren, VA; Berkeley, Jefferson, WV
A313	Baltimore, MD	Anne Arundel, Baltimore, Baltimore city, Carroll, Harford, Howard, Queen Anne's, MD
A316	Dallas-Fort Worth, TX	Collin, Dallas, Delta, Denton, Ellis, Henderson, Hood, Hunt, Johnson, Kaufman, Parker, Rockwall, Tarrant, Wise, TX
A318	Houston-Galveston-Brazoria, TX	Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, San Jacinto, Waller, TX
A319	Atlanta, GA	Cleburne, AL; Barrow, Bartow, Butts, Carroll, Cherokee, Clayton, Cobb, Coweta, Dawson, De Kalb, Douglas, Fayette, Forsyth, Fulton, Gwinnett, Haralson, Henry, Newton, Paulding, Pickens, Pike, Rockdale, Spalding, Walton, GA
A320	Miami-Fort Lauderdale, FL	Broward, Miami Dade, FL
A419	Los Angeles-Orange, CA	Los Angeles, Orange, CA

(Continues)

TABLE A1 (Continued)

PSU	PSU name	Definition (county, state)
A420	Los Angeles Suburbs, CA	Riverside, San Bernardino, Ventura, CA
A422	San Francisco-Oakland-San Jose, CA	Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma, CA
A423	Seattle-Tacoma-Bremerton, WA	Island, King, Kitsap, Pierce, Snohomish, Thurston, WA
A424	San Diego, CA	San Diego, CA
A429	Phoenix-Mesa, AZ	Maricopa, Pinal, AZ

Source: The Bureau of Labor Statistics (BLS). *Consumer Expenditure Survey Metropolitan Areas*. Retrieved from https://www.bls.gov/regions/ce_areadef.pdf
Note: The list includes only "A" size primary sampling units with a population greater than 1.5 million, which are identified on the 2006–2014 Consumer Expenditure Survey Public-Use Microdata.

TABLE A2 Consumption categories and their values of visibility index

Consumption categories	Spending items	Visibility index	Conspicuous/ inconspicuous
Cig	Tobacco products such as cigarettes, cigars, and pipe tobacco	0.76	
Car	The purchase of new and used motor vehicles such as cars, trucks, and vans	0.73	Conspicuous
Clo	Clothing and shoes, not including underwear, undergarments, and nightwear	0.71	Conspicuous
Fur	Home furnishings and household items such as furniture, appliances, tools, and linen	0.68	Conspicuous
Jwl	Jewelry and watches	0.67	Conspicuous
Ot1	Computers, games, TVs, video, audio, musical and sports equipment, tapes, CDs	0.66	Conspicuous
FdO	Dining out at restaurants, drive-through, etc., excluding alcohol; including food at school	0.62	Conspicuous
AlH	Alcoholic beverages for home use	0.61	
Brb	Barbershops, beauty parlors, hair dressers, health clubs, etc.	0.60	
AlO	Alcoholic beverages at restaurants, bars, cafeterias, cafe's, etc.	0.60	
Ot2	Cable TV, pets and veterinarians, sports, country clubs, movies, and concerts	0.58	
Bks	Books, including school books, newspapers, and magazines, toys, games, and hobbies	0.57	
Edu	Education, from nursery to college, like tuition and other school expenses	0.56	
FdH	Food and nonalcoholic beverages at grocery, specialty, and convenience stores	0.51	
Hom	Rent, or mortgage, or purchase, of their housing	0.50	
Cel	Mobile phone services	0.47	
Air	Airline fares for out-of-town trips	0.46	
Htl	Lodging away from home on trips and housing for someone away at school	0.46	
Bus	Public transportation, both local and long distance, such as buses and trains	0.45	

(Continues)

TABLE A2 (Continued)

Consumption categories	Spending items	Visibility index	Conspicuous/ inconspicuous
CMn	Vehicle maintenance, mechanical and electrical repair and replacement	0.42	
Gas	Gasoline and diesel fuel for motor vehicles	0.39	
Med	Medical care, including health insurance, drugs, dentists, doctors, hospitals, etc.	0.36	
Cha	Contributions to churches or other religious organizations, and other charities	0.34	Inconspicuous
Lry	Laundry and dry cleaning	0.34	
Utl	Home utilities such as electricity, gas, and water; garbage collection	0.31	
Tel	Home telephone services, not including mobile phones	0.30	
Fee	Legal fees, accounting fees, and occupational expenses such as tools and licenses	0.26	Inconspicuous
CIn	Vehicle insurance, such as insurance for cars, trucks, and vans	0.23	
HIn	Homeowner's insurance, fire insurance, and property insurance	0.17	Inconspicuous
LIn	Life insurance, endowment, annuities, and other death benefits insurance	0.16	Inconspicuous
Und	Underwear, undergarments, nightwear, and sleeping garments	0.13	

Source: Heffetz's (2011) visibility index based on Harris and Sabelhaus' (2005) spending categories.

TABLE A3 Full results of the fixed effects regressions

	ln (conspicuous)			ln (inconspicuous)			ln (other)		
Dependent variable:	**Coef.**	**S.E.**	**Sig.**	**Coef.**	**S.E.**	**Sig.**	**Coef.**	**S.E.**	**Sig.**
Age of householder (ref: 15–24)									
25–34	−0.146	(0.015)	***	−0.216	(0.022)	***	0.112	(0.006)	***
34–44	−0.277	(0.015)	***	−0.289	(0.022)	***	0.150	(0.006)	***
45–54	−0.371	(0.016)	***	−0.248	(0.022)	***	0.151	(0.006)	***
55–64	−0.428	(0.016)	***	−0.205	(0.023)	***	0.153	(0.006)	***
65–74	−0.414	(0.019)	***	−0.063	(0.026)	*	0.131	(0.007)	***
75 and over	−0.569	(0.022)	***	0.123	(0.028)	***	0.115	(0.008)	***
Female householder	−0.023	(0.006)	***	0.096	(0.008)	***	−0.008	(0.002)	***
Race/ethnicity of householder (ref: non-Hispanic white)									
African American	−0.001	(0.010)		−0.058	(0.013)	***	−0.005	(0.003)	
Asian and Pacific Islander	−0.002	(0.011)		−0.165	(0.016)	***	−0.024	(0.003)	***
Hispanic	0.087	(0.009)	***	−0.167	(0.013)	***	−0.011	(0.003)	***
Other	−0.027	(0.027)		−0.040	(0.035)		0.000	(0.008)	
Marital status of householder (ref: married couple)									
Widowed	−0.037	(0.016)	*	0.086	(0.018)	***	−0.039	(0.004)	***
Divorced	0.009	(0.012)		−0.021	(0.015)		−0.017	(0.003)	***
Separated	0.015	(0.019)		0.047	(0.025)		−0.018	(0.005)	***
Never married	0.061	(0.011)	***	0.056	(0.015)	***	−0.042	(0.003)	***

(Continues)

TABLE A3 (Continued)

	ln (conspicuous)			ln (inconspicuous)			ln (other)		
Dependent variable:	**Coef.**	**S.E.**	**Sig.**	**Coef.**	**S.E.**	**Sig.**	**Coef.**	**S.E.**	**Sig.**
Composition of earners (ref: single earner)									
No earners	−0.007	(0.014)		−0.176	(0.018)	***	0.068	(0.004)	***
Dual earners	−0.041	(0.018)	*	−0.180	(0.023)	***	0.098	(0.005)	***
Other cases	−0.007	(0.015)		−0.289	(0.019)	***	0.115	(0.004)	***
Household size	−0.024	(0.003)	***	−0.070	(0.005)	***	0.018	(0.001)	***
Having a child/children	−0.062	(0.009)	***	0.207	(0.013)	***	−0.006	(0.003)	*
Highest education (ref: high school dropouts)									
High school graduate	−0.021	(0.013)		0.145	(0.017)	***	0.014	(0.003)	***
Some college	−0.001	(0.012)		0.319	(0.016)	***	0.005	(0.003)	
Bachelor's degree	−0.057	(0.013)	***	0.439	(0.018)	***	0.022	(0.004)	***
Master's degree or higher	−0.136	(0.014)	***	0.564	(0.019)	***	0.027	(0.004)	***
Occupation (ref: manager, professional)									
Admin, sales and tech	0.015	(0.008)		−0.033	(0.011)	**	−0.015	(0.003)	***
Service	0.016	(0.010)		−0.099	(0.013)	***	−0.017	(0.003)	***
Operator and assembler	0.001	(0.013)		−0.156	(0.018)	***	−0.015	(0.004)	***
Mechanic and mining	−0.044	(0.017)	*	−0.120	(0.023)	***	0.004	(0.005)	
Farming and fishing	0.051	(0.038)		−0.114	(0.050)	*	−0.048	(0.013)	***
Missing occupation info.	−0.030	(0.012)	*	−0.100	(0.015)	***	−0.009	(0.003)	**
Units in structure (ref: single-family housing)									
Multifamily housing	0.050	(0.008)	***	0.101	(0.011)	***	−0.035	(0.002)	***
Mobile home or other	0.136	(0.016)	***	0.068	(0.021)	**	−0.071	(0.005)	***
Owner	−0.017	(0.008)	*	0.313	(0.011)	***	−0.005	(0.002)	*
log (income)	−0.009	(0.003)	**	0.008	(0.004)	*	0.028	(0.001)	***
log (wealth)	−0.001	(0.003)		0.030	(0.004)	***	−0.000	(0.001)	
Missing wealth info.	0.004	(0.027)		0.204	(0.034)	***	−0.009	(0.008)	
log (total expenditures)	1.374	(0.008)	***	1.477	(0.010)	***	0.720	(0.004)	***
Year FEs (ref: 2007)									
2008	−0.048	(0.012)	***	0.042	(0.015)	**	0.014	(0.003)	***
2009	−0.045	(0.011)	***	0.072	(0.014)	***	0.010	(0.003)	**
2010	−0.030	(0.011)	**	0.072	(0.014)	***	0.006	(0.003)	
2011	−0.046	(0.011)	***	0.064	(0.014)	***	0.008	(0.003)	*
2012	−0.012	(0.011)		0.072	(0.015)	***	0.001	(0.003)	
2013	−0.100	(0.012)	***	0.041	(0.015)	**	0.018	(0.003)	***
2014	−0.112	(0.012)	***	0.048	(0.015)	**	0.023	(0.003)	***

(Continues)

TABLE A3 (Continued)

	ln (conspicuous)			ln (inconspicuous)			ln (other)		
Dependent variable:	**Coef.**	**S.E.**	**Sig.**	**Coef.**	**S.E.**	**Sig.**	**Coef.**	**S.E.**	**Sig.**
Metropolitan area FEs (ref: Chicago)									
Atlanta	0.042	(0.017)	*	−0.038	(0.023)		−0.015	(0.005)	**
Baltimore	−0.104	(0.021)	***	−0.082	(0.027)	**	0.014	(0.006)	*
Boston	−0.153	(0.016)	***	0.005	(0.019)		0.019	(0.005)	***
Cleveland	0.071	(0.021)	***	−0.036	(0.027)		−0.022	(0.006)	***
Hartford	−0.162	(0.015)	***	−0.074	(0.019)	***	0.050	(0.004)	***
Dallas	0.107	(0.014)	***	0.016	(0.020)		−0.012	(0.004)	**
Detroit	0.116	(0.016)	***	0.004	(0.021)		−0.027	(0.005)	***
Houston	0.054	(0.016)	***	0.040	(0.022)		−0.017	(0.005)	***
Los Angeles	−0.053	(0.013)	***	0.024	(0.017)		0.016	(0.004)	***
Miami	−0.042	(0.021)	*	−0.192	(0.027)	***	0.025	(0.006)	***
Minneapolis	−0.052	(0.018)	**	0.110	(0.023)	***	−0.024	(0.006)	***
Newark	−0.135	(0.015)	***	−0.209	(0.020)	***	0.061	(0.004)	***
New York	−0.048	(0.016)	**	−0.049	(0.021)	*	0.023	(0.004)	***
Philadelphia	−0.097	(0.015)	***	−0.077	(0.019)	***	0.026	(0.004)	***
Phoenix	0.075	(0.020)	***	0.080	(0.026)	**	−0.036	(0.007)	***
Riverside	−0.040	(0.017)	*	−0.033	(0.023)		0.032	(0.005)	***
San Diego	−0.122	(0.018)	***	−0.090	(0.024)	***	0.056	(0.005)	***
San Francisco	−0.175	(0.015)	***	−0.031	(0.019)		0.058	(0.004)	***
Seattle	−0.070	(0.017)	***	0.131	(0.022)	***	0.014	(0.005)	**
Washington, DC	−0.139	(0.015)	***	0.007	(0.019)		0.035	(0.005)	***
Constant	−5.751	(0.086)	***	−8.324	(0.102)	***	2.192	(0.035)	***
Number of observations		85,815			85,815			85,815	
Adj. *R*-squared		0.545			0.545			0.545	

Note: $^{*}P < 0.05$, $^{**}P < 0.01$, $^{***}P < 0.001$. The sample includes consumer units in the primary sampling units from 2007 to 2014. The consumer units with zero expenditure on conspicuous, inconspicuous, or other consumption are excluded. The robust standard errors are used to correct for heteroscedasticity.

TABLE A4 Full results of the random effects regressions

	ln (conspicuous)			ln (inconspicuous)			ln (other)		
Dependent variable:	**Coef.**	**S.E.**	**Sig.**	**Coef.**	**S.E.**	**Sig.**	**Coef.**	**S.E.**	**Sig.**
Age of householder (ref: 15–24)									
25–34	−0.147	(0.027)	***	−0.217	(0.033)	***	0.112	(0.013)	***
34–44	−0.281	(0.030)	***	−0.296	(0.037)	***	0.151	(0.014)	***
45–54	−0.376	(0.033)	***	−0.253	(0.038)	***	0.153	(0.014)	***
55–64	−0.433	(0.031)	***	−0.210	(0.040)	***	0.154	(0.014)	***
65–74	−0.418	(0.035)	***	−0.070	(0.049)		0.133	(0.018)	***
75 and over	−0.575	(0.043)	***	0.117	(0.063)		0.117	(0.022)	***
Female householder	−0.023	(0.008)	**	0.097	(0.012)	***	−0.008	(0.003)	**
Race/ethnicity of householder (ref: non-Hispanic white)									
African American	−0.130	(0.041)	**	−0.170	(0.061)	**	0.011	(0.016)	
Asian and Pacific Islander	0.010	(0.027)		−0.157	(0.036)	***	−0.035	(0.008)	***
Hispanic	−0.027	(0.042)		−0.263	(0.055)	***	0.002	(0.016)	
Other	−0.094	(0.059)		−0.091	(0.063)		0.006	(0.015)	
Marital status of householder (ref: married couple)									
Widowed	−0.038	(0.021)		0.083	(0.028)	**	−0.038	(0.006)	***
Divorced	0.007	(0.018)		−0.021	(0.018)		−0.016	(0.003)	***
Separated	0.015	(0.026)		0.051	(0.039)		−0.019	(0.006)	**
Never married	0.058	(0.019)	**	0.054	(0.020)	**	−0.042	(0.006)	***
Composition of earners (ref: single earner)									
No earners	−0.006	(0.020)		−0.170	(0.026)	***	0.066	(0.005)	***
Dual earners	−0.041	(0.030)		−0.174	(0.032)	***	0.096	(0.006)	***
Other cases	−0.006	(0.022)		−0.285	(0.026)	***	0.113	(0.005)	***
Household size	−0.024	(0.005)	***	−0.071	(0.009)	***	0.018	(0.001)	***
Having a child/children	−0.063	(0.012)	***	0.207	(0.020)	***	−0.006	(0.004)	
Highest education (ref: high school dropouts)									
High school graduate	−0.023	(0.019)		0.137	(0.035)	***	0.016	(0.005)	**
Some college	−0.001	(0.017)		0.315	(0.039)	***	0.006	(0.004)	
Bachelor's degree	−0.057	(0.019)	**	0.431	(0.050)	***	0.023	(0.006)	***
Master's degree or higher	−0.136	(0.020)	***	0.558	(0.050)	***	0.027	(0.006)	***
Occupation (ref: manager, professional)									
Admin, sales and tech	0.015	(0.010)		−0.034	(0.011)	**	−0.014	(0.003)	***
Service	0.014	(0.013)		−0.104	(0.022)	***	−0.017	(0.004)	***
Operator and assembler	0.002	(0.017)		−0.158	(0.021)	***	−0.014	(0.004)	***
Mechanic and mining	−0.042	(0.021)	*	−0.116	(0.036)	**	0.003	(0.006)	
Farming and fishing	0.045	(0.070)		−0.115	(0.062)		−0.046	(0.023)	*
Missing occupation info.	−0.033	(0.018)		−0.103	(0.023)	***	−0.008	(0.005)	
Units in structure (ref: single-family housing)									
Multifamily housing	0.052	(0.013)	***	0.101	(0.022)	***	−0.035	(0.005)	***
Mobile home or other	0.135	(0.019)	***	0.070	(0.033)	*	−0.071	(0.010)	***
Owner	−0.017	(0.016)		0.310	(0.032)	***	−0.005	(0.007)	

(Continues)

TABLE A4 (Continued)

	ln (conspicuous)			ln (inconspicuous)			ln (other)		
Dependent variable:	**Coef.**	**S.E.**	**Sig.**	**Coef.**	**S.E.**	**Sig.**	**Coef.**	**S.E.**	**Sig.**
log (income)	−0.008	(0.004)		0.008	(0.005)		0.028	(0.002)	***
log (wealth)	−0.001	(0.003)		0.031	(0.003)	***	−0.001	(0.001)	
Missing wealth info.	0.005	(0.026)		0.209	(0.034)	***	−0.010	(0.012)	
log (total expenditures)	1.375	(0.024)	***	1.477	(0.028)	***	0.721	(0.008)	***
Year FEs (ref: 2007)									
2008	−0.056	(0.016)	***	0.024	(0.026)		0.015	(0.004)	**
2009	−0.056	(0.017)	**	0.051	(0.022)	*	0.013	(0.005)	*
2010	−0.056	(0.016)	***	0.038	(0.026)		0.013	(0.005)	**
2011	−0.069	(0.022)	**	0.034	(0.024)		0.014	(0.007)	*
2012	−0.034	(0.018)		0.048	(0.027)		0.003	(0.006)	
2013	−0.109	(0.022)	***	0.030	(0.027)		0.015	(0.006)	*
2014	−0.128	(0.026)	***	0.032	(0.033)		0.022	(0.007)	**
Metropolitan characteristics									
log (population)	0.041	(0.014)	**	0.090	(0.037)	*	−0.015	(0.009)	
log (population density)	0.053	(0.013)	***	0.020	(0.028)		−0.010	(0.007)	
Gini coefficient (%)	−0.020	(0.006)	***	−0.021	(0.012)		0.006	(0.003)	*
Dissimilarity index (%)	0.012	(0.004)	**	−0.008	(0.009)		−0.001	(0.002)	
log (own race's income)	−0.241	(0.052)	***	−0.203	(0.069)	**	0.058	(0.017)	***
log (other race's income)	0.005	(0.062)		0.004	(0.092)		0.044	(0.029)	
Restaurants and bars LQ	0.371	(0.135)	**	0.255	(0.249)		−0.084	(0.060)	
Avg. temp in Jan (°F)	0.000	(0.001)		−0.000	(0.002)		0.000	(0.000)	
No. of rainy days	−0.000	(0.000)		−0.000	(0.000)		0.000	(0.000)	
RPP (goods)	0.003	(0.003)		0.006	(0.004)		−0.001	(0.001)	
RPP (rents)	−0.002	(0.000)	***	−0.001	(0.001)		0.000	(0.000)	*
Number of observations		85,815			85,815			85,815	
Adj. *R*-squared		0.544			0.531			0.855	

Note: $^{*}P < 0.05$, $^{**}P < 0.01$, $^{***}P < 0.001$. The sample includes consumer units in the primary sampling units from 2007 to 2014. The consumer units with zero expenditure on conspicuous, inconspicuous, or other consumption are excluded. The robust standard errors are used to correct for heteroscedasticity.

TABLE A5 Intraclass correlation by metropolitan area, age group, race/ethnicity, and education attainment

Dependent variable:	**Conspicuous consumption (%)**	**Inconspicuous consumption (%)**
Between-group		
Metropolitan area	1.26	0.62
Age group	5.25	2.01
Race/ethnicity	0.29	0.51
Education attainment	0.49	4.35

Note: The variation decomposition analyses for age, race/ethnicity, and education was made on the models shown in Table A3.