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EXPENDITURE VISIBILITY AND CONSUMER BEHAVIOR: NEW EVIDENCE

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ABSTRACT

Expenditure visibility—the extent to which a household's spending on a consumption category is noticeable to others—is measured in three new surveys, with ~3,000 telephone and online respondents. Visibility shows little change across time (ten years) and survey methods. Four different notions, or dimensions, of visibility are measured: the noticeability of above-average spending on a category; that of below-average spending; and the positivity/negativity of impressions made by above- and below-average spending. Jointly, these visibility measures explain up to three quarters or more of the observed variation in total-expenditure elasticities across consumption categories in U.S. data. Possible theoretical explanations are explored.

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1 Introduction

The *sociocultural visibility* of consumer expenditures has for centuries been considered an important determinant of consumer behavior.[1] Intuitively, one's costly diamond is more conspicuous to others than one's costly life-insurance policy—a difference that could explain differences in demand patterns across the two commodities. The theoretical implications of this intuition have been investigated in modern consumer-choice theory (e.g., Frank 1985, Ng 1987, Ireland 1994). Empirical applications, however, require substituting intuition with more systematic data that would place different expenditures on a quantitative visibility scale. A diamond and an insurance policy may be easy to place, somewhere close to extreme visibility and non-visibility, respectively; but how visible are expenditures on housing, health, education, or charity? And how stable are measures of their visibility—do they change over time, across survey methods, or across visibility-definition variations? Most importantly, how much does it all matter for explaining household expenditure patterns? Relevant data for answering these questions have only recently started to be collected. As discussed shortly, while researcher demand is rising, supply is still limited.

This paper's contribution is twofold: it collects new data to help address the data gap; and it applies its new data to help explain household consumption behavior. Its first part introduces three new visibility surveys, conducted in 2014–2015 among ∼3,000 U.S. respondents. They replicate existing visibility measures and, more importantly, generate new measures that are readily applicable in empirical work. The paper's second part imports these new measures into an existing application, and finds that they dramatically increase our power to explain observed cross-commodity variation in total-expenditure elasticities.

Table 1's top panel summarizes published efforts to date to measure expenditure visibility with surveys. The earliest (from the mid-1990s) is an informal survey of twenty female students, measuring the social visibility of four cosmetics products (Chao and Schor 1998). It was followed in 2004 by a random-digit-dialing (RDD) telephone survey of 480 adults in the continental U.S. (Heffetz 2011). This 2004 survey was the first generally applicable,

[1] Smith, Marx, Veblen, Duesenberry, and many others wrote famous passages or entire books on social comparisons and signaling, in the specific context of consumer expenditures. Social comparisons/signaling more generally, as well as public display vs. private behavior, pride vs. modesty (or shame), and appearance vs. truth, feature heavily in the writings of much earlier authors, such as Plato.

national visibility survey; it asked respondents how quickly they would notice a newly met person's above-average expenditures on each of 31 consumption categories that together cover virtually the entire basket of U.S. household expenditures in the Bureau of Labor Statistics's Consumer Expenditure Survey (CEX). Several later surveys were conducted online, using convenience samples of students. They include a 2007 survey inspired by the 2004 survey, asking 320 students a similar question about above-average expenditures, but replacing speed of noticing with closeness of interaction, and reclassifying the 31 CEX categories into 18 (Charles et al. 2009); a 2010 replication in India of the 2007 survey, asking 163 students regarding 20 categories from the India Human Development Survey (IHDS; Khamis et al. 2012); and a 2011 survey of 108 students in Germany, asking which of a collection of 16 items are easily observable (Hillesheim and Mechtel 2013).

Table 1: Visibility Surveys

Year	Described in	N	Sample	Mode	Expenditures[a]
≤1996	Chao & Schor (1998)	20	Female Harvard students	Informal	4 Cosmetics
2004/5	Heffetz (2011)	480	RDD Cont. U.S. (18+)	Telephone	31 CEX
2007	Charles et al. (2009)	320	UChicago grad students	Online	18 CEX
2010	Khamis et al. (2012)	163	Delhi Sc. Econ. students	Online	20 IHDS
2011	Hillesheim & Mechtel (2013)	108	U of Tübingen students	Online	16 Various
2014	This paper	500	RDD Cont. U.S. (18+)	Telephone	31 CEX
2014	This paper	1,079[b]	ClearVoice U.S. (18+)	Online	31 CEX
2015	This paper	1,426[c]	ClearVoice U.S. (18+)	Online	17 Clothing CEX

[a]Cosmetics: lipstick, mascara, eyeshadow, and facial cleanser. CEX: broad categories from the U.S. Consumer Expenditure Survey. IHDS: broad categories from the India Human Development Survey. Various: a mix of expenditures, income, vacation/leisure time, and personal characteristics (e.g., attractiveness). Clothing CEX: clothing-only expenditure subcategories in the CEX.

[b]Four different visibility treatments, between-subjects design.

[c]Two different visibility treatments, between-subjects design.

These surveys were motivated by research questions closely related to Veblen's (1899) idea that the rich advertise their wealth by conspicuously consuming more than others. They therefore focus on measuring a specific notion of visibility: the noticeability of larger-than-average spending. But the measures they provide have been used in a broader set of subsequent empirical applications. The 2004 and 2007 U.S./CEX visibility measures have been used, for example, to assess whether consumption utility is relative vs. absolute (Kamakura and Du 2012); to investigate the importance of conspicuous consumption under

alternative political regimes (East vs. West Germany after reunification, Friehe and Mechtel 2014); to investigate the links from inequality in visible expenditure to violent crime (Hicks and Hicks 2014), and from property crime to distortions in conspicuous- vs. inconspicuous-consumption allocation decisions (Mejía and Restrepo 2016); to assess the hypothesis of "trickle-down consumption," i.e., that rising income and consumption among high-income households since the early 1980s have induced lower-income households to consume a larger share of their income (Bertrand and Morse 2016); and to distinguish between alternative mechanisms that may drive consumption network/peer effects (De Giorgi, Frederiksen, and Pistaferri 2016). These U.S. visibility measures have in addition been used in other recent applications in more limited ways, e.g., to classify particular expenditures as high- or low-visibility. For example, Cosaert (2018) estimates the diamondness (Ng 1987) of more and less visible goods. Finally, the 2010 India/IHDS measure is starting to be used as well (e.g., Jaikumar and Sarin 2015, Bellet and Sihra 2018).

Table 1's bottom panel lists the three new U.S. visibility surveys introduced in this paper's first part. We provide full details in section 2. The first new survey is a 2014 national telephone survey that replicates the 2004 survey, resulting in a second comparable datapoint, ten years apart. It thus provides evidence on the stability of the original survery-based visibility measure and, therefore, on the robustness of findings across the above range of applications that use the original 2004 measure. The second and third are new web surveys conducted in 2014 and 2015, respectively. Relative to the first 2014 survey, they vary the interview mode—online vs. telephone—and the national survey sample type—convenience vs. RDD. Relative to each other, they vary the set of expenditures and its granularity, using the original 31 broad CEX categories (in 2014) vs. a new set of 17 clothing-only subcategories (in 2015).

Most importantly, the new online surveys vary the visibility question itself, including four (in 2014) and two (in 2015) different question variants, aimed to measure different notions of visibility. Therefore, in addition to providing evidence on the sensitivity of visibility measures to underlying survey-implementation details, these new surveys generate measures of notions of visibility that have not been previously measured. The new measures are designed to be both compatible with past applications and readily applicable in future ones.

Section 3 analyzes the data from the new surveys. Three main findings are highlighted, along with their implications for empirical research. First, using the original 2004 visibility question, we record remarkable stability in results across the 2004 and 2014 telephone surveys (correlation = 0.99 across the two benchmark visibility measures; $N = 31$ expenditures). Such stability, ten years and many technology-based sociocultural developments apart, suggests that the empirical work above that uses visibility measures is on rather stable grounds. In particular, it allays potential concerns regarding those of the papers (e.g., Bertrand and Morse, 2016) that match 2004 visibility data with expenditure data dating back to 1980, i.e., almost a quarter-century earlier.

Second, we similarly record stability across the two telephone surveys and the 2014 online survey (correlation = 0.97 across either the 2004 or 2014 telephone visibility measure and the online measure). Overall, these two findings suggest that the original visibility question captures a stable property of expenditures, that has not recently changed much across time (10 years) and technology, and that appears largely invariant to interview mode and survey sample. This in turn opens the door for data-collection efforts to measure new notions of visibility and track them over time; such efforts need be neither frequent nor expensive.[2]

The third finding, and the main contribution of this paper's first part (i.e., the data part), relates to such new notions of visibility that the 2014–2015 online surveys measure for the first time. They expand the main visibility notion that has been measured and used to date—an *upward noticeability* notion, based on a question about the *noticeability* of *more*-than-average expenditures, referred to below as a Notice More (NM) question.[3] The new notions are based on a question about the noticeability of *less*-than-average expenditures (Notice Less, NL), measuring *downward noticeability*; and two questions about the positivity/negativity of *impressions* made by more- and less-than-average expenditures, conditional on their being noticed (Impressions More and Less, IM and IL).

The 2014 online survey thus has a 2×2 between-subjects design, yielding four visibility measures: NM, NL, IM, and IL; the 2015 clothing-only survey focuses on NM and NL. The

[2]The cost per respondent in the 2014 national RDD telephone survey was roughly twenty times higher than that in the 2014 online survey. Such a cost multiple appears typical.

[3]Versions of such an NM question are used in the 2004, 2007, and 2010 surveys in table 1's top panel (and in all the new surveys in its bottom panel). For the different versions' wordings, see subsection 2.1.2.

new measures are motivated by the idea that spending more vs. less than average on a commodity may be differently noticeable and may make different impressions conditionally on being noticed. Indeed, unlike the first two findings above—of close to perfect correlations (0.97–0.99) across replications of the NM question that differ in survey mode, sample, and decade—the correlations across the four randomly assigned treatments within the same 2014 survey are lower, varying in absolute value from 0.42 to 0.92. The lower correlations, and a qualitative expenditure-by-expenditure assessment of the four measures (in section 3.2), suggest that the new questions do capture distinct notions, or aspects, of visibility, not previously measured. This in turn raises the possibility that models and empirical applications of consumer behavior that incorporate visibility but only consider *NM* visibility may miss an important part of the story. This possibility is investigated next, in the context of one application.

The paper's second part demonstrates that the new visibility measures can substantially increase the explained portion of cross-expenditure variation in demand patterns.[4] It focuses on the empirical attempt to explain cross-expenditure variation in Engel curves—specifically, in income elasticities—with measurable properties of expenditures. In their "Retrospectives: Engel Curves," Chai and Moneta (2010) observe that such an explanation has not yet been offered, and comment: "it may be tempting to conclude, as Houthakker (1967 [1992]) did, that any proper explanation of variation observed in Engel curves requires researchers to go 'far outside economics.'" However, as mentioned in the opening paragraph above, economic models *have* incorporated a broader set of topics since Houthakker's pessimistic prediction half a century ago. A Stone-Geary application of Ireland's (1994) conspicuous consumption model, for example, endogenously predicts income elasticity to be higher if a good is visible and lower if it is not—as shown in Heffetz (2011), where it is also shown empirically that income elasticities can indeed be predicted from NM visibility.

Section 4 demonstrates the value for empirical research of the new visibility measures by revisiting that application (for which the 2004 visibility survey was originally conducted). The original main finding was that weighted univariate OLS regressions of the total-expenditure

[4] As discussed shortly, "explained portion" here refers to R^2 in a linear regression. No causality inferences are implied. Indeed, the possibility of reverse causality is explored formally in section 5.

elasticities of 29 expenditure categories on their NM visibility measure result in large coefficients and, importantly, high R^2's. A benchmark whole-population specification had $R^2 = 0.18$, meaning that one-sixth to one-fifth of the cross-expenditure variation in elasticities was explained by the 2004 NM visibility measure alone (the top three income quintiles had R^2's in the range 0.19–0.32). Section 4 first replaces the original 2004 (telephone) NM measure with the 2014 (online) NM measure, and the original CEX expenditure data with updated expenditure data on 31 categories, and essentially replicates the original findings ($R^2 = 0.17$; top quintiles' $R^2 = 0.19$–0.28). It then adds the new NL, IM, and IL measures as additional (or alternative) regressors.

Section 4's main finding is that in multivariate regressions on more than one visibility measure, explanatory power increases dramatically. With two regressors—NM and NL, or NM and IM—$R^2 = 0.43$–0.59 (top two quintiles: 0.55–0.68); with all four regressors, $R^2 = 0.73$ (0.80–0.81). Moreover, the coefficient estimates suggest that the *difference* NM−NL strongly predicts elasticities. We argue that this difference (between upward and downward noticeability) may capture noticeability's *discretionary*, or *active* component. The replicability and robustness of these findings are demonstrated using CEX data on 17 clothing-only subcategories and the new 2015 NM and NL clothing-only visibility measures.

Section 5 presents two stylized formal examples that explore the potential role of causality in these NM−NL findings. The examples offer potential explanations in both directions: from visibility to high elasticity—with an alternative to Ireland's model (since it cannot accommodate the difference between upward and downward visibility)—and from high elasticity to visibility—i.e., a reverse-causality interpretation. They are used to interpret the empirical findings, and to conclude that while strong visibility-elasticity associations are a robust empirical fact, its underlying mechanism remains an open question for future research.

Section 6 concludes.

2 Three New Visibility Surveys: Design

This paper's new visibility surveys share the common structure of past surveys. It is based on two components: a list of expenditure categories, and a visibility question. Each respondent

answers the visibility question repeatedly, each time for a different expenditure category from the list, until the list is exhausted.

2.1 2014 Telephone and Online Surveys

As the bottom panel of table 1 shows, this paper's two new 2014 surveys differ in interview mode and survey sample. However, they are identical in the list of 31 expenditures they ask about, and they share a similar NM (Notice More) visibility question, which they also share with the original 2004 survey. In addition, the 2014 online survey includes three new visibility questions. We now discuss these survey-design details.

2.1.1 31 Expenditure Categories

Table 2 lists the 31 expenditure categories that respondents are asked about in the 2014 telephone and online surveys. The list is identical to the original 2004 list in all but two categories: Ot1 and Ot2 (rows 28 and 29); for these, the table also lists the two original 2004 categories, for comparison. The 2004 list was based on Harris and Sabelhaus's (2005) list of consumption categories, that was designed to cover virtually all expenditures in the raw CEX (Interview Survey) data.

Appendix A.1 provides detail regarding the construction of the 2014 category list from the 2004 list. Here we note, first, that as with the original 2004 list, the order of words in each category's description reflects the relative empirical importance (in the CEX data) of the items within that category. Second, we note that although the decade that followed 2004 saw many newly available goods and services replace older ones *within* many of the 31 categories, all but two of the original category descriptions are sufficiently broad to be unaffected. The two exceptions underwent only minuscule modifications, related to specific technologies mentioned in their descriptions (e.g., CDs, internet).

2.1.2 Notice More (NM) Question

Figure 1 reproduces a screenshot of the 2014 online survey's Notice More (NM) question. It is identical to the question in the 2014 telephone survey, which in turn is identical to

Table 2: Expenditure Categories in 2014 Surveys

1.	FdH	food and nonalcoholic beverages at grocery, specialty and convenience stores.
2.	FdO	dining out at restaurants, drive-thrus, etc, excl. alcohol; incl. food at school.
3.	Cig	tobacco products like cigarettes, cigars, and pipe tobacco.
4.	AlH	alcoholic beverages for home use.
5.	AlO	alcoholic beverages at restaurants, bars, cafeterias, cafes, etc.
6.	Clo	clothing and shoes, not including underwear, undergarments, and nightwear.
7.	Und	underwear, undergarments, nightwear and sleeping garments.
8.	Lry	laundry and dry cleaning.
9.	Jwl	jewelry and watches.
10.	Brb	barbershops, beauty parlors, hair dressers, health clubs, etc.
11.	Hom	rent, or mortgage, or purchase, of their housing.
12.	Htl	lodging away from home on trips, and housing for someone away at school.
13.	Fur	home furnishings and household items, like furniture, appliances, tools, linen.
14.	Utl	home utilities such as electricity, gas, and water; garbage collection.
15.	Tel	home telephone services, not including mobile phones.
16.	Cel	mobile phone services.
17.	HIn	homeowners insurance, fire insurance, and property insurance.
18.	Med	medical care, incl. health insurance, drugs, dentists, doctors, hospitals, etc.
19.	Fee	legal fees, accounting fees, and occupational expenses like tools and licenses.
20.	LIn	life insurance, endowment, annuities, and other death-benefits insurance.
21.	Car	the purchase of new and used motor vehicles such as cars, trucks, and vans.
22.	CMn	vehicle maintenance, mechanical and electrical repair and replacement.
23.	Gas	gasoline and diesel fuel for motor vehicles.
24.	CIn	vehicle insurance, like insurance for cars, trucks, and vans.
25.	Bus	public transportation, both local and long distance, like busses and trains.
26.	Air	airline fares for out-of-town trips.
27.	Bks	books incl. school books, newspapers and magazines, toys, games, and hobbies.
28.	Ot1	computers, TVs, visual, audio, musical and sports equipment, music, games, etc.
	(Ot1 *in 2004*	*computers, games, TVs, video, audio, musical and sports equipment, tapes, CDs.*)
29.	Ot2	cable TV, internet, pets and veterinarians, sports, country clubs, movies, concerts.
	(Ot2 *in 2004*	*cable TV, pets and veterinarians, sports, country clubs, movies, and concerts.*)
30.	Edu	education, from nursery to college, like tuition and other school expenses.
31.	Cha	contributions to churches or other religious organizations, and other charities.

that in the original 2004 telephone survey. While the language surrounding its response options *is* slightly adjusted to improve on-screen readability in the online version, the five response options themselves do not change.[5] In all surveys, respondents answer this question 31 times, each time with one of the 31 expenditure categories from table 2 appearing where the category "**jewelry and watches**" appears in figure 1. The order of the 31 categories is randomized for each respondent.

The question asks respondents regarding quickness of noticing an above-average expenditure of a newly met person who lives in a household similar to the respondent's. The focus on a similar-household person is motivated by both relevance and practicality: social (non-family) interactions often involve people of roughly similar neighborhood, age, education, income, household composition, etc., and it makes little sense to ask, e.g., a young, urban, unmarried male about the expenditures of a retired rural couple (for further discussion and a formal model, see Heffetz 2012, section 3.2). Importantly, the question conveys that the reason for said above-average expenditure is *tastes* rather than *needs*: "they like to, and do, spend more." In effect, respondents are asked to imagine a tastes-driven exogenous shock to a typical similar household's expenditure. This is important because some expenditures (e.g., medical care) could be above average due to a *need* (e.g., deteriorating health), in which case they may be noticed quickly due to the noticeability of the circumstances rather than that of the expenditure itself. The question's wording aims to mitigate this potential issue.

[5] Specifically, the original response options were read as a follow-up question by the telephone interviewer:

> "Would you notice it almost immediately upon meeting them for the first time, a short while after, a while after, only a long while after, or never?"

As figure 1 shows, the online response options start with the self-statement "I would notice it..." and contain slightly more repetition. The only purpose of this adjustment is to make the question as clear as possible in the online version where—in contrast with the telephone version—respondents do not have a chance to ask an interviewer for clarification.

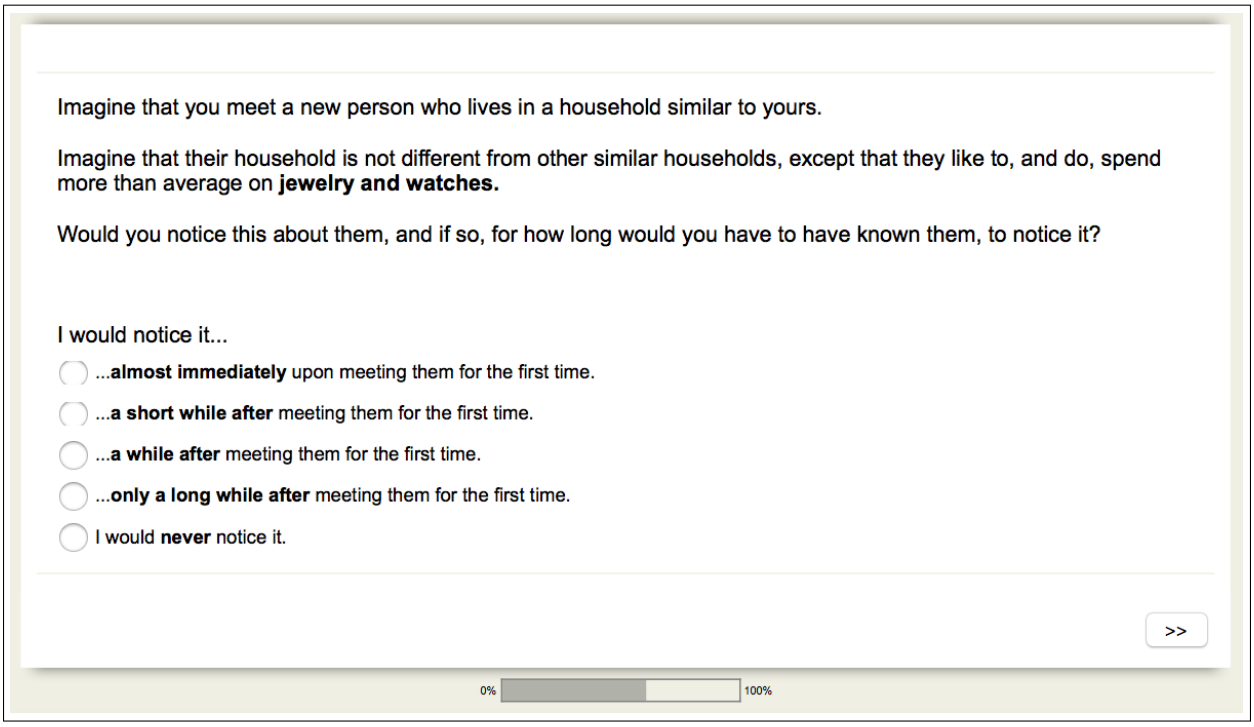
For completeness and comparison, we also reproduce here the wording in the other U.S./CEX survey listed in table 1's top panel, namely the 2007 survey (Charles et al. 2009, robustness appendix):

> "Consider a person who lives in a household and community roughly similar to yours. How closely would you have to interact with this person in order to observe that they consistently spend more than average on each of the following categories?"

Response options in that survey "ranged from 1 (indicating that higher than average spending could be observed if the respondent did not interact socially with the person at all) to 5 (indicating that spending would never be observed)."

Finally, the wording in the 2010 survey that was conducted in India (Khamis et al., 2012; see table 1) combines elements from both the 2004 and 2007 surveys.

Figure 1: 2014 Online Survey, Notice More (NM) Question



2.1.3 Notice Less (NL), Impressions More (IM), and Impressions Less (IL)

Unlike the 2004 and 2014 telephone surveys, which include only the above Notice More (NM) question, the 2014 online survey includes three additional question versions:

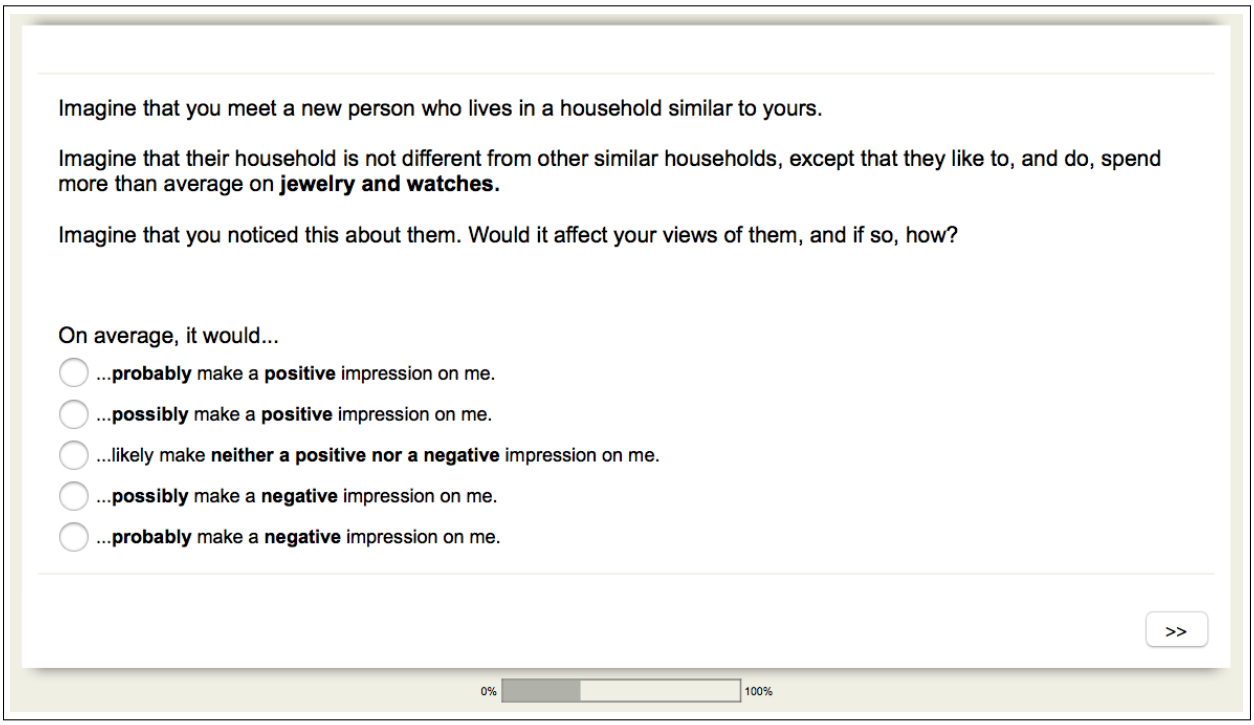
Notice Less (NL): identical to the NM version in figure 1, except for one word; "more" (third line, first word) is replaced with "less." This version therefore asks how quickly one would notice spending *less* than average on a category.

Impressions More (IM): see figure 2 for a screenshot. The first two sentences are identical to those in the NM version, and the rest of the question is modified. Instead of asking respondents how quickly they would notice an above-average expenditure, respondents are asked whether and how their views/impressions would be affected conditionally on noticing it.

Impressions Less (IL): identical to the IM version in figure 2, except for one word; "more" (third line, first word) is replaced with "less." This version therefore asks whether and

how one's impressions would be affected by noticing spending *less* than average on a category.

Figure 2: 2014 Online Survey, Impressions More (IM) Question



The 2014 online survey thus has a 2×2 between-subjects design: each respondent is randomly assigned to one of the four versions [Impressions vs. Notice]×[More vs. Less]. They then answer their assigned question version for each of the 31 expenditure categories (randomly ordered).

The discussion above regarding the wording of the NM question can now be generalized. The phrase "they like to, and do" remains unchanged in all four versions, conveying a shock to tastes rather than to needs. This becomes even more important for the NL than for the NM question, as spending less than average on an expenditure could simply result from a lower-than-average budget (which, again, may itself be visible, e.g., due to visible circumstances). Furthermore, when asking about respondents' impressions of someone who spends more/less than average on a category (IM and IL), it is important to clarify that the spender is driven by tastes rather than needs.

2.2 2015 Online Clothing-Only Survey

Clothing as an expenditure category plays a central role in socioculturally-related consumption. Constantly changing social and cultural conventions prescribe different clothing for different circumstances, depending on occasion, event, date, social position, professional role, gender, age, culture, and place. As fashions change, what was acceptable yesterday may be (socioculturally) unwearable today. Beyond its sociocultural role, however, clothing is a *relatively* homogenous expenditure category in terms of its production processes and materials, durability, availability to consumers, and its main (non-sociocultural) purpose, i.e., covering and protecting the wearer's body. At the same time, expenditures on different clothing subcategories are not all equally noticeable and are therefore not all equally subject to sociocultural considerations.

Of the 31 expenditure categories in table 2, two cover clothing. Together, the two aggregate data on more than 70 individual CEX expenditure items. Table 3 presents a finer reclassification of these items into 17 clothing-only subcategories.[6] The third new survey introduced in this paper (see table 1's bottom row) repeats the 2014 online survey's NM and NL treatments, but uses these 17 clothing-only subcategories (randomly ordered). The classification into these subcategories (in table 3) reflects an attempt to balance two opposing considerations: on the one hand, an aspiration to classify into a separate subcategory any item that may differ in visibility from other items; on the other hand, a need to avoid subcategories that are so specific that few households in the CEX data spend positive amounts on them.[7]

[6]The two clothing categories in table 2 are Clo (row 6, "clothing and shoes, not including underwear, undergarments, and nightwear") and Und (row 7, "underwear, undergarments, nightwear and sleeping garments"). The seventeen subcategories in table 3 include fourteen that disaggregate Clo, plus the following three that disaggregate Und: nightwear (Nwr, row 8), socks (Soc, row 15), and underwear (Uwr, row 17).

[7]The clothing-only survey does not include IM and IL treatments. This design decision, namely, to refrain from asking about positive/negative impressions in the clothing context, aims to avoid unintentionally making respondents feel uncomfortable. For example, it aims to avoid asking about impressions related to noticing that someone spent more or less on clothing subcategories explicitly assigned to men, women, boys, girls, or infants, as such impression questions may have unintended connotations. (Sex/age-based subcategories constitute more than half of the 17 subcategories in table 3, as it seemed plausible at the survey-design stage that they may have different visibility levels.)

Table 3: Clothing-Only Expenditure Subcategories in 2015 Survey

1.	Acc	clothing accessories like belts, purses, scarves, hats, EXCLUDING jewelry/shoes.
2.	Sts	suits, sport coats, and tailored jackets (for men and women).
3.	Boy	boys' clothes like pants, shorts, shirts, and sweaters, EXCLUDING shoes.
4.	Grl	girls' clothes like shirts, pants, shorts, dresses, and skirts, EXCLUDING shoes.
5.	Men	men's clothes like pants, shorts, shirts, sweaters and vests, EXCLUDING shoes.
6.	Wmn	women's clothes like pants, shorts, dresses, shirts, and sweaters, EXCL. shoes.
7.	Inf	infants' diapers and clothes, including outerwear, accessories, and footwear.
8.	Nwr	nightwear such as pajamas and robes.
9.	Oth	sewing/quilting materials, luggage, luggage carriers, wigs, and hairpieces.
10.	Owr	outerwear like coats, jackets and furs.
11.	ShB	boys' shoes.
12.	ShG	girls' shoes.
13.	ShM	men's shoes.
14.	ShW	women's shoes.
15.	Soc	socks, stockings and hose (for men and women).
16.	Spo	athletic clothing like swimsuits, warm-up suits, and uniforms, EXCLUDING shoes.
17.	Uwr	underwear and undergarments, EXCLUDING socks.

3 New Visibility Measures: Results

The 2014 telephone survey was conducted by the Survey Research Institute (SRI) at Cornell University from May 3 to 29, 2014. The phone sample, provided to SRI by Marketing Systems Group, is a random-digit-dial (RDD) list of cellphone and landline numbers drawn from the continental United States. 500 adult respondents (18+) were interviewed; response rate = 15%.[8] The demographic composition of respondents appears generally similar (in first moments) to that of the Census population, but black, Hispanic, and Western-U.S. residents are underrepresented, while higher-education, higher-income, and Northeastern residents are overrepresented (appendix table A.1). Median interview time was 11 minutes.

The 2014 and 2015 online surveys were conducted on Qualtrics from June 11 to 23, 2014 and from July 7 to 11, 2015, respectively. Respondents were recruited by ClearVoice Research, targeting the U.S. adult population. 1,079 and 1,426 respondents completed the surveys.[9] The two samples, while not random, appear generally similar to the Census pop-

[8]This calculation of response rate corresponds with the American Association of Public Opinion Research Response Rates #3 and #4 (AAPOR, 2016). (The two response-rate definitions differ in how partial interviews are treated, but the 2014 survey had no partial interviews.) Since telephone-survey respondents self-select into participation, a low-response-rate sample should not be thought of as "representative."

[9]The 1,079 2014 web respondents were randomly assigned into the four visibility-question treatments

ulation on demographics, but in the 2014 survey black respondents are underrepresented while Hispanic and high-education respondents are overrepresented (appendix table A.2), and in the 2015 survey black and Hispanic respondents are underrepresented while married, high-education, high-income, and Northeastern respondents are overrepresented (table A.3). Median survey-completion times were 8 minutes in 2014 (31 categories) and 5 minutes in 2015 (17 clothing-only subcategories).

Figures 3 and 4 compare visibility measures across surveys and treatments. All measures are constructed the way the original 2004 measure was: the five response options (in figures 1 and 2 and in footnote 5) are coded 0 (bottom response), 0.25, 0.5, 0.75, and 1 (top response); the coded responses are then averaged to create a visibility score for each expenditure category, across all respondents in a given survey/treatment. Appendix tables A.5–A.11 report all averaged scores, their standard errors (SE), and the category rankings they imply, for each of the seven new visibility measures reported in this paper.[10] The centers of the gray capped crosses in figures 3 and 4 represent these scores, and the caps represent their SEs, for a pair of surveys/treatments (one per axis) in each graph. 3-letter expenditure labels are taken from tables 2 and 3 above. Dashed lines show 45° lines, and solid lines show SD lines.

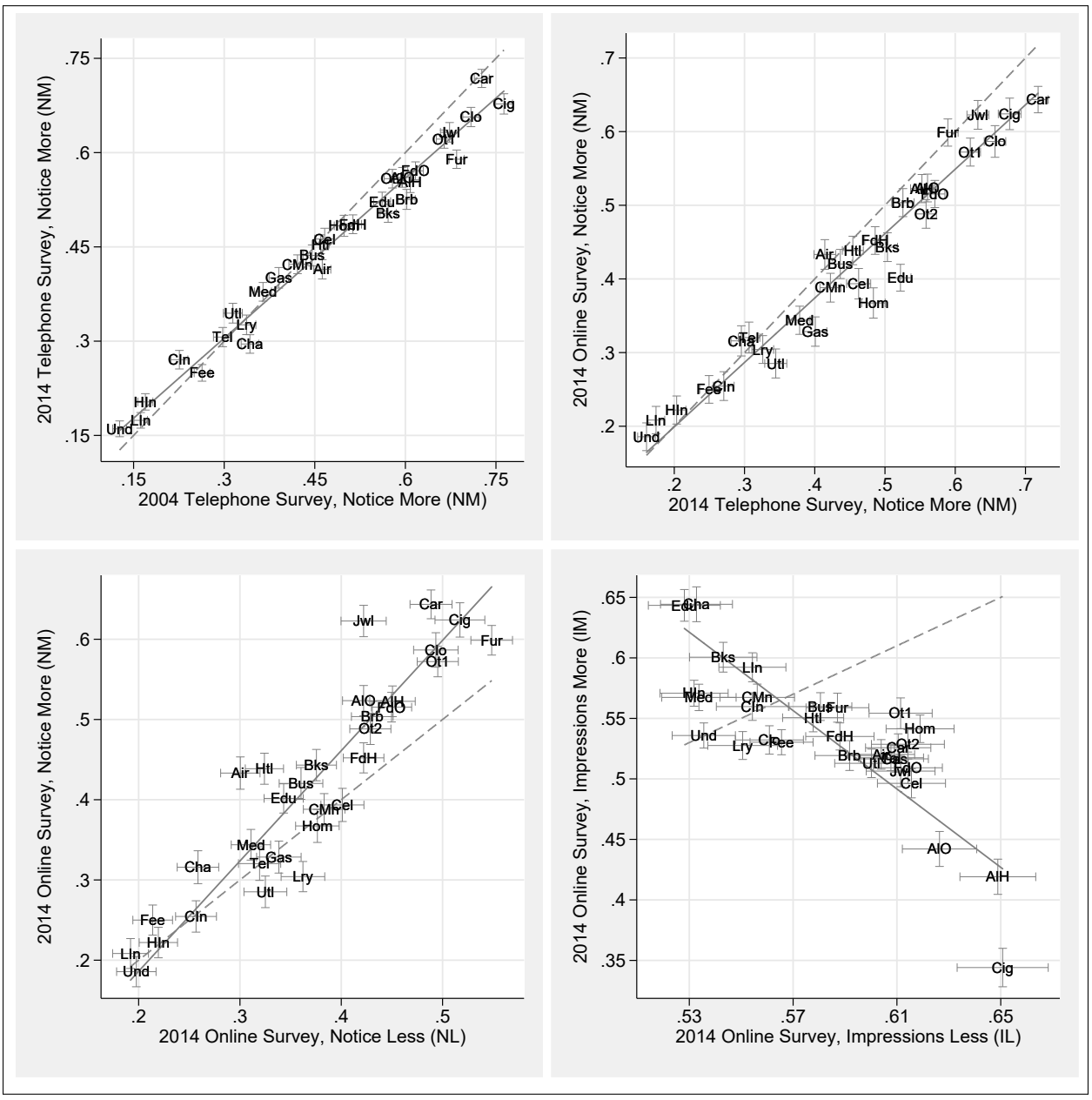
3.1 Notice-More Scores Across Time, Mode, and Sample

We start with the graph at the top left of figure 3. It compares the NM visibility scores from the 2004 (horizontal axis) and 2014 (vertical axis) telephone surveys. The 31 capped crosses effectively lie on the SD line, which itself is slightly flatter than the 45° line, suggesting that the 2014 scores essentially replicate the 2004 scores, but show slightly smaller cross-expenditure variance (perhaps due to slightly noisier responses).

as follows: NM = 277 respondents, NL = 263, IM = 272, and IL = 267. The 1,426 2015 clothing-only respondents were randomly assigned into NM = 713 and NL = 713.

[10]For completeness and backward compatibility with the original 2004 NM measure (Heffetz 2011, table 3), these seven appendix tables also report scores, SEs, and ranks for two additional, alternatively constructed measures: "Top Two Responses" and "Top Three Responses." These alternative measures report the fraction of responses that are in the top two and three (out of five) response options, respectively. They thus only assume an ordinal interpretation of the five response options, instead of the cardinal interpretation implied by the above linear-coding-based score. As with the original 2004 NM question, the three alternative measures are, with few exceptions, highly correlated with each other for each of the new visibility questions. Following all past work that uses the original NM measure, the rest of this paper uses the averaged scores, which aggregate more information and have the smallest SEs across the three methods.

Figure 3: Comparing Six Visibility Measures



Notes: Visibility measures (first column of appendix tables A.6–A.9), based on author's visibility surveys. Capped ranges: standard errors (second column of appendix tables). Dashed line: 45° line. Solid line: SD line.

Table 4 reports score correlations across all pairs of of 2004 and 2014 surveys/treatments. The correlation across the 2004 and 2014 telephone NM scores is 0.99.

We conclude from the graph and the close-to-perfect correlation that the NM visibility

Table 4: Correlations Across Six Visibility Measures

	2004 Telephone NM	2014 Telephone NM	2014 Online NM	2014 Online NL	2014 Online IM	2014 Online IL
2004 Telephone NM	1.00					
2014 Telephone NM	0.99	1.00				
2014 Online NM	0.97	0.97	1.00			
2014 Online NL	0.93	0.93	0.92	1.00		
2014 Online IM	−0.38	−0.39	−0.42	−0.45	1.00	
2014 Online IL	0.57	0.59	0.59	0.61	−0.79	1.00

of the 31 expenditure categories remained effectively unchanged in the decade from 2004 to 2014.[11] This may be surprising in light of the dramatic change from 2004 to 2014 in how individuals communicate with others, including about consumption—recall, for example, that communication media such as the iPhone, Facebook, Twitter and Instagram all but did not exist in 2004.

Looking at specific expenditures, in both years, the most upward-visible expenditures are those on cars (Car), tobacco products (Cig), clothes and shoes (Clo), jewelry and watches (Jwl), recreation equipment (Ot1), and home furnishings (Fur) (in this exact order in 2014, and in roughly this order in 2004); and the least upward-visible expenditures are those on underclothes and nightwear (Und), life insurance (LIn), and homeowner, fire, and property insurance (HIn) (in this exact order in both years).

Next, the graph at the top right of figure 3 compares the 2014 telephone (horizontal) and online (vertical) NM surveys. It again shows an effective replication, although scores move around slightly more, and in the online survey they show slightly lower cross-expenditure variance and larger within-expenditure SEs. This may at least in part reflect the smaller sample size in the online survey (277 respondents, compared with 500 in the telephone survey). Table 4 shows that the correlation between the 2014 online NM measure and either the 2004 or 2014 telephone NM measures is 0.97. Together, these two graphs and three

[11] In principle, the new identical survey ten years later turns the original visibility cross-section into a [31 expenditures]×[2 time points] panel—indeed, when designing the 2014 survey, the potential for creating such a panel was an important design consideration. In practice, however, we find essentially no cross-time variation.

pairwise correlations suggest remarkable stability of the NM score, across time (a 10-year interval), survey mode (telephone vs. online), and sample (RDD vs. convenience sample).

3.2 Notice-More, Notice-Less, Impressions-More, and Impressions-Less Scores

The two bottom graphs in figure 3 focus on the 2014 online survey. They present the four measures resulting from its four treatments: at the bottom left, NL (horizontal) against NM (vertical); at the bottom right, IL (horizontal) against IM (vertical). The four rightmost ("Online") columns of table 4 report the six pairwise correlations across the four measures.

We start with the correlations. Ranging (in absolute value) from 0.42 to 0.92, they suggest that the different visibility notions that the four survey-question variants attempt to capture yield measures that are correlated but distinct. As expected, the most correlated are the two noticeability measures (NM and NL, correlation = 0.92) and the two impressions measures (IM and IL, −0.79). Thus, upward noticeability—the quickness of noticing a more-than-average expenditure (NM)—is highly correlated with downward noticeability—the quickness of noticing a less-than-average expenditure (NL). In simple words, what is noticeable upwards, is likely also noticeable downwards. Similarly (though slightly less, and flipping sign), the impressions made by a more- vs. less-than-average expenditure, assuming it is noticed, are highly negatively correlated; what makes a better impression upwards, likely makes a worse impression downwards. At the same time, as the graphs show (and as discussed shortly), behind these high correlations lie meaningful patterns for specific expenditures, which demonstrate the distinctiveness of the different measures.

Finally, the Online columns of table 4 also show that the four pairs that mix a noticeability with an impressions measure are the least correlated (0.42–0.61 in absolute value)—but they still show significant correlations. Looking at the signs, noticeability and impressions are negatively correlated: expenditures that are noticed quickly (both upwards and downwards) are on average those that make a worse impression when spent more on, and a better impression when spent less on.

Returning to figure 3's bottom two graphs—which compare the most highly correlated

measures, i.e., NL with NM, and IL with IM—we next discuss the patterns that lie beyond the high correlations.

3.2.1 Upward, Downward, and Discretionary Noticeability

We start with NL and NM, at the bottom left graph of figure 3. First, no expenditure lies significantly below the 45° line, suggesting that on average, upward noticeability is at least as high as downward noticeability for effectively all expenditures. Second, while most expenditures effectively lie on either the 45° or the SD lines, several expenditures lie far above the 45° line, as well as significantly above the SD line, including jewelry and watches (Jwl), air travel (Air), and hotels (Htl). These expenditures are significantly more noticeable upwards than downwards, in absolute score values as well as relative to other expenditures. Notice that these are not necessarily among the most noticeable (upward or downward) expenditures.

To get a sense of the cross-expenditure variation in the (mostly nonnegative) difference between upward and downward noticeability, compare expenditures on jewelry and watches (Jwl) with those on food for home consumption (FdH, whose location on the NM-vs.-NL graph is close to the 45° line, on a vertical line below Jwl); or compare expenditures on air travel and hotels (Air, Htl) with those on home utilities (Utl, just below the 45° line, vertically below Htl). Jewelry expenditures are as downward noticeable as home-food expenditures; air travel/hotel expenditures are slightly less downward noticeable than utilities.[12] However, jewelry expenditures are significantly more upward noticeable than food expenditures, and similarly, air travel and hotel expenditures are significantly more upward noticeable than home utilities.[13]

These examples seem consistent with the Veblenian notion that some expenditures—e.g., jewelry, air travel and hotels, but not home food and utilities—are *actively* used as signals by households. Such active signaling involves, in addition to above-average spending on certain categories, also actively making such spending additionally (upward) noticeable, beyond the passive (downward) noticeability of these categories in the absence of active advertising.

[12]NL scores (table A.7): Jwl and FdH = 0.42; Utl = 0.33, Htl = 0.32, and Air = 0.30; all SEs = 0.02.
[13]NM scores (table A.6): Jwl = 0.62 vs. FdH = 0.45; Htl = 0.44, Air = 0.43 vs. Utl = 0.29; all SEs = 0.02.

Active advertising could involve, for example, discretionary brand/designer namedropping (for jewelry) and photo sharing (for travel); by *discretionary* we mean that such extra noticeability is actively promoted only when one's spending on the relevant categories is above average.

Such active advertising of some expenditures by above- but not by below-average-spending households makes their upward noticeability higher than their downward noticeability. Of course, even without active (or discretionary) advertising of expenditures by households that spend on them *below*-average, below-average expenditures could be (passively, downward) noticeable—as suggested by high-NL expenditures such as home furnishings (Fur), tobacco products (Cig), recreation equipment (Ot1), clothes (Clo), and cars (Car). From this perspective, high-NL expenditures are downward noticeable even in the absence of active advertising: society has the means to find out when a household spends less than average on these categories—for example, because they are *physically* visible. Under this interpretation, upward (NM) visibility could be generally (though perhaps not in all cases) thought of as the sum of two components: passive downward (NL) visibility, plus a discretionary, active component (the difference NM−NL).

In summary, the NM-vs.-NL graph is consistent with the notion that while they are not the most passively (NL) noticeable, expenditures on jewelry and watches (Jwl), air travel (Air), and hotels (Htl) are the most *actively*, or *discretionarily*, (NM−NL) noticeable. As it turns out, together with cars (Car) and education (Edu), these categories are the most *luxurious* commodities, i.e., they have the highest total-expenditure elasticities among the 31 expenditures in U.S. household data. We return to this point in our empirical application in section 4 below.

3.2.2 Impressions

Finally, the bottom-right graph in figure 3 compares IM and IL. The score values on the axes show less cross-expenditure variation in the impressions questions than in the noticeability questions. In particular, the IL score (horizontal axis) varies in a relatively narrow range: from a lowest score = 0.53 for education (Edu), homeowner, fire, and property insurance (HIn), charitable donations (Cha), and healthcare expenditures (Med), to a highest score =

0.65 for tobacco products (Cig) and alcohol for home consumption (AlH) (appendix table A.9). That this narrow range lies entirely above 0.50 means that on average, survey respondents indicate that willingly spending less on *anything* makes a positive impression on them if it is noticed. Said positive impression is only very slightly positive for below-average spending on positive-externality expenditures such as education, various insurances, donations, and health; and is more positive for negative-externality and "sin" expenditures such as tobacco and alcohol.

IM score values (vertical axis) vary more, but virtually the entire variation comes from some of the above expenditures, which again lie in the extremes. Specifically, the only expenditures that make on average a (statistically significantly) negative impression (IM $<$ 0.50) when spending more-than-average on, are tobacco products (Cig), alcohol for home use (AlH), and Alcohol outside the home (AlO). All other expenditures' IM scores are roughly at or above 0.50, with charities (Cha) and Education (Edu) at the top with IM = 0.64, followed by books and other expenditures (Bks, 0.60) and life insurance (LIn, 0.59) (appendix table A.8). The remainder 24 expenditures—more than three quarters of the 31 expenditures—have IM scores in the narrow (rounded) range from 0.50 to 0.57.

In summary, respondents appear on average reluctant to report that something makes a negative impression on them—including spending above or below average on almost any category—with the exception of above-average spending on tobacco and alcohol. Within the positive half of the impressions scales, there is modest variation, with positive-externality and "merit" expenditures such as charity and education being on the end of the range opposing that of the negative-externality and sin expenditures.[14]

[14]More generally, as a comparison of the Top Two Responses and the Top Three Responses fractions in appendix tables A.8 and A.9 shows, in response to both the IM and IL questions regarding almost all of the 31 expenditure categories, a majority of respondents choose the middle response option "On average, it would likely make **neither a positive nor a negative** impression on me." (The main exception is tobacco products (Cig), for which in both the IM and IL questions the middle response option is still chosen by 42% of respondents.) Thus, respondents overwhelmingly report that in most cases, others' expenditure patterns, if they noticed them, would not affect their impressions. This could of course reflect a cultural norm of refraining from expressing criticism of others' lifestyle choices.

3.3 Notice-More and Notice-Less Scores for Clothing

Figure 4 is identical to the NM-vs.-NL graph at the bottom left of figure 3, except that it replaces results from the 2014 31-broad-categories online survey with those from the 2015 17-clothing-only-subcategories survey. We summarize these results, and offer possible interpretations, in three points that echo the NM-NL discussion above regarding the 31 broad categories. First, the correlation between the NM and NL measures is very high (correlation = 0.95, $N = 17$; reported in the figure's notes). The most noticeable clothing expenditures are those on women's clothes (Wmn), men's clothes (Men), suits, sport coats, and tailored jackets (for men and women) (Sts), and outerwear like coats, jackets and furs (Owr). The least noticeable are underwear and undergarments (Uwr), nightwear (Nwr), and socks, stockings and hose (for men and women) (Soc).[15] Second, all 17 clothing expenditures lie at or above the 45° line, suggesting that upward noticeability is never lower than downward noticeability for clothing subcategories. Third, in spite of the high correlation, expenditures vary in how far above the 45° line they are (at a given NL score).

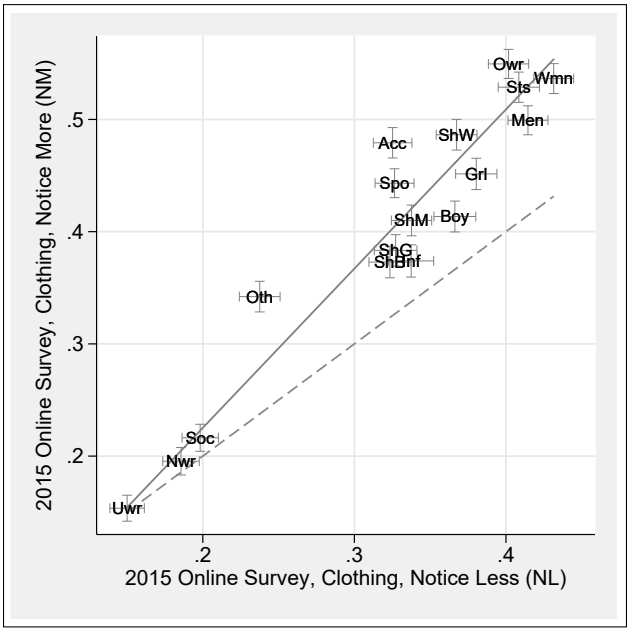
To get a sense of the variation, consider clothing accessories like belts, purses, scarves, and hats (Acc)—the category that is the farthest above both the 45° and the SD lines. Its downward noticeability is similar to that of boys' shoes (ShB), girls' shoes (ShG), and infant clothing (Inf). However, its upward noticeability is significantly above them.[16] Interpreting NL as the passive noticeability that is inherent in commodities (socioculturally, or even merely physically), and the difference NM−NL as an additional active-signaling component of noticeability, this example is consistent with the notion that while accessories, boys' and girls' shoes, and infant clothing are all roughly as passively visible as each other, accessories are actively (or discretionarily) used as a signal significantly more than these other categories. As we will see in the next section, accessories (Acc), together with suits, sport coats, and tailored jackets (Sts), are the most luxurious—i.e., with the highest total-expenditure

[15]NL and NM scores, respectively (appendix tables A.11 and A.10): most noticeable: Wmn = 0.43 & 0.54, Men = 0.41 & 0.50, Sts = 0.41 & 0.53, Owr = 0.40 & 0.55; least noticeable: Uwr = 0.15 & 0.15, Nwr = 0.19 & 0.20, Soc = 0.20 & 0.22; all SEs = 0.01.

Notice that these clothing-subcategory scores are generally lower than their aggregate-category scores for clothing (Clo) and underclothing (Und) in figure 3 (appendix tables A.6 and A.7). This may reflect the notion that the more differentiated a category is, the less likely a given respondent is to notice it.

[16]NL and NM scores, respectively (tables A.11 and A.10): Acc = 0.33 & 0.48, ShB = 0.32 & 0.37, ShG = 0.33 & 0.38, Inf = 0.34 & 0.37; all SEs = 0.01.

Figure 4: Comparing Two Clothing Visibility Measures



Notes: Visibility measures (first column of appendix tables A.10–A.11), based on author's visibility survey. Capped ranges: standard errors (second column of appendix tables). Dashed line: 45° line. Solid line: SD line. NM-NL correlation = 0.95 ($N = 17$).

elasticities—among the 17 clothing subcategories.

4 Visibility and Elasticity: Empirical Application

We demonstrate the value for empirical research of the new visibility measures by revisiting the original application for which the 2004 visibility survey was conducted (Heffetz 2011). The main finding in that application was that weighted univariate OLS regressions (with expenditure shares as weights) of the total-expenditure elasticities of 29 expenditure categories on their (NM) visibility measure yield large coefficients and high R^2's.[17] A benchmark whole-population specification had $R^2 = 0.18$. The top three income quintiles had R^2's in the range 0.19 to 0.32, while the bottom two quintiles had much lower R^2's.

[17]While the 2004 survey measured the visibility of the 31 expenditure categories discussed above, the CEX data extracts used in the original application to estimate elasticities did not report underclothes and cell phone expenditures separately from clothing and telephone expenditures, respectively. The analysis of visibility and elasticities was therefore based on only 29 categories.

These original findings suggest that a single NM visibility measure explains almost one-fifth (all households) or one-third (higher quintiles) of the observed cross-expenditure variation in elasticities. In this section, we show that NM together with one or more of the new visibility measures as additional regressors, can explain around two to three times more of said variation.

4.1 31 Broad-Expenditure Categories

Table 5, column (1) reproduces the original benchmark whole-population ("All Households") specification.[18] It replaces the original 2004 visibility measure with the 2014 online NM measure, and the original 29 expenditure elasticities and weights, estimated from 2003–2005 CEX data, with 31 elasticities and weights estimated from 2012–2014 data. Specifically, elasticities and weights in table 5 are based on all 9,026 households with full-year CEX records who started reporting quarterly expenditures in 2012:2–2014:1 (and whose last interview was therefore in 2013:1–2014:4).[19] See appendix A.2 for additional CEX-data detail.

The estimates in table 5, column (1) essentially replicate the original 2004 estimates. The coefficient on the visibility measure, which was 1.81 (SE = 0.74) in the original data, is now slightly but insignificantly larger, at 2.15 (SE = 0.87; p-value from a zero-coefficient t-test = 0.02); R^2 was 0.18 and is now 0.17 (adjusted R^2 = 0.14). Appendix tables A.16–A.20 replicate table 5 separately for each income quintile. R^2 at the top three quintiles, which was originally in the range 0.19–0.32, is now in essentially the same range, 0.19–0.28; R^2 at the bottom two quintiles maintains its substantially lower range (was: 0.01–0.08; now: 0.04 in both).

Columns (2), (3), and (4) replace the NM regressor with the new NL, IM, and IL mea-

[18] See Heffetz (2011), p. 1112, table 4, panel A, column A.

[19] Average elasticities are estimated as follows. For each expenditure, an Engel curve is estimated non-parametrically, using a kernel-weighted local linear smoother (e.g., Fan 1992) at 99 annual-total-expenditure points. The points correspond with the 1st to 99th total-expenditure percentiles in the sample of 9,026 households. Appendix figures A.1 and A.2 report these Engel curves in levels and shares, respectively. Then, the slopes of the 98 lines that connect the estimated 99 Engel-curve points are calculated, and 98 local total-expenditure elasticities are calculated from these slopes. Average elasticities for all households and by quintile are constructed from these 98 elasticities, using the CEX survey weights. These average elasticities, reported in appendix table A.12, are used as dependent variable in the regressions in table 5 (and in the by-quintile versions of table 5). The corresponding average expenditure shares, reported in appendix table A.13, are used as weights in these regressions.

Table 5: Elasticity and Four Visibility Measures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
NM (Notice More)	2.15				3.01	9.60			10.42
	(0.87)				(0.77)	(1.52)			(1.52)
NL (Notice Less)		0.85				−11.81	2.42		−12.64
		(1.38)				(2.20)	(1.50)		(2.43)
IM (Impressions More)			5.11		7.76			4.62	7.12
			(2.51)		(2.16)			(3.39)	(2.01)
IL (Impressions Less)				−4.30			−6.94	−0.86	5.90
				(2.93)			(3.28)	(3.84)	(2.70)
Observations	31	31	31	31	31	31	31	31	31
R^2	0.17	0.01	0.13	0.07	0.43	0.59	0.15	0.13	0.73
Adj. R^2	0.14	−0.02	0.10	0.04	0.39	0.56	0.09	0.06	0.68
F-test (p-value)	0.02	0.54	0.05	0.15	0.00	0.00	0.10	0.15	0.00

Notes: Weighted OLS regressions. Dependent variable: average total-expenditure elasticity for all households (first column of appendix table A.12), estimated from 2012:2–2014:1 full-year CEX extracts. Weights: average expenditure shares (first column of appendix table A.13), estimated from the same data. Independent variables: visibility measures (first column of appendix tables A.6–A.9), based on author's visibility survey. All regressions include a constant (not reported). Standard errors in parentheses.

sures, respectively. The new IM measure in column (3) has a statistically suggestive coefficient (5.11, $p = 0.051$), with explanatory power not too far below that of the NM measure ($R^2 = 0.13$, adj. $R^2 = 0.10$). Appendix tables A.16–A.20 show that unlike the NM measure, the new IM measure's R^2 does not disappear at low quintiles and does not grow at higher quintiles; rather, it fluctuates in the range $R^2 = 0.09$–0.19, with no apparent systematic cross-quintile pattern.

Unlike NM and IM in columns (1) and (3), the new NL and IL measures in columns (2) and (4) explain little if any of the variation in elasticities *on their own*, that is, as single visibility measures in univariate regressions. We next turn to multivariate regressions.

The rest of table 5 shows the explanatory power of combinations of visibility measures. We highlight four main findings. First, column (5) combines NM and IM, the two More(-than-average-spending) measures. Relative to each of the two separate univariate regressions in columns (1) and (3), the coefficients are larger and more tightly estimated ($p = 0.001$ for

both) and, importantly, R^2's roughly triple ($R^2 = 0.43$; adj. $R^2 = 0.39$). (In line with the patterns above in tables A.16–A.20, they increase to $R^2 = 0.55$–0.56 (adj. $R^2 = 0.52$–0.53) at the top two quintiles.) The pattern in column (5) is thus consistent with the idea that elasticities are associated both with upward noticeability and (conditional on being upwardly noticeable) with upward impressions.

Second, column (6) combines the two Notice(ability) measures, NM and NL. The two coefficients are several times larger than as single regressors, are opposite in sign from each other, and are of roughly the same magnitude.[20] R^2 increases to 0.59 (adj. $R^2 = 0.56$), that is, it between triples and quadruples from column (1). (It generally increases with quintile in tables A.16–A.20.) Overall, column (6) appears roughly consistent with the notion that elasticity is associated with the *difference* NM−NL.[21]

Third, Columns (7) and (8) combine the two Less (NL, IL) and the two Impressions (IM, IL) measures, respectively. $R^2 = 0.15$ and 0.13 (adj. $R^2 = 0.09$ and 0.06), and the coefficients in neither column are highly statistically significant (the four coefficient p-values are, respectively, 0.12, 0.04, 0.19, and 0.83; the two joint-coefficient F-test p-values are 0.10 and 0.15). Overall, these two pairs of visibility measures explain dramatically less than the two pairs in columns (5) and (6).

Finally, column (9) combines all four visibility measures. With 31 observations and four correlated regressors, results are at best suggestive and should be interpreted with caution. Explanatory power is very high: $R^2 = 0.73$ (adj. $R^2 = 0.68$); it again generally increases with quintile (tables A.16–A.20), reaching $R^2 = 0.80$–0.81 (adj. $R^2 = 0.77$–0.78) at the top two quintiles. The NM and NL coefficients are slightly larger (in absolute value) than in column (6); the IM coefficient is essentially as large as it is in column (5); and they are

[20] Statistically, the two coefficients are clearly different from zero ($p < 0.0005$ for both), and are suggestively different from each other in absolute value ($p = 0.04$). To interpret coefficient sizes, recall from figure 3 and table A.6, for example, that the NM-score increases from underclothing (Und = 0.19, rank = 31) to clothing (Clo = 0.59, rank = 5), or from car insurance (CIn = 0.25, rank = 27) to cars (Car = 0.64, rank = 1), are roughly 0.4. (The entire NM range, from rank 31 to 1, is 0.45.) With a coefficient of 9.60 on NM in column (6), these NM differences are thus associated with an elasticity difference of 3.8 when NL is controlled for. That is more than twice the observed (estimated) elasticity difference between car insurance and cars in our data (see table A.12). (A similar exercise regarding the NL coefficient yields a similar conclusion. Relative to NM, the entire NL range, roughly 0.36 (figure 3 and table A.7), is 20% shorter, while the column (6) NL coefficient, 11.81, is roughly 20% larger.)

[21] Indeed, in a univariate specification (not reported) similar to those in columns (1)–(4) except that the (single) regressor is the difference (NM−NL), coeff = 8.04, SE = 1.42, $R^2 = 0.52$, and adj. $R^2 = 0.51$.

all highly statistically significant ($p \leq 0.001$ for each of the three).[22] The IL coefficient is slightly smaller than the IM coefficient, has the same (positive) sign, and a larger p-value ($p = 0.04$). Relative to columns (5) and (6), column (9) is thus statistically suggestive that once upward noticeability, downward noticeability, and upward impressions are controlled for, high elasticity may be positively associated with downward impressions.

In summary, the estimates in table 5 show that of the (all-households) cross-expenditure variation in elasticities, visibility can explain anywhere from 17% with a single NM measure—replicating the main result in Heffetz (2011)—to 73% with a combination of four measures. (These percentages are still higher at high quintiles.) Most of the variation—59%—is explained by the two noticeability measures, NM and NL. Indeed, the data seem consistent with the notion that what explains (or is explained by) the variation in elasticities is, to a large extent, the difference NM−NL. As discussed in the previous section, this difference can be interpreted as the discretionary (or active) component of noticeability.

4.2 Replication: 17 Clothing-Only Expenditure Subcategories

The finding in table 5 (columns 6 and 9), that elasticity is associated with the visibility difference NM−NL, was not expected at the survey-design stage. A main motivation for the 2015 clothing-only visibility survey was to explore the replicability of this finding. Table 6 replicates the specifications from table 5's columns (1), (2), and (6), but replaces the 2014 broad-category NM and NL visibility measures with the 2015 clothing-only NM and NL measures, and, correspondingly, the 31 broad-category elasticities and weights with the 17 clothing-only elasticities and weights.[23]

While neither coefficient sizes nor R^2's are directly comparable, and while based on only

[22] To interpret the size of the IM coefficient, recall from figure 3 and table A.8 that the entire IM range from tobacco products (Cig = 0.34, rank = 31) to charities and education (Cha, Edu = 0.64, rank = 1, 2) is roughly 0.30. With a coefficient of 7.12 on IM, the entire tobacco-to-education upward-impression difference is associated with an elasticity difference of 2.1—almost exactly the observed tobacco-education elasticity difference.

[23] The 17 clothing-only average elasticities and weights are estimated using the same methods, and based on the same 2012–2014 CEX data, used for estimating the 31 broad-category elasticities and weights. See subsection 4.1 and appendix A.2 for further detail, and appendix figures A.3 and A.4 for the estimated clothing-only Engel curves. The clothing-only average elasticities, used as dependent variable in the regressions in table 6, are reported in appendix table A.14. The corresponding average expenditure shares, used as weights in these regressions, are reported in appendix table A.15.

Table 6: Clothing Elasticity and Two Visibility Measures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	——All Households——			Q1	Q2	Q3	Q4	Q5
NM (Notice More)	0.85		2.85	−2.06	0.98	4.04	5.95	4.54
	(0.36)		(1.03)	(2.76)	(1.16)	(1.50)	(1.62)	(1.35)
NL (Notice Less)		0.83	−2.91	3.61	−0.22	−4.58	−7.20	−4.88
		(0.54)	(1.42)	(3.83)	(1.61)	(2.10)	(2.23)	(1.83)
Observations	17	17	17	17	17	17	17	17
R^2	0.28	0.14	0.44	0.08	0.28	0.38	0.50	0.50
Adj. R^2	0.23	0.08	0.36	−0.06	0.18	0.29	0.43	0.42
F-test (p-value)	0.03	0.14	0.02	0.57	0.10	0.03	0.01	0.01

Notes: Weighted OLS regressions. Dependent variable: average total-expenditure elasticity, for all households and by total-expenditure quintile (appendix table A.14), estimated from 2012:2–2014:1 full-year CEX extracts. Weights: average expenditure shares (appendix table A.15), estimated from the same data. Independent variables: visibility measures (first column of appendix tables A.10–A.11), based on author's visibility survey. All regressions include a constant (not reported). Standard errors in parentheses.

17 observations, table 6's columns (1), (2), and (3) show that the findings from table 5's corresponding columns (1), (2), and (6) generally replicate. In univariate all-households regressions, NM is a strong predictor of the variation in elasticities, both in absolute terms ($R^2 = 0.28$, adj. $R^2 = 0.23$; column 1) and relative to not-statistically-significant NL ($R^2 = 0.14$, adj. $R^2 = 0.08$; column 2). Relative to table 5's columns (1), the NM coefficient is smaller, but its R^2 is larger. In an all-population regression on both NM and NL, the two coefficients more than triple, and become almost identical in size and opposite in sign (zero-coefficient t-test $p = 0.02$ and 0.06, respectively; equal-absolute-value-coefficients F-test $p = 0.91$; $R^2 = 0.44$, adj. $R^2 = 0.36$; column 3). These estimates are hence again consistent with the idea that elasticity is explained by the difference NM−NL.[24]

Columns (4)–(8) replicate the specification in column (3) for each income quintile. Similarly to the corresponding broad-category analysis (in appendix tables A.16–A.20), here too R^2's generally increase with income quintile. At the fourth and fifth quintiles (columns 7

[24]Even more than in the 31-broad-categories analysis above, here a univariate specification like those in columns (1) and (2) except that the (single) regressor is the difference (NM−NL) has explanatory power similar to the regression in column (3): coeff = 2.79, SE = 0.81, $p < 0.005$; $R^2 = 0.44$, and adj. $R^2 = 0.41$.

and 8), F-test p-value = 0.01, $R^2 = 0.50$ (adj. $R^2 = 0.42$–0.43), the coefficients on NM and NL are roughly double what they are in column (3), and they remain roughly equal to each other and opposite in sign.

Since the variation in elasticity and visibility across these 17 clothing-only subcategories is unrelated to the corresponding variation across the original 31 expenditure categories, we view these findings as an independent qualitative replication of the original, broad-expenditure NM and NL findings.[25]

5 Visibility and Elasticity: Possible Interpretations

The findings in the previous section are consistent with the notion that what explains much of—or is explained by—the cross-expenditure variation in elasticities is variation in the difference NM−NL. As discussed above, this difference may be interpreted as the active, or discretionary, component of sociocultural visibility. That is, it may be the part of visibility that households can actively control, or manipulate.

In the next two subsections, we formally sketch two alternative stylized theoretical examples that illustrate two alternative mechanisms that could account for this finding: from visibility to elasticity, and from elasticity to visibility. The correlational evidence presented in this paper appears consistent with both directions of causality, and cannot identify their relative empirical importance. Intuitively, the two alternative accounts are:

1. **From (discretionary) visibility to elasticity**. The scope for discretionary/active visibility is assumed to vary exogenously across expenditures. For example, due to the physical features of commodities (compare accessories with underwear); the locational context of their use (compare suits with pajamas); or the cultural/normative acceptability of making them public (compare school tuition and fees with legal or accounting fees). Elasticities do not vary across expenditures in the absence of visibility; their ob-

[25] To make the clothing-only replication *mechanically* independent of the original application, appendix table A.21 reproduces table 6 based on only the 14 clothing subcategories that disaggregate the original clothing-and-shoes (Clo) category—that is, dropping the three subcategories that disaggregate the original underclothes-and-nightwear (Und) category: nightwear (Nwr), socks (Soc), and underwear (Uwr). Results remain essentially the same (in fact, R^2's at the top two quintiles further increase to 0.58–0.68).

served variation is (essentially by assumption) due entirely to variation in discretionary visibility.[26]

2. **From elasticity to (reported) visibility**. Elasticities are assumed to vary exogenously across expenditures. For example, due to some yet-to-be-developed theory of Engel curves, perhaps à la Maslow (1943). Visibility does not vary—all expenditures are equally visible, or equally knowable/estimable from other visible information. The observed cross-expenditure variation in our visibility *measures*, that are based on responses to survey questions, is due entirely to cross-expenditure variation in expenditure distributions among the population of households, which in turn is a direct mechanical outcome of said exogenous variation in elasticities.[27]

5.1 From Visibility to Elasticity

Consider a familiar setup: the linear expenditure system (LES). Households have Stone-Geary utility,

$$U = \prod_i (x_i - \gamma_i)^{\beta_i},$$

where subscript i denotes good i, x_i is its expenditure, and the parameters γ_i and β_i are, respectively, i's minimum required expenditure and i's normalized importance in the utility function; $\beta_i > 0 \ \forall i$, and $\sum_i \beta_i = 1$. With income $y > \sum_i \gamma_i$ and prices normalized to 1, the budget constraint is $\sum_i x_i = y$, expenditure on good i is $x_i = \gamma_i + \beta_i \left(y - \sum_j \gamma_j \right)$, and good

[26]This account, from *discretionary* visibility (NM−NL) to elasticity, is fundamentally different from the account in Heffetz (2011). That account is based on Ireland's (1994) signaling-by-consuming two-good model, where one good is perfectly visible, in the sense that its expenditure is public knowledge; the other good is perfectly non-visible, in that its expenditure is private knowledge; and consumers' spending on the visible good signals their privately known income type. That Spencian model, where 0/1 visibility denotes private/public knowledge, cannot accommodate the different notions of upward and downward visibility—let alone the difference between the two. (Indeed, the original application had only the 2004 NM measure, which was implicitly assumed to capture said unidimensional, private/public notion of visibility.)

[27]This interpretation of the data is rather different from the idea that high-elasticity expenditures become socioculturally visible simply due to society's (apparently obsessive) fascination with what the rich consume. Like our interpretation, that alternative idea too is consistent with our finding that elasticity is correlated with the *active*, or *discretionary* component of visibility—assuming that component is measured as the difference between upward and downward noticeability. While we view that explanation as a plausible complement to our interpretation, for simplicity we leave it out of our stylized example below.

i's income elasticity is

$$\epsilon_i \equiv \frac{dx_i}{dy}\frac{y}{x_i} = \beta_i \frac{y}{x_i} = \frac{\beta_i y}{\gamma_i + \beta_i \left(y - \sum_j \gamma_j\right)}.$$

One can easily add structure to this standard framework to generate a cross-expenditure correlation between active visibility and elasticity. For example, assume no cross-expenditure differences in the γ's—that is, $\gamma_i \equiv \gamma > 0 \ \forall i$—and no cross-expenditure differences in the β's *except for* differences due to cross-expenditure differences in active visibility—that is, $\beta_i \propto \beta(\mathrm{NM}_i - \mathrm{NL}_i)$, with $\beta(\cdot)$ a strictly increasing function.[28] Then, by assumption, in the absence of sociocultural visibility considerations, all expenditures enter symmetrically into the utility function. But the presence of sociocultural considerations causes expenditures with higher active visibility to be more important in the utility function.

Under these assumptions,

$$\epsilon_i = \frac{\beta_i y}{\beta_i y + \gamma - \beta_i n \gamma},$$

where n denotes the number of goods. Thus, goods with $\beta_i \gtreqless 1/n$ have $\epsilon_i \gtreqless 1$. In words, goods whose β is above, equal to, or below their "fair share" of normalized importance are luxuries, unit-elasticity, or necessities, respectively. More generally, elasticity increases with β, which by assumption increases with active visibility.

5.2 From Elasticity to Visibility

We now consider an alternative simple setup where all expenditures are equally visible. We focus on a single expenditure that has exogenous, constant income elasticity. We then show that, under arguably plausible assumptions, the difference between the upward and downward noticeability of that expenditure *as reported in a visibility survey* increases and decreases with that expenditure's income elasticity. Since we focus on a single expenditure, in this subsection we drop the subscript i.

[28] We require $\gamma > 0$ to allow for cross-expenditure differences in elasticity. (Otherwise, the Stone-Geary utility reduces to the Cobb-Douglas special case, where $\epsilon_i \equiv 1 \ \forall i$.)

Assume that a household's income y is drawn from a log-normal distribution,

$$Y \sim \text{Lognormal}\left(\mu, \sigma^2\right),$$

and that some expenditure x has constant income elasticity ϵ,

$$x = Cy^{\epsilon},$$

with some positive C.[29,30] Then, x too is distributed log-normally, with transformed parameters,[31]

$$X \sim \text{Lognormal}\left(\mu\epsilon + \ln C, (\sigma\epsilon)^2\right).$$

That is, ϵ multiplicatively scales both μ and σ, with the usual implied effects on x's mean, variance, and other statistical properties. Of particular interest for our purposes, the *skewness* of x,

$$\text{E}\left[\left(\frac{X - \text{mean}}{\sqrt{\text{variance}}}\right)^3\right] = \left(e^{(\sigma\epsilon)^2} + 2\right)\sqrt{e^{(\sigma\epsilon)^2} - 1},$$

increases with ϵ in exactly the same way that it increases with σ. Thus, with unit elasticity ($\epsilon = 1$), expenditure x is as positively skewed as income y. With elasticity smaller or larger than unity—that is, with x a necessity or a luxury—the distribution of x is, respectively,

[29]Formally, the assumption of constant ϵ is expressed as the differential equation $\frac{dx}{dy}\frac{y}{x} = \epsilon$, whose general solution is $x = Cy^{\epsilon}$.

[30]This purposefully simple example focuses on a single expenditure with constant elasticity over a limited income range. In general, elasticity cannot be constant at levels different from unity for all expenditures, and the elasticity of even a single expenditure cannot be constant at a level above unity at all income levels. (To see this, remember that for the budget constraint to hold, elasticities weighted by their expenditure shares must sum to 1 at all income levels. In particular, even a single expenditure that grows faster than income will at some point exceed income.)

[31]To see this, start with the PDF of y,

$$f_Y(y) = \frac{1}{y\sqrt{2\pi\sigma^2}} e^{-\frac{1}{2}\left(\frac{\ln y - \mu}{\sigma}\right)^2}.$$

Then, since $x(y) = Cy^{\epsilon}$ is monotonic, the PDF of x is

$$\begin{aligned} f_X(x) &= \frac{d}{dy}F_Y\left(y\left(x\right)\right)\left|\frac{d}{dx}y\left(x\right)\right| = f_Y\left(y\left(x\right)\right)\left|\frac{d}{dx}y\left(x\right)\right| = f_Y\left(\left(\frac{x}{C}\right)^{\frac{1}{\epsilon}}\right)\left(\frac{1}{C}\right)^{\frac{1}{\epsilon}}\left|\frac{1}{\epsilon}\right| x^{\frac{1-\epsilon}{\epsilon}} \\ &= \frac{1}{x\sqrt{2\pi\left(\epsilon\sigma\right)^2}} e^{-\frac{1}{2}\left(\frac{\ln x - (\ln C + \epsilon\mu)}{\epsilon\sigma}\right)^2}. \end{aligned}$$

less or more positively skewed than the income distribution, in the same way that it would be under a corresponding change in σ.

How may x's skewness affect survey respondents' reports when asked about x's upward and downward noticeability? The NM and NL visibility survey questions ask respondents to report how quickly they would notice a new household's expenditure that is above or below average. Under the assumption that all expenditures are equally visible, cross-expenditure differences in survey responses may be driven entirely by cross-expenditure differences in distributional properties. It is plausible, for example, that when asked how quickly they would notice an above- or below-average expenditure, respondents essentially ask themselves by how much expenditures drawn randomly from the part of x's distribution that is above or below the average expenditure (in our case, $\mu\epsilon + \ln C$) would deviate from that average. If such deviations from the average expenditure are typically large (formally, they are large in expectation), the respondent assesses and reports that they would typically be noticed more quickly; if they are small, she reports that they would be noticed more slowly.

By definition, skewness is a measure of the expectation of the normalized difference between such above-mean and below-mean (cubed) deviations. Under our assumptions, it is therefore a plausible measure of the difference between (survey-based, reported) upward and downward noticeability, NM$-$NL. But as shown above, cross-expenditure variation in skewness originates in our assumed setup from cross-expenditure variation in income elasticity. It follows that cross-expenditure variation in elasticity could drive at least part of the observed cross-expenditure variation in the difference between upward and downward reported visibility.[32]

[32]This account is also consistent with two additional features of our data. First, that x is at least weakly *positively* skewed at any elasticity ϵ is consistent with the general tendency in our data for an expenditure's upward noticeability to be higher than its downward noticeability (see figures 3 and 4). Second, it is easy to verify that the *variance* of x also increases with ϵ, consistent with the tendency of both upward and (to a lesser extent, and not statistically significantly) downward noticeability to be higher for higher-elasticity expenditures (see columns (1) and (2) in tables 5 and 6).

6 Conclusion

What explains observed preferences? For example, why do households with different incomes spend differently on different things? (Or: What explains cross-good variation in income elasticities?) Building on past research, this paper presents new empirical evidence on the relationship between the total-expenditure elasticity and the *visibility* of different household expenditures. It thus provides evidence that bears on one particular class of explanations of observed preferences: those that relate to the *sociocultural* aspects of consumption. Such evidence is pertinent to questions regarding the extent to which demand patterns can be explained by sociocultural phenomena that may include, among others, consumption-oriented status seeking, social signaling and social learning, peer effects, fashion cycles, conspicuous consumption, and related phenomena.

A common necessary condition for these phenomena is that one's consumer expenditures be knowable to others—in our phrasing, that expenditures be *visible*. It is by obtaining information on others' expenditures that individuals can confer expenditure-based social status, interpret expenditure-based signals, learn, be influenced by peer consumption, and adhere to the demands of fashion. Moreover, in some settings, their knowability and communicability allow consumer expenditures to play almost language-like roles, reinforcing hierarchy (e.g., through dress), signifying special occasions (e.g., with a wedding ring, or a birthday cake), and more generally facilitating individuals' attempt to tell their story and express who they are—either as part of their search for better economic and social outcomes, or as part of their search for meaning in their lives.[33]

Houthakker's conclusion that explaining observed variation in Engel curves would require researchers to go "far outside economics" (quoted in the introduction above from Chai and Moneta 2010) could be reevaluated nowadays, fifty years after it was made. On the one hand, as our formal explorations in section 5 suggest, we are still some way from providing a satisfactory theory of Engel curves. On the other hand, as our empirical analysis in section 4 suggests, much of the observed cross-expenditure variation in Engel curves can be explained

[33]See Heffetz (2012, Introduction) for a related discussion, and Baudrillard (1970) and Douglas and Isherwood (1979) for the idea that consumption activity is best understood as a cultural ritual that carries and communicates symbolic meanings.

by (or explain) the difference between upward and downward sociocultural noticeability, especially when combined with measures of impression quality.

More generally, expenditure visibility is a potentially important, yet mostly unexplored, feature of consumer expenditures, that appears highly correlated with hitherto unexplained variation in a range of consumer behaviors. The data presented in this paper confirm that it is empirically measurable; show it to be remarkably stable across two decennial survey waves, across interview modes, and across respondent samples; and, importantly, show that it is multidimensional. Such evidence in turn suggests that one-off (or infrequent) online surveys using a simple design and a relatively small convenience sample may be an inexpensive way to generate highly applicable visibility data. In addition to the applications discussed in the introduction, we would like to see the existing visibility data (surveyed in table 1) applied in new domains. Moving beyond existing data, we would like to see new visibility data collected: in new places; on new, finer consumption categories; and eliciting new, subtler notions of visibility.

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A Web Appendix

Expenditure Visibility and Consumer Behavior: New Evidence

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A.1 Additional Survey-Design Detail: 31 Expenditure Categories

Construction of the original 31-category list for the 2004 survey was based on Harris and Sabelhaus's (2005) CEX extracts, as detailed in Heffetz (2004). In the decade from 2004 to 2014, household expenditure shares in the CEX decreased for some items—formally, universal classification codes, or UCCs, of which there are several hundreds in the CEX—as increasing shares were redirected toward newly available goods and services. While this transition from older goods and services to newer substitutes affected expenditures on specific items/UCCs—in some cases dramatically, as obsolete goods and services were entirely replaced by superior alternatives—its effects on the 31-category list was limited. For example, while consumers increasingly switch from printed to digital books and magazines, the original category Bks ("Books, including school books, newspapers and magazines...") needed no modification.

After carefully reviewing the original list and comparing it with the most recently available data on consumer expenditures at the time of redesigning the survey (e.g., BLS, 2013), we made slight modifications to only two of the 31 categories in the original list. Specifically, in the category Ot1 (Recreation 1) we replaced "video ... equipment" with "visual ... equipment" and "tapes, CDs" with "music" (generalizing from specific, outdated technologies to broader categories); and we replaces "games" with "games, etc." and moved "games" from right after "computers" to right after "music" (viewing games more as examples of *content*—as is music—and less as examples of *equipment*—as are computers).[1] And

[1] Replacing specific outdated technologies with more general categories, rather than with *current* technologies, is intended also to minimize the potential need to update the list again in the future.

in the category Ot2 (Recreation 2) we added "internet" (and replaced "and" with ",").[2]

In summary, our updated list of 31 consumption categories is identical to the original 2004 list in all but two categories (Ot1 and Ot2), which in turn saw only slight modifications. Importantly, the two modified categories maintain the spirit of the original categories. For example, they are not longer than the original categories, and they rely on familiar examples rather than on more technical expressions (we avoided "information technology," "communications devices," etc.). That said, since modifying even a single word in a survey question could potentially have great consequences, one should pay special attention to these two categories when interpreting the data.

References A.1

BLS (2013). "Table 1 (2011-2012 Weights). Relative importance of components in the Consumer Price Indexes: U.S. city average, December 2013." `https://www.bls.gov/cpi/tables/relative-importance/2013.pdf`.

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A.2 Additional CEX-Data Detail

The analysis of household expenditures in the original 2004 visibility-elasticity application (Heffetz, 2011) was based on "10,400 households for which full-year expenditure data exist in the 2003:3–2004:2 and 2005:1–2005:4 CEX extracts from Harris and Sabelhaus (2005)." As documented in that paper, those CEX extracts, which surround the time during which the 2004 visibility survey was conducted, are not available online; they were kindly provided by Ed Harris, though without documentation. The documentation and data that are publicly

[2]The addition of "internet" was motivated by the "Communication" category in the BLS (2013) table, where "Internet services and electronic information providers" account for 0.7% of expenditures. The location of "internet" right after "Cable TV" reflects our intended interpretation of "internet" as referring to internet services for the home (which are often purchased as a combined package with cable TV), rather than as mobile internet services. Relatedly, we hope that the category Cel ("mobile phone services," unmodified from the original list) is perceived by respondents as including mobile internet services (which are often purchased as a combined package with mobile call and text services).

available in Harris and Sabelhaus (2005) end in 2003:2.[3]

The updated 2014 application in the present paper requires creating from the raw CEX data (available on the Bureau of Labor Statistics website, at `https://www.bls.gov/cex/pumd_data.htm#stata`) new full-year CEX extracts that match the structure of the original extracts. For this purpose, we created new programs, based on the Harris and Sabelhaus original programs and documentation. The new programs include two main updates. The first involves adding all the new UCCs that were added to the CEX after 2003—i.e., after the last year that is still covered by the Harris and Sabelhaus (2005) documentation—and assigning them to the 31 original expenditure categories. (The updated assignments, along with all the new and updated programs and documentation we created, are included in our data package.) With the updated UCCs, the new programs create 2012:2–2014:1 full-year CEX extracts. These eight extracts cover all households who started reporting expenditures in 2012:2–2014:1, and whose last interview was therefore conducted during 2013–2014 (since households report expenditures in four consecutive quarterly interviews). The analysis in the present paper (section 4) is based on the 9,026 households with full-year expenditure data in these extracts.

Our second main update involves classifying the two (updated) clothing categories, Clo and Und, into 17 new subcategories that are used in the 2015 online clothing-only visibility survey. (See section 2.2 for details on this reclassification, table 3 for the list of 17 subcategories, and our data package for the assignment of UCCs into subcategories.)

References A.2

BLS (2016). "2015 Changes. Interview Survey and Diary Survey Consumer Expenditure Public Use Microdata. August 30, 2016." `https://www.bls.gov/cex/pumd/2015/changes.pdf`.

[3] As noted in Heffetz (2011, footnote 16): "Notice that due to the BLS's decennial sample frame rebasing in 2005, households that began the survey in 2004:3 and 2004:4 cannot be tracked for the entire year and hence are not included in our data." Another sample redesign a decade later, in 2015, resulted in a similar issue: households whose participation in the CEX spanned the 2015 sample redesign (because they began the relevant four quarterly interviews in 2014:3 and 2014:4) could not be tracked for a full year (BLS, 2016).

A.3 Additional Tables and Graphs

Table A.1: 2014 Telephone Survey, Respondent Demographics

	Visibility Survey			Census Etc.[a]
	Observations[b]	Value	(SE)	Value
Mean values:				
Age	495	46.0	(0.8)	46.4
Household size[c]	498	2.9	(0.1)	2.6
Children under 18 in household	498	0.7	(0.0)	0.6
Percent distribution:				
Female	500	49.4	(2.2)	51.5
Black	495	9.9	(1.3)	12.0
Hispanic	499	8.8	(1.3)	14.2
Married	497	48.5	(2.2)	51.4
Employed	499	62.5	(2.2)	58.6
Education	496			
Elementary (0-8)		0.8	(0.4)	5.6
High school (9-12)		22.6	(1.9)	37.8
College (13-16)		53.6	(2.2)	47.5
Graduate school (17 or more)		23.0	(1.9)	9.2
Total household income:	474			
Less than $20,000		12.7	(1.5)	19.9
$20,000 to $40,000		17.3	(1.7)	21.7
$40,000 to $60,000		13.5	(1.6)	16.8
$60,000 to $100,000		24.5	(2.0)	21.2
$100,000 or more		32.1	(2.1)	20.4
Region:	498			
Northeast		22.3	(1.9)	18.3
Midwest		23.9	(1.9)	21.7
South		37.1	(2.2)	37.0
West		16.7	(1.7)	23.0

Sources: author's visibility survey; 2010 American Community Survey, 2010 Census, and 2011 Current Population Survey.

[a]Entire-population estimates for Household size, Children under 18 in household, and Total household income; 18+-population estimates for all other variables; see appendix table A.4 for further detail.

[b]Number of respondents reporting demographic characteristic (out of a total of 500 respondents).

[c]Top-coded at 8 (in visibility survey).

Table A.2: 2014 Online Survey, Respondent Demographics

	Visibility Survey			Census Etc.[a]
	Observations[b]	Value	(SE)	Value
Mean values:				
Age	1076	47.2	(0.5)	46.4
Household size[c]	1075	2.7	(0.0)	2.6
Children under 18 in household	1066	0.6	(0.0)	0.6
Percent distribution:				
Female	1079	53.7	(1.5)	51.5
Black	1079	9.1	(0.9)	12.0
Hispanic	1077	21.9	(1.3)	14.2
Married	1078	48.5	(1.5)	51.4
Employed	1074	53.0	(1.5)	58.6
Education	1079			
Elementary (0-8)		0.0	(0.0)	5.6
High school (9-12)		22.5	(1.3)	37.8
College (13-16)		60.8	(1.5)	47.5
Graduate school (17 or more)		16.7	(1.1)	9.2
Total household income:	1078			
Less than $20,000		16.9	(1.1)	19.9
$20,000 to $40,000		24.8	(1.3)	21.7
$40,000 to $60,000		18.7	(1.2)	16.8
$60,000 to $100,000		22.9	(1.3)	21.2
$100,000 or more		16.7	(1.1)	20.4
Region:	1052			
Northeast		18.9	(1.2)	18.3
Midwest		20.1	(1.2)	21.7
South		36.6	(1.5)	37.0
West		24.4	(1.3)	23.0

Sources: author's visibility survey; 2010 American Community Survey, 2010 Census, and 2011 Current Population Survey.

[a]Entire-population estimates for Household size, Children under 18 in household, and Total household income; 18+-population estimates for all other variables; see appendix table A.4 for further detail.

[b]Number of respondents reporting demographic characteristic (out of a total of 1079 respondents).

[c]Top-coded at 8 (in visibility survey).

Table A.3: 2015 Online Survey, Clothing, Respondent Demographics

	Visibility Survey			Census Etc.[a]
	Observations[b]	Value	(SE)	Value
Mean values:				
Age	1418	49.2	(0.4)	46.4
Household size[c]	1423	2.7	(0.0)	2.6
Children under 18 in household	1412	0.6	(0.0)	0.6
Percent distribution:				
Female	1425	51.4	(1.3)	51.5
Black	1425	8.3	(0.7)	12.0
Hispanic	1426	9.5	(0.8)	14.2
Married	1425	63.0	(1.3)	51.4
Employed	1424	59.6	(1.3)	58.6
Education	1425			
Elementary (0-8)		0.1	(0.1)	5.6
High school (9-12)		17.1	(1.0)	37.8
College (13-16)		58.2	(1.3)	47.5
Graduate school (17 or more)		24.6	(1.1)	9.2
Total household income:	1424			
Less than $20,000		10.0	(0.8)	19.9
$20,000 to $40,000		14.0	(0.9)	21.7
$40,000 to $60,000		14.7	(0.9)	16.8
$60,000 to $100,000		27.8	(1.2)	21.2
$100,000 or more		33.4	(1.2)	20.4
Region:	1400			
Northeast		23.2	(1.1)	18.3
Midwest		18.6	(1.0)	21.7
South		35.4	(1.3)	37.0
West		22.8	(1.1)	23.0

Sources: author's visibility survey; 2010 American Community Survey, 2010 Census, and 2011 Current Population Survey.

[a]Entire-population estimates for Household size, Children under 18 in household, and Total household income; 18+-population estimates for all other variables; see appendix table A.4 for further detail.

[b]Number of respondents reporting demographic characteristic (out of a total of 1426 respondents).

[c]Top-coded at 8 (in visibility survey).

Table A.4: Data Source and Variable Construction for Census Etc Column in Tables A.1–A.3

Variable	Tables	Source	Notes
Age	Table PCT12: SEX BY AGE - Universe: Total population	2010 Census Summary File 1	Calculated mean for 18 years and over.
Household size	Table DP-1: Profile of General Population and Housing Characteristics	2010 Census Summary File 1	Given as the average household size.
Children under 18 in household	Table DP-1: Profile of General Population and Housing Characteristics	2010 Census Summary File 1	Including other relative and non-relative children under 18.
Female	Table DP-1: Profile of General Population and Housing Characteristics	2010 Census Summary File 1	Calculated for 18 years and over.
Black	Table QT-PL: Race, Hispanic or Latino, Age, and Housing Occupancy: 2010	2010 Census National Summary File of Redistricting Data	Calculated for 18 years and over.
Hispanic	Table QT-PL: Race, Hispanic or Latino, Age, and Housing Occupancy: 2010	2010 Census National Summary File of Redistricting Data	Calculated as Hispanic or Latino (of any race) for 18 years and over.
Married	Table B12002: SEX BY MARITAL STATUS BY AGE FOR THE POPULATION 15 YEARS AND OVER - Universe: Population 15 years and over	2010 American Community Survey 1-Year Estimates	Calculated as married, excluding separated, for 18 years and over.
Employed	Table B01001: SEX BY AGE - Universe: Total population. Table B21005: AGE BY VETERAN STATUS BY EMPLOYMENT STATUS FOR THE CIVILIAN POPULATION 18 TO 64 - Universe: Population 16 years and over. Table B23001: SEX BY AGE BY EMPLOYMENT STATUS FOR THE POPULATION 16 YEARS AND OVER - Universe: Population 16 years and over	2010 American Community Survey 1-Year Estimates	Calculated percent employed for 18 years and over.
Education	Table B15001: SEX BY AGE BY EDUCATIONAL ATTAINMENT FOR THE POPULATION 18 YEARS AND OVER - Universe: Population 18 years and over	2010 American Community Survey 1-Year Estimates	Calculated distribution for 18 years and over.
Total household income	Table HINC-06: Income Distribution to $250,000 or More for Households: 2010	Current Population Survey, 2011 Annual Social and Economic Supplement	Total household income.
Region	Table PCT12: SEX BY AGE - Universe: Total population	2010 Census Summary File 1	Chose geographic units as regions. Calculated for 18 years and over.

Table A.5: 2014 Telephone Survey, Notice More (NM) Scores and Rankings

Expenditure Category	Avg. Coded Response			Top Two Responses			Top Three Responses		
	Score	(SE)	[Rank]	Frac.	(SE)	[Rank]	Frac.	(SE)	[Rank]
Car (cars)	0.72	(0.01)	[1]	0.69	(0.02)	[1]	0.83	(0.02)	[1]
Cig (cigarettes)	0.68	(0.02)	[2]	0.67	(0.02)	[2]	0.78	(0.02)	[3]
Clo (clothing)	0.66	(0.02)	[3]	0.63	(0.02)	[3]	0.79	(0.02)	[2]
Jwl (jewelry)	0.63	(0.02)	[4]	0.60	(0.02)	[4]	0.75	(0.02)	[5]
Ot1 (recreation 1)	0.62	(0.01)	[5]	0.56	(0.02)	[5]	0.77	(0.02)	[4]
Fur (furniture)	0.59	(0.01)	[6]	0.50	(0.02)	[7]	0.73	(0.02)	[7]
FdO (food out)	0.57	(0.01)	[7]	0.51	(0.02)	[6]	0.75	(0.02)	[6]
AlO (alcohol out)	0.56	(0.02)	[8]	0.49	(0.02)	[8]	0.70	(0.02)	[9]
Ot2 (recreation 2)	0.56	(0.01)	[9]	0.47	(0.02)	[10]	0.72	(0.02)	[8]
AlH (alcohol home)	0.55	(0.02)	[10]	0.48	(0.02)	[9]	0.68	(0.02)	[10]
Brb (barbers etc)	0.53	(0.02)	[11]	0.45	(0.02)	[11]	0.65	(0.02)	[13]
Edu (education)	0.52	(0.01)	[12]	0.43	(0.02)	[12]	0.65	(0.02)	[12]
Bks (books etc)	0.50	(0.01)	[13]	0.40	(0.02)	[13]	0.67	(0.02)	[11]
FdH (food home)	0.49	(0.01)	[14]	0.37	(0.02)	[16]	0.64	(0.02)	[14]
Hom (rent/home)	0.48	(0.02)	[15]	0.40	(0.02)	[14]	0.57	(0.02)	[16]
Cel (cell phone)	0.46	(0.02)	[16]	0.40	(0.02)	[15]	0.56	(0.02)	[17]
Htl (hotels etc)	0.45	(0.01)	[17]	0.34	(0.02)	[18]	0.60	(0.02)	[15]
Bus (public trans.)	0.44	(0.02)	[18]	0.35	(0.02)	[17]	0.53	(0.02)	[18]
CMn (car repair)	0.42	(0.01)	[19]	0.30	(0.02)	[20]	0.52	(0.02)	[20]
Air (air travel)	0.41	(0.02)	[20]	0.30	(0.02)	[21]	0.52	(0.02)	[19]
Gas (gasoline)	0.40	(0.02)	[21]	0.31	(0.02)	[19]	0.48	(0.02)	[21]
Med (health care)	0.38	(0.01)	[22]	0.25	(0.02)	[22]	0.46	(0.02)	[22]
Utl (home utilities)	0.34	(0.02)	[23]	0.24	(0.02)	[23]	0.41	(0.02)	[23]
Lry (laundry)	0.33	(0.02)	[24]	0.24	(0.02)	[24]	0.38	(0.02)	[24]
Tel (home phone)	0.31	(0.02)	[25]	0.21	(0.02)	[25]	0.37	(0.02)	[25]
Cha (charities)	0.30	(0.01)	[26]	0.20	(0.02)	[26]	0.36	(0.02)	[26]
CIn (car insur.)	0.27	(0.01)	[27]	0.17	(0.02)	[27]	0.32	(0.02)	[27]
Fee (legal fees)	0.25	(0.01)	[28]	0.13	(0.01)	[28]	0.27	(0.02)	[28]
HIn (home insur.)	0.20	(0.01)	[29]	0.11	(0.01)	[29]	0.21	(0.02)	[29]
LIn (life insur.)	0.17	(0.01)	[30]	0.10	(0.01)	[30]	0.18	(0.02)	[30]
Und (underwear)	0.16	(0.01)	[31]	0.09	(0.01)	[31]	0.16	(0.02)	[31]

Source: author's visibility survey (500 respondents).

Table A.6: 2014 Online Survey, Notice More (NM) Measures and Rankings

Expenditure Category	Avg. Coded Response			Top Two Responses			Top Three Responses		
	Score	(SE)	[Rank]	Frac.	(SE)	[Rank]	Frac.	(SE)	[Rank]
Car (cars)	0.64	(0.02)	[1]	0.61	(0.03)	[1]	0.83	(0.02)	[1]
Cig (cigarettes)	0.62	(0.02)	[2]	0.58	(0.03)	[3]	0.76	(0.03)	[4]
Jwl (jewelry)	0.62	(0.02)	[3]	0.59	(0.03)	[2]	0.77	(0.03)	[2]
Fur (furniture)	0.60	(0.02)	[4]	0.52	(0.03)	[5]	0.75	(0.03)	[5]
Clo (clothing)	0.59	(0.02)	[5]	0.52	(0.03)	[4]	0.74	(0.03)	[6]
Ot1 (recreation 1)	0.57	(0.02)	[6]	0.47	(0.03)	[6]	0.77	(0.03)	[3]
AlO (alcohol out)	0.52	(0.02)	[7]	0.41	(0.03)	[9]	0.70	(0.03)	[7]
AlH (alcohol home)	0.52	(0.02)	[8]	0.41	(0.03)	[8]	0.68	(0.03)	[9]
FdO (food out)	0.52	(0.02)	[9]	0.42	(0.03)	[7]	0.69	(0.03)	[8]
Brb (barbers etc)	0.50	(0.02)	[10]	0.39	(0.03)	[10]	0.67	(0.03)	[10]
Ot2 (recreation 2)	0.49	(0.02)	[11]	0.36	(0.03)	[11]	0.64	(0.03)	[11]
FdH (food home)	0.45	(0.02)	[12]	0.30	(0.03)	[14]	0.63	(0.03)	[12]
Bks (books etc)	0.44	(0.02)	[13]	0.31	(0.03)	[12]	0.58	(0.03)	[14]
Htl (hotels etc)	0.44	(0.02)	[14]	0.29	(0.03)	[16]	0.58	(0.03)	[13]
Air (air travel)	0.43	(0.02)	[15]	0.31	(0.03)	[13]	0.57	(0.03)	[15]
Bus (public trans.)	0.42	(0.02)	[16]	0.30	(0.03)	[15]	0.56	(0.03)	[17]
Edu (education)	0.40	(0.02)	[17]	0.24	(0.03)	[20]	0.56	(0.03)	[16]
Cel (cell phone)	0.39	(0.02)	[18]	0.26	(0.03)	[18]	0.52	(0.03)	[18]
CMn (car repair)	0.39	(0.02)	[19]	0.25	(0.03)	[19]	0.49	(0.03)	[19]
Hom (rent/home)	0.37	(0.02)	[20]	0.27	(0.03)	[17]	0.46	(0.03)	[20]
Med (health care)	0.34	(0.02)	[21]	0.19	(0.02)	[24]	0.42	(0.03)	[21]
Gas (gasoline)	0.33	(0.02)	[22]	0.20	(0.02)	[23]	0.41	(0.03)	[22]
Tel (home phone)	0.32	(0.02)	[23]	0.23	(0.03)	[21]	0.40	(0.03)	[23]
Cha (charities)	0.32	(0.02)	[24]	0.21	(0.02)	[22]	0.40	(0.03)	[25]
Lry (laundry)	0.30	(0.02)	[25]	0.17	(0.02)	[26]	0.40	(0.03)	[24]
Utl (home utilities)	0.29	(0.02)	[26]	0.18	(0.02)	[25]	0.35	(0.03)	[26]
CIn (car insur.)	0.25	(0.02)	[27]	0.16	(0.02)	[27]	0.30	(0.03)	[27]
Fee (legal fees)	0.25	(0.02)	[28]	0.14	(0.02)	[29]	0.29	(0.03)	[28]
HIn (home insur.)	0.22	(0.02)	[29]	0.13	(0.02)	[31]	0.25	(0.03)	[29]
LIn (life insur.)	0.21	(0.02)	[30]	0.14	(0.02)	[28]	0.24	(0.03)	[30]
Und (underwear)	0.19	(0.02)	[31]	0.14	(0.02)	[30]	0.21	(0.02)	[31]

Source: author's visibility survey (277 respondents).

Table A.7: 2014 Online Survey, Notice Less (NL) Measures and Rankings

Expenditure Category	Avg. Coded Response			Top Two Responses			Top Three Responses		
	Score	(SE)	[Rank]	Frac.	(SE)	[Rank]	Frac.	(SE)	[Rank]
Fur (furniture)	0.55	(0.02)	[1]	0.46	(0.03)	[2]	0.68	(0.03)	[1]
Cig (cigarettes)	0.52	(0.02)	[2]	0.51	(0.03)	[1]	0.61	(0.03)	[5]
Ot1 (recreation 1)	0.50	(0.02)	[3]	0.39	(0.03)	[4]	0.63	(0.03)	[3]
Clo (clothing)	0.49	(0.02)	[4]	0.41	(0.03)	[3]	0.63	(0.03)	[2]
Car (cars)	0.49	(0.02)	[5]	0.35	(0.03)	[7]	0.62	(0.03)	[4]
AlH (alcohol home)	0.45	(0.02)	[6]	0.38	(0.03)	[5]	0.57	(0.03)	[8]
FdO (food out)	0.45	(0.02)	[7]	0.36	(0.03)	[6]	0.60	(0.03)	[6]
Brb (barbers etc)	0.43	(0.02)	[8]	0.31	(0.03)	[12]	0.57	(0.03)	[7]
Ot2 (recreation 2)	0.43	(0.02)	[9]	0.31	(0.03)	[11]	0.56	(0.03)	[9]
Jwl (jewelry)	0.42	(0.02)	[10]	0.34	(0.03)	[8]	0.52	(0.03)	[12]
FdH (food home)	0.42	(0.02)	[11]	0.29	(0.03)	[13]	0.56	(0.03)	[10]
AlO (alcohol out)	0.42	(0.02)	[12]	0.32	(0.03)	[10]	0.56	(0.03)	[11]
Cel (cell phone)	0.40	(0.02)	[13]	0.32	(0.03)	[9]	0.51	(0.03)	[13]
CMn (car repair)	0.38	(0.02)	[14]	0.25	(0.03)	[20]	0.49	(0.03)	[14]
Hom (rent/home)	0.38	(0.02)	[15]	0.28	(0.03)	[14]	0.47	(0.03)	[16]
Bks (books etc)	0.38	(0.02)	[16]	0.26	(0.03)	[17]	0.48	(0.03)	[15]
Lry (laundry)	0.36	(0.02)	[17]	0.27	(0.03)	[15]	0.46	(0.03)	[17]
Bus (public trans.)	0.36	(0.02)	[18]	0.27	(0.03)	[16]	0.46	(0.03)	[18]
Edu (education)	0.34	(0.02)	[19]	0.19	(0.02)	[23]	0.43	(0.03)	[20]
Gas (gasoline)	0.34	(0.02)	[20]	0.26	(0.03)	[18]	0.44	(0.03)	[19]
Utl (home utilities)	0.33	(0.02)	[21]	0.25	(0.03)	[19]	0.41	(0.03)	[21]
Htl (hotels etc)	0.32	(0.02)	[22]	0.18	(0.02)	[25]	0.38	(0.03)	[23]
Tel (home phone)	0.32	(0.02)	[23]	0.21	(0.03)	[21]	0.41	(0.03)	[22]
Med (health care)	0.31	(0.02)	[24]	0.19	(0.02)	[24]	0.38	(0.03)	[24]
Air (air travel)	0.30	(0.02)	[25]	0.16	(0.02)	[27]	0.36	(0.03)	[25]
Cha (charities)	0.26	(0.02)	[26]	0.19	(0.02)	[22]	0.29	(0.03)	[27]
CIn (car insur.)	0.26	(0.02)	[27]	0.17	(0.02)	[26]	0.30	(0.03)	[26]
HIn (home insur.)	0.22	(0.02)	[28]	0.13	(0.02)	[30]	0.25	(0.03)	[28]
Fee (legal fees)	0.21	(0.02)	[29]	0.14	(0.02)	[28]	0.24	(0.03)	[29]
Und (underwear)	0.20	(0.02)	[30]	0.13	(0.02)	[29]	0.22	(0.03)	[30]
LIn (life insur.)	0.19	(0.02)	[31]	0.12	(0.02)	[31]	0.22	(0.03)	[31]

Source: author's visibility survey (263 respondents).

Table A.8: 2014 Online Survey, Impression More (IM) Measures and Rankings

Expenditure Category	Avg. Coded Response			Top Two Responses			Top Three Responses		
	Score	(SE)	[Rank]	Frac.	(SE)	[Rank]	Frac.	(SE)	[Rank]
Cha (charities)	0.64	(0.01)	[1]	0.47	(0.03)	[1]	0.94	(0.01)	[8]
Edu (education)	0.64	(0.01)	[2]	0.46	(0.03)	[2]	0.96	(0.01)	[1]
Bks (books etc)	0.60	(0.01)	[3]	0.38	(0.03)	[3]	0.95	(0.01)	[6]
LIn (life insur.)	0.59	(0.01)	[4]	0.33	(0.03)	[4]	0.96	(0.01)	[2]
HIn (home insur.)	0.57	(0.01)	[5]	0.27	(0.03)	[6]	0.95	(0.01)	[4]
Med (health care)	0.57	(0.01)	[6]	0.25	(0.03)	[8]	0.95	(0.01)	[3]
CMn (car repair)	0.57	(0.01)	[7]	0.27	(0.03)	[7]	0.95	(0.01)	[5]
CIn (car insur.)	0.56	(0.01)	[8]	0.24	(0.03)	[12]	0.94	(0.01)	[9]
Bus (public trans.)	0.56	(0.01)	[9]	0.25	(0.03)	[10]	0.94	(0.01)	[10]
Fur (furniture)	0.56	(0.01)	[10]	0.25	(0.03)	[9]	0.93	(0.02)	[11]
Ot1 (recreation 1)	0.55	(0.01)	[11]	0.28	(0.03)	[5]	0.87	(0.02)	[21]
Htl (hotels etc)	0.55	(0.01)	[12]	0.24	(0.03)	[11]	0.91	(0.02)	[15]
Hom (rent/home)	0.54	(0.01)	[13]	0.19	(0.02)	[17]	0.92	(0.02)	[13]
Und (underwear)	0.54	(0.01)	[14]	0.16	(0.02)	[25]	0.94	(0.01)	[7]
FdH (food home)	0.54	(0.01)	[15]	0.18	(0.02)	[21]	0.92	(0.02)	[12]
Clo (clothing)	0.53	(0.01)	[16]	0.20	(0.02)	[15]	0.88	(0.02)	[19]
Fee (legal fees)	0.53	(0.01)	[17]	0.18	(0.02)	[22]	0.92	(0.02)	[14]
Ot2 (recreation 2)	0.53	(0.01)	[18]	0.20	(0.02)	[16]	0.86	(0.02)	[23]
Lry (laundry)	0.53	(0.01)	[19]	0.19	(0.02)	[20]	0.90	(0.02)	[16]
Car (cars)	0.53	(0.01)	[20]	0.21	(0.02)	[14]	0.87	(0.02)	[22]
Air (air travel)	0.52	(0.01)	[21]	0.17	(0.02)	[23]	0.88	(0.02)	[20]
Brb (barbers etc)	0.52	(0.01)	[22]	0.23	(0.03)	[13]	0.83	(0.02)	[26]
Tel (home phone)	0.52	(0.01)	[23]	0.15	(0.02)	[26]	0.89	(0.02)	[18]
Gas (gasoline)	0.52	(0.01)	[24]	0.14	(0.02)	[27]	0.89	(0.02)	[17]
Utl (home utilities)	0.51	(0.01)	[25]	0.16	(0.02)	[24]	0.86	(0.02)	[24]
FdO (food out)	0.51	(0.01)	[26]	0.19	(0.02)	[18]	0.82	(0.02)	[27]
Jwl (jewelry)	0.51	(0.01)	[27]	0.19	(0.02)	[19]	0.81	(0.02)	[28]
Cel (cell phone)	0.50	(0.01)	[28]	0.14	(0.02)	[29]	0.84	(0.02)	[25]
AlO (alcohol out)	0.44	(0.01)	[29]	0.14	(0.02)	[28]	0.68	(0.03)	[29]
AlH (alcohol home)	0.42	(0.01)	[30]	0.12	(0.02)	[30]	0.64	(0.03)	[30]
Cig (cigarettes)	0.34	(0.02)	[31]	0.09	(0.02)	[31]	0.51	(0.03)	[31]

Source: author's visibility survey (272 respondents).

Table A.9: 2014 Online Survey, Impression Less (IL) Measures and Rankings

Expenditure Category	Avg. Coded Response			Top Two Responses			Top Three Responses		
	Score	(SE)	[Rank]	Frac.	(SE)	[Rank]	Frac.	(SE)	[Rank]
Cig (cigarettes)	0.65	(0.02)	[1]	0.46	(0.03)	[1]	0.88	(0.02)	[23]
AlH (alcohol home)	0.65	(0.01)	[2]	0.45	(0.03)	[2]	0.94	(0.01)	[12]
AlO (alcohol out)	0.63	(0.01)	[3]	0.42	(0.03)	[3]	0.94	(0.01)	[11]
Hom (rent/home)	0.62	(0.01)	[4]	0.37	(0.03)	[6]	0.96	(0.01)	[3]
Cel (cell phone)	0.62	(0.01)	[5]	0.38	(0.03)	[5]	0.95	(0.01)	[6]
Ot2 (recreation 2)	0.61	(0.01)	[6]	0.40	(0.03)	[4]	0.92	(0.02)	[16]
FdO (food out)	0.61	(0.01)	[7]	0.37	(0.03)	[9]	0.95	(0.01)	[9]
Ot1 (recreation 1)	0.61	(0.01)	[8]	0.36	(0.03)	[10]	0.96	(0.01)	[2]
Jwl (jewelry)	0.61	(0.01)	[9]	0.34	(0.03)	[12]	0.95	(0.01)	[7]
Car (cars)	0.61	(0.01)	[10]	0.37	(0.03)	[7]	0.94	(0.01)	[10]
Gas (gasoline)	0.61	(0.01)	[11]	0.35	(0.03)	[11]	0.95	(0.01)	[8]
Tel (home phone)	0.61	(0.01)	[12]	0.33	(0.03)	[13]	0.96	(0.01)	[1]
Air (air travel)	0.60	(0.01)	[13]	0.33	(0.03)	[14]	0.96	(0.01)	[5]
Utl (home utilities)	0.60	(0.01)	[14]	0.37	(0.03)	[8]	0.90	(0.02)	[19]
Brb (barbers etc)	0.59	(0.01)	[15]	0.31	(0.03)	[15]	0.93	(0.02)	[15]
FdH (food home)	0.59	(0.01)	[16]	0.31	(0.03)	[17]	0.92	(0.02)	[17]
Fur (furniture)	0.59	(0.01)	[17]	0.31	(0.03)	[16]	0.94	(0.01)	[13]
Bus (public trans.)	0.58	(0.01)	[18]	0.28	(0.03)	[22]	0.96	(0.01)	[4]
Htl (hotels etc)	0.58	(0.01)	[19]	0.29	(0.03)	[18]	0.93	(0.02)	[14]
Fee (legal fees)	0.57	(0.01)	[20]	0.25	(0.03)	[26]	0.92	(0.02)	[18]
Clo (clothing)	0.56	(0.01)	[21]	0.28	(0.03)	[20]	0.89	(0.02)	[21]
CMn (car repair)	0.56	(0.01)	[22]	0.28	(0.03)	[21]	0.83	(0.02)	[29]
LIn (life insur.)	0.55	(0.01)	[23]	0.25	(0.03)	[25]	0.90	(0.02)	[20]
CIn (car insur.)	0.55	(0.01)	[24]	0.28	(0.03)	[19]	0.87	(0.02)	[25]
Lry (laundry)	0.55	(0.01)	[25]	0.26	(0.03)	[23]	0.87	(0.02)	[24]
Bks (books etc)	0.54	(0.01)	[26]	0.24	(0.03)	[28]	0.87	(0.02)	[26]
Und (underwear)	0.54	(0.01)	[27]	0.21	(0.02)	[31]	0.88	(0.02)	[22]
Med (health care)	0.53	(0.01)	[28]	0.25	(0.03)	[24]	0.80	(0.02)	[31]
Cha (charities)	0.53	(0.01)	[29]	0.22	(0.03)	[30]	0.84	(0.02)	[28]
HIn (home insur.)	0.53	(0.01)	[30]	0.23	(0.03)	[29]	0.84	(0.02)	[27]
Edu (education)	0.53	(0.01)	[31]	0.25	(0.03)	[27]	0.81	(0.02)	[30]

Source: author's visibility survey (267 respondents).

Table A.10: 2015 Online Survey, Clothing, Notice More (NM) Measures and Rankings

Expenditure Category	Avg. Coded Response			Top Two Responses			Top Three Responses		
	Score	(SE)	[Rank]	Frac.	(SE)	[Rank]	Frac.	(SE)	[Rank]
Owr (outerwear)	0.55	(0.01)	[1]	0.44	(0.02)	[2]	0.69	(0.02)	[1]
Wmn (women)	0.54	(0.01)	[2]	0.46	(0.02)	[1]	0.68	(0.02)	[2]
Sts (suits etc)	0.53	(0.01)	[3]	0.44	(0.02)	[3]	0.66	(0.02)	[3]
Men (men)	0.50	(0.01)	[4]	0.38	(0.02)	[6]	0.64	(0.02)	[4]
ShW (women's shoes)	0.49	(0.01)	[5]	0.38	(0.02)	[5]	0.64	(0.02)	[5]
Acc (accessories)	0.48	(0.01)	[6]	0.39	(0.02)	[4]	0.60	(0.02)	[6]
Grl (girls)	0.45	(0.01)	[7]	0.35	(0.02)	[7]	0.59	(0.02)	[7]
Spo (sports)	0.44	(0.01)	[8]	0.32	(0.02)	[9]	0.57	(0.02)	[8]
Boy (boys)	0.41	(0.01)	[9]	0.29	(0.02)	[10]	0.53	(0.02)	[9]
ShM (men's shoes)	0.41	(0.01)	[10]	0.32	(0.02)	[8]	0.51	(0.02)	[10]
ShG (girls' shoes)	0.38	(0.01)	[11]	0.29	(0.02)	[11]	0.49	(0.02)	[12]
Inf (infants)	0.37	(0.01)	[12]	0.28	(0.02)	[12]	0.49	(0.02)	[11]
ShB (boys' shoes)	0.37	(0.01)	[13]	0.26	(0.02)	[13]	0.48	(0.02)	[13]
Oth (luggage etc)	0.34	(0.01)	[14]	0.25	(0.02)	[14]	0.40	(0.02)	[14]
Soc (socks)	0.22	(0.01)	[15]	0.14	(0.01)	[16]	0.26	(0.02)	[15]
Nwr (nightwear)	0.20	(0.01)	[16]	0.15	(0.01)	[15]	0.22	(0.02)	[16]
Uwr (underwear)	0.15	(0.01)	[17]	0.11	(0.01)	[17]	0.18	(0.01)	[17]

Source: author's visibility survey (713 respondents).

Table A.11: 2015 Online Survey, Clothing, Notice Less (NL) Measures and Rankings

Expenditure Category	Avg. Coded Response			Top Two Responses			Top Three Responses		
	Score	(SE)	[Rank]	Frac.	(SE)	[Rank]	Frac.	(SE)	[Rank]
Wmn (women)	0.43	(0.01)	[1]	0.33	(0.02)	[1]	0.55	(0.02)	[1]
Men (men)	0.41	(0.01)	[2]	0.30	(0.02)	[2]	0.52	(0.02)	[2]
Sts (suits etc)	0.41	(0.01)	[3]	0.30	(0.02)	[3]	0.50	(0.02)	[3]
Owr (outerwear)	0.40	(0.01)	[4]	0.28	(0.02)	[4]	0.50	(0.02)	[4]
Grl (girls)	0.38	(0.01)	[5]	0.28	(0.02)	[5]	0.49	(0.02)	[5]
ShW (women's shoes)	0.37	(0.01)	[6]	0.28	(0.02)	[6]	0.46	(0.02)	[6]
Boy (boys)	0.37	(0.01)	[7]	0.27	(0.02)	[7]	0.45	(0.02)	[7]
ShM (men's shoes)	0.34	(0.01)	[8]	0.24	(0.02)	[11]	0.41	(0.02)	[10]
Inf (infants)	0.34	(0.01)	[9]	0.25	(0.02)	[8]	0.42	(0.02)	[8]
ShG (girls' shoes)	0.33	(0.01)	[10]	0.24	(0.02)	[9]	0.40	(0.02)	[12]
Spo (sports)	0.33	(0.01)	[11]	0.20	(0.02)	[13]	0.42	(0.02)	[9]
Acc (accessories)	0.33	(0.01)	[12]	0.21	(0.02)	[12]	0.40	(0.02)	[11]
ShB (boys' shoes)	0.32	(0.01)	[13]	0.24	(0.02)	[10]	0.39	(0.02)	[13]
Oth (luggage etc)	0.24	(0.01)	[14]	0.17	(0.02)	[14]	0.26	(0.02)	[14]
Soc (socks)	0.20	(0.01)	[15]	0.14	(0.01)	[15]	0.23	(0.02)	[15]
Nwr (nightwear)	0.19	(0.01)	[16]	0.14	(0.01)	[16]	0.22	(0.02)	[16]
Uwr (underwear)	0.15	(0.01)	[17]	0.12	(0.01)	[17]	0.18	(0.01)	[17]

Source: author's visibility survey (713 respondents).

Table A.12: Average Total-Expenditure Elasticity: All Households & by Quintile (31 Cat.)

	All	Q1	Q2	Q3	Q4	Q5
FdH (food home)	0.53	0.54	0.57	0.56	0.50	0.47
FdO (food out)	1.16	1.30	1.27	1.17	1.05	1.03
Cig (cigarettes)	−0.02	0.37	0.10	0.18	−0.20	−0.60
AlH (alcohol home)	0.99	0.68	0.99	1.28	1.08	0.88
AlO (alcohol out)	1.42	1.21	1.54	1.66	1.38	1.26
Clo (clothing)	1.21	1.26	1.25	1.33	1.19	1.01
Und (underwear etc.)	1.06	0.79	1.16	1.19	1.20	0.90
Lry (laundry)	0.60	−0.15	−0.05	0.51	1.17	1.55
Jwl (jewelry)	1.99	1.52	1.90	2.61	2.14	1.65
Brb (barbers etc.)	1.30	1.38	1.58	1.29	1.24	0.98
Hom (rent/home)	0.82	1.00	0.89	0.77	0.72	0.75
Htl (hotels etc.)	2.27	2.39	2.38	2.29	2.36	1.89
Fur (furniture)	1.45	1.23	1.84	1.64	1.42	1.08
Utl (home utilities)	0.55	0.85	0.57	0.49	0.40	0.47
Tel (home telephone)	0.51	0.67	0.56	0.49	0.30	0.52
Cel (cell phone)	0.78	1.01	1.03	0.90	0.54	0.37
HIn (home insurance)	1.59	2.05	1.76	1.34	1.34	1.48
Med (health care)	1.08	1.31	1.26	1.12	0.93	0.77
Fee (legal fees)	1.06	1.26	1.21	0.99	1.03	0.80
LIn (life insur.)	1.52	0.98	1.52	1.72	1.80	1.53
Car (cars)	2.67	2.65	2.86	3.23	2.73	1.77
CMn (car repair)	1.33	1.63	1.58	1.36	1.14	0.89
Gas (gasoline)	0.83	1.36	1.02	0.84	0.54	0.37
Cin (car insur.)	0.93	1.53	1.08	0.78	0.69	0.59
Bus (public trans.)	0.93	−0.09	0.34	1.00	1.66	1.73
Air (air travel)	2.00	1.96	2.29	1.94	1.96	1.85
Bks (books etc.)	1.29	1.10	1.21	1.55	1.35	1.20
Ot1 (recreation 1)	1.51	1.52	1.54	1.61	1.63	1.24
Ot2 (recreation 2)	1.11	0.99	1.10	1.11	1.19	1.17
Edu (education)	2.17	1.45	1.67	2.86	2.58	2.18
Cha (charities)	1.58	1.63	1.69	1.53	1.53	1.49

Notes: Average total-expenditure elasticity, for all households and by total-expenditure quintile (31 categories). Estimated from 2012:2–2014:1 full-year CEX extracts.

Table A.13: Average Expenditure Shares (percent): All Households & by Quintile (31 Cat.)

	All	Q1	Q2	Q3	Q4	Q5
FdH (food home)	12.68	18.34	14.02	12.13	10.52	8.08
FdO (food out)	4.62	3.78	4.53	4.77	5.04	5.02
Cig (cigarettes)	0.92	1.68	1.09	0.84	0.64	0.30
AlH (alcohol home)	0.44	0.48	0.40	0.42	0.49	0.43
AlO (alcohol out)	0.27	0.19	0.21	0.27	0.33	0.36
Clo (clothing)	1.65	1.37	1.46	1.71	1.85	1.89
Und (underwear etc.)	0.11	0.11	0.09	0.11	0.11	0.11
Lry (laundry)	0.22	0.42	0.21	0.15	0.15	0.19
Jwl (jewelry)	0.13	0.05	0.08	0.10	0.19	0.26
Brb (barbers etc.)	0.55	0.37	0.50	0.59	0.63	0.66
Hom (rent/home)	31.42	34.79	34.17	32.45	29.38	25.93
Htl (hotels etc.)	0.61	0.13	0.34	0.47	0.78	1.37
Fur (furniture)	1.52	0.91	1.24	1.56	1.86	2.09
Utl (home utilities)	6.00	8.10	6.96	6.03	5.01	3.75
Tel (home telephone)	1.00	1.44	1.13	1.00	0.81	0.59
Cel (cell phone)	2.08	2.21	2.27	2.28	2.06	1.56
HIn (home insurance)	1.57	0.82	1.36	1.70	1.75	2.28
Med (health care)	7.81	6.53	7.85	8.39	8.49	7.82
Fee (legal fees)	1.38	1.22	1.43	1.45	1.43	1.38
LIn (life insur.)	0.61	0.39	0.42	0.57	0.69	1.01
Car (cars)	4.40	0.65	1.46	2.98	6.32	11.06
CMn (car repair)	1.79	1.18	1.68	1.93	2.13	2.07
Gas (gasoline)	6.02	5.97	6.83	6.71	5.97	4.53
Cin (car insur.)	1.98	1.79	2.33	2.17	1.98	1.64
Bus (public trans.)	0.38	0.59	0.28	0.28	0.30	0.48
Air (air travel)	0.54	0.17	0.36	0.48	0.65	1.08
Bks (books etc.)	0.54	0.44	0.45	0.50	0.63	0.69
Ot1 (recreation 1)	1.11	0.67	0.84	1.12	1.29	1.68
Ot2 (recreation 2)	3.51	3.27	3.34	3.43	3.58	3.99
Edu (education)	1.51	0.52	0.63	0.88	1.97	3.71
Cha (charities)	2.58	1.42	2.04	2.54	2.98	3.98
Total	100.00	100.00	100.00	100.00	100.00	100.00

Notes: Average expenditure shares (%), for all households and by total-expenditure quintile (31 categories). Calculated from 2012:2–2014:1 full-year CEX extracts.

Table A.14: Average Total-Expenditure Elasticity: All Households & by Quintile (17 Sub.)

	All	Q1	Q2	Q3	Q4	Q5
Acc (accessories)	1.43	1.75	1.20	1.47	1.58	1.17
Sts (suits etc.)	1.62	1.08	1.70	2.03	1.76	1.42
Boy (boys)	1.09	1.67	1.11	1.06	0.91	0.73
Grl (girls)	1.29	1.69	1.45	1.29	1.16	0.88
Men (men)	1.18	0.99	1.26	1.36	1.25	1.01
Wmn (women)	1.28	1.32	1.36	1.31	1.23	1.14
Inf (infants)	0.88	1.52	1.18	0.83	0.50	0.34
Nwr (nightwear)	1.15	1.08	1.33	1.23	1.09	0.99
Oth (luggage etc.)	1.39	1.31	1.25	1.54	1.63	1.20
Owr (outerwear)	1.23	1.00	1.33	1.37	1.30	1.12
ShB (boys' shoes)	1.08	1.94	1.04	0.99	0.81	0.67
ShG (girls' shoes)	1.19	1.78	1.28	1.10	0.95	0.88
ShM (men's shoes)	1.05	0.87	1.00	1.30	1.17	0.85
ShW (women's shoes)	1.11	1.08	1.14	1.18	1.13	1.00
Soc (socks)	1.06	0.74	1.16	1.28	1.18	0.87
Spo (sports)	1.40	1.03	1.50	1.65	1.53	1.25
Uwr (underwear)	0.99	0.68	1.02	1.14	1.16	0.93

Notes: Average total-expenditure elasticity, for all households and by total-expenditure quintile (17 clothing-only subcategories). Estimated from 2012:2–2014:1 full-year CEX extracts.

Table A.15: Average Expenditure Shares (percent): All Households & by Quintile (17 Sub.)

	All	Q1	Q2	Q3	Q4	Q5
Acc (accessories)	0.05	0.04	0.04	0.05	0.06	0.08
Sts (suits etc.)	0.05	0.03	0.03	0.05	0.07	0.09
Boy (boys)	0.10	0.09	0.10	0.11	0.11	0.10
Grl (girls)	0.11	0.07	0.10	0.11	0.13	0.12
Men (men)	0.26	0.23	0.23	0.26	0.30	0.30
Wmn (women)	0.44	0.34	0.38	0.47	0.48	0.54
Inf (infants)	0.12	0.10	0.14	0.14	0.12	0.08
Nwr (nightwear)	0.03	0.03	0.02	0.03	0.03	0.03
Oth (luggage etc.)	0.03	0.03	0.03	0.03	0.04	0.05
Owr (outerwear)	0.10	0.08	0.08	0.10	0.10	0.12
ShB (boys' shoes)	0.04	0.04	0.04	0.05	0.04	0.04
ShG (girls' shoes)	0.03	0.03	0.03	0.04	0.04	0.03
ShM (men's shoes)	0.12	0.12	0.10	0.11	0.13	0.12
ShW (women's shoes)	0.14	0.14	0.13	0.15	0.15	0.16
Soc (socks)	0.02	0.02	0.02	0.02	0.02	0.02
Spo (sports)	0.05	0.03	0.04	0.05	0.06	0.07
Uwr (underwear)	0.06	0.06	0.05	0.06	0.06	0.06
Total clothing	1.76	1.48	1.55	1.82	1.96	2.00

Notes: Average expenditure shares (%), for all households and by total-expenditure quintile (17 clothing-only subcategories). Calculated from 2012:2–2014:1 full-year CEX extracts.

Table A.16: Elasticity and Four Visibility Measures: First Income Quintile

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
NM (Notice More)	−0.84				−0.33	4.06			5.90
	(0.79)				(0.83)	(1.90)			(2.33)
NL (Notice Less)		−2.15				−7.44	−1.80		−9.88
		(1.07)				(2.68)	(1.20)		(3.51)
IM (Impressions More)			3.62		3.33			3.11	3.80
			(1.82)		(1.98)			(2.26)	(2.18)
IL (Impressions Less)				−3.33			−1.66	−1.09	4.83
				(2.32)			(2.54)	(2.81)	(3.30)
Observations	31	31	31	31	31	31	31	31	31
R^2	0.04	0.12	0.12	0.07	0.13	0.25	0.14	0.13	0.33
Adj. R^2	0.00	0.09	0.09	0.03	0.06	0.19	0.07	0.06	0.23
F-test (p-value)	0.30	0.05	0.06	0.16	0.15	0.02	0.13	0.15	0.03

Notes: Weighted OLS regressions. Dependent variable: average total-expenditure elasticity for first total-expenditure quintile (Q1 column of appendix table A.12), estimated from 2012:2–2014:1 full-year CEX extracts. Weights: average expenditure shares (Q1 column of appendix table A.13), estimated from the same data. Independent variables: visibility measures (first column of appendix tables A.6–A.9), based on author's visibility survey. All regressions include a constant (not reported). Standard errors in parentheses.

Table A.17: Elasticity and Four Visibility Measures: Second Income Quintile

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
NM (Notice More)	0.94				1.76	7.74			8.71
	(0.87)				(0.81)	(1.74)			(1.97)
NL (Notice Less)		−0.41				−10.24	0.91		−11.12
		(1.22)				(2.40)	(1.33)		(2.99)
IM (Impressions More)			4.93		6.45			3.65	5.83
			(2.13)		(2.13)			(2.73)	(2.17)
IL (Impressions Less)				−4.82			−5.76	−2.31	4.26
				(2.43)			(2.80)	(3.04)	(3.00)
Observations	31	31	31	31	31	31	31	31	31
R^2	0.04	0.00	0.16	0.12	0.28	0.42	0.13	0.17	0.54
Adj. R^2	0.01	−0.03	0.13	0.09	0.22	0.38	0.07	0.11	0.47
F-test (p-value)	0.29	0.74	0.03	0.06	0.01	0.00	0.13	0.07	0.00

Notes: See table A.16 notes; replace first with second income quintile.

Table A.18: Elasticity and Four Visibility Measures: Third Income Quintile

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
NM (Notice More)	2.63				3.54	10.74			11.52
	(0.96)				(0.88)	(1.76)			(1.92)
NL (Notice Less)		1.37				−12.43	3.22		−13.13
		(1.49)				(2.47)	(1.60)		(2.98)
IM (Impressions More)			4.82		7.95			3.62	6.77
			(2.88)		(2.46)			(3.82)	(2.41)
IL (Impressions Less)				−4.56			−8.03	−2.02	5.01
				(3.16)			(3.47)	(4.15)	(3.17)
Observations	31	31	31	31	31	31	31	31	31
R^2	0.21	0.03	0.09	0.07	0.42	0.58	0.18	0.10	0.68
Adj. R^2	0.18	−0.01	0.06	0.03	0.38	0.55	0.13	0.03	0.63
F-test (p-value)	0.01	0.37	0.10	0.16	0.00	0.00	0.06	0.24	0.00

Notes: See table A.16 notes; replace first with third income quintile.

Table A.19: Elasticity and Four Visibility Measures: Fourth Income Quintile

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
NM (Notice More)	3.20				4.21	11.58			12.10
	(0.94)				(0.80)	(1.57)			(1.45)
NL (Notice Less)		2.00				−13.45	4.05		−13.73
		(1.59)				(2.30)	(1.72)		(2.36)
IM (Impressions More)			5.85		9.70			5.94	8.96
			(3.12)		(2.36)			(4.38)	(2.14)
IL (Impressions Less)				−4.36			−8.96	0.16	6.58
				(3.55)			(3.84)	(4.82)	(2.76)
Observations	31	31	31	31	31	31	31	31	31
R^2	0.28	0.05	0.11	0.05	0.55	0.68	0.21	0.11	0.81
Adj. R^2	0.26	0.02	0.08	0.02	0.52	0.65	0.15	0.04	0.78
F-test (p-value)	0.00	0.22	0.07	0.23	0.00	0.00	0.04	0.20	0.00

Notes: See table A.16 notes; replace first with fourth income quintile.

Table A.20: Elasticity and Four Visibility Measures: Fifth Income Quintile

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
NM (Notice More)	1.90				2.83	8.21			8.14
	(0.73)				(0.58)	(1.23)			(1.03)
NL (Notice Less)		0.82				−10.38	2.56		−9.66
		(1.20)				(1.85)	(1.34)		(1.73)
IM (Impressions More)			5.88		8.79			6.99	8.58
			(2.28)		(1.80)			(3.44)	(1.79)
IL (Impressions Less)				−4.11			−7.37	1.68	5.46
				(2.71)			(3.11)	(3.84)	(2.28)
Observations	31	31	31	31	31	31	31	31	31
R^2	0.19	0.02	0.19	0.07	0.56	0.62	0.18	0.19	0.80
Adj. R^2	0.16	−0.02	0.16	0.04	0.53	0.59	0.12	0.13	0.77
F-test (p-value)	0.01	0.50	0.02	0.14	0.00	0.00	0.06	0.05	0.00

Notes: See table A.16 notes; replace first with fifth income quintile.

Table A.21: Clothing Elasticity and Two Visibility Measures: 14 Subcategories

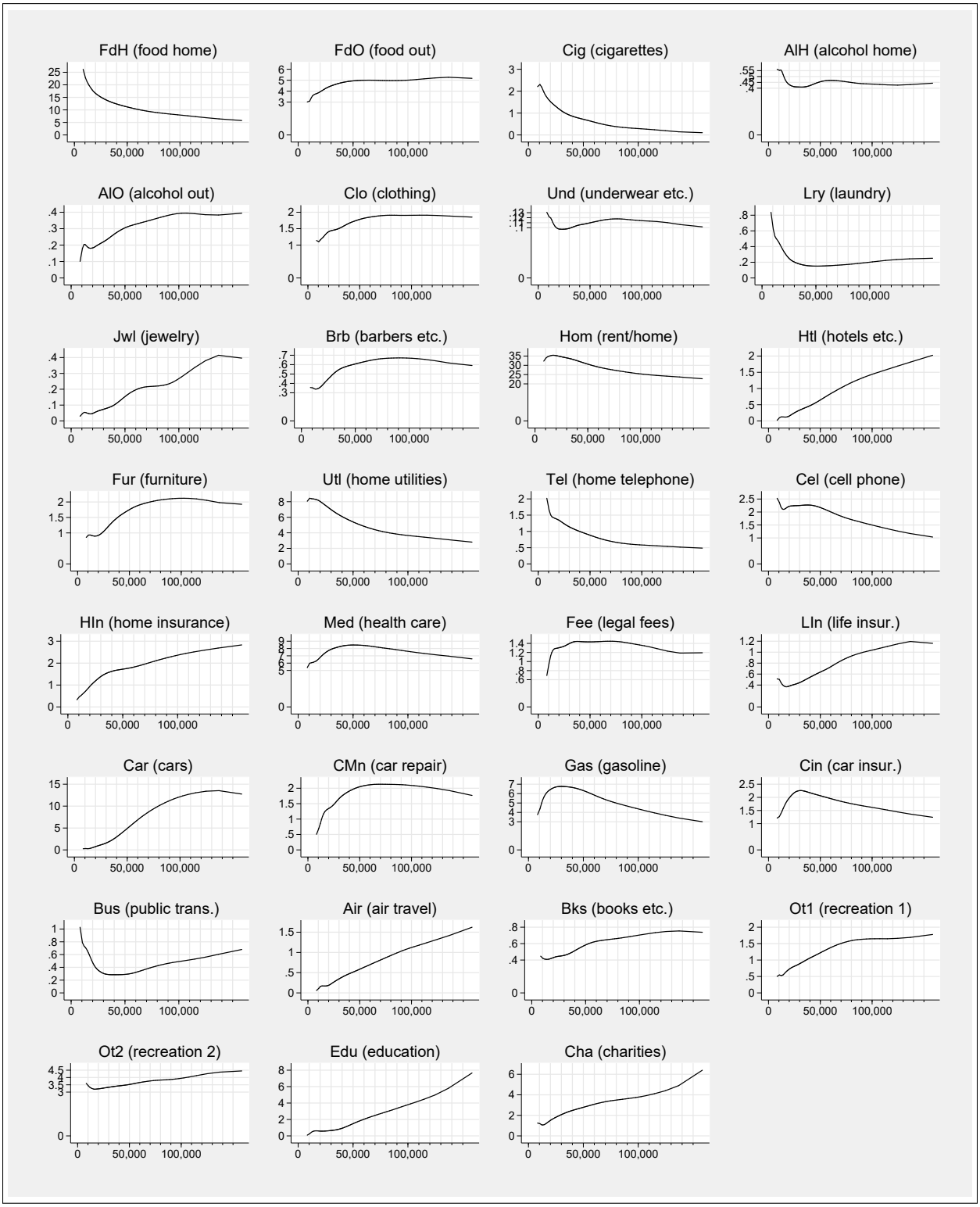
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	——All Households——			Q1	Q2	Q3	Q4	Q5
NM (Notice More)	1.33		3.07	−3.07	1.20	4.38	6.55	5.58
	(0.60)		(1.14)	(2.76)	(1.22)	(1.63)	(1.74)	(1.28)
NL (Notice Less)		0.94	−2.72	2.10	0.14	−4.04	−6.72	−4.56
		(0.94)	(1.56)	(3.83)	(1.73)	(2.28)	(2.33)	(1.65)
Observations	14	14	14	14	14	14	14	14
R^2	0.29	0.08	0.44	0.15	0.31	0.44	0.58	0.68
Adj. R^2	0.23	0.00	0.34	−0.00	0.19	0.34	0.50	0.62
F-test (p-value)	0.05	0.34	0.04	0.40	0.13	0.04	0.01	0.00

Notes: This table replicates table 6, but drops the three clothing-only subcategories that disaggregate the original underclothes-and-nightwear (Und) category: nightwear (Nwr), socks (Soc), and underwear (Uwr). Weighted OLS regressions. Dependent variable: average total-expenditure elasticity, for all households and by total-expenditure quintile (appendix table A.14), estimated from 2012:2–2014:1 full-year CEX extracts. Weights: average expenditure shares (appendix table A.15), estimated from the same data. Independent variables: visibility measures (first column of appendix tables A.10–A.11), based on author's visibility survey. All regressions include a constant (not reported). Standard errors in parentheses.

Figure A.1: 31 Engel Curves: Expenditure Levels

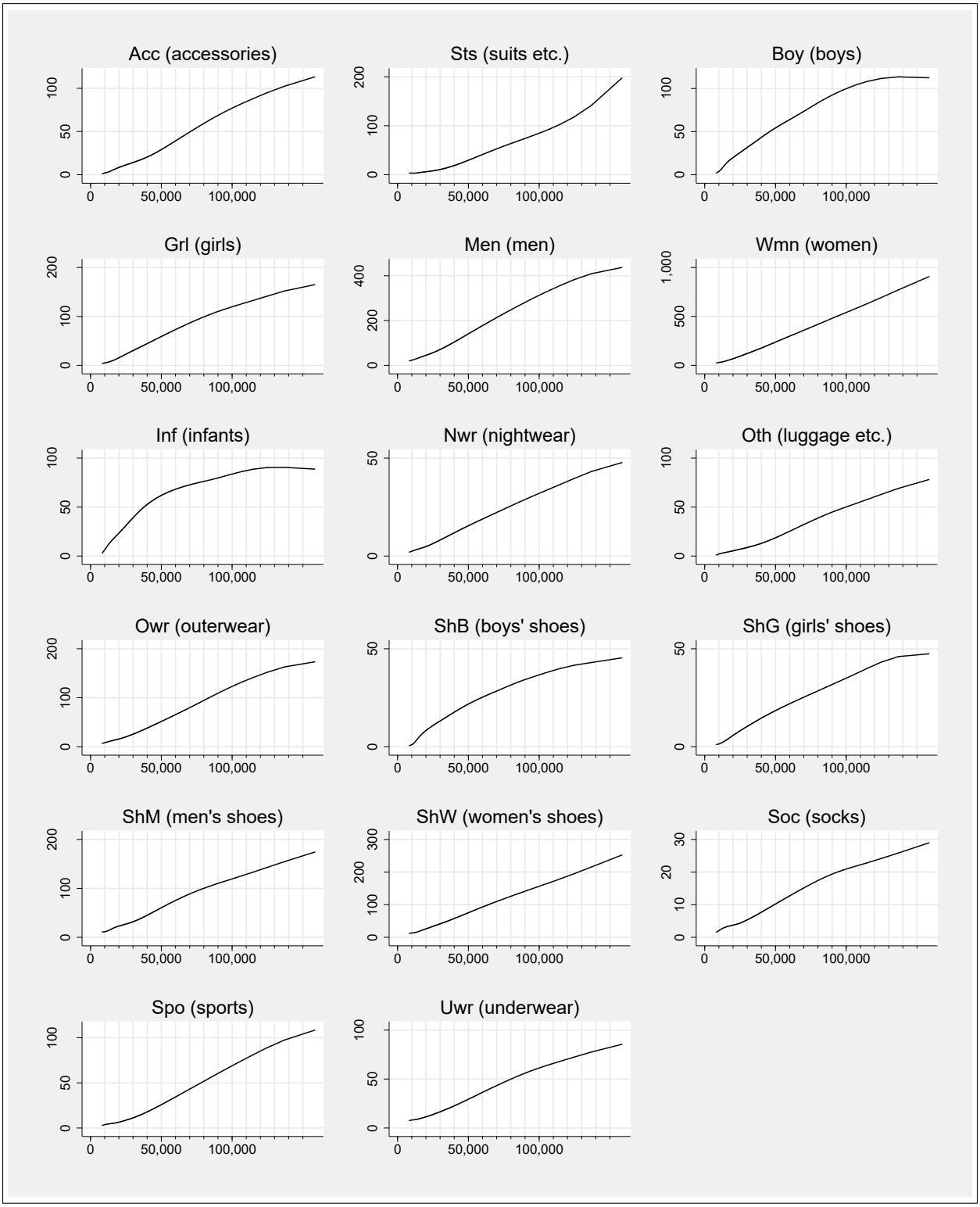
Notes: Total annual expenditures (horizontal axis) and category expenditures (vertical axis) are in US$. Estimated from 2012:2–2014:1 full-year CEX extracts.

Figure A.2: 31 Engel Curves: Expenditure Shares



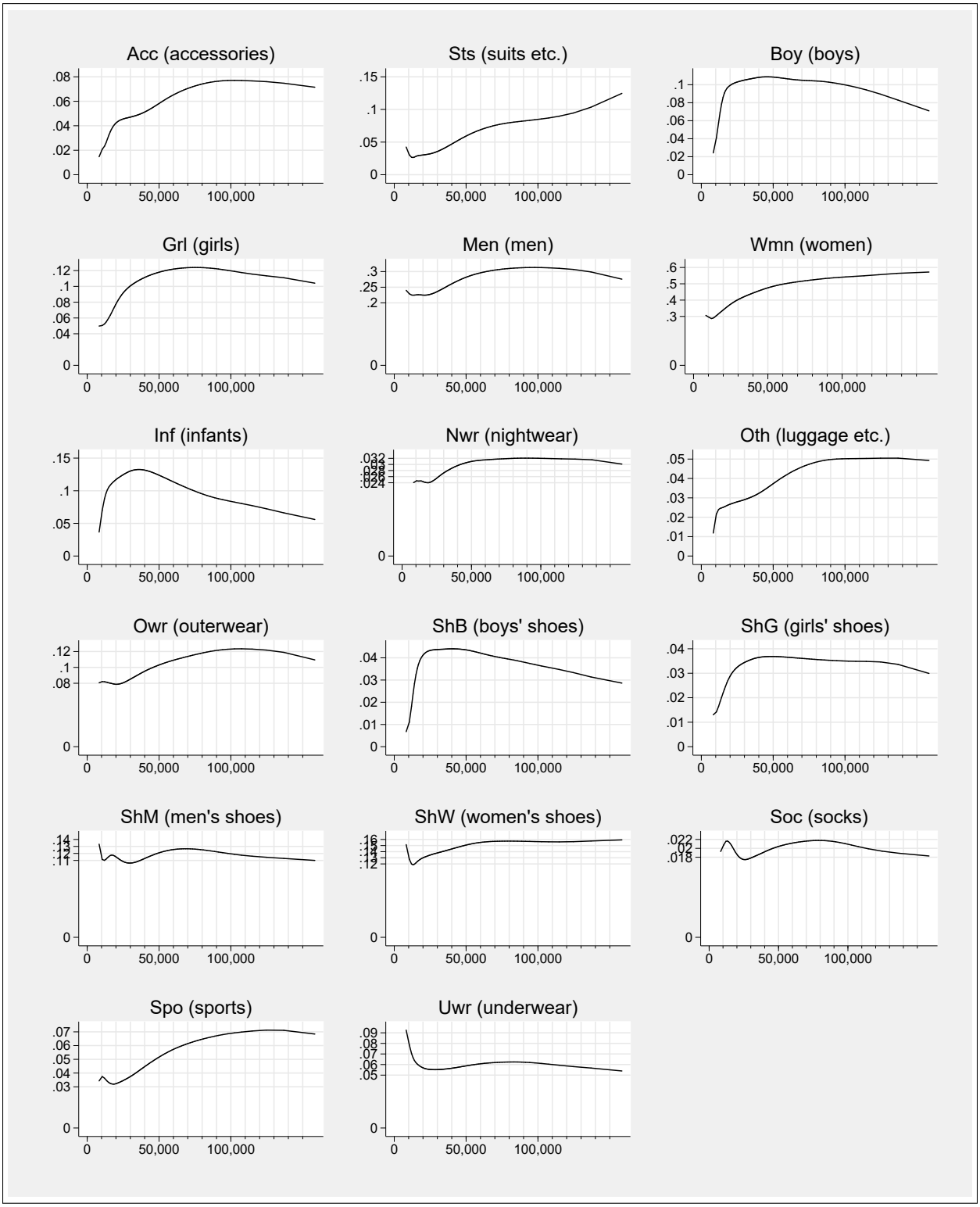
Notes: Total annual expenditures (horizontal axis) are in US$. Category expenditure shares (vertical axis) are in percent of total expenditures. Estimated from 2012:2–2014:1 full-year CEX extracts.

Figure A.3: 17 Clothes-Only Engel Curves: Expenditure Levels



Notes: Total annual expenditures (horizontal axis) and category expenditures (vertical axis) are in US$. Estimated from 2012:2–2014:1 full-year CEX extracts.

Figure A.4: 17 Clothes-Only Engel Curves: Expenditure Shares



Notes: Total annual expenditures (horizontal axis) are in US$. Category expenditure shares (vertical axis) are in percent of total expenditures. Estimated from 2012:2–2014:1 full-year CEX extracts.