Cost Savings from Sharing Across Households

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By Rachel Soloveichik

Abstract

This paper studies sharing across households. For example, a group of friends might reserve a single table at a restaurant and then order pizza and pitcher of soda for everyone to eat together, or two co-workers might carpool to work together, or four golfers might play together and share green fees and a caddy. The popular book 'Bowling Alone' (Putnam 2000) already explored the cultural and wellbeing implications of in-person sharing across households. More recent authors have explored the wellbeing implications of virtual sharing networks like Facebook and Wikipedia (Brynjolfsson, Collis, and Eggers 2019). This paper focuses on the cost savings associated with sharing across households without attempting to measure wellbeing.

Equivalized costs are 3 percent lower in 2019 when sharing across households is valued using pre-existing equivalence scales (Renwick and Garner 2017). Between 1975 and 2019, the equivalized cost reduction associated with sharing across households fell from 5.3 percent to only 3.2 percent. Hence, equivalized cost growth increases by 0.05 percentage point per year. College-educated individuals share more across households, and so they face slightly lower equivalized costs. The implications are that the long-recognized problems of slow economic growth (Boppart and Li 2021) and low consumption for less educated individuals (Heckman 2018) become even worse when costs are equivalized for sharing across households.

JEL Codes: D13, D31, and E01

Introduction

Sharing allows groups to consume the same goods and services at a lower equivalent cost. For example, two co-workers who carpool reduce costs per person-mile by 43 percent (Department of Transportation 1979). Sharing within households is very common. To start out, a household is defined as 'a group of persons who share the same living accommodation' (U.N. Statistics Division 2008, sec. 24.12). In addition, the American Time Use Survey (ATUS) reports that household members frequently eat together, travel together, and enjoy leisure activities together. Economists studying poverty (Orshansky 1965) (Forster 1994) and inequality (Fixler et al. 2020) routinely use equivalence scales to account for sharing within households. In addition, national accountants use equivalence scales to link the consumption measures from the published national accounts with consumption measures that are equivalized for sharing within households (Jorgenson and Schreyer 2017).

This paper extends the household equivalence scale literature to study all the cost savings associated with sharing by groups. For example, a carpool that is shared among five people provides the same cost savings regardless of whether the commuters all live in the same household or live in five different households. By construction, group equivalence scales track sharing within households and sharing across households consistently. The paper then uses those group equivalence scales to link consumption measures from the Bureau of Economic Analysis (BEA)'s national accounts with consumption measure that are equivalized for sharing within households and across households.

The paper measures sharing by groups with data from the ATUS and other sources. The paper then uses pre-existing equivalence scales (Renwick and Garner 2017) to value the cost savings associated with sharing. The paper calculates that equivalized costs were 5.3 percent lower in 1975 but only 3.2 percent lower in 2019 when sharing across households is tracked. Hence, equivalized cost growth rises by [(5.3-3.2)/44] = 0.05 percentage point per year when sharing across households is tracked consistently with sharing within households. Educated adults share more across households and so they face slightly lower costs. The implications are that the long-recognized problems of slow economic growth (Boppart and Li 2021) and low consumption for less educated individuals (Heckman 2018) become even worse when costs are equivalized for sharing across households.

The paper is divided into 4 sections. Section 1 reviews the previous literature on sharing. Section 2 measures sharing within households and sharing across households with data from the American Time Use Survey, American Community Survey (ACS), the decennial Census, and other sources. Section 3 uses pre-existing equivalence scales to calculate the cost saving associated with sharing across households. Finally, Section 4 measures sharing by education and calculates how sharing across households impacts consumption inequality by education.

Section 1: Previous Literature On Sharing

Sharing in the National Accounting Literature

Many services involve implicit sharing among multiple customers. For example, an airline might sell hundreds of seats on a typical flight, or a hotel might rent hundreds of rooms in a typical night. Historically, shared services were sold by offline firms like Southwest or Marriot. More recently, online firms like Gogo Jets and Airbnb have started selling shared services as well. In theory, one could decompose these firms' revenue into a payment for the cost of the service itself and a payment for the coordination required for multiple people to share it. In practice, both payments are in scope for GDP and therefore excluded from this paper's analysis.

In addition, organizations often share resources internally. For example, an office might have a single printer which is available to many employees simultaneously. Measured output for non-profits and governments depends on their costs. Accordingly, the time and energy they devote to coordinating shared internal resources are directly in scope for GDP. Furthermore, private for-profit businesses often depends on shared internal resources. Hence, the time and energy they devote to coordinating internal resources is indirectly included in output costs and indirectly in scope for GDP. This paper excludes non-profit sharing, government sharing, and for-profit business sharing from its analysis.

The official guidelines for national accounting, System of National Accounts 2008, are clear that household services are excluded from the national accounts (U.N. Statistics Division 2008, sec. 6.28-9). The examples given in the official guidelines focus on services like cooking, cleaning, or childcare. Nevertheless, the discussion is clear that sharing-related activities like planning a restaurant get-together, organizing a carpool, or reserving a golf course are definitely not in scope for GDP. This paper focuses its analysis on those sharing-related activities.

Costs of Sharing

Decision-making is the most studied cost of sharing. On the one hand, a single leader has difficulty gathering all the information necessary to make the 'best' decision (Hayek 1945). On the other hand, fully decentralized decision-making can have large transaction costs (Demetz 1988). Regardless of how a decision is made, implementing that decision for the entire group is not straightforward (Nutt 1999). Some people desire control for its own sake (Leotti et al. 2011) and therefore find the compromises required by groups inherently unpleasant. Decision-making can be particularly difficult for large groups (Cooney et al. 2020).

Disease transmission is another cost of sharing. The basic idea that diseases can be transmitted during sharing has been known for millennia (Nelson and Williams 2013) and has received renewed attention during the recent coronavirus epidemic (Bazant et al. 2021). If one individual can infect an entire group,

then multiple overlapping groups can spread a disease throughout the entire population (Germann et al 2006). Large groups can be particularly vulnerable to disease transmission (Nunn et al. 2015).

Finally, privacy violations may also be a cost of sharing. Economists studying privacy typically focus on companies collecting data or other monitoring which is in scope for GDP (Acquisti et al. 2016). But the communications literature is clear that family and friends can collect private data (Petronio 2002). In addition, some family and friends may misuse shared devices to cyberstalk or commit other digital privacy violation (Levy and Schneir 2020). Unlike the earlier two costs, small groups can be even more vulnerable to privacy violations than large groups (Long 2020).

The costs of sharing described above are very relevant to wellbeing, but national accounting theory is clear that GDP is a measure of final output rather than wellbeing (Aitken 2019). If sharing across households required purchased inputs, then the cost of those purchased inputs would partially offset the direct cost savings associated with sharing. Neither information loss, disease transmission, nor privacy violation require any purchased inputs. Hence, final cost is equal to cost without sharing minus the cost savings associated with sharing.

Section 2: Measuring Sharing Over Time

The paper studies five separate sharable consumption categories: a) housing, b) food, c) private vehicle transportation, d) dependent care, e) leisure and miscellaneous. In addition, the paper tracks non-sharable consumption like clothing or health care as a sixth category of consumption. These six categories are determined by consumption patterns rather than the North American Industry Classification System (NAICS) codes or BEA's NIPA table lines.[1] For example, furniture repair services are part of housing because furniture is consumed together with housing. The paper estimates sharing for each of the five sharable consumption categories separately.

The paper uses self-reported location and the self-reported presence of others as proxies for sharing. The American Time Use Survey (ATUS) provides the primary data for the period 2003 to 2019. ATUS respondents complete detailed time diaries which report activities, location, and other individuals present for a sample day. To be clear, the paper focuses on in-person groups and does not track remote groups. It is certainly true that social media and other virtual sharing networks enable very large groups of people to collaborate on leisure or volunteer projects online. For example, Reddit allowed millions of people to collaborate on an online art project (Kelly 2022). Social media accounts for a large and

[1] A portion of market purchases are intermediate input to household production. For example, a bus trip to the grocery store and raw food ingredients may be both intermediate to the production of a cooked meal. As an experiment, the paper used ATUS's detailed activity codes and expert judgment to reallocate these intermediate purchases to their final consumption category. Such a reallocation decreases the spending share for private vehicles and increases the spending share for food – but does not change overall trends much.

growing share of leisure time (Hall and Liu 2022), and therefore measures of socialization may be biased if remote group time is treated as alone time. However, remote group activities account for only a small share of personal consumption expenditures and almost no household production.[2] As a result, this paper focuses on in-person sharing in its empirical estimates of group size and cost savings.

Sharing Data for 2003 to 2019 from the ATUS

Housing sharing is measured based on respondent location. One might think that housing services are only consumed by individuals living in a household and therefore only shared within households. In fact, ATUS respondents often visit other people's homes. For the entire 2003 to 2019 period, ATUS respondents reported spending 31 percent of their time at their own home and 3 percent of their time at another person's home.[3] In 2019, the paper calculates that housing sharing was split 92 percent within household and 8 percent across households.

Food sharing is measured based on the individuals present while a respondent eats. For the entire 2003 to 2019 period, ATUS respondents eating in restaurants shared their meal with an average of 0.8 household member and 0.7 non-household member while ATUS respondents eating in other locations shared their meal with an average of 1.0 household member and 0.3 non-household member.[4] Over the past few decades, the restaurant sector has grown rapidly and meals eaten in restaurants now account for approximately one sixth of total food consumption.[5] Holding all else equal, this restaurant growth shifts food sharing from within households to across households. In 2019, the paper calculates that food sharing was split 75 percent within households and 25 percent across households.

Private vehicle sharing is measured based on the individuals present in a private vehicle. For the entire 2003 to 2019 period, ATUS respondents who are in a private vehicle for their work commute share it with an average of 0.1 household member and 0.1 non-household member while ATUS respondents who are in a private vehicle for other reasons share it with an average of 0.3 household member and 0.1 non-household member. According to the National Household Transportation Survey, commutes to work account for approximately one third of personal vehicle transportation (Department of Transportation 2018). In 2019, the paper calculates that private vehicle sharing was split 82 percent within household and 18 percent across household.

Dependent care sharing is measured based on the individuals present during an episode of active care. For the entire 2003 to 2019 period, ATUS respondents who are providing in-person adult care average 1.16 other adults present and ATUS respondents who are providing in-person child care average 1.57

[2] If user-generated content (i.e., Wikipedia articles, tweets, etc.) is tracked as household production, then remote groups accounts for a large and growing share of household production (Nakamura, Samuels, and Soloveichik).
[3] The ATUS does not ask location for sleeping, personal care, etc. These activities are dropped from the sample.
[4] Quick snacks are more likely to be solitary than long dinners. This number is weighted by time spent eating. Meals eaten at school are dropped because students eating lunch don't normally share their food communally.
[5] This number is not comparable with the spending data in BEA's NIPA Table 2.4.5U because takeout is classified as a non-restaurant meal. In addition, the value of home-cooked meals includes household production time.

children present. Adult care accounts for approximately one quarter of active care time in the ATUS and child care accounts for the remaining three quarters of care. Hence, the paper calculates that the average care episode is shared with 0.46 other people. Most care episodes only involve household members. In 2019, the paper estimates that dependent care sharing was split 94 percent within household and 6 percent across household.

Leisure and miscellaneous sharing is measured based on the individuals present during a leisure episode. Between 2003 and 2019, ATUS respondents who are enjoying passive electronic media, like television or music, share their time with an average of 0.6 household member and 0.1 non-household member. Over the same time period, ATUS respondents who enjoying non-electronic sharable leisure, like sports or parties, activities share their time with an average of 0.5 household member and 0.3 non-household member. According to the spending data in BEA's table 2.4.5U, passive electronic leisure accounts for 23 percent of the leisure spending tracked and non-electronic sharable leisure accounts for the remaining 77 percent. Active electronic leisure, like video games or social media, is dropped from the analysis because remote groups are difficult to observe. Finally, data on miscellaneous activities was not located, so the paper assumes that miscellaneous sharing tracks non-electronic sharable leisure sharing. In 2019, the paper calculates that leisure and miscellaneous sharing was split 69 percent within household and 31 percent across household.

Figure 1: Average Number of Household Members in a Sharing Group

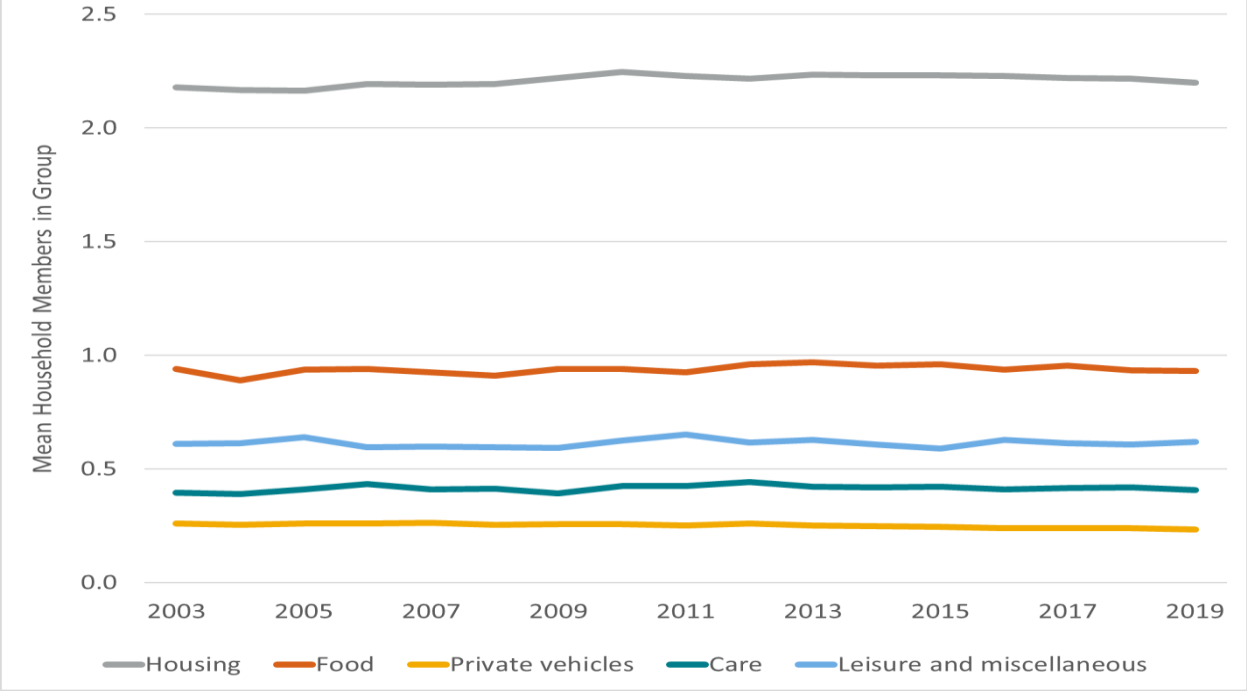
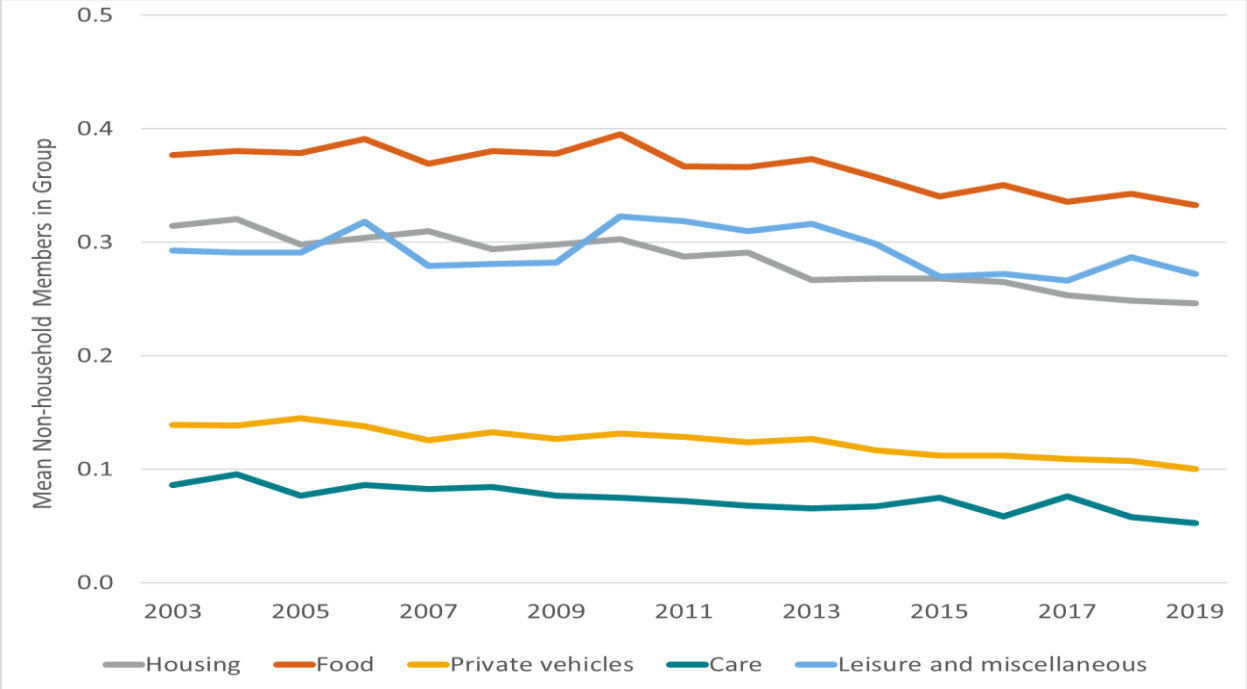


Figure 2: Average Number of Non-household Members in a Sharing Group



Figures 1 and 2 show that every consumption category has more sharing within households than sharing across households. The two consumption categories with the most similar levels of sharing, private vehicles and leisure and miscellaneous, only account for a small share of spending. The higher quantity of sharing within households may explain why previous researchers focused on sharing within households (Dudel et al 2021) (Orshansky 1965) (Fixler et al. 2020). This paper extend the previous research to study sharing across households consistently with sharing within households.

Figure 2 shows that sharing across households has fallen noticeably from 2003 to 2019. One might worry that the declines shown in Figure 2 are due to survey methodology rather than genuine change. It is certainly true that the ATUS has changed questions and procedures since it started in 2003 (Bureau of Labor Statistics 2021). However, the American Community Survey (ACS) also collects data on travel to work. Between 2003 and 2019, the ACS and the ATUS report virtually identical declines in carpooling to work. Accordingly, the sharing declines in figure 2 likely reflect a genuine reduction of in-person sharing rather than ATUS's survey methodology. The simultaneous decline to in-person sharing for all five consumption categories likely represents a broad shift in culture (Putnam 2000).

The coronavirus pandemic accelerated the decline in sharing across households. Consistent with stay-in-place behavior, respondents in the 2020 ATUS are much less likely to report spending time with non-household members. However, it is difficult to calculate precise measures of sharing in 2020 because the BLS does not provide official weights for that wave of the ATUS. Furthermore, the ATUS did not collect time diaries in the beginning of the pandemic (Bureau of Labor Statistics 2021). In order to avoid these measurement issues, the paper stops its analysis in 2019.

Sharing 1975-2002

It is difficult to measure sharing before the ATUS started in 2003. High quality data on private vehicle sharing is available from the ACS and the decennial Census, which record journey to work. However, government surveys that track the individuals present during other activities could not be located. Furthermore, previous time diary studies only record whether the respondent is alone without giving a full list of the individuals present at an activity. The paper estimates housing sharing with location data from the American Heritage Time Use Survey (AHTUS) for select years and a demographic model to interpolate between those select years. The paper estimates food sharing with survey data from DDB Needham (Putnam 2000), AHTUS data on eating alone, and academic research on shared meals (Carlson 1969). The paper estimates private vehicle sharing with Census data on work carpools and AHTUS data on non-commute driving alone. The paper estimates dependent care sharing with a demographic model. Finally, the paper estimates data on leisure and miscellaneous sharing with data from the AHTUS on leisure alone, academic research on shared television viewing (Bogart 1956), and demographic models. In practice, those alternative datasets report sharing trends which closely match the private vehicle sharing trends reported in the decennial Census. Hence, the results shown in this paper would be very similar if private vehicle sharing was used to extrapolate all types of sharing.

Figure 3: Average Number of Household Members in Group

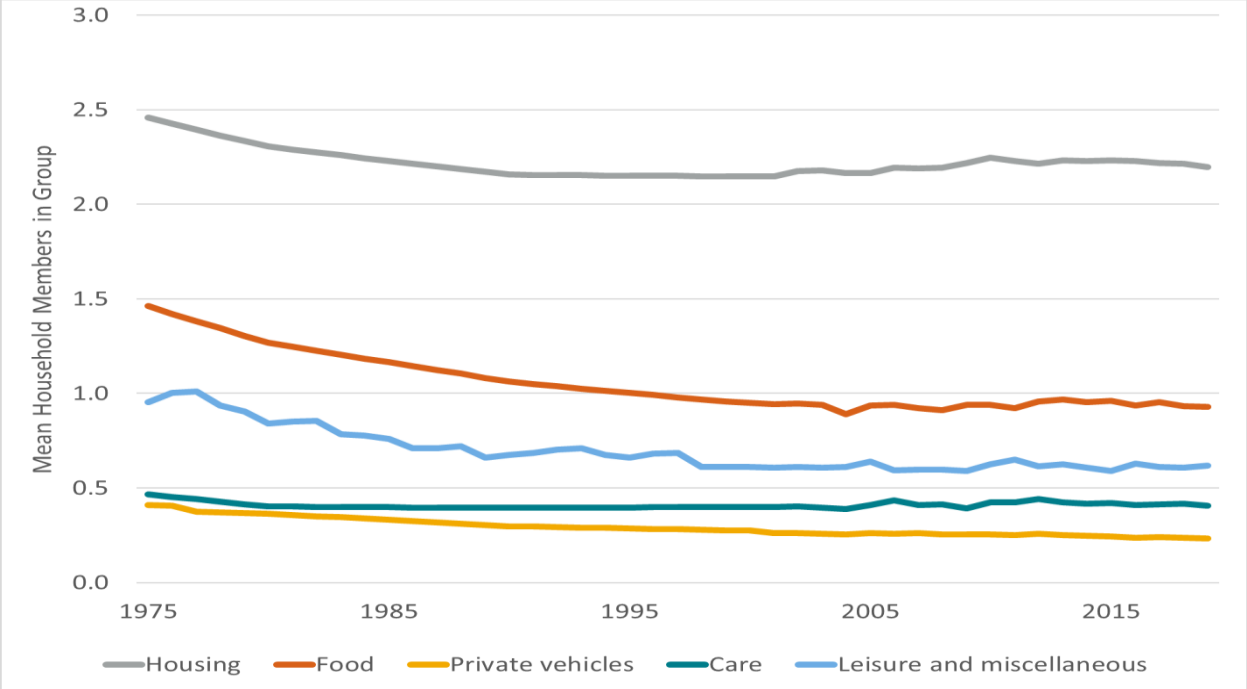
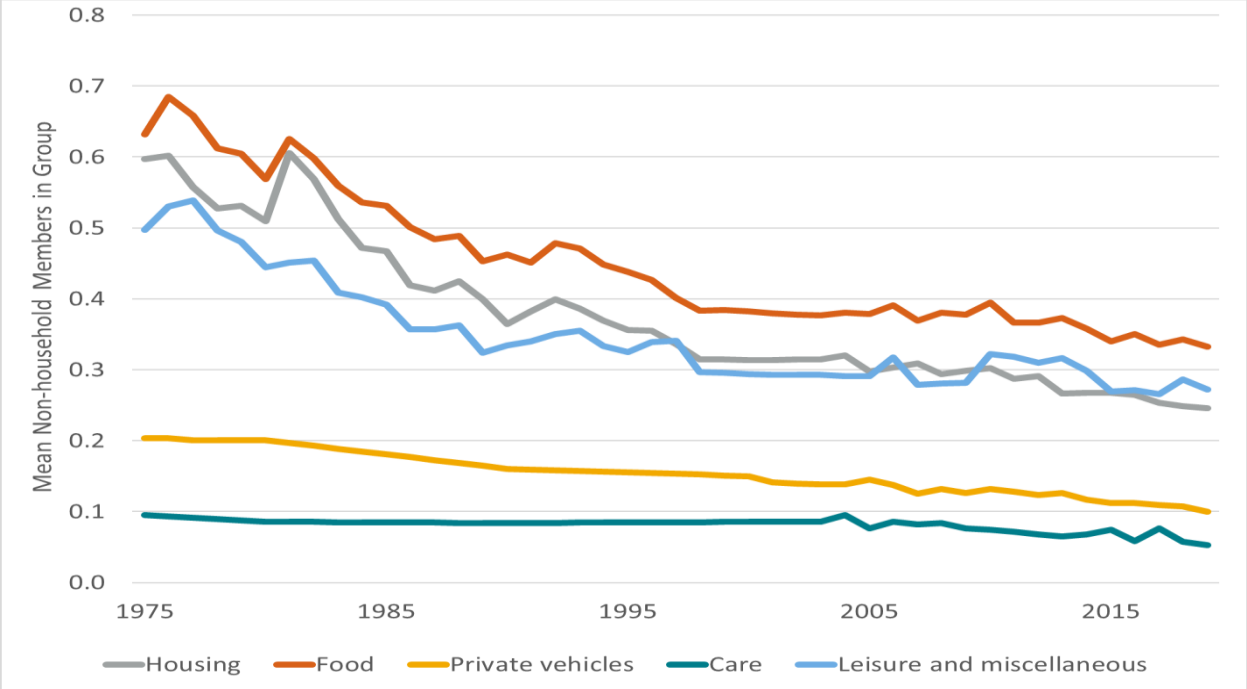


Figure 4: Average Number of Non-household Members in Group



Figures 3 and 4 show that very similar patterns as figures 1 and 2. Once again, every consumption category has more sharing within households than sharing across households. Furthermore figures 2 and 4 show that sharing across households declined at a relatively steady rate from 1975 to 2019. The annual data is noisy, but the decline does not appear to be associated with a single event like the Great Recession. In order to minimize the impact of short-term volatility, the paper's discussion focuses on comparing sharing in 1975 to sharing in 2019.

Section 3: Measuring the Cost Savings Associated with Sharing

Sharing reduces costs in many different ways. In some cases, cost savings are dictated by basic production technology. For example, a golfer needs the same greens to play in a foursome as he needs to play alone. In other cases, cost savings are driven by market pricing structure. For example, a restaurant might sell a large meal at a lower cost per calorie than a small meal (Vercammen et al. 2019). Finally, cost savings can be caused by government policy. For example, the tax system encourages employers to subsidize shared van commutes (Internal Revenue Service 2014).

This section does not study how groups divide payment. Some groups pay all bills from a common bank account. Other groups require each individual to pay their fair share from their individual bank account. Most individuals belong to multiple groups which each have their own system for dividing costs. For

example, a young man might pay nothing when dining with his parents, split the bill when dining with friends, and pay the full bill when dining with a date. This focus on costs rather than payments is consistent with national accounting rules for transactions in which payments do not match actual market prices (U.N. Statistics Division 2008, sec. 3.131-3.133).

Equivalence Scales by Consumption Category

This paper develops six separate equivalence scales, one for each of the following consumption categories: a) housing, b) food, c) private vehicles, d) dependent care, e) leisure and miscellaneous, and f) non-sharable. The cost for the first person in a group is set to one. The marginal cost to each additional person in a group is then determined by an equivalence parameter. None of the six equivalence scales developed in this paper match precisely with either the equivalence scale used by the U.S. poverty line (Orshansky 1965), the equivalence scale used by BEA's distributional accounts (Fixler et al. 2020), or the equivalence scale used by Eurostat (U.N. Economic Commission for Europe 2011). However, these six equivalence scales fall within the broad range of equivalence scales studied by researchers (Dudel et al. 2021) (Reeves and Pulliam 2019).

The housing equivalence parameter is taken from Renwick and Garner (2017). In their paper, housing is described as 'shelter and utilities', which is slightly narrower than the consumption categories that are included in 'housing' in this paper. Nevertheless, this paper uses their equivalence scale parameter without adjustment. In particular, the paper uses the 0.316 equivalence parameter from figure 7.

The food equivalence parameter is based on Renwick and Garner (2017). Figure 7 of their paper reports that 'food plus clothing' has an equivalence parameter of 0.589. Clothing is rarely shared (Salcedo et al. 2012), so its equivalence scale parameter is assumed to be 1. Furthermore, BEA's NIPA Table 2.4.5U reports that Americans spent more than 4.4 times as much on food as on clothing in 2017 (0.4 trillion versus 1.8 trillion). Hence, the paper calculates an equivalence parameter of 0.410 (0.589-1*0.4/(0.4+1.8)) for food alone.

It might seem that the 0.410 food equivalence parameter only applies to home-cooked meals. It is certainly true that restaurants typically charge per menu item without any explicit discount for group size. However, larger menu items are typically sold at a lower price per unit (Dobson and Gerstner 2010). One recent analysis suggests that the marginal cost per calorie associated with upsizing a fast food meal is approximately half of the cost per calorie of standard sized fast food meal (Vercammen et al. 2019). In addition, restaurants often provide individual diners with worse service (Bruni 2008). Accordingly, a large group which reserves a table together and pools their menu items can enjoy significant economies of scale. For simplicity, the paper uses the same equivalence parameter for home-cooked meals, takeout meals, and restaurant meals.

The private vehicle equivalence parameter is taken from a study of work carpools (Department of Transportation 1979). That study reports that adding one more person to a carpool only increases costs

by $249 relative to a fixed cost of $1857. Hence, the paper uses an equivalence scale parameter of 0.13 (249/1857) for private vehicles travel.

The dependent care equivalence parameter is calculated from the task detail provided by the ATUS. To be clear, passive care is not counted as household production (Bridgman et al. 2022) or included in this paper's analysis of sharing. Approximately, 40 percent of active care time is spent on activities specific to a particular dependent. The paper assumes that those specific activities have an equivalence parameter of 1. For example, changing two diapers takes twice as long as changing one diaper. The paper also assumes an equivalence parameter of 0.5 for activities which are not specific to a particular dependent. Hence, the average equivalence parameter is 0.7 (0.4+0.6*0.5) for dependent care.

The category 'leisure and miscellaneous' includes recreational goods, recreational services, and miscellaneous products. Previous research on the equivalence parameter for these products could not be located. However, many of the recreational goods and services can be shared by many users without additional intermediate costs. For example, multiple people can watch a single football game together and multiple people can ride in a boat together. In this respect, recreational goods and services are similar to private vehicle transportation. Accordingly, the paper uses 0.13 as its equivalence scale parameter for this category, the same as the equivalence scale parameter for private vehicles.

The category 'non-sharable' covers all products with minimal economies of scale. There are three main reasons why a product might have minimal economies of scale. Most obviously, some individualized products are inherently unsharable. For example, surgery is a personal service which can't be split between individuals or transferred from one user to another. In addition, many services are already shared by the market sector and can't be shared further. For example, a single airplane ticket only buys one seat on a shared plane. Finally, some services have a payment structure that doesn't reward sharing. For example, a credit card company might charge the same interest rate regardless of how many authorized users are on the account. The paper sets the equivalence parameter for all three types of products at exactly 1. Over the last few decades, non-sharable consumption has grown much faster than the rest of personal consumption expenditures. Due to this growth, the cost savings associated with sharing impact a smaller share of nominal consumption.

Calculating Average Cost Savings from Sharing Across Households

Cost savings for each consumption category are calculated by comparing actual costs per person with the hypothetical average cost per person that would occur if all non-household members left the group and consumed the same item on their own. For example, imagine a worker who commutes with one household member and one non-household member in the car. This group faces a cost of 0.42 per person [(1+2*0.13)/3]. If there is no sharing across households, then the non-household member drives separately and the group faces an average cost of 0.71 per person [(2+0.13)/3]. Hence, sharing across households saves 41 percent (1-0.42/0.71) of commuting costs in this example.

The paper assumes that group equivalence scales have a linear functional form and average spending per person is not dependent on group size or composition.[6] Thanks to those two assumptions, the mean number of household members and non-household members in a group is a sufficient statistic to measure the cost savings associated with sharing across households. The general formula for calculating cost savings for each consumption category is:

(1-Equivalence Parameter)*(#Non-Household Members)/[1+(#Group Members)]

Total cost savings are calculated by weighting each category's cost saving by its nominal budget share. In turn, budget shares are calculated by adding market purchases in each category (from BEA' NIPA Table 2.4.5U) and household production in each category (from the ATUS's activity description).[7] The exact level of cost savings calculated is somewhat sensitive to the allocation of items between categories and other assumptions. However, the trends in cost savings over time are robust.

Figure 5: Average Cost Savings from Sharing Across Households 1975-2019

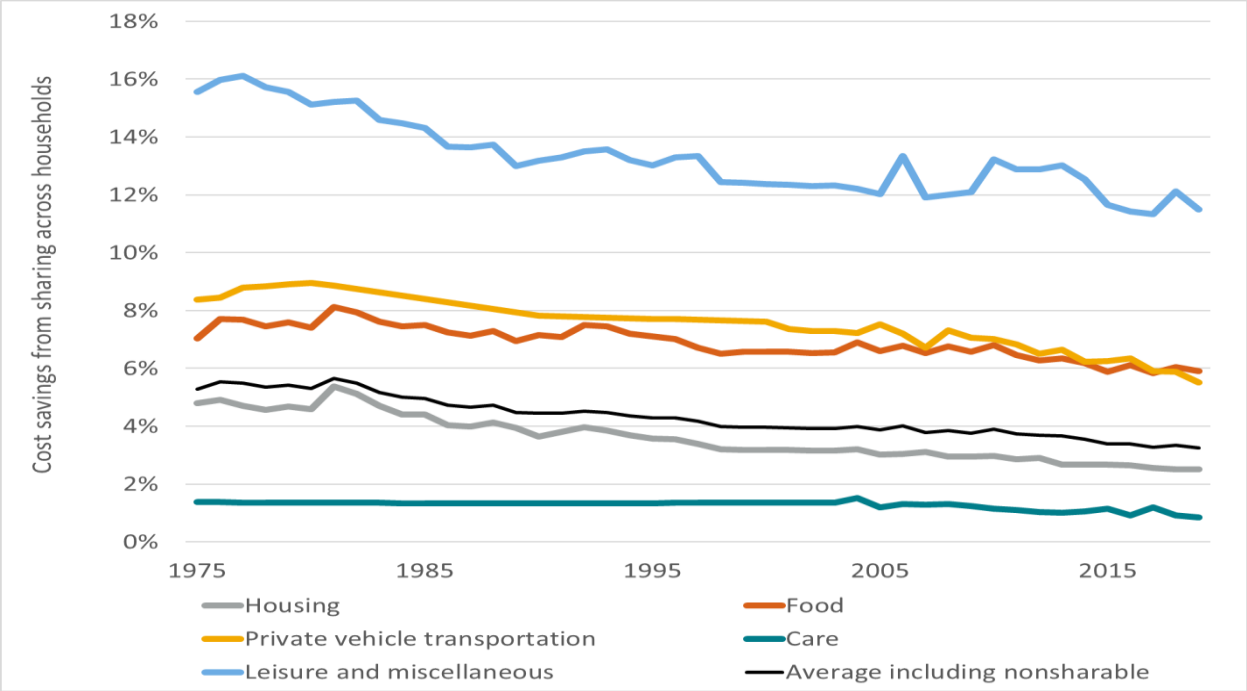


Figure 5 shows that the cost savings from sharing across households fell steadily over time. The declines shown in figure 5 are economically significant. Between 1975 and 2019, the average cost savings associated with sharing across households fell from 5 percent of total consumption to 3 percent of total

[6] This assumption is consistent with a Cobb-Douglas utility function where demand elasticity precisely equal to -1.
[7]Reflecting the ATUS sample, the population studied in this section excludes individual living in group housing. Accordingly, the paper exclude services like nursing home care from its analysis.
Figures 1 and 2 only track individuals who are old enough to be included in the ATUS. The paper uses ATUS data on the presence of children, demographic models, and expert judgment to impute sharing for children.

consumption. Over the same time period, the paper calculates that real consumption per person grew at 55 percent. Hence, tracking sharing across households lowers the growth rate for equivalized consumption from 1.02 percentage point per year to 0.97 percentage point per year.

Section 4: Sharing by Education

It is hard to study whether sharing ameliorates or exacerbates inequality across individuals. Datasets like the Consumer Expenditure Survey (CEX), which track spending, are typically small and do not contain estimates of household production time or sharing across households. Conversely, datasets like the ATUS, which contain measures of household production and sharing across households, have limited data on spending. In addition, the ATUS's one day of diary collection cannot easily be compared to the CEX's three month data collection window (Garner and Safir 2021). Furthermore, the quality of household production is difficult to observe or value (Dulaney et al. 1992). Because of these data limitations, the paper cannot test whether the cost savings from sharing across households are positively or negatively correlated with individual consumption.

Instead, the paper studies whether sharing ameliorates or exacerbates inequality across educational cohorts. There is a very large literature demonstrating that education is positively correlated with wages in the market sector (Psacharopoulos and Patrinos 2018) and a substantial literature demonstrating that education is positively correlated with nonmarket productivity (Heckman et al. 2018). The CEX, ATUS, and ACS all record education for individuals in their sample. Hence, it is possible to calculate a measure of average spending, average household production, and average sharing for each educational cohort.

The same ATUS data used to measure aggregate sharing is also used to measure sharing by education. The ATUS includes some individuals who are still attending school, and so current education may not match final education. However, excluding young adults from the sample does not change the qualitative results shown in this section. In order to minimize volatility, the paper combines all seventeen ATUS sample years into a single sample and then splits that sample by individual education.

Figure 6: Average Number of Household Members in Group 2003-2019

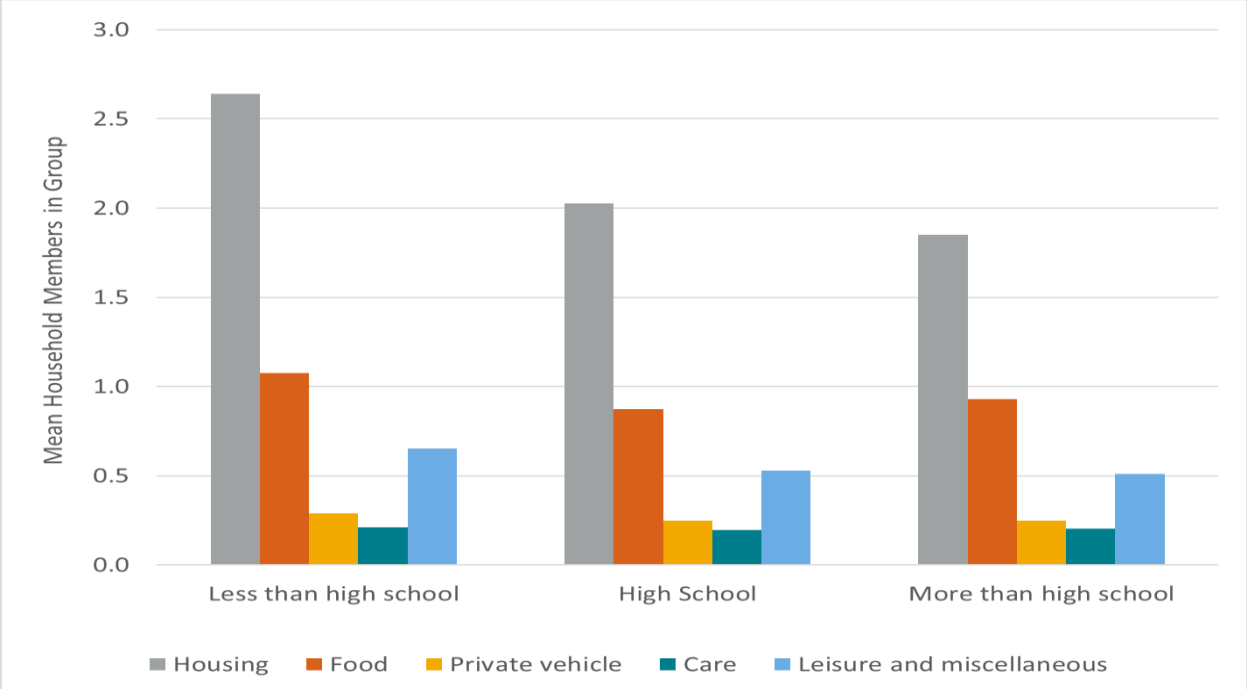


Figure 6 shows a clear negative correlation between education and sharing within households. This negative correlation is caused by complex households. All three educational groups have a similar propensity to live with romantic partners and young children. But more educated individuals are less likely to live with collateral relatives or non-relatives.

Figure 7: Average Number of Non-household Members in Group 2003-2019

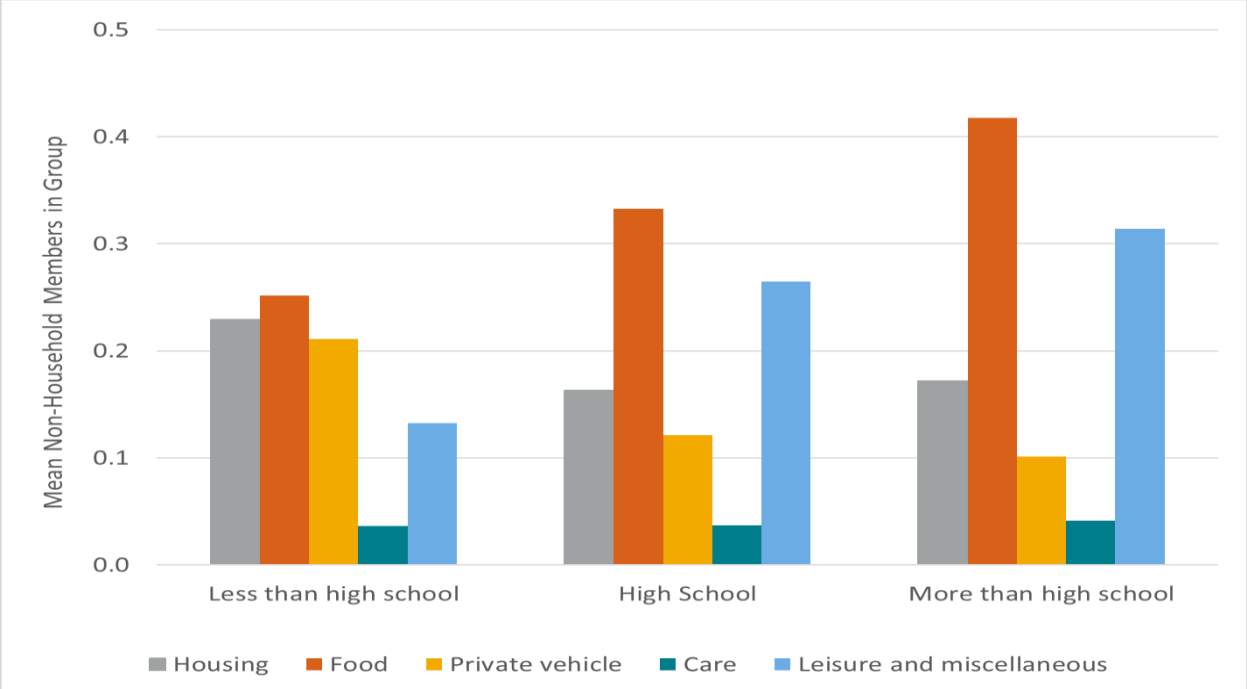


Figure 7 shows an ambiguous relationship between education and sharing across households. Individuals with more education are much more likely to share food. The different in food sharing is driven by restaurants. All three educational groups frequently share restaurant meals with non-household members but rarely share other meals with non-household members. Individuals with more education are more likely to eat meals in a restaurant, and so they share a higher percentage of their meal with non-household members. In contrast, individuals with more education are much less likely to share private vehicles. Unlike food sharing, the difference in private vehicle sharing is not driven by compositional effects. Rather, individuals with more education are less likely to share every type of driving. Average cost savings by education are calculated using the same budget shares used in figure 5.

Figure 8: Average Cost Savings from Sharing Across Households by Education, 2003-2019

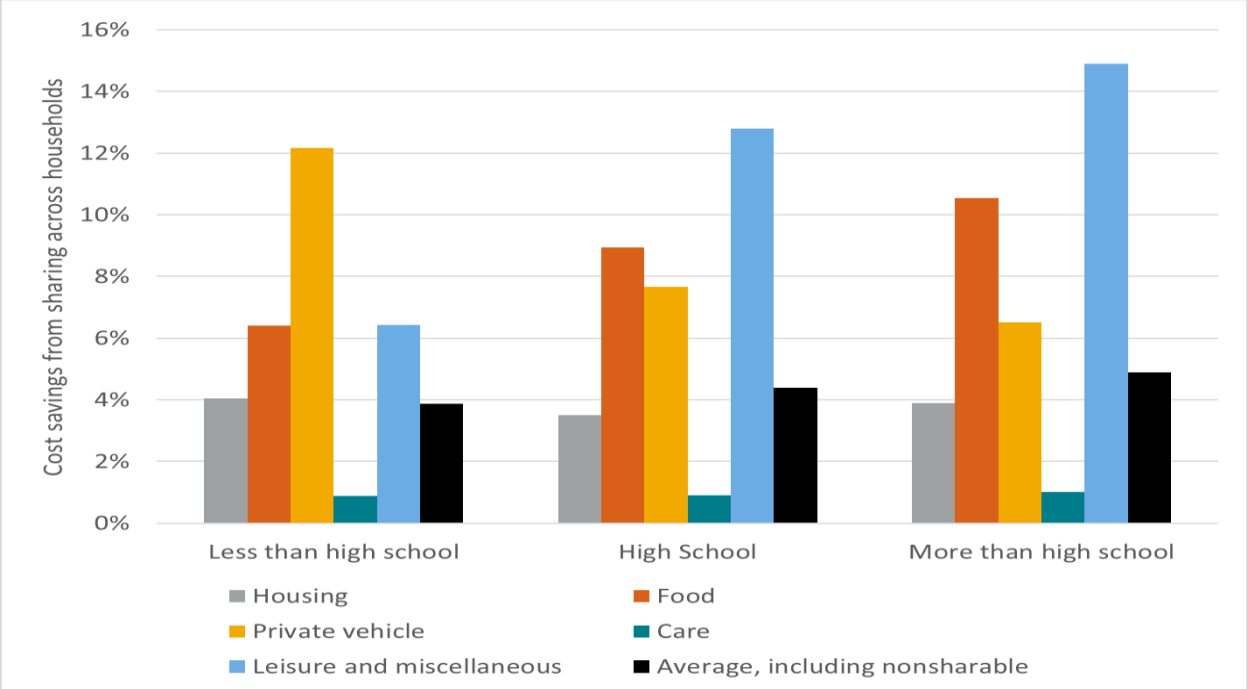


Figure 8 shows that college-educated individuals reap a larger cost savings from sharing than the less educated individuals. Intuitively, food accounts for a much larger share of total consumption than private vehicles. As a result, the higher food cost saving enjoyed by college-educated individuals sharing restaurant meals more than cancel the lower private vehicle savings. Based on the CEX, the paper calculates that college-educated individuals spend 53 percent more than less educated individuals. The differences in cost saving shown in figure 8 exacerbate those spending differences so that the college consumption premium rises from 53 percent to 54 percent.

Conclusion

This paper measured sharing across households with data from the American Time Use Survey and other sources. The paper then valued the cost savings associated with that sharing using pre-existing equivalence scales (Renwick and Garner 2017). In 2019, the paper calculated that equivalized costs are 3 percent lower when sharing across households is tracked consistently with sharing within households. Between 1975 and 2019, sharing across households fell by half. Hence, the paper calculates that equivalized cost growth rises by 0.05 percentage point per year when sharing across households is tracked consistently with sharing within households. Educated adults share more across households and so they face slightly lower costs. In other words, the long-recognized problems of slow economic growth (Boppart and Li 2021) and low consumption for less educated individuals (Heckman 2018) become even worse when costs are equivalized for sharing across households.

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