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Abstract

This research uses a unique data set to answer some fundamental questions that have not previously been fully addressed. Specifically, it provides a summary of the debt service patterns of United States consumers that is derived from de-identified Chase data. The primary purpose is to get a sense of real-world debt service trends through different life stages and, therefore, more realistically save for and live in retirement. To accomplish this, we will provide insights related to important questions that underlie retirement planning assumptions. What is the average level of debt service at various life points? What is the average composition of payments across different debt types? How much do households typically pay, on average, for the specific types of debt they support? Are there specific life-cycle patterns that occur for different types of debt service? Do wealthier households manage debt service differently from households with lower asset levels? This study explores these questions and outlines high-level implications for retirement planning.

Keywords

age range, asset level, auto loan, average annual debt service, debt life cycle, debt service patterns, home equity loans/lines of credit, income replacement, mortgage, retirement planning, revolving credit card, spending transaction data, student loan

Disciplines

Economics

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Paying it back: Real-world debt service trends and implications for retirement planning

Anne Lester, Katherine Santiago, Je Oh, Livia Wu, Ekaterina Chegaeva

Abstract

This research uses a unique data set to answer some fundamental questions that have not previously been fully addressed. Specifically, it provides a summary of the debt service patterns of United States consumers that is derived from de-identified Chase data. The primary purpose is to get a sense of real-world debt service trends through different life stages and, therefore, more realistically save for and live in retirement. To accomplish this, we will provide insights related to important questions that underlie retirement planning assumptions. What is the average level of debt service at various life points? What is the average composition of payments across different debt types? How much do households typically pay, on average, for the specific types of debt they support? Are there specific life-cycle patterns that occur for different types of debt service? Do wealthier households manage debt service differently from households with lower asset levels? This study explores these questions and outlines high-level implications for retirement planning.

Key words: age range, asset level, auto loan, average annual debt service, debt life cycle, debt service patterns, home equity loans/lines of credit, income replacement, mortgage, retirement planning, revolving credit card, spending transaction data, student loan

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Research regarding retirement planning in the United States has mainly focused on evaluating saving and spending patterns. Both are important inputs to help evaluate whether people are accumulating the adequate retirement assets necessary to generate acceptable post-retirement replacement income levels. Analyzing such data can help set realistic targets for what individuals might need to maintain general lifestyle standards throughout their golden years, as well as help establish sustainable withdrawal amounts that minimize the risk that assets will be depleted prematurely.

Of course, ‘spending’ can cover a wide range of categories, from monthly household bills, to health care costs, to general consumption. Debt repayment is a unique type of spending that, to a certain extent, can be even more important than other areas of general consumption. Once someone obtains a 30-year mortgage, the borrower is committed to a monthly payment until the loan is paid in full. By comparison, it is often easier to reduce other spending categories if necessary. Thus committing to a debt service may have a considerable impact on individuals’ saving and spending abilities.

Understanding debt patterns at various life stages can offer an important insight to help people make the most of their financial journeys. Past research into household debt service, however, has been somewhat challenging due to the lack of comprehensive data sets that are both highly accurate and highly granular. Most data has been gathered by one of two methods:

- *National data*, such as the Federal Reserve and the Census Bureau, report on various types of debt payments based on actual loan and repayment information, providing information that tends to be high level, with limited or no ability to dissect by age or other potentially important characteristics.

- *Research surveys* can offer the ability to drill down to the individual level but may be inaccurate if responders provide misinformation on their financial records, either knowingly or unknowingly, due to poor memories or journaling habits, as well as behavioral biases.

To help individuals and their financial advisors make better assumptions about the role of debt service in retirement planning, we recently conducted extensive research into the real-world debt service patterns of millions of de-identified Chase households, applying rigorous security protocols to ensure all customer data were kept confidential and secure. This robust dataset provides a realistic snapshot of debt service that can be sliced at very precise levels, offering new insights into how repayment trends evolve at various age points and at different wealth levels—both of which may have implications for retirement planning. Of note, we found:

- Although average debt service declines throughout retirement, it remains at notably higher levels than might be typically expected, particularly in the early years.
- Some types of debt service, such as mortgage payments, exhibit a clear average life cycle, but others, such as auto loan payments, do not.
- Wealthier households exhibit higher average debt service levels, but their debt-to-asset ratios tend to be lower.

A more detailed description of our analysis and observations is provided in the sections that follow.

Our Dataset

As part of one of the world's largest financial institutions, we have access to a unique dataset maintained by JPMorgan Chase & Co., reporting spending transaction records for more than 31

million households. We began our analysis by filtering this universe to include clients who conducted significant banking activity and likely did most of their spending using Chase payment methods.

First, we focused on households with at least \$500 in deposits and five or more expenditures for each month of 2017, bringing the universe to 13.7 million. Next, we narrowed this group to the 10.6 million included in the data records in each of the 12 months, and from there to the 9.6 million where customers were unique to only one household. The latter eliminates the potential for duplicate information to be counted from households which split due to divorce, merged due to marriage, or changed for another reason. Counting only households representing clients between 25 and 100 years of age with assets and income data brought the number to 7.4 million, and then, finally, to 5.1 million, including only those who spent a significant portion of their estimated income at Chase (at least 50% of gross income or the median amount spent by households with similar assets). This filtering methodology is highlighted in Figure 1.

Figure 1 here

Data validation. The volume of spending records offered by these 5.1 million households was much larger than any publicly-available dataset. This allowed us to parse the households into segments large enough to provide statistical confidence that the results were representative of the group being analyzed.

Of course, we are mindful that the data reflected the behavior of Chase customers, who as a whole tend to be centered in urban areas. To help validate that the patterns exhibited by this universe remained generally reflective of the broader US population, we compared the average debt service for various loan segments with corresponding national averages (see Figure 2). While there were some differences to address, the overall trends validate our data.

Figure 2 here

Our student loan payment numbers are slightly less than the national average, but this is likely due to our dataset covering the full gamut of age ranges, whereas the national average is restricted to age 20-30. Similarly, our auto loan average is somewhat lower, probably due to its covering all types of auto debt including leased and used vehicles, while the national average includes only loan financing for new cars, which are typically more expensive. The differences between the mortgage averages is more pronounced, but this may be a result of Chase's concentration in urban regions where real estate prices are usually higher compared with more rural communities.

The Big Picture: Debt Service by Age and Debt Type

With this robust dataset, we can track average debt service for 12 months in 2017 by various loan and credit categories. We segmented these averages by age group, determined by the age of the highest-spending consumer in each household. As shown in Figure 3, this output offers a detailed snapshot of average debt service patterns at different life stages. The number of households in each age segment is presented in the upper right corner of each chart.

Figure 3 here

Trends by age. One of the clearest findings is that total household average debt service grows across the late 20s, 30s, and early 40s, reaching a peak between age 45-49. Interestingly, our *Ready! Fire! Aim?* research, which analyzes 401(k) participant saving patterns, shows that the percentage of plan loans also peaks within a similar time frame, between age 40-50 (JP Morgan Asset Management 2007). The peak begins to fall in the 50-54 age group and moves lower for each successive older segment. The downward debt trend with age is sensible, as households are

usually expected to pay down their debt obligations and start to spend less as they transition into and move through retirement, which typically involves a smaller, more fixed income for living expenses.

Nevertheless, overall average debt payments for these older age cohorts remain substantial, albeit lower, throughout retirement. On average, households continue to make payments for mortgages, auto loans, credit card debt, and even student loans well into their 60s, 70s, and beyond. This suggests that the conventional view of enjoying retirement largely debt free after paying off a mortgage and driving the same paid-for car appears outdated for many.

Trends by debt type. Another key takeaway is that the average amounts spent on certain types of debt service evolve across the life course, while others remain relatively steady. For example, mortgages begin to make up by far the largest average repayments starting around the early to mid-30s. Prior to that, credit card revolving debt represents the highest average debt service obligation for the younger age segments. Credit card revolving payments continue to be the second-largest average debt service category from this point onward, remaining relatively high during the working years and throughout retirement, especially early on.

Average auto loan debt payments remain fairly constant across age segments, as households appear to buy replacement cars periodically throughout their lifetimes, even into their much later years. Student loan payments, on average, also continue well into retirement. Average home equity loans and line of credit debt service are low in the younger years and only begin to gain traction after age 50.

Average Annual Repayment Amounts

The averages presented in Figure 3 reflect the entire universe, including households within and without each type of specific debt service category. While this is necessary to understand the average composition of debt for the average household across age segment, not all households hold all of these debt categories. The logical next step in understanding the real magnitude of each debt category is to consider only households actively supporting a specific debt service. Accordingly, the averages shown in Figure 4 focus on payment averages for households that actually hold each kind of debt. This provides a look at how much households tend to pay annually, on average, for each debt category they are currently servicing.

Figure 4 here

In this analysis, mortgages remain the largest average debt service across age segments, peaking in the mid- to late 40s. Clearly, this category of debt service represents a long-term commitment of a significant dollar amount. More surprising is the significant shift up in home equity loans and lines of credit. Annual debt service for this debt type jumps to the second-largest average payment type across all ages, instead of the relatively small amounts shown in Figure 3. Thus not many households utilize this sort of debt, but those that do use it a lot and at consistently higher amounts than most other categories.

Households that take on auto loan, credit card, and student loan debt also exhibit similar repayment levels within each of these categories, regardless of age. A new car costs the same whether a 40-year-old or a 70-year-old decides to finance it.

Debt Service Life Cycles

Evaluating the number of households servicing each type of debt and how much they pay per year, on average, at various ages helps highlight debt service patterns across life stages. The

order of debt the average household takes on usually starts with credit cards and student loans, continues with auto loans and mortgages, and ends with home equity loans or lines of credit.

Figure 5 illustrates the clear debt service life cycle. Average student loan debt service, for example, peaks at three distinct points, at ages 30–34, 50–64, and again in the mid-80s (see Figure 5). This is likely the result of people paying off, respectively, their own educations, those of their children, and those of their grandchildren. Although the average dollar amounts for each peak are comparable, the number of households making student loan payments steadily declines and the peak-period time frames tend to expand. Most people attend college and attain additional education at roughly the same ages, but when they have children can vary greatly, and this naturally affects the volume and timing of the later peaks.

Figure 5 here

Mortgages also follow a clear debt service life cycle (see Figure 6). The number of households and average annual repayment amounts climb across households in their 20s, 30s, and 40s; both begin to peak at ages 40 to 49, then steadily decline for ages 50 and beyond.

Figure 6 here

Credit card debt service displays a life cycle that peaks between ages 30 and 50, with a major point of differentiation—the sheer volume of households supporting credit card debt dwarfs the other debt categories (see Figure 7). This broad usage, coupled with relatively high average annual repayment amounts, can make the segment particularly dangerous if problems in household debt service start to emerge. Credit card debt service can have potentially alarming impacts on a household's financial wellness because it is usually subject to higher interest rate charges and accumulating credit card debt can risk balance compounding. Additionally, any payment

deterioration can be quickly detected by credit reporting agencies, which in turn may negatively affect the household's ability to secure other kinds of financing.

Figure 7 here

Neither auto payments nor home equity loans and lines of credit exhibit a clear life-cycle pattern (see Figures 8 and 9). Annual average payments for households using these types of debt remain relatively stable across age segments, though the number of households making payments follows a clear pattern. Auto loan volume starts at a relatively high level that grows across the 20s, 30s, and 40s, and peaks at ages 45-49. In contrast, home equity loan and line of credit volume remains relatively low until the late 40s and peaks in the late 50s.

Figure 8 and 9 here

Debt Service and Asset Levels

Our colleagues in the Chase Consumer and Community Bank (CCB) have developed a rigorous proprietary model to estimate investable wealth for their clients with a relatively high degree of confidence. The estimates are provided in ranges rather than specific amounts to ensure client anonymity, and the components include deposits, mutual funds, and stock and bond investments held both at and away from Chase. Figures 10 and 11 summarize the average annual debt service by age for households with asset ranges between \$50,000–\$100,000 and \$500,000–\$1 million.

Figures 10 and 11 here

Results show, first, that the number of higher-asset households is skewed to older age groups due to the increased probability of owning more wealth later in life. Total debt service also peaks at a later age for these households, with steeper payment declines. Second, average debt service is

higher for wealthier households, but assets increase at a much higher rate. Hence, average debt ratios for wealthier households are much healthier than for lower-asset households. Despite these differences, overall debt service composition is not materially different between the two groups.

These trends may reflect different rationales for carrying debt in the two segments. Lower-asset households may be taking on debt earlier and paying it off later out of necessity. Wealthier households may have the luxury of taking on higher debt to enjoy a better quality of life after they have accumulated meaningful assets, or they may be using debt more strategically, such as by taking advantage of low interest rates to free up assets for other opportunities. The stronger asset-to-liability ratio for the latter households also affords a much greater degree of elasticity to navigate fluctuations in interest rates, financial markets, or short-term income.

Implications for Retirement Planning

Our granular picture of debt service trends provides insight into how they might affect retirement planning and replacement income strategies. At a high level, it appears that debt service may be a much larger part of retirement spending than previously thought.

Many households in retirement continue to make mortgage payments. Households also continue to make sizable annual credit card payments to service revolving balances even well into retirement, which may be of particular concern given the nature of this debt and how quickly it can fall into a debt spiral if mismanaged. Car payments often continue throughout retirement as well, at only slightly lower levels than during the working years. So too do student loan payments, as older households may take on the educational expenses of other family members.

These insights can help us develop more realistic plans around Americans' potential retirement funding needs and how best to reach them. This may include probable areas of course

correction that might prove valuable for positioning them for greater long-term success—whether scaling back debt usage in certain areas or simply creating more pragmatic expectations for the types and levels of debt service that households may take on or continue to support in retirement.

Conclusion

Debt service is intrinsically linked to household fiscal health, but much past research in this area has faced challenges due to the structures of national data sources, and accuracy, based on self-reported data-gathering. Our research offers one of the first detailed snapshots of real-world debt service patterns by age, loan type, and asset level. Our findings suggest that the fundamental nature of retirement has changed. People are living longer, healthier lives, and most are relying on self-funded retirement plans to help meet their replacement income needs. Now we know that a substantial number of households also remain active debt consumers as they move into and transition through their retirement years.

Understanding these debt life-cycle patterns can help us develop more realistic views of what retirement may look like for different households and how better to address their financial needs, both in terms of saving adequate funding levels and introducing sustainable replacement income approaches. These insights might also be used to adjust current standard industry methodologies for calculating post-retirement income replacement targets, which currently tend to focus on spending and taxes.

It will be interesting to see how these current debt trends evolve over time, as well as how they may connect to other critical retirement preparedness areas, such as 401(k) investment and saving behaviors and overall retirement spending patterns—all key areas we have identified for

additional research. Recognizing and effectively applying these types of real-world behaviors can help position people on a safer retirement path, wherever they may be on their financial journeys.

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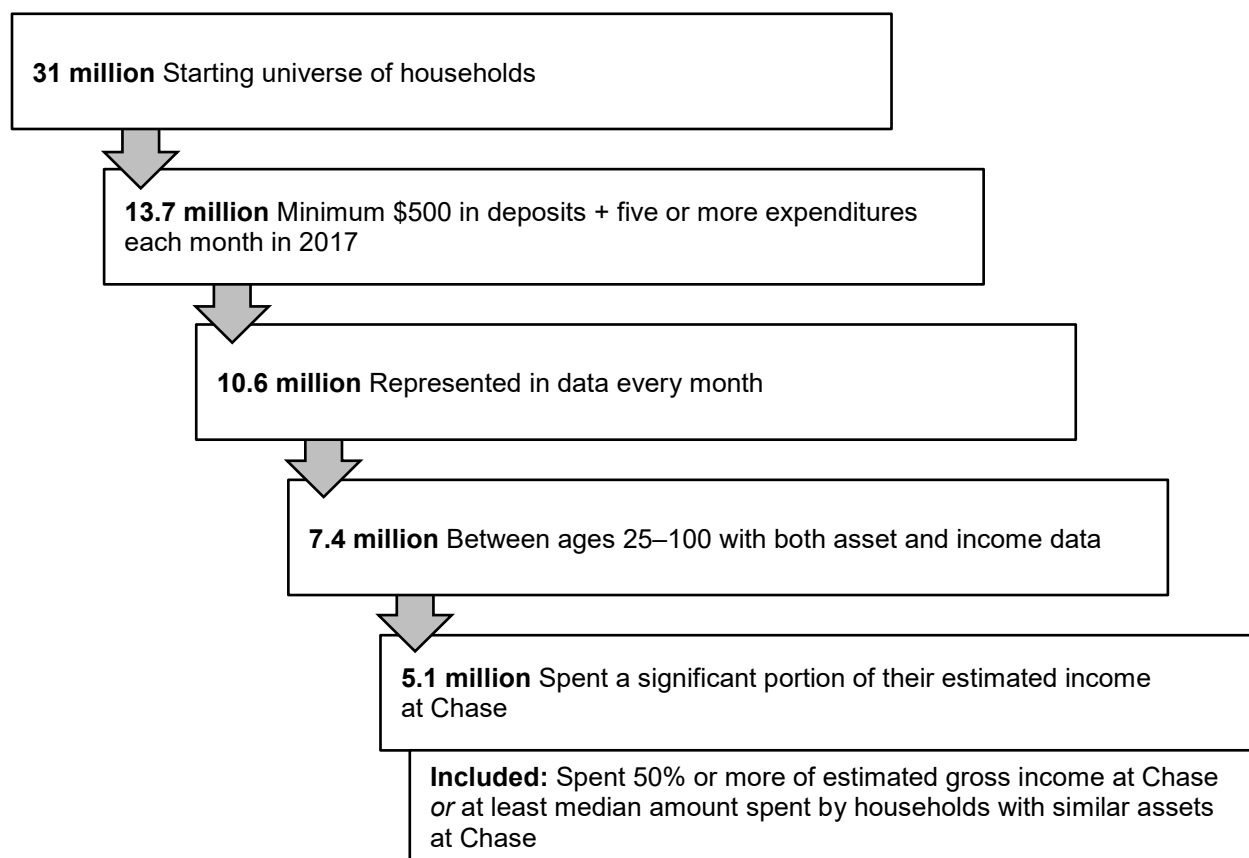


Figure 1. Data filtering methodology

Note: Starting universe of 31 million households with both JPMorgan Chase credit card and banking relationships through year-end 2017. Chase credit card data excludes certain Chase co-branded cards.

Source: Authors' calculations from J.P. Morgan Asset Management, based on Chase data.

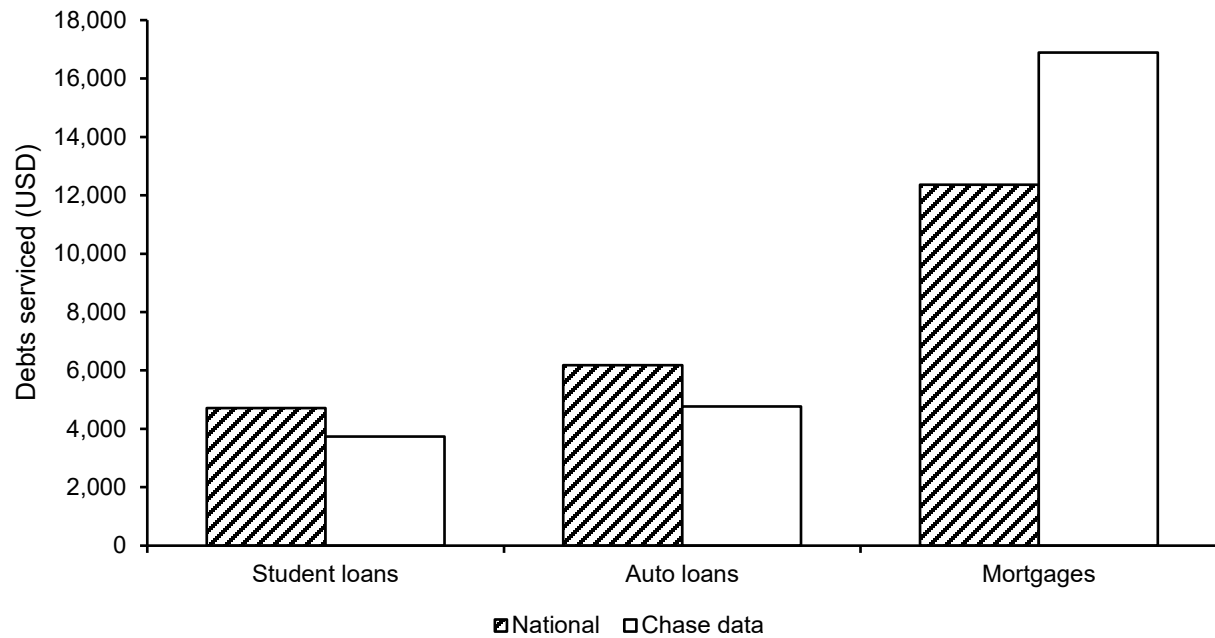


Figure 2. Chase data debt service averages versus national averages.

Note: Chase averages based on 5.1 million households, of which 0.86 million exhibited positive annual debt service for student loans, 1.4 million for auto loans, and 1.5 million for mortgages.

Source: Federal Reserve (2016); Experian (2017); Census Bureau (2015).

Number of households by age

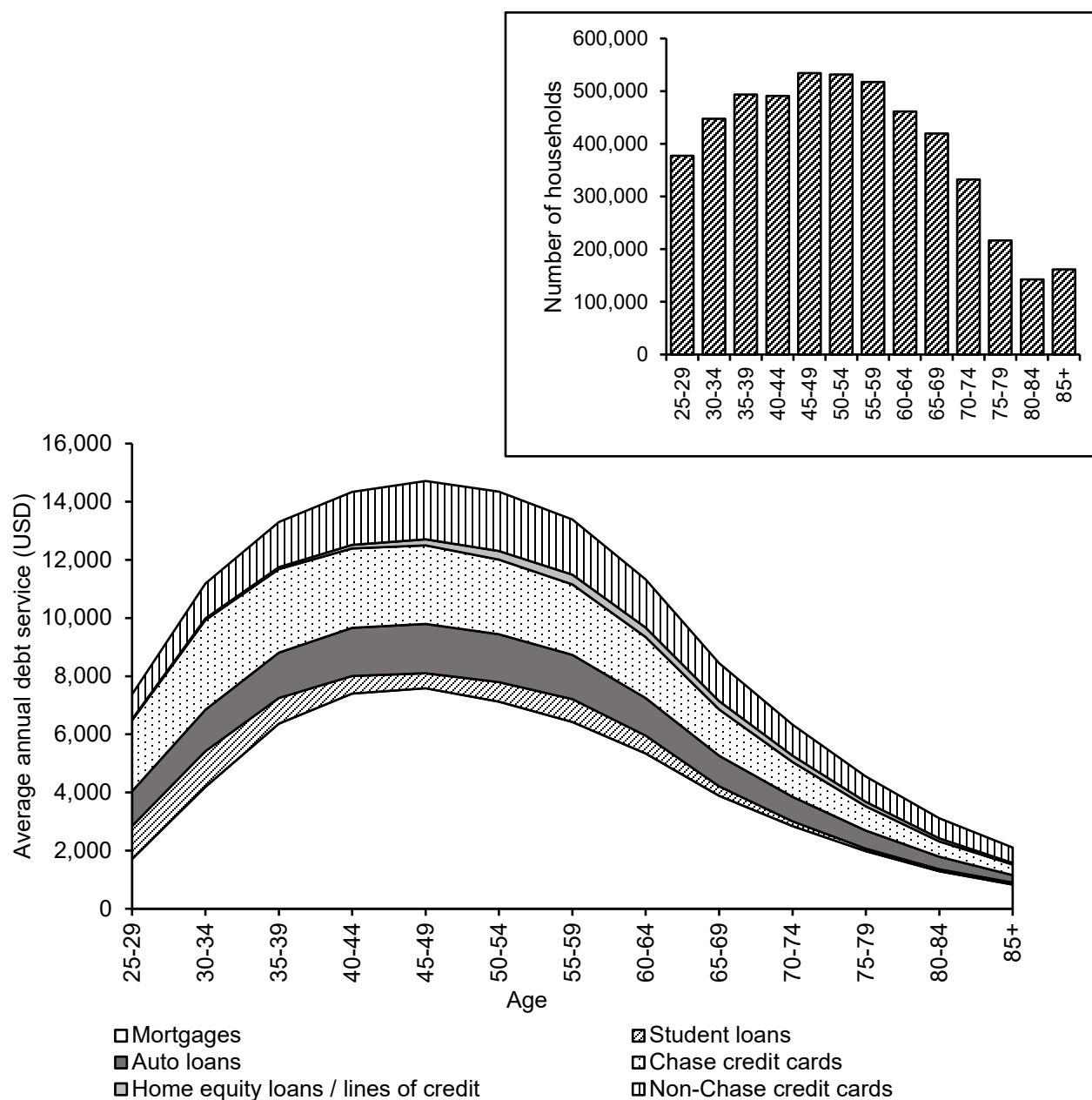


Figure 3. Average annual debt service patterns by age for all households

Note: Based on 5.1 million households whether or not they hold a particular category of debt. Extreme outliers excluded so that overall averages are not skewed. Average credit card payments are separated into two groups: Chase credit cards, which offer direct, detailed data, and non-Chase credit cards, from which we are able to infer information based on overall household debt service and general spending patterns. Credit card debt service data includes only revolving balances in order to focus solely on credit card debt versus broad credit card usage, which would be more reflective of spending patterns than debt accumulation.

Source: Authors' calculations from J.P. Morgan Asset Management, based on Chase data.

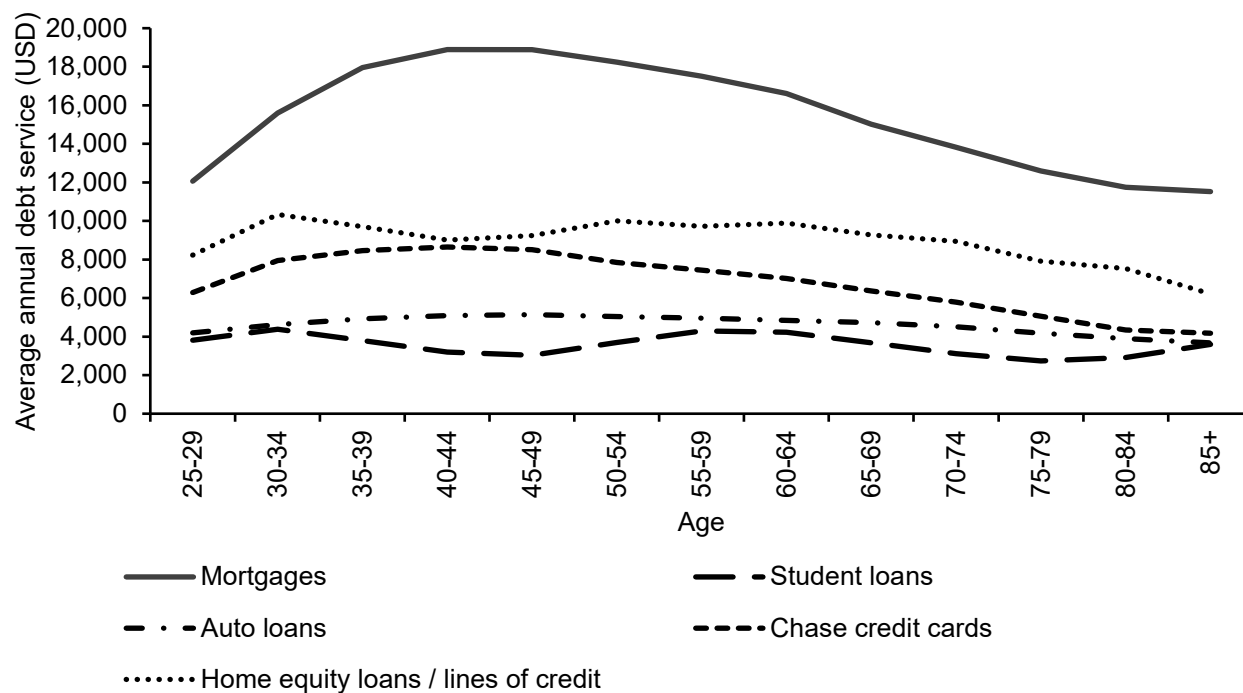


Figure 4. Average annual debt service patterns for households with a particular debt type.

Note: Based on 5.1 million households, if they hold the particular category of debt.

Source: Authors' calculations from J.P. Morgan Asset Management, based on Chase data

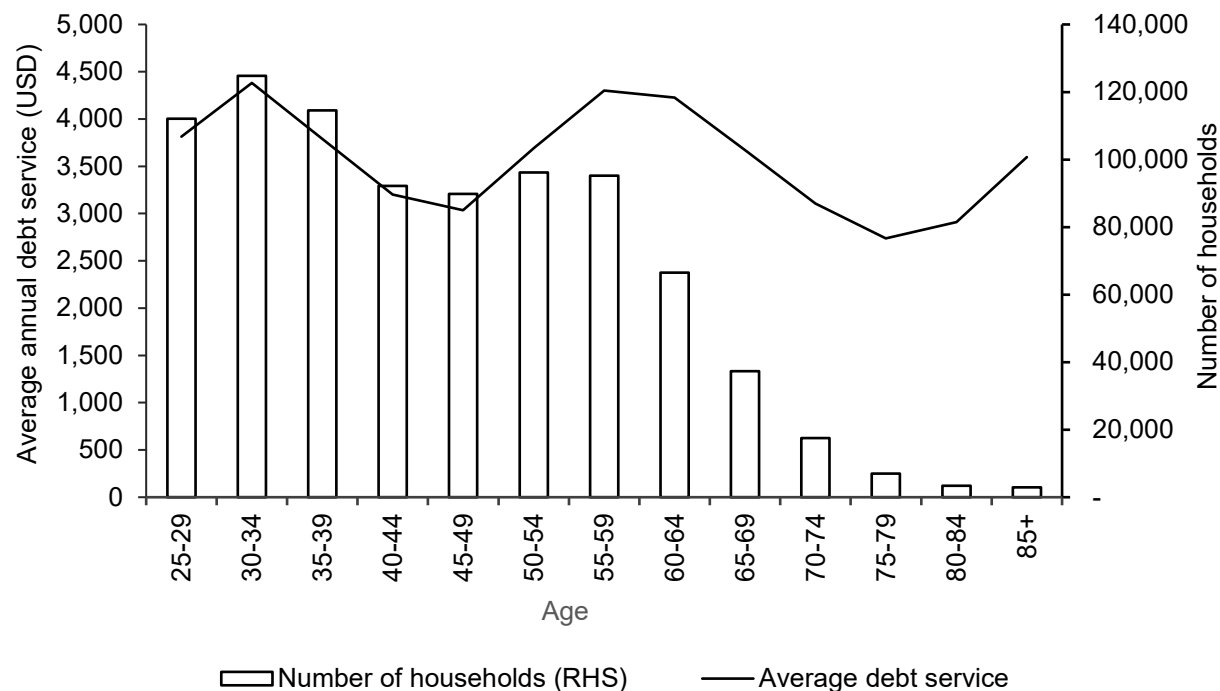


Figure 5. Annual debt service for households with student loans

Note: Data based on the following number of households holding a particular category of debt from the 5.1 million overall data set: 859,402 servicing student loan debt, 1,540,324 servicing mortgage debt, 2,643,601 servicing Chase credit card debt, 1,409,649 servicing auto loan debt, and 103,481 servicing home equity loan/line of credit debt.

Source: Authors' calculations from J.P. Morgan Asset Management, based on Chase data.

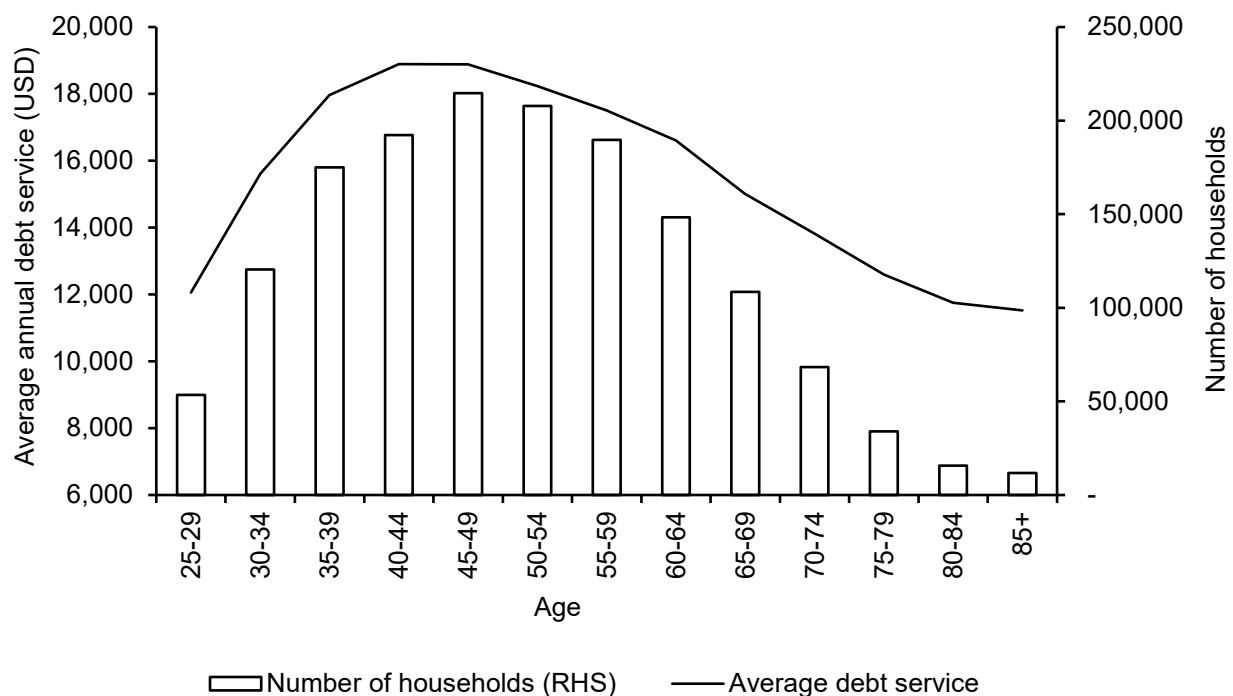


Figure 6. Annual debt service for households with mortgages

Note: Data based on the following number of households holding a particular category of debt from the 5.1 million overall data set: 859,402 servicing student loan debt, 1,540,324 servicing mortgage debt, 2,643,601 servicing Chase credit card debt, 1,409,649 servicing auto loan debt, and 103,481 servicing home equity loan/line of credit debt.

Source: Authors' calculations from J.P. Morgan Asset Management, based on Chase data.

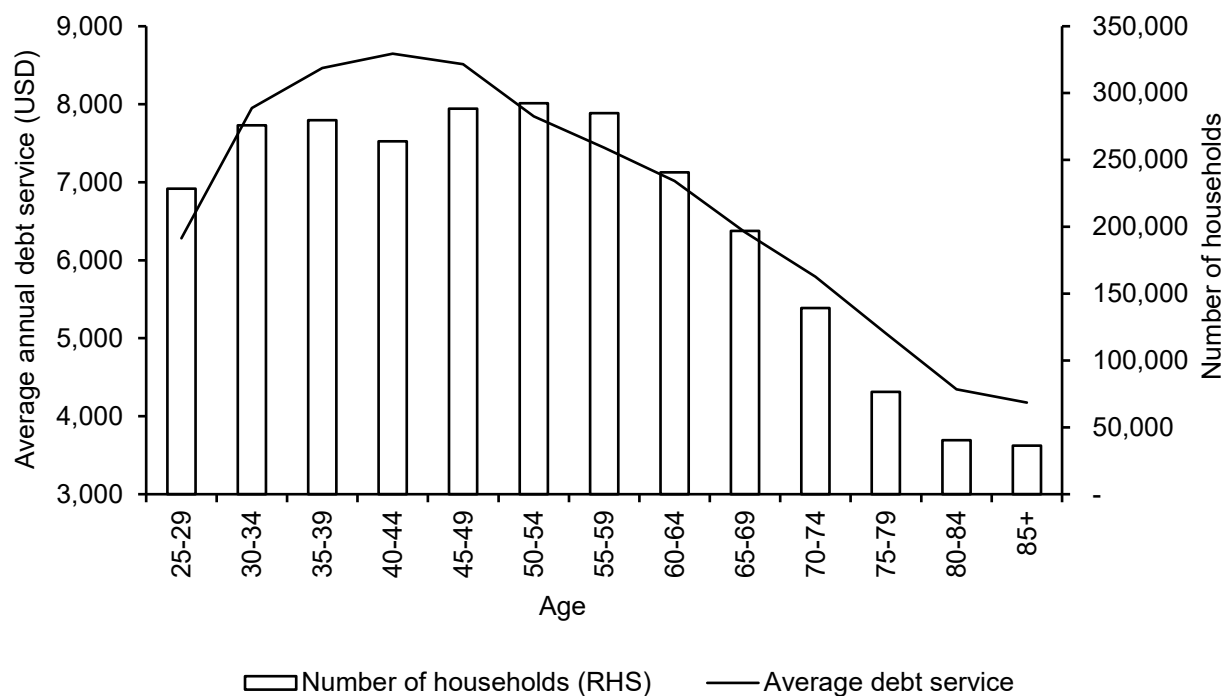


Figure 7. Annual debt service for households with Chase credit card debt

Note: Data based on the following number of households holding a particular category of debt from the 5.1 million overall data set: 859,402 servicing student loan debt, 1,540,324 servicing mortgage debt, 2,643,601 servicing Chase credit card debt, 1,409,649 servicing auto loan debt, and 103,481 servicing home equity loan/line of credit debt.

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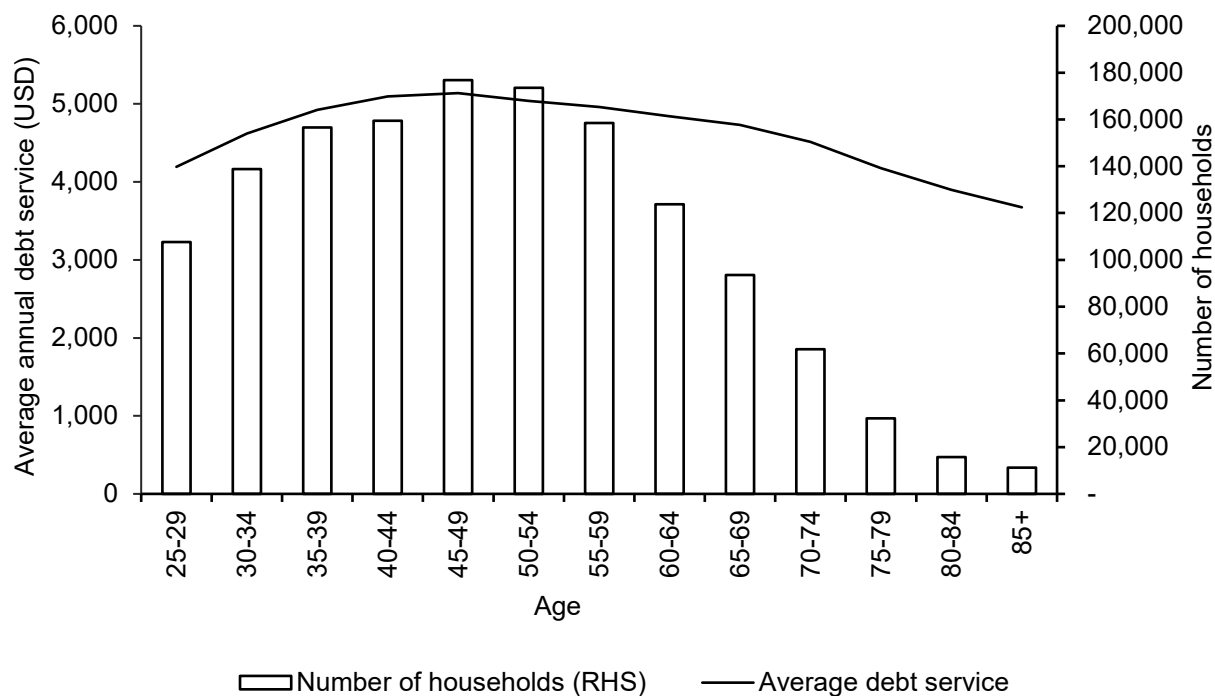


Figure 8. Annual debt service for households with auto loans

Note: Data based on the following number of households holding a particular category of debt from the 5.1 million overall data set: 859,402 servicing student loan debt, 1,540,324 servicing mortgage debt, 2,643,601 servicing Chase credit card debt, 1,409,649 servicing auto loan debt, and 103,481 servicing home equity loan/line of credit debt.

Source: Authors' calculations from J.P. Morgan Asset Management, based on Chase data.

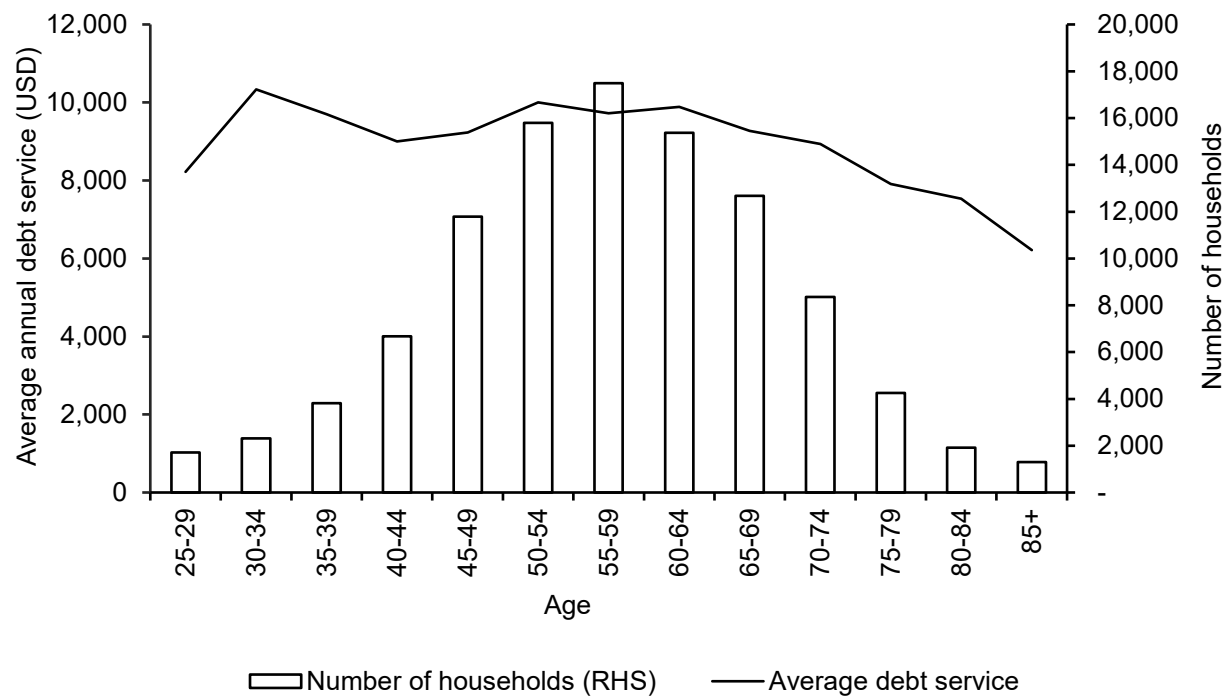


Figure 9. Annual debt service for households with home equity loans/lines of credit

Note: Data based on the following number of households holding a particular category of debt from the 5.1 million overall data set: 859,402 servicing student loan debt, 1,540,324 servicing mortgage debt, 2,643,601 servicing Chase credit card debt, 1,409,649 servicing auto loan debt, and 103,481 servicing home equity loan/line of credit debt.

Source: Authors' calculations from J.P. Morgan Asset Management, based on Chase data.

Number of households by age

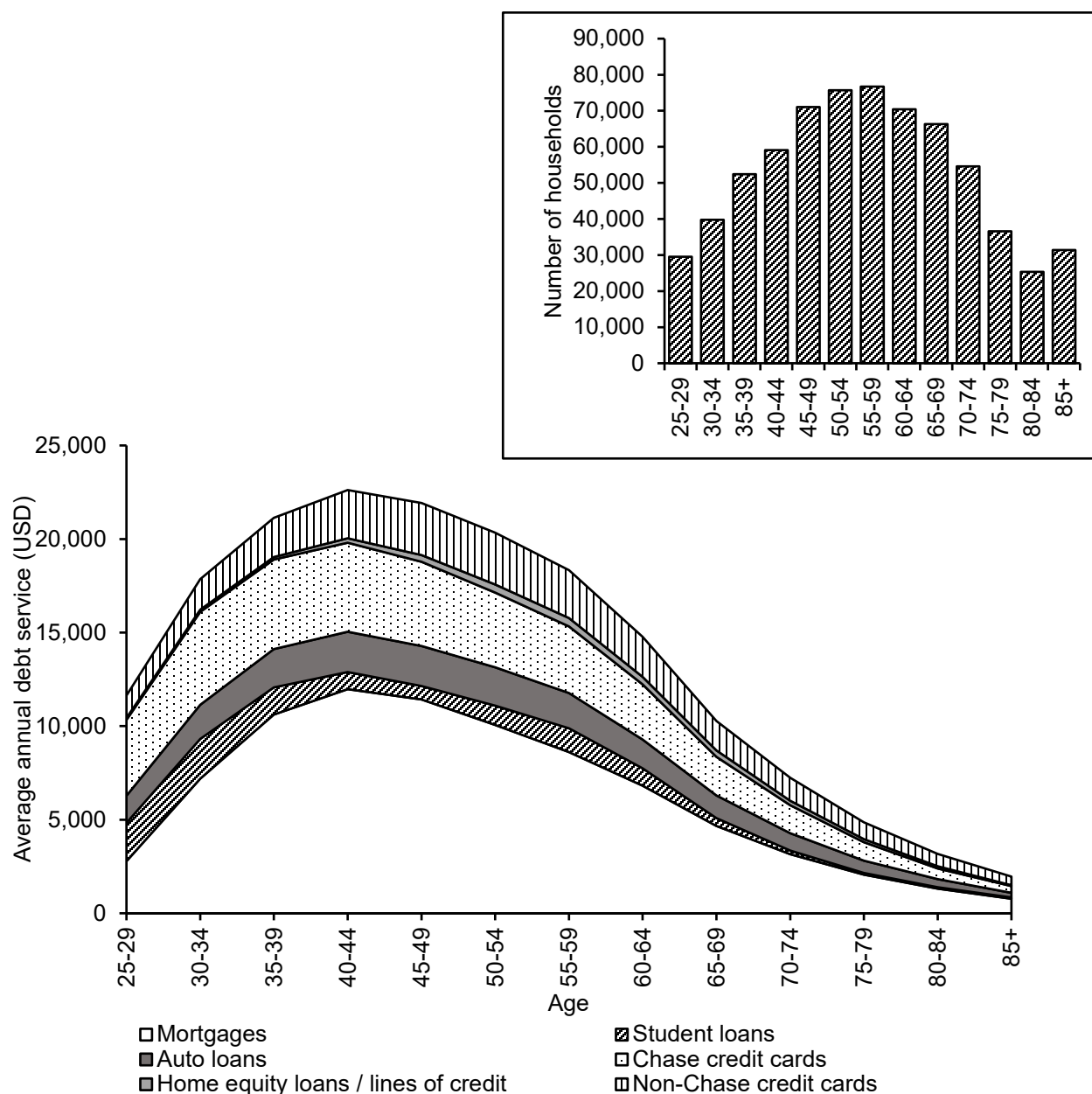


Figure 10. Average annual debt service for households in the \$50,000–\$100,000 asset range

Note: A total of 689,048 households are represented in the \$50,000–\$100,000 asset range. All are included in the data whether or not they hold a particular category of debt.

Source: Authors' calculations from J.P. Morgan Asset Management, based on Chase data.

Number of households by age

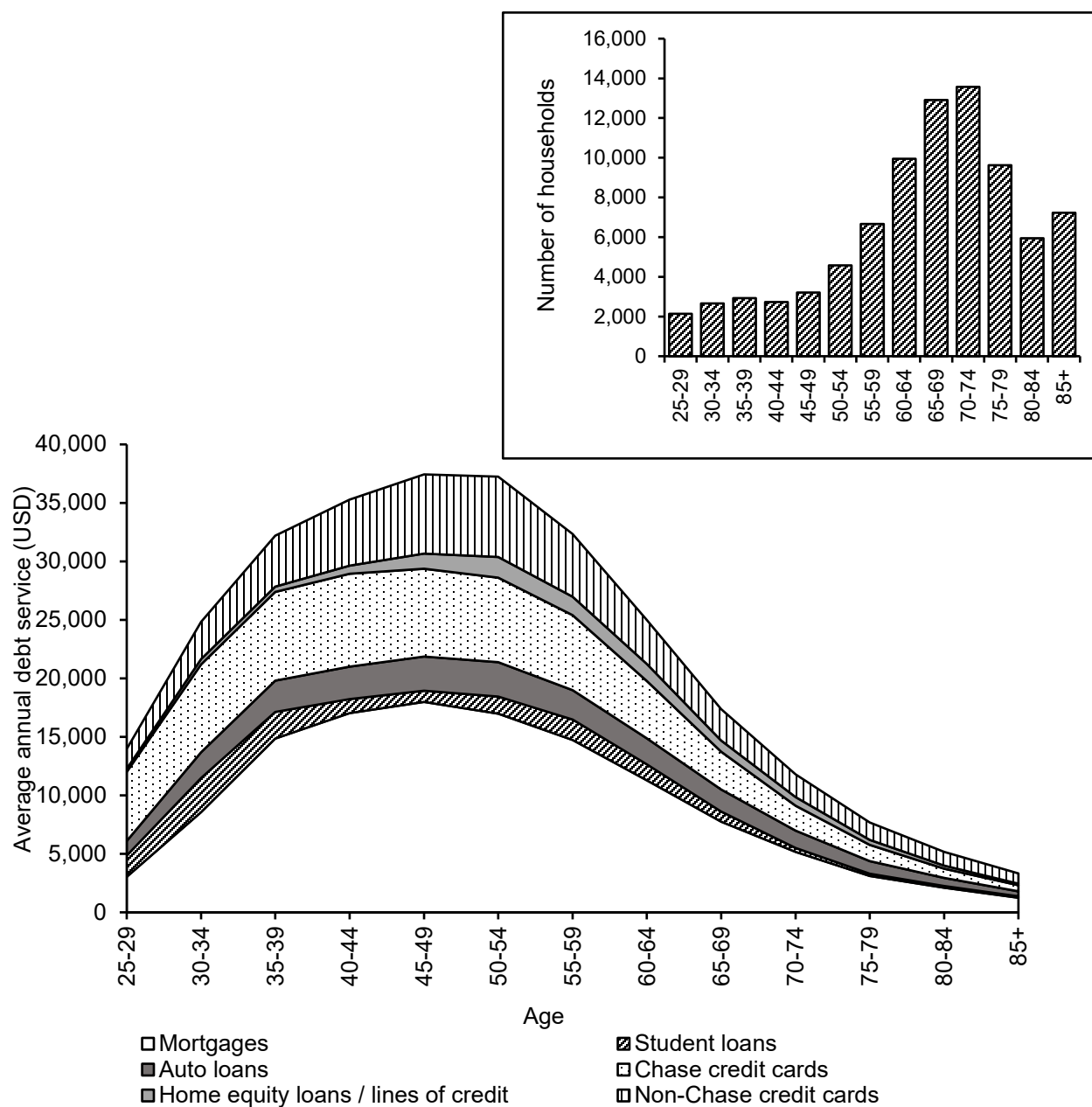


Figure 11. Average annual debt service for households in the \$500,000–\$1 million asset range.

Note: A total of 84,103 households are represented in the \$500,000–\$1 million asset range. All are included in the data whether or not they hold a particular category of debt.

Source: Authors' calculations from J.P. Morgan Asset Management, based on Chase data.

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