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Deferred Care

How Tax Refunds Enable Healthcare Spending

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Deferred Care:

How Tax Refunds Enable Healthcare Spending

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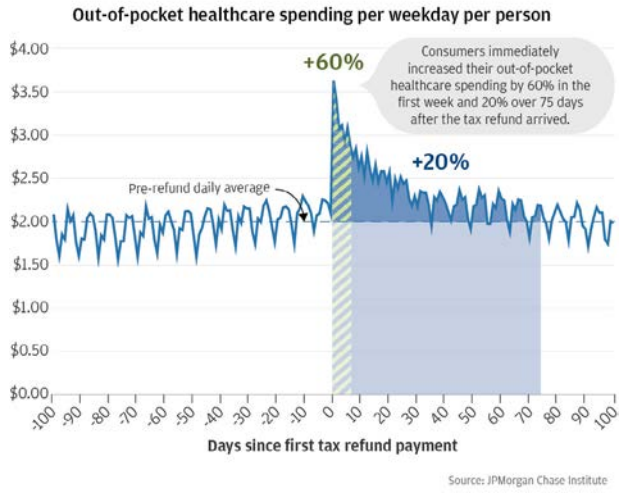
Executive Summary

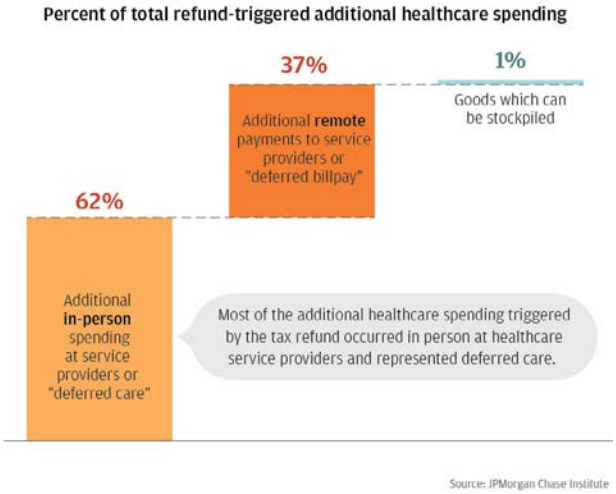
Healthcare represents a large and growing fraction of the US economy. Many policy strategies to control the rising cost of healthcare have involved giving consumers more "skin in the game." The reasoning behind many of these strategies is that if consumers' choices had a more direct impact on their own out-of-pocket spending, they would have more incentive to seek value for money, which in turn would reduce costs for everyone. But what if consumers' cash flow constraints prevent them from taking on higher out-of-pocket costs in the short run, even when doing so would be better in the long run both for them and for the healthcare system overall?

The JPMorgan Chase Institute draws on its Healthcare Out-of-Pocket Spending Panel (HOSP) to investigate how a specific and important cash infusion—a tax refund payment—drives the timing of out-of-pocket expenditures on healthcare. Consumers' spending on healthcare was significantly affected by cash flow dynamics. Even though they could likely anticipate the amount of the cash infusion that their refund payment would bring, they did not increase their spending until the refund arrived; then, as soon as it arrived, they immediately increased their spending.

Our analysis uncovers five key findings:

1. Consumers immediately increased their total out-of-pocket healthcare spending by 60 percent in the week after receiving a tax refund. Spending remained elevated for about 75 days, during which consumers spent 20 percent more out of pocket on healthcare than before the tax refund.
2. In the week after the tax refund, out-of-pocket healthcare spending on debit cards increased by 83 percent, and electronic payments increased by 56 percent. There was no change in credit card spending. This suggests that liquidity from the tax refund enabled the increase in healthcare spending.
3. In-person payments to healthcare service providers represented 62 percent of tax refund-triggered additional healthcare spending. This indicates that the timing of a cash infusion affected when consumers received healthcare, not just when they made a healthcare payment.
4. The tax refund caused consumers to make visits to dentists' and doctors' offices and pay outstanding hospital bills which they had deferred.
5. Cash flow dynamics had less effect on the out-of-pocket healthcare spending patterns of consumers who had higher balances in their checking account or who had a credit card prior to the refund payment.





We conclude that cash flow dynamics are a significant driver of out-of-pocket healthcare spending. Even when consumers knew with near-certainty the size and source of a major cash infusion, they still waited until the infusion arrived before spending. These dynamics may shed light on ways insurers, healthcare providers, employers, and financial service providers could help consumers receive care when they need it rather than when they have cash on hand to pay for it.

Introduction

Healthcare represents a large and growing fraction of the US economy. Many policy strategies to control the rising cost of healthcare have involved giving consumers more "skin in the game." The reasoning behind many of these strategies is that if consumers' choices had a more direct impact on their own out-of-pocket healthcare expenditure, they would have more incentive to seek value for money, which in turn would reduce costs for everyone (Handel, 2013; Bhargava, Loewenstein, Sydnor, 2017). But what if consumers' cash flow constraints prevent them from taking on higher out-of-pocket costs in the short run, even when doing so would be better in the long run for them and for the healthcare system overall?

In this study, we use a specific and important type of cash infusion—a tax refund payment—to show that consumers' spending on healthcare is significantly affected by cash flow dynamics. Tax refunds are a significant cash flow event for many households. In 2016, 73 percent of tax filers received a tax refund, with an average refund of $2,860 (Internal Revenue Service, 2017a).[1] When family members received this significant cash infusion, they immediately increased their out-of-pocket spending on healthcare. Furthermore, even though they likely were able to anticipate the amount of the cash infusion as soon as they had filed their returns, they did not increase their spending until the refund actually arrived.

We draw on the JPMC Institute Healthcare Out-of-pocket Spending Panel (JPMCI HOSP) data asset and examine how healthcare payments vary in the days and weeks around when account holders receive their tax refunds.[2] We analyze average out-of-pocket healthcare expenditure on over a dozen categories of healthcare goods and services for each day in the 100 days before and after a tax refund payment, for 1.2 million checking account holders in the JMPCI HOSP who received a tax refund between 2014 and 2016. This represents the first ever daily event study documenting how families' out-of-pocket healthcare spending responds to the arrival of this significant cash infusion.[3]

Our analysis uncovers five key findings:

1. Consumers immediately increased their total out-of-pocket healthcare spending by 60 percent in the week after receiving a tax refund. Spending remained elevated for about 75 days, during which consumers spent 20 percent more out of pocket on healthcare than before the tax refund.
2. In the week after the tax refund, out-of-pocket healthcare spending on debit cards increased by 83 percent, and electronic payments increased by 56 percent. There was no change to credit card spending. This suggests that liquidity from the tax refund enabled the increase in healthcare spending.
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4. The tax refund caused consumers to make visits to dentists' and doctors' offices and pay outstanding hospital bills which they had deferred.
5. Cash flow dynamics had less effect on the out-of-pocket healthcare spending patterns of consumers who had higher balances in their checking account or who had a credit card.

Out-of-pocket healthcare spending and ability to pay: Previous findings and remaining questions

In previous research, the JPMorgan Chase Institute has shown that account holders spend more out of pocket on healthcare when they have more money. This is true even within a single year. As shown in Figure 1, the average account holder consistently spends more out of pocket on healthcare in March and December; these two months are also consistently marked by higher than average income (Farrell and Greig, 2017a). Furthermore as Figure 2 illustrates, account holders timed major medical payments to occur in the same month as increases in income and shortly after increases in liquid assets (Farrell and Greig, 2017b).

Figure 1: Out-of-pocket healthcare payments and take-home income peak in March.

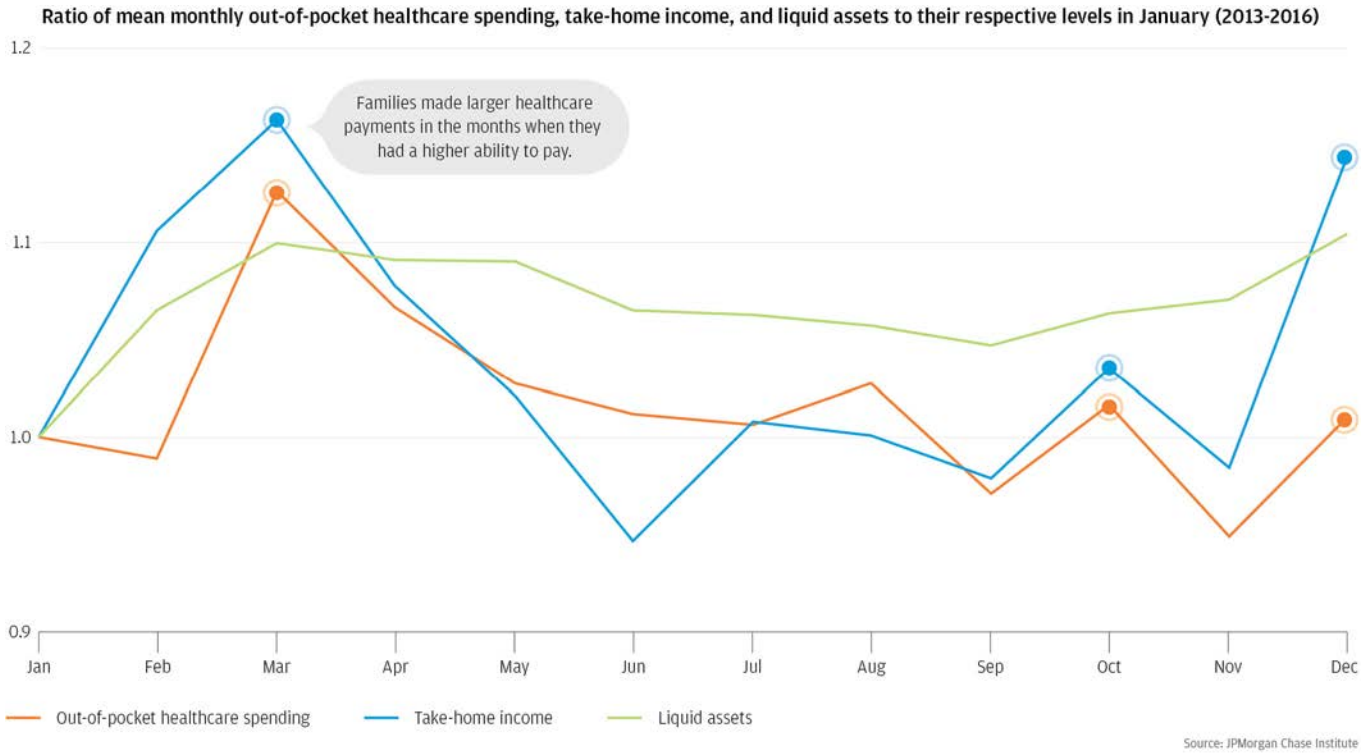
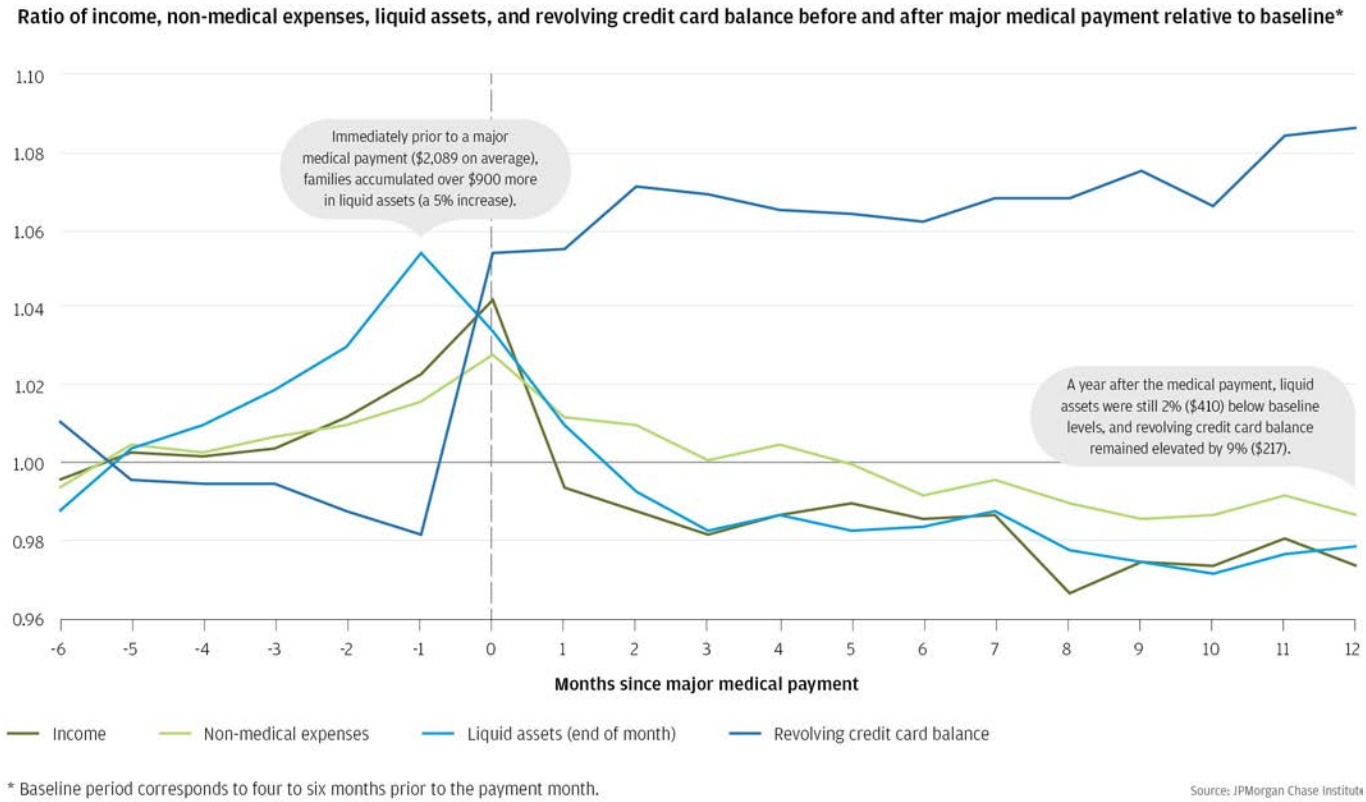


Figure 2: Account holders time major medical payments to coincide with higher income and bank balances.



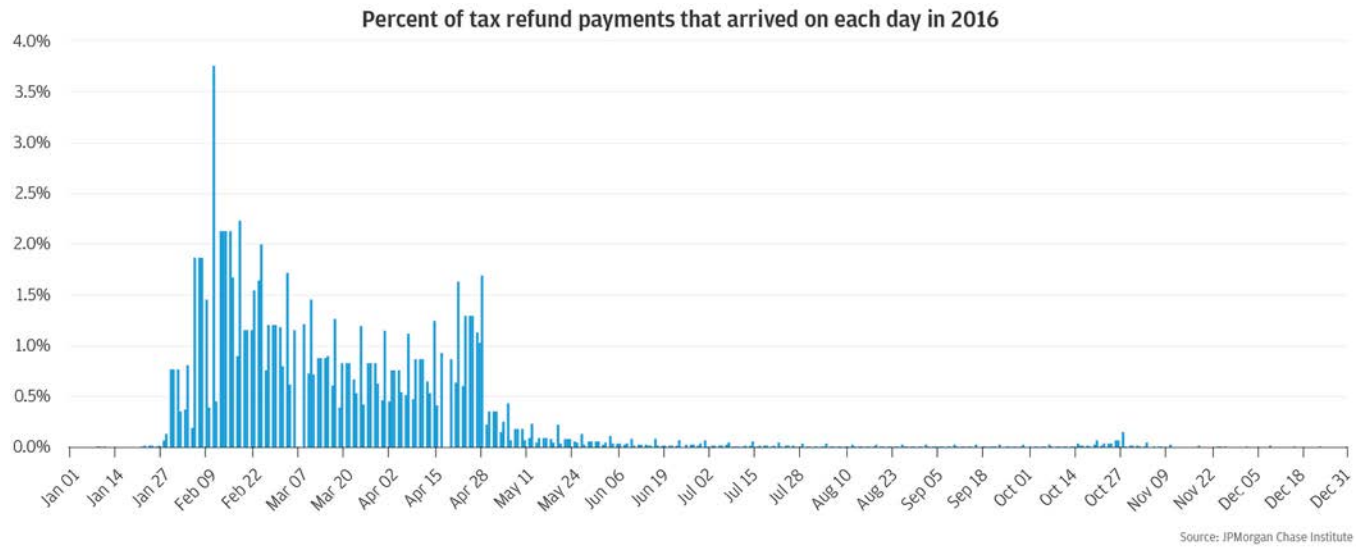
The patterns in Figures 1 and 2 are striking because they suggest that cash flow dynamics may drive when families receive healthcare. Still, important questions remain unanswered:

1. If family members are able to anticipate a cash infusion with near certainty, do they still wait for that infusion to arrive before attending to their spending needs?
2. Do major healthcare payments follow increases in liquid assets because families time inflows to their needs, as opposed to delaying spending until inflows arrive?
3. The months when income and out-of-pocket healthcare expenditure both tend to be highest (March and December) also happen to fall during peak infectious disease season.[4] Could it be that people just need more healthcare at these times?
4. Even if cash flow dynamics affect when consumers pay for care, what does that mean for when they receive it? For example, consumers might seek care when they need it, but then carry balances with healthcare providers until they have the cash to pay down those balances. They might take advantage of volume discounts to stockpile medications and other supplies when income is high, and then consume those stockpiles gradually as their needs dictate. In these cases, cash flow dynamics would drive when consumers spend out of pocket on healthcare goods and services, but not when they get the benefits of those goods and services.

In this study, we address questions one through three directly, by observing out-of-pocket expenditures on healthcare in the days around receipt of a significant cash infusion: a tax refund payment (Box 1). Account holders can anticipate the amount of their tax refund payment almost perfectly once they file their returns, but they can neither control nor anticipate the precise timing of that payment. Therefore, when we observe that increases in healthcare spending follow closely after receipt of the tax refund, we know that it is implausible that families could have first planned the timing of the spending, and then timed the tax refund to immediately precede it.

We also know that it is implausible that family members coincidentally fall ill just as a tax refund payment arrives. As shown in Figure 3, the actual calendar date when a refund is received varies widely. Even the modal day in 2016 (February 10), accounted for only 3.8 percent of tax refund payments for that year. For different account holders, the 100 days before and after the tax refund payment correspond to different points in the calendar, so there is no systematic relationship between days before or after the payment and seasonal dynamics like infectious disease risk.

Figure 3. The timing of tax refund payments varies widely.



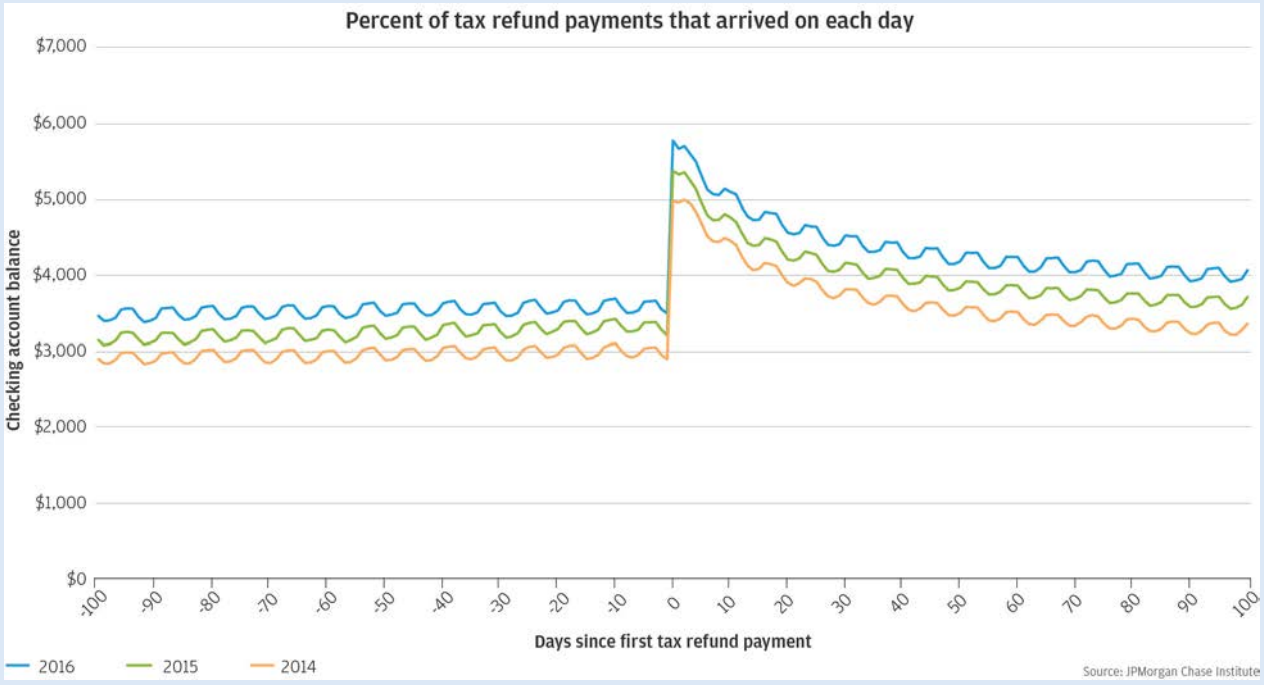
In order to address the fourth question, we separately analyze out-of-pocket healthcare payments to goods providers (for example, drug stores or medical supply merchants) and to service providers (for example, doctors' offices, dentists' offices, or hospitals). We further disaggregate payments to service providers that are made in person versus those that are made remotely, based on administrative data that indicate whether a debit or credit card was physically present at the time of payment. Payments

made at the point of service are likely made at the time of service as well. Therefore, we infer in-person payments to healthcare providers to represent services that were not received until the tax refund arrived. We characterize these payments as covering costs of *deferred care*. In contrast, healthcare payments made remotely are likely to reflect payments made for services received in the past and for which consumers were carrying unpaid balances. We describe the increase in remote payments after the tax refund as *deferred bill payments*.

Box 1: Tax refunds are more than a convenient case study

Focusing on cash infusions that come specifically through tax refunds allows us to directly address important unanswered questions. But tax refunds are not just a convenient case study. In previous research (Figure 1), we observed that out-of-pocket healthcare expenditures were highest during tax refund season, which suggests that these payments may in fact be a primary driver of expenditure on healthcare. Roughly three-fourths of tax filers receive a tax refund (IRS, 2017). The average total tax refund in our sample was $3,100, which is 2.6 times the average payroll deposit.[5] This is a significant amount of money to receive in a concentrated period of time. In 70 percent of cases, account holders received their entire total tax refund on the same day. In 90 percent of cases, the entire amount arrived in multiple payments over the span of a week or less. For 40 percent of account holders, a tax refund payment represents the largest single cash infusion into their accounts for the whole year. Account balances are consistently highest on the day that the first tax refund payment is deposited, as shown in Figure 4. For those whose capacity to spend out of pocket on healthcare is constrained by cash flow dynamics, tax refund season is likely to be the time when those constraints are most alleviated.

Figure 4. Checking account balances in JPMCI HOSP increased by more than 50 percent when the first tax refund payment was received.



Findings

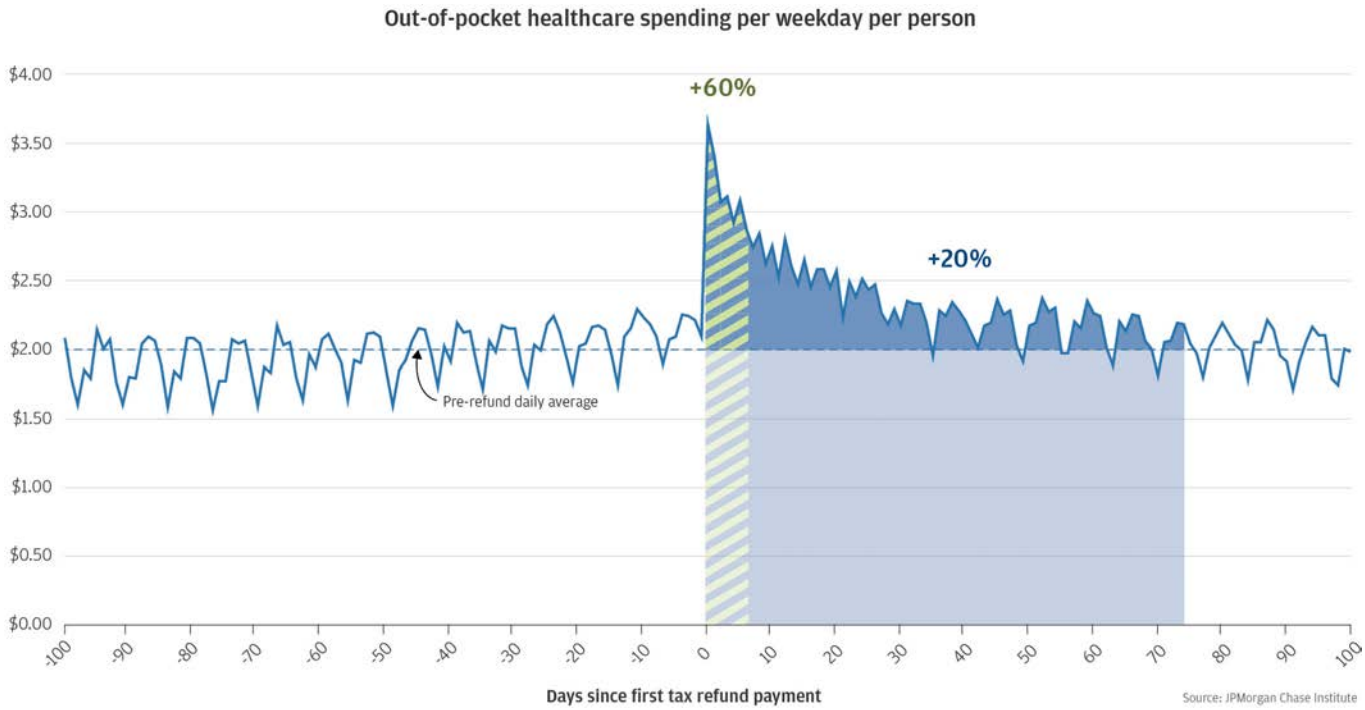
Finding One

Consumers immediately increased their out-of-pocket healthcare spending by 60 percent in the week after receiving a tax refund. Spending remained elevated for about 75 days, during which consumers spent 20 percent more out of pocket on healthcare than before the tax refund.

Figure 5 shows out-of-pocket healthcare spending in the JPMCI HOSP data asset in the 100 days before and after account holders received their first 2016 tax refund. The sharp rise in the line on "day 0" indicates that spending increased immediately when the refund payment arrived. Total healthcare spending was 60 percent higher in the week after the refund payment, compared with a typical week prior to the refund. This represents a significant departure from the stable pattern of spending over the 100 days prior to the payment. The response to the cash infusion tailed off after about 75 days, when spending returned to its pre-infusion pace. Over the entire period of elevated spending, out-of-pocket healthcare spending was about 20 percent higher than a comparable period prior to the refund payment.

The arrival of the tax refund triggered 75 days of elevated out-of-pocket spending on healthcare.

Figure 5. Consumers immediately increased their out-of-pocket healthcare spending by 60 percent in the first week and 20 percent in the 75 days after receiving a tax refund payment.



The total additional spending represented in the shaded area of Figure 5 comes to about $30 per account in JPMCI HOSP. We infer that this healthcare spending would have occurred at a different time if the tax refund payment had arrived at a different time (see Box 2). Reflecting this inference, we will refer to these dollars as *tax refund-triggered additional healthcare spending*.

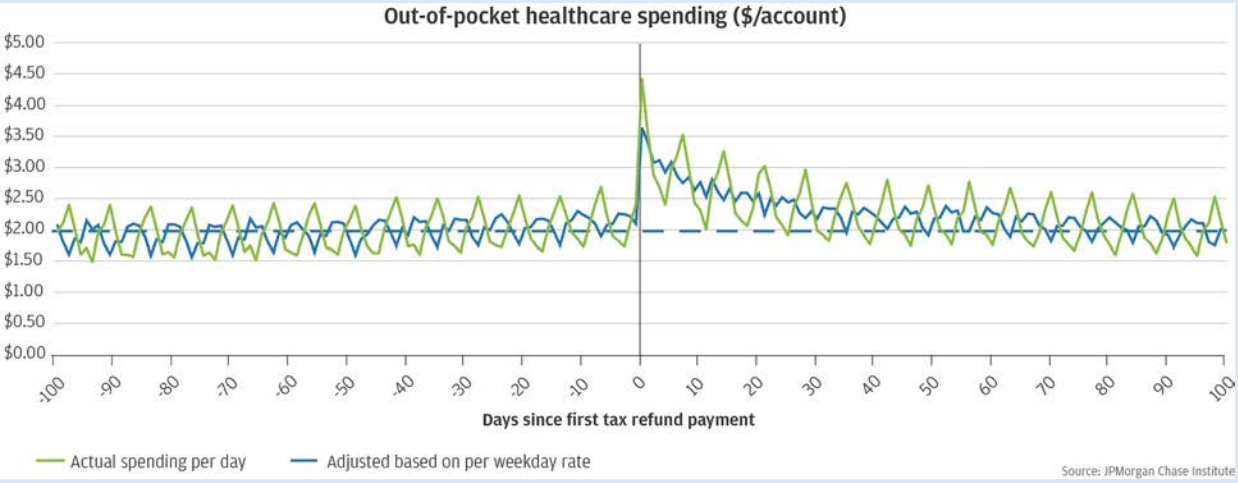
It is important to note that some of the tax refund-triggered additional spending is almost certainly for things that can wait. For example, if a routine check-up occurs in March instead of January because a tax refund arrives in March instead of January, this may not be any special cause for concern. In highlighting the fraction of spending for which the timing is determined by the arrival of cash, rather than by customers' needs or convenience, we are careful not to imply that every one of those dollars must necessarily be cause for concern.

Box 2: Computing tax refund-triggered additional healthcare spending

One way to quantify the impact of cash flow dynamics on out-of-pocket healthcare spending is with the following thought experiment: "How much more did account holders spend on healthcare after the first tax refund payment arrived, compared with what they would have spent on healthcare if their per weekday pace had carried on as it was prior to the refund payment?"

We identify the additional spending based on changes in the average per weekday pace of healthcare spending (rather than average per day), because healthcare spending is naturally elevated on weekdays relative to weekends. Therefore, spending will appear higher on "day 0" than the days around it, simply because tax refund payments always arrive on a weekday. We sweep out this effect by adjusting each of the days to account for the fraction of account holders for whom that day falls on a weekend.[6] Actual spending per person per day and our adjusted series based on the per person per weekday rate are shown together in Figure 6. We use the adjusted series (in blue) to compute "tax refund-triggered additional spending."

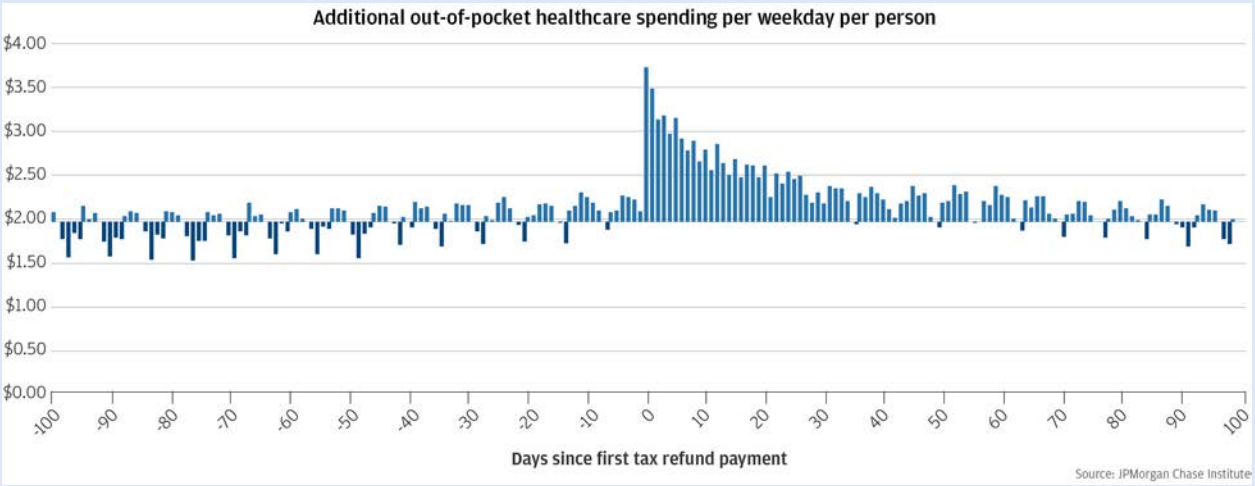
Figure 6. We adjust for weekend and weekday dynamics in computing "tax refund-triggered additional spending."



Our computation of "tax refund-triggered additional spending" is represented graphically in Figure 7, which is a recasting of the adjusted series (blue) in Figure 6. During any period, we can add up the heights of all the positive deviations (lighter bars), and subtract the heights of all the negative deviations (darker bars), to arrive at a total number of "additional dollars" spent. Over the period from day -100 to day -1, the cumulative additional spending comes to exactly $0 (by construction). Beginning at day 0, cumulative additional spending increases until about day 75, when it stabilizes around $30.

Subject to the assumption that the jump in spending would have occurred on whatever day the tax refund arrived, the additional spending can be described as "triggered" by the tax refund. This assumption is plausible given the extent to which day 0 differs from all of the 100 days before it. The sense in which this spending is "triggered" by the refund refers specifically to its timing; it does not refer to the economic concept of a marginal propensity to consume.

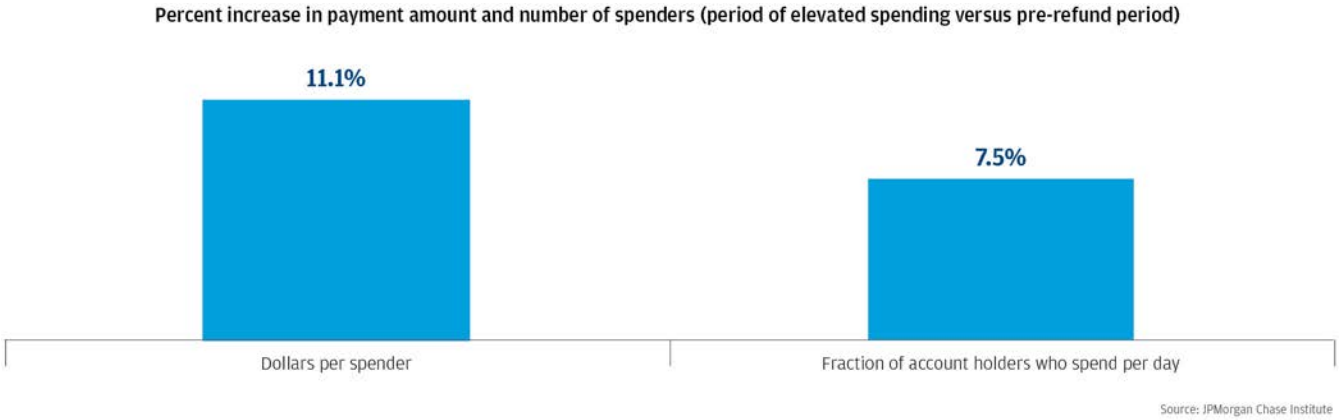
Figure 7. "Additional healthcare spending" in each of the 100 days before and after the first tax refund payment



As shown in Figure 5, out-of-pocket healthcare spending remained elevated for roughly 75 days after the first tax refund payment was received. Average spending per account was about 20 percent higher during this period than over a comparable period before the first refund payment. This increase is driven by two dynamics—larger healthcare payments in a typical day, and more account holders making healthcare payments in a typical day. The more powerful factor is the former, accounting for 59 percent of the tax refund triggered additional healthcare spending.[7] As shown in Figure 8, the typical spender spent 11.1 percent more in a typical day during the period of elevated spending, compared with the pre-refund period ($94 per day during the period of elevated spending, and $85 during the pre-refund period). The other 41 percent of the increase is accounted for by the fact that the number of spenders on a typical day rises from 2.3 percent of account holders during the pre-refund period to 2.5 percent during the period of elevated spending—translating to a 7.5 percent rise (right bar in Figure 8).

We also observe that this increase in the average payment was driven in large part by an increase in the largest payment amounts (account holders spending $150 or more in a single day). The cash infusion represented by a tax refund payment allowed more people to make more purchases of healthcare goods and services, but, even more consequentially, it facilitated larger payments. This implies that the cash infusion generated by a tax refund payment triggered additional spending on large healthcare ticket items that consumers could have least afforded out of their pre-refund cash flow.

Figure 8. The number of consumers spending out-of-pocket on healthcare increased on a typical day after a tax refund was received, and the average payment increased substantially.



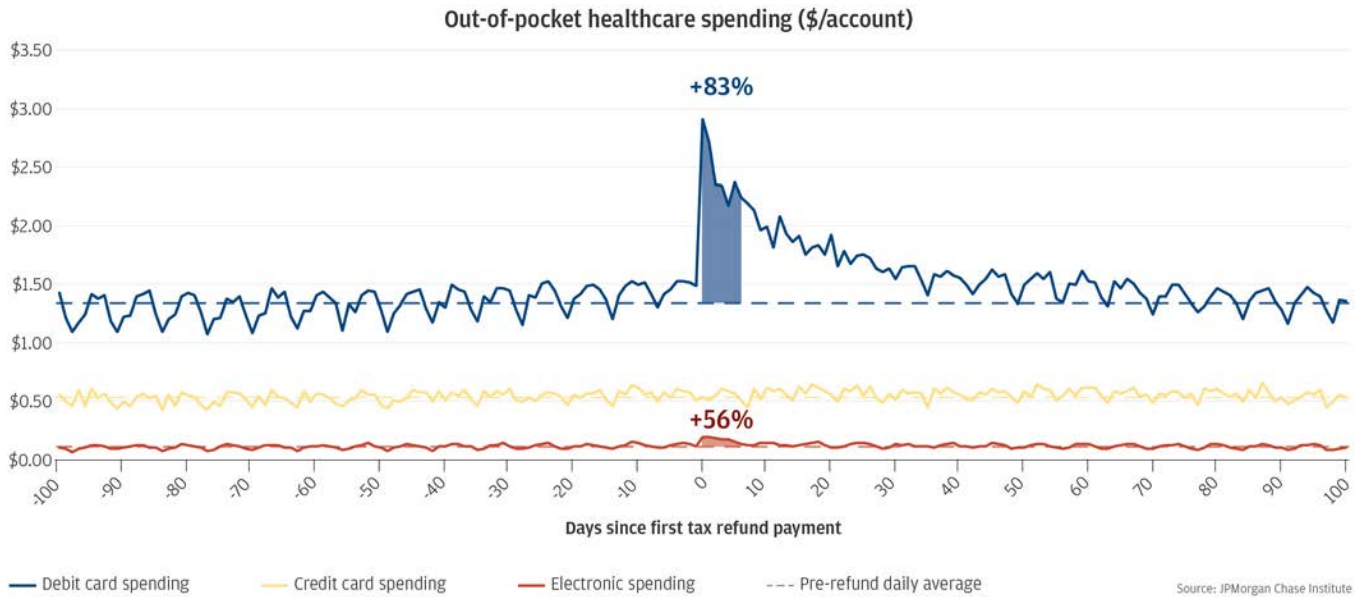
Finding Two

In the week after the tax refund, out-of-pocket healthcare spending on debit cards increased by 83 percent, and electronic payments increased by 56 percent. There was no change to credit card spending. This suggests that liquidity from the tax refund enabled the increase in healthcare spending.

Figure 9 disaggregates total out-of-pocket healthcare spending by payment instrument in the 100 days before and after account holders receive their first tax refund payment. In the week following the arrival of the payment, out-of-pocket healthcare payments on debit cards increased the most, by 83 percent. Spending via electronic payments also increased by 56 percent, but from a much smaller base. By contrast, spending on credit cards did not change in response to the tax refund. Also striking is the degree to which these patterns persist year after year (Figure 14 in the Appendix). In each of the three observed years, healthcare spending on credit cards showed no change around the time of the tax refund, while debit card spending and electronic payments rose sharply. The sharp rise in out-of-pocket healthcare spending on debit cards and electronic payments indicate that consumers had unmet healthcare needs or unpaid healthcare bills, to which they waited to attend until after the cash arrived. Moreover the spending response for healthcare is greater, in aggregate, than other types of spending: non-health spending on debit cards increased by 54 percent in the week after the tax refund (compared to 83 percent for health spending on debit cards).

The fact that the arrival of the tax refund triggers additional healthcare spending is striking because as soon as families file their tax returns, they can anticipate with near certainty how much of a cash infusion to expect. If they had access to formal or informal credit or to a cash buffer, they could begin spending as soon as they learned the exact amount to expect. For example, one might expect credit card spending to rise in anticipation of the refund payment. However, out-of-pocket healthcare spending on credit cards did not increase either before or after the tax refund. For account holders who did not already know the amount of refund to expect, the tax filing provided new information but no new liquidity; we see no evidence that this impacted spending behavior. Since filers knew their tax refund amount when they filed, the refund payment itself provided new liquidity but no new information. The fact that spending jumped in response to the refund payment, therefore, suggests that consumers were waiting for cash before making healthcare payments, not just information about how much to expect.

Figure 9. Spending on debit cards increased 83 percent in the week after receiving a tax refund, with no offsetting change to credit card spending.



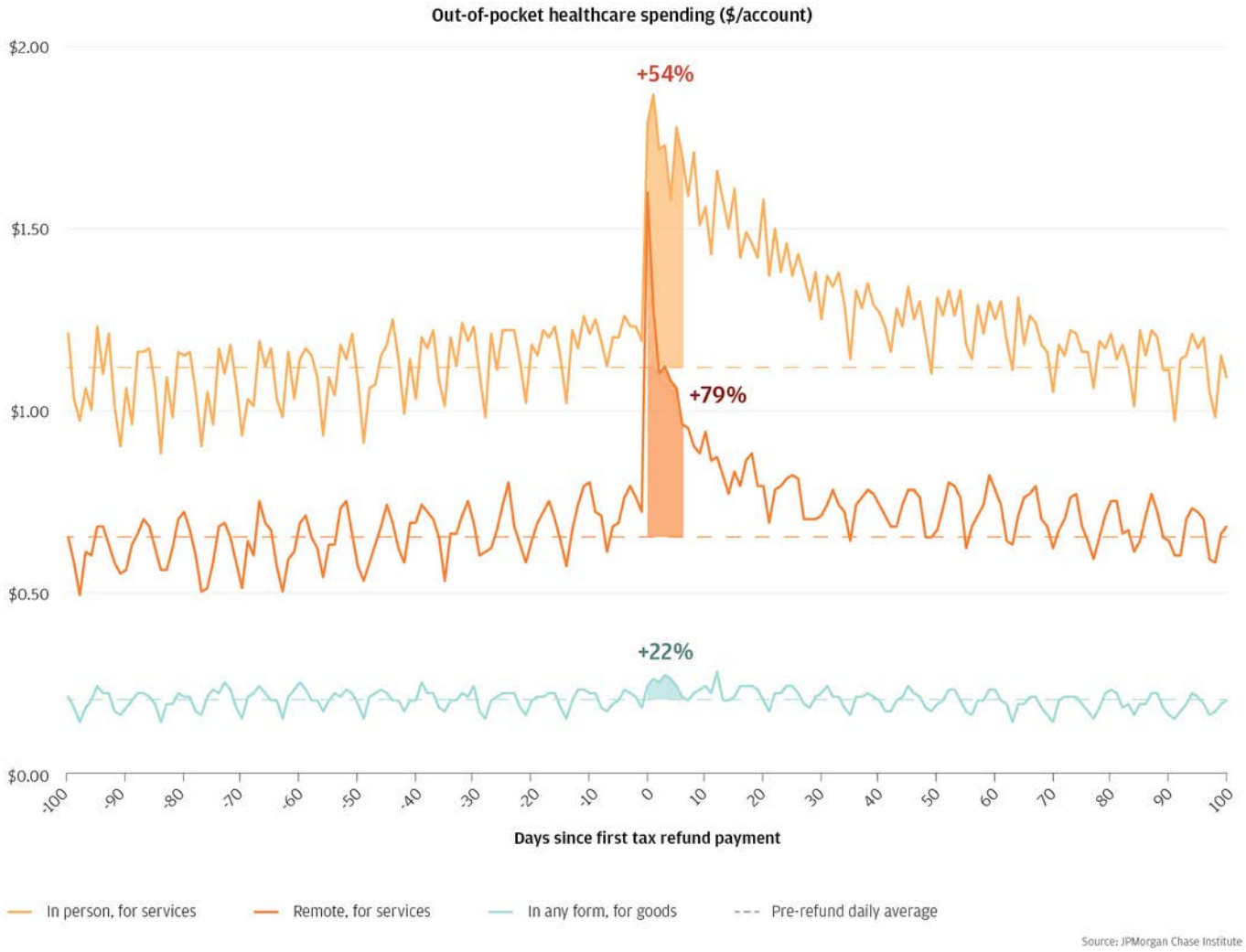
Finding Three

In-person payments to healthcare service providers represented 62 percent of tax refund-triggered additional healthcare spending. This indicates that the timing of a cash infusion affected when consumers received healthcare, not just when they made a healthcare payment.

Figure 10 disaggregates total out-of-pocket healthcare spending by payments made in person at healthcare service providers, payments made remotely to healthcare service providers, and payments in any form (in-person or remote) to goods providers, in the 100 days before and 100 days after account holders received their first tax refund payment.[8]

Payments in person at service providers were 54 percent higher during the seven days after account holders received their first tax refund payment than a typical week prior to the refund. Remote payments to service providers were elevated by 79 percent, but off of a smaller base and for a shorter period of time than in-person payments. Payments to providers of stockable healthcare goods increased by only 22 percent.

Figure 10. In the week of receiving a tax refund, in-person payments for healthcare service increased by 54 percent, and remote payment of healthcare bills increased 79 percent.



Source: JPMorgan Chase Institute

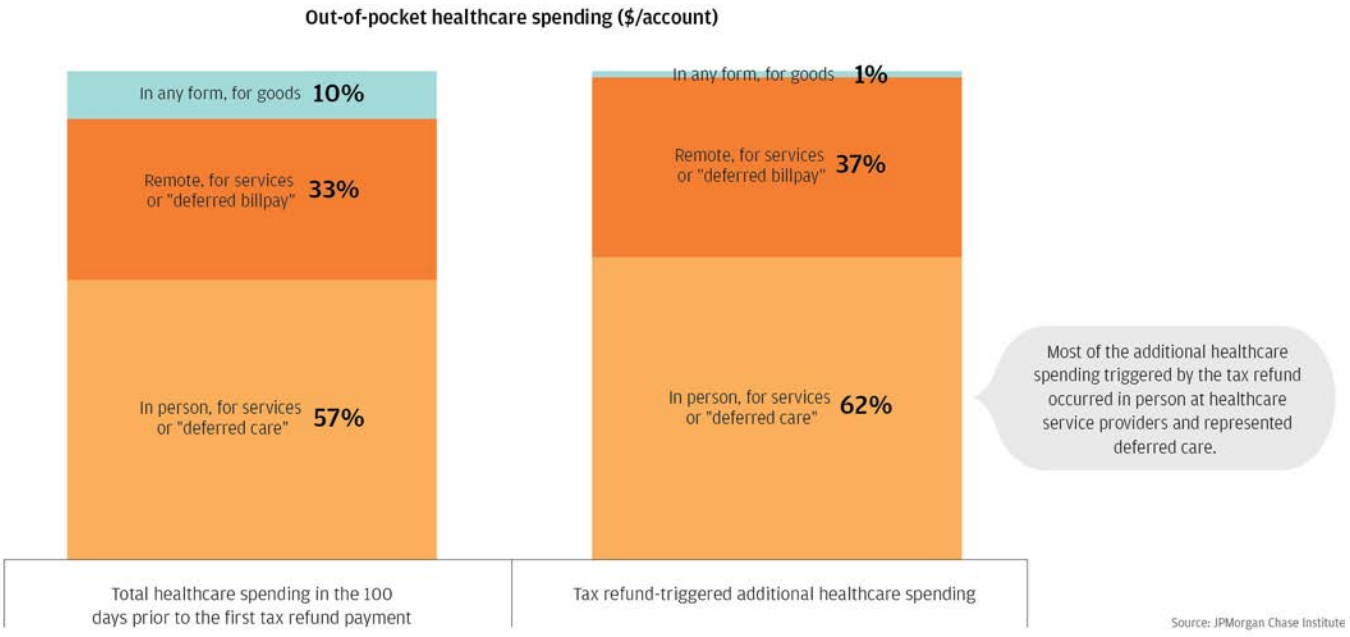
It is likely that payments made at the point of service are also made at the time that the service is provided. This inference is supported by the sharper rise and faster decay in remote payments in Figure 10. This likely reflects the fact that consumers have more control over when they can make remote payments, whereas in-person payments may require appointments to be made and kept. Based on this inference, we conclude that the additional dollars spent in person in Figure 10 go toward deferred care—healthcare services that consumers would have received earlier, if their refund payment had come earlier. In contrast, payments made remotely are likely to reflect payments made for services that consumers had received in the past and for which they were carrying balances (deferred bill payments).

The additional spending triggered by the tax refund went disproportionately towards in-person healthcare services that that were likely deferred from the period before the refund arrived.

Figure 11 compares the distribution of the tax refund-triggered additional spending to the distribution of total spending prior to the tax refund. We observe that 62 percent of tax refund-triggered additional dollars were paid in person at service providers (deferred care), a larger share than in the 100 days prior to the tax refund (57 percent). Thirty-seven percent of tax refund-triggered additional healthcare spending was paid remotely to service providers (deferred bill payments), compared to 33 percent before the tax refund.

Only 1 percent of tax refund triggered additional healthcare spending was paid to providers of healthcare goods that can be stockpiled, like drugs or medical supplies, compared to 10 percent before the tax refund.

Figure 11: Most of the tax-refund triggered additional healthcare spending paid for deferred care.



Most consumers did not appear to use their tax refund to stock up on drug supplies and other healthcare goods. Rather, the additional spending went disproportionately toward in-person healthcare services which were likely deferred from the period before the refund arrived. We next explore what kinds of healthcare services were most likely to have been deferred.

Finding Four

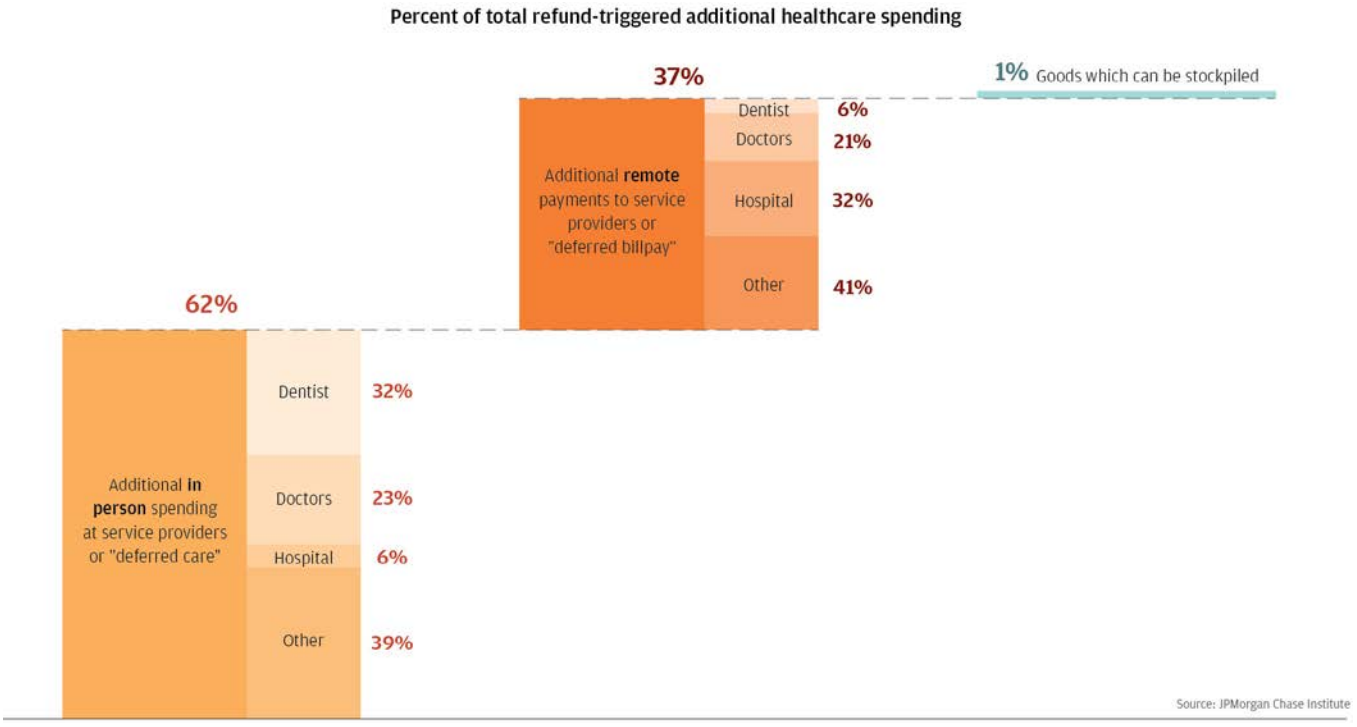
The tax refund caused consumers to make visits to dentist and doctor offices and pay outstanding hospital bills which they had likely deferred.

Dentists received a disproportionate share of the refund-triggered additional spending. Figure 12 illustrates that 32 percent of the refund-triggered in-person payments to service providers went to dentists. By contrast, during the period prior to the tax refund payment only 27 percent of in-person payments to service providers went to dentists (figures not shown). The refund-triggered additional healthcare spending was less likely to go to doctors or hospitals, which, respectively, received only 23 percent and 6 percent of the additional spending triggered by the refund payment (compared to 27 percent and 7 percent of spending during the pre-refund period respectively). The remaining 39 percent went towards other healthcare providers, including nursing service providers, ambulance service providers, medical laboratories, opticians, optometrists, and chiropractors.

Remote payments for healthcare services (bill payments) mostly represented hospital bills even during the period before the tax refund arrived; however, hospitals still received a disproportionate share of refund-triggered remote payments to service providers (31 percent, compared with 28 percent during the pre-refund period). Twenty-one percent of refund-triggered additional remote payments for services went to doctors and 6 percent went to dentists (compared to 19 percent and 15 percent respectively prior to the tax refund, figures not shown).

In short, the tax refund triggered consumers to make visits to dentist and doctor offices and pay outstanding hospital bills which they had likely deferred.

Figure 12. Dentist and doctor visits accounted for more than half of the deferred care that would have been received earlier, if the tax refund payment had come earlier.



Finding Five

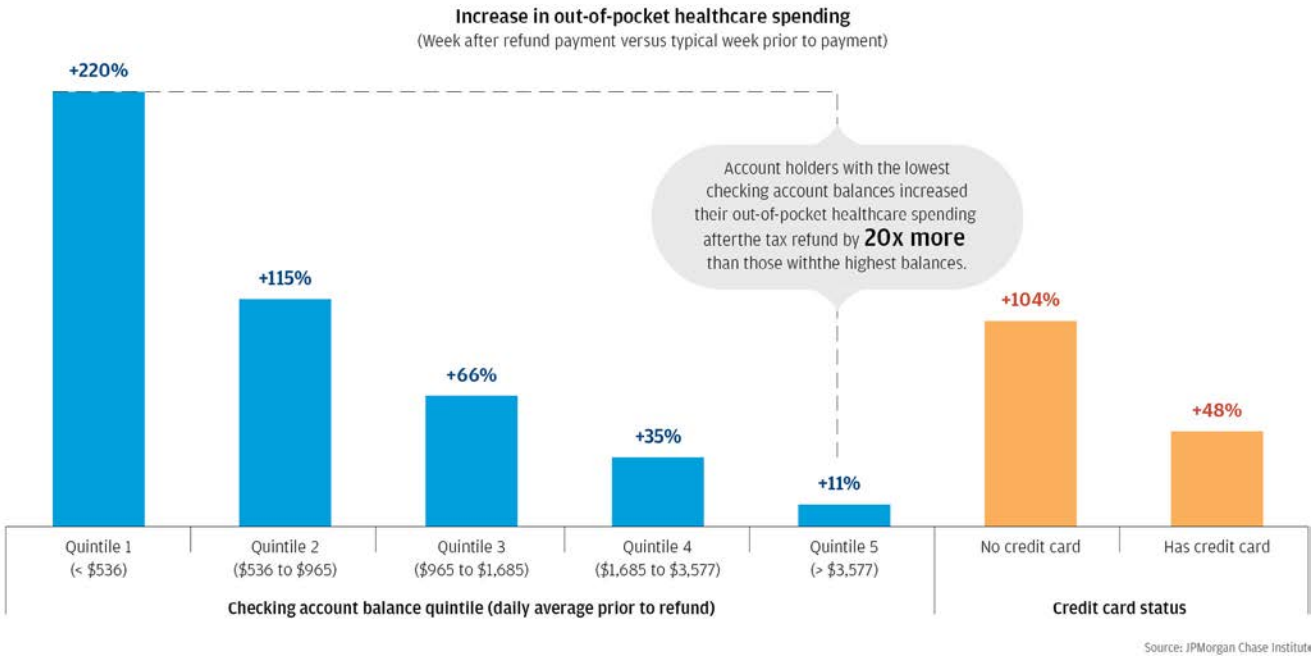
Cash flow dynamics had less effect on the out-of-pocket healthcare spending patterns of consumers who had higher balances in their checking accounts or who had a credit card before the payment arrived.

If consumers have access to formal or informal credit or a cash buffer, they may be able to use these tools to time spending more to their healthcare needs or to their convenience, rather than to the arrival of a cash infusion. In Figure 13, we segment account holders on the basis of their average daily checking account balances over the 100 days prior to their first tax refund payment, and also on the basis of whether we observe any evidence that they had a credit card prior to the first tax refund payment.

For consumers who had less access to liquidity, the tax refund triggered a larger increase in healthcare spending.

We observe a clear gradient. Among account holders whose average daily checking account balance was less than $536 (the lowest quintile), healthcare spending was 220 percent higher in the week after receiving the first tax refund payment compared with a typical week prior to the refund payment. By contrast, for account holders with average daily balances over $3,577 (the highest balance quintile), healthcare spending increased by only 11 percent with the cash infusion. In other words, account holders with the lowest checking account balances increased their out-of-pocket healthcare spending after the tax refund by 20 times more than those with the highest balances. Similarly, healthcare spending increased more sharply among those who did not have a credit card than among those who did (104 percent compared with 48 percent, respectively).[9] For consumers who had more spending power prior to the refund, the tax refund triggered a smaller increase in healthcare spending.

Figure 13. The cash infusion from a tax refund payment triggered a significantly sharper increase in healthcare spending among account holders who had lower checking account balances or who did not have a credit card prior to receiving their tax refund.



Implications

Cash flow dynamics are a significant driver of out-of-pocket healthcare spending. Even when consumers likely know the size and source of a major cash infusion, they still wait for the infusion to arrive before spending and begin spending immediately when it does. Consumers in the JPMCI HOSP increased their out-of-pocket healthcare spending by 60 percent in the week after receiving a tax refund. This spending would most likely have occurred earlier, if the refund payment had arrived earlier. This evidence on the power of cash flow dynamics to drive behavior indicates opportunities for insurers, employers, healthcare providers, and financial service providers to help consumers receive care when they need it, rather than when they have cash on hand to pay for it.

Cash flow dynamics drive when consumers receive healthcare, and not only when they pay for it. More than 60 percent of tax refund-triggered additional healthcare spending was paid for in person and therefore likely represents care that consumers would have received sooner, if the tax refund had come sooner. More than half of this care was provided by dentists and doctors. Almost certainly, the timing of some of these services is not especially sensitive. However, we also observe that consumers who had more spending power prior to the refund payment were less likely to time their spending based on when their tax refund arrived. This implies that at least some consumers might otherwise prefer not to have the timing of their services determined by cash flow considerations. The consequences to physical and financial health of deferring these services should be a target of empirical policy research.

Health insurers and employers can play a role in helping people smooth their healthcare spending. Giving consumers "skin in the game" may not be an effective way to control the rise of healthcare costs if consumers delay more cost-effective care (for example, preventive or diagnostic services) due to short run cash flow constraints, only to require more costly interventions in the long run. Therefore, strategies to curtail unnecessary healthcare utilization should not give consumers incentive to delay necessary care because they are waiting for a cash infusion they know is coming. For example, insurers and employers could cooperate to offer consumers who are enrolled in High Deductible Health Plans (HDHP) with an associated Health Savings Account (HSA) a mechanism to allocate some of their tax refund directly to their HSA when they file their return, and even to begin spending from that allocation before the refund payment arrives. Given that over a third of HSAs received no contributions in 2016 (Fronstin, 2017), employers could more actively encourage and facilitate HSA allocations. For example, employees might be given an option to specify that HSA allocations are automatically made from their paycheck on a regular basis, with built-in adjustments during periods of predictable income spikes, like five-Friday months and bonus season.

Consumers' willingness to enroll in a plan that includes an HSA may not just be driven by longer run considerations like deductibles and premiums, but also by shorter run factors like whether covered services are paid for up-front or reimbursed later, and when in the year contributions are made to HSAs. Understanding how consumers approach these tradeoffs can help inform the design of innovative approaches to help people make the healthcare decisions that are best for their long run physical and financial health, and for the sustainability of the system overall.

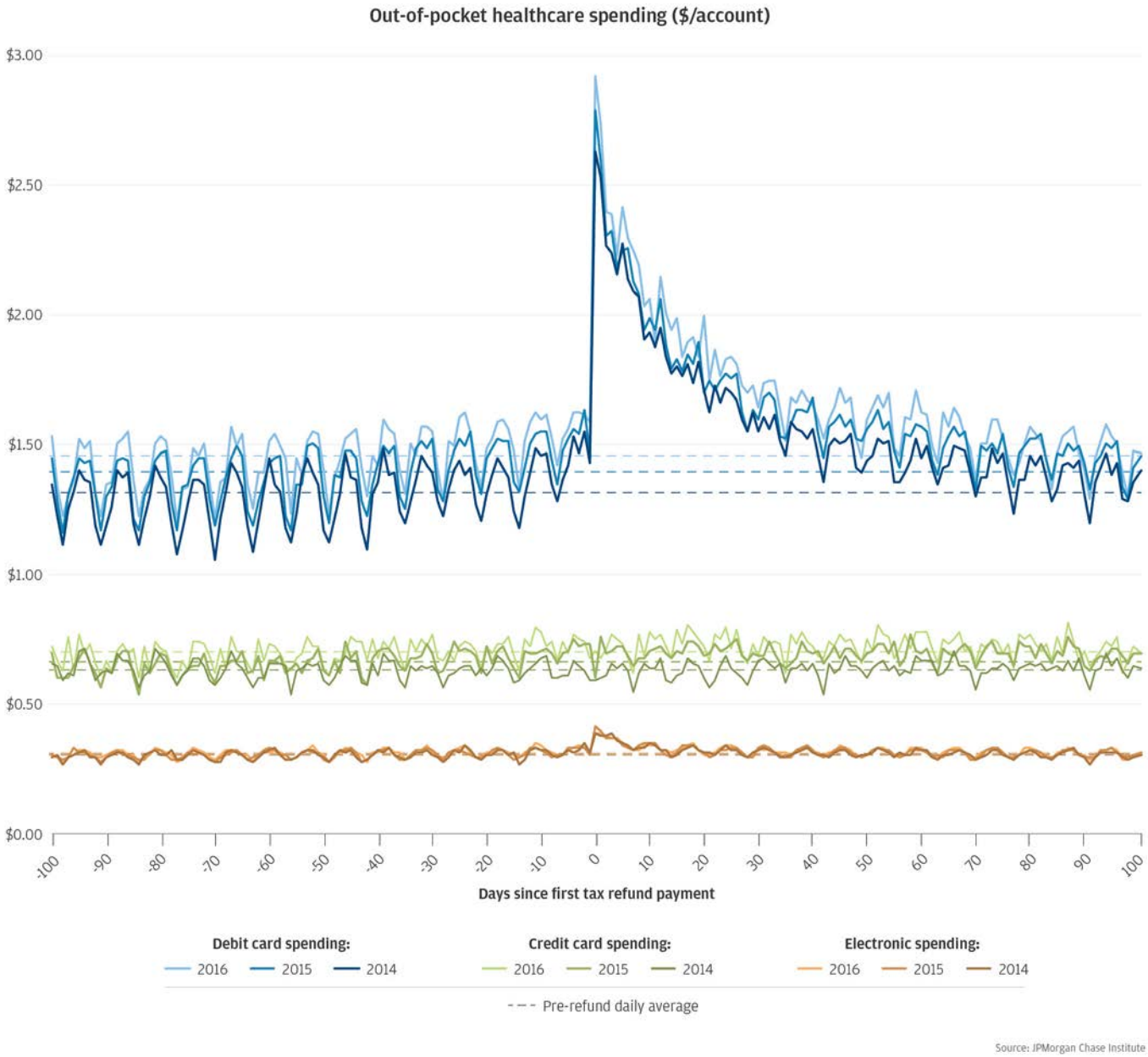
Patients and healthcare providers should take cash flow considerations explicitly into account when working together to design an optimal healthcare plan. Our findings highlight the deep complexity that consumers and providers face in being active partners in healthcare. For many consumers, this is not solely a question of working with their healthcare providers to align their healthcare choices with their needs and financial resources. It is also a question of planning a care schedule so that out-of-pocket costs line up with cash flow conditions. What care may be put off until an expected cash infusion arrives? For care that must not be put off, how can the costs be covered in the meantime? Consumers need to understand both the health and financial consequences of their choices in a dynamic framework where timing may sometimes be a critical component. Healthcare providers should prioritize elements of a patient's healthcare plan and offer clear medical advice around the consequences of delay.

Financial service providers have an opportunity to design innovative products to meet the cash flow needs of consumers and healthcare providers. Our findings indicate that tax refund payments trigger consumers to immediately begin making large healthcare payments which they had been deferring. This suggests that financial service providers could design innovative savings, credit, and payment tools (perhaps even directly integrating these with planning and budgeting tools) to give their customers more control over when and how to cover large-ticket expenditures. These tools would likely be useful even beyond healthcare. In the healthcare industry specifically, a significant fraction of the tax refund-triggered additional healthcare spending goes to paying down balances with healthcare service providers. This indicates an opportunity to cooperate with financial service providers to increase the amount of care that can be extended and received when it is needed.

Cash flow dynamics are a significant driver of out-of-pocket healthcare spending. This has important implications for insurers, employers, healthcare providers, and financial service providers, to ensure consumers receive healthcare when they need it, rather than just when they have cash on hand to pay for it.

Appendix

Figure 14. Healthcare spending on debit cards increases by 1.8 times in the days after a tax refund was received in all three years, with no offsetting change to credit card spending.



Source: JPMorgan Chase Institute

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Endnotes

1 "Tax filers" are not the entire US population. In 2011, for example, around 10 percent of the population may not have been represented in any tax filing document, because their households did not file a return with the IRS. Using other administrative information, Cilke (2014) finds evidence that most of the income of these non-filers comes from government transfers. Nonetheless, for the small minority of the US population who are non-filers, we do not know if they would have received refund payments if they had filed, nor how any such payments would have affected their out-of-pocket healthcare spending behavior.

2 The JPMCI HOSP data asset was constructed using a sample of de-identified core Chase customers for whom we observe financial attributes, including out-of-pocket healthcare spending between 2013 and 2016. For the purposes of our research, the unit of analysis was the primary account holder. We focused on accounts held by adults aged 18 to 64, as adults 65 and older were more likely to make payments using paper checks, which we could not categorize. To provide better visibility into income and spending, we selected accounts which had at least five checking account outflows each month, at least $5,000 in take-home income each year, and used paper checks, cash, and non-Chase credit cards for less than 50 percent of their total spending. The JPMCI HOSP data asset includes customers who resided within the 23 states in which JPMorgan Chase has a retail branch presence. We re-weighted our population to reflect the joint age and income distribution among the 18-64 year old population within each state. See Farrell and Greig (2017a) for a full description of the JPMCI HOSP data asset.

3 Other efforts to estimate the impact of tax refunds on consumer spending have done so on a monthly basis and documented higher total spending and specifically durable spending in February among families eligible for the Earned Income Tax Credit (Barrow and McGranahan, 2000). A number of studies have measured the impacts of changes in tax rebates on household spending with higher frequency. See Parker (2017) and Broda and Parker (2014) for recent summaries of this literature and evidence using Nielson Consumer Panel that weekly household spending increased by 9-10 percent after receiving the 2008 Economic Stimulus Payment. Notably, Baugh et al. (2014), based on daily transaction data, provide evidence that in the week following receipt of their tax refund, households increase their restaurant spending by 8 percent, retail spending by 12 percent and, ATM withdrawals by 16 percent.

4 The seasonality of influenza, which is a significant driver of healthcare costs (Molinari, Ortega-Sanchez, et al., 2007), is closely tracked by the US Centers for Disease Control and Prevention. In the 2016/2017 season, influenza activity peaked in late February, and prevalence fell sharply starting in the third week of March (Blanton, Alabi, et al., 2017). Nationally, inpatient discharges are consistently highest in March (NCHS, 2010) and the daily rate of outpatient visits to hospitals in the state of New York peak in March (NYSDH, 2016).

5 The average value of all tax refunds received in a year in the JPMCI sample was $3,100; this includes directly deposited federal and state tax refunds. This is roughly comparable to national estimates. The average federal tax refund (i.e., not including state refunds) was $2,860 ($2,995 for directly deposited tax refunds) in 2016, $2,797 ($2,957 for directly deposited tax refunds) in 2015, and $2,792 ($2,918 for directly deposited tax refunds) (IRS, 2017a; IRS, 2017b).

6 The cyclicality in the unadjusted (green) series in Figure 6 is driven by the fact that healthcare spending on weekdays is naturally elevated relative to weekends, and the fact that the IRS does not distribute tax refund payments on weekends. As a result, day 0 is a weekday for all 1.2 million accounts in our sample, which therefore means that days 0+/- 7, 0+/- 14, and so on also fall on weekdays for 100 percent of the sample. By contrast, days 4+/-7, 4+/-14, and so on fall on weekends for 48 percent of the sample. Therefore, we compute the weekday-adjusted (blue) series in Figure 6 as follows, for each day t:

$$\tilde{x}_t = x_t + (1 - r_t)\, x_p$$

Where x_t is average out-of-pocket healthcare expenditure per account on day t, x_p is "typical" average daily expenditure per account (where "typical" is identified by the 100 days prior to the tax refund payment), and r_t is the ratio of the fraction of accounts for whom day t is a weekday to the "typical" fraction of account-days that fall on weekdays (i.e., the 100 days prior to the tax refund payment). Therefore, if day t is more likely to fall on a weekday than is typical, then r_t>1, so we adjust the average for that day downward by a proportion of typical expenditure. Conversely, if it is more likely to fall on a weekend than typical, then r_t<1, so we adjust the average for that day upward. Based on this, we compute "tax refund-triggered additional spending" over any period between day s and day t by:

$$a_{s,t} = \sum_{\tau=s}^{t} (\tilde{x}_\tau - x_p)$$

Or, equivalently:

$$a_{s,t} = \sum_{\tau=s}^{t} (x_\tau - r_\tau x_p)$$

This reflects the fact that any difference in average expenditure in the period from day s to day t compared with an equivalent number of days during the pre-refund period might be an artifact of differences in weekday versus weekend composition. We use the $r_\tau x_p$ term in the summation above to sweep out that artifactual component. Finally, we note that the adjusted (green) series in Figure 6 is countercyclical with the unadjusted (blue) series during the period prior to the refund payment. This indicates that this approach somewhat over-corrects, in that it

"pushes" more expenditure from days that are most likely to fall on weekdays to days that are most likely to fall on weekends. This makes our approach conservative in the sense that it likely underestimates the impact of the refund on the spike at day 0. We also used an approach that computes seven separate correction factors each of which inflates or deflates expenditure on a day of the week, instead of a single weekday-versus-weekend inflator. The results reported here were substantively identical using this alternative approach. We also computed additional spending using the actual (unadjusted) series, and found all results to be substantively the same as what we have reported here.

7 We decompose the growth in average spending per account per day in logarithms. The natural logarithm of the ratio of average daily spending during the 75 days after the refund payment to average daily spending prior to the refund payment (0.18) is itself equal to the sum of two logarithms. The first is the logarithm of the ratio of the average payment sizes (0.11), and the second is the logarithm of the ratio of the number of payments (0.07). We use this to assign the "contribution" of these two components to the overall growth in the average—0.11/0.18, or 59 percent of the growth, is "contributed" by growth in the average payment size, and 0.07/0.18, or 41 percent of the growth, is "contributed" by growth in the number of payments.

8 Healthcare services include doctors, dentists, hospitals, nursing service providers, ambulance service providers, medical laboratories, opticians, optometrists, chiropractors, and "other" healthcare services. Goods include all purchases at drug stores, medical equipment suppliers, orthopedic goods and prosthetic device suppliers, and hearing aid providers. Some overlap exists between healthcare service providers and goods providers; for example, a payment to an optometrist may be for a glaucoma screening or for a pair of eyeglasses, or conversely a payment to a drug store may be for a walk-in clinic visit.

9 We infer whether someone has a credit card on the basis of whether we ever observe a credit card payment prior to the arrival of the tax refund.

Suggested Citation

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