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ABSTRACT

We examine the impact of the opening of a new urgent care center (UCC) on health care costs and the utilization of care among nearby Medicare beneficiaries. We focus on 2006–2016, a period of rapid UCC expansion. We find that total Medicare spending rises when residents of a zip code are first served by a UCC, relative to spending in yet-to-be-served zip codes, while mortality remains flat. We explore mechanisms by looking at categories of spending and by examining utilization. Increases in inpatient visits are the largest contributor to the overall increase in spending, rising by 6.65 percent within six years after UCC entry. The number of emergency room visits that result in a hospital admission also increases by 3.7 percent. In contrast, there is no change in the number of ER visits that do not result in admission to hospital, in visits to physicians outside a UCC, or in imaging and tests. Overall, these results provide little evidence that UCCs replace costly ER visits or that they crowd out visits to patients' regular doctors. Instead, the evidence is consistent with the possibility that UCCs—which are increasingly owned by or contract with hospital systems—induce greater spending on hospital care.

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I. Introduction

Urgent Care Centers (UCCs) have frequently been viewed as a way to curb health care costs (Weinick, Burns and Mehrotra, 2010; Allen, Cummings and Hockenberry, 2019; Merritt, Naamon and Morris, 2000; Corwin, Parker and Brown, 2016). If patients can be diverted from costly hospital emergency rooms (ERs) and treated at lower cost in UCCs, the potential per-visit savings could be substantial. However, large health care systems are increasingly operating UCCs, and in other cases UCCs contract with health systems (Kaissi, Shay and Roscoe, 2016). Some commentators have expressed concern that in these cases UCCs are used as a way to funnel patients into hospital systems (Landro, 2016). As one hospital executive has remarked: "The benefit to patients is getting them out of the ER so they can get treated most effectively and most efficiently for their non-life-threatening problems.... And on the flip side, it's provided us with some more feet through the door" (Experity, 2016). If hospitals use affiliated UCCs to increase their shares of a fixed market, UCCs will not necessarily affect health care utilization or costs. But if UCCs offer a means to grow the market by increasing provider-initiated demand for hospital services, UCC entry could increase overall costs with uncertain effects on health outcomes.

This study examines the impact of the opening of a new UCC on health care costs and utilization of care among nearby Medicare recipients. We focus on the period 2006 to 2016, when the percentage of zip codes with a UCC serving Medicare patients grew from 28.3 to 90.7. There are several advantages to focusing on Medicare, the public health insurance program that covers elderly Americans. First, Medicare recipients accounted for 21 percent of total U.S. health care spending in 2019 (Martin et al., 2021). Second, we can observe all health care spending for Medicare recipients, which enables us to examine substitution between UCCs and ERs, as well as the effects of UCCs on the use of physician's offices and hospitals. Third, Medicare allows us to identify UCCs through their use of specific codes for place of service.

This last advantage is important, because previously it has been difficult to develop either a uniform definition or a comprehensive longitudinal data base of UCCs. Previous studies of the impact of UCCs are based on case studies rather than on the universe of UCCs. There are a number of private organizations that offer UCC accreditation, but because not all UCCs pursue accreditation it is not possible to compile a comprehensive list of facilities from these sources. Moreover, accrediting organizations typically only have lists of current members. Hence, the Medicare claims data offer the most complete available picture of U.S. UCC activity.

To estimate the impact of UCC entry, we use a difference-in-differences (DID) framework, comparing zip codes around the time they are first served by a UCC to zip codes that had not yet experienced such an entry. We use the estimator proposed by de Chaisemartin and d'Haultfœuille (2020*a*), which is suitable for staggered entry with potentially heterogeneous treatment effects.

Our results show that when the residents of a zip code first begin to be served by a UCC, total Medicare spending rises while mortality remains flat. Inpatient spending is the largest contributor to this increase, rising by $153 (2006 dollars) per patient, or 4.2 percent by six years after the entry. Part D spending on prescription drugs, home health spending, and Part B drug spending also rise by $108 per capita (9.55 percent), $43 per capita (9.83 percent) and $19 per capita (4.63 percent), respectively.[1] There are also increases in the number of ER visits that result in hospital admission (3.71 percent).

The percentage increase in elective inpatient visits (5.62 percent) is larger than the percentage increase in non-elective visits (3.6 percent). By six years after entry, about a quarter of the increase in elective inpatient spending is occurring within 90 days after a UCC visit while about half of the increase occurs within six months of a UCC visit. In the case of non-elective visits, which are typically more urgent than elective visits, 14 percent of the increase occurs within two days of a UCC visit.

[1] Part B drugs are drugs that are usually administered by a health care provider but not during an inpatient visit.

Several important categories of spending are not affected by UCC entry. In particular, there is no evidence of an effect on spending for hospital outpatient care, visits to physicians outside a UCC, imaging and tests, or the number of ER visits that do not result in admission to hospital. Hence, there is little evidence that UCCs are substituting for these services.

On the whole, there is little evidence that UCCs function as a low-cost alternative for costly ER visits or that they crowd out visits to patients' regular doctors. Instead, the evidence is consistent with the possibility that UCCs induce greater spending on hospital care, especially elective services, and for both prescription and Part B drugs.

The rest of the paper proceeds as follows. Section II provides some background about UCCs and prior work. Section III provides an overview of the data, and Section IV discusses our methods. Results appear in Section V, followed by a discussion and conclusions in Section VI.

II. Background

According to the American Academy of Urgent Care Medicine (2021), most UCCs employ physicians. They typically have X-ray and laboratory facilities and are able to treat wounds, injuries, fractures, asthma attacks and mild concussions. They do not offer surgery or inpatient care, and most do not have advanced imaging equipment (e.g., CT scans). If a patient requires more advanced care, the UCC will transfer the patient to an ER. From the patient's point of view, the most salient features of a UCC are likely that they have longer opening hours than typical doctor's offices, and that they welcome walk-in patients.

While the first UCCs were owned by physicians, UCCs are increasingly either owned by hospitals and health systems or by corporations that contract with health systems. According to the Urgent Care Association (2018), in 2008 54.1 percent of UCCs were owned by physicians, 24.8 percent were owned by hospitals, and the rest were owned largely by corporations, often with private equity partners. By 2014, physician ownership had fallen to 40 percent and direct hospital ownership had increased to 37 percent. According to the Urgent Care Association (2018), big hospital chains such as Dignity Health, HCA, Aurora Health, Intermountain Health, and Carolinas Healthcare have all made significant investments in UCCs. Yee, Lechner and Boukus (2013) report that in some markets the vast majority of UCCs are owned by hospitals.

These trends in ownership suggest that arrangements with hospitals are likely to have become increasingly important over time. While there is little direct evidence that ownership of UCCs matters to patient spending (and indeed, data about ownership of UCCs are not comprehensively available), related research about the ownership of physician practices suggests that patients in organizations owned by hospitals have higher spending than patients treated in similar physician-owned practices, although there is no consistent difference in quality (Ho et al., 2020). Similarly, Chernew et al. (2021) show that physicians affiliated with hospitals refer patients in need of lower-limb MRIs to hospitals, though the imaging could easily be done in an outpatient setting.

Much of the existing literature argues that UCCs have the potential to greatly lower health care costs. For example, Weinick, Burns and Mehrotra (2010) examine the types of conditions that bring people to the ER and estimate that as many as 27.1 percent of ER visits could be treated at UCCs or retail clinics, for a savings of up to $4.4 billion annually. Similarly, Allen, Cummings and Hockenberry (2019) find that in areas with multiple UCCs, local non-emergent ER visits increase by 1.43 percent (over the adjusted mean rate of 70.58 percent) after UCCs close each day. This finding suggests that UCC visits can substitute for ER visits. Merritt, Naamon and Morris (2000) tracked patients before and after their first visit to a UCC and report that these patients were subsequently less likely to use ERs. Corwin, Parker and Brown (2016) examine a cross section of Medicare beneficiary data in 2012 and find that ER use is lower in areas with high UCC use, and vice versa.

However, a few recent observers found zero or positive effects of UCC entry on ER use. Yakobi (2017) examines ER use in New York City and notes that although by 2015 there were over 100 UCCs operating in the city, there appeared to have been no impact on ER use. Carlson et al. (2020) examine patients who were using the ERs at two academic medical centers for low severity conditions. They find that patients who lived within one mile of an open UCC were less likely to utilize one of the ERs, but that proximity to a UCC had no apparent effect on the use of the other ER. Wang, Mehrotra and Friedman (2021) analyze commercial insurance data and find that zip-code level increases in the rate of urgent care visits were associated with small reductions in ER visits, but with an overall increase in spending on urgent care services. In related work, Xu and Ho (2020) also report that the entry of new, free-standing emergency departments had little impact on visits to hospital ERs but served merely to increase the overall use of emergency services. These conflicting results of various studies suggest that it will be informative to look in the Medicare data at the effects of UCC entry.

III. Data

Our main source of data is the Medicare Fee-for-Service population (CMS, 2006–2016). We use a 20-percent sample of the Medicare Master Beneficiary Summary Files (MBSF) and its segments for 2006 to 2016. These files include information about the patient's utilization of care and spending, demographic characteristics, chronic conditions, dates of Medicare enrollment, date of death (if relevant), and zip code of residence. For identifying UCC and physician visits and for measuring associated spending, we also use the 20-percent sample of the Carrier Files, which record fee-for-service claims submitted by professional providers including physicians, physician assistants, and nurse practitioners. For analyzing inpatient spending, we use the 20-percent sample of the Inpatient Files, which contain claims submitted by hospital providers.

In order to define UCC entry into a zip code, we take advantage of the fact that since 2003 the Centers for Medicare and Medicaid Services (CMS), which oversees Medicare, has designated a specific place of service code for urgent care facilities.[2] Using this code, we can determine the number of Medicare beneficiaries residing in a given zip code who used a UCC in each year. If the share of patients residing in a zip code who use a UCC in a particular year is at least one percent, we consider that zip code to be served by a UCC in that year and in subsequent years. We sometimes refer to this for short as "entry," but it should be clear that the UCC serving patients in a particular zip code need not necessarily be located in that zip code. These definitions are described in further detail in the appendix.

A patient-year is included in the sample if the patient was covered by Medicare Parts A and B (which cover inpatient and outpatient care, respectively) for the entire year, or if the patient died sometime during the year. In addition, the patient must have been enrolled in fee-for-service Medicare for all 12 months and be 65 or older. We remove zip codes that had fewer than 100 fee-for-service beneficiaries in at least one year, leaving 14,562 zip codes.

Appendix Table A1 shows the rapid penetration of UCCs over our sample period. Between 2006 and 2016, the fraction of Medicare beneficiaries with a UCC that began serving their zip code increased from 29.3 percent to 92.2 percent. The fraction of beneficiaries covered is slightly higher than the fraction of treated zip codes over our sample period, indicating that zip codes with UCC entry are slightly larger than those without. Appendix Table A1 provides some support for our decision to ignore exits in our main results. In 2016, the fraction of beneficiaries in a zip code currently served by a UCC is 87.1 percent. Comparing this figure to the percentage with an "entry" suggests that only 5.1 percent of beneficiaries lived in a zip code that experienced an exit. We show below that the results are quite similar whether we drop the zip codes with exits entirely, or treat an exit as a "negative" entrance. For these additional analyses, we define a zip code that experienced an exit as one in which the share of patients treated by a UCC dropped below one percent for at least two years in a row and did not rise again until the end of our sample period.

Characteristics of patients, utilization of care and spending are shown in Table 1 for areas

[2] "CMS Place of Service Code Set," https://www.cms.gov/Medicare/Coding/place-of-service-codes/Place_of_Service_Code_Set, accessed July 10, 2021.

with and without UCCs in 2011, about halfway through our sample period, and in 2016, the end of this period. Spending is in 2006 US dollars throughout. The first panel of Table 1 shows that the probability of UCC use, the number of UCC visits, and UCC spending are all an order of magnitude bigger in “treated” zip codes with UCC entry compared to “control” zip codes without such entry, as one would expect given our definition of entry.

Panel B of Table 1 shows that total per capita spending was lower in treated zip codes in 2011, but somewhat higher in 2016. Treatment zip codes had lower mortality rates in both periods. These differences could reflect differences in the areas where UCCs entered over time. Previous research suggests that UCCs first entered wealthier urban areas and areas with higher rates of private insurance (Le and Hsia, 2016). One might well expect the effect of UCC entry to be different in the richer areas where UCCs initially entered compared to the areas where they entered later. In what follows, we use methods that are robust to heterogeneous treatment effects.

Panel C of Table 1 shows the main categories of Medicare spending that we consider. One can see that the largest components of spending are (in order): inpatient visits; outpatient hospital visits; Medicare Part D drug benefits; and spending on skilled nursing facilities (SNF) and hospice. In each of these categories, per capita 2011 spending was lower in treated areas; however, by 2016, per capita spending on inpatient visits and Part D was higher in treated areas. As discussed above, one possible explanation for this crossover is that poorer areas with less healthy populations were being added to the treatment group over time. Spending on Part B drugs, imaging and testing, and visits to non-UCC physicians were always higher in treatment areas despite their lower mortality rates, underscoring the concern that there may be some unobserved differences between areas.

Since inpatient spending is the largest category, Panels D–F of Table 1 break it down in several ways. Inpatient spending in acute care facilities (a category that includes most general-purpose hospitals) follows the pattern described above. Spending on non-elective visits (i.e., visits that were relatively urgent) was lower in treatment areas in 2011 but became higher by 2016. Spending on elective visits was roughly even in treatment and control areas.

Because one concern about UCCs is that they may steer patients to hospitals, we break down inpatient spending on elective and non-elective visits further by considering only patients who visited a UCC in the past year or the previous year. Panel A shows that 6.3 percent of patients in zip codes that were treated in 2016 visited a UCC during the year. In the two-year period 2015–2016, 10.2 percent of patients visited a UCC. Patients who visited a UCC in either the current or the previous year spent on average \$2313 on non-elective inpatient admissions, nearly the same as the average beneficiary living in the same zip code (\$2305). Of this spending, 8 percent (\$184) occurred within two days of a UCC visit and 11 percent (\$259) occurred within seven days of a UCC visit. We see a similar pattern for elective visits: Patients who visited a UCC had spending of \$1044 compared to an overall mean of \$942. Because elective visits may be scheduled in a more leisurely way than non-elective visits, we consider a longer time window and show that 23 percent (\$241) of the spending occurred within 90 days of a UCC visit and 39.6 percent (\$413) occurred within 180 days. Although they are only descriptive, these figures suggest that UCCs may be steering patients to hospitals and that this possibility merits further investigation.

Panel G of Table 1 shows comparable figures for ER visits. An ER visit can end in an admission to the hospital or a discharge, so these two types of visits are further broken out. Zip codes with UCC entry had fewer ER visits on average than control zip codes (0.60 versus 0.69 per beneficiary per year). This difference is concentrated in visits that did not result in an admission (0.40 vs 0.49 per beneficiary per year).

Finally, the last panel shows the controls that are available. In addition to age and sex (which are constant over time and similar in treatment and control areas), we construct an approximation to the Charlson Comorbidity Index (Charlson et al., 1987), which is frequently used to measure the burden of chronic disease in elderly people.[3] The index is a weighted

[3]Our approximation is based on the smaller set of chronic conditions that is available in MBSF File. See the appendix for the list of included conditions and their weights.

sum of the number of chronic conditions where more severe conditions get higher weights. Table 1 shows that people are sicker in control areas than in treatment areas. The fact that the index rises over time in both treatment and control areas is consistent with UCCs moving into areas where people are sicker: Moving the least sick patient from the control to the treatment group would increase the mean level of sickness in both groups. In models examining spending on drugs, we also control for the number of months of Part D coverage, since elderly people may move in and out of such coverage over time. See the appendix for further discussion of the definitions of the variables included in Table 1.

IV. Methods

Our main analysis relies on a series of DID event-study analyses, examining the impact of UCC entry into a zip code on a range of outcomes, relative to yet-to-be-treated zip codes. Several authors have shown that when treatment is staggered, standard DID estimates can be biased in the presence of heterogeneous treatment effects (Goodman-Bacon, 2021; de Chaisemartin and d'Haultfœuille, 2020*a*,*b*). Sun and Abraham (2020) show that the estimated coefficients from two-way fixed effect regressions are not robust when there are heterogeneous treatment effects, while Borusyak and Jaravel (2017) show that in this case it is also difficult to identify pre-trends. Since it is quite likely that UCCs will have different impacts in different areas, depending for example on how well served they are by other types of providers, we use the estimator proposed by de Chaisemartin and d'Haultfœuille (2020*a*) which is unbiased in the presence of heterogeneous treatment effects.

We compute dynamic treatment effects for each event-time $l \geq 0$, where $l = 0$ denotes contemporaneous treatment effects and $l > 0$ denotes dynamic average treatment effects. This estimator corresponds to the average effect of the treatment on the treated patients (ATT), given the staggered entry design. Note that in keeping with the huge growth of UCCs over our sample period and as discussed above, in our main results we ignore exits and assume that once a zip code is treated, it stays treated. Specifically, we estimate:

$$\beta_l = \sum_{t=l+2}^{T} \omega_{t,l} \left[\sum_{z:\tau_z=t-l} \frac{N_{z,t}}{N_{t,l}^{treat}} \left(Y_{z,t} - Y_{z,t-l-1}\right) - \sum_{z:\tau_z>t} \frac{N_{z,t}}{N_{t,l}^{non\text{-}treat}} \left(Y_{z,t} - Y_{z,t-l-1}\right) \right], \quad (1)$$

where $Y_{z,t}$ is the average outcome for beneficiaries in zip code z and year t; τ_z is the year of UCC entry in zip code z; $N_{z,t}$ is the number of beneficiaries in zip code z and year t; $N_{l,t}^{treat}$ is the number of beneficiaries in zip codes treated for the first time in year $t-l$ and $N_{l,t}^{non\text{-}treat}$ is the number of beneficiaries in zip codes that had not been treated by year t. The weights $\omega_{t,l}$ capture the relative size of the group of zip codes that had UCC entry in each year t for a fixed event-time l relative to all treated zip codes observed for event-time l.[4] The term in brackets is the DID estimator comparing the evolution of the outcome from period $t-l-1$ (the last period before the treatment) to t in groups treated for the first time in $t-l$ and in groups which are yet to be treated at period t.

We present plots with dynamic treatment effects for the six years following a UCC entry as well as placebo pre-treatment effects for the six years preceding entry (with period -1 as the baseline). We compute the placebo pre-period coefficients as proposed by de Chaisemartin and d'Haultfœuille (2020*a*) in order to be able to assess the parallel trends assumption. These coefficients are computed using the following equation:

$$\beta_l^{pre} = \sum_{t=l+2}^{T} \omega_{t,l}^{pre} \left[\sum_{z:\tau_z=t-l} \frac{N_{z,t}}{N_{t,l}^{treat}} \left(Y_{z,t-2l-2} - Y_{z,t-l-1}\right) - \sum_{z:\tau_z>t} \frac{N_{z,t}}{N_{t,l}^{non\text{-}treat}} \left(Y_{z,t-2l-2} - Y_{z,t-l-1}\right) \right]. \quad (2)$$

To incorporate the effects of control variables, we estimate a generalization of equation (2) in which ($Y_{z,t}$ and $Y_{z,t-l-1}$) are replaced by residuals from regressions of ΔY on ΔX (the control variables) and year fixed effects. The control variables include: beneficiary age, gender, and the approximated Charlson Comorbidity Index (see Section III for details).

[4]The weights are defined as follows: $\omega_{t,l} = N_{t,l}^{treat} \Big/ \sum_{t=l+2}^{T} N_{t,l}^{treat}$.

Estimates of the effect of UCC entry on drug spending and utilization as well as on total spending also control for months of Part D enrollment. The reason for controlling for Part D enrollment is that although sample participants must have been in Medicare Parts A and B for 12 months, many of them have fewer than 12 months of enrollment in Part D, the part of Medicare that covers prescriptions drugs.

In addition to the DID event-study graphs, we summarize our findings in tables that report weighted averages of the dynamic estimates for the post-treatment effects from equation (1). The weights correspond to the size of the group of zip codes that had UCC entry and are observed for event-time l relative to all treated zip codes.[5] Standard errors are clustered at the zip code level and are computed using 200 bootstrap replications.

V. Results

Figure 1 shows the "first stage" results: The entry of a UCC in a zip code increases the use of UCCs by Medicare beneficiaries living in that zip code. This is of course a necessary condition for UCC entry to affect other types of utilization of medical care and spending and is implied by our definition of UCC entry. Figure 1a shows that the probability that a beneficiary uses a UCC is essentially zero prior to entry and then jumps to about 1.5 percent in the year of entry, rising smoothly to over 4 percent by six years after entry.[6] Similarly, Figure 1b shows that the average number of UCC visits jumps to about 0.02 visits per person after UCC entry, rising to 0.065 visits per enrollee after six years. Figure 1c shows a corresponding increase in Medicare spending on UCC services, rising from zero dollars prior to UCC entry to around \$6 per enrollee by six years after the year of entry. These figures demonstrate that UCC entry into a zip code clearly increased utilization of UCCs among

[5] They are defined as follows:

$$\beta_{post} = \sum_{l=0}^{L} \omega_l \beta_l, \quad \text{where} \quad \omega_l = \sum_{t=l+2}^{T} N_{t,l}^{treat} \Big/ \sum_{l=0}^{L} \sum_{t=l+2}^{T} N_{t,l}^{treat}. \tag{3}$$

[6] Pre-entry UCC use may reflect occasional use by zip code residents of UCCs located in other areas.

Medicare beneficiaries living in that zip code, by all measures.

Figure 2 shows DID estimates for the impact of UCC entry on total per capita Medicare spending and mortality. Figure 2a indicates that total spending per recipient began to rise after UCC entry, increasing by almost $300 per person by six years after entry. Figure 2b shows that there is no corresponding change in mortality rates—death rates are unchanged following UCC entry. Since the increase in expenditure is much higher than the amount spent directly on UCCs and has no effect on mortality, it begs the question of what categories account for the additional, apparently non-productive, spending?

This question is addressed in Figure 3, which shows the four categories with the greatest increases in spending. Figure 3a shows that inpatient spending accounts for the largest share of the increase, rising by $153 per person by six years after entry (this increase amounts to 4.23 percent of its baseline 2006 average). Figure 3b shows that there is also an increase in spending on Medicare Part D, the prescription drug benefit, of $108 (9.55 percent) after six years, suggesting that patients are receiving more prescriptions, or prescriptions for more expensive drugs, after a UCC opens. This observation is consistent with concerns about UCC over-prescription of drugs such as antibiotics (Laude et al., 2020; Urgent Care Association, 2019; Incze, Redberg and Katz, 2018). Figure 3c shows that UCC entry also led to modest increases in home health spending of approximately $43 per patient after six years. Although there does not seem to be much research on this subject, it is possible that the availability of additional options for receiving both regular doctor visits and urgent care encourages some seniors to remain in their homes and therefore to make greater use of home health services. Finally, Figure 3d shows that there was also an increase in spending on Part B drugs of about $19 per person after six years. These are drugs that a patient wouldn't usually give themselves (such as injectable and infused drugs that are usually given in an outpatient setting) but which could be administered in a setting such as a UCC.

Figure 4 shows DID graphs for several other important categories of services that one might expect to be impacted by UCC entry. Figure 4a shows that hospital outpatient spending was on a declining trend prior to UCC entry. Upon entry, spending flattens for a few years but then continues a downward trend. Figure 4b shows that spending on imaging and lab tests declined fairly smoothly through UCC entry (though perhaps with some flattening right around entry). This may be in part because most UCCs do not have the most expensive imaging equipment such as MRIs and CT scans. Figure 4c suggests that there was a small decline in spending on skilled nursing facilities four to six years after UCC entry, perhaps consistent with the increase in spending on home health care noted above given that these may be substitutes.

Figure 4d shows that visits to non-UCC physicians continued on a smooth, slightly upward trend through UCC entry, suggesting that there is little evidence of substitution of UCC visits for non-UCC outpatient visits. This observation is consistent with the claim from urgent care trade groups that most people who visit UCCs already have a primary care physician and seek care at UCCs in addition to the care they receive from their doctors (Landro, 2016). Because inpatient spending was the largest contributor to increases in spending following UCC entry, we examine it further in Figure 5. Figure 5a shows that virtually all of the increase in spending is occurring in regular acute care hospitals rather than non-acute care facilities. Figure 5b breaks admissions into elective and non-elective components. As discussed above, both components of inpatient spending rise following UCC entry. While the absolute size of the increase in spending on elective visits is less because elective visits account for a smaller share of spending, there is a larger percentage increase in spending on elective visits (5.62 percent) than in spending on non-elective visits (3.6 percent).

Figure 5c breaks down the increase in spending on elective hospitalizations further by asking what share of the increase in spending occurs within a relatively short window after a trip to a UCC? By six years after entry, about a quarter of the increase in elective spending occurs within 90 days after a UCC visit, while, about half of the increase occurs within six months of a visit. We chose these cutoffs to allow time for a patient to book an elective visit. Figure 5d performs a similar exercise for non-elective visits. Because these visits are supposed to be more urgent, we focus on much shorter time windows of two and seven days. The figure shows that 15 percent of the increase in non-elective spending is occurring within two days of a UCC visit, while 21 percent is occurring within seven days of a visit.

As discussed above, UCCs are often thought of as a substitute for emergency rooms, so it is particularly interesting to see how UCC entry affects utilization of the ER. Figure 6 shows the impact of UCCs on the number of ER visits, divided by whether the person was admitted to the hospital from the ER. We look at numbers of visits here because it is difficult to attribute spending to the ER when many visits result in an admission and are billed together with subsequent hospital charges. The figure shows that there is little change in the number of ER visits that do not end in an admission when a UCC opens in a patient's zip code, suggesting that UCCs do not divert a significant share of patients from ERs. However, the number of visits to the ER which do end in an admission rises by 3.7 percent by six years after UCC entry. Together with the results for inpatient visits, these estimates seem consistent with the idea of UCCs' serving as a way to get "feet in the door" of hospitals.

The estimates underlying Figures 1–6 are summarized in Table 2. Column 1 shows the mean of the dependent variable for 2006. Column 2 shows a weighted average of the pre-treatment coefficients (i.e. the pre-trend values), while column 3 shows a weighted average of the post-UCC entry estimates, where the weights are as described above. Since we observe zip codes for up to six years after their first UCC entry and the effects are growing over time, column 4 shows the last point estimate, while column 5 divides that point estimate by the mean to give an estimate of the percent change six years after entry.

Each panel of Table 2 corresponds to one of the figures, allowing us to refine the discussion above. In the case of Figure 1, Panel A of Table 2 confirms that the pre-trends are not quite flat—they were gently trending upward prior to UCC entry. But there is a clear trend break after UCC entry. Panel B confirms that there was no significant pre-trend in either total per capita spending or mortality, and that only spending increased after UCC entry (neither there were significant pre-trends for specific types of inpatient spending, as confirmed by Panel E). Panel C indicates that there was no pre-trend in any of the Figure 3 spending variables except for Part D spending, where there was a slight negative estimate prior to a dramatic positive estimate after UCC entry.

Turning to the estimates corresponding to Figure 4, Panel D of Table 2 shows that in three cases there were strong pre-trends, which, as we saw above, continued into the post-UCC period. In the case of SNF and hospice spending, the estimates are not statistically significant either before or after entry. It is for these reasons that we judge that UCC entry had no effect on these outcomes. Panel F, corresponding to Figure 6, indicates that there was no pre-trend for ER visits ending in admission to hospital, but a clear increase after UCC entry. For ER visits that ended without an admission, there is a positive coefficient in period -6 that drives an overall positive "pre" coefficient, but no evidence of any effect after UCC entry. A natural question is whether the increases in spending that follow UCC entry reflect increases in the prices or in the quantities of services. Because Medicare prices are administered, they are relatively similar across areas, suggesting that much of the increased spending is due to increased utilization. Table 3 shows analyses of utilization using the same empirical specifications as above. Table 3 indicates that inpatient hospital stays—the main driver of the increases in spending—increase by 6.65 percent by six years after UCC entry. The fact that the number of visits rises by more in percentage terms than spending on visits suggests that the marginal additional visit may be for a patient with a less severe condition. The average number of months of drugs supplied (in both Parts D and B) decreases following a UCC entry, suggesting that the estimated increase in spending reflects an increase in prices (i.e., different drugs), not quantities. The estimated changes in the utilization of all other services are similar in magnitude and direction to the estimated changes in spending.

One potential concern about our data is that it covers only fee-for-service Medicare enrollees. Over the period we study, there was a slow decline in the fraction of Medicare enrollees in fee-for-service Medicare and an increase in the number enrolled in managed care plans. The first panel of Appendix Figure A1 shows that over our sample period, treated zip codes saw a relative decline in the share enrolled in fee-for-service Medicare. But this decline was quite small in magnitude (about 1.2 percent over the six-year period following an entry) and it occurred smoothly through UCC entry, suggesting that it is not due to UCC entry and should not confound our estimates. Similarly, the second panel shows that there was a very gradual increase in the number of months of Part D enrollment that was very smooth through the point of UCC entry. Hence, we do not think that these small changes in the sample over time are driving the estimated effects of UCC entry.

A second issue is that we focus on UCC entries and ignore exits. Appendix Table A2 shows estimates similar to those in columns 2 and 3 of Table 2 from two additional specifications. Columns 4 and 5 show estimates using the sub-sample where zip codes that experienced UCC exit have been dropped. The estimates are clearly very similar to those from the full sample. Columns 6 and 7 show estimates from an alternative specification where exits are treated as negative entries. Again, this specification produces estimates very similar to those in Table 2.

VI. Discussion and Conclusions

We present the first national analysis of the effects of UCC entry on overall health care spending. In doing so, we are greatly aided by the fact that the Medicare program has systematized the coding of health services rendered in UCC settings. This coding enables us to examine the effects of UCC entry on the health care of millions of elderly people across the United States. At the same time, it is important to recognize that the Medicare-covered population is quite different from the rest of the U.S. population. In addition to that population's being sicker and more likely to use medical services, Medicare also has administered prices so that there is a close connection between utilization and spending. Conclusions about spending and utilization derived from Medicare data do not always apply to the privately insured population, in part because the latter may pay very different prices for the same services (Cooper et al., 2019).

Our results show that when a zip code's Medicare patients first begin to be served by a UCC, total Medicare spending rises, with no impact on mortality. Delving into the mechanisms underlying this increase, we find that the largest rise is in inpatient spending which increases by 4.2 percent by six years after UCC entry. Much of this increase is accounted for by elective visits that occur within 90 to 180 days after a UCC visit, and by non-elective visits that occur within a few days of a UCC visit. The fact that the percentage increase in visits is greater than the percentage increase in spending may indicate that the marginal visits induced by UCC entry are of lower acuity.

We also see increases in Part D prescription drug spending, home health spending, and Part B drug spending, which appear to be due to the prescribing of higher-priced drugs, as well as increases in the number of ER visits that result in a hospital admission. There is little evidence that UCC entry substitutes for other forms of care such as ER visits that do not result in admission to hospital, hospital outpatient care, or visits to non-UCC physicians.

On the whole, the evidence indicates that UCCs induce greater spending on inpatient hospital care, especially elective services, and for both Part D and Part B drugs. It would be of great interest to know whether these effects are larger in UCCs that are owned by hospitals or contract with hospital networks. But given the current absence of information about contracts with hospitals, hospital ownership, and changes in ownership over time, this question will have to remain for future work.

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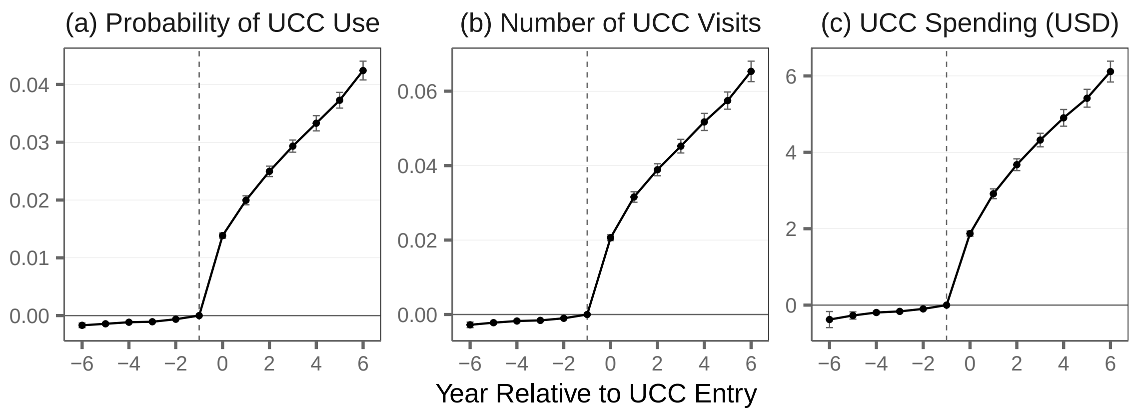
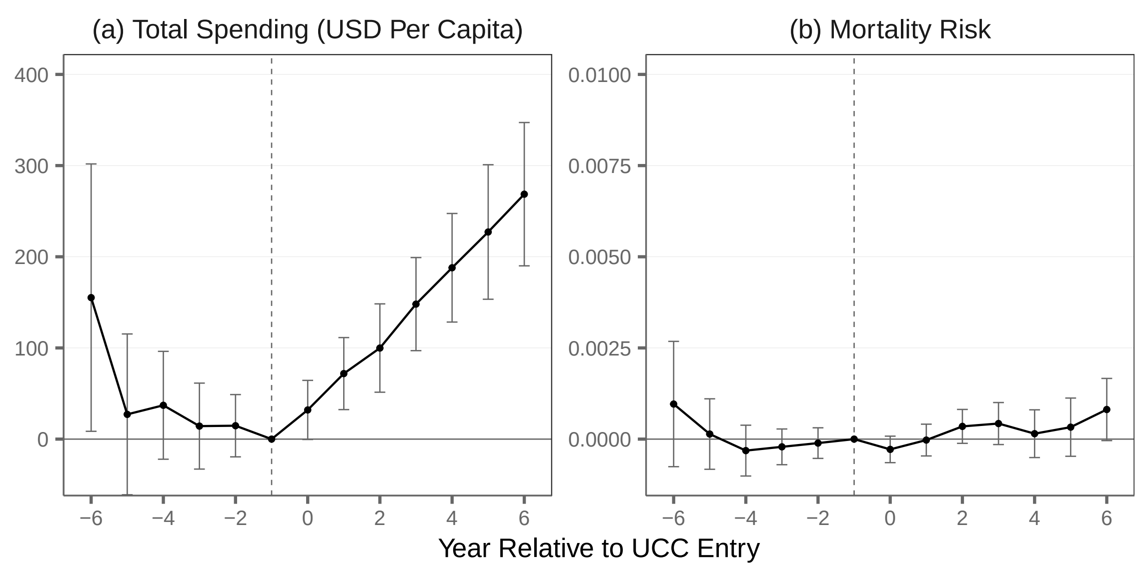
Figure 1: UCC Entry, Different Measures



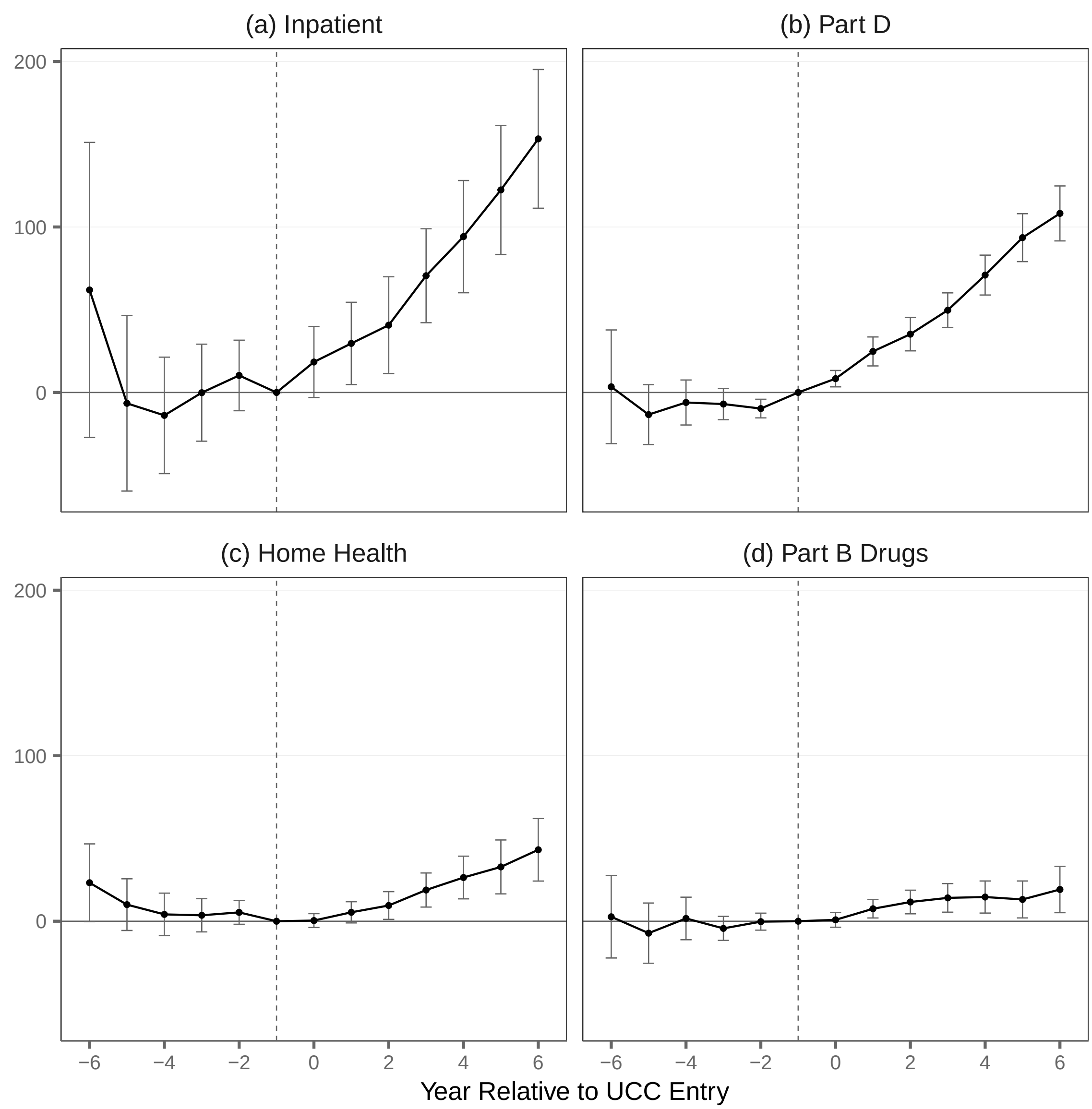
Notes: Figure shows DID estimates of the impact of UCC entry on UCC use. UCC entry (Year 0) is defined as the first year in which more than 1 percent of Medicare beneficiaries in a zip code use a UCC. Year -1 (denoted by a vertical dashed line) is the reference level, which is set to zero. The different panels show estimates of β_l from equation (1) for different measures of UCC use. Probability of UCC use (Panel A) is the share of beneficiaries with any UCC visit during the year. Number of UCC visits (Panel B) is the average number of visits per beneficiary (including zeros). UCC spending (Panel C) is the total per capita spending on claims with UCC as the place of service (all spending measures are in 2006 US dollars). For detailed definitions see Section III and the appendix. Standard errors are clustered by zip code.

Figure 2: UCC Impact on Spending and Mortality



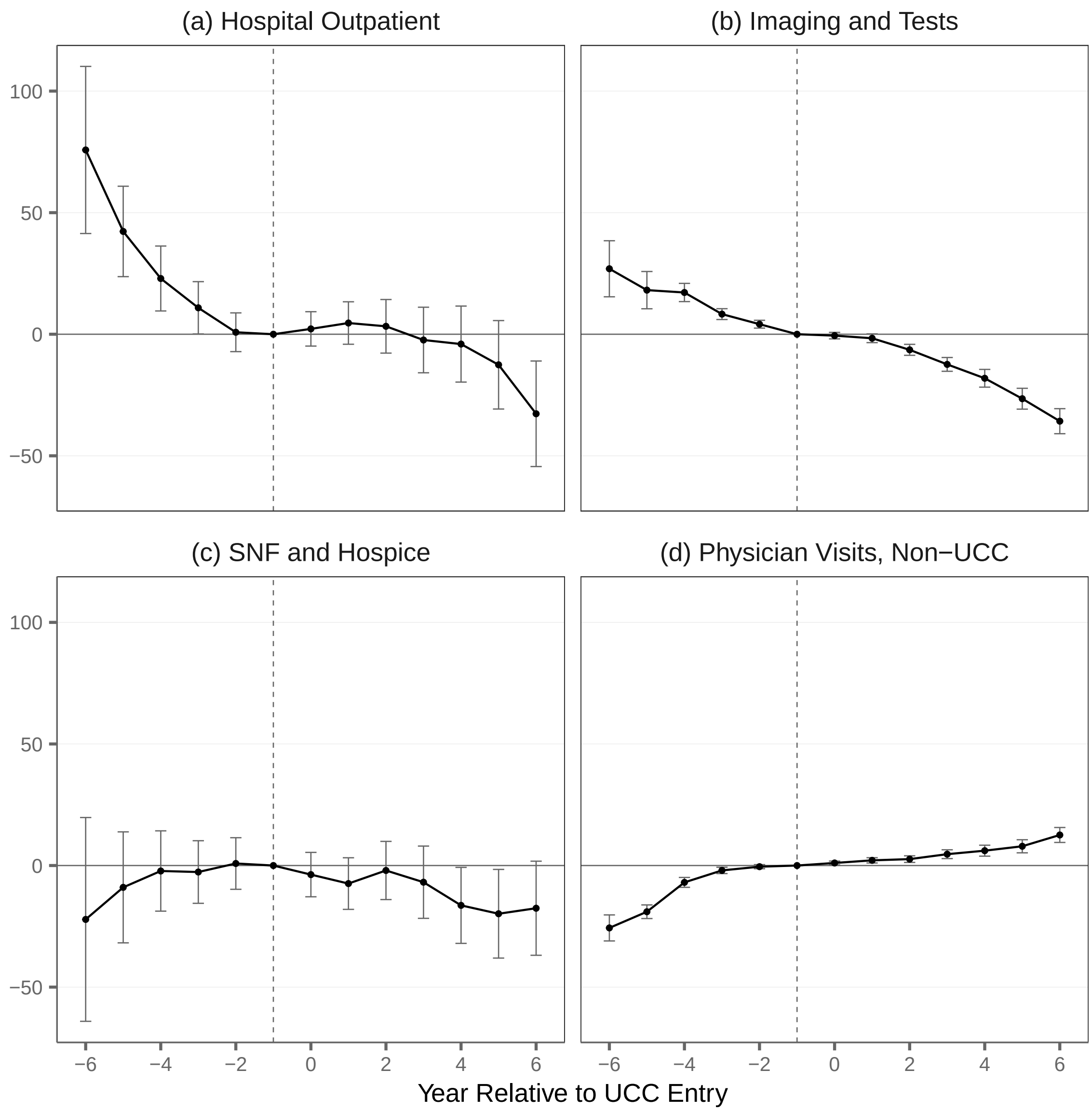
Notes: Figure shows DID estimates of the impact of UCC entry on total Medicare spending and mortality. UCC entry (Year 0) is defined as the first year in which more than 1 percent of Medicare beneficiaries in a zip code use a UCC. Year −1 (denoted by a vertical dashed line) is the reference level, which is set to zero. The different panels show estimates of β_l from equation (1) for total Medicare spending (Panel A) and mortality risk (Panel B). Total spending is the total per capita spending on all services. Mortality risk is the probability that the beneficiary died anytime during the year. For detailed definitions see Section III and the appendix. Standard errors are clustered by zip code.

Figure 3: UCC Impact on Spending, Most Affected Services



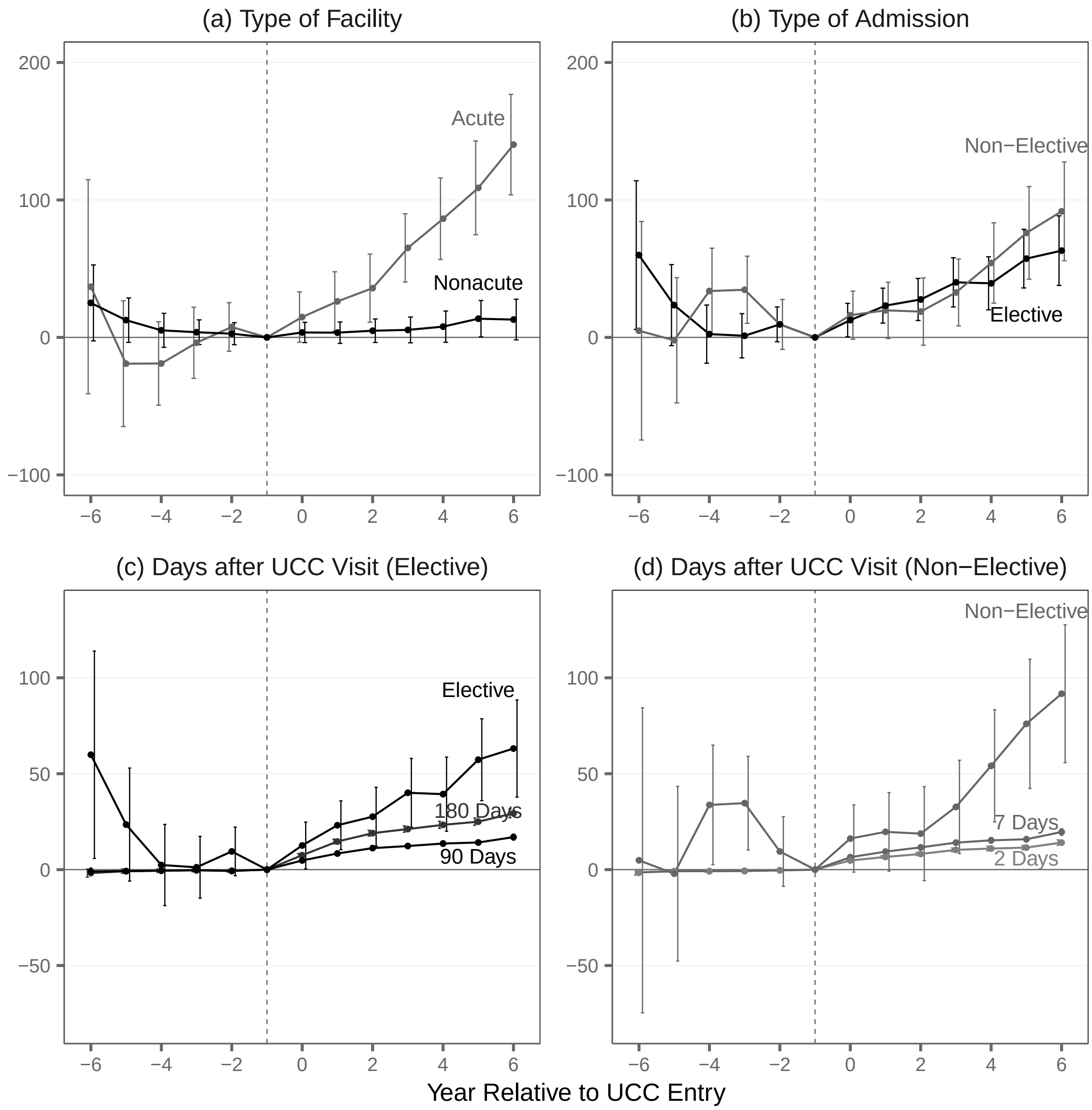
Notes: Figure shows DID estimates of the impact of UCC entry on spending on the most affected services.. UCC entry (Year 0) is defined as the first year in which more than 1 percent of Medicare beneficiaries in a zip code use a UCC. Year −1 (denoted by a vertical dashed line) is the reference level, which is set to zero. The different panels show estimates of β_l from equation (1) with annual per-capita spending on each of the services shown in the panel titles as the outcome (panels are sorted by overall dollar impact, in descending order). For detailed definitions see Section III and the appendix. Standard errors are clustered by zip code.

Figure 4: UCC Impact on Spending, Other Important Services



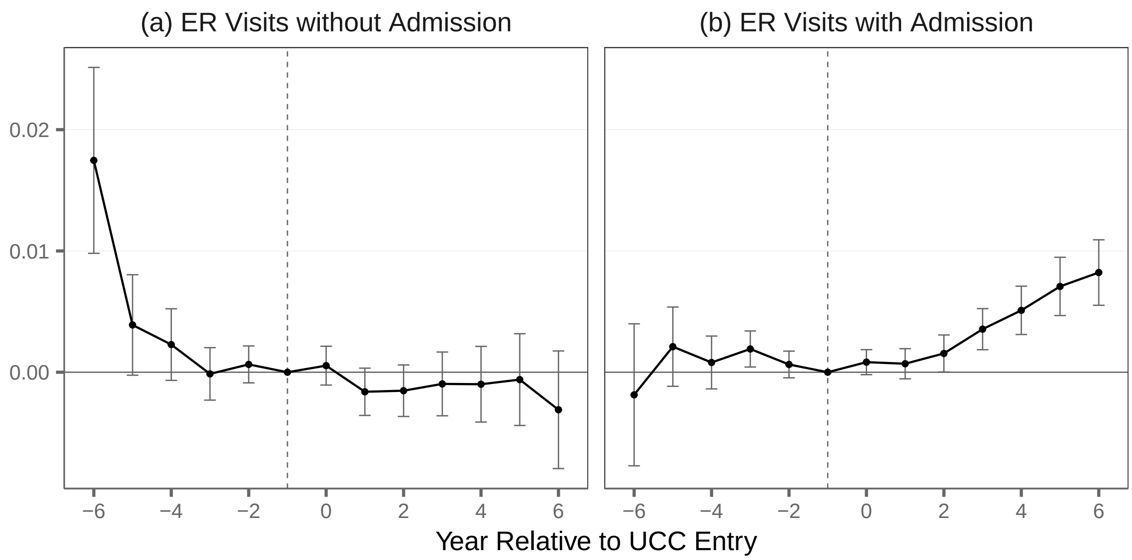
Notes: Figure shows DID estimates of the impact of UCC entry on spending on selected services.. UCC entry (Year 0) is defined as the first year in which more than 1 percent of Medicare beneficiaries in a zip code use a UCC. Year −1 (denoted by a vertical dashed line) is the reference level, which is set to zero. The different panels show estimates of β_l from equation (1) with annual per-capita spending on each of the services shown in the panel titles as the outcome. For detailed definitions see Section III and the appendix. Standard errors are clustered by zip code.

Figure 5: UCC Impact on Inpatient Spending, Different Breakdowns



Notes: Figure shows DID estimates of the impact of UCC entry on spending on inpatient admissions. UCC entry (Year 0) is defined as the first year in which more than 1 percent of Medicare beneficiaries in a zip code use a UCC. Year −1 (denoted by a vertical dashed line) is the reference level, which is set to zero. The different panels show estimates of β_l from equation (1) for different inpatient spending outcomes (per capita USD). Panels A and B decompose the impact on inpatient spending by whether the facility was acute versus non-acute (Panel A) or elective versus non-elective (Panel B). Panels C and D further decompose spending on elective admissions (Panel C) and non-elective admissions (Panel D) by the time in days between the admission and the most recent UCC visit preceding it. For detailed definitions see Section III and the appendix. Standard errors are clustered by zip code.

Figure 6: UCC Impact on the Number of ER Visits, by ER Discharge Type



Notes: Figure shows DID estimates of the impact of UCC entry on the number of ER visits. UCC entry (Year 0) is defined as the first year in which more than 1 percent of Medicare beneficiaries in a zip code use a UCC. Year −1 (denoted by a vertical dashed line) is the reference level, which is set to zero. The different panels show estimates of β_l from equation (1) for different types of ER visits. Panel A shows data for ER visits ending without the patient being admitted to a hospital. Panel B shows data for ER visits resulting in the patient being admitted to a hospital. For detailed definitions see Section III and the appendix. Standard errors are clustered by zip code.

Table 1: Patient Characteristics

	All (1)	Treated 2011 (2)	Controls 2011 (3)	Treated 2016 (4)	Controls 2016 (5)
A. UCC entry					
Probability of UCC use	0.032	0.041	0.004	0.063	0.005
Number of UCC visits	0.050	0.063	0.005	0.097	0.006
UCC spending	4.47	5.89	0.52	8.73	0.58
B. Spending and Mortality					
Total spending (USD per capita)	11,537	11,570	12,396	11,920	11,620
Mortality risk	0.054	0.053	0.056	0.051	0.057
C. Spending, by Type of Service (USD per capita)					
Inpatient	3,491	3,386	3,732	3,307	3,262
Hospital outpatient	1,533	1,499	1,601	1,842	2,041
Part D	1,383	1,300	1,583	1,704	1,681
SNF and hospice	1,274	1,405	1,472	1,219	1,271
Imaging and tests	530	556	535	472	372
Physician visits: non-UCC	526	577	556	572	471
Home health	511	515	592	480	497
Part B drug	431	427	397	526	431
D. Inpatient Spending Categories					
(1) Acute facilities	3,108	3,017	3,303	2,944	2,860
(2) Non-acute facilities	383	369	429	364	401
(A) Non-elective	2,453	2,438	2,775	2,305	2,272
(B) Elective	1,021	1,018	1,044	942	950
E. Inpatient Spending: Non-Elective Admissions					
All beneficiaries	2,453	2,438	2,775	2,305	2,272
If no UCC visit in this or prior calendar year	2,459	2,434	2,776	2,304	2,272
If at least one UCC visit in this or prior calendar year	2,356	2,484	2,549	2,313	2,344
Spending on admissions within 1 year of UCC visit	1,624	1,707	1,609	1,596	1,419
Spending on admissions within 7 days of UCC visit	283	310	251	259	215
Spending on admissions within 2 days of UCC visit	210	234	198	184	168
F. Inpatient Spending: Elective Admissions					
All beneficiaries	1,021	1,018	1,044	942	950
If no UCC visit in this or prior calendar year	1,016	1,008	1,043	931	949
If at least one UCC visit in this or prior calendar year	1,103	1,152	1,234	1,044	1,095
Spending on admissions within 1 year of UCC visit	711	750	735	681	668
Spending on admissions within 180 days of UCC visit	440	466	451	413	320
Spending on admissions within 90 days of UCC visit	263	287	256	241	158
G. ER utilization					
Number of ER visits	0.57	0.56	0.61	0.60	0.69
ER visits without admission	0.35	0.34	0.37	0.40	0.49
ER visits with admission	0.22	0.22	0.24	0.20	0.20
H. Controls					
Age	76.37	76.42	76.66	76.00	75.93
Percent male	0.42	0.43	0.42	0.43	0.43
CCI approximation (lower is better)	2.94	2.96	3.10	3.11	3.24
Part D enrollment (number of months)	6.26	5.67	6.28	7.87	7.96
Observations	51,260,567	3,044,037	1,587,742	4,425,561	375,015

Notes: Column 1 shows average characteristics for all sampled patients in all years. Columns 2 and 4 focus on the subsample of beneficiaries that reside in zip codes that had a UCC entry ("treated") by 2011 and 2016, respectively. Columns 3 and 5 focus on the subsample of beneficiaries living in zip codes with no UCC entry ("controls") by 2011 and 2016, respectively. Spending is the sum of Medicare and beneficiary spending for each particular category and is denominated in 2006 US dollars. CCI stands for approximated Charlson Comorbidity Index. For detailed definitions, see Section III and the appendix.

Table 2: The Impact of UCC Entry

	Mean Dependent Variable in 2006	β_{pre}	β_{post}	β_6	$\beta_6/mean$ (4)/(1) (percent)
	(1)	(2)	(3)	(4)	(5)
A. UCC entry, Different Measures					
Probability of UCC use	0.0137	-0.0010	0.0266	0.0424	310.20
		(0.0001)	(0.0004)	(0.0008)	
Number of UCC visits	0.0225	-0.0015	0.0411	0.0653	290.31
		(0.0001)	(0.0007)	(0.0014)	
UCC spending	1.85	-0.17	3.86	6.11	330.97
		(0.02)	(0.07)	(0.14)	
B. UCC Impact on Spending and Mortality					
Total spending (USD per capita)	10,829.41	26.73	129.08	268.63	2.48
		(19.54)	(20.62)	(40.10)	
Mortality risk	0.05493	-0.0001	0.0002	0.0008	1.48
		(0.0002)	(0.0002)	(0.0004)	
C. UCC Impact on Spending, Most Affected Services					
Inpatient	3,624.82	2.69	64.49	153.24	4.23
		(12.16)	(11.86)	(21.38)	
Part D	1,132.89	-8.09	47.75	108.20	9.55
		(3.93)	(4.07)	(8.47)	
Home health	439.06	5.97	16.07	43.17	9.83
		(3.91)	(4.46)	(9.64)	
Part B drug	414.41	-1.75	10.45	19.17	4.63
		(3.68)	(3.18)	(7.14)	
D. UCC Impact on Spending, Other Important Services					
Hospital outpatient	1,219.16	16.49	-3.33	-32.71	-2.68
		(4.76)	(5.22)	(11.07)	
Imaging and tests	603.77	10.64	-11.60	-35.76	-5.92
		(1.14)	(1.18)	(2.63)	
SNF and hospice	1,096.82	-2.98	-9.14	-17.56	-1.60
		(5.10)	(5.30)	(9.87)	
Physician office visits non-UCC	432.14	-5.59	4.44	12.57	2.91
		(0.61)	(0.73)	(1.57)	

continued on next page

Table 2: The Impact of UCC Entry (Continued)

	Mean Dependent Variable in 2006 (1)	β_{pre} (2)	β_{post} (3)	β_6 (4)	$\beta_6/mean$ (4)/(1) (percent) (5)
E. UCC Impact on Inpatient Spending, Different Breakdowns					
(1) Inpatient in acute facilities	3,232.77	-3.01	57.99	140.26	4.34
		(10.64)	(10.24)	(18.64)	
(2) Inpatient in nonacute facilities	392.05	5.70	6.50	12.97	3.31
		(3.75)	(3.99)	(7.55)	
(A) Inpatient: non-elective	2,546.84	19.78	37.61	91.70	3.60
		(10.19)	(10.25)	(18.34)	
Non-elective within 7 days of UCC visit	6.74	-0.67	12.23	19.61	291.07
		(0.23)	(0.33)	(0.87)	
Non-elective within 2 days of UCC visit	5.19	-0.60	8.80	14.09	271.71
		(0.21)	(0.28)	(0.75)	
(B) Inpatient: elective	1,125.38	9.66	33.65	63.13	5.61
		(6.66)	(6.79)	(12.92)	
Elective within 90 days of UCC visit	6.62	-0.57	10.79	16.94	256.02
		(0.25)	(0.34)	(0.78)	
Elective within 180 days of UCC visit	9.38	-0.63	18.50	29.34	312.72
		(0.30)	(0.47)	(1.18)	
F. UCC Impact on the Number of ER Visits					
ER visits without admission	0.3118	0.0019	-0.0010	-0.0031	-0.99
		(0.0009)	(0.0011)	(0.0025)	
ER visits with admission	0.2218	0.0011	0.0032	0.0082	3.71
		(0.0007)	(0.0007)	(0.0014)	

Notes: Table shows DID estimates of the impact of UCC entry on different outcomes. Column 1 shows the mean dependent variable in 2006 (for all beneficiaries, including those then treated). Column 2 shows a weighed average of pre-treatment estimates from equation (2), which describe the pre-trends in outcome variables. Column 3 shows a weighed average of post-treatment coefficients from equation (3). Column 4 shows estimates of β_6, the estimated change in the outcome six years after UCC entry. Column 5 shows this change in outcome six years after UCC entry as a percentage of the mean dependent variable in 2006. Spending for each category is the sum of Medicare and beneficiary spending and is denominated in 2006 US dollars. All estimates control for beneficiary age, gender and patient approximated Charlson Comorbidity Index. Estimates of Part D spending and total spending also control for months of Part D enrollment. Standard errors are clustered by zip code. N = 51,260,567 patient-years (36,030,854 of which are from zip codes yet to be treated in 2006). For detailed definitions see Section III and the appendix.

Table 3: Utilization Results

	Mean Dependent Variable in 2006	β_{pre}	β_{post}	β_6	$\beta_6/mean$ (4)/(1) (percent)
	(1)	(2)	(3)	(4)	(5)
A. UCC Impact on Utilization, Most Affected Services					
Hospital stays	0.3840	-0.0018	0.0100	0.0255	6.65
		(0.0009)	(0.0009)	(0.0019)	
Part D medication (months of supply)	18.76	0.38	-0.60	-1.48	-7.90
		(0.03)	(0.04)	(0.08)	
Home health visits	3.21	0.15	0.01	0.18	5.54
		(0.07)	(0.06)	(0.11)	
Part B drug events	3.31	0.01	-0.01	-0.06	-1.88
		(0.01)	(0.01)	(0.02)	
B. UCC Impact on Utilization, Other Important Services					
Hospital outpatient visits	5.70	0.11	-0.09	-0.23	-4.00
		(0.02)	(0.02)	(0.05)	
Imaging and testing events	18.86	0.06	-0.09	-0.35	-1.84
		(0.03)	(0.04)	(0.08)	
SNF and hospice stays	0.1097	0.0001	0.0010	0.0026	2.41
		(0.0004)	(0.0005)	(0.0009)	
Physician office visits non-UCC	7.4312	-0.0243	-0.0021	0.0052	0.07
		(0.0080)	(0.0099)	(0.0210)	

Notes: Table shows DID estimates of the impact of UCC entry on different outcomes. Column 1 shows the mean dependent variable in 2006 (for all beneficiaries, including those then treated). Column 2 shows a weighed average of pre-treatment estimates from equation (2), which describe the pre-trends in outcome variables. Column 3 shows a weighed average of post-treatment coefficients from equation (3). Column 4 shows estimates of β_6, the estimated change in the outcome six years after UCC entry. Column 5 shows this change in outcome six years after UCC entry as a percentage of the mean dependent variable in 2006. All estimates control for beneficiary age, gender and patient approximated Charlson Comorbidity Index. Estimate of Part D prescription drugs controls for months of Part D enrollment. Standard errors are clustered by zip code. N = 51,260,567 patient-years (36,030,854 of which are from zip codes yet to be treated in 2006). For detailed definitions see Section III and the appendix.

Appendix

Sample and Variable Definitions

Construction of the Main Sample

Our main sample consists of all beneficiaries aged 65 years old or older who were enrolled for at least one full calendar year in Medicare Parts A and B in 2006–2016 and residing in zip codes that had at least 100 beneficiaries.

Zip-code areas. We sample zip codes as follows. For each zip code and year, we use the 20-percent sample of the MBSF to calculate the number of fee-for-service (FFS) beneficiaries who resided in the zip code during that year. We then exclude all zip codes that had fewer than 100 beneficiaries in one or more years during the study period 2006–2016. The resulting sample of zip codes consists of 14,562 zip codes that had 100 or more beneficiaries throughout this study period.

Beneficiaries. We sample all patient-years during which the beneficiary resided in a sampled zip code, was at least 65 years old, and had Parts A and B coverage for the full 12 months, or for as long as they were alive for beneficiaries who died during the year. That is, we exclude beneficiary-years that had any enrollment in Medicare Advantage. The resulting sample has 51,260,567 patient-years.

Variable Definitions

UCC entry and exit. We consider a zip code as being served by a UCC from the first year when at least one percent of Medicare FFS beneficiaries residing in this zip code used a UCC. To calculate the numerator, we use the 20-percent sample of the Carrier File to define the number of unique beneficiaries who used UCC in each zip-year (without any other sample restrictions)—namely, beneficiaries with least one Carrier claim with UCC as the place of service. To calculate the denominator, we use the 20-percent sample of the MBSF to define the number of FFS beneficiaries residing in each zip every year. The ratio between the two defines the share of FFS beneficiaries who had at least one visit to UCC in a zip-year. For each zip code, we consider the first year in which this share is greater or equal to 1 percent as the year of UCC entry. In our main analysis, we ignore UCC exits (that, as we show, are rare) and consider a zip code as treated from the year of UCC entry and onward.

In our robustness checks, we also consider UCC exits, using the same access-based approach we used to define entry. To reduce the measurement error that results from the use of a 20-percent sample of beneficiaries to measure UCC access, we classify the UCC as having lost UCC access (i.e., had a UCC exit) only if the number of UCC users falls below 1 percent for at least two consecutive years and does not rises above this threshold again during our sample period.

Utilization and health outcomes. We observe multiple utilization measures, spending, and mortality outcomes for our sample of Medicare beneficiaries. UCC visits are observed in the Carrier File. Number of UCC visits is the number of distinct dates on which a patient has any claim in Carrier data with place of service "Urgent Care Facility". Probability of UCC use is estimated using a dummy that has the value one if a patient has at least one UCC physician office visit within a given year and zero otherwise. We observe patient mortality in the MBSF Base File, and estimate mortality probabilities based on whether a patient died anytime during the year. We observe ER visits and hospital stays in the MBSF Cost and Utilization File. We classify ER visits to those with and without admission, using the inpatient and hospital outpatient emergency room visit categories in this file. Our Hospital Stays variable is the sum of acute inpatient stays and other inpatient stays from the MBSF Cost and Utilization File.[7] Number of physician visits is the number of services that a patient receives in the Carrier File with Berenson-Eggers Type of Service (BETOS) codes corresponding to office visits (as opposed to ER visits and visits to other facilities, procedures, tests and other service types in non-institutional settings). Physician visits in non-UCC settings have any place of service except for UCC, the majority of which are physician offices.

Spending measures. For most services, we use spending measures from the MBSF Cost and Utilization File, which provides annual summaries of spending that CMS calculates from detailed claims data. In some cases when we consider more granular definitions of services, we ourselves compute spending by aggregating payments from detailed claims data. All spending measures are annual and denominated in 2006 US dollars.

The following spending variables are computed using MBSF Cost and Utilization File. Inpatient spending in acute facilities is the sum of Medicare, patient and pass-through per diem payments for acute inpatient hospital category. Inpatient spending in non-acute facilities is the sum of Medicare, patient and pass-through per diem payments for "other inpatient

[7] For detailed definitions, see "Data Documentation Master Beneficiary Summary File (MBSF): Cost and Utilization Segment," `https://resdac.org/cms-data/files/mbsf-cost-and-utilization/data-documentation`, accessed July 10, 2021.

hospital" category. This category includes settings such as long-term care hospitals, inpatient psychiatric facilities, inpatient rehabilitation facilities, and other inpatient facilities. Hospice spending and home health spending are defined based on Medicare payments for each category. All other reported spending measures are the sum of Medicare and beneficiary payments for each category. We group skilled nursing facility with hospice payment and imaging with tests payment. Finally, total spending is the sum of all spending on all categories reported in the MBSF Cost and Utilization File.

We computed the following spending measures from detailed claims data (from the Inpatient and Carrier Files). Spending on non-UCC physician visits and UCC spending are computed using data from the Carrier File. We compute spending as the sum of all line payments by Medicare and the beneficiary (coinsurance and deductible amount).[8] Spending on UCC services is the sum of payments on all Carrier claims with UCC as the place of service. To compute spending on physician visits non-UCC, we identify procedures (claim lines) with BETOS codes for "office visits." We exclude claims with UCC as the place of service. The place of service for most remaining claims is "physician office." Note that this category excludes procedures, imaging, and testing.

We use inpatient claims (from the Inpatient File) to decompose inpatient spending by whether the admission is elective and by the timing of admission relative to the most recent UCC visit. Spending for each category is beneficiary and Medicare spending on all relevant inpatient claims that a patient had in a given year.[9] We classify an admission as elective if it has a type "elective," and as non-elective if it has any other type.[10] Non-elective admission is within 2 days of UCC visit if admission date is the same, one day or two days after the date of any UCC visit. Other categories with UCC timing are defined similarly.

Approximation of the Charlson Comorbidity Index. As a summary measure of beneficiary health, we approximate the Charlson Comorbidity Index using data on all chronic

[8]Carrier line payment by Medicare and beneficiary = Line NCH Medicare Payment Amount + Line Beneficiary Part B Deductible Amount + Line Beneficiary Coinsurance Amount.

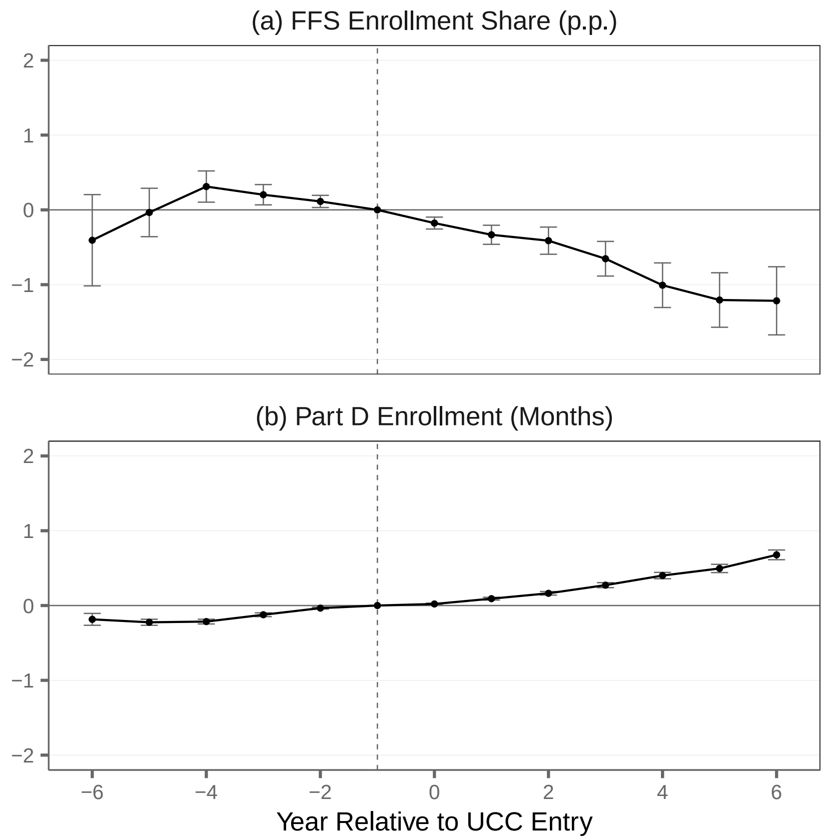
[9]Following CMS documentation, Medicare spending = Claim (Medicare) Payment Amount + Claim Pass Thru Per Diem Amount * Claim Medicare Utilization Day Count. Beneficiary spending = NCH Beneficiary Inpatient (or other Part A) Deductible Amount + NCH Beneficiary Part A Coinsurance Liability Amount + NCH Beneficiary Blood Deductible Liability Amount (for all inpatient claims with non-negative Claim (Medicare) Payment Amount). We use the sum of Medicare and beneficiary spending, recoding negative spending to zero.

[10]Inpatient claims have Claim Inpatient Admission Type Code with categories: "elective;" "emergency;" "urgent;" "newborn;" and "trauma center." CMS definitions of these admission types are as follows. Elective—The patient's condition permitted adequate time to schedule the availability of suitable accommodations; Urgent—The patient required immediate attention for the care and treatment of a physical or mental disorder (Generally, the patient was admitted to the first available and suitable accommodation); Emergency—The patient required immediate medical intervention as a result of severe, life threatening, or potentially disabling conditions (Generally, the patient was admitted through the emergency room).

conditions that are a part of the original index and are observed in the MBSF Chronic Conditions segment. The resulting index is a weighted number of the following chronic conditions. We use the same weights as in the Charlson Comorbidity Index or average weights for different disease severity (that we do not observe). Weight of 1: Acute Myocardial Infarction; Alzheimer's Disease and Related Disorders or Senile Dementia; Chronic Obstructive Pulmonary Disease; Heart Failure; Rheumatoid Arthritis and Osteoarthritis; Stroke or Transient Ischemic Attack. Weight of 1.5: Chronic Kidney Disease and Diabetes. Weight of 4: Breast Cancer, Colorectal Cancer, Prostate Cancer, Lung Cancer, Endometrial Cancer. The possible range of the resulting health index is 0–29.

Enrollment measures. We measure FFS and Part D enrollment using the MBSF Base File. The yearly share of FFS beneficiaries is defined as the share of beneficiaries with zero Medicare Advantage months during the year out of the sample of all beneficiaries who are 65 or older, with full-year coverage, or coverage until death. Months of Part D enrollment are observed in the MBSF base segment.

Appendix Figure A1: UCC Entry and Enrollment Trends



Notes: Figure shows DID estimates of the impact of UCC entry on entry and enrollment outcomes. UCC entry (Year 0) is defined as the first year in which more than 1 percent of Medicare beneficiaries in a zip code use a UCC. Year −1 (denoted by a vertical dashed line) is the reference level, which is set to zero. The different panels show estimates of β_l from equation (1) for the following outcomes: FFS enrollment share (Panel A) is the percent of beneficiaries who were enrolled in Medicare FFS throughout the year. Part D enrollment is the number of months a beneficiary was enrolled in Part D during the year (including zero). For detailed definitions see Section III and the appendix. Standard errors are clustered by zip code.

Appendix Table A1: UCC Penetration

Year	Beneficiaries	Zips	% bene with UCC entry	% zips with UCC entry	% bene with UCC	% zips with UCC
	(1)	(2)	(3)	(4)	(5)	(6)
2006	4,718,394	14,562	29.3	28.3	29.3	28.3
2007	4,616,647	14,562	37.4	37.2	37.3	37.1
2008	4,544,576	14,562	45.4	45.7	45.2	45.4
2009	4,546,816	14,562	53.4	53.4	52.9	52.9
2010	4,592,044	14,562	59.3	59.3	58.4	58.4
2011	4,631,779	14,562	65.7	66.0	64.6	64.6
2012	4,672,461	14,562	72.5	72.3	70.7	70.1
2013	4,719,898	14,562	78.5	77.8	75.8	74.4
2014	4,712,215	14,562	84.7	83.0	81.1	78.3
2015	4,705,161	14,562	89.3	87.7	84.1	80.8
2016	4,800,576	14,562	92.2	90.7	87.1	83.8

Notes: Columns 1 and 2 show the number of unique beneficiaries and zip codes included in the sample each year. Columns 3 and 4 show the share of beneficiaries and zip codes that has a UCC entry on or before a given year. Columns 5 and 6 show the number of beneficiaries and zip codes still served by a UCC in a given year. UCC entry is defined as the first year in which more than 1 percent of Medicare beneficiaries in a zip code use a UCC. UCC exit is defined based on a drop of the share of UCC users below 1 percent for at least two consecutive years and until the end of our sample period. For detailed definitions see the appendix.

Appendix Table A2: Robustness to UCC Exits

	Main results		Remove zip codes with exits		Use both entries and exits for identification	
	β_{pre}	β_{post}	β_{pre}	β_{post}	β_{pre}	β_{post}
	(1)	(2)	(3)	(4)	(5)	(6)
A. UCC Entry, Different Measures						
Probability of UCC use	-0.0010	0.0266	-0.0010	0.0281	-0.0013	0.0267
	(0.0001)	(0.0004)	(0.0001)	(0.0004)	(0.0001)	(0.0004)
Number of UCC visits	-0.0015	0.0411	-0.0016	0.0434	-0.0021	0.0412
	(0.0001)	(0.0007)	(0.0001)	(0.0008)	(0.0001)	(0.0006)
UCC Spending	-0.17	3.86	-0.18	4.08	-0.21	3.86
	(0.02)	(0.07)	(0.02)	(0.07)	(0.02)	(0.06)
B. UCC Impact on Spending and Mortality						
Total spending	26.73	129.08	28.63	129.35	24.07	125.97
	(19.54)	(20.62)	(21.55)	(23.06)	(19.22)	(20.24)
Mortality rate	-0.0001	0.0002	-0.0001	0.0001	-0.0001	0.0002
	(0.0002)	(0.0002)	(0.0002)	(0.0003)	(0.0002)	(0.0002)
C. UCC Impact on Spending, Most Affected Services						
Inpatient spending	2.69	64.49	4.15	66.81	1.07	63.03
	(12.16)	(11.86)	(12.77)	(12.51)	(11.93)	(11.13)
Part D spending	-8.09	47.75	-8.52	51.43	-8.34	46.84
	(3.93)	(4.07)	(4.24)	(4.26)	(4.05)	(4.20)
Home health spending	5.97	16.07	6.22	17.11	5.86	15.46
	(3.91)	(4.46)	(3.90)	(4.50)	(3.90)	(4.36)
Part B drug spending	-1.75	10.45	-1.93	10.76	-1.67	11.04
	(3.68)	(3.18)	(3.45)	(3.34)	(3.13)	(2.91)
D. UCC Impact on Spending, Other Important Services						
Hospital outpatient spending	16.49	-3.33	18.22	-7.68	16.71	-4.20
	(4.76)	(5.22)	(4.75)	(5.20)	(4.56)	(4.72)
Imaging and tests spending	10.64	-11.60	11.36	-12.92	10.46	-11.57
	(1.14)	(1.18)	(1.19)	(1.13)	(1.06)	(1.19)
SNF and hospice spending	-2.98	-9.14	-3.80	-11.04	-3.73	-9.07
	(5.10)	(5.30)	(5.95)	(6.07)	(5.27)	(5.60)
Spending on physician office visits non-UCC	-5.59	4.44	-6.25	4.93	-5.58	4.46
	(0.61)	(0.73)	(0.60)	(0.79)	(0.64)	(0.77)

continued on next page

Appendix Table A2: Robustness to UCC Exits (Continued)

	Main results		Remove zip codes with exits		Use both entries and exits for identification	
	β_{pre}	β_{post}	β_{pre}	β_{post}	β_{pre}	β_{post}
	(1)	(2)	(3)	(4)	(5)	(6)
E. UCC Impact on Inpatient Spending, Different Breakdowns						
(1) Inpatient in acute facilities	-3.01	57.99	-1.90	61.03	-4.08	57.08
	(10.64)	(10.24)	(11.14)	(10.45)	(10.65)	(9.85)
(2) Inpatient in non-acute facilities	5.70	6.50	6.05	5.78	5.15	5.95
	(3.75)	(3.99)	(3.98)	(4.41)	(3.83)	(3.68)
(A) Inpatient: non-elective	19.78	37.61	25.05	37.83	19.20	37.25
	(10.19)	(10.25)	(11.47)	(10.92)	(9.75)	(9.62)
Non-elective within 7 days of UCC visit	-0.67	12.23	-0.70	12.91	-0.62	12.34
	(0.23)	(0.33)	(0.26)	(0.37)	(0.22)	(0.36)
Non-elective within 2 days of UCC visit	-0.60	8.80	-0.63	9.31	-0.54	8.89
	(0.21)	(0.28)	(0.23)	(0.33)	(0.20)	(0.31)
(B) Inpatient: elective	9.66	33.65	7.99	34.66	7.83	32.41
	(6.66)	(6.79)	(7.32)	(6.40)	(6.81)	(5.99)
Elective within 90 days of UCC visit	-0.57	10.79	-0.57	11.52	-0.49	10.96
	(0.25)	(0.34)	(0.28)	(0.37)	(0.25)	(0.35)
Elective within 180 days of UCC visit	-0.63	18.50	-0.67	19.63	-0.63	18.73
	(0.30)	(0.47)	(0.36)	(0.53)	(0.33)	(0.47)
F. UCC Impact on the Number of ER Visits						
ER visits without admission	0.0019	-0.0010	0.0021	-0.0011	0.0019	-0.0013
	(0.0009)	(0.0011)	(0.0009)	(0.0011)	(0.0010)	(0.0009)
ER visits resulting in admission	0.0011	0.0032	0.0012	0.0034	0.0012	0.0033
	(0.0007)	(0.0007)	(0.0008)	(0.0008)	(0.0008)	(0.0007)
Observations	51,260,567		48,579,973		51,260,567	

Notes: Table shows estimates with and without accounting for UCC exists. Columns 1 and 2 show the weighted average of pre-treatment and post-treatment coefficients for the main results. Results in columns 3 and 4 are estimated on a sample of zip codes that did not have a UCC exit in 2007–2016. Results in columns 5 and 6 are computed on our main sample and represent both the (positive) effect of UCC entry and the (negative) effect of UCC exit. Spending for each category is the sum of Medicare and beneficiary spending and is denominated in 2006 US dollars. All estimates control for beneficiary age, gender and patient approximated Charlson Commorbidity Index. Estimates of Part D spending and total spending also control for months of Part D enrollment. Standard errors are clustered by zip code. For detailed definitions see Section III and the appendix.