Travel and Wait Times are Longest for Health Care Services and Result in an Annual Opportunity Cost of $89 Billion

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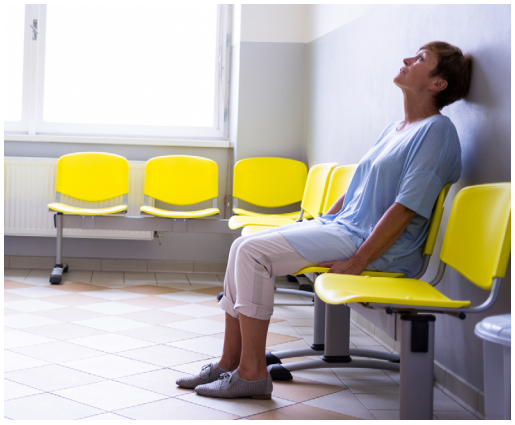
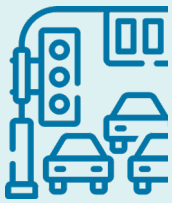
Accessing professional health care services required on average 34 minutes of travel and 11 minutes of waiting, a burden that hasn't changed over the past 11 years.



According to data analyzed from the Bureau of Labor Statistics' American Time Use Survey from 2006 thru 2017, both health care travel and wait times were the longest when compared to other professional services like legal services, personal care, vehicle repair or even government activities like obtaining a permit/license **(Figure 1)**. Waiting times for health care services in particular were much higher than the other service categories, over twice the length of the next closest, veterinary services. The time spent traveling and waiting for health care services on a day when an individual got care was over 50% of the time spent actually receiving care—45 combined minutes traveling & waiting vs. 76 minutes receiving care (data not shown). Among all time spent on health care related activities (self-care, assisting others, receiving professional care, waiting and travel), travel and waiting for care accounted for 19.7% of the total time spent, on average over two minutes a day or an hour per month **(Figure 2)**.

Time spent on travel and waiting for care is an underappreciated burden of the US health care system. It results in a significant cost on patients, as individuals must forgo either leisure, work, or home activities in order to see a professional. When quantified by applying an individual's hourly wage as an approximate measure of the economic cost of time spent, travel and waiting costs averaged $89 billion dollars annually from 2006 thru 2017. Despite significant investments in the United States over this period in improving access to health care through better insurance, the use of innovative delivery systems, and advances in digitizing health care records and automating administrative processes, travel and wait times show no discernable improvements in these data from 2006 to 2017 **(Figure 4)**. Travel and wait times represent an important measure of quality as they are key metrics of patient experiences and the time burden of care is a known hurdle for individuals seeking access to medicine.

Accessing health care services required an average of



34 minutes travel

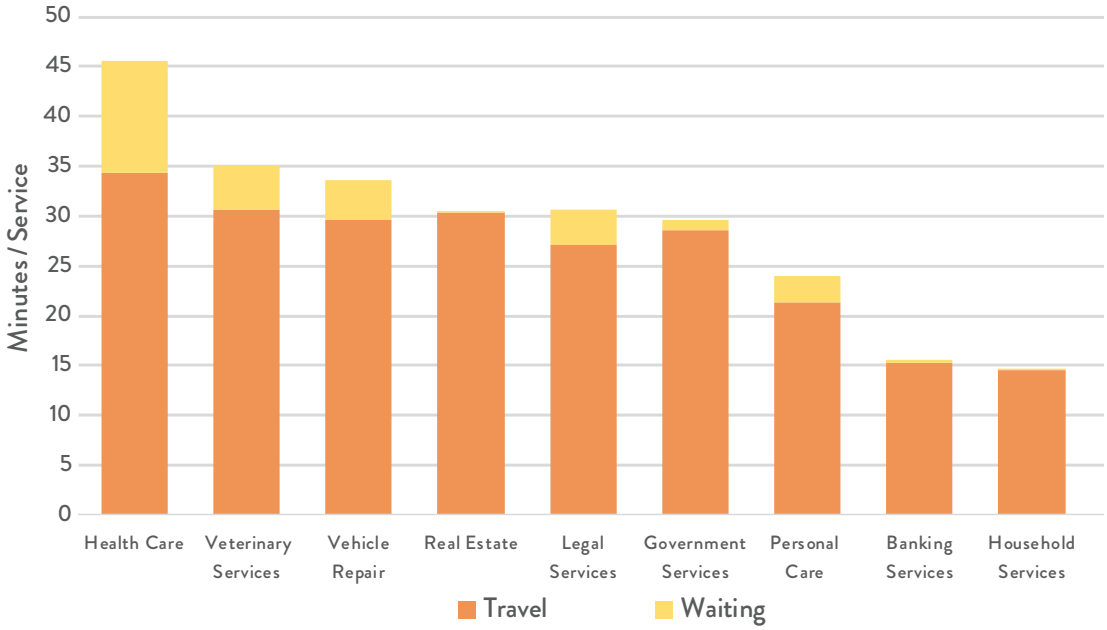
+

11 minutes waiting

These findings on travel and wait times come from a larger analysis of all health-related activities within the American Time Use Survey.

The American Time Use Survey (ATUS) is a nationally-representative survey of those fifteen and older. It asks individuals to record throughout a single day a record of their activities in a diary, which are then classified into pre-determined categories. Data from the years 2006 thru 2017 are included in this analysis, during which most of the health-related category definitions remained identical. "Professional

Figure 1: Average Travel and Wait Times for Professional Services (2006–2017)

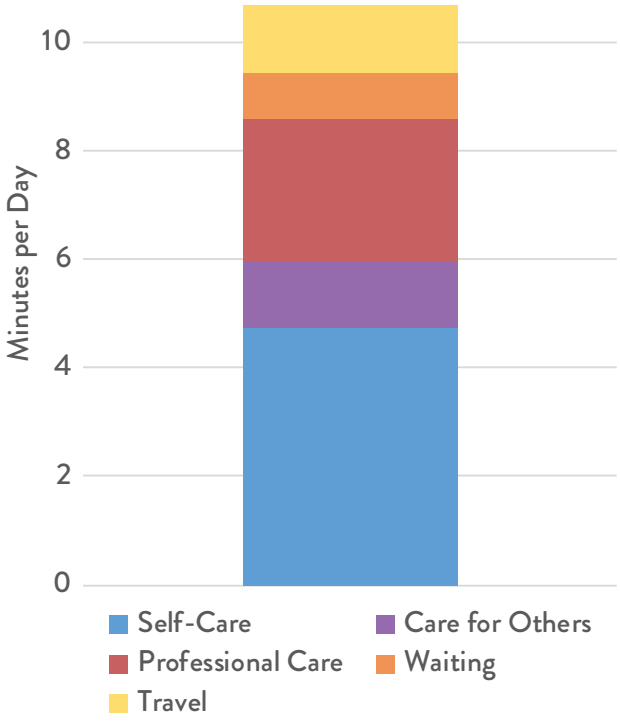


health services" in this survey comprise a broad range of medical and health services/treatments including: office visits, inpatient treatment, dental care, physical therapy, psychologist visits, talking to a pharmacist, chiropractic care, and even acupuncture. These distinct types of professional care unfortunately cannot be individually distinguished in the underlying data. Studying health care travel and wait times within the ATUS survey has a few advantages—these data can be compared over a long period of time, contrasted against other types of professional services, and analyzed in a way that illuminates how health care activities impact the remainder of an individual's daily tasks.

Broadly, ATUS health activities include health-related self-care like taking medicines/vitamins and treating injuries and illness; providing health care for others, including family and non-family household members; seeking professional care from a variety of providers; and any travel/waiting required to maintain health. Additional tangential health-related activities like exercise and fitness activities and generic self-care like grooming are not included in this analysis. Engaging in any of the five health categories on a particular day occurs infrequently, on only 11.0% of days for the average American. However, when time is spent on one of these five categories, the total health time burden for that day averages over 100 minutes.

Older Americans spend more time treating their health than their younger counterparts: those between the ages of 15 and 50 average less than 7.0 minutes per day, while those aged 50 and older average 16.9 minutes per day. Females are also more likely to spend time on health than males (13.3 minutes per day vs. 7.9 minutes). One of the most predictive factors of time spent on health-related activities is an individual's health status, which was self-reported in a separate survey module from 2014-2016. For those who reported their general health was "Poor", an average 26.4 hours per month was spent on health care activities, compared to less than three hours for those who cited "Excellent" general health. This pattern was consistent across all categories of care, with self-care, travel and professional care accounting for the largest differences. The greater average time spent is driven both by the fact that those in poorer health are more likely to spend any time during the day on a health-related activity (37.6% for "Poor" vs. 6.9% for "Excellent"), but also that when spending time on these activities, more time is spent on average during the day (138 minutes for "Poor" vs. 101 minutes for "Excellent").

Figure 2: Average Daily Time Spent on Health Care Activities



Receiving professional health care nearly always required travel to access that care and frequently required time spent waiting. The average time required was not impacted by an individual's income or location.

Time spent receiving professional care accounts for less than a quarter (24.1%) of all time on health-related activities, because these activities occur less frequently compared to self-care. However, while infrequent the average duration of receiving professional care is quite long at 76.3 minutes. 92.5% of the time professional services were received outside of the home travel time was required to access care, with an average duration of 34.3 minutes. Waiting for care was surprising less frequent, with only 32.3% of respondents recording having to wait for a professional care service. When time waiting was required, the average time spent was even longer than the travel time at 36.4 minutes. The smaller percentage of those who recorded waiting for care may result from the very broad range of professional health care services categorized together in the survey, some of which like "attending group therapy" or "receiving physical therapy" likely don't have wait times like doctor's office or emergency room visits. It is also possible respondents did not record waiting as a separate activity, instead categorizing it in the duration of time spent receiving care. When looking for trends in travel and waiting for professional care between 2006 and 2017, there is little evidence of a trend, and no sign of improvement in the US **(Figure 4)**.

Travel and waiting time for professional care were similar across a variety of demographic variables, neither family income or urban/rural divides show differences in time spent traveling and waiting for care. When compared to the other professional services analyzed, health care services required both the longest travel and longest wait times **(Figure 1)**. When total travel and wait times are measured as a proportion of the total event (including time receiving the services), health care fell near the middle of the categories, with those like banking, vehicle repair, and veterinary services requiring a greater relative amount of travel and waiting, while personal care and real estate required less (data not shown). Health care falls near the middle despite its longer waiting and travel times because health care also had one of the longest average service visit lengths.

Figure 3: Time Spent on Health Care Activities, by General Health Status (2014–2016)

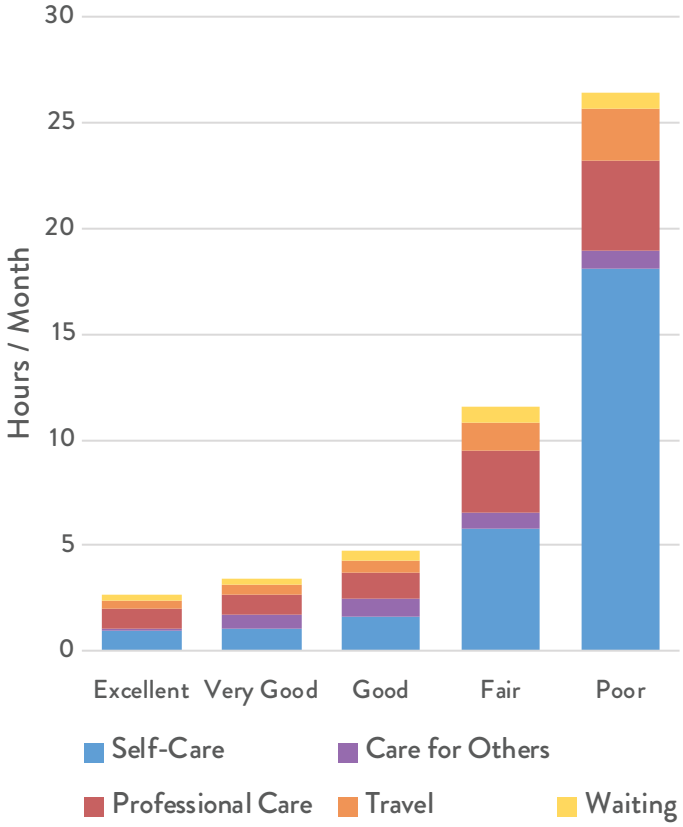
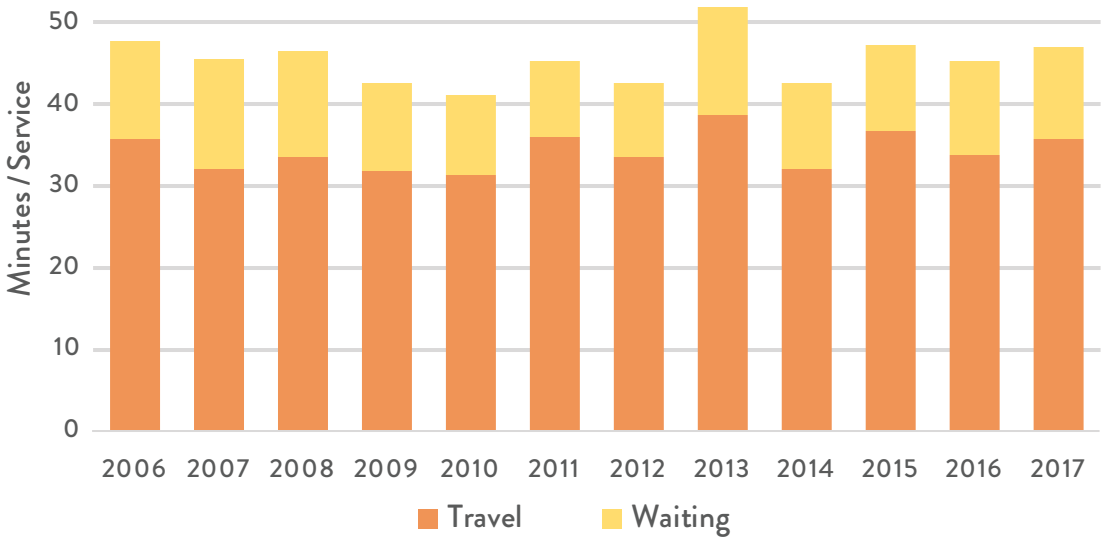


Figure 4: Average Travel and Wait Times for Professional Care from 2006 to 2017



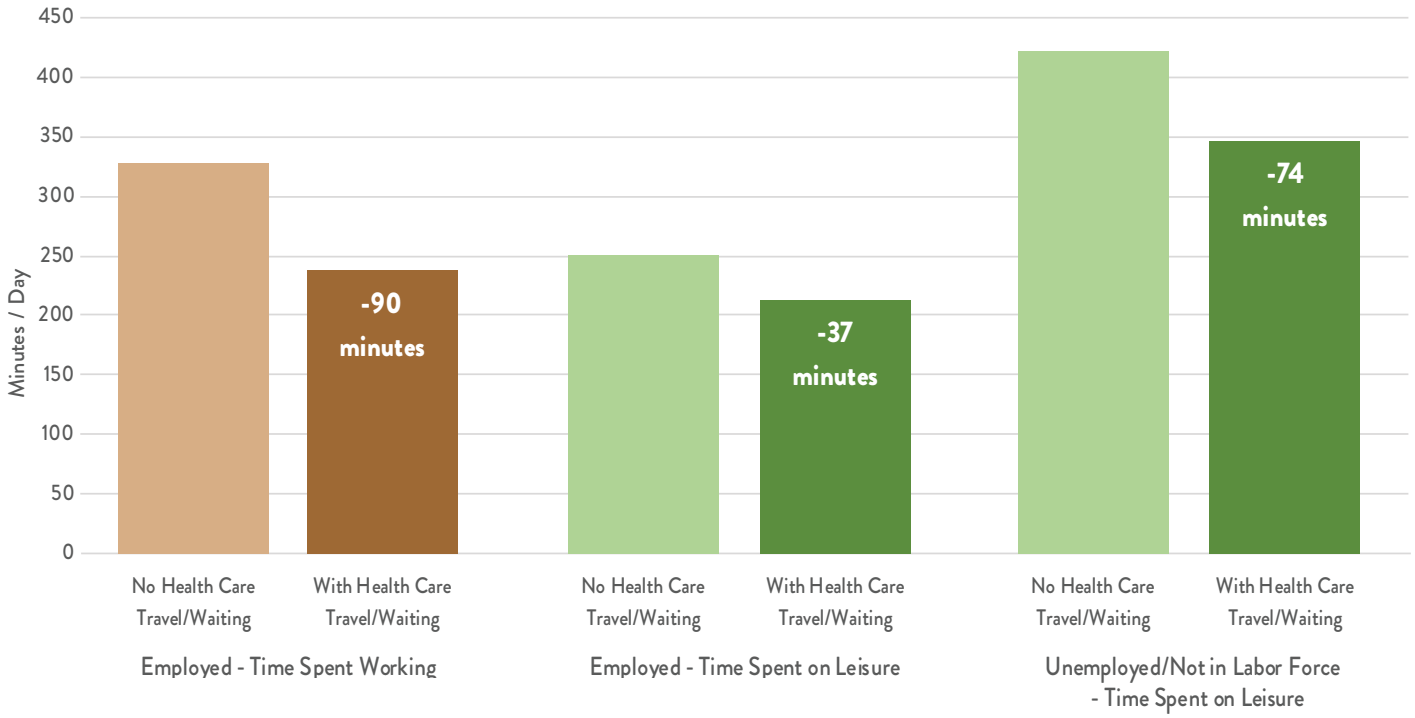
Traveling or waiting for health care services result both in lost time at work and less time spent on leisure.

While any of the time spent on health care tasks have opportunity costs associated with them, I would argue the time spent traveling and waiting for care represent the most critical examples of lost potential time that health care providers should seek to reduce. Time traveling and waiting for care likely adds little, if any, additional value to one's health or wellbeing (and in fact is likely a significant burden in receiving adequate care); therefore, the opportunity cost of waiting and travel for care is important to quantify. In order to approximate the magnitude of the lost potential time spent traveling and waiting for care, I first estimate the impact of traveling or waiting for professional care on an individual's other daily activities.

For those responding as "Employed – at work", the impact of any time traveling/waiting for health care on both time at work and time engaging in leisure during that day is estimated. For those either unemployed or not in the labor force, the impact of traveling or waiting for care is limited to the changes in time spent in leisure only. For those who are currently employed in the labor force, a day that includes time spent traveling or waiting for health care services is associated with 90 fewer minutes spent working and 37 fewer minutes spent engaging in leisure. For those who are unemployed or not in the labor force, traveling or waiting for health care services results in 74 fewer minutes engaging in leisure. These results are robust when controlling for the respondent's health status, sex, and age.

Finally, this time is valued in an estimate the total economic impact of the opportunity cost of time spent waiting and traveling to receive health care services for the entire US population ages 15 and older. An individual's value of their time is estimated using their hourly wage, and then applied to approximate the monetary value of time lost to travel and waiting for health care. While not a perfect measure of an individual's lost value of time, using an estimated hourly wage has been used in the previous research to estimate opportunity costs. Because not all individuals are employed at the time of survey, wages are imputed for those missing in the dataset using a demographic characteristics and a two-stage Heckman methodology to reduce the risk of selection bias among the working/non-working populations. This methodology has been used by previous researchers to develop estimates of missing wages in the ATUS survey. By multiplying the average number of minutes per day spent on travel and waiting for care by each individual's actual or imputed wage and then multiplying by the US population over the age of 15, one can estimate the total opportunity cost of time per year. Monetary costs across years are computed in constant 2017 dollars by applying the GDP Deflator. The average economic cost of travel and waiting equals $89 billion dollars. Like total time spent, there appears to be little upward or downward trend in this estimates from 2006 thru 2017.

Figure 5: Impacts of Health-Related Travel and Waiting on Work and Leisure



In conclusion, I find that health care services require the longest travel and wait times recorded among all the professional services tracked by the American Time Use Survey. On average, each professional health care service activity required over 34 minutes of travel to receive care and an additional 11 minutes of waiting. Over the past eleven years, there has been little change or improvement in the time required to seek professional care. While travel and waiting represent a mostly small proportion of time individuals spent managing and improving their health, it still represents a significant opportunity cost and burden on their daily schedules. A health care visit requiring travel or waiting was associated with less time working and engaging in leisure and when quantified, equals an opportunity cost of $89 billion dollars annually for the US population. Given the lack of progress made in decreasing wait and travel times, despite significant system investments in access and efficiency, this report emphasizes the need for further focus on decreasing a patient's time burden in receiving care. Technological improvements (such as in-home and telehealth care) can reduce the burden on a patient, as can further improvements in administrative efficiency such as reducing paperwork and better scheduling/alerts for patients.

$89 billion

Average annual cost of travel and waiting

METHODOLOGY AND DATA

The primary data source for this report is the American Time Use Survey, which is sponsored by the Bureau of Labor Statistics and administered by the Census Bureau. This report includes results for the combined years of data from 2006 thru 2017, including the activity summary, respondent, CPS-ATUS, and Eating and Health module files. Definitions of health care-related categories and the other services are determined by using the activity description files. Definitions of waiting and travel for health-related services are taken directly from the ATUS categories, with the exception of travel and waiting for

self-care, which is only included when travel and waiting for self-care had a co-occurring instance of *health-related* self-care event recorded in the diary. Total time waiting for health-related services includes time spent waiting for one's own care and care for others.

The estimates of time spent on health care activities by self-reported general health status are limited to the years 2014-2016, when that question was asked in the Eating and Health supplemental module. A similar question on health status was asked from 2010, 2012, and 2013 in the Health and Well-Being supplement, and similar findings were found across the different perceived health categories. **Figure 5** shows the impacts on an individual's day when either travel or waiting for professional health care services occurred. Because only a single day per survey is tracked in each individual's diary, Figure 5's results show the difference between all individuals with a health-related travel/waiting vs. a non-overlapping group of individuals without health-related travel/waiting during their day (and not the difference within each individual's days with and without health-related care). Tests were ran ensuring that these results were robust when controlling for individual's age, perceived health status, and sex, and showed consistent findings.

Estimates of the total monetary opportunity cost of time spent waiting/traveling for health care applied estimated and imputed wages for some survey respondents. Wages are estimated in a stepwise fashion, depending on the labor force status of the respondent and responses to the labor/earnings questions. First, provided hourly earnings are used directly and then wages for individuals who provided weekly earnings are included by dividing average weekly earnings by estimates of number of hours worked per week. Next, for the employed population without hourly or weekly earnings, I impute an estimated hourly wage from a regression of the combined weekly/hourly earnings on age, sex, race, education, and state. Finally, I impute hourly wages for the unemployed/not in the labor force population through a two-stage estimation process to account for bias that would occur in estimating wages for the unemployed population from the employer population directly. Following the procedures used by Ray et al. and Chari et al. I first estimate a regression on workforce participation and then include that result in the final regression to predict wages for the unemployed population. Following previous work, I use the presence of children under the age of six as a factor that predicted participation, but not wages. When using the final imputed wages I found that compared to a simple average US prevailing wage, the results of the opportunity cost were broadly similar.

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This research brief was authored by Corwin Rhyan, Corwin.Rhyan@altarum.org, with assistance from Ani Turner, Paul Hughes-Cromwick and George Miller—all with the Altarum Center for Value in Health Care.