Dental Expenditure Expected to Grow at a Much Lower Rate in the Coming Years

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Key Messages

- **Total per-capita dental expenditures are expected to grow in the next thirty years, but at a much lower rate than the past few decades. This could suggest the emergence of a ‘new normal’ in terms of dental spending.**
- **Adults 60 years of age and over are expected to account for a greater share of total dental expenditures.**
- **The sluggish dental expenditure growth expected in the coming decades combined with an expansion of dental school enrolment could potentially lead to challenging economic conditions for practicing dentists. But further research is needed in this area.**

Introduction

Over the last ten to fifteen years, the dental economy has changed significantly. Dental incomes have steadily declined over the last decade, driven in part by falling dental care utilization among adults, particularly among the poor. Fortunately, dental care utilization among children has increased over the last decade, driven in part by a robust safety net. States must cover pediatric dental benefits for poor children through Medicaid/CHIP, a requirement that the ACA maintains. In line with declining dental incomes, the growth in total per capita dental expenditures has slowed since 2002 and has been flat in recent years. It is interesting to note that since 2000, per-patient dental expenditures have risen significantly among older adults, particularly those aged 65 and older while per-patient dental expenditures have remained flat among children and young adults.
To date, little work has been done to project dental expenditures into the future. Each year, the Center for Medicare and Medicaid Service (CMS) projects dental expenditures ten years into the future. In 2011, CMS projected total per capita dental expenditures to go from $347 in 2011 to $530 in 2021. Using data from 1987 through 1999, one study attempted to look at the impact of the aging population on per-capita US dental expenditures and found that per capital dental expenditures were higher in all age groups in 1999 relative to 1987. This study noted that falling rates of edentulism could have contributed to higher per-capital dental expenditures.

In this research brief, we project per capita dental expenditures from 2010 through 2040 in the United States, accounting for the aging of the population. We present various scenarios that take into account the rate of dental expenditure growth in recent years as well as the changing age distribution of the US population. Specifically, we will show how total per-capita dental expenditures could shift among different age groups and by different sources of payment (e.g., private insurance and out-of-pocket) in the coming years. We discuss the policy implications of our findings.

**Data & Methods**

We used data from the 1996 through 2010 Medical Expenditure Panel Survey (MEPS). MEPS is a nationally representative survey of adults and their children. Approximately 13,000 families and 31,000 individuals are included in each year of the household component (HC) of the MEPS, which is built off a nationally representative sample of the National Health Interview Survey. Data contained in the MEPS-HC includes information on demographics, health conditions, health status, payment charges, access to care, health insurance coverage, family income, employment status and utilization of medical services. In our analysis, we specifically analyzed total, out-of-pocket and private dental expenditures for all dental services, including those performed by general practice and dental specialists. Total dental expenditures include payments from all payers (private, out-of-pocket, government) for all dental services. Private dental expenditures include payments from private insurance payers for all dental services. Out-of-pocket dental expenditures include payments from individuals for all dental services.

Individuals were grouped into ten-year age bands from age 0-9 through age 80-89. We analyzed the total, private and out-of-pocket dental expenditures of each individual in each age band from 1996 through 2010. Total and private expenditures from each year were inflation adjusted to 2010 dollars using the GDP deflator and out-of-pocket dental expenses from each year were inflation adjusted to 2010 dollars using the all-item consumer price index.

We developed three scenarios to project total, private and out-of-pocket dental expenditures from 2010 through 2040. These scenarios are summarized in Table 1. We used various logarithmic, exponential or power functions in our models. Using future estimates of the population age distribution provided by the U.S. Census, we applied population estimates to the per-capita expenditure levels we modeled to estimate total, private and out-of-pocket dental expenditures in the future through 2040.

**Results**

From 1996 through 2002, total per-capita dental expenditures grew at around 3.85% annually (Table 2), but then began to grow at a slower 1.15% annual rate from 2002 through 2007 before declining at a 1.81% annual rate during the recession (2007-2010). Total per-capita dental expenditures are expected to increase to about $325 by 2040 under the least
conservative scenario and to about $277 under the most conservative scenario (data not shown).

Scenario 1, which only takes into account the aging of the population by holding fixed the level of per-capita expenditure from 2010, projects flat total per-capita dental expenses through 2040. The aging of the population does not appear to have a significant impact on the level of spending in the coming years. As shown in Table 2, under Scenario 1, total per-capita dental expenditures are expected to grow at a 0.22% annual rate from 2010 to 2020, a 0.07% annual rate from 2020 to 2030 and slightly shrink at a 0.02% annual rate between 2030 and 2040.

Under Scenario 2, per capita dental expenditures are expected to grow at a 1.25% annual rate between 2010 and 2020, a similar growth rate that existed prior to the recession (2002-2007), but then slow to a 0.42% annual rate between 2020 and 2030 and a 0.23% annual rate from 2030 to 2040.

Under Scenario 3, we project per-capita dental expenditures to grow at a 0.58% annual rate between 2010 and 2020 but then slow to a 0.24% annual rate between 2020 and 2030 and a 0.08% annual rate between 2030 and 2040.

From 1996 through 2002, per-capita out-of-pocket (OOP) dental expenditures grew at around 2.59% annually (Table 3), but then grew at a slower 1% annual rate from 2002 through 2007 before declining at a 3.13% annual rate from 2007 through 2010, the period during the recession. Under the least conservative scenario (Scenario 2), per-capita OOP dental expenditures are expected to grow to about $149 by 2040 (data not shown). Under the most conservative scenario (Scenario 1), which only accounts for the aging of the population, per-capita OOP dental expenditures are expected to grow to about $138 by 2040 (data not shown). As shown in Scenario 1 in Table 3, after holding the rate of per-capita OOP expenditure growth fixed at 2010 levels, as the population ages, per-capita OOP dental expenditures are expected to grow at a slower rate over time from 0.44% annually from 2010 through 2020 to 0.01% annually from 2030 through 2040. Under the least conservative scenario (Scenario 2), per-capita OOP dental expenditures are expected to grow at a 1.23% annual rate from 2010 through 2020, a 0.3% annual rate from 2020 through 2030 and not grow from 2030 through 2040. Under Scenario 3, per-capita OOP dental expenditures are expected to grow at a 1.05% annual rate from 2010 through 2020, but then slow to a 0.25% annual rate from 2020 through 2030 and finally shrink slightly at a 0.03% annual rate from 2030 through 2040.

As shown in Table 4, per-capita private dental expenditures grew at a 3.47% annual rate from 1996 through 2002 but then slowed to a 1.56% annual rate from 2002 through 2007 and shrank at a 1.62% annual rate from 2007 through 2010. From 2004 to 2010, per-capita private dental expenditures declined from about $120 to $115 (data not shown). Under the least conservative scenario (Scenario 2), we expect per-capita private dental expenditures to grow to about $132 by 2040 (data not shown). Under the most conservative scenarios (Scenarios 1 and 2), we expect per-capita private dental expenditure to slightly decrease from 2010 through 2040.

Under the most conservative scenario (Scenario 1), per-capita private dental expenditures are expected to hardly grow from 2010 through 2020, shrink at 0.2% annual rate from 2020 through 2030 and contract slightly at a 0.05% annual rate from 2030 through 2040. Under the scenario two, per-capita private dental expenditures are expected to grow at a 0.97% annual rate from 2010 through 2020, slow to a 0.19% annual rate from 2020 through 2030 and hold steady at a 0.22% annual rate from 2030 through 2040. Under scenario three, per-capita private dental expenditures
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are not expected to grow by any meaningful amount from 2010 through 2040.

Over time, children and young adults will account for less of the total share of national dental expenditures (Figure 1). Older adults, particularly those aged 60 to 69, 70 to 79 and 80 to 89 will account for a greater share of total national dental expenditures. The share of total dental expenditures for individuals aged 60 to 69 will rise from 15% in 2010 to about 20% in 2025, before dropping somewhat in later years. We project the share of total dental expenditures of individuals aged 70 to 79 to double from 7% in 2010 to 14% in 2040. Overall, dental expenditures will shift from the young to the old as the population ages in the coming years.

Table 1: Description of Scenarios for Total Dental Expenditure Projections

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Description</th>
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<tbody>
<tr>
<td>Scenario 1</td>
<td>Per-capita total dental expenditures remain constant at 2010 levels. Future expenditures adjusted for the projected age and size of the population. Most conservative.</td>
</tr>
<tr>
<td>Scenario 2</td>
<td>Growth in total per-capita dental expenditures to grow at the rate that was experienced from 1996 through 2010. Future expenditures adjusted for the projected age and size of the population. Least conservative.</td>
</tr>
<tr>
<td>Scenario 3</td>
<td>Growth in total per-capita dental expenditures to grow at the rate that was experienced from 1996 through 2010, accounting for possible structural change. Where a structural change is detected, a new model is fit to better represent the evolution of dental spending in the most recent period. Future expenditures adjusted for the projected age and size of the population.</td>
</tr>
</tbody>
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Table 2: Annual Growth Rates for Total Per-Capita Dental Expenditures, Actual (1996-2010) and Projected (2010-2040)

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Actual</th>
<th>Projected</th>
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</thead>
<tbody>
<tr>
<td>Scenario 1</td>
<td>3.85%</td>
<td>1.15%</td>
</tr>
<tr>
<td>Scenario 2</td>
<td>3.85%</td>
<td>1.15%</td>
</tr>
<tr>
<td>Scenario 3</td>
<td>3.85%</td>
<td>1.15%</td>
</tr>
</tbody>
</table>

### Table 3: Annual Growth Rates for Out-of-Pocket Per-Capita Dental Expenditures, Actual (1996-2010) and Projected (2010-2040)

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<tbody>
<tr>
<td>Scenario 1</td>
<td>2.59%</td>
<td>1.00%</td>
<td>-3.13%</td>
<td>0.44%</td>
<td>0.28%</td>
<td>0.01%</td>
</tr>
<tr>
<td>Scenario 2</td>
<td>2.59%</td>
<td>1.00%</td>
<td>-3.13%</td>
<td>1.23%</td>
<td>0.30%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Scenario 3</td>
<td>2.59%</td>
<td>1.00%</td>
<td>-3.13%</td>
<td>1.05%</td>
<td>0.25%</td>
<td>-0.03%</td>
</tr>
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</table>


### Table 4: Annual Growth Rates for Private Per-Capita Dental Expenditures, Actual (1996-2010) and Projected (2010-2040)

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<thead>
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</thead>
<tbody>
<tr>
<td>Scenario 1</td>
<td>3.47%</td>
<td>1.56%</td>
<td>-1.62%</td>
<td>0.01%</td>
<td>-0.20%</td>
<td>-0.05%</td>
</tr>
<tr>
<td>Scenario 2</td>
<td>3.47%</td>
<td>1.56%</td>
<td>-1.62%</td>
<td>0.97%</td>
<td>0.19%</td>
<td>0.22%</td>
</tr>
<tr>
<td>Scenario 3</td>
<td>3.47%</td>
<td>1.56%</td>
<td>-1.62%</td>
<td>0.07%</td>
<td>-0.14%</td>
<td>0.00%</td>
</tr>
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</table>

Discussion

In terms of dental spending in the United States, our analysis suggests we could be on the verge of a ‘new normal.’ We expect total per-capita dental expenditures to grow in the next thirty years, but at a much lower than historical rate. Our annual growth rate estimates for per-capita dental spending range from 0.22% per year to 1.25% per year over the next ten years under various scenarios. From 2010 to 2020, CMS projects total per-capita dental expenditures to grow at a 4.1% annual rate. However, given the decline in dental utilization among adults, lower rates of private dental insurance coverage and slower growth in total dental expenditures in recent years that predated the economic downturn, we believe that the CMS projections are overly optimistic. In their model, CMS controls for macroeconomic variables such as real disposable personal income and relative prices to project dental expenditures. While we believe that these factors may be important in estimating future total dental expenditures, CMS may not be capturing improvements in oral health or the fact that the dental economy has gone through significant structural changes in the last decade and this has important policy implications for the future. Over time, dental spending from older adults, particularly those near and around retirement will constitute a greater share of total annual dental expenditures. Dental expenditures from younger adults in turn will constitute a lesser share of total annual dental expenditures.

Among older adults rates of edentulism have decreased, which may act to increase demand for dental care among older adults. Per-patient dental expenditures have increased in recent years among
Among the geriatric population, there has been a shift in demand away from denture care towards esthetic procedures and complex restorative services, such as implants. While the aging of the population may act to increase total dental expenditures, the downward trends in dental spending among younger age groups may counteract this effect, particularly as the baby boomer generation phases out. As a result, despite the anticipated increase in dental expenditures among older adults, we expect the growth of total dental spending to slow in the next 30 years.

Based on projections from the ADA dental workforce model, in the next 10 years we expect the supply of dentists to hold steady. Some have commented that the United States will soon face a shortage of dentists. Between 2001 and 2011, eight new dental schools opened and more dental schools are expected to open in the next ten years, which could increase the supply of the dental workforce. Given that we expect sluggish total per-capita dental expenditure growth in the next 10 years, dentists may face a challenging economic environment in the coming years. We know that dentist incomes declined from 1996 to 2009 and this trend could continue if the demand for dental services does not keep pace with the dental workforce willing to perform those services. Some may argue that there is a shortage of dentists in rural areas. However, there are other innovative solutions beyond simply expanding dentist supply, such as loan repayment programs and increased reimbursement to entice dentists to provide care in underserved areas.

Our analysis also motivates an even bigger issue for the future of the profession. With dental spending likely to remain sluggish, there could be increased interest for the dental profession to explore an expanded scope of practice so they are much more active contributors, for example, to the primary healthcare network. There has been some research to evaluate the feasibility of dentists performing health screenings for non-communicable diseases such as hypertension, cholesterol, diabetes and heart disease in the dental office. Alternatively, our analysis suggests strongly the need to consider the appropriate size of the dentist workforce of the future that will promote improved access to dental care and successful livelihood and gainful employment of dentists.
References


16 Use of the power and logarithmic functions gave very similar results and were used interchangeably, given whichever function had a better fit.


Suggested Citation