Is it Time to Reconnect Mouth and Body…

…in Health Care Policy?

Marko Vujicic, PhD
Chief Economist & Vice President
Health Policy Institute
“You can’t be healthy without good oral health.”

C.E. Koop

fmr. U.S. Surgeon General
About Me
HSR
Health Services Research

The Impact of Medicaid Reform on Children’s Dental Care Utilization in Connecticut, Maryland, and Texas
Kamyar Nashef and Marko Vujicic

Objective. To measure the impact of 3 Medicaid dental fee increases in Connecticut, Maryland, and Texas among Medicaid-eligible children.


Principal Findings. Relative to Medicaid-eligible children in Connecticut and Texas, adult eligibility in Maryland had a significant impact on dental care utilization among children.

Conclusions. Increasing Medicaid dental access has a significant impact on dental care utilization among eligible children.

Key Words. Dental care utilization, Medicaid expansion, Medicaid

The ADA Health Policy Institute

Are We in a Medical Education Bubble Market?
David A. Asch, M.D., M.B.A., Sean Nicholson, Ph.D., and Marko Vujicic, Ph.D.

In November 2010, the prices of single-year medical school classes rose rapidly from their normal level to the point where a single school might sell for 10 times the annual earnings of a typical worker, just as quickly as in May 2013, the most basic price index of student debt has risen by 40% in the past 4 years. While the cost of education has skyrocketed, the value of the average student is now less than the annual earnings of a typical worker, just as quickly as in May 2013, the most basic price index of student debt has risen by 40% in the past 4 years.

One modern economic analysis suggests that the impending decline in single-year medical school classes is rapidly eroding the value of a medical education. Even as the price of medical education has skyrocketed, the value of the average student has fallen by more than 50%. This is because the cost of education has skyrocketed, the value of the average student has fallen by more than 50%. This is because the cost of education has skyrocketed, the value of the average student has fallen by more than 50%.

Although the relationship is not well understood, gain diabetes is linked to chronic conditions such as cardiovascular disease and diabetes. Improved health has also been shown to reduce the cost of health care. For example, the Missouri Medicaid program has reported that providing dental benefits to Medicare-eligible adults is optimal. In the past decade several studies have reported back dental benefits to help reduce costs. For example, Missouri Medicaid eliminated all adult dental benefits in 2005, and California cut children’s dental coverage to the level of Medicare in 2009. Washington State went from full adult dental Medicaid coverage in 2002 to limited coverage shown to have a positive effect on employment in 2002, restored full dental coverage in 2007, and eliminated all adult dental benefits in 2010.

Several studies have analyzed the impact of expanding or eliminating dental benefits for adults covered by Medicaid. A national analysis showed that the expansion of Medicaid to include adult dental benefits resulted in a 27% to 34% improvement in the likelihood of dental care among adults with less than 100% of the federal poverty level and in 2010's in annual household income. A study in California showed that Medicaid dental benefits in 2009, the percentage of adults with Medicaid dental benefits increased by 14% in the state that expanded Medicaid dental benefits for adults.
Stopped flossing? Teeth still vital to overall health

By Susan Scotti and Carina Storns, CNN

Story highlights

Periodontal disease could complicate the management of diabetes and heart disease

One-third of adults in the United States have no dental coverage

Studies show dental insurance provides improvements in overall health and cost savings

(CNN) — Your teeth are more than just something to chew and smile with. Research is increasingly showing that they can have an effect on your overall health.

Many Americans think their poor oral health is holding them back. In a 2015 survey by the American Dental Association, 20% of low-income adults said their mouths and teeth were in bad condition, and 20% of all adults said their unhealthy mouths caused them anxiety, according to Marko Vujicic, chief economist for the
Today

1. Why oral health matters

2. Dental care within health care systems

3. Policy options
Oral Health

Age-standardized DALYs per 100,000 Population for Oral Health Conditions in Excess of What is Predicted by GDP and Life Expectancy Levels

Dental Spending and Burden of Oral Disease

DALYs in Excess of What is Predicted by GDP

DALYs per 100,000 Population for Oral Health Conditions

Dental Spending per Capita ($2013 PPP)
Impact of Periodontal Therapy on General Health
Evidence from Insurance Data for Five Systemic Conditions

Marjorie K. Jeffcoat, DMD, Robert L. Jeffcoat, PhD, Patricia A. Gladowski, RN, MSN, James B. Bramson, DDS, Jerome J. Blum, DDS

Background: Treatment of periodontal (gum) disease may lessen the adverse consequences of some chronic systemic conditions.

Purpose: To estimate the effects of periodontal therapy on medical costs and hospitalizations among individuals with diagnosed type 2 diabetes (T2D); coronary artery disease (CAD); cerebral vascular disease (CVD); rheumatoid arthritis (RA); and pregnancy in a retrospective observational cohort study.

Methods: Insurance claims data from 338,891 individuals with both medical and dental insurance coverage were analyzed in 2011–2013. Inclusion criteria were (1) a diagnosis of at least one of the five specified systemic conditions and (2) evidence of periodontal disease. Subjects were categorized according to whether they had completed treatment for periodontal disease in the baseline year, 2005. Outcomes were (1) total annual medical costs and (2) number of hospitalizations, per subject per year, in 2009–2009. Except in the case of pregnancy, outcomes were aggregated without regard to reported cause. Individuals who were treated and not treated for periodontal disease were compared independently for the two outcomes and five systemic conditions using ANCOVA.

Results: Statistically significant reductions in both outcomes (p < 0.05) were found for T2D, CVD, CAD, and pregnancy, for which costs were lower by 40.2%, 40.9%, 10.7%, and 73.7%, respectively; results for hospital admissions were comparable. No treatment effect was observed in the RA cohort.

Conclusions: These cost-based results provide new, independent, and potentially valuable evidence that simple, non-invasive periodontal therapy may improve health outcomes in pregnancy and other systemic conditions.

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Introduction

There is a growing body of evidence that periodontal (gum) disease is associated with negative systemic health consequences for individuals with certain diseases and conditions. To the extent that this is true, it is reasonable to expect that successful treatment of periodontal disease might prevent or mitigate at least some adverse effects associated with medical conditions such as type 2 diabetes (T2D); rheumatoid arthritis (RA); cerebral vascular disease (CVD); and adverse pregnancy outcomes.

Direct confirmation of such links generally poses formidable difficulties arising from the long time course of chronic disease, the complex and multifactorial nature of the medical outcomes, and the ethical issues surrounding controlled clinical trials. Nevertheless, the potential preventive value of such a simple and low-risk intervention as dental hygiene in the management of patients with serious medical conditions justifies efforts to determine whether, and to what degree, a causal link exists.

Periodontal disease is a chronic inflammatory disease in which a pathogenic bacterial biofilm develops on the tooth surface and in a susceptible patient. If untreated, it can lead to alveolar bone resorption, infection, and tooth loss. It has been suggested that periodontal disease may also have an impact on systemic health via dissemination of pathogenic bacteria.
### Table 3. Chronic medical conditions: comparison of costs and hospitalizations

<table>
<thead>
<tr>
<th>Chronic systemic disease</th>
<th>Type 2 diabetes</th>
<th>Cerebral vascular disease</th>
<th>Coronary artery disease</th>
<th>Rheumatoid arthritis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Periodontal treatment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of qualifying subjects in Year 0 (2005)</td>
<td>91,242</td>
<td>13,007</td>
<td>8,458</td>
<td>81,439</td>
</tr>
<tr>
<td>ICD-9 codes for inclusion in cohort</td>
<td>250-25099, 3572-35729, 3620-36209, 36641, 6480</td>
<td>433, 434</td>
<td>411, 413, 414, 4292</td>
<td>7140, 7141, 7142, 71481</td>
</tr>
<tr>
<td>Periodontal treatment received</td>
<td>Untreated</td>
<td>Treated</td>
<td>Untreated</td>
<td>Treated</td>
</tr>
<tr>
<td>Number in cohort</td>
<td>90,329</td>
<td>913</td>
<td>12,868</td>
<td>139</td>
</tr>
<tr>
<td>Percentage periodontally treated</td>
<td>1.0%</td>
<td>1.1%</td>
<td>1.1%</td>
<td>0.7%</td>
</tr>
</tbody>
</table>

#### OUTCOMES

**Total medical costs**

| Total medical costs per subject per year (mean 2006–2009) | $7,056 | $4,216 | $13,895 | $8,214 | $10,222 | $9,133 | $9,218 | $8,637 |
| Annual reduction with treatment | $2,840 (40.2%) | $5,681 (40.9%) | $1,090 (10.7%) | $581 (6.3%) |
| Significance, Wilks’s lambda | $< 0.04 | $< 0.04 | $< 0.04 | NS |

**Hospital admission**

| Inpatient admissions per 1,000 subjects per year (mean 2006–2009) | 66.6 | 40.4 | 444.4 | 350.0 | 65.2 | 46.6 | 142.7 | 136.3 |
| Annual reduction with treatment | 26.3 (39.4%) | 94.4 (21.2%) | 18.7 (28.6%) | 6.4 (4.5%) |
| Significance, Wilks’s lambda | $< 0.05 | $< 0.002 | $< 0.01 | NS |

*Note: Differences significant at the $p < 0.05$ level are shown in boldface.*

*NS, not significant*
### Table 1. Cost and utilization outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Simple difference</th>
<th>Un-weighted regression adjustment (Poisson)</th>
<th>Un-weighted regression adjustment (Gamma)</th>
<th>Un-weighted regression adjustment (Logit)</th>
<th>IPW estimate</th>
<th>Doubly robusta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total healthcare cost</td>
<td>−1485.55*** (677.60)</td>
<td>−1744.27*** (665.08)</td>
<td>−1477.59* (785.86)</td>
<td>NA</td>
<td>−1726.01** (702.16)</td>
<td>−1798.71*** (674.38)</td>
</tr>
<tr>
<td>Total medical cost</td>
<td>−1422.99** (624.67)</td>
<td>−1541.36** (632.05)</td>
<td>−1299.39 (752.85)</td>
<td>NA</td>
<td>−1525.29** (648.54)</td>
<td>−1576.71*** (634.57)</td>
</tr>
<tr>
<td>Total type 2 diabetes healthcare cost</td>
<td>−449.31** (183.44)</td>
<td>−411.85** (188.46)</td>
<td>−335.76* (192.52)</td>
<td>NA</td>
<td>−401.66** (188.49)</td>
<td>−407.87** (199.65)</td>
</tr>
<tr>
<td>Any hospitalization visit</td>
<td>−0.017** (0.008)</td>
<td>NA</td>
<td>NA</td>
<td></td>
<td>−0.013* (0.008)</td>
<td>−0.012 (0.009)</td>
</tr>
<tr>
<td>Any emergency room visit</td>
<td>−0.026*** (0.010)</td>
<td>NA</td>
<td>NA</td>
<td></td>
<td>−0.012 (0.010)</td>
<td>−0.011 (0.011)</td>
</tr>
<tr>
<td>Total outpatient physician visits</td>
<td>0.023 (0.227)</td>
<td>−0.179 (0.209)</td>
<td>NA</td>
<td></td>
<td>−0.111 (0.232)</td>
<td>−0.142 (0.205)</td>
</tr>
</tbody>
</table>

ATE estimates. All type 2 diabetes individuals.

Standard errors are in parentheses. Cost and utilization outcomes measured in years 3 and 4 after initial diabetes diagnosis. Ordinary least squares used to estimate simple differences. Robust standard errors used in simple difference, pooled Poisson, pooled Gamma, and inverse-probability weighting (IPW) estimation. Truven MarketScan® Research Databases.

*a Bootstrapped standard errors using 400 replications.

*Significant at 10% level; **Significant at 5% level; ***Significant at 1% level.
Oral Health and Well-Being in the United States

Do adults in your state feel that the condition of their mouth and teeth affects their ability to interview for a job? Do they reduce participation in social activities or limit day-to-day activities because of poor oral health? Why do high-income adults in your state not visit the dentist more frequently? Do people expect they will lose some of their teeth as they grow older?

Oral Health & Well-Being in the United States summarizes select data on self-reported oral health status, attitudes and dental care utilization among United States adults as of 2015 based on an innovative household survey.

Related resources:
- Oral Health and Well-Being in the United States (PDF) - see the national results in an easy to read infographic
- Commentary - So What? Now What? (PDF)
- Data & Methods (PDF)
- Data Tables (XLSX) with all data used in the reports

Click on the desired state to view its Oral Health & Well-Being report.
Low income adults are most likely to report having problems due to the condition of their mouth and teeth.

- **23%** of low income adults reduce participation in social activities due to the condition of their mouth and teeth.
- **35%** of low income adults feel embarrassment due to the condition of their mouth and teeth.
- **37%** of low income adults avoid smiling due to the condition of their mouth and teeth.

**Pain** is the top oral health problem for low income adults.
Oral Health

How do adults in Florida view their oral health? This fact sheet summarizes select data on self-reported oral health status, attitudes and dental care utilization among Florida adults as of 2015, by income level, based on an innovative household survey. For methods and sources, visit ADA.org/statistics. For more information on the ADA Health Policy Institute, visit ADA.org/HPI.

Oral Health and Well-Being in Florida

Overall Condition of Mouth and Teeth

Appearance of Mouth and Teeth Affects Ability to Interview for a Job

1 in 4 low income adults say their mouth and teeth are in poor condition.

Life in General is Less Satisfying Due to Condition of Mouth and Teeth

Appearance of Mouth and Teeth Affects Ability to Interview for a Job

ALL

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Oral Health

- 97% value oral health.
- 85% feel they need to visit the dentist twice per year.
- 95% agree regular dental visits keep them healthy.
- 82% believe straight, bright teeth help you get ahead in life.

“I accept I will lose some teeth with age.”

- 74% low income adults
- 48% high income adults
Access

What People Say...

77% of adults say they plan to visit the dentist within the next year.

What People Do...

37% of adults actually visited the dentist within the last year.
Figure 1: Percentage of the Population with a Dental Visit in the Year, 2000-2013

Source: Health Policy Institute analysis of the Medical Expenditure Panel Survey, AHRQ. Notes: For children ages 2-18, changes were statistically significant at the 1% level (2000-2013) and at the 5% level (2011-2013). Among adults ages 19-64, changes were statistically significant at the 1% level (2003-2013). For adults 65 and older, changes were significant at the 5% level (2000-2013). Changes from 2012 to 2013 among children, adults 19-64 and the elderly 65 and older were not statistically significant.
Access

Reasons for Not Visiting the Dentist More Frequently, Among Those Without a Visit in the Last 12 Months

- Cost: 59%
  - Afraid of Dentist: 22%
  - Inconvenient Location or Time: 19%
  - Trouble Finding a Dentist: 15%
  - No Original Teeth: 12%
  - No Perceived Need: 10%
  - No Reason: 9%
  - Other: 10%

Source of Dental Benefits

- Private: 47%
  - 28% 28%
  - 14% 16% 12% 9%

- Medicaid: 50%
  - 35% 33%
  - 20% 21% 8% 9%

- Other: 43%
  - 24% 32% 30%
  - 14% 16% 13% 13%

- None: 70%
  - 18% 12% 13% 14%
  - 8% 6% 10%
Spending

Health Expenditure by Source of Financing

2011: 19% Private insurance, 36% Out of pocket, 11% CMS programs, 33% Other
2012: 19% Private insurance, 36% Out of pocket, 11% CMS programs, 33% Other
2013: 19% Private insurance, 36% Out of pocket, 11% CMS programs, 33% Other
2014: 19% Private insurance, 37% Out of pocket, 11% CMS programs, 33% Other

Dental Expenditure by Source of Financing

2011: 9% Private insurance, 41% Out of pocket, 10% CMS programs, 48% Other
2012: 9% Private insurance, 42% Out of pocket, 10% CMS programs, 47% Other
2013: 10% Private insurance, 41% Out of pocket, 10% CMS programs, 47% Other
2014: 11% Private insurance, 40% Out of pocket, 10% CMS programs, 48% Other
Coverage

Figure 1: Source of Dental Benefits, Children Ages 2-18, 2000-2013

Figure 2: Source of Dental Benefits, Adults Ages 19-64, 2000-2013

Figure 3: Source of Dental Benefits, Adults Ages 65 and Older, 2000-2013

Source: Health Policy Institute analysis of the Medical Expenditure Panel Survey, AHRQ. Notes: All changes were significant at the 1% level (2000-2013). All changes from 2012 to 2013 were not statistically significant.
Access

Reasons for Not Visiting the Dentist More Frequently, Among Those Without a Visit in the Last 12 Months

<table>
<thead>
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<th>Reason</th>
<th>Percentage</th>
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</tr>
</tbody>
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Source of Dental Benefits

- Private: 47% (28% 28%), 14% 7%, 16% 12%, 9% 9%
- Medicaid: 50% (35% 33%), 41% (20% 21%), 8% 9%
- Other: 43% (24% 32% 30%), 14% 16% 13% 13%
- None: 70% (18% 12% 13% 14%), 8% 6% 10%
Policy Options

1. Reconsider the separation of mouth and body in state and federal health care policy

2. Explore alternative designs of adult dental benefits in Medicaid and private dental benefit plans

3. Implement systems to measure oral health and well-being based on HPI’s new measures

As the Surgeon General said, “you can’t be healthy without good oral health.” It is time to re-engineer the health care system so it actually delivers oral health and well-being. We need to put more effort (and perhaps money) where our mouth is.
Dental care should be part of basic health care: UBC study

All Canadians, especially low-income Canadians, should have dental care as part of their basic health care coverage, a new study by the University of B.C. concludes. CHRISTOPHER PURLING/GETTY IMAGES

The Root of the Problem: Taking a whole-person approach to oral, physical health

Posted: Monday, April 4, 2016 8:15 am
Brittany Ogan, Communications Specialist/Navigator Flint Hills Community Health Center | 0 comments
It might seem convenient to only discuss bothersome symptoms and how to treat them during a medical appointment.

However, studies show taking a whole-person approach to healthcare is more beneficial for a patient’s long-term health. This is often referred to as “integrated care.”

Staff members at Flint Hills Community Health Center have been providing integrated healthcare services for many years, but in the last two years, grant opportunities and staff growth have allowed them to take integrated care to the next level.

Oral health integration

One type of integrated service the health center offers is oral health integration.

A recent American Dental Association study showed people with gum disease are 40 percent more likely to have a chronic health condition — like heart disease or diabetes — on top of it.
The Effect of the Affordable Care Act’s Expanded Coverage Policy on Access to Dental Care

Marko Vujicic, PhD; Cassandra Yarbrough, MPP; and Kamary Nasek PhD

Background: The Affordable Care Act included a dependent coverage policy that extends parent’s or guardian’s health insurance to adults aged 19-25. This policy does not apply directly to private dental benefits. However, for various reasons it could still have an indirect “spillover” effect if employees voluntarily expand dental coverage in conjunction with medical coverage.

Objective: To assess the effect of the Affordable Care Act’s dependent coverage policy on dental benefits coverage, utilization, and financial barriers to dental care.

Research Design: Differences-in-differences models were used to measure the association between the dependent coverage policy and private dental benefits coverage, utilization, and financial barriers to dental care. We analyze 2002-2012 National Health Insurance Survey data, computing results in 2011 and 2012, and results from 2008 to 2010 (preperiod period).

Subjects: Adults aged 19-25 were compared with adults aged 26-34.

Measures: Private dental benefits coverage, dental care utilization, and financial barriers to obtaining needed dental care.

Results: Relative to the preperiod period, private dental benefits coverage among adults aged 19-25 increased by 5.6 percentage points in 2011 (P = 0.098) and 6.9 percentage points in 2012 (P = 0.098) compared with adults aged 26-34. Dental care utilization among adults aged 19-25 increased by 2.8 percentage points in 2011 (P = 0.062) and 3.3 percentage points in 2012 (P = 0.038) compared with adults aged 26-34. Adults aged 19-25 experienced a 2.1 percentage point decrease in 2011 (P = 0.086) and a 2.0 percentage point decrease in 2012 (P = 0.087) in financial barriers to dental care compared with adults aged 26-34.

Conclusions: The dependent coverage policy was associated with an increase in private dental benefit coverage and dental care utilization, and a decrease in financial barriers to dental care among young adults aged 19-25.

Key Words: Dental benefit coverage, dental care utilization, financial barriers to care, Affordable Care Act

Med Care 2014;52:715-719

From the American Dental Association, Chicago, IL.

This study was supported in part by the Health Policy Institute of Ohio, Columbus, OH.

Email: vujicic@uc.edu

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Oral Health

Health Reform in Massachusetts Increased Adult Dental Care Use, Particularly Among the Poor

By Kamary Nasek and Marko Vujicic

ABSTRACT

States frequently expand or limit dental benefits for adults covered by Medicaid. As part of statewide health reform in 2006, Massachusetts expanded dental benefits to all adults ages 19-64 whose annual income was at or below 100 percent of the federal poverty level. We examine the impact of this reform and found that it led to an increase in dental care use among the Massachusetts adult population, driven by gains among poor adults. Compared to the pre-reform period, dental care use increased by 2.9 percentage points among all nonelderly adults in Massachusetts, relative to all nonelderly adults in eight control states. For poor Massachusetts adults, the effect was larger—an eleven-percentage-point increase in dental care use above the increase among the state’s nonpoor residents. The Massachusetts experience provides evidence that providing dental benefits to poor adults through Medicaid can improve dental care access and use. Our results imply that the lack of expanded dental coverage for low-income adults under the Affordable Care Act is a missed opportunity to improve access to oral care.

Objective: Dental care is an important component of oral and general health. As of 2010, 12% of US adults had any untreated tooth decay, and 10% had any untreated caries.

The relationship between adult oral health and physical and mental health is well documented. Poor oral health has been linked to chronic diseases such as cardiovascular disease and diabetes. Improved oral health has been shown to have a positive effect on employment and wages.

Poor adults, with poor defined here as having self-reported household incomes at or below 200 percent of the federal poverty level, tend to face significant barriers to dental care. Dental care use decreased at the national level among poor adults from 2000 to 2010, in part as a result of Medicaid policies toward dental benefits for adults. States are obligated to provide dental benefits for poor children through Medicaid or the Children’s Health Insurance Program, but providing dental benefits for Medicaid-eligible adults is optional.

In the past decade several states have scaled back dental benefits for each adult. For example, Alaska eliminated all adult dental Medicaid benefits in 2005, and California went from full dental Medicaid coverage to no coverage in July 2009. Washington State went from full adult dental Medicaid benefits in 2002 to limited coverage in 2003, reinstated full dental coverage in 2007, and ultimately eliminated all adult dental benefits in 2010. Several studies have analyzed the impact of expanding or eliminating dental benefits for adults covered by Medicaid. A national analysis showed that the expansion of Medicaid to include adult dental benefits resulted in a seven-to-nine-percentage-point increase in the likelihood of dental visits among adults with less than $10,000 in annual household income. After California eliminated adult Medicaid dental benefits in July 2009, the percentage of adults...
Thank You!

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ADA.org/HPI

To inquire about speaking engagements or custom data analytics, please contact:

hpi@ada.org
Tools for Policymakers

The Health Policy Institute compiled a number of useful tools for policymakers focused on improving the oral health care system.

- Oral Health and Well-Being in Your State and for the U.S.
- The Oral Health Care System in Your States and for the U.S.
- Projecting the Supply of Practicing Dentists in Your State and for the U.S.
- Estimating the Cost of a Medicaid Adult Dental Benefit in Your State
- Assessing the Accuracy of Medicaid Provider Lists
- Medicaid Dental Care Reimbursement Rates in Your State
- Developing an Effective RFP/Dental Benefits Contract in Medicaid in Your State
Understanding Access
Understanding Access
Projecting the Supply of Dentists

Graduates -> Practicing Dentist

Moved in

Foreign-trained

Re-licensure

Un-retirement

Retired

Moved out

Death

License lapse

Exit labor force

Emigration
Projecting the Supply of Dentists

Figure 1: Historical and Projected Dentists per 100,000 Population in the U.S., Baseline Scenario

Sources: ADA Health Policy Institute analysis of ADA masterfile; ADA Survey of Dental Practice; ADA Survey of Dental Education; U.S. Census Bureau, Intercensal Estimates and National Population Projections. Notes: Data for 2005, 2010 and 2015 are based on the ADA masterfile. Results after 2015 are projected. Assumes (a.) U.S. total annual dental school graduates will increase until 2020 and then remain constant (b.) future outflow rates are same as 2010-15 historical percentages.
Thank You!

[Logo and text: Health Policy Institute]

[Email and website links: ada.org/hpi, hpi@ada.org]