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Research Brief

An Analysis of Dental Spending Among Adults with Private Dental Benefits

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Key Messages

- *More than one in three adults ages 19 through 64 with private dental benefits do not have a single dental claim within the year.*
- *Fees paid to dentists through private dental benefits plans are significantly lower than market fees. This leads to substantial differences in total dental spending estimates based on "market" versus "actual" fees.*
- *For the majority of adults, total copayments, coinsurance and premiums exceed the "market" value of their dental care.*

Introduction

The passage of the Affordable Care Act (ACA) brought many changes to the oral health sector in the United States. Chief among them was a continued focus on the importance of children's oral health, with child dental benefits designated as one of ten essential health benefits under the ACA.[1] There was no corresponding coverage requirement for adult dental benefits. Rather, adult dental benefits are still optional, with one implication being there are fewer regulations governing how dental benefits are offered to adults.

Given that adults are the most likely to report cost as a barrier to obtaining needed dental care,[2] and are more likely than children to frequent the emergency department for dental services,[3] we wanted to analyze how adults use their dental benefits more closely.

In this research brief, we analyze dental care utilization and spending patterns among a very large sample of adults with private dental benefits. We analyze utilization and spending by dental service category, spending quartile and age. To our knowledge, this is the first analysis of dental spending patterns at the procedure level among a large sample of adults with private dental benefits.

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Results

Table 3 summarizes average annual dental spending valued at market fees. For ages 19 through 34, this is estimated to be $492 and ranges from $298 for adults in the lowest quartile of spending to $2,143 for adults in the highest quartile of spending. We find that 44.5 percent of adults ages 19 through 34 who have private dental benefits do not have a single dental claim within the year.

Among adults ages 35 through 49, average annual dental spending, valued at market fees, is estimated to be $598. This ranges from $252 among adults in the lowest quartile of spending to $2,363 among adults in the highest quartile of spending. Additionally, 36.6 percent of adults ages 35 to 49 who have private dental benefits do not have a single dental claim within the year.

Among adults ages 50 through 64, average annual dental spending, valued at market fees, is estimated to be $785. This ranges from $232 among adults in the lowest quartile of spending to $3,069 among adults in the highest quartile of spending. Additionally, approximately 30.4 percent of adults ages 50 through 64 who have private dental benefits do not have a single dental claim within the year.

Among all adults ages 19 through 64 who have private dental benefits in our sample, 36.5 percent do not have a single dental claim within the year.

Table 4 summarizes estimated average annual dental spending, valued at market fees, by age group and dental spending quartile, replicating the “total” rows from Table 3.

Table 5, in comparison, summarizes average annual dental spending valued at actual fees paid to dentists under dental benefits plans for adults with private dental benefits. For adults ages 19 through 34, this is estimated to be $323. This ranges from $164 among adults in the lowest quartile of spending to $1,425 among adults in the highest quartile of spending.

Average annual dental spending, valued at actual fees paid to dentists, among adults with private dental benefits ages 35 through 49 is estimated to be $399. This ranges from $141 among adults in the lowest quartile of spending to $1,593 among adults in the highest quartile of spending.

Average annual dental spending, valued at actual fees paid to dentists, among adults with private dental benefits ages 50 through 64 is estimated to be $523. This ranges from $128 among adults in the lowest quartile of spending to $2,104 among adults in the highest quartile of spending.

Table 6 summarizes estimated average annual dental spending, valued at actual fees paid to dentists, by age group and dental spending quartile, replicating the “total rows” from Table 5. Note, neither Table 5 nor Table 6 include spending on dental benefits plan premiums.

Table 7 summarizes average annual dental spending, valued at actual fees paid to dentists, by dental spending quartile broken down by source of financing. Specifically, it summarizes the portion of dental spending that is paid by the insurer and the patient. We also calculate total outlays that incorporate estimated dental benefits plan premium costs.

Discussion

To our knowledge, this is the first comprehensive analysis of dental care utilization and spending patterns among adults with private dental benefits. In our view, there are several findings with important implications for consumers and employers, the main purchasers of private dental benefits.

First, a significant portion of adult beneficiaries – more than one out of three – do not use any of their dental benefits within the year. Clearly, many adult beneficiaries, or employers on their behalf, are paying for a dental plan they are not using.

Second, it is clear that fees paid to dentists through private dental benefits plans are significantly lower than market fees. This leads to substantial differences in total dental spending estimates based on "market" versus "actual" fees, especially within the higher spending quartiles. Additionally, this may indicate that there are out-of-pocket expenses for services not covered by dental benefits plans that we are unable to capture here.

Third, and most significant in our view, our results suggest that for 69.0 percent of adults, total spending after including premiums actually exceeds the "market" value of their dental care. This can be seen by comparing Table 1, Table 4 and the bottom panel in Table 7.

It is important to note that while we used ACA marketplace stand-alone dental plan premium estimates in our calculation of the total cost of dental benefits to the patient, we feel our analysis is very relevant for group dental benefits plans purchased by employers outside of the ACA marketplaces. Under an alternative assumption of, for example, a $250 annual premium, total spending exceeds the "market" value of dental care for half of adults.

Employer-sponsored dental benefits plan information from the National Association of Dental Plans indicates that dental preferred provider organization plans (DPPOs) are by far the most common type of plan offered by employers.[4] Our estimate for premiums in our analysis is on par with typical premiums charged for DPPO products (for fully insured business lines) sold outside of the marketplaces.[4] Thus, we feel that observations regarding total spending on care versus total cost of premiums and patient out-of-pocket expenses hold true beyond the ACA marketplaces.

Looking forward, the ACA and other developments in the dental sector have the potential to reshape the dental benefits products available to consumers. The ADA Health Policy Institute will continue to study the impact of the ACA on dental benefits coverage, as well as other important outcomes.

Table 1: Total Number of Adults in Sample by Age Group and Dental Spending Quartile

Ages	Total	No Spending	First	Second	Third	Fourth
19 through 34	1,676,433	746,044	176,154	216,249	285,826	252,160
35 through 49	2,012,404	736,877	306,090	321,074	313,930	334,433
50 through 64	2,281,549	694,250	456,625	465,113	292,031	373,530

Source: ADA HPI analysis of 2013 Truven data.

Table 2: Utilization Rate for the Top 25 Most Common Procedures

Ages 19 through 64		Ages 19 through 34		Ages 35 through 49		Ages 50 through 64	
D1110	0.856	D1110	0.723	D1110	0.857	D1110	0.954
D0120	0.771	D0120	0.600	D0120	0.770	D0120	0.898
D0274	0.347	D0274	0.309	D0274	0.356	D0274	0.368
D0220	0.242	D0220	0.165	D0220	0.239	D0220	0.301
D0230	0.155	D2392	0.139	D0230	0.159	D0230	0.168
D0140	0.103	D0230	0.132	D2392	0.098	D4910	0.163
D4910	0.099	D0150	0.122	D0150	0.096	D0140	0.128
D2392	0.098	D2391	0.105	D0140	0.096	D2391	0.082
D0150	0.094	D0210	0.079	D2391	0.092	D4341	0.079
D2391	0.092	D0140	0.078	D4341	0.089	D0210	0.075
D0210	0.078	D2150	0.072	D4910	0.088	D0150	0.072
D4341	0.076	D0330	0.068	D0210	0.081	D2950	0.070
D2150	0.058	D1208	0.058	D2150	0.058	D2392	0.067
D0330	0.058	D2140	0.058	D0272	0.054	D0272	0.067
D0272	0.057	D4341	0.058	D0330	0.054	D7140	0.062
D1208	0.050	D2393	0.049	D1208	0.048	D0330	0.054
D2950	0.049	D0272	0.048	D2950	0.047	D7210	0.052
D2140	0.047	D7210	0.039	D2140	0.045	D2750	0.050
D7210	0.044	D7240	0.039	D2393	0.042	D2330	0.050
D7140	0.042	D1206	0.028	D7210	0.039	D2740	0.050
D2393	0.042	D7230	0.027	D7140	0.034	D2150	0.049
D2330	0.036	D4910	0.026	D2330	0.031	D1208	0.046
D2740	0.033	D2160	0.026	D2740	0.030	D2331	0.041
D2750	0.032	D7140	0.024	D2750	0.029	D2140	0.039
D2331	0.032	D2950	0.024	D2331	0.028	D2393	0.037

Source: ADA HPI analysis of 2013 Truven data. **Notes:** Analysis is based on all adults with private dental benefits regardless of their dental spending level (i.e. includes adults with no spending).

Table 3: Estimated Average Annual Dental Spending, Valued at Market Fees (per FAIR Health), by Age Group, Category of Dental Service and Dental Spending Quartile in 2015 Dollars

	Category of Dental Service	All	First	Second	Third	Fourth
Ages 19 through 34	Preventive/Diagnostic	$160	$253	$324	$275	$299
	Basic	$177	$27	$53	$197	$889
	Major	$116	$8	$8	$28	$727
	Orthodontia	$39	$10	$8	$18	$228
	Total	**$492**	**$298**	**$392***	**$517***	**$2,143**
Ages 35 through 49	Preventive/Diagnostic	$184	$213	$310	$336	$302
	Basic	$150	$26	$57	$261	$580
	Major	$237	$10	$9	$70	$1,343
	Orthodontia	$26	$3	$4	$13	$138
	Total	**$598***	**$252**	**$380**	**$680**	**$2,363**
Ages 50 through 64	Preventive/Diagnostic	$203	$187	$269	$433	$337
	Basic	$170	$32	$75	$470	$537
	Major	$399	$13	$16	$349	$2,127
	Orthodontia	$13	$1	$2	$13	$68
	Total	**$785**	**$232***	**$361***	**$1,266***	**$3,069**

Source: ADA HPI analysis of 2013 Truven claims data, 2012 and 2013 FAIR Health procedure charges. **Notes:** Analysis for "All" includes all adults with private dental benefits regardless of dental spending (i.e. includes adults with no spending). Analysis for spending quartiles excludes individuals with no dental spending. *Spending categories do not sum to total due to rounding.

Table 4*:* Estimated Average Annual Dental Spending, Valued at Market Fees (per FAIR Health), by Age Group and Dental Spending Quartile in 2015 Dollars

Ages	All	First	Second	Third	Fourth
19 through 34	$492	$298	$392	$517	$2,143
35 through 49	$598	$252	$380	$680	$2,363
50 through 64	$785	$232	$361	$1,266	$3,069

Source: ADA HPI analysis of 2013 Truven claims data, 2012 and 2013 FAIR Health procedure charges. **Notes:** Analysis for "All" includes all adults with private dental benefits regardless of dental spending (i.e. includes adults with no spending). Analysis for spending quartiles excludes individuals with no dental spending.

Table 5: Estimated Average Annual Dental Spending, Valued at Actual Fees Paid (per Truven), by Age Group, Category of Dental Service and Dental Spending Quartile in 2015 Dollars

	Category of Dental Service	All	First	Second	Third	Fourth
Ages 19 through 34	Preventive/Diagnostic	$119	$153	$228	$222	$238
	Basic	$117	$8	$24	$114	$622
	Major	$74	$3	$2	$11	$481
	Orthodontia	$13	$0	$0	$1	$84
	Total	**$323**	**$164**	**$255***	**$348**	**$1,425**
Ages 35 through 49	Preventive/Diagnostic	$139	$128	$223	$278	$244
	Basic	$98	$10	$28	$162	$405
	Major	$153	$3	$2	$26	$892
	Orthodontia	$9	$0	$0	$1	$53
	Total	**$399**	**$141**	**$253**	**$467**	**$1,593***
Ages 50 through 64	Preventive/Diagnostic	$156	$114	$205	$357	$281
	Basic	$110	$12	$38	$304	$374
	Major	$252	$2	$3	$147	$1,421
	Orthodontia	$5	$0	$0	$1	$28
	Total	**$523**	**$128**	**$245***	**$810***	**$2,104**

Source: ADA HPI analysis of 2013 Truven claims data, 2012 and 2013 FAIR Health procedure charges. **Notes**: Analysis for "All" includes all adults with private dental benefits regardless of dental spending (i.e. it includes adults with no spending). Analysis for spending quartiles excludes individuals with no dental spending. *Spending categories do not sum to total due to rounding.

Table 6: Estimated Average Annual Dental Spending, Valued at Actual Fees Paid (per Truven), by Age Group and Dental Spending Quartile in 2015 Dollars

Ages	All	First	Second	Third	Fourth
19 through 34	$323	$164	$255	$348	$1,425
35 through 49	$399	$141	$253	$467	$1,593
50 through 64	$523	$128	$245	$810	$2,104

Source: ADA HPI analysis of 2013 Truven claims data, 2012 and 2013 FAIR Health procedure charges. **Notes:** Analysis for "All" includes all adults with private dental benefits regardless of dental spending (i.e. includes adults with no spending). Analysis for spending quartiles excludes individuals with no dental spending.

Table 7: Estimated Average Annual Dental Spending, Valued at Actual Fees Paid (per Truven), by Age Group and Dental Spending Quartile in 2015 Dollars

	Ages	All	First	Second	Third	Fourth
Dental Spending Paid by Insurer	19 through 34	$251	$153	$236	$299	$1,018
	35 through 49	$302	$130	$236	$401	$1,097
	50 through 64	$383	$118	$225	$670	$1,394
Dental Spending Paid by Patient (Not Including Estimated Premium Cost)	19 through 34	$73	$11	$18	$50	$407
	35 through 49	$96	$10	$17	$66	$496
	50 through 64	$140	$10	$21	$140	$710
Dental Spending (Including Estimated Premium Cost)	19 through 34	$453	$391	$398	$430	$787
	35 through 49	$476	$390	$397	$446	$876
	50 through 64	$520	$390	$401	$520	$1,090

Source: ADA HPI analysis of 2013 Truven claims data, 2012 and 2013 FAIR Health procedure charges. **Notes**: Analysis for "All" includes all adults with private dental benefits regardless of dental spending (i.e. includes adults with no spending). Analysis for spending quartiles excludes individuals with no dental spending.

Data & Methods

Adult dental benefits in dental plans offered in the federally-facilitated marketplace include four main categories of dental services: routine, basic, major and orthodontia. For the purposes of this analysis, we used these four categories and renamed the category "routine" as "preventive and diagnostic services."

We categorized adults in our analysis based on two factors: age group and total dental spending within the year.

We created age groups by separating the reviewed age range into thirds. This resulted in the following groups: ages 19 through 34, 35 through 49, and 50 through 64.

To calculate dental care utilization, we used data from the Truven Health MarketScan® Research Databases (Truven) for 2013.[5] Truven includes dental claims and enrollment data from large employers and health plans across the United States who provided private dental benefits to employees, their spouses and dependent children. In 2013, there were 10.7 million covered lives included in Truven. Based on the latest data from the 2012 Medical Expenditure Panel Survey (MEPS),[6] we estimate that as of 2012, Truven covered about 7.6 percent of privately insured individuals in the United States. Truven includes claims from a variety of fee-for-service (FFS), preferred provider organization (PPO), and capitated health plans.

We examined 24,820,546 dental claims across 5,970,386 adults who were enrolled in a private dental benefits plan for 365 continuous days in our analysis.

Each Truven dental claim indicates the age of the adult for which the claim was submitted, the American Dental Association Current Dental Terminology (CDT®) procedure code, and the total amount spent per procedure. Within each age group, we analyzed data across all adults with private dental benefits, regardless of whether they had any dental spending. We also generated dental spending quartiles, separating those with no dental spending into a separate fifth group. Total dental spending includes payments made by consumers (copayments, coinsurance, etc.), insurers and other third parties. Truven captures all of these parameters.

See Table 1 for the total number of adults in each age group and dental spending quartile included in our analysis, hereinafter referred to as "patient profiles."

With beneficiaries sorted into groups by their dental spending levels, we analyzed the utilization of specific dental procedures within each patient profile using CDT® codes. To determine the average number of times an adult within each patient profile utilized a specific dental procedure within the year, we divided the total number of claims for a procedure by the total number of individuals within each patient profile. This generates an average utilization rate for each dental procedure that is specific to each age group and dental spending quartile (i.e. for each patient profile). We did this for every dental procedure. Table 2 summarizes the utilization rate for the 25 most frequently used procedures among adults within each age group. These services are typically covered by private dental benefits plans.

We calculated the average utilization rate slightly differently for three orthodontia procedures: D8070, D8080 and D8090. These procedures are comprehensive orthodontia procedures and should not be billed together or more than once per year. However, many dental benefits plans will disperse provider reimbursement for these procedures over the course of 12 to 18 months,[7] resulting in multiple paid

claims with the same procedure code per adult. Indeed, we found this to be the case within the 2013 Truven data we analyzed. For our analysis, we needed to count each of these procedures only once per year per adult. To accomplish this, we added up spending across procedure codes D8070, D8080 and D8090 in 2013 and when there were multiple instances of these procedures, we set the frequency to once per year. In other words, if an adult had two or more claims for these procedures within a year, total spending was summed up and allocated to the procedure code used on the last claim paid in 2013. Had we not made this adjustment, we would be potentially overestimating the frequency of comprehensive orthodontia procedures.

We calculated total dental spending based on these dental care utilization profiles in two ways. Our first method used actual reimbursement amounts from the Truven database. It is important to note that Truven is a database of dental spending based on reimbursement rates to providers that have been negotiated with private dental benefits plans. Truven does not necessarily represent what providers would typically charge for dental procedures. We break down dental spending according to what is paid by the insurer and the patient. We also calculate total outlays, including estimated dental benefits plan premium costs. We used the Consumer Price Index (CPI) inflation calculator from the United States Bureau of Labor Statistics to adjust these 2013 average payments to 2015 dollars.[8] We use $380 as the estimated annual premium cost, which is the annualized average cost of a family stand-alone dental plan for adults in the federally-facilitated marketplace in 2015.[9] This premium estimate is also roughly in line with average premiums for dental PPO plans sold in the employer market.[4]

Our second method estimated dental spending based on "market fees." To determine how much dentists typically charge for each procedure, we obtained commercial dental benefits plan reimbursement charges from the 2012 and 2013 FAIR Health Dental Benchmark Module.[10] The most recent data contained within the FAIR Health database cover 125 million individuals with commercial dental benefits,[11] capturing approximately 80 percent[12] of the total commercial dental benefits market. The FAIR Health database provides charge data for dental procedures billed using CDT® codes, reporting reimbursement rates charged by providers before network discounts are applied. Thus, we use these charge data to estimate dental spending at market fees.

We used average national charges from the 2013 FAIR Health database, substituting data from the 2012 FAIR Health dataset when 2013 data were not available.

FAIR Health does not include average national charges for orthodontia procedures. We substituted average national charges from the ADA 2013 Survey of Dental Fees for these procedures.[13] The Survey of Dental Fees was sent to a simple random probability sample of 13,052 ADA member and non-member general practitioners and specialists. Specialists, such as orthodontists, were oversampled with respect to their proportion in the population. The response rate was 18.2 percent, and appropriate weights were applied to reflect the population.

We used the CPI inflation calculator from the U.S. Bureau of Labor Statistics to adjust FAIR Health and ADA 2013 Survey of Dental Fees charges to 2015 dollars.[8] We multiplied the 2015 procedure charges by the corresponding utilization rate to determine the average spending per dental procedure per beneficiary in each of our patient profiles.

For some procedure codes, Truven data indicated there were no insurer or consumer out-of-pocket payments. We substituted in the charged amount for

these procedures under the assumption that when there are no payments associated with a procedure, then it is not covered by a dental benefits plan and the consumer pays for the procedure out of pocket at the price charged by the provider. We recognize that in some cases, the provider may not charge the patient for procedures that are not covered by a dental benefits plan, instead providing such procedures free of charge. However, to be conservative, we maximized total average dental spending by consumers in assuming that providers do charge patients their market fee for non-covered services. We examined the total estimated value of these procedures and it was negligible; using the charged amount for these procedures did not change any of the results.

We grouped dental procedures and associated spending into broad categories. We reviewed 2013 and 2015 Federal Employee Dental and Vision Plan (FEDVIP) information to assign each procedure to a service category: preventive and diagnostic, basic, major and orthodontia.[14] Several procedures were not specifically referenced in any of the FEDVIP plans we reviewed. Additionally, several procedures were categorized as general services. For those procedures that were not specifically referenced in any of the FEDVIP plans we reviewed, we referenced dental benefits industry reports and reviewed several stand-alone dental plans offered in the 2015 federally-facilitated marketplace for potential categorizations. The majority of these procedures were crowns and oral surgery codes. After our review, we categorized crowns as major services[15] and oral surgery procedures as basic services.[16] While we understand that not all procedures are covered by every dental benefits plan, our goal was to include as many procedures in our patient profiles as possible in order to accurately reflect total spending on dental services by adults in our sample.

The majority of the remaining uncategorized procedures were related to anesthesia or sedation. We followed the methodology from a previous brief[17] and split total spending on these procedures evenly between basic and major spending.

Finally, there were 84 non-orthodontia procedures for which there was no corresponding charge data in the FAIR Health database and 12 orthodontia procedures for which there was no corresponding charge data in the ADA 2013 Survey of Dental Fees. We dropped these procedures from our analysis. Additionally, if a procedure was not covered under the FEDVIP plan and we could not find supporting documentation for classification from another source, we dropped it from our analysis. This resulted in dropping an additional 150 procedures. It is important to note that dropping these 150 procedures from the analysis had almost no effect on our dental spending calculations. In fact, the dental procedures retained in our analysis account for 99.4 percent of total dental spending across our sample, using market fees.

A limitation in our analysis is that we do not capture the use of dental services for which no claims were submitted on behalf of the beneficiary. We have no way of identifying the extent to which providers for commercially insured adults do not submit a claim to the adult's dental plan. However, in our data, there are claims for which the insurer did not cover any of the charged amount. This strongly suggests that the Truven data are indeed capturing utilization of procedures even in the case where the dental plan does not cover any of the cost.

This Research Brief was published by the American Dental Association's Health Policy Institute.

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Suggested Citation

Yarbrough C, Vujicic M, Aravamudhan K, Blatz A. An analysis of dental spending among adults with private dental benefits. Health Policy Institute Research Brief. American Dental Association. May 2016. Available from: http://www.ada.org/~/media/ADA/Science%20and%20Research/HPI/Files/HPIBrief_0516_1.pdf.