

# Use of dental services in 1980

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*In this article, we describe the use of dental services by the civilian noninstitutionalized population of the United States in 1980. Data are presented on the extent to which this population is insured for dental*

*expenses, their use of dental services, the charges incurred, and the sources of payment for these services.*

## Introduction

Compared with the use of other major health care services, the use of dental services has received relatively little attention from health care researchers. This is not to belittle the amount of money spent for those services: In this article, we estimate that more than \$17 billion were spent in 1980 for dental services. Total expenditures for dental services, like those for other health care services, have been increasing, but the proportion of personal health care expenditures spent for dental care has remained at about 7 percent since 1975 (Waldo, Levit, and Lazenby, 1986).

Part of the relative inattention given to the study of the economics of dental services is probably attributable to the absence of drama usually attendant on their use. The use of dental services is largely elective and often deferrable, even in the presence of discomfort. Consequently, the timing and extent of the financial burden of dental services can be significantly controlled by the patient. Further, a goodly share of dental expenditures may be for cosmetic purposes, for which the perception of societal concern and responsibility is small.

The perception of low urgency associated with dental services has led to an ambiguous picture relative to the development of dental insurance plans. On the one hand, the coverage of dental expenditures under private health insurance plans has been growing. Increasingly, employers have been enriching the benefit structure of their employee health insurance packages to include dental services. Coverage of dental services as a "fringe" benefit of employment is the way most persons come to possess dental insurance. In health insurance plans, dental services may be covered directly, with specified amounts allowed for specific services, or expenditures for dental services may be included among expenses for other health care services that are subject to specified deductibles and coinsurance. Increased insurance coverage has reduced out-of-pocket payments for dental services. The proportion of dental charges paid directly by patients decreased from 80.0 percent in 1975 to 63.5 percent in 1985 while the proportion paid by private health insurance increased from 14.0 to 34.3 percent (Waldo, Levit, and Lazenby, 1986). On the other hand, despite the growth of third-party coverage of dental services, we

show in this article that more than one-half of the population still had no third-party coverage for dental services in 1980.

Insurance for health services affects patterns of use. In this article, we use data collected in the 1980 National Medical Care Utilization and Expenditure Survey (NMCUES) to compare and contrast the use of dental services by type of insurance coverage and by selected demographic and socioeconomic characteristics. In addition to differentiating patterns of use and expenditures in 1980, the data can also be used to provide benchmarks for comparisons with data that may be collected in the future.

## Source and limitations of data

This article is a synopsis of a larger report (Hunt and Bonito, 1985). The report was based on data from NMCUES, a panel survey of the civilian noninstitutionalized population of the United States. The national household component of NMCUES consisted of a national probability sample of 6,600 households representing the general population. These households were the source of data on 17,900 persons (Bonham, 1983). (NMCUES also included a four-State Medicaid household survey, data from which are not used in this article.)

Over a 15-month period, five interviews were conducted with respondents regarding events related to medical care received during 1980. A core questionnaire administered at each interview contained questions about the use of medical services, charges incurred, sources of payment, and health insurance in force at the time of the interview. A supplementary questionnaire for the first interview was used to obtain data about demographic and social characteristics and limitations in activity. The interviewer administered another supplementary questionnaire at the third interview to gain information about access to health care services. At the fifth and final interview, the interviewer asked about employment during 1980, individual income by source, and functional limitations, using another supplementary questionnaire. The overall response rate was 89 percent.

All estimates that have a percent relative standard error greater than 50 percent or are based on a sample size of fewer than 20 respondents have been suppressed in the tables in this article. In the text, differences between estimates are noted only when they are statistically significant. Although no formal

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tests of statistical significance were performed, the standard errors of estimates were used to establish 95-percent confidence intervals around the estimates. Only if the confidence intervals did not overlap were the differences considered significant. This is a conservative criterion for the determination of statistically significant differences. If formal statistical tests had been performed, additional differences would have been found to be statistically significant.

Three limitations should be noted with respect to the definition of dental insurance used in this article. First, the levels of coverage for dental services under an insurance plan are not differentiated.

Second, for persons covered by Medicaid, no distinction was made between State programs that covered dental services and those that did not. All persons covered by Medicaid were treated as though they had coverage for dental services. In 1980, 29 States, which accounted for 77.3 percent of all Medicaid recipients, provided dental benefits (Sawyer et al., 1983). Thus, failure to differentiate among Medicaid beneficiaries by whether or not dental services were covered dilutes the measurement of the impact of Medicaid coverage on their use of services. However, because the preponderance of Medicaid recipients reside in States that provide dental benefits, the estimates given for Medicaid beneficiaries can, we believe, be taken as orders of magnitude, if not as exact estimates. The use of dental services among Medicaid beneficiaries is low. We believe that this is attributable not only to the inclusion of noncovered individuals but also to program controls placed on the use of the benefits where they are available. Perhaps the attitude of the beneficiary population toward dental health is another contributor to low use. The use of dental services increases with education and income. The level of education and income among Medicaid recipients tends to be low (Kasper, 1986). It should also be noted that Medicaid beneficiaries who report having private insurance at any time during the year are categorized among persons with private insurance. It is estimated that about 1.2 percent of the total population fell into this category in 1980.

The third limitation with respect to the definition of dental insurance coverage relates to persons who were covered under public insurance programs other than Medicaid and who were not covered by supplementary private insurance with dental benefits at any time during the year. This category is two-thirds Medicare beneficiaries. (Medicare does not cover dental benefits.) The remaining one-third includes persons covered by the Indian Health Service, State and local government workers, and beneficiaries under the Defense Department's programs for military dependents. Persons with public insurance other than Medicare or Medicaid, but without any private dental insurance, make up 5.7 percent of the total population. Most of these persons (5.5 percent of the total population) are counted in this article as not having dental insurance. The remainder (0.2 percent) are categorized as unknown private coverage.

However, some of the public plans may have actually covered dental services.

## Highlights

The salient findings of this article are presented by topic areas.

### Coverage

- In 1980, 52.5 percent of the civilian noninstitutionalized population had no third-party coverage for dental services; another 2.9 percent could not be classified under any dental insurance category and may also have been uninsured.
- An estimated 34.4 percent of the population had private dental insurance coverage for all or part of 1980.
- An estimated 10.1 percent were covered under Medicaid and had no private dental insurance at any time during the year.

### Persons using dental services

- In 1980, 44.8 percent of the civilian noninstitutionalized population used dental services.
- Among persons with private dental insurance for the whole year, 59.0 percent used dental services; among persons privately insured for part of the year, 48.6 percent used services.
- Among persons with no coverage, 41.6 percent used dental services.
- Only 31.8 percent of Medicaid beneficiaries used dental services.

### Dental visits

- Users of dental services in 1980 made an average of 3.1 visits.
- Persons with full-year private dental insurance coverage who used dental services averaged 3.4 dental visits; users with part-year coverage averaged 3.1 visits.
- Users of dental services who had no dental insurance averaged 3.0 visits.
- Users covered under Medicaid averaged 2.5 visits.

### Charges incurred

- Persons who used dental services in 1980 incurred average annual charges of \$177.
- Users of dental services who had private dental insurance for all of 1980 incurred average charges of \$229; users with only part-year private coverage incurred charges averaging \$193.
- Users with no dental insurance incurred average charges of \$156.
- Medicaid beneficiaries using dental services incurred average charges of \$125.

## Out-of-pocket payments

- The average user of dental services in 1980 paid \$113 out of pocket, 63.9 percent of the total charges incurred.
- Users covered under private dental insurance for all of 1980 paid \$93 out of pocket, or 40.5 percent of the charges incurred; users covered for only part of the year paid \$104 out of pocket for dental services, or 54.0 percent of the charges incurred.
- Persons without dental insurance who used dental services paid \$139 out of pocket, or 88.6 percent of the charges incurred.
- Medicaid beneficiaries using dental services paid \$33 of the charges incurred, or 26.4 percent of the total.

## Socioeconomic factors

- The use of dental services increased with income and education.
- Black non-Hispanics made the least use of dental services among the ethnicity/race categories examined.
- Persons in the South trailed residents of other census regions in the use of dental services.

## Findings

### Insurance coverage

The percent distribution of the civilian noninstitutionalized population across different types of dental insurance is shown in Table 1 by selected demographic and socioeconomic characteristics. In 1980, most individuals (52.5 percent) did not have any insurance coverage for dental expenses. Slightly more than one-third of the population (34.4 percent) had private dental insurance: 18.1 percent for all of the year and 16.3 percent for part of the year. An additional 10.1 percent are estimated to have had coverage for dental services as Medicaid beneficiaries. This estimate is probably high. As noted earlier, it is based on the assumption that all Medicaid beneficiaries had dental insurance by virtue of enrollment in the program. Data from other sources indicate that only 77.3 percent of Medicaid recipients in 1980 resided in States that included dental services in their Medicaid benefit structure.

These estimates from NMCUES fall within the range of estimates produced by other investigators. In a study of prepaid dental care carried out for the Health Resources and Services Administration, Bonito et al. (1984) estimated that 46.1 percent of the population 3 years of age or over had dental coverage in 1980 under either a private plan or Medicaid. This is consistent with the findings of this paper.

In a Health Care Financing Administration (HCFA) study of private health insurance plans (Carroll and Arnett, 1979), it was estimated that coverage under private dental plans increased from 12.0 million

persons in 1970 to 60.3 million in 1979. Even allowing for an additional year of growth in private insurance coverage of dental services, the estimate from NMCUES (76.8 million) is higher than that from the HCFA study.

The Health Insurance Association of America (1982) estimated that coverage under private dental plans increased from 12.0 million persons in 1970 to 70.2 million in 1979. Allowing for an additional year of growth in private insurance coverage of dental services, the Health Insurance Association of America (HIAA) estimate is close to the one in this article.

Using data from the National Medical Care Expenditure Survey (NMCES), Farley and Walden (1985) estimated that only 18.8 percent of the population had private dental insurance in 1977. The NMCES estimate equates to 39.9 million persons with private dental insurance in 1977, less than the 1977 HCFA estimate of 44.4 million persons and the HIAA estimate of 50.3 million persons. Even allowing for projected growth from 1977 to 1980, the NMCES estimate for the rate of private dental insurance coverage is lower than the rate estimated for this article. Overall, however, comparisons with other studies indicate that the estimates of coverage in this article are tenable.

An examination of coverage by demographic and socioeconomic characteristics shows many meaningful and statistically significant relationships. Persons 65 years of age or over had a lower rate of insurance coverage for dental expenses than any other age group. Children under 5 years were more likely than other age groups to be covered by Medicaid. Black non-Hispanics were more likely to be covered by Medicaid than other groups, and white non-Hispanics were least likely to be covered. Coverage under private insurance plans generally increased with education and income. The South had the highest proportion of persons with no dental insurance.

### Use of services

The use of dental services is shown in Table 2 by selected demographic and socioeconomic characteristics and by type of insurance coverage. Less than one-half (44.8 percent) of the civilian noninstitutionalized population used dental services in 1980. Persons who used dental services averaged 3.1 visits, for a total of 307.4 million dental visits in 1980.

These estimates are comparable with those made by other investigators. In the 1980 National Health Interview Survey (NHIS), it was also found that less than one-half of the population (49.9 percent) used dental services (Jack, 1981). Persons using dental services, according to NHIS estimates, averaged 3.3 visits. NHIS data show that the proportion of the population using dental services was 49.9 percent in 1978 and 50.2 percent in 1979. Persons using these services averaged 3.2 visits in 1978 and 3.4 visits in 1979.

**Table 1**  
**Percent distribution of persons, by type of dental coverage and selected characteristics:**  
**United States, 1980**

Characteristic	Estimated population in millions	Type of coverage				
		Medicaid, no private dental insurance	Private dental insurance <sup>1</sup>		No Medicaid, private dental insurance unknown	No Medicaid, no private dental insurance
			Full year	Part year		
Percent distribution						
<b>Total</b>	222.9	10.1	18.1	16.3	2.9	52.5
<b>Age<sup>2</sup></b>						
Under 5 years	18.0	20.0	17.6	17.9	2.3	42.2
5-14 years	35.0	13.6	22.6	15.9	2.2	45.7
15-24 years	41.5	10.8	16.6	19.9	2.5	50.3
25-44 years	61.3	5.5	22.9	18.5	3.0	50.1
45-64 years	43.6	5.5	17.7	15.7	3.1	58.1
65 years or over	23.5	16.6	3.0	4.8	5.0	70.6
<b>Sex</b>						
Male	107.5	8.4	18.7	16.6	3.0	53.4
Female	115.3	11.7	17.7	16.0	2.9	51.7
<b>Ethnicity/race</b>						
Hispanic	15.0	17.8	18.8	15.2	2.7	45.5
White non-Hispanic	177.6	6.8	19.3	16.5	2.9	54.5
Black non-Hispanic	25.6	27.5	10.6	15.6	3.3	43.1
Other non-Hispanic	4.7	16.8	13.1	17.0	2.9	50.2
<b>Education<sup>3</sup></b>						
None	1.5	39.7	( <sup>5</sup> )	11.0	( <sup>5</sup> )	41.2
Grades 1-8	29.6	20.8	7.4	10.6	3.1	58.0
Grades 9-11	39.4	18.7	14.5	13.4	3.1	50.2
Grade 12	87.6	7.0	21.8	17.1	2.7	51.3
1-3 years of college	36.1	5.0	20.4	20.1	2.9	51.6
4 years of college or more	28.6	1.1	20.9	19.2	3.3	55.5
<b>Family income</b>						
Less than \$5,000	16.2	43.8	( <sup>5</sup> )	3.9	3.0	48.6
\$5,000-\$9,999	26.5	29.4	2.9	7.9	3.4	56.5
\$10,000-\$14,999	31.6	10.1	9.3	13.2	3.0	64.4
\$15,000-\$24,999	60.4	4.7	18.1	19.9	3.5	53.7
\$25,000-\$34,999	43.0	2.0	29.8	20.4	2.1	45.7
\$35,000 or more	45.0	1.5	28.5	19.1	2.6	48.3
<b>Geographic region</b>						
Northeast	46.9	10.6	22.8	17.1	2.3	47.2
North Central	59.3	8.3	21.1	18.1	2.9	49.5
South	69.5	8.8	9.6	12.8	4.3	64.5
West	47.2	13.7	22.4	18.5	1.6	43.8
<b>Type of community</b>						
<b>SMSA<sup>4</sup>:</b>						
Central city	64.9	14.6	15.8	17.1	3.3	49.3
Remainder	89.1	7.8	23.0	18.3	2.9	48.1
<b>Outside SMSA:</b>						
Urban	31.0	9.4	16.1	14.1	2.9	57.5
Rural	37.8	8.5	12.5	11.9	2.7	64.4

<sup>1</sup>With or without Medicaid.

<sup>2</sup>As of January 1.

<sup>3</sup>Education of self or, for persons under 17 years, of mother.

<sup>4</sup>Standard metropolitan statistical area.

<sup>5</sup>Relative standard error is more than 50 percent, or sample size is less than 20.

SOURCE: Health Care Financing Administration and National Center for Health Statistics: Data from the household survey component, National Medical Care Utilization and Expenditure Survey, 1980.

Table 2

**Percent of persons using dental services, percent distribution of dental visits, and mean visits per user, by dental coverage and selected characteristics: United States, 1980**

Dental coverage and characteristic	Persons		Visits	
	Estimated population in millions	Percent using dental services	Percent distribution of visits	Mean visits per user
<b>Total</b>	222.9	44.8	100.0	3.08
<b>Type of coverage</b>				
Medicaid, no private dental insurance	22.5	31.8	5.9	2.54
Private dental insurance <sup>1</sup> :				
Full year	40.4	59.0	26.6	3.42
Part year	36.3	48.6	18.0	3.13
No Medicaid, private dental insurance unknown	6.6	38.5	2.4	2.94
No Medicaid, no private dental insurance	117.1	41.6	47.1	2.98
<b>Age<sup>2</sup></b>				
Under 5 years	18.0	21.0	2.2	1.80
5-14 years	35.0	54.5	19.9	3.21
15-24 years	41.5	47.6	19.6	3.05
25-44 years	61.3	48.6	29.7	3.06
45-64 years	43.6	45.2	20.9	3.26
65 years or over	23.5	33.1	7.7	3.04
<b>Sex</b>				
Male	107.5	42.0	43.2	2.94
Female	115.3	47.4	56.8	3.19
<b>Ethnicity/race</b>				
Hispanic	15.0	32.8	5.0	3.09
White non-Hispanic	117.6	48.4	86.8	3.10
Black non-Hispanic	25.6	27.1	5.9	2.63
Other non-Hispanic	4.7	43.8	2.4	3.55
<b>Education<sup>3</sup></b>				
None	1.5	13.0	0.1	( <sup>5</sup> )
Grades 1-8	29.6	24.6	6.8	2.89
Grades 9-11	39.4	33.3	13.0	3.04
Grade 12	87.6	48.5	43.1	3.12
1-3 years of college	36.1	53.1	19.6	3.15
4 years of college or more	28.6	61.5	17.3	3.03
<b>Family income</b>				
Less than \$5,000	16.2	31.3	4.7	2.84
\$5,000-\$9,999	26.5	32.5	8.0	2.86
\$10,000-\$14,999	31.6	36.8	11.6	3.07
\$15,000-\$24,999	60.4	43.5	25.2	2.95
\$25,000-\$34,999	43.0	50.9	22.2	3.11
\$35,000 or more	45.0	58.5	28.3	3.31
<b>Geographic region</b>				
Northeast	46.9	50.0	26.1	3.42
North Central	59.3	49.3	28.0	2.95
South	69.5	38.5	24.9	2.86
West	47.2	43.3	21.0	3.16
<b>Type of community</b>				
<b>SMSA<sup>4</sup>:</b>				
Central city	64.9	41.3	26.0	2.98
Remainder	89.1	50.0	47.3	3.26
<b>Outside SMSA:</b>				
Urban	31.0	40.5	12.4	3.04
Rural	37.8	42.2	14.3	2.76

<sup>1</sup>With or without Medicaid.

<sup>2</sup>As of January 1.

<sup>3</sup>Education of self or, for persons under 17 years, of mother.

<sup>4</sup>Standard metropolitan statistical area.

<sup>5</sup>Relative standard error is more than 50 percent, or sample size is less than 20.

NOTE: The estimated total number of dental visits is 307.4 million.

SOURCE: Health Care Financing Administration and National Center for Health Statistics: Data from the household survey component, National Medical Care Utilization and Expenditure Survey, 1980.

**Table 3**  
**Number of persons using dental services and annual number of visits per user, by dental coverage and selected characteristics: United States, 1980**

Dental coverage and characteristic	Users of dental services in millions	Annual number of dental visits per user			
		1	2	3	4 or more
Total	99.9	33.9	25.3	14.5	26.4
<b>Percent distribution</b>					
<b>Type of coverage</b>					
Medicaid, no private dental insurance	7.1	38.4	28.7	15.5	17.4
Private dental insurance <sup>1</sup> :					
Full year	23.9	27.3	26.5	15.1	31.0
Part year	17.6	34.0	25.3	12.8	27.9
No Medicaid, private dental insurance unknown	2.5	44.7	19.0	12.1	24.1
No Medicaid, no private dental insurance	48.7	35.8	24.5	14.7	24.9
<b>Age<sup>2</sup></b>					
Under 5 years	3.8	54.0	26.6	11.6	7.9
5-14 years	19.1	34.5	26.9	14.6	23.9
15-24 years	19.7	34.8	26.1	14.1	25.1
25-44 years	29.8	33.6	24.8	13.9	27.7
45-64 years	19.7	29.6	24.0	15.7	30.7
65 years or over	7.8	31.9	23.9	15.6	28.6
<b>Sex</b>					
Male	45.2	35.2	25.4	14.5	24.9
Female	54.7	32.8	25.2	14.4	27.5
<b>Ethnicity/race</b>					
Hispanic	4.9	35.2	23.6	16.0	25.2
White non-Hispanic	85.9	32.8	25.9	14.7	26.6
Black non-Hispanic	6.9	45.1	20.8	12.6	21.4
Other non-Hispanic	2.1	36.0	18.7	9.4	35.8
<b>Education<sup>3</sup></b>					
None	( <sup>5</sup> )	( <sup>5</sup> )	( <sup>5</sup> )	( <sup>5</sup> )	( <sup>5</sup> )
Grades 1-8	7.3	41.0	20.3	12.6	26.1
Grades 9-11	13.1	36.6	24.1	12.9	26.4
Grade 12	42.5	31.8	26.2	15.4	26.6
1-3 years of college	19.2	33.5	24.9	15.1	26.5
4 years of college or more	17.6	34.2	26.4	13.6	25.8
<b>Family income</b>					
Less than \$5,000	5.1	39.0	22.9	13.5	24.6
\$5,000-\$9,999	8.6	40.6	22.4	13.5	23.5
\$10,000-\$14,999	11.6	35.3	23.5	14.3	26.9
\$15,000-\$24,999	26.3	35.9	25.3	14.6	24.2
\$25,000-\$34,999	21.9	32.6	26.2	14.6	26.6
\$35,000 or more	26.3	29.0	26.7	14.9	29.3
<b>Geographic region</b>					
Northeast	23.4	27.8	25.4	15.3	31.6
North Central	29.2	35.3	26.6	14.7	23.5
South	26.8	37.6	24.6	13.5	24.3
West	20.4	33.9	24.3	14.6	27.1
<b>Type of community</b>					
<b>SMSA<sup>4</sup>:</b>					
Central city	26.8	37.8	23.5	13.7	24.9
Remainder	44.6	31.4	25.6	13.9	29.2
<b>Outside SMSA:</b>					
Urban	12.6	33.6	24.0	17.2	25.1
Rural	15.9	34.5	28.3	15.4	21.8

<sup>1</sup>With or without Medicaid.

<sup>2</sup>As of January 1.

<sup>3</sup>Education of self or, for persons under 17 years, education of mother.

<sup>4</sup>Standard metropolitan statistical area.

<sup>5</sup>Relative standard error is more than 50 percent, or sample size is less than 20.

SOURCE: Health Care Financing Administration and National Center for Health Statistics: Data from the household survey component, National Medical Care Utilization and Expenditure Survey.

Persons with private dental insurance had a greater likelihood of visiting a dentist than others. Furthermore, persons insured for the whole year were more likely to visit a dentist (59.0 percent) than those insured for only part of the year (48.6 percent). Medicaid beneficiaries had the lowest proportion of individuals seeing a dentist, even lower than those with no insurance, and they made fewer dental visits than did persons in all the other categories. These findings, however, need to be qualified because of the absence of distinction between beneficiaries in States with dental benefits and those in States without dental benefits.

Persons with private full-year insurance coverage who used dental services made more visits than persons without coverage (3.4 visits per user, compared with 2.9), but persons with private part-year coverage did not make significantly more visits (3.1 versus 2.9).

Several statistically significant differences in the use of dental services by demographic and socioeconomic characteristics were apparent. Children under 5 years and persons 65 years or over were the least likely to use dental services. The proportion of males using dental services (42.0 percent) was lower than the proportion of females (47.4 percent), and males also made fewer visits. Hispanics and black non-Hispanics were the groups least likely to use services, with less than one-third visiting a dentist. The likelihood of using dental services increased with higher education and income, although the number of visits among those using dental services did not differ much. Persons in the Northeast were more likely to visit a dentist than were persons in the other regions and had a higher number of visits per user. Persons in the South were the least likely to use dental services and made the fewest visits.

### Levels of use

In Table 3, we show the percent distribution of persons using dental services by the number of visits made during 1980. The modal number of visits to a dentist was one. Overall, about one-third of those using dental services made only one visit. About one-quarter of the users made four or more visits. Again, persons who had private insurance for the entire year made greater use of dental services than others did. Individuals with private insurance for the entire year had the smallest proportion with only one visit (27.3 percent, compared with a range of 34.0 to 44.7 percent for the other insurance categories) and the largest proportion with four or more visits (31.0 percent, compared with a range of 17.4 to 27.9 percent for the others).

In addition to having the lowest proportion using dental services, children under 5 years of age also made the fewest visits; more than one-half of those using dental services made only one visit. Among the other age categories, there were no substantive differences in the number of visits for users of dental

services. As in Table 2, the smaller use of dental services by black non-Hispanics than by other ethnicity and race groups is highlighted in Table 3. Black non-Hispanics were the group most likely to visit a dentist only once and least likely to visit a dentist four or more times. The influence of education and income on the use of dental services is also shown in Table 3. Among the education and income groups, persons with only an elementary school education (grades 1-8) or family income under \$10,000 had the largest proportion making only one dental visit. Among the regions, the greatest use of dental services was in the Northeast, which had the lowest proportion of persons with only one visit and the largest with four or more visits.

### Types of services used

In Table 4, dental care received in 1980 is shown by type of service—the percent of persons receiving each service and the percent of visits that included each service. If a visit included multiple services, each service was counted for both person-service percents and visit-service percents. Multiple services of the same type in a single visit, such as several fillings, were counted as a single service in that visit. The same service received by a person during two or more visits was counted as a single service received by that person during the year.

**Table 4**  
**Percent of persons using selected dental services and percent of dental visits including such services: United States, 1980**

Type of service	Percent of users who used the service	Percent of visits that included the service
Consultation	1.5	0.6
Other diagnostic or preventive services	0.4	0.1
Fluoride treatment	6.7	2.6
Examination	51.7	22.8
X-ray <sup>1</sup>	61.7	26.9
Cleaning (prophylaxis)	61.7	27.1
Other basic operative services	4.8	2.3
Fillings and restorations	43.0	23.5
Extractions and oral surgery	17.3	8.1
Partial denture fabrication and repair	3.7	2.7
Full denture fabrication and repair	3.6	2.7
Root canal	5.1	3.9
Crown	8.9	5.7
Bridge	2.6	1.9
Periodontal treatment	2.9	1.8
Orthodontia	6.4	12.5
Unclassified	4.3	1.9

<sup>1</sup>X-rays may be undercounted. In the National Medical Care Utilization and Expenditure Survey questionnaire, the service was listed as "Nothing but X-rays." Hence, for a visit that included an X-ray plus other services, the X-ray may not have been recorded.

NOTE: Estimated number of dental service users = 99.9 million; estimated number of dental visits = 307.4 million.

SOURCE: Health Care Financing Administration and National Center for Health Statistics: Data from the household survey component, National Medical Care Utilization and Expenditure Survey, 1980.

**Table 5**  
**Charges for dental services, by dental coverage and selected characteristics:**  
**United States, 1980**

Dental coverage and characteristic	Total charges in millions	Mean charge per visit	Mean annual charges per user of services	Dental coverage and characteristic	Total charges in millions	Mean charge per visit	Mean annual charges per user of services
<b>Total</b>	\$17,689.5	\$57.54	\$177.14	<b>Family income</b>			
<b>Type of coverage</b>				Less than \$5,000	695.9	48.22	137.01
Medicaid, no private dental insurance	895.7	49.38	125.41	\$5,000-\$9,999	1,339.6	54.32	155.42
Private dental insurance <sup>1</sup> :				\$10,000-\$14,999	1,940.4	54.31	166.73
Full year	5,457.0	66.74	228.54	\$15,000-\$24,999	4,236.8	54.77	161.36
Part year	3,402.6	61.66	192.88	\$25,000-\$34,999	3,972.0	58.29	181.17
No Medicaid, private dental insurance unknown	328.0	44.20	129.87	\$35,000 or more	5,504.8	63.20	208.96
No Medicaid, no private dental insurance	7,606.2	52.49	156.27	<b>Geographic region</b>			
<b>Age<sup>2</sup></b>				Northeast	4,613.0	57.52	196.83
Under 5 years	196.5	28.73	51.82	North Central	4,609.6	53.50	157.82
5-14 years	3,276.6	53.51	171.67	South	4,260.8	55.69	159.06
15-24 years	3,430.5	56.93	173.75	West	4,206.2	65.14	205.88
25-44 years	5,541.5	60.74	186.04	<b>Type of community</b>			
45-64 years	3,998.0	62.21	203.06	SMSA <sup>4</sup> :			
65 years or over	1,246.4	52.85	160.55	Central city	4,825.2	60.46	180.11
<b>Sex</b>				Remainder	8,643.2	59.43	193.94
Male	8,013.4	60.32	177.48	Outside SMSA:			
Female	9,676.1	55.43	176.86	Urban	2,107.5	55.20	167.72
<b>Ethnicity/race</b>				Rural	2,113.7	48.04	132.61
Hispanic	1,002.1	65.84	203.22				
White non-Hispanic	15,119.8	56.69	175.94				
Black non-Hispanic	1,062.1	58.28	153.13				
Other non-Hispanic	505.5	69.35	245.96				
<b>Education<sup>3</sup></b>							
None	( <sup>e</sup> )	60.77	( <sup>e</sup> )				
Grades 1-8	1,238.0	58.81	169.93				
Grades 9-11	2,268.2	56.75	172.49				
Grade 12	7,245.2	54.69	170.58				
1-3 years of college	3,755.1	62.25	196.06				
4 years of college or more	3,159.2	59.39	179.74				

<sup>1</sup>With or without Medicaid.

<sup>2</sup>As of January 1.

<sup>3</sup>Education of self or, for persons under 17 years, education of mother.

<sup>4</sup>Standard metropolitan statistical area.

<sup>5</sup>Relative standard error is more than 50 percent, or sample size is less than 20.

SOURCE: Health Care Financing Administration and National Center for Health Statistics: Data from the household survey component, National Medical Care Utilization and Expenditure Survey, 1980.

dental care have not commanded the attention that other health care services have commanded, because visits for these services alone incur the lowest charges of all dental visits.

Orthodontia is the only service for which the percent of visits is higher than the percent of users. Although only 6.4 percent of the users of dental services received orthodontic services, these services were rendered in 12.5 percent of all visits. Orthodontia usually extends over a long period of time and requires an extended series of visits.

### Charges

In Table 5, data are presented on the charges incurred for dental services in 1980. Users of dental services incurred charges of almost \$17.7 billion. The average user incurred charges of \$177. The average charge per visit was almost \$58. These estimates include visits with no charges and users who incurred no charges for the services rendered.

These estimates from NMCUES are higher than most. Wilder (1982) averaged 1978 and 1979 NHIS data to estimate annual charges of \$47 per capita and \$133 per user. In a comparison of health expenditures in the United States and France, Sandier (1983) estimated that U.S. dental charges were \$59.64 per capita in 1978. If converted to a per-user basis, this

Dental services are ordered in Table 4 according to their assumed service intensity and complexity (except for "unclassified"). "Other diagnostic or preventive services" is a grouping of services that did not occur frequently enough to be listed separately but that were similar in importance and were for diagnostic or preventive purposes. Examples are hygiene instruction and application of sealants. "Other basic operative services" is a grouping of infrequently occurring services that pertained to operative procedures. Examples are tooth bleaching, bite alignment, grinding teeth, and making models.

The preponderance of maintenance care in the use of dental services is highlighted in Table 4. The four most frequently used services were cleaning (prophylaxis), X-rays, examinations, and fillings and restorations. Each of these services was provided to about one-half of the persons using dental services and included in about one-quarter of all dental visits. This suggests one of the reasons that the economics of



would approximate \$120 per person using dental services. Even allowing for the differences in the time periods, the NMCUES estimates are higher than found by these investigators. An average of \$187 in charges per person with dental expenses was estimated from 1977 NMCES data. However, this figure is not directly comparable with the NMCUES estimate because the NMCES investigators did not count users to whom no charges were made.

As might be expected, users with private insurance incurred higher average charges than those in the other coverage categories. Those covered by private insurance for the whole year incurred charges of \$229 and were the only group with more than \$200 in charges. This group also incurred the highest average charge per visit (\$67), although this amount is not significantly different from the average charge incurred by users with part-year private coverage (\$62).

Children under 5 years of age incurred lower charges per visit and total charges than did persons in the other age groups. Other than that, no statistically significant age-related differences were noted. Differences by sex, ethnicity and race, and education were not statistically significant. Users in families with incomes of \$35,000 or more incurred higher average charges (\$209) than those in income groups less than \$25,000. Users in the West incurred the highest charges per visit and total charges. Users in rural areas outside standard metropolitan statistical areas scored lowest on both measures.

Because of the multiplicity of services that can be rendered in the course of a visit and the inability to attribute charges to a specific component of the services rendered, charges by type of service are deemed too unreliable to report here.

## Sources of payment

The distribution of payments for dental services is shown in Table 6 by source of payment, categories of dental insurance coverage, and selected demographic and socioeconomic characteristics. Of almost \$17.7 billion in charges incurred in 1980 for dental services, individuals paid \$11.3 billion out of pocket, 63.9 percent of the total. Private insurance plans covered one-fourth of the charges, and public sources paid the remainder.

In comparison, NMCES data show that 74.4 percent of dental charges incurred in 1977 were paid out of pocket. In the study of U.S. and French expenditures, Sandier (1983) estimated that 76.5 percent of dental charges were paid out of pocket. Given the trend toward increasing private insurance coverage during the period discussed, the differences in the estimates do not seem substantive.

Persons covered by Medicaid had the lowest proportion of charges paid out of pocket, 26.4 percent; Medicaid paid 72.5 percent of the charges. Along similar lines, out-of-pocket payments covered 52.5 percent of the charges for children under 5 years of age (the lowest amount among the age categories),

but Medicaid covered 28.3 percent (the highest amount among the age categories). About 20 percent of the children in this age group were covered by Medicaid. Overall, Medicaid enrollees and children under 5 years of age had the lowest levels of use of dental services.

Not unexpectedly, persons with whole-year private dental insurance coverage had a relatively low level of out-of-pocket payments, 40.5 percent of charges. One-half of the charges for this group were picked up by insurance.

Persons 65 years of age or over had the highest proportion of dental charges paid out of pocket, 85.1 percent. Out-of-pocket charges did not exceed 66.8 percent of charges for any of the other age groups. Conversely, the aged had the lowest proportion of dental charges paid by public sources. As shown earlier, the aged were the group least likely to have third-party coverage of dental services.

Black non-Hispanic users of dental services paid a smaller share of expenses out of pocket than did other non-Hispanics. Public sources covered 21 percent of the dental charges of black non-Hispanics, compared with 9.7 percent of the charges of white non-Hispanics. Public sources were significant in covering the charges incurred by persons living in families with income under \$10,000 and those who lived in the West.

In Table 7, the reductions in liabilities provided by third-party coverage of dental services are highlighted. For each range of incurred charges, a significant proportion of users paid out of pocket an amount less than the charges incurred.

## Discussion

Researchers have shown that insurance coverage facilitates access to needed health care services by lowering financial barriers through sharing the incurred costs. When access is deemed to have important social value, this value is expressed in the provision of readily available insurance coverage. The findings of this article relative to the coverage of dental services are ambiguous.

According to the data in this article, persons with private dental insurance, especially those covered for the entire year, do indeed use dental services to a greater extent than others. However, at the same time, more than one-half of the population had no private dental insurance at all in 1980, and existing health insurance plans vary widely in their coverage of dental services. Many health insurance plans do not cover dental services in any form. Others include them among a range of ambulatory health care services for which insurance comes into play when specified deductibles are met. Some plans explicitly specify the dental services covered and the amounts payable. Even public programs manifest this variable pattern.

**Table 6**  
**Sources of payment for dental services, by dental coverage and selected characteristics:**  
**United States, 1980**

Dental coverage and characteristic	Total charges in millions	Out-of-pocket payments		Source of payment		
		Mean amount per visit	Mean annual amount per user	Out of pocket	Private dental insurance	Public sources
Total	\$17,689.5	\$36.77	\$113.19	63.9	25.0	11.1
Percent distribution						
<b>Type of coverage</b>						
Medicaid, no private dental insurance	895.7	12.96	32.91	26.4	1.1	72.5
Private dental insurance <sup>1</sup> :						
Full year	5,457.0	27.05	92.64	40.5	50.1	9.4
Part year	3,402.6	33.09	103.51	54.0	36.1	9.9
No Medicaid, private dental insurance unknown	328.0	38.15	112.11	86.4	( <sup>5</sup> )	4.4
No Medicaid, no private dental insurance	7,606.2	46.56	138.61	88.6	5.5	5.9
<b>Age<sup>2</sup></b>						
Under 5 years	196.5	14.85	26.79	52.5	19.2	28.3
5-14 years	3,276.6	33.86	108.65	62.5	22.4	15.0
15-24 years	3,430.5	36.41	111.12	64.5	22.8	12.8
25-44 years	5,541.5	35.30	108.14	58.0	32.2	9.8
45-64 years	3,998.0	41.39	135.11	66.8	24.9	8.3
65 years or over	1,246.4	44.63	135.59	85.1	7.0	7.9
<b>Sex</b>						
Male	8,013.4	37.86	111.41	62.9	26.2	10.9
Female	9,676.1	35.93	114.65	64.7	24.1	11.3
<b>Ethnicity/race</b>						
Hispanic	1,002.1	38.04	117.42	57.9	22.7	19.4
White non-Hispanic	15,119.8	37.14	115.26	65.6	24.6	9.7
Black non-Hispanic	1,062.1	26.54	69.75	44.1	35.0	21.0
Other non-Hispanic	505.5	45.91	162.82	66.2	19.3	14.5
<b>Education<sup>3</sup></b>						
None	( <sup>5</sup> )	( <sup>5</sup> )	( <sup>5</sup> )	69.9	( <sup>5</sup> )	( <sup>5</sup> )
Grades 1-8	1,238.0	33.93	98.04	57.7	16.8	25.5
Grades 9-11	2,268.2	37.26	113.24	65.9	20.6	13.5
Grade 12	7,245.2	34.18	106.62	62.1	27.2	10.7
1-3 years of college	3,755.1	40.29	126.89	65.2	24.3	10.5
4 years of college or more	3,159.2	39.94	120.87	67.4	27.4	5.2
<b>Family income</b>						
Less than \$5,000	695.9	28.75	81.68	59.7	3.7	36.6
\$5,000-\$9,999	1,339.6	36.16	103.46	67.3	9.7	23.0
\$10,000-\$14,999	1,940.4	36.74	112.78	67.8	18.3	13.8
\$15,000-\$24,999	4,236.8	34.65	102.09	63.5	25.9	10.6
\$25,000-\$34,999	3,972.0	36.24	112.65	61.8	31.0	7.2
\$35,000 or more	5,504.8	40.57	134.13	64.1	28.7	7.2
<b>Geographic region</b>						
Northeast	4,613.0	36.49	124.88	62.6	26.0	11.5
North Central	4,609.6	33.89	99.96	63.7	28.5	7.8
South	4,260.8	40.90	116.82	73.7	18.4	7.9
West	4,206.2	36.04	113.91	55.5	27.0	17.5
<b>Type of community</b>						
<b>SMSA<sup>4</sup>:</b>						
Central city	4,825.2	37.60	111.99	62.4	25.3	12.2
Remainder	8,643.2	37.81	123.38	63.5	25.6	10.9
<b>Outside SMSA:</b>						
Urban	2,107.5	36.31	110.31	66.1	23.2	10.7
Rural	2,113.7	32.23	88.96	66.3	23.8	9.9

<sup>1</sup> With or without Medicaid.

<sup>2</sup> As of January 1.

<sup>3</sup> Education of self or, for persons under 17 years, education of mother.

<sup>4</sup> Standard metropolitan statistical area.

<sup>5</sup> Relative standard error is more than 50 percent, or sample size is less than 20.

SOURCE: Health Care Financing Administration and National Center for Health Statistics: Data from the household survey component, National Medical Care Utilization and Expenditure Survey, 1980.

Table 7

**Percent distribution of users of dental services, by out-of-pocket payments per user within charge ranges: United States, 1980**

Annual charges per user	Users of dental services in millions	Annual out-of-pocket payments per user						
		\$0	\$1-\$49	\$50-\$99	\$100-\$199	\$200-\$499	\$500 or more	
Total	99.9	16.9	43.4	15.9	9.6	9.2	5.0	
				Percent distribution				
\$0	2.4	100.0	0.0	0.0	0.0	0.0	0.0	
\$1-\$49	41.6	18.1	81.9	0.0	0.0	0.0	0.0	
\$50-\$99	20.4	14.2	26.4	59.4	0.0	0.0	0.0	
\$100-\$199	13.3	14.7	17.7	14.5	53.0	0.0	0.0	
\$200-\$499	13.3	11.4	8.8	11.7	13.1	55.0	0.0	
\$500 or more	8.9	6.6	3.9	3.5	8.4	21.6	56.1	

SOURCE: Health Care Financing Administration and National Center for Health Statistics: Data from the household survey component, National Medical Care Utilization and Expenditure Survey.

Many State Medicaid programs do not cover dental services. In 1980, about one-fourth of all Medicaid beneficiaries resided in an area (21 States and the District of Columbia) where dental services were not covered. It appears from the data on utilization that, even where dental services are covered, Medicaid program controls limit service use. It also appears that the primary beneficiaries of Medicaid dental coverage are children. These indications, taken together, seem to suggest an ambiguous attitude toward dental services. It is not clear whether a societal commitment exists to facilitate access to this health care service.

Because of this mixed picture on the prevalence of dental insurance coverage, the findings on the advantages afforded by insurance, particularly private insurance, need to be qualified. The data are clear in that persons with private insurance, particularly for the whole year, made greater use of dental services. Compared with other groups in 1980, a higher proportion of privately insured persons visited a dentist. Persons with private insurance also made more visits, incurred higher charges, and (except in comparison with Medicaid beneficiaries) paid a smaller proportion of the charges out of pocket than did all other groups. However, persons with no dental insurance did not, to a substantive degree, lag behind privately insured persons in the use of dental services. It appears that factors other than insurance coverage (private or Medicaid) influence the use of dental services.

Two socioeconomic factors seem relevant. Even among persons with some college education or an annual income of \$25,000 or more, about one-half had no dental insurance. The small differences in use patterns by coverage group suggest that persons with high income and education place a high value on dental health that is not substantially deterred by the absence of dental insurance, especially as the timing and the extent of the services used are controllable.

The obverse side of the socioeconomic factors that seem to induce high use of dental services seems present among those showing a low use of dental services: low income, low education, and being a black non-Hispanic. Overall, the use of dental services by these groups is lower than use among those

identified explicitly as Medicaid beneficiaries. The total group of Medicaid beneficiaries had the lowest rate of use, the fewest number of visits, and the lowest average incurred charges, despite the fact that Medicaid paid the major portion of the charges.

Of particular interest is the dental coverage of aged persons. The age group 65 years or over group contains the largest proportion of persons without coverage for dental expenses and, except for the group under 5 years of age, has the lowest percent of persons visiting a dentist. It appears indicative of social ambiguity toward the need for facilitated access to dental care that, despite the prevalence of dental problems among the aged, neither Medicare nor most of the private insurance supplements to Medicare cover dental expenses.

Further analysis of the use of dental services by different socioeconomic groups could be conducted, controlling for insurance coverage and for variables not covered in this study. Such analysis would clarify some of the ambiguities present in our findings. The results would be valuable in identifying whether there are groups whose access to dental services or some types of dental services should be facilitated to a greater extent than is done currently.

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