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DENTAL EXAMINATIONS

CODEBOOK FOR ADULTS AND CHILDREN
AT ENROLLMENT AND EXIT

E. S. Bloomfield, L. Y. Weissler, A. M. Bell

February 1987

HEALTH INSURANCE EXPERIMENT

THE **RAND**
CORPORATION

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PREFACE

The codebook in this volume describes the contents of one data file from the Health Insurance Experiment (HIE), a large social experiment conducted by The RAND Corporation from 1974 to 1982 in six sites across the United States. The experiment was conducted under a grant from the U.S. Department of Health and Human Services. The HIE is issuing a number of data files, grouped in topical series, with associated documentation.

This volume documents the dental examination file, a file containing data collected via dental screening examinations administered to participants at enrollment and exit from the experiment. The file itself contains identifying variables for each participant that completed a dental screening examination, and derived variables that describe the prevalence of tooth decay and periodontal disease. The codebook contained herein is a basic reference for users of the file. This dental examination file and codebook supersede all previously issued experiment data.

ACKNOWLEDGMENTS

The authors would like to thank Christine d'Arc Taylor for writing the introduction to the Health Insurance Experiment that appears as Sec. I of this volume. Betty Amo and Joice Polin provided much needed support in preparing the volume for publication. Carol Edwards gathered vital information for Secs. II and III, and Deborah Wesley provided important assistance in the final preparation of Sec. III. Bernadette Benjamin reviewed the document and offered valuable critical input. Final production of this Note was supervised by Patricia Bedrosian. Last, the authors wish to thank Joseph Newhouse for his guidance and support.

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I. INTRODUCTION

This section presents an overview of the Health Insurance Experiment (HIE) and its data collection and file development efforts. It provides essential background for understanding the contents of this codebook. Section II describes the distinctive features of the dental examinations data file this codebook documents. Section III presents the codebook itself.

EXPERIMENTAL DESIGN

The RAND Corporation conducted the Health Insurance Experiment from 1974 to 1982 in six sites across the United States: Dayton, Ohio; Seattle, Washington; Franklin County and Fitchburg, Massachusetts; and Georgetown County and Charleston, South Carolina.¹ The main purpose of the experiment was to assess how varying patients' cost of health services affected their use of services, their satisfaction with health care, the quality of their care, and the state of their health. A related purpose was to study how those outcomes were affected by the mode of delivery--fee for service or health maintenance organization (HMO).²

Over the course of the experiment, information of some kind was obtained for 26,148 persons. A total of 24,340 persons were administered a baseline interview (*baseline participants*³), of which

¹The sites were chosen to represent the four census regions of the country and both urban and rural areas. They also differed in the amount of delay to obtain an appointment, reflecting different degrees of stress on the ambulatory medical care system. Site selection is described in Philip J. Held, *Site Selection Criteria for the Health Insurance Study*, The RAND Corporation, N-2266-HHS, May 1985.

²For a discussion of the purposes and design of the HIE, see Joseph P. Newhouse, "A Design for a Health Insurance Experiment," *Inquiry*, Vol. 11, 1974, pp. 5-27. HIE is also called HIS, Health Insurance Study. The terms are synonymous.

³This and other distinctive HIE terms are defined in the Glossary at the end of this document.

7,700 were ultimately enrolled.⁴ An additional 554 persons were enrolled later, all but a few of them newborns or adopted children under one year of age. Those 8,254 *insured enrollees* were assigned to an *experimental insurance treatment*, and data on their use of health services were collected throughout their period of participation.⁵ Another 2,483 *adjunct enrollees* were not assigned to an insurance treatment but resided with insured enrollees or were members of a short-lived control group in Dayton.

Selection of Enrollees

Persons offered enrollment in the experiment represent a random sample from each site, subject to certain eligibility restrictions.⁶ They were chosen by a two-stage baseline selection process. In each site an areawide probability sample of dwelling units was drawn. Their occupants were interviewed for eligibility, and those found eligible were questioned in depth about their socioeconomic characteristics and experience with health care (baseline interview).

Eligibility criteria excluded those whose health care delivery systems differed from options available to the general population. The following groups were excluded:

- Those who were eligible for Medicare or would become so during the experiment, i.e., those 62 years of age and older, or younger than 62 but with a Medicare-eligible condition such as end-stage renal disease.
- Those with family incomes over \$25,000 (1973 dollars).

⁴Of the remaining 16,640 persons, the 15,411 who did not enroll are called *baseline-only participants*; the other 1,229 are part of the adjunct enrollee group defined below.

⁵Note that "insured" in HIE terminology only means "assigned to an experimental treatment." By the same token, "uninsured" applies only to a participant not so assigned, not necessarily someone lacking health insurance altogether.

⁶Subject also to slight oversampling of low-income families in Dayton, Massachusetts, and South Carolina.

- Those institutionalized (jail, long-term hospital).
- Veterans with service-connected disabilities.
- Those in the military and their dependents.⁷

Project staff verified the accuracy of the information given by baseline participants with employers and insurance companies.

In the second selection stage, HIE staff drew a representative sample of eligible persons to be offered enrollment and assigned each family to one of the insurance plans described below. A sophisticated technique assured that, across plans, families closely resembled each other in 24 health and socioeconomic characteristics.⁸

Experimental Treatments

Sixteen experimental treatments distinguished between coinsurance rates, delivery systems, and maximum out-of-pocket expenditures. All but one of the treatments were health insurance plans, listed below as A-O. Enrollees who had gone through the baseline selection process were assigned to one of the plans. The remaining treatment involved a control group in Seattle, chosen separately.

Insurance Plans. Plans A-N entailed different degrees of cost sharing under the fee-for-service system. Within each cost-sharing group, listed below, plans also differed by the ceiling placed on maximum expenditure. Plan O involved participation in a prepaid group practice, a traditional type of HMO:

- A. Free care (0% coinsurance) (one plan).
- B-D. Family pays 25% of its medical bills (25% coinsurance) (three plans).

⁷Details of HIE eligibility requirements are in Lorraine Clasquin and Marie E. Brown, *Rules of Operation for the RAND Health Insurance Study*, The RAND Corporation, R-1602-HEW, May 1977, Sec. II.

⁸The logic and techniques used to determine optimal sample sizes and assign individual families to experimental plans are described in Carl N. Morris, "A Finite Selection Model for Experimental Design of the Health Insurance Study," *Journal of Econometrics*, Vol. 11, 1979, pp. 43-61.

- E-G. 50% coinsurance (three plans).
- H-J. 50% coinsurance for dental and outpatient mental health services and 25% coinsurance for all other services (three plans).
- K-M. 95% coinsurance (three plans).
- N. 95% coinsurance on outpatient services; 0% on hospital care (one plan).⁹
- O. 0% coinsurance if care was received at a Seattle HMO, Group Health Cooperative of Puget Sound; 95% if care was received outside the HMO (one plan).

Plans requiring coinsurance (B-N) placed a ceiling on annual out-of-pocket expenditures, above which care was free.¹⁰ In all but one plan (N), the ceiling was a specified percentage of the family's income or a dollar limit, whichever was less. The percentage varied with family income and the dollar limit varied with the plan, as indicated below:

<i>Plan</i>	<i>Percentage of Family Income</i>	<i>Dollar Limit</i>
B-D	5, 10, or 15	1000/750 ¹¹
E-G	5, 10, or 15	1000
H-J	5, 10, or 15	1000/750
K-M	5, 10, or 15	1000
N	--	150 per individual; 450 per family

⁹During the experiment's first year in Dayton, the provisions of plans A-N differed in two ways: Only plan A covered dental services for adults; and the coinsurance rate on plans K-N was 100 percent instead of 95 percent.

¹⁰During the experiment's first year in Dayton, expenditures for outpatient mental health care did not apply toward the ceiling.

¹¹In plans B-D and H-J the \$1000 limit applied during the first two years of enrollment for Dayton families who enrolled from November 1974 to February 1975; and during the first year of enrollment for Seattle families who enrolled from January to September 1976. The \$750 limit applied during subsequent enrollment years for the aforementioned families, and during the entire enrollment period for all other families.

HMO Control Group. A random sample of existing members of the Group Health Cooperative (subject to HIE eligibility requirements) was drawn as a control group for the HMO experimental group assigned to plan 0. The control group was formed to compare HMO use by those who had *chosen* that delivery mode (i.e., members of the control group) with use by those experimentally *transferred* to an HMO from the fee-for-service system (i.e., members of the experimental group). Enrollees in the HMO control group continued with the Group Health Cooperative under their prior arrangements but provided the same data as HMO experimental members. With respect to the insurance provider, enrollees assigned to plans A-0 (including the HMO experimental group) were said to be HIE-insured; the HMO control group was termed HMO-insured.

Services Provided

Plans A-0 provided the same comprehensive benefits, including hospital, physician, dental, mental health, visual, and auditory services, drugs (including over-the-counter drugs for certain chronic conditions), and supplies. Services of nonphysician providers, such as audiologists, chiropractors, clinical psychologists, optometrists, physical therapists, and speech therapists, were also covered. The only noteworthy exclusions were nonpreventive orthodontic services, cosmetic surgery for preexisting conditions, and outpatient mental health visits exceeding 52 per year.

Enrollees were able to choose the physicians and other persons who provided their health care. However, if those in the HMO experimental group sought care outside the HMO that was available within, they were responsible for 95 percent of the cost. (For covered services, such as dental or chiropractic, that were unavailable at the HMO, members of the experimental HMO group were fully reimbursed.)

Enrollees in the HMO control group retained whatever benefit package they or their employer had purchased from the HMO. Members of both control and experimental groups were reimbursed 5 percent of the cost of care obtained outside the HMO to encourage the reporting of non-HMO care.

Terms of Enrollment

Families who accepted the insurance plan offered from plans A-0 were enrolled in the experiment for either three or five years, the term randomly assigned. All members of the HMO control group were enrolled for five years.

Enrollees assigned any benefits from their existing health insurance policies to the HIE during the time they participated. No family was financially penalized by HIE enrollment. Enrollees were reimbursed for the cost of maintaining their policies, and if their HIE plan could, under any conceivable set of circumstances, provide less coverage than their private policies, they were paid the maximum difference.¹²

Table 1 indicates the timing of enrollment in the experiment and number of enrollees insured immediately after the baseline selection process in each site.

DATA COLLECTION

Over the course of the experiment, extensive data were collected on participants' demographic and economic characteristics, health status, and use of health services. Background information was obtained on local health care costs, providers, and types of services rendered. The data collection instruments are described in Table 2.

Table 2 shows the amount and types of data gathered from the various participant groups. The most extensive data, especially longitudinal data on the use of health services, are available from the 8,254 insured enrollees, who participated in the experiment longest. The 15,411 baseline-only participants provided much demographic and socioeconomic data, as well as information on health status, experience with health care, and health-related attitudes. Limited data were obtained for the 2,483 adjunct enrollees.

Several subcontractors to RAND participated in the data collection effort. Until March 1975, Mathematica, Inc., supervised data collection, administered the insurance plans, and processed claim forms.

¹²Calculation of the maximum difference is described in Appendix A.

Table 1

HIE ENROLLMENT PERIODS

Site	Number of Enrollees ¹	1974	1975	1976	1977	1978	1979	1980	1981	1982
Dayton	1137	Nov.							Feb.	
3-year	533								Feb.	
5-year	604									
Seattle	3112		Jan.						Sept.	
3-year	1500								Sept.	
5-year	1612									
Fitchburg	723		July						Oct.	
3-year	547								Oct.	
5-year	176									
Franklin Co.	889		July						Oct.	
3-year	649								Oct.	
5-year	240									
Charleston	779		Nov.						Feb.	
3-year ²	571									
5-year	208									
Georgetown Co.	1060		Nov.						Feb.	
3-year ³	800									
5-year	260									
Total	7700									

NOTE: Timelines mark the month and year in which the first person enrolled in the experiment and the month and year in which the last person left the experiment. Data on use of health services continued to be collected from several groups after the end dates shown here: one year afterward for the Dayton 5-year group and Seattle, Fitchburg, and Franklin County 3-year groups; six months afterward for the Dayton 3-year group.

¹Numbers refer to enrollees insured immediately after the baseline selection process. An additional 554 persons were enrolled and insured later, nearly all of them newborns or adopted children under 1 year of age. Figures for Seattle include the HMO control group.

²Some of these enrollees were also members of a preenrollment group between November 1976 and February 1979. An additional 339 persons participated in the preenrollment phase but did not formally enroll in the experiment.

³Some of these enrollees were also members of a preenrollment group between November 1976 and February 1979. An additional 213 persons participated in the preenrollment phase but did not formally enroll in the experiment.

Table 2

PRINCIPAL HIE DATA COLLECTION INSTRUMENTS

Instrument	Topics Covered	Data Collected		
		How	When	From
1. Screening questionnaire [1]	Demographic information to establish basic eligibility	Interview	Beginning of HIE operation in site	Occupants of representative sample of dwelling units on geographic clusters in site
2. Baseline questionnaire, 2 parts	Income, employment Family composition Health status Health care experience and insurance coverage Satisfaction with medical care	Interview Self-administered	4-6 months before enrollment 4-6 months before enrollment	Baseline participants Baseline participants
3. Enrollment verification form	Changes in family composition, economics, or insurance coverage since baseline questionnaire	Interview	Between administration of baseline questionnaire and enrollment date	Baseline participants determined eligible
4. Medical history questionnaire (MHQ), 3 versions by age group: 0-4 years 5-13 years 14+ years	Form A: health status, attitudes, habits Form B: specific medical disorders	Administered by self or parent [2]	Just before enrollment and exit [3]	Insured enrollees
5. Medical screening examination, 3 versions by age group: 0-2 years 3-13 years 14+ years	Physiologic tests	Paramedical personnel	Just before enrollment and exit	Sample of insured enrollees at enrollment; all exiting enrollees
6. Health report	Use of medical or dental services and time spent obtaining them; any restricted activity or bed disability	Administered by self or parent	Biweekly during period of participation	Insured enrollees [4]

- Administered as a separate questionnaire only in Dayton; part of baseline questionnaire in the other sites.
- When "parent" appears in this column, a parent was asked to provide data for children 13 and younger.
- "Exit" refers to normal departure from the experiment after completing the assigned enrollment period, three or five years. Those who "attrited," or voluntarily left the experiment early, received an "attrition" MHQ that was identical to the exit MHQ.
- In the first year of the experiment in Dayton, the health report was administered weekly to a random half of Dayton enrollees. In the first year of the experiment in Massachusetts and South Carolina, 25 percent of enrollees were exempted to measure the reporting requirement's effect on the use of health services. Also at one point virtually all participants stopped filling out health reports, for budgetary reasons.

Table 2 (cont.)

Instrument	Topics Covered	Data Collected		
		How	When	From
7. Health care questionnaire, 3 versions by age group: 0-4 years 5-13 years 14+ years	Health status, attitudes, habits (subset of MHQ)	Administered by self or parent	Each anniversary of enrollment except at exit	Insured enrollees
8. Annual income report	Amount and sources of family income, taxes paid	Self-administered	Annually (April)	Head of insured family
9. Periodic employment report	Wages, hours worked, family payments for care of children or elderly, government program benefits received	Self-administered	Semiannually	Enrollees (head and family members 16 and older)
10. Assets and debts questionnaire	Family assets and liabilities	Self-administered	Exit	Head of insured family
11. Knowledge of coverage questionnaire	Details of HIE insurance plan	Self-administered	Specified intervals [5]	Insured enrollees
12. Insurance abstraction	Details of selected insurance policies	Abstraction	At time of knowledge of coverage questionnaire	Insurance company brochures
13. Chronic condition questionnaire	Status of condition, correctness of diagnosis, adequacy of treatment	Physician interview	At exit medical screening examination	Sample of insured enrollees found to have certain chronic conditions [6]
14. Evaluation questionnaire	Perceptions and attitudes about HIE and health care system	Self-administered	Exit	Head of insured family
15. Health notice	Use of medical or dental services	Administered by self or parent	Biweekly during preenrollment phase (South Carolina); 6 months-1 year after exit (other sites)	Preenrollees (South Carolina), insured enrollees who have exited (other sites)

5. Intended intervals were enrollment, 18 months, 3 years, and 5 years after enrollment (the last only for the 5-year participants). Actual mailings approximated those intervals in Massachusetts and South Carolina; the first mailing was 2-1/2 years and 1 year after enrollment in Dayton and Seattle, respectively.

6. Hypertension, diabetes, thyroid diseases, chronic heart diseases, chronic lung diseases, joint diseases, ulcers, cerebrovascular disease.

Table 2 (cont.)

Instrument	Topics Covered	Data Collected		
		How	When	From
16. Medical expense report (MER)--fee-for-service claim form, 4 types: Doctors' services and supplies Dental care Hospital and extended care Pharmacy	Each use of medical or dental service, drugs, and equipment; reason or diagnosis; treatment	Administered by self or parent	Time of occurrence	Insured enrollees and providers/suppliers
17. Services rendered report (SERR)--HMO equivalent of MER [7], 2 types: Doctors' services and supplies Hospital and extended care	Each use of medical service provided by HMO; reason or diagnosis; treatment	Abstraction	Annually to cover entire previous year	HMO records for insured enrollees in HMO experimental and control groups
18. Factor price survey	Wages and benefits of selected hospital personnel [8], average daily inpatient population	Phone and mail	Semiannually	Sample of local hospitals
19. Consumer price index	Prices of selected nonmedical products in the six HIE sites	Phone and inspection	Semiannually	Sample of local retailers
20. Physician capacity utilization survey (PCUTS)	Availability of services [9]	Phone	Annually	Sample of local physicians [10]
21. Dentist capacity utilization survey (DCUTS)	Similar to PCUTS	Phone	Annually	Sample of local dentists [11]
22. Insurance preference questionnaire	Willingness to pay higher premium to reduce out-of-pocket expense limit	Self-administered	Exit	Head of insured family
<p>7. Pharmacy data were obtained directly from an HMO-supplied computer tape. Dental care was not available through the HMO; HMO participants reported claims for dental care and other non-HMO services on the MER.</p> <p>8. Categories of personnel: registered nurses (general-duty), medical technicians, licensed professional nurses, nursing aides, kitchen helpers, general stenographers, and maids or porters.</p> <p>9. Waiting time for appointments; appointments per hour; patients seen in office, home, and hospital; weekend office hours; office staffing; cost of office visit; whether new patients accepted.</p> <p>10. Physicians (M.D. or D.O.) specializing in general practice, internal medicine, and pediatrics.</p> <p>11. Except in Fitchburg, Franklin County, and Georgetown County, where all dentists were surveyed.</p>				

Thereafter, National Opinion Research Center managed data collection and Glen Slaughter and Associates handled insurance administration and claim processing. American Health Profiles, Inc., conducted the medical screening examinations at enrollment (October 1974 through January 1977); CompuHealth administered those examinations at exit (October 1977 through December 1981).

FILE DEVELOPMENT

Subcontractors sent the collected data to RAND, either in hardcopy form or as cleaned data tapes. At RAND the hardcopy data were encoded for machine readability and subjected to computerized checks for logical consistency and adherence to specified response ranges; outliers were checked only for fidelity to the original response and otherwise left unchanged. Limited cross-checking was done to assess logical consistency among a respondent's answers. All identifiers permitting information to be linked to a specific respondent were replaced twice to protect respondents' privacy.¹³ The cleaned records were then arranged in the HIE version of standard computer file format, and the resulting files of *primary variables* made available for HIE analyses.

When an analyst needed information that required manipulation of primary data, *derived variables* were constructed. The analyst and a programmer determined a suitable way of obtaining the information by extracting, aggregating, or transforming primary data, and the programmer wrote the appropriate logic. With the analyst's approval, the new variable was entered on the master file.

Both primary and derived variable files are being issued to the public in a number of topical series. Appendix B provides a complete list of the files to be issued.

¹³The first conversion was known only to the subcontractor, the second only to RAND. Neither institution could make the full link from the respondent's name to his or her identifier on the analytic files.

The machine-readable tape for each file includes data in both SAS¹⁴ (Statistical Analysis System) and character formats, and an index of character-format variables.¹⁵

A codebook is also provided for each file. This volume contains the codebook for the derived variable dental examinations file. Section II describes the dental examinations; Sec. III presents the codebook itself.

¹⁴A registered trademark of the SAS Institute Inc.

¹⁵These are the components of all files issued by RAND. Other institutions (e.g., National Archives) will distribute these files and may alter their contents.

II. DENTAL FILE OVERVIEW

The HIE dental file was created to help analyze the effects of different levels of health insurance on the use and quality of dental care in a general population. Data collected focused on the prevalence and adverse consequences of *dental caries*, or tooth decay, and *periodontal disease*.

THE SAMPLE

Dental screening examinations, part of a general physical assessment of health status, were administered at enrollment and exit from the experiment to persons age three and older. The dental file consists of variables measured during the examinations. A record exists for each person who completed a dental screening examination at enrollment, exit, or both. Not all persons on the file have both enrollment and exit data.

At enrollment, the general physical and dental examinations were administered to a randomly selected subsample of enrolled families. Depending on the HIE site, approximately 50 to 75 percent of the families were selected; only participants age three and older in these selected families received the examinations. A portion of the dental examination, the Periodontal Index, was given only to participants age 14 and older.

At exit, all HIE participants age three and older received the general and dental screening examinations, with the exception of participants living more than 100 miles from the examination center.¹ A portion of the examination, the Periodontal Index, was given only to participants age 12 and older.

¹Participants living more than 100 miles from the examination center were asked to take the general physical examination with their own physician, and the dental portion of the examination was omitted.

Enrollment data only appear for:

- Persons in the subsample who were terminated, i.e., became ineligible or refused to cooperate, or who attrited, i.e., left voluntarily.
- Persons in the exit sample who did not complete the exit examination.
- Persons in the subsample who died during the study.
- Persons in the subsample who lived more than 100 miles away from the examination center at exit.

Exit data only appear for:

- Persons not in the enrollment subsample, or who were in the enrollment subsample but did not complete the examination.
- Persons under three years of age at enrollment.
- Persons insured after the study began (primarily newborns).

Both enrollment and exit variables are included for each participant. Participants with enrollment data only have all exit values listed as "Missing" (SAS "dot" notation for numeric values, blanks for alphanumeric values). Participants with exit data only have all enrollment values listed as "Missing."

Special alphanumeric "missing" codes are used to denote specific cases of missing data. For example, variables relating to primary teeth would be "missing" for adults. These special codes are described in Sec. III and in the appropriate variable descriptions in the codebook itself.

SCREENING EXAMINATIONS

Each screening examination was conducted by a dentist or a dental hygienist under the supervision of a dentist.² Table 3 lists the dates

²Details on screening examination procedures is provided in L. H. Smith et al., *The Health Insurance Study Screening Examination Procedures Manual*, The RAND Corporation, R-2101-HEW, September 1978.

of examination administration at enrollment; Table 4 lists examination dates at exit.

Table 3

DENTAL EXAMINATION ADMINISTRATION DATES AT ENROLLMENT

Site	Dates
Dayton 3- and 5-year	10/14/74 - 12/21/74
Seattle 3- and 5-year	12/01/75 - 05/28/76
Massachusetts 3- and 5-year	06/19/76 - 09/25/76
South Carolina 3-and 5-year	10/25/76 - 01/19/77

NOTE: The South Carolina 3-year sample was a pre-enrollment group (PEG) at the time of the examinations. The examination data was collected two years before their actual enrollment in the HIE.

Table 4

DENTAL EXAMINATION ADMINISTRATION DATES AT EXIT

Site	Dates
Dayton 3-year	10/27/77 - 11/21/77
Dayton 5-year	10/18/79 - 11/16/79
Seattle 3-year	01/10/79 - 05/15/79
Seattle 5-year	02/19/81 - 05/03/81
Massachusetts 3-year	06/06/79 - 08/11/79
Massachusetts 5-year	05/16/81 - 06/05/81
South Carolina 3- and 5-year	08/22/81 - 12/10/81

The examination itself consisted of categorizing a participant's teeth as permanent (adult), primary (baby, or deciduous), or unerupted. The participant's overall dental caries experience, i.e., the cumulative effect of decay on the teeth, was then summarized according to two

specialized indexes: the Decayed-Missing-Filled Teeth index (DMFT) and Decayed-Missing-Filled Surfaces index (DMFS) for permanent teeth, the Decayed-Extracted-Filled index (def) and Decayed-Extracted-Filled Surfaces index (defs)³ for primary teeth. The surrounding gum tissue was scored using the Periodontal Index (PI); the assessment of degree to which tooth surface areas were covered by plaque and calculus was measured using the Simplified Oral Hygiene Index (OHI-S).

DMFT and DMFS Indexes

The DMFT and DMFS indexes summarize the effects of decay on permanent teeth. The indexes deal with the number of decayed, missing, and filled teeth or tooth surfaces for each person. A decayed tooth or tooth surface is defined as a tooth or tooth surface on which decay is detectable either visually or with the aid of a dental explorer.⁴ A missing tooth or tooth surface is defined as one that is either missing without an artificial replacement, replaced with a fixed restoration, replaced with a removable appliance, extracted as a part of orthodontic treatment, or extracted because of decay.⁵ A filled tooth or tooth surface is one that has a sound filling and no recurrent decay.

The DMFT index is defined as the total number of decayed, missing, and filled permanent teeth per person. For this index, a tooth was classified only once; a decayed tooth always took precedence over one filled. The DMFT index used by the HIE included third molars and ranges from 0 to 32.⁶

³By convention, abbreviations used to denote indexes are written in capital letters when referring to permanent teeth and lowercase letters when referring to primary teeth.

⁴Full criteria on determining the presence of decay is available in V. W. Spolsky et al., *Measurement of Dental Health Status*, The RAND Corporation, R-2902-HHS, September 1983.

⁵Restorations and appliances are described in Smith et al., op. cit.

⁶Unless radiographs are used in conjunction with an examination to identify third molars (wisdom teeth), it is common to use 28 teeth (16 posterior, 12 anterior) in determining DMFT and DMFS scores. Hence, the DMFT index typically ranges from 0 to 28, and the DMFS index from 0 to 128 ((16x5)+(12x4)). The HIE followed the practice of the National Center for Health Statistics in including third molars in both the DMFT and DMFS scores, thus the broader ranges.

The DMFS index is defined as the sum of decayed, missing, or filled tooth surfaces. In constructing a DMFS score, each tooth was assigned a number of surfaces; the 20 posterior (back) teeth, including third molars, were assigned five surfaces each, and the 12 anterior (front) teeth were assigned four surfaces each. A tooth that was both decayed and filled was classified as both. The DMFS index used by the HIE ranges from 0 to 148 $((20 \times 5) + (12 \times 4))$; see footnote 6.

The third molars of participants under age 16 were scored as unerupted if not visible. The third molars of participants over age 16 were scored as missing if the participant could state confidently that the teeth had been extracted and could identify which teeth had been extracted. If the participant stated emphatically that the teeth were not extracted, or showed any doubt about their extraction, the third molars were scored as unerupted.

def and defs Indexes

The def and defs indexes are similar to the DMFT and DMFS indexes, providing a means of summarizing the cumulative effect of decay on primary teeth.

The def index is defined as the total number of decayed, extracted, and filled primary teeth per person. Each tooth was classified only once, and a decayed tooth always took precedence over one filled. The def index ranges from 0 to 20.

The defs index is defined as the total number of decayed, extracted, or filled primary tooth surfaces per person. The eight posterior teeth were assigned five surfaces each, and the 12 anterior teeth were assigned four surfaces each. As with the DMFT index, a tooth could be classified more than once in the defs index, e.g., a tooth could be classified as both decayed and filled. The defs index ranges from 0 to 88 $((8 \times 5) + (12 \times 4))$.

Periodontal Index

The Periodontal Index (PI) assesses the presence and severity of *gingivitis* (i.e., inflammation of the gums), *pocket formation* (separation of the tooth from the supporting bone), and *tooth mobility*.⁷

To arrive at a PI score, the tissue surrounding each tooth was first assigned a score of 0, 1, 2, 6, or 8, as follows:⁸

- 0 Negative; no overt inflammation in the tissues nor loss of function produced by destruction of supporting tissues.
- 1 Mild gingivitis; overt area of inflammation in the gums, but not circumscribing the tooth.
- 2 Moderate gingivitis; inflammation completely circumscribed the tooth.
- 6 Gingivitis with pocket formation; a pocket was present, but there was no interference with normal chewing function, the tooth was firm in its socket and had not drifted.
- 8 Advanced destruction with loss of chewing function; the tooth was loose or had drifted.

The following teeth or tooth spaces were not scored:

- Unerupted or missing teeth.
- Tooth spaces with only a root tip remaining.
- Teeth with gingival restorations.
- Teeth with partial or complete crowns.
- Teeth with orthodontic bands and wires.

If a primary tooth and permanent tooth occupied the same space (a condition which existed in some participants around the age of 12), the permanent tooth took precedence over the primary tooth.

⁷For a description of the etiology of periodontal disease, see Spolsky et al., op. cit.

⁸See Smith et al., op. cit., for complete details on Periodontal Index scores.

The actual PI score for each participant was derived by taking the average of the individual tooth scores, i.e., the sum of all that person's tooth scores divided by the number of teeth scored.

Simplified Oral Hygiene Index

The Simplified Oral Hygiene Index (OHI-S) assesses the degree to which six selected tooth surfaces, four posterior and two anterior, are covered by *plaque* (debris) and *calculus* (tartar).

Posterior surfaces examined were the cheek side of the upper left and upper right first molars and the tongue side of the lower left and lower right first molars. If a first molar was missing, the second molar was examined; if a second molar was also missing, the third molar, if present, was examined.

Anterior surfaces examined were the lip sides of the upper right incisor and lower left incisor. If the upper right incisor was missing, the upper left incisor, if present, was examined. If the lower left incisor was missing, the lower right incisor, if present, was examined.

Both a debris score and a calculus score were assigned to each of the six selected surfaces. If a selected surface and all alternatives were missing, that surface was not scored.

In the debris portion of the examination, the tooth was divided horizontally into thirds (incisal, middle, gingival), and a dental explorer was drawn from the tip (biting edge) of the tooth to the gum line. Debris scores range from 0 to 3, as follows:

- 0 No plaque on tooth or on dental explorer used in the examination.
- 1 Plaque on the gingival one-third of the tooth, or plaque absent from the visible tooth surface but present on the dental explorer when drawn *subgingivally* (i.e., below the gum line) in a horizontal direction.
- 2 Plaque on the middle one-third of the tooth surface.
- 3 Plaque on the incisal one-third of the tooth surface.

The debris scores were averaged to produce an overall debris score for each participant (variables DEBSCOR and DEBSCORX).

In the calculus portion of the examination, the tooth surfaces were examined both *supragingivally* (above the gum line) and subgingivally. Supragingival calculus was assessed with the tooth surface divided into thirds, as was done for the debris examination. For subgingival calculus, the dental explorer was placed in the gingival crevice near the contact area of the adjacent tooth and drawn halfway around the tooth. Calculus scores were assigned to each examined surface as follows:

- 0 No calculus present.
- 1 Supragingival calculus covering not more than one-third of the exposed tooth surface.
- 2 Supragingival calculus covering more than one-third but not more than two-thirds of the exposed tooth surface, or individual flecks of subgingival calculus present around the cervical portion of the tooth.
- 3 Supragingival calculus covering more than two-thirds of the exposed tooth surface or a continuous heavy band of subgingival calculus around the cervical portion of the tooth.

The calculus scores were averaged to produce an overall calculus score for each participant (variables CALSCOR and CALSCORX). The actual OHI-S score for each participant was the sum of the average debris score and the average calculus score.

RELATED FILES

Demographic and Eligibility Files

To analyze the dental data using particular demographic and eligibility criteria, reference to the *master sample series* will be necessary. Volume 1 in the master sample series provides data

concerning eligibility and family changes among enrollees.⁹ Volume 2 presents demographic and baseline data for all enrollees and anyone considered for enrollment.¹⁰

Primary Variable Files

A series of primary variable files, the *medical history questionnaire series*, includes self-reported (for adults) and proxy-reported (for children) information on dental history, behaviors related to seeking dental care and to carrying out preventive activities, and eating and dietary habits relating to dental health. The *claims line-item series* includes data on participants' usage of health services, prescribed drugs and supplies, and related costs.¹¹

Derived Variable Files

Related series of derived variable files have been published or are projected for publication. The *health status and attitude series* and the *medical disorder series* contain derived variables from the *medical history questionnaire series* and other sources, including data on health status, perceptions of general health and satisfaction, and the prevalence of certain medical disorders. The *aggregated claims series* presents aggregations of primary-variable data from the *claims line-item series*, including information on yearly health care expenditures and visit totals for each participant.¹²

⁹S. M. Polich and C. d'Arc Taylor, *Master Sample Series, Vol. 1: Codebook for Eligibility-Family Changes File*, The RAND Corporation, N-2264/1-HHS, May 1986.

¹⁰S. M. Polich et al., *Master Sample Series, Vol. 2: Codebook for Full Sample Demographic File*, The RAND Corporation, N-2264/2-HHS, May 1986.

¹¹See Appendix B for a listing of volumes in each series.

¹²See Appendix B for a listing of volumes in each series.

III. THE DENTAL CODEBOOK

CODEBOOK CONSTRUCTION

The codebook describes each variable in the dental file. A technical description of the file, including the location and length of each variable, is provided in Appendix C.

HEADER VARIABLES

The following five header variables appear in the data records:

FILENAME	Denotes the particular file
PERSON	Identifies each participant by person number, permitting data to be gathered for a certain person across all HIE files
SITE	Contains codes that identify the site where the participant enrolled
INSTAT	Indicates the HIE insurance status of the participant INSTAT = 1 identifies insured participants INSTAT = 2 identifies members of the Seattle HMO control group INSTAT = 3 indicates participants who were never insured
ENRTERM	Identifies terms of enrollment of participants

VARIABLE DESCRIPTIONS

Variable descriptions are set off in boxes, as illustrated in Fig. 1. Each box provides a basic description of the variable, including:

- Variable name: a unique alphanumeric tag. In Fig. 1, DEF_D is the variable name.
- Variable label: a capsule description.

- Variable values and their definitions, if necessary.
- Explanation of the variable.

Below the box explanatory notes may appear.

Both enrollment and exit dental variables are present for each participant, although in some cases the data may be missing (see Sec. II). Exit variable names consist of the corresponding enrollment variable name plus the letter X. For example, the variable DEF_D denotes the number of decayed primary teeth at enrollment; the variable DEF_DX denotes the number of decayed primary teeth at exit.

VARIABLE	DEF_D	DENTAL	DEF_D				
			VALUE	FREQ	CUM FREQ	%	CUM %
		Number of decayed primary teeth at enrollment	.	992	.	.	.
		CODES	I	76	.	.	.
			J	33	.	.	.
			Q	3117	.	.	.
			R	2226	.	.	.
			0	544	544	62.31	62.31
			1	121	665	13.86	76.17
			2	55	720	6.30	82.47
			3	49	769	5.61	88.09
			4	39	808	4.47	92.55
			5	28	836	3.21	95.76
			6	22	858	2.52	98.28
			7	5	863	0.57	98.86
			8	4	867	0.46	99.31
			9	2	869	0.23	99.54
			10	3	872	0.34	99.89
			12	1	873	0.12	100.00

Fig. 1 - Example of codebook format

VARIABLE FREQUENCIES

To the right of the box for most variables is a table of response frequencies. The first column lists all response codes appearing for the variable. The second and third columns show, respectively, the absolute and cumulative response frequencies for each code. The fourth and fifth columns show the corresponding absolute and cumulative percentages.

SPECIAL CODES FOR MISSING DATA

A number of special codes are used to denote missing data:

- . - Missing. For most cases indicates the participant was not in the sample, either at enrollment or exit. "." may also appear in cases where the data were missing and no reason was given for their absence.
- E - Age less than 12. Used for exit PI scores.
- G - Age less than 14 years old in Dayton. Used for enrollment Periodontal Index scores.
- H - Participant under six years old. Used for DMF (permanent teeth) variables.
- I - Missed trigger, not known if participant had teeth. The answer was missing to the screening question, "Does the subject have teeth?"
- J - Invalid value in teeth data. J is used in variables whose values are derived from a set of primary or permanent tooth scores. If the value for any one tooth in the set was invalid, the derived variable was set to J.
- O - Participant over 11 years old. Used for DEF (primary teeth) variables.
- Q - Only one surface used in debris or calculus calculation. Used for Simplified Oral Hygiene Index scores.
- R - No screening exam, in screening exam sample. For enrollment variables, participant was selected for the sample but did not complete the screening examination. For exit variables, participant lived more than 100 miles away from the examination center, or did not complete the screening examination for another unspecified reason.
- S - Participant had no teeth.
- V - Age less than 14 years old in Seattle, Massachusetts, South Carolina. Used for enrollment PI scores.

THE DENTAL CODEBOOK

FILENAME	VALUE	FREQ	CUM FREQ	%	CUM %
	DHD0AA	7317	7317	100.00	100.00

VARIABLE FILENAME DENTAL; HEADER

Name of file

FILENAME is a 6-character code that uniquely identifies this file as DHD0AA, (dental examinations for adults and children at enrollment and exit, all sites).

VARIABLE PERSON DENTAL; HEADER

PERSON is an 8-character alphanumeric code that uniquely identifies the participant in the HIE to whom the following data refer. The 2nd character of PERSON designates the site where the participant resided during enrollment in the HIE: A=Dayton; B=Seattle; E=Fitchburg; F=Franklin County; G=Charleston; H=Georgetown County.

VARIABLE	SITE	DENTAL; HEADER
Site		
CODES		
1	Dayton, Ohio	
2	Seattle, Washington	
3	Fitchburg, Massachusetts	
4	Franklin County, Massachusetts	
5	Charleston, South Carolina	
6	Georgetown County, South Carolina	
SITE identifies the participant's place of residence at time of enrollment.		

SITE	VALUE	FREQ	CUM FREQ	%	CUM %
1	1035	1035	1035	14.15	14.15
2	2847	3882	3882	38.91	53.06
3	708	4590	4590	9.68	62.73
4	878	5468	5468	12.00	74.73
5	766	6234	6234	10.47	85.20
6	1083	7317	7317	14.80	100.00

VARIABLE	INSTAT	DENTAL; HEADER
Insurance status		
CODES		
1	Ever insured (includes HMO experimental group)	
2	Ever assigned to HMO control group	
3	Never insured	
INSTAT describes the participant's insurance status in the Health Insurance Experiment.		

INSTAT	VALUE	FREQ	CUM FREQ	%	CUM %
1	6683	6683	6683	91.34	91.34
2	634	7317	7317	8.67	100.00

VARIABLE	ENRTERM	DENTAL; HEADER
Enrollment term		
CODES		
0	None--person never enrolled	
2	None--participant in PEG period only	
3	3 years	
5	5 years	
ENRTERM distinguishes the participants who accepted 3-year and 5-year terms of enrollment.		

VARIABLE	DEF_D	DENTAL
Number of decayed primary teeth at enrollment		
CODES		
0	Missing	
1	Missed trigger, not known if participant had teeth	
J	Invalid value in teeth data	
0	Participant over 11 years old	
R	No screening examination	
0 to 20	Range of decayed primary teeth	
DEF_D is the total number, at enrollment, of primary teeth with decay on one to five surfaces.		

ENRTERM					
VALUE	FREQ	CUM FREQ	%	CUM %	
3	4390	4390	60.00	60.00	
5	2927	7317	40.00	100.00	

DEF_D					
VALUE	FREQ	CUM FREQ	%	CUM %	
0	992	.	.	.	
1	76	.	.	.	
J	33	.	.	.	
0	3117	.	.	.	
R	2226	.	.	.	
0	544	544	62.31	62.31	
1	121	665	13.86	76.17	
2	55	720	6.30	82.47	
3	49	769	5.61	88.09	
4	39	808	4.47	92.55	
5	28	836	3.21	95.76	
6	22	858	2.52	98.28	
7	5	863	0.57	98.86	
8	4	867	0.46	99.31	
9	2	869	0.23	99.54	
10	3	872	0.34	99.89	
12	1	873	0.12	100.00	

VARIABLE	DEF_DX	DENTAL
	Number of decayed primary teeth at exit	
	CODES	
	<ul style="list-style-type: none"> - Missing - Missed trigger, not known if participant had teeth - Invalid value in teeth data - Participant over 11 years old - No screening examination - Range of decayed primary teeth 	
	0 to 20	
	DEF_DX is the total number, at exit, of primary teeth with decay on one to five surfaces.	

DEF_DX	VALUE	FREQ	CUM FREQ	%	CUM %
.	I	399		.	.
.	J	424		.	.
.	O	53		.	.
.	R	2255		.	.
.	.	183		.	.
.	0	3625	3625	90.56	90.56
.	1	176	3801	4.40	94.95
.	2	79	3880	1.97	96.93
.	3	56	3936	1.40	98.33
.	4	32	3968	0.80	99.13
.	5	19	3987	0.48	99.60
.	6	4	3991	0.10	99.70
.	7	5	3996	0.13	99.83
.	8	2	3998	0.05	99.88
.	10	3	4001	0.08	99.95
.	11	1	4002	0.03	99.98
.	12	1	4003	0.03	100.00

VARIABLE	DEF_E	DENTAL
	Number of extracted primary teeth at enrollment	
	CODES	
	<ul style="list-style-type: none"> - Missing - Missed trigger, not known if participant had teeth - Invalid value in teeth data - Participant over 11 years old - No screening examination - Range of extracted primary teeth 	
	0 to 20	
	DEF_E is the total number, at enrollment, of (1) primary teeth which required extraction due to tooth decay only, and (2) primary teeth indicated for extraction when a permanent tooth was erupted and occupied the same tooth space as the primary tooth.	

DEF_E	VALUE	FREQ	CUM FREQ	%	CUM %
.	I	992		.	.
.	J	76		.	.
.	O	33		.	.
.	R	3117		.	.
.	.	2226		.	.
.	0	816	816	93.47	93.47
.	1	31	847	3.55	97.02
.	2	10	857	1.15	98.17
.	3	6	863	0.69	98.86
.	4	3	866	0.34	99.20
.	5	4	870	0.46	99.66
.	7	2	872	0.23	99.89
.	20	1	873	0.12	100.00

VARIABLE	DEF_EX	DENTAL
Number of extracted primary teeth at exit		
.	- Missing	
i	- Missed trigger, not known if participant had teeth	
J	- Invalid value in teeth data	
0	- Participant over 11 years old	
R	- No screening examination	
0 to 20	- Range of extracted primary teeth	
DEF_EX is the total number, at exit, of (1) primary teeth which required extraction due to tooth decay only, and (2) primary teeth indicated for extraction when a permanent tooth was erupted and occupied the same tooth space as the primary tooth.		

DEF_EX VALUE	FREQ	CUM FREQ	%	CUM %
.	399	.	.	.
i	424	.	.	.
J	53	.	.	.
0	2255	.	.	.
R	183	.	.	.
0	3743	3743	93.51	93.51
1	61	3804	1.52	95.03
2	14	3818	0.35	95.38
3	5	3823	0.13	95.50
4	7	3830	0.18	95.68
5	1	3831	0.03	95.70
10	1	3832	0.03	95.73
20	171	4003	4.27	100.00

VARIABLE	DEF_F	DENTAL
Number of filled primary teeth at enrollment		
CODES		
.	- Missing	
i	- Missed trigger, not known if participant had teeth	
J	- Invalid value in teeth data	
0	- Participant over 11 years old	
R	- No screening examination	
0 to 20	- Range of extracted primary teeth	
DEF_F is the total number, at enrollment, of primary teeth with a filling on one to five surfaces and no recurrent decay.		

DEF_F VALUE	FREQ	CUM FREQ	%	CUM %
.	992	.	.	.
i	76	.	.	.
J	33	.	.	.
0	3117	.	.	.
R	2226	.	.	.
0	580	580	66.44	66.44
1	57	637	6.53	72.97
2	54	691	6.19	79.15
3	44	735	5.04	84.19
4	40	775	4.58	88.77
5	29	804	3.32	92.10
6	30	834	3.44	95.53
7	15	849	1.72	97.25
8	17	866	1.95	99.20
9	2	868	0.23	99.43
10	2	870	0.23	99.66
11	1	871	0.12	99.77
13	2	873	0.23	100.00

VARIABLE	DEF_FX	DENTAL
Number of filled primary teeth at exit		
CODES		
.	- Missing	
I	- Missed trigger, not known if participant had teeth	
J	- Invalid value in teeth data	
0	- Participant over 11 years old	
R	- No screening examination	
0 to 20	- Range of extracted primary teeth	
DEF_FX is the total number, at exit, of primary teeth with a filling on one to five surfaces and no recurrent decay.		

DEF_FX	VALUE	FREQ	CUM FREQ	%	CUM %
.	I	399	.	.	.
.	J	424	.	.	.
.	0	53	.	.	.
.	R	2255	.	.	.
.	.	183	.	.	.
.	0	3548	3548	88.63	88.63
.	1	111	3659	2.77	91.41
.	2	75	3734	1.87	93.28
.	3	71	3805	1.77	95.05
.	4	59	3864	1.47	96.53
.	5	37	3901	0.92	97.45
.	6	37	3938	0.92	98.38
.	7	28	3966	0.70	99.08
.	8	24	3990	0.60	99.68
.	9	9	3999	0.23	99.90
.	10	2	4001	0.05	99.95
.	12	1	4002	0.03	99.98
.	13	1	4003	0.03	100.00

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VARIABLE	DEFSCOR	DENTAL
Primary DEF score at enrollment		
CODES		
.	- Missing	
I	- Missed trigger, not known if participant had teeth	
J	- Invalid value in teeth data	
0	- Participant over 11 years old	
R	- No screening examination	
0 to 20	- Range of DEF score	
DEFSCOR is the total number of decayed, extracted, or filled primary teeth at enrollment. DEFSCOR is the sum of DEF_D, DEF_E, and DEF_F.		

DEFSCOR	VALUE	FREQ	CUM FREQ	%	CUM %
.	I	992	.	.	.
.	J	76	.	.	.
.	0	33	.	.	.
.	R	3117	.	.	.
.	.	2226	.	.	.
.	0	378	378	43.30	43.30
.	1	77	455	8.82	52.12
.	2	76	531	8.71	60.83
.	3	57	588	6.53	67.35
.	4	62	650	7.10	74.46
.	5	65	715	7.45	81.90
.	6	60	775	6.87	88.77
.	7	34	809	3.90	92.67
.	8	36	845	4.12	96.79
.	9	7	852	0.80	97.60
.	10	12	864	1.38	98.97
.	11	2	866	0.23	99.20
.	12	1	867	0.12	99.31
.	13	3	870	0.34	99.66
.	15	1	871	0.12	99.77
.	16	1	872	0.12	99.89
.	20	1	873	0.12	100.00

VARIABLE DEFS_D (cont.)

VALUE	FREQ	CUM FREQ	%	CUM %
14	2	861	0.23	98.63
15	2	863	0.23	98.86
16	2	865	0.23	99.08
17	1	866	0.12	99.20
18	2	868	0.23	99.43
19	3	871	0.34	99.77
20	1	872	0.12	99.89
28	1	873	0.12	100.00

DEFS_DX

VALUE	FREQ	CUM FREQ	%	CUM %
.	399	.	.	.
I	424	.	.	.
J	53	.	.	.
O	2255	.	.	.
R	183	.	.	.
0	3625	3625	90.56	90.56
1	75	3700	1.87	92.43
2	91	3791	2.27	94.70
3	48	3839	1.20	95.90
4	51	3890	1.27	97.18
5	30	3920	0.75	97.93
6	22	3942	0.55	98.48
7	16	3958	0.40	98.88
8	9	3967	0.23	99.10
9	6	3973	0.15	99.25
10	7	3980	0.18	99.43
11	3	3983	0.08	99.50
12	7	3990	0.18	99.68
13	1	3991	0.03	99.70
14	2	3993	0.05	99.75
15	1	3994	0.03	99.78
16	1	3995	0.03	99.80
18	1	3996	0.03	99.83
21	1	3997	0.03	99.85
22	1	3998	0.03	99.88
23	1	3999	0.03	99.90
25	1	4000	0.03	99.93
26	1	4001	0.03	99.95
32	2	4003	0.05	100.00

VARIABLE DEFS_DX DENTAL

Number of decayed primary surfaces at exit

CODES

- . - Missing
- I - Missed trigger, not known if participant had teeth
- J - Invalid value in teeth data
- O - Participant over 11 years old
- R - No screening examination
- 0 to 88 - Range of decayed primary surfaces

DEFS_DX is the total number of decayed primary surfaces at exit.

DEFS_E	VALUE	FREQ	CUM FREQ	%	CUM %
.	.	992	.	.	.
i	i	76	.	.	.
J	J	33	.	.	.
0	0	3117	.	.	.
R	R	2226	.	.	.
0	0	816	816	93.47	93.47
4	4	5	821	0.57	94.04
5	5	26	847	2.98	97.02
8	8	1	848	0.12	97.14
9	9	3	851	0.34	97.48
10	10	6	857	0.69	98.17
13	13	3	860	0.34	98.51
14	14	1	861	0.12	98.63
15	15	2	863	0.23	98.86
17	17	1	864	0.12	98.97
19	19	1	865	0.12	99.08
20	20	1	866	0.12	99.20
21	21	1	867	0.12	99.31
23	23	1	868	0.12	99.43
25	25	2	870	0.23	99.66
33	33	2	872	0.23	99.89
88	88	1	873	0.12	100.00

VARIABLE	DEFS_E	DENTAL
Number of extracted primary surfaces at enrollment		
CODES		
.	- Missing	
i	- Missed trigger, not known if participant had teeth	
J	- Invalid value in teeth data	
0	- Participant over 11 years old	
R	- No screening examination	
0 to 88	- Range of extracted primary surfaces	
DEFS_E	is the total number, at enrollment, of surfaces on primary teeth which required extraction due to tooth decay only, or which were indicated for extraction when a permanent tooth was erupted and occupied the same tooth space as a primary tooth.	

VARIABLE	DEFS_EX	DENTAL
Number of extracted primary surfaces at exit		
CODES		
	.	- Missing
	i	- Missed trigger, not known if participant had teeth
	J	- Invalid value in teeth data
	0	- Participant over 11 years old
	R	- No screening examination
0 to 88	-	Range of extracted primary surfaces
DEFS_E		is the total number, at exit, of surfaces on primary teeth which required extraction due to tooth decay only, or which were indicated for extraction when a permanent tooth erupted and occupied the same tooth space as a primary tooth.

DEFS_EX	VALUE	FREQ	CUM FREQ	%	CUM %
.	i	399	.	.	.
.	J	424	.	.	.
.	0	53	.	.	.
.	R	2255	.	.	.
.	0	183	.	.	.
.	0	3743	3743	93.51	93.51
.	4	32	3775	0.80	94.30
.	5	29	3804	0.72	95.03
.	8	5	3809	0.13	95.15
.	9	5	3814	0.13	95.28
.	10	4	3818	0.10	95.38
.	12	3	3821	0.08	95.45
.	13	1	3822	0.03	95.48
.	15	1	3823	0.03	95.50
.	16	4	3827	0.10	95.60
.	17	1	3828	0.03	95.63
.	18	1	3829	0.03	95.65
.	20	1	3830	0.03	95.68
.	23	1	3831	0.03	95.70
.	46	1	3832	0.03	95.73
.	88	171	4003	4.27	100.00

VARIABLE	DEFS_F	DENTAL
Number of filled primary surfaces at enrollment		
CODES		
	.	- Missing
	i	- Missed trigger, not known if participant had teeth
	J	- Invalid value in teeth data
	0	- Participant over 11 years old
	R	- No screening examination
0 to 88	-	Range of filled primary surfaces
DEFS_F		is the total number, at enrollment, of filled surfaces on primary teeth with no recurrent decay.

DEFS_F	VALUE	FREQ	CUM FREQ	%	CUM %
.	i	992	.	.	.
.	J	76	.	.	.
.	0	33	.	.	.
.	R	3117	.	.	.
.	0	2226	.	.	.
.	0	580	580	66.44	66.44
.	1	25	605	2.86	69.30
.	2	45	650	5.16	74.46
.	3	19	669	2.18	76.63
.	4	25	694	2.86	79.50
.	5	15	709	1.72	81.21
.	6	29	738	3.32	84.54
.	7	11	749	1.26	85.80
.	8	15	764	1.72	87.51
.	9	11	775	1.26	88.77
.	10	17	792	1.95	90.72
.	11	4	796	0.46	91.18
.	12	11	807	1.26	92.44
.	13	5	812	0.57	93.01
.				(cont.)	

VARIABLE DEFS_F (cont.)

VALUE	FREQ	CUM FREQ	%	CUM %
14	13	825	1.49	94.50
15	6	831	0.69	95.19
16	5	836	0.57	95.76
17	8	844	0.92	96.68
18	5	849	0.57	97.25
19	4	853	0.46	97.71
20	4	857	0.46	98.17
21	2	859	0.23	98.40
22	2	861	0.23	98.63
23	2	863	0.23	98.86
24	2	865	0.23	99.08
26	2	867	0.23	99.31
27	2	869	0.23	99.54
28	1	870	0.12	99.66
29	1	871	0.12	99.77
33	1	872	0.12	99.89
40	1	873	0.12	100.00

DEFS_FX

VALUE	FREQ	CUM FREQ	%	CUM %
i	399	.	.	.
J	424	.	.	.
0	53	.	.	.
R	2255	.	.	.
Missing	183	.	.	.
i - Missed trigger, not known if participant had teeth	3548	.	88.63	88.63
J - Invalid value in teeth data	42	3548	1.05	89.68
0 - Participant over 11 years old	70	3590	1.75	91.43
R - No screening examination	34	3660	0.85	92.28
0 to 88 - Range of filled primary surfaces	40	3694	1.00	93.28
DEFS_F is the total number, at exit, of filled surfaces on primary teeth with no recurrent decay.	35	3734	0.87	94.15
	29	3769	0.72	94.88
	23	3798	0.58	95.60
	16	3827	0.40	96.18
	27	3850	0.67	96.58
	10	3866	0.25	97.25
	11	3893	0.28	97.50
	12	3903	0.25	97.78
	13	3914	0.18	97.95
	14	3921	0.30	98.25
	15	3933	0.15	98.40
	16	3939	0.33	98.73
	17	3952	0.20	98.93
	8	3960	0.18	99.10
	7	3967	(cont.)	

VARIABLE DEFS_FX DENTAL

Number of filled primary surfaces at exit

CODES

- i - Missed trigger, not known if participant had teeth
- J - Invalid value in teeth data
- 0 - Participant over 11 years old
- R - No screening examination
- 0 to 88 - Range of filled primary surfaces

DEFS_F is the total number, at exit, of filled surfaces on primary teeth with no recurrent decay.

VARIABLE DEFS_FX (cont.)

VALUE	FREQ	CUM FREQ	%	CUM %
19	8	3975	0.20	99.30
20	4	3979	0.10	99.40
21	3	3982	0.08	99.48
22	4	3986	0.10	99.58
23	3	3989	0.08	99.65
24	2	3991	0.05	99.70
25	2	3993	0.05	99.75
30	2	3995	0.05	99.80
31	1	3996	0.03	99.83
32	1	3997	0.03	99.85
33	3	4000	0.08	99.93
34	1	4001	0.03	99.95
35	1	4002	0.03	99.98
54	1	4003	0.03	100.00

DEFSURF

VARIABLE	DEFSURF	DENTAL
Primary surfaces DEF score at enrollment		
CODES		
i	- Missed trigger, not known if participant had teeth	
J	- Invalid value in teeth data	
0	- Participant over 11 years old	
R	- No screening examination	
0 to 88	- Range of DEF score	
DEFSURF is the total number of decayed, extracted, and filled surfaces on primary teeth at enrollment. DEFSURF is the sum of DEFS_D, DEFS_E, and DEFS_F.		

VALUE	FREQ	CUM FREQ	%	CUM %
i	992	.	.	.
J	76	.	.	.
0	33	.	.	.
R	3117	.	.	.
0	2226	.	.	.
0	378	378	43.30	43.30
1	42	420	4.81	48.11
2	61	481	6.99	55.10
3	27	508	3.09	58.19
4	45	553	5.16	63.35
5	30	583	3.44	66.78
6	37	620	4.24	71.02
7	22	642	2.52	73.54
8	24	666	2.75	76.29
9	20	686	2.29	78.58
10	30	716	3.44	82.02
11	14	730	1.60	83.62
12	18	748	2.06	85.68
13	14	762	1.60	87.29
14	12	774	1.38	88.66
15	15	789	1.72	90.38
16	7	796	0.80	91.18
17	17	813	1.95	93.13
18	7	820	0.80	93.93
19	11	831	1.26	95.19
20	6	837	0.69	95.88
21	3	840	0.34	96.22

(cont.)

VARIABLE DEFSURF (cont.)

VALUE	FREQ	CUM FREQ	%	CUM %
22	3	843	0.34	96.56
23	2	845	0.23	96.79
24	8	853	0.92	97.71
25	1	854	0.12	97.82
26	1	855	0.12	97.94
27	5	860	0.57	98.51
28	1	861	0.12	98.63
29	2	863	0.23	98.86
31	1	864	0.12	98.97
33	2	866	0.23	99.20
37	2	868	0.23	99.43
40	1	869	0.12	99.54
43	1	870	0.12	99.66
45	1	871	0.12	99.77
48	1	872	0.12	99.89
88	1	873	0.12	100.00

DEFSURFX

VARIABLE	DEFSURFX	DENTAL
Primary surfaces DEF score at exit		
CODES		
i	- Missing	
J	- Missed trigger, not known if participant had teeth	
0	- Invalid value in teeth data	
3	- Participant over 11 years old	
R	- No screening examination	
0 to 88	- Range DEF score	
DEFSURFX is the total number of decayed, extracted, and filled surfaces on primary teeth at exit. DEFSURFX is the sum of DEFS_DX, DEFS_EX, and DEFS_FX.		

VALUE	FREQ	CUM FREQ	%	CUM %
i	399	.	.	.
J	424	.	.	.
0	53	.	.	.
0	2255	.	.	.
R	183	.	.	.
0	3158	3158	78.89	78.89
1	71	3229	1.77	80.67
2	75	3304	1.87	82.54
3	51	3355	1.27	83.81
4	75	3430	1.87	85.69
5	43	3473	1.07	86.76
6	42	3515	1.05	87.81
7	41	3556	1.02	88.83
8	26	3582	0.65	89.48
9	23	3605	0.58	90.06
10	26	3631	0.65	90.71
11	17	3648	0.43	91.13
12	25	3673	0.63	91.76
13	14	3687	0.35	92.11
14	25	3712	0.63	92.73
15	8	3720	0.20	92.93
16	17	3737	0.43	93.36
17	10	3747	0.25	93.61
18	13	3760	0.33	93.93
19	13	3773	0.33	94.25

(cont.)

VARIABLE DEFSURFX (cont.)

VALUE	FREQ	CUM FREQ	%	CUM %
20	4	3777	0.10	94.35
21	8	3785	0.20	94.55
22	8	3793	0.20	94.75
23	9	3802	0.23	94.98
24	3	3805	0.08	95.05
25	4	3809	0.10	95.15
26	4	3813	0.10	95.25
27	2	3815	0.05	95.30
29	1	3816	0.03	95.33
30	1	3817	0.03	95.35
31	1	3818	0.03	95.38
32	4	3822	0.10	95.48
34	1	3823	0.03	95.50
35	2	3825	0.05	95.55
37	1	3826	0.03	95.58
38	1	3827	0.03	95.60
39	1	3828	0.03	95.63
44	1	3829	0.03	95.65
54	1	3830	0.03	95.68
56	1	3831	0.03	95.70
67	1	3832	0.03	95.73
88	171	4003	4.27	100.00

PRIMCNT

VARIABLE	PRIMCNT	DENTAL
Number of primary teeth at enrollment		
CODES		
i	- Missing	
j	- Missed trigger, not known if participant had teeth	
J	- Invalid value in teeth data	
O	- Participant over 11 years old	
R	- No screening examination	
0 to 20	- Range of primary teeth	
PRIMCNT is the total number of primary teeth at enrollment, including teeth that were normal, decayed, filled, or required extraction due to tooth decay.		

VALUE	FREQ	CUM FREQ	%	CUM %
i	992	.	.	.
j	76	.	.	.
J	33	.	.	.
O	3117	.	.	.
R	2226	.	.	.
0	67	67	7.68	7.68
1	21	88	2.41	10.08
2	24	112	2.75	12.83
3	11	123	1.26	14.09
4	23	146	2.64	16.72
5	21	167	2.41	19.13
6	18	185	2.06	21.19
7	15	200	1.72	22.91
8	36	236	4.12	27.03
9	19	255	2.18	29.21
10	42	297	4.81	34.02
11	44	341	5.04	39.06
12	107	448	12.26	51.32
13	28	476	3.21	54.53

(cont.)

VARIABLE PRIMCNT (cont.)

VALUE	FREQ	CUM FREQ	%	CUM %
14	27	503	3.09	57.62
15	11	514	1.26	58.88
16	20	534	2.29	61.17
17	19	553	2.18	63.35
18	42	595	4.81	68.16
19	18	613	2.06	70.22
20	260	873	29.78	100.00

PRIMCNTX	FREQ	CUM FREQ	%	CUM %
1	399	.	.	.
J	424	.	.	.
O	53	.	.	.
R	2255	.	.	.
0	183	.	71.57	71.57
0	2865	2865	1.17	72.75
1	47	2912	1.20	73.95
2	48	2960	0.55	74.49
3	22	2982	1.10	75.59
4	44	3026	0.53	76.12
5	21	3047	0.70	76.82
6	28	3075	0.72	77.54
7	29	3104	1.05	78.59
8	42	3146	0.75	79.34
9	30	3176	1.27	80.62
10	51	3227	1.15	81.76
11	46	3273	4.57	86.34
12	183	3456	0.58	86.91
13	23	3479	1.37	88.28
14	55	3534	0.55	88.83
15	22	3556	0.85	89.68
16	34	3590	0.45	90.13
17	18	3608	1.40	91.53
18	56	3664	0.50	92.03
19	20	3684	7.97	100.00
20	319	4003		

VARIABLE PRIMCNTX DENTAL

Number of primary teeth at exit

CODES

- i - Missing
- J - Missed trigger, not known if participant had teeth
- 0 - Invalid value in teeth data
- R - Participant over 11 years old
- 0 to 20 - No screening examination
- 0 to 20 - Range of primary teeth

PRIMCNTX is the total number of primary teeth at exit, including teeth that were normal, decayed, filled, or required extraction due to tooth decay.

DMF32_D VALUE	FREQ	CUM FREQ	%	CUM %
.	992	.	.	.
H	301	.	.	.
I	247	.	.	.
J	50	.	.	.
R	2226	.	.	.
0	1422	1422	40.62	40.62
1	562	1984	16.05	56.67
2	394	2378	11.25	67.92
3	245	2623	7.00	74.92
4	214	2837	6.11	81.03
5	146	2983	4.17	85.20
6	121	3104	3.46	88.66
7	90	3194	2.57	91.23
8	83	3277	2.37	93.60
9	48	3325	1.37	94.97
10	47	3372	1.34	96.32
11	36	3408	1.03	97.34
12	27	3435	0.77	98.12
13	20	3455	0.57	98.69
14	15	3470	0.43	99.12
15	7	3477	0.20	99.31
16	8	3485	0.23	99.54
17	5	3490	0.14	99.69
18	4	3494	0.11	99.80
19	3	3497	0.09	99.89
20	1	3498	0.03	99.91
22	2	3500	0.06	99.97
23	1	3501	0.03	100.00

VARIABLE	DMF32_D	DENTAL
Number of decayed permanent teeth at enrollment		
CODES		
.	- Missing	
H	- Participant under 6 years old - No DMF	
I	- Missed trigger, not known if participant had teeth	
J	- Invalid value in teeth data	
R	- No screening examination	
0 to 32	- Range of decayed permanent teeth	
DMF32_D is the total number, at enrollment, of permanent teeth with decay on one to five surfaces. The count includes decayed third molars.		

DMF32_DX VALUE	FREQ	CUM FREQ	%	CUM %
.	399	.	.	.
H	169	.	.	.
I	505	.	.	.
J	35	.	.	.
R	183	.	.	.
0	3097	3097	51.39	51.39
1	968	4065	16.06	67.46
2	612	4677	10.16	77.61
3	420	5097	6.97	84.58
4	276	5373	4.58	89.16
5	178	5551	2.95	92.12
6	135	5686	2.24	94.36
7	88	5774	1.46	95.82
8	71	5845	1.18	97.00
9	59	5904	0.98	97.98
10	35	5939	0.58	98.56
11	19	5958	0.32	98.87
12	19	5977	0.32	99.19
13	13	5990	0.22	99.40
14	7	5997	0.12	99.52
15	8	6005	0.13	99.65
16	6	6011	0.10	99.75
17	5	6016	0.08	99.83
18	2	6018	0.03	99.87
19	4	6022	0.07	99.93
20	1	6023	0.02	99.95
21	3	6026	0.05	100.00

VARIABLE	DMF32_DX	DENTAL
Number of decayed permanent teeth at exit		
CODES		
.	- Missing	
H	- Participant under 6 years old - No DMF	
I	- Missed trigger, not known if participant had teeth	
J	- Invalid value in teeth data	
R	- No screening examination	
0 to 32	- Range of decayed permanent teeth	
DMF32_DX is the total number, at exit, of permanent teeth with decay on one to five surfaces. The count includes decayed third molars.		

VARIABLE	DMF32_M	DMF32_M VALUE	FREQ	CUM FREQ	%	CUM %
Number of missing permanent teeth at enrollment						
CODES						
· - Missing			992	·	·	·
H - Participant under 6 years old - No DMF			301	·	·	·
I - Missed trigger, not known if participant had teeth			247	·	·	·
J - Invalid value in teeth data			50	·	·	·
R - No screening examination			2226	·	·	·
0 to 32 - Range of missing permanent teeth			1149	1149	32.82	32.82
			1149	1350	5.74	38.56
			201	1585	6.71	45.27
			235	1734	4.26	49.53
			149	2219	13.85	63.38
			485	2400	5.17	68.55
			181	2548	4.23	72.78
			148	2665	3.34	76.12
			117	2781	3.31	79.43
			116	2853	2.06	81.49
			72	2908	1.57	83.06
			55	2947	1.11	84.18
			39	2991	1.26	85.43
			44	3031	1.14	86.58
			40	3058	0.77	87.35
			27	3075	0.49	87.83
			17	3093	0.51	88.35
			18	3108	0.43	88.78
			15	3122	0.40	89.18
			14	3134	0.34	89.52
			12	3154	0.57	90.09
			20	3173	0.54	90.63
			19	3192	0.54	91.17
			22	3217	0.71	91.89
			25	3237	0.57	92.46
			20	3260	0.66	93.12
			23	3282	0.63	93.75
			22	3292	0.29	94.03
			10	3296	0.11	94.15
			4	3299	0.09	94.23
			3	3303	0.11	94.34
			2	3305	0.06	94.40
			196	3501	5.60	100.00

DMF32_M is the total number, at enrollment, of permanent teeth that were either missing without an artificial replacement, replaced with a fixed restoration, replaced with a removable appliance, missing due to orthodontic treatment, or required extraction due to tooth decay. The count includes missing third molars and molars requiring extraction due to tooth decay.

VARIABLE	DMF32_MX	DMF32_MX VALUE	FREQ	CUM FREQ	%	CUM %
Number of missing permanent teeth at exit						
CODES						
.	- Missing		399	.	.	.
H	- Participant under 6 years old - No DMF	H	169	.	.	.
I	- Missed trigger, not known if participant had teeth	I	505	.	.	.
J	- Invalid value in teeth data	J	35	.	.	.
R	- No screening examination	R	183	.	.	.
0 to 32	- Range of missing permanent teeth					
		0	1994	1994	33.09	33.09
		1	324	2318	5.38	38.47
		2	344	2662	5.71	44.18
		3	287	2949	4.76	48.94
		4	892	3841	14.80	63.74
		5	318	4159	5.28	69.02
		6	245	4404	4.07	73.08
		7	168	4572	2.79	75.87
		8	211	4783	3.50	79.37
		9	112	4895	1.86	81.23
		10	85	4980	1.41	82.64
		11	75	5055	1.25	83.89
		12	56	5111	0.93	84.82
		13	67	5178	1.11	85.93
		14	48	5226	0.80	86.72
		15	36	5262	0.60	87.32
		16	31	5293	0.51	87.84
		17	29	5322	0.48	88.32
		18	28	5350	0.47	88.78
		19	35	5385	0.58	89.36
		20	35	5420	0.58	89.94
		21	32	5452	0.53	90.48
		22	34	5486	0.56	91.04
		23	34	5520	0.56	91.60
		24	47	5567	0.78	92.38
		25	25	5592	0.42	92.80
		26	43	5635	0.71	93.51
		27	14	5649	0.23	93.74
		28	11	5660	0.18	93.93
		29	2	5662	0.03	93.96
		30	15	5677	0.25	94.21
		31	2	5679	0.03	94.24
		32	347	6026	5.76	100.00

VARIABLE DMF32_MX DENTAL

Number of missing permanent teeth at exit

CODES

.

- Missing

H - Participant under 6 years old - No DMF

I - Missed trigger, not known if participant had teeth

J - Invalid value in teeth data

R - No screening examination

0 to 32 - Range of missing permanent teeth

DMF32_MX is the total number, at exit, of permanent teeth that were either missing without an artificial replacement, replaced with a fixed restoration, replaced with a removable appliance, missing due to orthodontic treatment, or required extraction due to tooth decay. The count includes missing third molars and molars requiring extraction due to tooth decay.

VARIABLE	DMF32_F	DENTAL
Number of filled permanent teeth at enrollment		
CODES		
.	- Missing	
H	- Participant under 6 years old - No DMF	
I	- Missed trigger, not known if participant had teeth	
J	- Invalid value in teeth data	
R	- No screening examination	
0 to 32	- Range of filled permanent teeth	
DMF32_F	is the total number of permanent teeth, at enrollment, with a filling on one to five surfaces and no recurrent decay. The count includes filled third molars.	

DMF32_F	FREQ	CUM FREQ	%	CUM %
H	992	.	.	.
I	301	.	.	.
J	247	.	.	.
R	50	.	.	.
0	2226	.	.	.
1	1063	1063	30.36	30.36
2	173	1236	4.94	35.30
3	168	1404	4.80	40.10
4	159	1563	4.54	44.64
5	178	1741	5.08	49.73
6	114	1855	3.26	52.99
7	131	1986	3.74	56.73
8	107	2093	3.06	59.78
9	128	2221	3.66	63.44
10	126	2347	3.60	67.04
11	96	2443	2.74	69.78
12	116	2559	3.31	73.09
13	114	2673	3.26	76.35
14	123	2796	3.51	79.86
15	120	2916	3.43	83.29
16	94	3010	2.69	85.98
17	100	3110	2.86	88.83
18	63	3200	2.57	91.40
19	72	3263	1.80	93.20
20	48	3335	2.06	95.26
21	37	3383	1.37	96.63
22	38	3420	1.06	97.69
23	21	3458	1.09	98.77
24	9	3479	0.60	99.37
25	3	3488	0.26	99.63
26	6	3491	0.09	99.71
27	3	3497	0.17	99.89
28	1	3500	0.09	99.97
		3501	0.03	100.00

VARIABLE	DMF32_FX	DMF32_FX VALUE	FREQ	CUM FREQ	%	CUM %
Number of filled permanent teeth at exit						
CODES						
	.	H	399	.	.	.
		I	169	.	.	.
		J	505	.	.	.
		R	35	.	.	.
			183	.	24.98	24.98
		0	1505	1505	4.51	29.49
		1	272	1777	4.85	34.34
		2	292	2069	4.43	38.77
		3	267	2336	5.16	43.93
		4	311	2647	3.58	47.51
		5	216	2863	3.34	50.85
		6	201	3064	3.27	54.12
		7	197	3261	4.00	58.12
		8	241	3502	3.83	61.95
		9	231	3733	3.62	65.57
		10	218	3951	4.17	69.73
		11	251	4202	3.78	73.52
		12	228	4430	3.78	77.30
		13	228	4658	4.07	81.36
		14	245	4903	3.52	84.88
		15	212	5115	3.09	87.97
		16	186	5301	2.54	90.51
		17	153	5454	2.06	92.57
		18	124	5578	2.21	94.77
		19	133	5711	1.48	96.25
		20	89	5800	1.26	97.51
		21	76	5876	0.95	98.46
		22	57	5933	0.47	98.92
		23	28	5961	0.58	99.50
		24	35	5996	0.20	99.70
		25	12	6008	0.08	99.78
		26	5	6013	0.12	99.90
		27	7	6020	0.07	99.97
		28	4	6024	0.03	100.00
		30	2	6026		

DENTAL
 Number of filled permanent teeth at exit
 CODES
 . - Missing
 H - Participant under 6 years old - No DMF
 I - Missed trigger, not known if participant had
 teeth
 J - Invalid value in teeth data
 R - No screening examination
 0 to 32 - Range of filled permanent teeth
 DMF32_FX is the total number of permanent teeth, at
 exit, with a filling on one to five surfaces and no
 recurrent decay. The count includes filled third
 molars.

VARIABLE	DMF32X	DENTAL	DMF32X VALUE	FREQ	CUM FREQ	%	CUM %
DMF score at exit				399	.	.	.
CODES				169	.	.	.
				505	.	.	.
				35	.	.	.
				183	.	.	.
				540	540	8.96	8.96
				147	687	2.44	11.40
				185	872	3.07	14.47
				151	1023	2.51	16.98
				268	1291	4.45	21.42
				136	1427	2.26	23.68
				119	1546	1.98	25.66
				129	1675	2.14	27.80
				170	1845	2.82	30.62
				134	1979	2.22	32.84
				136	2115	2.26	35.10
				162	2277	2.69	37.79
				147	2424	2.44	40.23
				160	2584	2.66	42.88
				170	2754	2.82	45.70
				180	2934	2.99	48.69
				217	3151	3.60	52.29
				196	3347	3.25	55.54
				225	3572	3.73	59.28
				218	3790	3.62	62.89
				188	3978	3.12	66.01
				201	4179	3.34	69.35
				198	4377	3.29	72.64
				193	4570	3.20	75.84
				185	4755	3.07	78.91
				207	4962	3.44	82.34
				199	5161	3.30	85.65
				115	5276	1.91	87.55
				133	5409	2.21	89.76
				80	5489	1.33	91.09
				72	5561	1.20	92.28
				41	5602	0.68	92.96
				424	6026	7.04	100.00

DMF score at exit

CODES

.

H - Participant under 6 years old - No DMF

I - Missed trigger, not known if participant had teeth

J - Invalid value in teeth data

R - No screening examination

0 to 32 - Range of DMF score with third molars

DMF32X is the total number of decayed, missing, and filled permanent teeth at exit. The count includes decayed, missing, and filled third molars. DMF32X is the sum of DMF32_DX, DMF32_MX, and DMF32_FX.

VARIABLE	DMFS32D	DENTAL	DMFS32D VALUE	FREQ	CUM FREQ	%	CUM %
Number of decayed permanent surfaces at enrollment							
CODES							
.	- Missing			992	.	.	.
H	- Participant under 6 years old - No DMF		H	301	.	.	.
I	- Missed trigger, not known if participant had teeth		I	247	.	.	.
J	- Invalid value in teeth data		J	50	.	.	.
R	- No screening examination		R	2226	.	.	.
0 to 148 - Range of decayed permanent surfaces				1422	1422	40.62	40.62
DMFS32D is the total number of decayed permanent surfaces at enrollment.				1422	1759	9.63	50.24
				337	2070	8.88	59.13
				311	2293	6.37	65.50
				223	2511	6.23	71.72
				218	2662	4.31	76.04
				151	2794	3.77	79.81
				132	2883	2.54	82.35
				89	2962	2.26	84.60
				79	3049	2.49	87.09
				87	3096	1.34	88.43
				47	3163	1.91	90.35
				67	3211	1.37	91.72
				48	3255	1.26	92.97
				44	3286	0.89	93.86
				31	3318	0.91	94.77
				32	3339	0.60	95.37
				21	3356	0.49	95.86
				17	3374	0.51	96.37
				18	3386	0.34	96.72
				12	3399	0.37	97.09
				13	3413	0.40	97.49
				14	3422	0.26	97.74
				9	3430	0.23	97.97
				8	3436	0.17	98.14
				6	3440	0.11	98.26
				4	3448	0.23	98.49
				8	3455	0.20	98.69
				7	3459	0.11	98.80
				4	3465	0.17	98.97
				6	3468	0.09	99.06
				3	3470	0.06	99.12
				2	3474	0.11	99.23
				4	3479	0.14	99.37
				5	3480	0.03	99.40
				1	3481	0.03	99.43
				1	3484	0.09	99.51
				3	3485	0.03	99.54
				1	3486	0.03	99.57
				1	3487	0.03	99.60
				41			

(cont.)

VARIABLE DMFS32D (cont.)

VALUE	FREQ	CUM FREQ	%	CUM %
43	1	3488	0.03	99.63
44	2	3490	0.06	99.69
45	2	3492	0.06	99.74
48	1	3493	0.03	99.77
49	2	3495	0.06	99.83
54	1	3496	0.03	99.86
56	1	3497	0.03	99.89
60	1	3498	0.03	99.91
66	1	3499	0.03	99.94
71	1	3500	0.03	99.97
75	1	3501	0.03	100.00

DMFS32DX

VARIABLE	DMFS32DX	DENTAL
Number of decayed permanent surfaces at exit		
CODES		
.	- Missing	
H	- Participant under 6 years old - No DMF	
I	- Missed trigger, not known if participant had teeth	
J	- Invalid value in teeth data	
R	- No screening examination	
0 to 148	- Range of decayed permanent surfaces	
DMFS32DX	is the total number of decayed permanent surfaces at exit.	

VALUE	FREQ	CUM FREQ	%	CUM %
.	399	.	.	.
H	169	.	.	.
I	505	.	.	.
J	35	.	.	.
R	183	.	.	.
0	3097	3097	51.39	51.39
1	471	3568	7.82	59.21
2	470	4038	7.80	67.01
3	367	4405	6.09	73.10
4	326	4731	5.41	78.51
5	225	4956	3.73	82.24
6	169	5125	2.81	85.05
7	148	5273	2.46	87.50
8	122	5395	2.03	89.53
9	102	5497	1.69	91.22
10	87	5584	1.44	92.67
11	60	5644	1.00	93.66
12	58	5702	0.96	94.62
13	41	5743	0.68	95.30
14	26	5769	0.43	95.74
15	32	5801	0.53	96.27
16	32	5833	0.53	96.80
17	30	5863	0.50	97.30
18	24	5887	0.40	97.69
19	24	5911	0.40	98.09
20	6	5917	0.10	98.19
21	11	5928	0.18	98.37
22	7	5935	0.12	98.49
23	15	5950	0.25	98.74
24	5	5955	0.08	98.82

(cont.)

VARIABLE DMFS32DX (cont.)

VALUE	FREQ	CUM FREQ	%	CUM %
25	7	5962	0.12	98.94
26	11	5973	0.18	99.12
27	7	5980	0.12	99.24
28	5	5985	0.08	99.32
29	3	5988	0.05	99.37
30	3	5991	0.05	99.42
31	4	5995	0.07	99.49
32	3	5998	0.05	99.54
33	3	6001	0.05	99.59
34	1	6002	0.02	99.60
35	5	6007	0.08	99.69
36	1	6008	0.02	99.70
37	2	6010	0.03	99.73
39	1	6011	0.02	99.75
40	1	6012	0.02	99.77
41	1	6013	0.02	99.78
42	2	6015	0.03	99.82
44	3	6018	0.05	99.87
45	2	6020	0.03	99.90
46	1	6021	0.02	99.92
49	1	6022	0.02	99.93
50	1	6023	0.02	99.95
52	1	6024	0.02	99.97
55	1	6025	0.02	99.98
61	1	6026	0.02	100.00

DMFS32MX

NUMBER OF OBSERVATIONS	6026
NUMBER OF MISSING	1291
MEAN	29.48
MEDIAN	20.00
MINIMUM VALUE	0.00
MAXIMUM VALUE	148.00
STANDARD DEVIATION	40.60
COEFFICIENT OF VARIATION	137.71
SKEWNESS	1.81
KURTOSIS	2.37

DMFS32F

NUMBER OF OBSERVATIONS	3501
NUMBER OF MISSING	3816
MEAN	15.48
MEDIAN	8.00
MINIMUM VALUE	0.00
MAXIMUM VALUE	107.00
STANDARD DEVIATION	18.33
COEFFICIENT OF VARIATION	118.41
SKEWNESS	1.26
KURTOSIS	0.95

VARIABLE	DMFS32MX	DENTAL
Number of missing permanent surfaces at exit		
CODES		
	.	- Missing
	H	- Participant under 6 years old - No DMF
	I	- Missed trigger, not known if participant had teeth
	J	- Invalid value in teeth data
	R	- No screening examination
	0 to 148	- Range of missing permanent surfaces
DMFS32MX is the total number, at exit, of permanent surfaces that were either missing without an artificial replacement, replaced with a fixed restoration, replaced with a removable appliance, missing due to orthodontic treatment, or required extraction due to tooth decay. The count includes missing third molars and molars requiring extraction due to tooth decay only.		

VARIABLE	DMFS32F	DENTAL
Number of filled permanent surfaces at enrollment		
CODES		
	.	- Missing
	H	- Participant under 6 years old - No DMF
	I	- Missed trigger, not known if participant had teeth
	J	- Invalid value in teeth data
	R	- No screening examination
	0 to 148	- Range of filled permanent surfaces
DMFS32F is the total number of surfaces on the permanent teeth with a filling and no recurrent decay, at enrollment.		

VARIABLE	DMFS32FX	DENTAL
	Number of filled permanent surfaces at exit	
	CODES	
	<ul style="list-style-type: none"> . - Missing H - Participant under 6 years old - No DMF I - Missed trigger, not known if participant had teeth J - Invalid value in teeth data R - No screening examination 	
	0 to 148 - Range of filled permanent surfaces	
	DMFS32FX is the total number of surfaces on the permanent teeth with a filling and no recurrent decay, at exit.	

DMFS32FX

NUMBER OF OBSERVATIONS 6026
NUMBER OF MISSING 1291
MEAN 18.88
MEDIAN 11.00
MINIMUM VALUE 0.00
MAXIMUM VALUE 112.00
STANDARD DEVIATION 20.96
COEFFICIENT OF VARIATION 111.05
SKEWNESS 1.19
KURTOSIS 0.87

VARIABLE	DMFS32	DENTAL
	DMFS score at enrollment	
	CODES	
	<ul style="list-style-type: none"> . - Missing H - Participant under 6 years old - No DMF I - Missed trigger, not known if participant had teeth J - Invalid value in teeth data R - No screening examination 	
	0 to 148 - Range of DMFS score	
	DMFS32 is the total number of decayed, missing, and filled surfaces on the permanent teeth at enrollment. The count includes decayed, missing, and filled third molar surfaces. DMFS32 is the sum of DMFS32D, DMFS32M, and DMFS32F.	

DMFS32

NUMBER OF OBSERVATIONS 3501
NUMBER OF MISSING 3816
MEAN 48.58
MEDIAN 41.00
MINIMUM VALUE 0.00
MAXIMUM VALUE 148.00
STANDARD DEVIATION 41.92
COEFFICIENT OF VARIATION 86.28
SKEWNESS 0.82
KURTOSIS -0.14

VARIABLE	DMFS32X	DENTAL
DMFS score at exit		
CODES		
	. - Missing H - Participant under 6 years old - No DMF I - Missed trigger, not known if participant had teeth J - Invalid value in teeth data R - No screening examination 0 to 148 - Range of DMFS score	
	DMFS32X is the total number of decayed, missing, and filled surfaces on the permanent teeth at exit. The count includes decayed, missing, and filled third molar surfaces. DMFS32X is the sum of DMFS32DX, DMFS32MX, and DMF32SFX.	

VARIABLE	PERM32	DENTAL
Number of permanent teeth at enrollment		
CODES		
	. - Missing H - Participant under 6 years old - No DMF I - Missed trigger, not known if participant had teeth J - Invalid value in teeth data R - No screening examination 0 to 32 - Range of permanent teeth	
	PERM32 is the total number of permanent teeth at enrollment, including teeth that were normal, decayed, filled, or required extraction due to caries. The count includes third molars.	

DMFS32X	NUMBER OF OBSERVATIONS	6026
	NUMBER OF MISSING	1291
	MEAN	51.30
	MEDIAN	43.00
	MINIMUM VALUE	0.00
	MAXIMUM VALUE	148.00
	STANDARD DEVIATION	43.98
	COEFFICIENT OF VARIATION	85.74
	SKEWNESS	0.69
	KURTOSIS	-0.51

PERM32	VALUE	FREQ	CUM FREQ	%	CUM %
.	H	992	.	.	.
.	I	301	.	.	.
.	J	247	.	.	.
.	R	50	.	.	.
.	0	2226	.	.	.
.	1	220	220	6.28	6.28
.	2	4	224	0.11	6.40
.	3	13	237	0.37	6.77
.	4	6	243	0.17	6.94
.	5	31	274	0.89	7.83
.	6	13	287	0.37	8.20
.	7	53	340	1.51	9.71
.	8	27	367	0.77	10.48
.	9	46	413	1.31	11.80
.	10	47	460	1.34	13.14
.	11	74	534	2.11	15.25
.	12	51	585	1.46	16.71
.	13	137	722	3.91	20.62
.	14	43	765	1.23	21.85
.		41	806	1.17	23.02

(cont.,)

VARIABLE PERM32 (cont.)

VALUE	FREQ	CUM FREQ	%	CUM %
15	34	840	0.97	23.99
16	30	870	0.86	24.85
17	41	911	1.17	26.02
18	52	963	1.49	27.51
19	62	1025	1.77	29.28
20	59	1084	1.69	30.96
21	68	1152	1.94	32.91
22	84	1236	2.40	35.30
23	108	1344	3.09	38.39
24	190	1534	5.43	43.82
25	155	1689	4.43	48.24
26	235	1924	6.71	54.96
27	285	2209	8.14	63.10
28	837	3046	23.91	87.00
29	142	3188	4.06	91.06
30	150	3338	4.28	95.34
31	72	3410	2.06	97.40
32	91	3501	2.60	100.00

PERM32X

VARIABLE	PERM32X	DENTAL
Number of permanent teeth at exit		
CODES		
.	Missing	
H	Participant under 6 years old - No DMF	
I	Missed trigger, not known if participant had teeth	
J	Invalid value in teeth data	
R	No screening examination	
0 to 32	Range of permanent teeth	
PERM32X is the total number of permanent teeth at exit, including teeth that were normal, decayed, filled, or required extraction due to caries. The count includes third molars.		

VALUE	FREQ	CUM FREQ	%	CUM %
.	399	.	.	.
H	169	.	.	.
I	505	.	.	.
J	35	.	.	.
R	183	.	.	.
0	546	546	9.06	9.06
1	11	557	0.18	9.24
2	34	591	0.56	9.81
3	14	605	0.23	10.04
4	20	625	0.33	10.37
5	22	647	0.37	10.74
6	100	747	1.66	12.40
7	44	791	0.73	13.13
8	82	873	1.36	14.49
9	58	931	0.96	15.45
10	104	1035	1.73	17.18
11	67	1102	1.11	18.29
12	232	1334	3.85	22.14
13	74	1408	1.23	23.37
14	65	1473	1.08	24.44
15	46	1519	0.76	25.21
16	66	1585	1.10	26.30
17	66	1651	1.10	27.40

(cont.)

VARIABLE PERM32X (cont.)

VALUE	FREQ	CUM FREQ	%	CUM %
18	85	1736	1.41	28.81
19	97	1833	1.61	30.42
20	93	1926	1.54	31.96
21	99	2025	1.64	33.60
22	136	2161	2.26	35.86
23	160	2321	2.66	38.52
24	398	2719	6.61	45.12
25	242	2961	4.02	49.14
26	414	3375	6.87	56.01
27	507	3882	8.41	64.42
28	1493	5375	24.78	89.20
29	222	5597	3.68	92.88
30	182	5779	3.02	95.90
31	101	5880	1.68	97.58
32	146	6026	2.42	100.00

PIScore

VARIABLE PIScore

Periodontal index score at enrollment

CODES

- . - Missing or number of teeth used in periodontal index calculation = 0
- G - Age less than 14 in Dayton
- I - Missed trigger, not known if participant had teeth
- R - No screening examination
- S - Skipped out, participant had no teeth
- V - Age less than 14 in Seattle, Massachusetts, and South Carolina
- 0 to 8 - Range of periodontal index score

PIScore assesses the presence and severity of gingival inflammation, pocket formation, and tooth mobility on the tissues surrounding and supporting each tooth. PIScore is the sum of all of a participant's tooth scores divided by the number of teeth scored. Persons 14 years of age or older were given the periodontal index at enrollment.

NOTE: See "The Periodontal Index (PI)", SEC. II for details on how the tooth surfaces were scored and definitions on these scoring rules.

NUMBER OF OBSERVATIONS	2503
NUMBER OF MISSING	4814
MEAN	1.28
MEDIAN	1.00
MINIMUM VALUE	0.00
MAXIMUM VALUE	8.00
STANDARD DEVIATION	0.83
COEFFICIENT OF VARIATION	65.20
SKEWNESS	3.72
KURTOSIS	19.93

VARIABLE	PISCOREX	DENTAL
Periodontal index score at exit		
CODES		
	<ul style="list-style-type: none"> - Missing E - Age less than 12 I - Missed trigger, not known if participant had teeth R - No screening examination S - Skipped out, participant had no teeth 0 to 8 - Range of periodontal index score 	
	<p>PISCOREX assesses the presence and severity of gingival inflammation, pocket formation, and tooth mobility on the tissues surrounding and supporting each tooth. PISCOREX is the sum of all of a participant's tooth scores divided by the number of teeth scored. Persons 12 years of age or older were given the periodontal index at exit.</p>	

NOTE: See "The Periodontal Index (PI)", SEC. II for details on how the tooth surfaces were scored and definitions on these scoring rules.

PISCOREX

NUMBER OF OBSERVATIONS	4613
NUMBER OF MISSING	2704
MEAN	1.16
MEDIAN	1.00
MINIMUM VALUE	0.00
MAXIMUM VALUE	8.00
STANDARD DEVIATION	0.93
COEFFICIENT OF VARIATION	80.39
SKEWNESS	3.21
KURTOSIS	14.31

VARIABLE	DEBSCOR	DENTAL
Debris score for oral hygiene index at enrollment		
CODES		
.	-	Missing or number of surfaces used in debris calculation = 0
I	-	Missed trigger, not known if participant had teeth
Q	-	Only one surface used in debris calculation
R	-	No screening examination
S	-	Skipped out, participant had no teeth
0 to 3	-	Range of debris score
DEBSCOR indicates the degree to which six selected tooth surfaces are covered by plaque and debris at enrollment. DEBSCOR is the average of the six valid debris scores.		

NOTE: See "The Simplified Oral Hygiene Index (OHI-S)", SEC. II for complete details on how the six tooth surfaces were selected for examination and definitions on the scoring rules.

DEBSCOR	FREQ	CUM FREQ	%	CUM %
1	1045	.	.	.
2	284	.	.	.
3	107	.	.	.
4	2226	.	.	.
5	189	.	.	.
6	80	80	2.31	2.31
7	67	147	1.93	4.24
8	12	159	0.35	4.59
9	12	171	0.35	4.93
10	171	342	4.93	9.87
11	21	363	0.61	10.47
12	255	618	7.36	17.83
13	56	674	1.62	19.45
14	354	1028	10.21	29.66
15	34	1062	0.98	30.64
16	62	1124	1.79	32.43
17	362	1486	10.44	42.87
18	777	2263	22.42	65.29
19	258	2521	7.44	72.74
20	42	2563	1.21	73.95
21	24	2587	0.69	74.64
22	235	2822	6.78	81.42
23	27	2849	0.78	82.20
24	197	3046	5.68	87.88
25	25	3071	0.72	88.60
26	107	3178	3.09	91.69
27	10	3188	0.29	91.98
28	20	3208	0.58	92.56
29	72	3280	2.08	94.63
30	98	3378	2.83	97.46
31	28	3406	0.81	98.27
32	7	3413	0.20	98.47
33	5	3418	0.14	98.62
34	21	3439	0.61	99.22
35	5	3444	0.14	99.37
36	11	3455	0.32	99.68
37	1	3456	0.03	99.71
38	5	3461	0.14	99.86
39	1	3462	0.03	99.89
40	1	3463	0.03	99.91
41	1	3464	0.03	99.94
42	2	3466	0.06	100.00

VARIABLE	DEBSCORX	DENTAL
Debris score for oral hygiene index at exit		
CODES		
: - Missing		
i	- Missed trigger, not known if participant had teeth	
Q	- Only one surface used in debris calculation	
R	- No screening examination	
S	- Skipped out, participant had no teeth	
0 to 3	- Range of debris score	
DEBSCORX indicates the degree to which six selected tooth surfaces are covered by plaque and debris at exit. DEBSCORX is the average of six valid debris scores.		

NOTE: See "The Simplified Oral Hygiene Index (OHI-S)", SEC. II for complete details on how the six tooth surfaces were selected for examination and definitions on the scoring rules.

DEBSCORX	VALUE	FREQ	CUM FREQ	%	CUM %
.	i	497	.	.	.
.	Q	518	.	.	.
.	R	233	.	.	.
.	S	183	.	.	.
.	0	346	.	.	.
0	0.166667	182	182	3.29	3.29
1	0.2	96	278	1.73	5.02
2	0.333333	32	310	0.58	5.60
3	0.4	31	341	0.56	6.16
4	0.5	246	587	4.44	10.60
5	0.6	42	629	0.76	11.35
6	0.75	350	979	6.32	17.67
7	0.8	69	1048	1.25	18.92
8	0.833333	360	1408	6.50	25.42
9	0.9	52	1460	0.94	26.35
10	1.0	77	1537	1.39	27.74
11	1.1	413	1950	7.46	35.20
12	1.2	939	2889	16.95	52.15
13	1.3	400	3289	7.22	59.37
14	1.4	82	3371	1.48	60.85
15	1.5	61	3432	1.10	61.95
16	1.6	376	3808	6.79	68.74
17	1.7	42	3850	0.76	69.50
18	1.8	363	4213	6.55	76.05
19	1.9	35	4248	0.63	76.68
20	2.0	260	4508	4.69	81.37
21	2.1	20	4528	0.36	81.73
22	2.2	32	4560	0.58	82.31
23	2.3	218	4778	3.94	86.25
24	2.4	297	5075	5.36	91.61
25	2.5	125	5200	2.26	93.86
26	2.6	24	5224	0.43	94.30
27	2.7	8	5232	0.14	94.44
28	2.8	109	5341	1.97	96.41
29	2.9	11	5352	0.20	96.61
30	3.0	78	5430	1.41	98.01
31	3.1	10	5440	0.18	98.20
32	3.2	41	5481	0.74	98.94
33	3.3	6	5487	0.11	99.04
34	3.4	6	5493	0.11	99.15
35	3.5	18	5511	0.33	99.48
36	3.6	29	5540	0.52	100.00

VARIABLE	CALSCOR	DENTAL
Calculus score for oral hygiene index at enrollment		
CODES		
.	-	Missing or number of surfaces used in calculus calculation = 0
I	-	Missed trigger, not known if participant had teeth
Q	-	Only one surface used in calculus calculation
R	-	No screening examination
S	-	Skipped out, participant had no teeth
0 to 3	-	Range of calculus score
CALSCOR indicates the degree to which six selected tooth surfaces are covered by calculus and tartar at enrollment. CALSCOR is the average of six valid calculus scores.		

NOTE: See "The Simplified Oral Hygiene Index (OHI-S)", SEC. II for complete details on how the six tooth surfaces were selected for examination and definitions on the scoring rules.

CALSCOR VALUE	FREQ	CUM FREQ	%	CUM %
.	1046	.	.	.
I	284	.	.	.
Q	108	.	.	.
R	2226	.	.	.
S	189	.	.	.
0	1430	1430	41.28	41.28
0.166667	250	1680	7.22	48.50
0.2	37	1717	1.07	49.57
0.25	14	1731	0.40	49.97
0.333333	253	1984	7.30	57.28
0.4	39	2023	1.13	58.40
0.5	151	2174	4.36	62.76
0.6	18	2192	0.52	63.28
0.666667	165	2357	4.76	68.04
0.75	12	2369	0.35	68.39
0.8	26	2395	0.75	69.14
0.833333	85	2480	2.45	71.59
1	202	2682	5.83	77.43
1.166667	75	2757	2.17	79.59
1.2	32	2789	0.92	80.51
1.25	12	2801	0.35	80.86
1.333333	101	2902	2.92	83.78
1.4	16	2918	0.46	84.24
1.5	80	2998	2.31	86.55
1.6	26	3024	0.75	87.30
1.666667	80	3104	2.31	89.61
1.75	13	3117	0.38	89.98
1.8	9	3126	0.26	90.24
1.833333	43	3169	1.24	91.48
2	133	3302	3.84	95.32
2.166667	24	3326	0.69	96.02
2.2	5	3331	0.14	96.16
2.25	6	3337	0.17	96.33
2.333333	24	3361	0.69	97.03
2.4	7	3368	0.20	97.23
2.5	33	3401	0.95	98.18
2.6	12	3413	0.35	98.53
2.666667	14	3427	0.40	98.93
2.75	2	3429	0.06	98.99
2.8	1	3430	0.03	99.02
2.833333	10	3440	0.29	99.31
3	24	3464	0.69	100.00

VARIABLE	CALSCORX	DENTAL
Calculus score for oral hygiene index at exit		
CODES		
i - Missing		
i - Missed trigger, not known if participant had teeth		
Q - Only one surface used in calculus calculation		
R - No screening examination		
S - Skipped out, participant had no teeth		
0 to 3 - Range of calculus score		
CALSCORX indicates the degree to which six selected tooth surfaces are covered by calculus and tartar at exit. CALSCORX is the average of six valid calculus scores.		

NOTE: See "The Simplified Oral Hygiene Index (OHI-S)", SEC. II for complete details on how the six tooth surfaces were selected for examination and definitions on the scoring rules.

CALSCORX VALUE	FREQ	CUM FREQ	%	CUM %
i	496	.	.	.
Q	518	.	.	.
R	235	.	.	.
S	183	.	.	.
0	346	.	.	.
0.166667	2563	2563	46.27	46.27
0.2	412	2975	7.44	53.71
0.25	70	3045	1.26	54.97
0.333333	41	3086	0.74	55.71
0.4	304	3390	5.49	61.20
0.5	62	3452	1.12	62.32
0.6	277	3729	5.00	67.32
0.666667	40	3769	0.72	68.05
0.75	232	4001	4.19	72.23
0.8	25	4026	0.45	72.69
0.833333	42	4068	0.76	73.44
1	110	4178	1.99	75.43
1.166667	263	4441	4.75	80.18
1.2	85	4526	1.54	81.71
1.25	43	4569	0.78	82.49
1.333333	18	4587	0.33	82.81
1.4	161	4748	2.91	85.72
1.5	15	4763	0.27	85.99
1.6	139	4902	2.51	88.50
1.666667	33	4935	0.60	89.10
1.75	127	5062	2.29	91.39
1.8	19	5081	0.34	91.73
1.833333	21	5102	0.38	92.11
2	54	5156	0.98	93.09
2.166667	224	5380	4.04	97.13
2.2	26	5406	0.47	97.60
2.25	15	5421	0.27	97.87
2.333333	8	5429	0.14	98.01
2.4	26	5455	0.47	98.48
2.5	5	5460	0.09	98.57
2.6	29	5489	0.52	99.10
2.7	7	5496	0.13	99.22
2.666667	14	5510	0.25	99.48
2.75	1	5511	0.02	99.49
2.8	3	5514	0.05	99.55
2.833333	5	5519	0.09	99.64
3	20	5539	0.36	100.00

VARIABLE	OHISCOR	DENTAL
Oral hygiene index at enrollment		
CODES		
.	- Missing or no surfaces used in debris or calculus calculation	
I	- Missed trigger, not known if participant had teeth	
Q	- Only one surface used in debris or calculus calculation	
R	- No screening examination	
S	- Skipped out, participant had no teeth	
0 to 6	- Range of oral hygiene index score	
	OHISCOR indicates the degree to which six selected surfaces are covered by plaque or debris and tartar or calculus at enrollment. OHISCOR is the sum of DEBSOR and CALSCOR.	

NOTE: See "The Simplified Oral Hygiene Index (OHI-S)", SEC. II for complete details on how the six tooth surfaces were selected for examination and definitions on the scoring rules.

OHISCOR	
NUMBER OF OBSERVATIONS	3464
NUMBER OF MISSING	3853
MEAN	1.59
MEDIAN	1.33
MINIMUM VALUE	0.00
MAXIMUM VALUE	6.00
STANDARD DEVIATION	1.00
COEFFICIENT OF VARIATION	62.92
SKEWNESS	1.05
KURTOSIS	0.87

OHISCORX	
NUMBER OF OBSERVATIONS	5539
NUMBER OF MISSING	1778
MEAN	1.67
MEDIAN	1.50
MINIMUM VALUE	0.00
MAXIMUM VALUE	6.00
STANDARD DEVIATION	1.04
COEFFICIENT OF VARIATION	62.49
SKEWNESS	0.85
KURTOSIS	0.72

VARIABLE	OHISCORX	DENTAL
Oral hygiene index at exit		
CODES		
i - Missing i - Missed trigger, not known if participant had teeth Q - Only one surface used in debris or calculus calculation R - No screening examination S - Skipped out, participant had no teeth 0 to 6 - Range of oral hygiene index score		
OHISCORX indicates the degree to which six selected surfaces are covered by plaque or debris and tartar or calculus at exit. OHISCORX is the sum of DEBSCORX and CALSCORX.		

NOTE: See "The Simplified Oral Hygiene Index (OHI-S)", SEC. II for complete details on how the six tooth surfaces were selected for examination and definitions on the scoring rules.

Appendix A

PARTICIPATION INCENTIVE PAYMENTS

HIE-insured families were paid a participation incentive (PI) if their HIE plans could conceivably impose a greater financial burden than their existing health insurance policies.¹ Calculated yearly, the PI consisted of (1) an amount calculated to be the *maximum* difference between what the family would have to pay for health care under its HIE insurance plan and what it would have paid under its existing insurance plan, unless (2) the premium a family paid to maintain its existing insurance exceeded the maximum difference. In that case, the family was paid an amount equal to the premium payment.

The calculation of item 1 ignored the family's actual medical expenses. To illustrate, consider family X whose HIE plan specified 95 percent coinsurance up to a maximum out-of-pocket expenditure of \$450, above which care was free.² Family X's existing insurance specified a \$100 deductible, above which the family had to pay 20 percent coinsurance. Under its HIE policy, the family had to spend \$473.68 for medical services (with the 5 percent reimbursement) to reach the \$450 out-of-pocket maximum. For the same charge under its existing insurance, the family would have paid \$100 (the deductible) plus 20 percent of the amount between \$100 and \$473.68. The maximum difference was thus $473.68 - 100 - 0.2 (473.68 - 100) = 298.94$. Family X was entitled to \$298.94 per year for that portion of its participation incentive.

The total PI could not exceed the MDE specified in the family's HIE plan unless the family's share of its insurance premium exceeded the MDE. For example, if family X paid an insurance premium of \$300, its

¹Participation incentive payments were not offered to families receiving free care (plan A, described on p. 3) who had no premium to pay, families who had no health insurance before the experiment, and families whose other policies had equal or less generous terms, under all circumstances, than their HIE plan.

²In HIE terminology, maximum out-of-pocket expenditure is called "maximum dollar expenditure," or MDE.

total PI entitlement was \$450, not \$598.94 (300 + 298.94). If the family paid a premium of \$600, its PI was \$600 because the premium exceeded the MDE of \$450. On the other hand, a family who had a high MDE in its HIE plan and an existing insurance policy with 0 percent coinsurance, no deductible, and an employer-paid premium was entitled to the full MDE amount. The purpose of PI payments was to ensure that a family was no worse off financially by participating in the experiment--whether because of the cost of its insurance premium or the "worse" terms of its HIE insurance plan compared with its existing policy.³

As encouragement for families to complete their assigned enrollment terms, a portion of the family's annual PI was withheld until the last year of the term.⁴ The family received its full annual PI that last year, and the amount previously withheld was paid as part of a completion bonus when the family completed the physical screening examination and medical health questionnaire at exit.⁵

To measure enrollees' responsiveness to PI payments, a subset of families received their full annual PI in the next-to-last, as well as the last, year of their term. That "super PI bonus" was offered to 44.4 percent of the families assigned to insurance plans requiring 95 percent coinsurance, the highest rate (plans K-N, described on pp. 3-4). Super PI

³Calculation of PI is further described in Clasquin and Brown, op. cit. The formula on p. 20 of that report should read $PI = \max[K \times PG, PR]$.

⁴The percentage of PI withheld depended on the site and assigned enrollment term, as follows:

	<i>3-yr Term</i>	<i>5-yr Term</i>
Dayton	25	15
Seattle	25	15
Fitchburg	33.3	25
Franklin Co.	33.3	25
Charleston	33.3	20
Georgetown Co.	33.3	20

If the discounted PI was not enough to reimburse the cost of the family's insurance premium, however, the family received the full amount of its premium. The difference between the premium and the discounted PI was then subtracted from the withheld amount.

⁵The rest of the completion bonus was the largest annual PI to which the family had been entitled during its enrollment (minus the withheld amount) or \$120, whichever was greater.

recipients represented all sites and both terms of enrollment except Dayton enrollees assigned to three-year terms, who had already begun their next-to-last year when super PI was instituted. Within the 95 percent coinsurance plans, super PI recipients were chosen using the "finite selection model." That model was developed by RAND to assign enrollees to experimental insurance plans so that, across plans, families resembled each other in 24 health and socioeconomic characteristics.⁶

⁶The finite selection model is described in Carl N. Morris, "A Finite Selection Model for Experimental Design of the Health Insurance Study," *Journal of Econometrics*, Vol. 11, 1979, pp. 43-61.

Appendix B

HIE DATA FILES

This appendix identifies the data files that the HIE has either issued or expects to issue, grouped in topical series. As a tape of each file is issued, a companion codebook is published as a RAND Note. One Note may contain the codebooks for several files. In addition to issuing files and codebooks, HIE staff will prepare a user's guide to provide assistance in understanding and using the HIE database for analysis.

The list below cites codebooks for the files that have been issued, and file names for those not yet issued. At this time it is impossible to predict exact issue dates for future files and codebooks. This preliminary list is to alert prospective users to the variety of subject matter covered by the HIE database and to the existence of related files that should be used together.

Before ordering a file or codebook, be sure to verify its availability with the RAND Publications Department, using the reference numbers cited below (e.g., MS3).

ISSUED TO DATE

Master Sample Series

MS1. *Vol. 1: Codebook for Eligibility-Family Changes File*, by S. M. Polich and C. d'Arc Taylor, The RAND Corporation, N-2264/1-HHS, May 1986.

MS2. *Vol. 2: Codebook for Full Sample Demographic File*, by S. M. Polich, N. F. Campbell, C. d'Arc Taylor, D. L. Wesley, J. W. Keesey, and E. S. Bloomfield, The RAND Corporation, N-2264/2-HHS, May 1986.

Aggregated Claims Series

AC1. *Vol. 1: Codebook for Fee-for-Service Annual Expenditures and Visit Counts*, by C. E. Peterson, M. Nelsen, and E. S. Bloomfield, The RAND Corporation, N-2360/1-HHS, May 1986.

ISSUED TO DATE (cont.)

AC2-AC4. *Vol. 2: Codebooks for Fee-for-Service Visits--Outpatient, Inpatient, and Dental*, by C. E. Peterson, M. Nelsen, D. L. Wesley, and E. S. Bloomfield, The RAND Corporation, N-2360/2-HHS, June 1986.

- AC2. FFS outpatient visits
- AC3. FFS inpatient visits
- AC4. FFS dental visits

AC5-AC6. *Vol. 3: Codebooks for Fee-for-Service Treatment Episodes and Annual Episode Counts*, by C. E. Peterson, C. d'Arc Taylor, and E. S. Bloomfield, The RAND Corporation, N-2360/3-HHS, June 1986.

- AC5. FFS treatment episodes
- AC6. FFS annual episode counts

AC8-AC9. *Vol. 4: Codebooks for Health Maintenance Organization and Seattle Fee-for-Service Visits--Outpatient and Inpatient*, by C. E. Peterson, M. Nelsen, and D. L. Wesley, The RAND Corporation, N-2360/4-HHS, December 1986.

- AC8. HMO and Seattle FFS outpatient visits
- AC9. HMO and Seattle FFS inpatient visits

AC7. *Vol. 5: Codebook for Health Maintenance Organization and Seattle Fee-for-Service Annual Expenditures and Visit Counts*, by C. E. Peterson, M. Nelsen, D. L. Wesley, and A. M. Bell, The RAND Corporation, N-2360/5-HHS, December 1986.

Claims Line-Item Series

LI1-LI14. *Vol. 1: Codebooks for Fee-for-Service Claims*, by C. E. Peterson, M. Nelsen, D. L. Wesley, E. S. Bloomfield, and S. M. Polich, The RAND Corporation, N-2347/1-HHS, June 1986.

- LI1. FFS data: hospital inpatient services
- LI2. FFS data: inpatient physician procedures billed by institutions
- LI3. FFS data: drugs prescribed by physicians
- LI4. FFS data: supplies prescribed by physicians
- LI5. FFS data: services rendered by physicians
- LI6. FFS data: drugs sold by physicians
- LI7. FFS data: supplies sold by physicians
- LI8. FFS data: injections administered by physicians
- LI9. FFS data: outpatient services billed by institutions
- LI10. FFS data: services rendered by dentists
- LI11. FFS data: drugs prescribed by dentists
- LI12. FFS data: drugs purchased
- LI13. FFS data: supplies purchased from pharmacies
- LI14. FFS data: supplies purchased from nonpharmacy suppliers

ISSUED TO DATE (cont.)

LI15-LI25. *Vol. 2: Codebooks for Health Maintenance Organization Claims*, by C. E. Peterson, M. Nelsen, E. S. Bloomfield, D. L. Wesley, and A. M. Bell, The RAND Corporation, N-2347/2-HHS, August 1986.

- LI15. Seattle HMO data: hospital inpatient services
- LI16. Seattle HMO data: inpatient physician services
- LI17. Seattle HMO data: drugs prescribed by physicians
- LI18. Seattle HMO data: supplies prescribed by physicians
- LI19. Seattle HMO data: services rendered by physicians
- LI20. Seattle HMO data: drugs dispensed by physicians
- LI21. Seattle HMO data: supplies dispensed by physicians
- LI22. Seattle HMO data: injections administered by physicians
- LI23. Seattle HMO data: outpatient services provided by institutions
- LI24. Seattle HMO data: drugs dispensed
- LI25. Seattle HMO data: supplies dispensed

LI26-LI29. *Vol. 3: Codebooks for Seattle Fee-for-Service Claims for Comparison with Health Maintenance Organization Claims*, by C. E. Peterson, M. Nelsen, and D. L. Wesley, The RAND Corporation, N-2347/3-HHS, October 1986.

- LI26. Seattle FFS data for HMO comparison: hospital inpatient services
- LI27. Seattle FFS data for HMO comparison: inpatient physician procedures billed by institutions
- LI28. Seattle FFS data for HMO comparison: outpatient services rendered by physicians
- LI29. Seattle FFS data for HMO comparison: injections administered by physicians

HIE Reference Series

RF1. *Vol. 1: Codes Used in HIE Claims--Diagnoses, Symptoms, Procedures, Drugs, and Supplies*, by M. Nelsen and C. A. Edwards, The RAND Corporation, N-2349/1-HHS, May 1986.

Health Status and Attitude Series

HS1-HS2. *Vol. 1: Codebooks for Adults and Children at Enrollment and Exit*, by E. M. Sloss, L. L. Colbert, D. L. Wesley, A. M. Bell, and A. B. Holland, The RAND Corporation, N-2447/1-HHS, November 1986.

- HS1. Adults at enrollment and exit
- HS2. Children at enrollment and exit

ISSUED TO DATE (cont.)

Medical History Questionnaire Series

MH1A-MH3A. *Vol. 1: Codebooks for Adults at Enrollment and Exit, Form A*, by C. A. Edwards, A. B. Holland, L. Y. Weissler, and M. Nelsen, The RAND Corporation, N-2485/1-HHS, August 1986.

- MH1A. Dayton adults at enrollment, Form A
- MH2A. NonDayton adults at enrollment, Form A
- MH3A. Adults at exit, Form A

MH1B-MH3B. *Vol. 2: Codebooks for Adults at Enrollment and Exit, Form B*, by C. A. Edwards, A. B. Holland, L. Y. Weissler, and M. Nelsen, The RAND Corporation, N-2485/2-HHS, October 1986.

- MH1B. Dayton adults at enrollment, Form B
- MH2B. NonDayton adults at enrollment, Form B
- MH3B. Adults at exit, Form B

MH4A-MH6B. *Vol. 3: Codebooks for Children at Enrollment and Exit*, by C. A. Edwards, A. M. Bell, D. L. Wesley, L. Y. Weissler, and M. Nelsen, The RAND Corporation, N-2485/3-HHS, November 1986.

- MH4A. Dayton children at enrollment, Form A
- MH4B. Dayton children at enrollment, Form B
- MH5A. NonDayton children at enrollment, Form A
- MH5B. NonDayton children at enrollment, Form B
- MH6A. Children at exit, Form A
- MH6B. Children at exit, Form B

MH7A-MH9B. *Vol. 4: Codebooks for Infants at Enrollment and Exit*, by C. A. Edwards, A. B. Holland, D. L. Wesley, A. M. Bell, L. Y. Weissler, and M. Nelsen, The RAND Corporation, N-2485/4-HHS, December 1986.

- MH7A. Dayton infants at enrollment, Form A
- MH7B. Dayton infants at enrollment, Form B
- MH8A. NonDayton infants at enrollment, Form A
- MH8B. NonDayton infants at enrollment, Form B
- MH9A. Infants at exit, Form A
- MH9B. Infants at exit, Form B

Insurance Preference

IP1. *Codebooks for Insurance Preference Files: Relation between Expense Limit and Premium*, by E. S. Bloomfield, L. Y. Weissler, and A. B. Holland, The RAND Corporation, N-2508-HHS, October 1986.

ISSUED TO DATE (cont.)

Medical Disorder Series

MD1. *Vol. 1: Codebook for Adults at Enrollment and Exit*, by B. H. Operskalski, L. L. Colbert, D. L. Wesley, E. S. Bloomfield, A. M. Bell, N. F. Campbell, and S. M. Polich, The RAND Corporation, N-2446/1-HHS, February 1987.

Dental Examinations

DE1. *Codebook for Adults and Children at Enrollment and Exit*, by E. S. Bloomfield, L. Y. Weissler, and A. M. Bell, The RAND Corporation, N-2506-HHS, February 1987.

TO BE ISSUED

Master Sample Series

MS3. Supplemental data file

HIE Reference Series

RF2. Providers cited in HIE data

RF3. User's guide to HIE data

Medical Disorder Series

MD2. Infant and child medical disorders at enrollment and exit

Appendix C

FILE DICTIONARY

This appendix contains the file dictionary for the character version of the dental examinations codebook for adults and children at enrollment and exit. Each dictionary has three parts: basic identifying data, alphabetic listing of variables, and listing by location.

Table C.1
BASIC IDENTIFYING DATA

Data file name	DHDOAA01.PUF.DATA
Creation Date	February 11, 1987
Variable format	Character
Total number of data elements	50
Header length (bytes)	20
Derived data length (bytes)	352
Record length (bytes)	372

Table C.2

LISTING BY ALPHABETIC ORDER

Name	Location	Length	Type	Name	Location	Length	Type
CALSCOR	341	8.6	F	DMFS32M	245	8	I
CALSCORX	349	8.6	F	DMFS32MX	253	8	I
DEBSCOR	325	8.6	F	DMFS32X	285	8	I
DEBSCORX	333	8.6	F	DMF32	213	8	I
DEF_D	21	8	I	DMF32_D	165	8	I
DEF_DX	29	8	I	DMF32_DX	173	8	I
DEF_E	37	8	I	DMF32_F	197	8	I
DEF_EX	45	8	I	DMF32_FX	205	8	I
DEF_F	53	8	I	DMF32_M	181	8	I
DEF_FX	61	8	I	DMF32_MX	189	8	I
DEFS_D	85	8	I	DMF32X	221	8	I
DEFS_DX	93	8	I	ENRTERM	17	1	A
DEFS_E	101	8	I	FILENAME	1	6	A
DEFS_EX	109	8	I	FILLER	18	3	A
DEFS_F	117	8	I	INSTAT	16	1	A
DEFS_FX	125	8	I	OHISCOR	357	8.6	F
DEFSCOR	69	8	I	OHISCORX	365	8.6	F
DEFSCORX	77	8	I	PERM32	293	8	I
DEFSURF	133	8	I	PERM32X	301	8	I
DEFSURFX	141	8	I	PERSON	7	8	A
DMFS32	277	8	I	PISCORE	309	8.6	F
DMFS32D	229	8	I	PISCOREX	317	8.6	F
DMFS32DX	237	8	I	PRIMCNT	149	8	I
DMFS32F	261	8	I	PRIMCNTX	157	8	I
DMFS32FX	269	8	I	SITE	15	1	A

NOTE: "Type" refers to whether the variable values are alphanumeric (A) or integer (I), or fixed-decimal (F). For fixed-decimal variables, the placement of the decimal point is shown in the "LENGTH" column; the number to the right of the dot "." tells the number of digits to the right of the decimal point (e.g., 8.2 means the numbers will be written "nnnnn.nn"). Missing values are written differently for each variable type: A = bbbbbbbb, I = bbbbbbb., F8.1 = bbbbbbb.b., F8.2 = bbbbb.bb, and F.8.3 = bbbb.bbb ("b" meaning blank). To obtain the appropriate positive and missing values, read all values as alphanumeric, then convert "I" data to integers and "F" data to the specified floating-point format.

Table C.3
LISTING BY LOCATION

Name	Location	Length	Type	Name	Location	Length	Type
FILENAME	1	6	A	DMF32_DX	173	8	I
PERSON	7	8	A	DMF32_M	181	8	I
SITE	15	1	A	DMF32_MX	189	8	I
INSTAT	16	1	A	DMF32_F	197	8	I
ENRTERM	17	1	A	DMF32_FX	205	8	I
FILLER	18	3	A	DMF32	213	8	I
DEF_D	21	8	I	DMF32X	221	8	I
DEF_DX	29	8	I	DMFS32D	229	8	I
DEF_E	37	8	I	DMFS32DX	237	8	I
DEF_EX	45	8	I	DMFS32M	245	8	I
DEF_F	53	8	I	DMFS32MX	253	8	I
DEF_FX	61	8	I	DMFS32F	261	8	I
DEFSCOR	69	8	I	DMFS32FX	269	8	I
DEFSCORX	77	8	I	DMFS32	277	8	I
DEFS_D	85	8	I	DMFS32X	285	8	I
DEFS_DX	93	8	I	PERM32	293	8	I
DEFS_E	101	8	I	PERM32X	301	8	I
DEFS_EX	109	8	I	PISCORE	309	8.6	F
DEFS_F	117	8	I	PISCOREX	317	8.6	F
DEFS_FX	125	8	I	DEBSCOR	325	8.6	F
DEFSURF	133	8	I	DEBSCORX	333	8.6	F
DEFSURFX	141	8	I	CALSCOR	341	8.6	F
PRIMCNT	149	8	I	CALSCORX	349	8.6	F
PRIMCNTX	157	8	I	OHISCOR	357	8.6	F
DMF32_D	165	8	I	OHISCORX	365	8.6	F

NOTE: "Type" refers to whether the variable values are alphanumeric (A) or integer (I), or fixed-decimal (F). For fixed-decimal variables, the placement of the decimal point is shown in the "LENGTH" column; the number to the right of the dot "." tells the number of digits to the right of the decimal point (e.g., 8.2 means the numbers will be written "nnnnn.nn"). Missing values are written differently for each variable type: A = bbbbbbbb, I = bbbbbbb., F8.1 = bbbbbbb.b., F8.2 = bbbbb.bb, and F.8.3 = bbbb.bbb ("b" meaning blank). To obtain the appropriate positive and missing values, read all values as alphanumeric, then convert "I" data to integers and "F" data to the specified floating-point format.

GLOSSARY

Attrition	Departure from the experiment by voluntary withdrawal before completion of assigned enrollment term.
Baseline participant	Person considered for enrollment at the beginning of the experiment in the site. May or may not have enrolled.
Contract year	Administrative unit of time for enrollees; year period(s) reckoned from date family signed enrollment contract. First contract year began on enrollment date, second contract year began on first anniversary of enrollment, and so on.
Exit	Departure from the experiment after completion of assigned enrollment term, three or five years.
FFS	Fee-for-service, the private economic sector in which fees are charged.
GHC	Group Health Cooperative of Puget Sound, the Seattle HMO that participated in the experiment.
HIE	Health Insurance Experiment.
HIE-insured	Enrollee assigned to an experimental health insurance plan paid by the HIE (plans A-O, described on p. 3). Includes members of HMO experimental group. Compare "HMO-insured."
HMO	Health maintenance organization; Group Health Cooperative of Puget Sound, the HMO that participated in the HIE.
HMO control group	Seattle enrollees drawn at random from existing HMO members who met HIE eligibility criteria. The HIE did not pay their insurance premiums.
HMO experimental group	Seattle enrollees experimentally transferred to HMO from fee-for-service system. The HIE paid their insurance premiums.
HMO-insured	Member of HMO control group.
Participant	Anyone with a record in the HIE database; includes baseline-only participants and enrollees.
PEG	South Carolina preenrollment group.
SAS	Statistical Analysis System. HIE files contain data in both SAS and character formats.

