



Pan American Health Organization
Division of Health Systems and Services Development
Regional Program of Oral Health

GUYANA ORAL HEALTH SURVEY FOR SCHOOL CHILDREN

Prepared by: Eugenio Beltrán, DDS, MPH, MS, Dr. Ph
Centers for Disease Control and Prevention
Atlanta, Georgia

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Guyana Oral Health Survey of School Children

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Findings

This document has been prepared by Eugenio D. Beltrán, D.D.S., M.P.H., M.S., Dr.P.H.

Protocol Summary Sheet

Title:

Guyana Oral Health Survey of School Children, 1995

Investigators:

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Eugenio D. Beltrán, D.D.S., M.P.H., M.S., Dr.P.H.

Hugh Cooper, D.D.S., M.S.

Agencies:

Government of the Republic of Guyana.

Health Volunteers Overseas/Dentistry Overseas.

Pan American Health Organization, Regional Oral Health Office.

Time and location:

Data collection: January to April 1995,
in Guyana's ten geographic regions.

Parameters to be evaluated:

Demographics.

Prevalence of dental caries (DMF index).

Presence of sealants.

Prevalence of dental fluorosis.

Time-urgency for treatment needed.

Sampling:

An approximation to a probability sample of school children in ten regions proportional to region population size (see sampling section for further detail).

Within each region sampling was carried out using probability proportional to size.

The sample is not a probability sample of the entire Guyana school children since sampling was completed using approximate numbers.

Method of data collection:

Calibrated examiners (dentists and dental auxiliaries).

On-site; data recorded into paper forms.

Data Management and Analysis:

Data entered into precustomized data entry programs in Epi Info.

Transformations and statistical calculations were made in SAS.

No sample weights and/or design effects were included in analysis (see sampling).

Introduction

Health Volunteers Overseas /Dentistry Overseas (ADA/HVO/DO), a private nonprofit organization, and Dr. S. Bera, Principal Dental Officer at the Ministry of Health of Guyana, coordinated the planning and implementation of a survey of school children in Guyana. The main objective of this project was to assess oral health status of Guyanese children. The participation of Dr. Eugenio Beltrán, epidemiologist of the Centers for Disease Control and Prevention and consultant of the Pan American Health Organization was secured through a group of highly motivated and committed people including, Dr. Ray Flanders, Dr. Hugh Cooper, and Dr. Arthur Hazlewood. The scope of the project was planned between Dr. Cooper, Dr. Bera and Dr. Beltrán. It was decided to measure dental caries, presence of sealants, and dental fluorosis, with the aim of obtaining estimators of these indicators for each of the ten administrative regions of Guyana. As Chief Dental Officer, Dr. Bera secured the participation of local dentists and dental auxiliaries to function as examiners and recorders. On January 1995, Dr. Cooper and Dr. Beltrán traveled to Georgetown to participate in the training/calibration of this personnel. The sample was selected during calibration, using the information provided by Dr. Bera. Training took place in schools of Georgetown following local arrangements. During the following weeks, teams of examiners/recorders traveled to the different places selected in the sample. Data was entered on site using customized paper forms. Later, the data was transferred into computer files by Mr. M. Harry. Computer files were sent to Dr. Beltrán who performed data cleaning, transformation, and analysis.

This report summarizes the different aspects of the survey. It focuses on the most important findings and point out potential areas for program implementation. As in any other oral health survey, this report does not provide specific recommendations. It is assumed that a thorough evaluation of these results should complement other relevant information and, in turn, serve as a framework to develop appropriate, effective and efficient policies to improve the oral health status of Guyanese children.

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The teams of examiners and recorders: Dr. Chandra, Dr. Chandini, Dr. Benn, Dr. Fraser, Dr. Lee, Dr. Walterns, Dr. Stuart, Ms. Kansanally, Dr. Brook-Joseph, Dr. Ali, Dr. Winfield, Dr. Armstrong, Dr. Sullivan, Ms. Waldron, Ms. Sorjannie, Ms. Millicent, Mr. Noel, Mr. Rambhorose, Mr. Harry, Mr. Bassir, Mr. De Abru, and Dr. Ganesh.

Local coordinators and school teachers.

School children who participate in the survey.

Support personnel at BIDCO Management Training Centre.

Executive Summary

Demographics/Sampling/Generalizability

Obtaining a sample for this survey was challenging. The main problem was the ruralness of many of the sites to be sampled and the lack of official records on their actual number of school children enrolled. For example, the actual number of students by school grade was not available from official records and the number of students from each school was, in many cases, an approximation. Therefore, it was decided to make the sampling on site after consultation with local authorities. The objective in the sampling was to obtain a convenient sample with as much random selection as it would be possible, e.g., using probability proportional to size to select schools. No attempts were made to over sample any particular sex or racial/ethnic group, since the information provided to construct the sampling frame did not have information on these variables. The final sample was planned to represent each of the ten geographical regions and, in the aggregate, the entire country. To measure how well the sample matched the entire population, we compared the proportion of children in the sample with their proportion in the entire population by sex and racial/ethnic group. No differences were observed for males and females between the sample and the entire population. Table A-1 shows that the sample slightly over represented the children of African descent and under represented East Indian children, but these differences were within 5%. Table A-4 shows that the sample under represented Region 7 and Regions 10 and 3 to a lesser degree. In addition, the sample over represented Region 1. All other regions were sampled in the same proportion as in the overall population.

In conclusion, and in spite of the differences between the sample and population of reference, overall point estimates before and after stratification by sex and race/ethnic group should be very close to estimates from a probability sample. It is impossible to determine the effect of the over and under representation of certain geographical regions into the overall estimates. Data within each region should be close to those of a probability sample. Caution, however, should be used when comparing different regions due to over and under representation (see results).

Dental Caries

Overall

The main finding in this investigation is that both DMF-T and DMF-S among 12-year-old children (mean= 1.33 and 2.97, respectively) were below WHO's goals for the year 2000 (Table B-1). Figure 1 shows the age-specific distribution of df-S and DMF-S. The

main contribution to the DMF index was the decay component: overall, 91% of the mean caries experience in the entire sample (5.19 out of 5.72) was due to untreated decay in both dentitions (see bottom of Table B-1). Sixty-seven percent of all children were caries-free in the permanent dentition (DMF-T, Table E-1) and 11% had DMF-T greater than three. However, only 33% of all children were caries-free when total caries experience (df-T + DMF-T) was taken into account and 64% had at least one decayed permanent or primary tooth. These results suggest a sizable prevalence of caries experience and untreated decay in both dentitions. Furthermore, missing teeth due to caries constituted 18% of the entire DMF-T among children having caries experience in the permanent dentition (DMF-T>0). Additional analyses of DMF-T components are presented later.

Sex

Overall, there were no differences between males and females (Tables B-2, B-3, C-1, D-1, D-2, & E-1). The main exception was decayed and filled teeth/surfaces in the primary dentition, with males having higher values than females across most age-groups.

Race/Ethnicity

Children of African ancestry have slightly higher levels of caries experience in the permanent dentition than children from other race/ethnic groups (Tables B-4 to B-7 and Figure 2). These differences, however, appear to be not significant at the clinical level. When the degree of caries experience was taken into account (Table E-1), children of African ancestry had also higher proportions in the higher categories of degree of caries experience. Easter Indian and African descendants had lower proportion of caries-free children and higher proportion of children with untreated decay at age 12 (Figure 6).

Geographical Regions

Because dental caries is strongly affected by age, comparisons between regions (Tables B-9 to B-12, C-1, D-8 to D-10, and E-1) were carried out grouping regions according to the age-specific data available. Regions 2, 5, 7, and 10 formed the first group; Regions 3, 8, and 9 formed the second group; Regions 4, and 6 formed the third group; Region 1 did not have a comparison region. Figure 3 shows the overall age-specific means for df-S, DMF-S, total caries experience (df-S + DMF-S), and total untreated decay (d-S+D-S) between regions in the first group. Similarly, Figures 4 and 5 display the same information for the other two groups. Figure 3 shows that Region 5 has higher caries experience than the other three regions in the first group, an effect that seems to be a consequence of the higher levels of caries experience in the primary dentition (df-S). These higher levels for Region 5, were paralleled by a higher proportion of children with untreated decay, lower proportion of caries-free children (Figure 7), and higher proportion of children with higher caries experience in the permanent dentition (Table

E-1: 6.4% had DMF-T \geq 5). Figures 4, 8 and Table E-1 show a similar effect for Region 9. In this case, however, it seems that the higher caries experience was in both dentitions. Figures 5, 6 and Table E-1 show that Region 6 had slightly higher caries experience than Region 4, this time an effect of caries experience in the permanent dentition. It should be stressed out that in all three groups, the major component of the total caries experience is untreated dental caries. Region 1 had the lowest proportion of caries-free permanent teeth (30%), and the highest level of children with DMF-T greater than or equal to five (17%) (Figure E-1). Two main reasons may explain these results: 1) an effect of age (in Region 1, only 12-14-year-old children were examined) and 2) true higher prevalence. Because the means for DMF-T in Region 1 at age 12 and 13 were not much higher those for other regions, it seems that the higher prevalence in Region 1 may be explained better by its age composition.

Section C analyzed the relative contribution of each DMF-T component among those children who had caries experience in the permanent dentition --defined as those having DMF-T greater than zero. As mentioned before, the greatest contribution to the index was untreated decayed teeth (80%). Eighteen percent of the index was missing teeth and only 2% was restored teeth. No differences were observed between sex groups. Children of Easter Indian ancestry had the lowest relative proportion of extracted teeth and the highest proportion of restored teeth. However, they had also a high proportion of untreated decay. Children of African ancestry had lower proportion of untreated decay but higher levels of missing teeth and lower levels of filled teeth. Region 7 had the lowest percent contribution of untreated decay, but also the highest missing contribution. The highest proportions of filled teeth were in Regions 8 & 4.

Fluorosis

Examiners reported 22.5% of the population as having dental fluorosis. Fluorosis is a direct effect of the chronic exposure to fluoride during the teeth formative years. Examiners took samples of tap water in a selected group of sites during data collection. None of these samples showed levels of fluoride in the water compatible with the reported proportion of children with fluorosis. Since exposure to other sources of fluoride in Guyana is limited, it seems that there was a shift in the diagnosis criteria toward over reporting. It should be pointed out that the examiners had limited clinical exposure to children with fluorosis before the calibration.

Conclusions

1. Mean DMF-T values at 12 years in Guyanese children were lower than three, WHO's goal for the year 2000. However, this aggregate statistic does not reflect the high levels of untreated decay and missing teeth, paralleled by the lower levels of restored teeth. This pattern is common in communities/societies where the need for restorations is unmatched and left untreated up to the point where the tooth needs to be extracted. Moreover, urbanization is frequently associated with increases in caries prevalence. As more Guyanese rural areas become urbanized, it is expected that the prevalence of sugar consumption and other cariogenic behaviors will increase, with the potential of producing even higher prevalence of dental caries. Mass dental caries preventive efforts, i.e., use of fluorides, should be studied as an alternative to reduce these high levels of untreated decay in future cohorts of children.

A gross 50% of all caries experience in this sample was accounted by the primary dentition. Since the missing component is not included in the indices for the primary teeth, it is fair to assume that this percentage is an under representation of the primary teeth's contribution to the overall caries experience. It is important to plan and provide restorative care to these untreated decayed teeth.

2. No major differences in caries experience were observed between males and females. Only slight differences, and mostly not significant at the clinical level, were observed among race groups.

3. There were striking differences in caries experience between regions. Some regions had higher levels of untreated decay and caries experience while others had higher proportions of missing teeth among those who had caries. Many factors should be taken into account to explain these differences, among them: 1) use of preventive regimens; 2) "ruralness" of the region; 3) presence and distribution of dental care providers; 4) type of dental treatment offered; and 5) access to dental care.

Methods

Examiners and Recorders

Twenty-two dentists and dental auxiliaries were trained as examiners and recorders. A list of this personnel is included in Appendix A. Personnel was trained to provide both examinations and data entry. Teams were formed and assigned to different regions depending on their availability and proximity to their hometown.

Diagnostic Criteria

This survey utilized the Radike/American Dental Association/U. S. National Institute of Dental Research diagnostic criteria, explained in full detail in the 1979-1980 survey of school children [USPHS, 1989]. These criteria were slightly modified in their coding to facilitate data entry process. Copy of the criteria and codes utilized in the survey are included in Appendix B.

Calibration

The calibration took place during five days in January 1995. The first part of the calibration took place in the classroom where the diagnostic criteria were discussed and tested. The second part of the calibration was clinical. Local arrangements were made to visit two schools for clinical examinations. In addition, some students were brought to the Georgetown Dental Centre. Therefore, three sites were used for the calibration. In these sites, chairs, equipment, and materials were arranged similarly as the examiners will have in their examination sites. Duplicate examinations were performed in subgroups of five or six examiners to measure reliability. Discrepancies were corrected on site using Dr. Beltrán assessment as standard. In each site, groups were formed differently to provide as many comparisons between examiners as possible.

Examinations

All examinations were performed in the selected schools by a team of examiner/recorder. Examinations were carried out using natural light and a regular chair for the student.

The examiners used a plane mouth mirror and a dental explorer to examine each child (visual-tactile examination). No x-rays were taken. Each examination took approximately five minutes. Since most teams were assembled and scheduled to

work independently in the ten geographical regions, no attempts were made to measure inter-examiner reliability after calibration.

Data Manipulation

All computer files with data were merged into one file using the Epi Info package. The SAS statistical package was used to read an ASCII version of the data and produce standard descriptive and univariate information to identify missing and potential miscoded data. Corrections were made in the Epi Info file and a new ASCII file was produced. Data cleaning continued three/four times up to point where the potential miscodes were not that clear. No datum was changed without complete assurance that the code in the record was wrong. In some cases, interpolation was used to assign the missing or miscoded value.

A final ASCII file with the cleaned data was resubmitted to SAS to make standard data transformations and calculation of indices, e.g., DMF-T. A second set of analyses using SAS produced univariate, bivariate, and standard tabulations.

Figure 1
Age-Specific Means for df-S and DMF-S

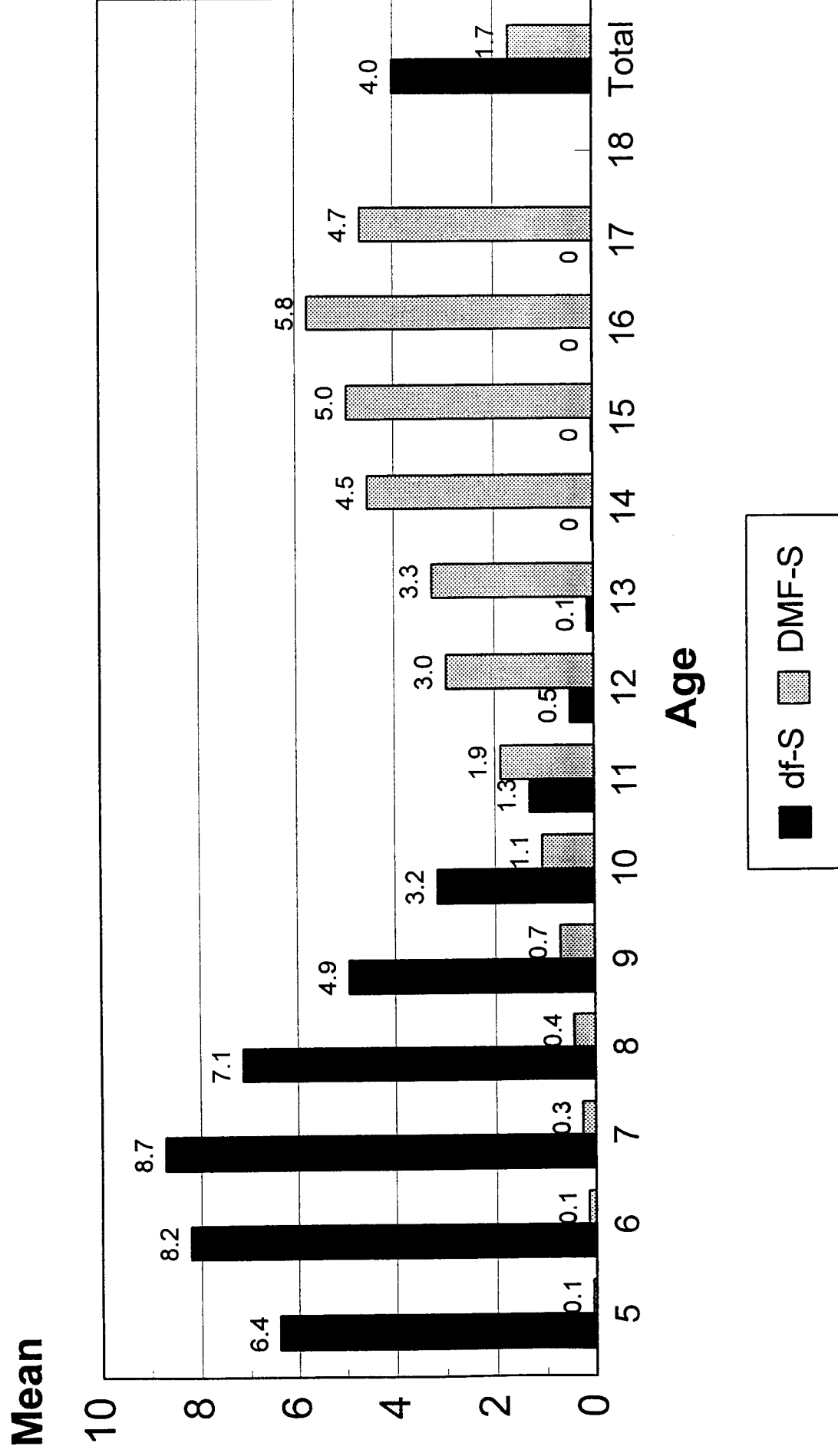


Figure 2
Means for Selected Dental Caries Indicators, by Race

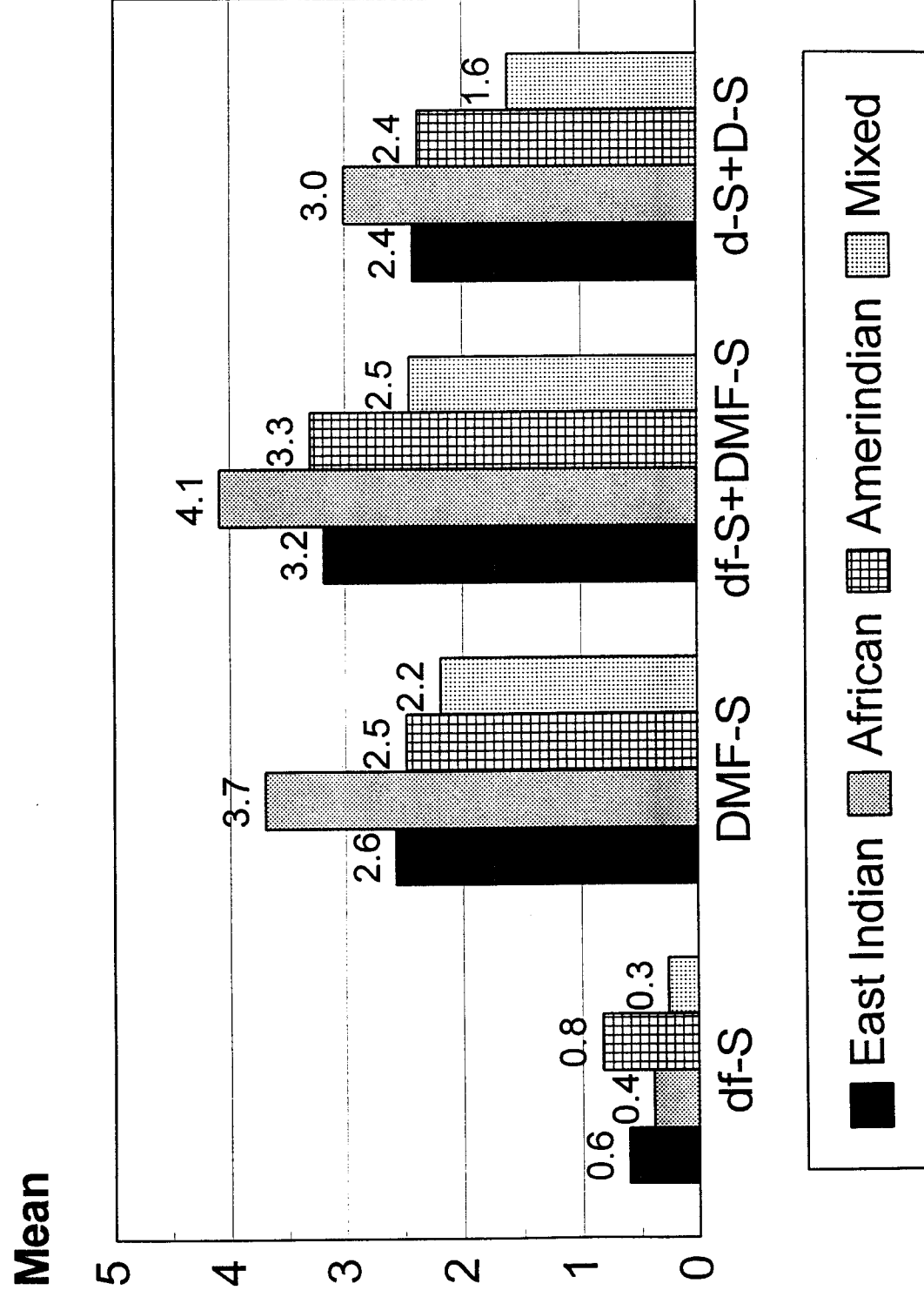


Figure 3

Mean Values for Selected Indices of Caries Experience in Regions 2, 5, 7, and 10

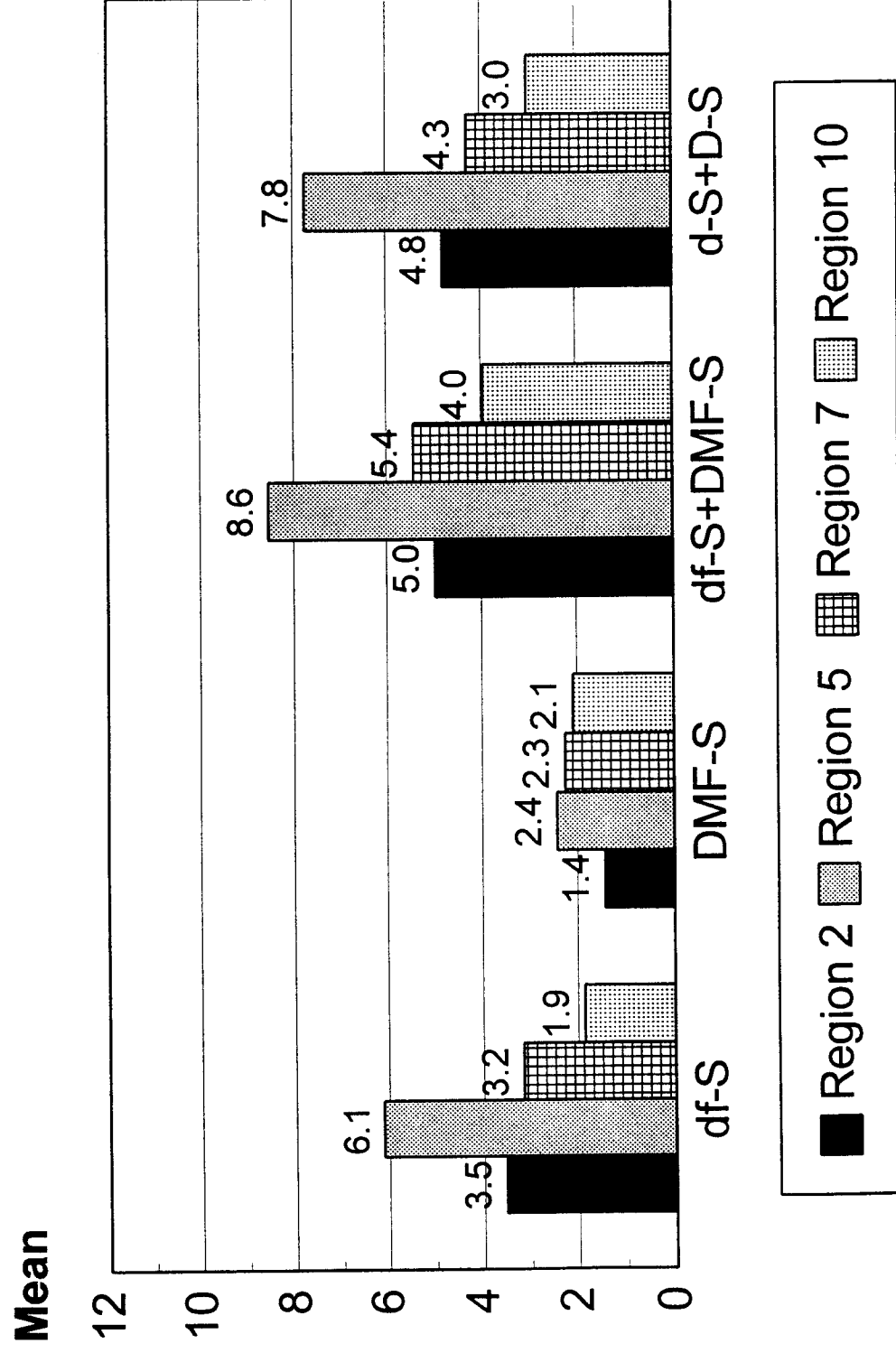


Figure 4

Mean Values for Selected Indices of Caries Experience in Regions 3, 8 and 9

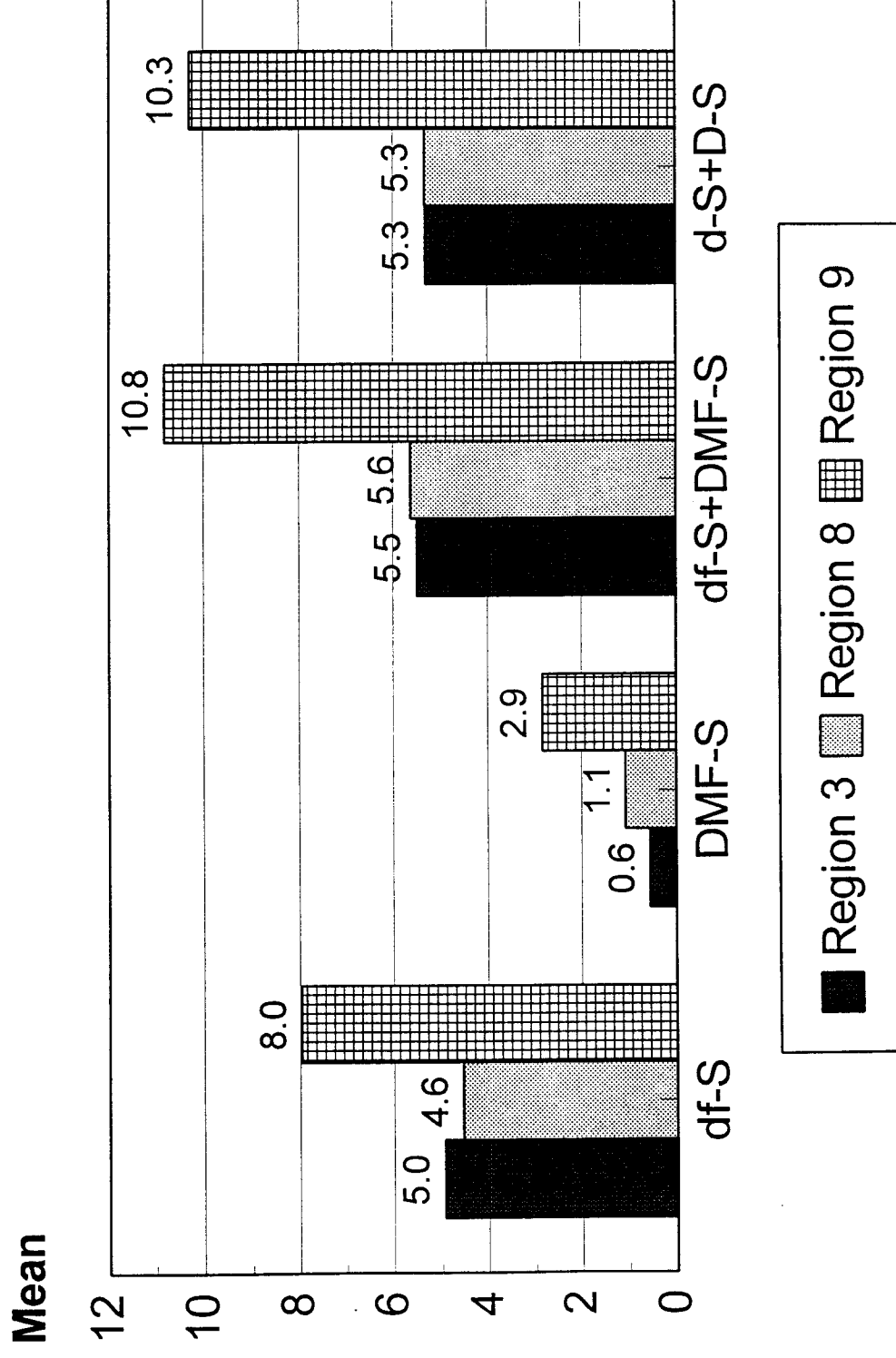


Figure 5
Mean Values for Selected Indices of Caries Experience in Regions 4 and 6

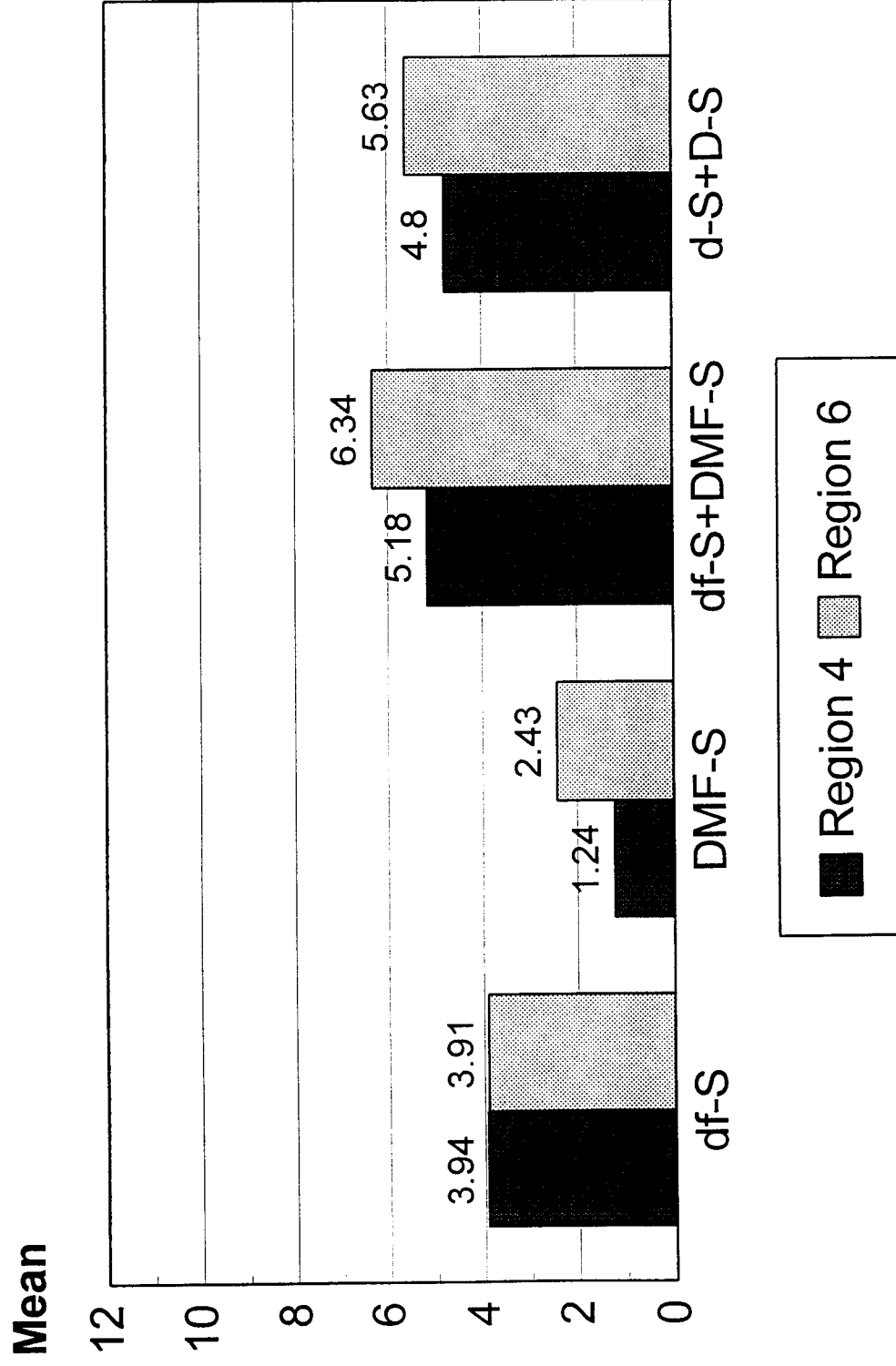


Figure 6
Proportion of 12-Year-Old Caries-Free Children and Children with Untreated
Caries Lesions Among Four Racial/Ethnic Groups

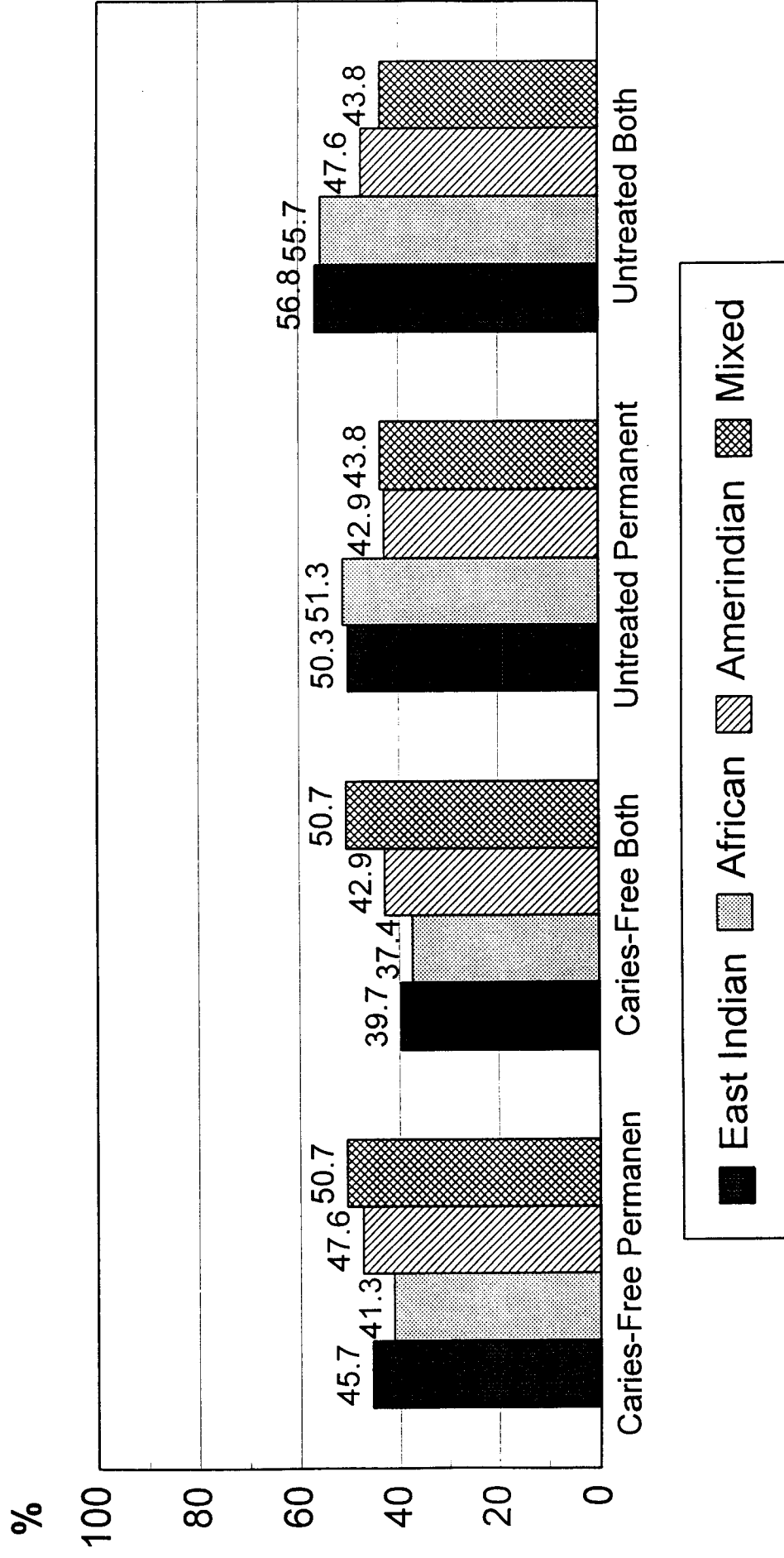


Figure 7
Proportions of 12-Year-Old Caries-Free Children and Children with Untreated Caries Lesions in Regions 2, 5, 6, and 10

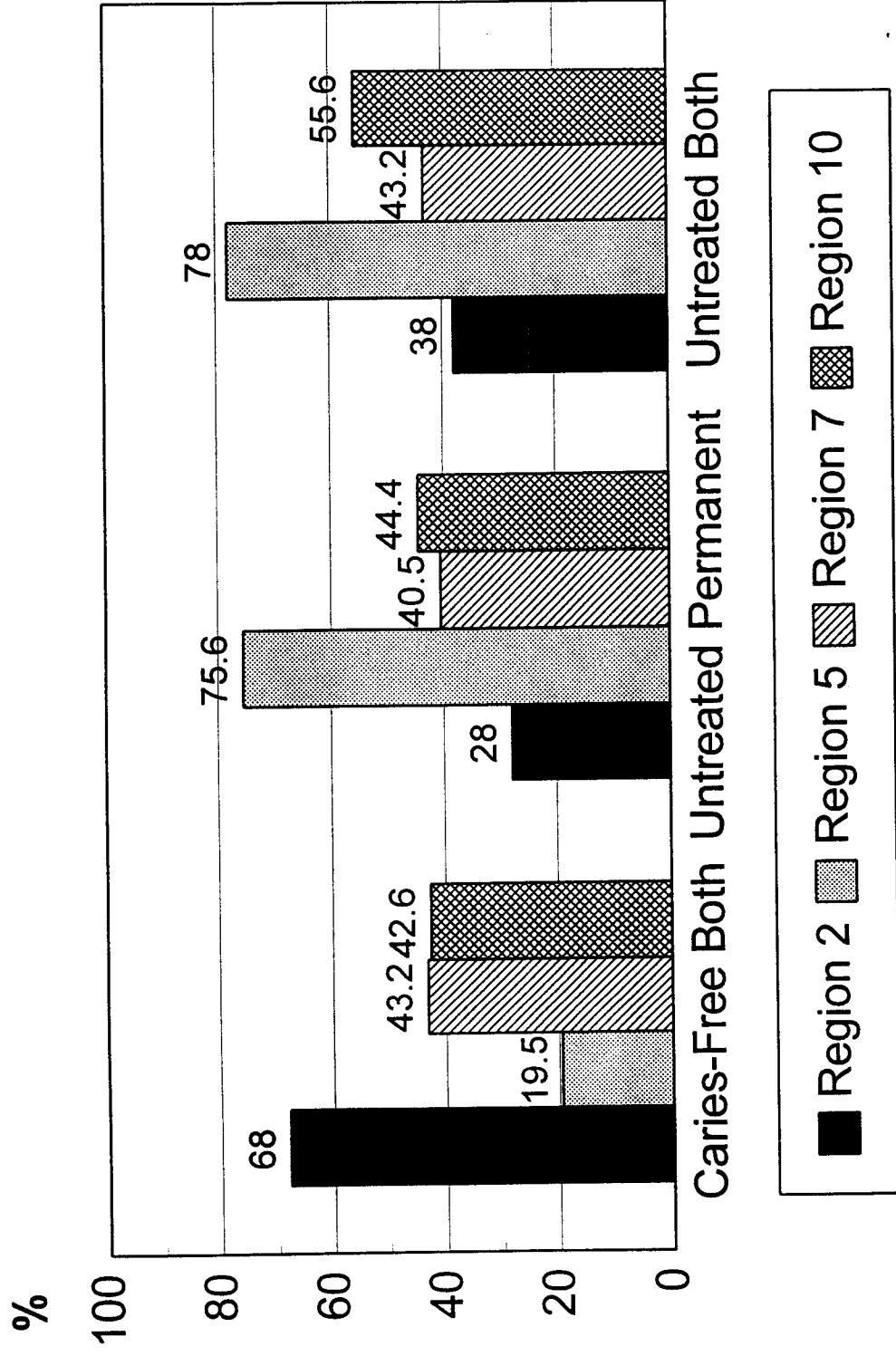


Figure 8
Proportions of 11-Year-Old Caries-Free Children and Children with Untreated Caries Lesions in Regions 3, 8, and 9

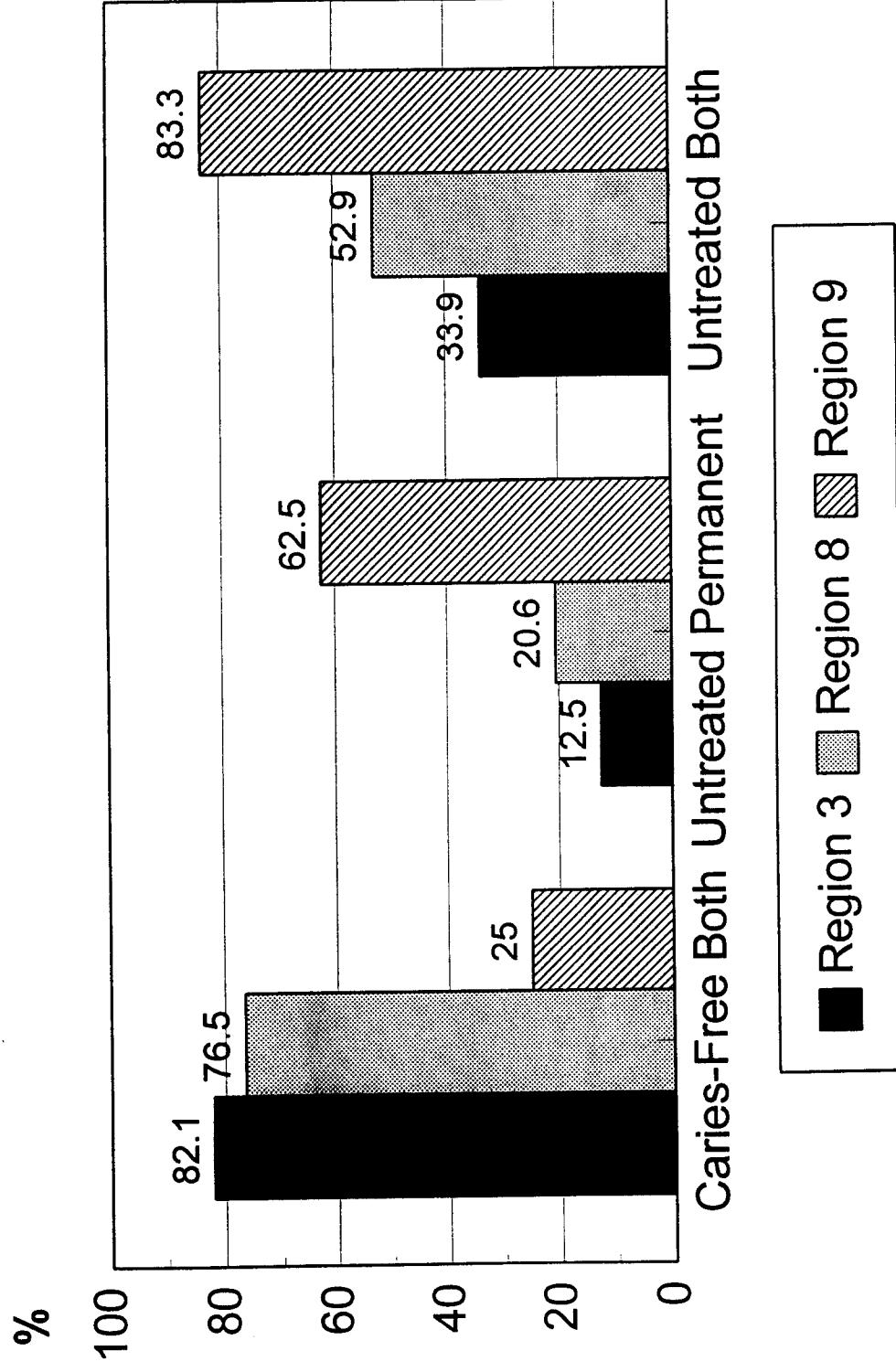
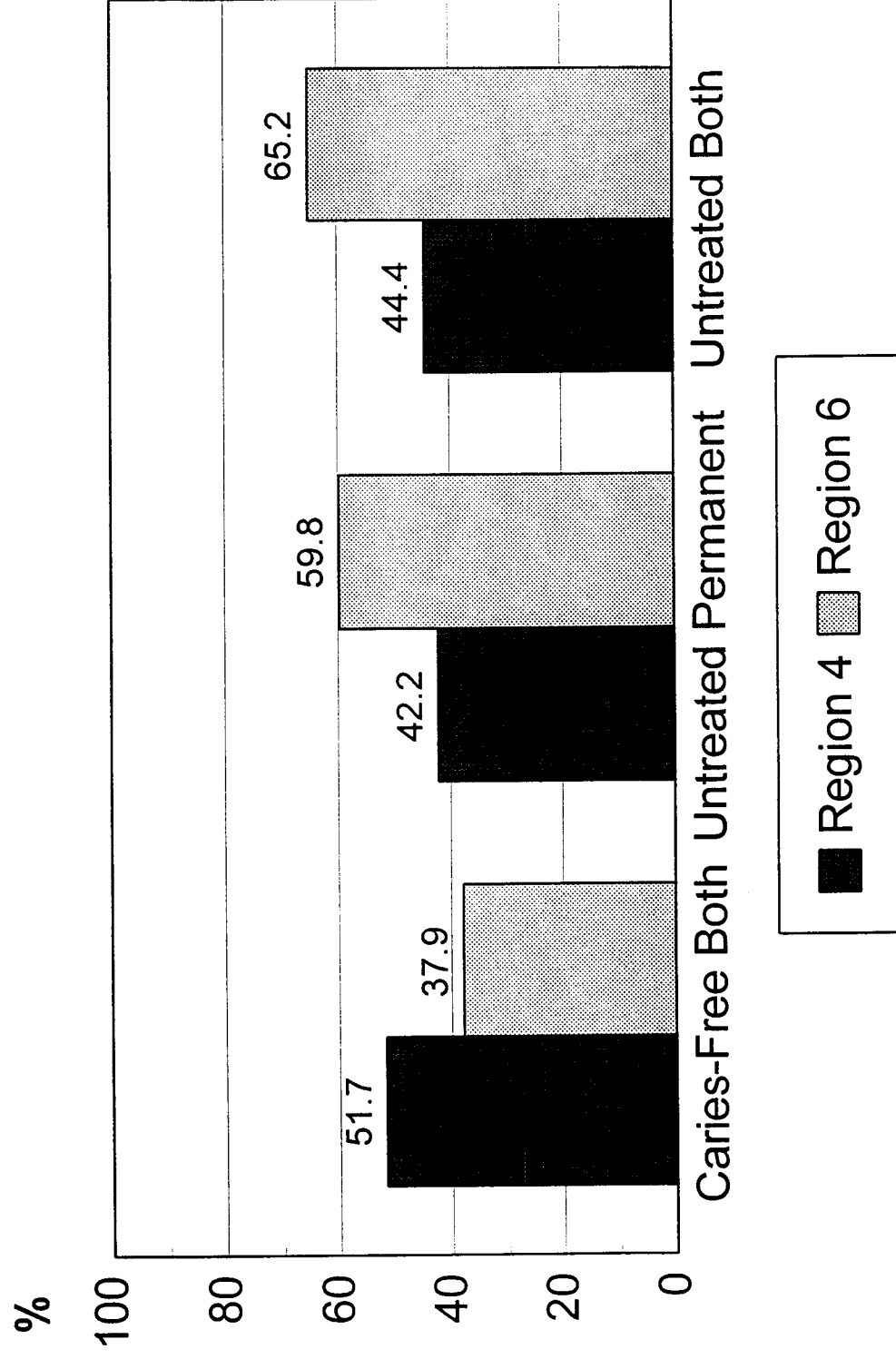


Figure 9
Proportions of 12-Year-Old Caries-Free Children and Children with Untreated Caries Lesions in Regions 5 and 6



A. Demographics

Tables A-1
Guyana Oral Health of School Children, 1995
Distribution of the Sample by Sex

Sex	Number	Percent
Males	3,319	47.8
Females	3,621	52.2

Distribution of the Sample by Race

Race/Ethnic	Number	Percent	Population
East Indian	2,938	43.6	48.3
African	2,369	35.1	32.7
Amerindian	594	8.8	6.3
Asian/Pacific Islander	5	0.1	0.2
White	8	0.1	0.2
Mixed	814	12.1	12.2
Other	12	0.2	0.2
All	6,740	100.0	100.1

Table A-2
Guyana Oral Health of School Children, 1995
Distribution of the Sample by School Grade

Grades	Number	Percent
Prep A	765	11.4
Prep B	772	11.5
Standard 1	811	12.0
Standard 2	768	11.4
Standard 3	831	12.3
Standard 4	747	11.1
Form 1	556	8.2
Form 2	451	6.7
Form 3	443	6.6
Form 4	400	5.9
Form 5	196	2.9
All	6,740	100.0

Table A-3
Guyana Oral Health of School Children, 1995
Distribution of the Sample by Age

Age	Number	Percent	Population
5	163	2.4	
6	692	10.3	
7	825	12.2	
8	775	11.5	
9	806	12.0	
10	770	11.4	
11	664	9.9	
12	547	8.1	
13	470	7.0	
14	453	6.7	
15	339	5.0	
16	169	2.5	
17	55	0.8	
18	12	0.2	
All	6,740	100.0	

Table A-4
Guyana Oral Health of School Children, 1995
Distribution of the Sample by Geographical Region

Region	Number	Percent	Population
1	123	1.8	3.3
2	505	7.5	7.1
3	552	8.2	11.5
4	2,655	39.4	41.4
5	439	6.5	7.5
6	1,178	17.5	17.1
7	420	6.2	1.4
8	290	4.3	4.3
9	175	2.6	3.2
10	405	6.0	3.2
All	6,742	100.0	100.0

Section B: Indices of Dental Caries Prevalence

Table B-1
Guyana Oral Health Survey of School Children, 1995
Age-Specific Means and Standard Deviations for Selected Indices of Dental Caries Prevalence

Age	N	df-T		DMF-T		df-T + DMF-T		df-S		DMF-S		df-S + DMF-S		d-S + D-S	
		Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.
5	163	2.31	3.17	0.06	0.33	2.37	3.24	6.40	10.90	0.06	0.33	6.46	10.94	6.46	10.94
6	692	2.85	3.25	0.06	0.32	2.91	3.30	8.21	10.93	0.14	1.05	8.35	11.08	8.34	11.08
7	825	3.04	2.82	0.15	0.47	3.19	2.91	8.72	9.62	0.26	1.11	8.99	9.78	8.95	9.79
8	775	2.64	2.45	0.26	0.66	2.90	2.62	7.14	7.74	0.43	1.45	7.57	8.08	7.53	8.05
9	806	1.82	1.98	0.41	0.85	2.23	2.20	4.94	6.18	0.71	1.85	5.64	6.55	5.55	6.54
10	770	1.15	1.60	0.56	1.03	1.71	1.88	3.16	4.99	1.07	2.37	4.24	5.49	3.97	5.42
11	664	0.53	1.12	0.90	1.48	1.44	1.83	1.32	3.08	1.89	3.75	3.20	4.86	2.66	4.44
12	547	0.19	0.69	1.33	1.84	1.52	1.95	0.49	1.90	2.97	5.07	3.46	5.40	2.54	4.77
13	470	0.05	0.33	1.64	2.02	1.69	2.03	0.13	0.90	3.25	4.45	3.38	4.53	2.40	3.83
14	453	0.01	0.09	2.00	2.59	2.01	2.60	0.03	0.37	4.53	7.38	4.56	7.38	3.01	5.86
15	339	0.02	0.15	2.17	2.53	2.19	2.53	0.03	0.32	4.95	6.53	4.98	6.53	2.96	4.83
16	169	0.01	0.08	2.50	2.52	2.50	2.52	0.01	0.08	5.76	6.67	5.77	6.67	3.41	5.52
17	55	0.00	0.00	2.18	2.25	2.18	2.25	0.00	0.00	4.67	5.77	4.67	5.77	2.69	3.66
18	12	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Total	6740	1.45	2.30	0.81	1.61	2.25	2.54	4.02	7.29	1.70	4.06	5.72	7.80	5.19	7.64

Table B-2
Guyana Oral Health Survey of School Children, 1995
Age-Specific Means and Standard Deviations for Selected Indices of Dental Caries Prevalence: Males

Age	N	df-T		DMF-T		df-T + DMF-T		df-S		DMF-S		df-S + DMF-S		d-S + D-S	
		Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.
5	81	2.88	3.44	0.10	0.44	2.98	3.51	8.38	11.87	0.10	0.44	8.48	11.91	8.48	11.91
6	339	3.04	3.27	0.07	0.40	3.12	3.33	8.92	11.51	0.19	1.40	9.12	11.72	9.11	11.72
7	399	3.13	3.03	0.15	0.51	3.28	3.09	9.07	10.39	0.30	1.30	9.37	10.51	9.33	10.52
8	377	2.87	2.56	0.27	0.71	3.14	2.75	7.90	8.35	0.44	1.51	8.34	8.79	8.29	8.74
9	386	2.10	2.03	0.40	0.87	2.50	2.25	5.84	6.40	0.64	1.77	6.48	6.69	6.38	6.69
10	365	1.43	1.82	0.50	0.96	1.93	2.01	4.02	5.89	0.93	2.13	4.95	6.18	4.77	6.12
11	341	0.68	1.29	0.82	1.43	1.50	1.87	1.60	3.41	1.71	3.83	3.31	5.01	2.76	4.51
12	274	0.27	0.87	1.32	1.86	1.59	2.05	0.70	2.35	3.09	5.31	3.80	5.83	2.87	5.42
13	207	0.06	0.38	1.71	2.16	1.77	2.16	0.13	0.74	3.40	4.88	3.53	4.86	2.41	4.08
14	204	0.01	0.12	1.83	2.39	1.85	2.39	0.06	0.53	4.16	6.49	4.23	6.48	3.01	5.51
15	151	0.01	0.08	2.06	2.38	2.07	2.38	0.01	0.08	4.66	6.13	4.66	6.13	2.97	4.51
16	66	0.02	0.12	2.61	2.77	2.62	2.78	0.02	0.12	6.45	7.43	6.47	7.44	4.38	6.28
17	25	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Total	3222	1.63	2.44	0.76	1.57	2.39	2.63	4.59	7.89	1.62	3.96	6.22	8.28	5.75	8.18

Table B-3
Guyana Oral Health Survey of School Children, 1995
Age-Specific Means and Standard Deviations for Selected Indices of Dental Caries Prevalence: Females

Age	N	df-T		DMF-T		df-T + DMF-T		df-S		DMF-S		df-S + DMF-S		d-S + D-S	
		Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.
5	82	1.74	2.77	0.02	0.16	1.77	2.83	4.44	9.52	0.02	0.16	4.46	9.55	4.46	9.55
6	353	2.67	3.23	0.04	0.22	2.71	3.26	7.53	10.32	0.08	0.51	7.61	10.40	7.60	10.40
7	426	2.96	2.62	0.14	0.43	3.10	2.72	8.40	8.85	0.23	0.90	8.63	9.04	8.60	9.05
8	398	2.42	2.32	0.25	0.62	2.68	2.46	6.42	7.05	0.42	1.40	6.84	7.29	6.80	7.28
9	420	1.56	1.91	0.42	0.82	1.98	2.12	4.11	5.87	0.77	1.93	4.88	6.34	4.78	6.31
10	405	0.90	1.33	0.62	1.09	1.52	1.74	2.39	3.85	1.20	2.56	3.59	4.70	3.24	4.58
11	323	0.38	0.88	1.00	1.54	1.37	1.78	1.02	2.66	2.07	3.67	3.09	4.69	2.56	4.37
12	273	0.11	0.42	1.34	1.81	1.45	1.84	0.27	1.26	2.86	4.83	3.12	4.92	2.22	4.00
13	263	0.04	0.28	1.59	1.92	1.63	1.93	0.12	1.00	3.14	4.09	3.26	4.26	2.40	3.62
14	249	0.00	0.06	2.14	2.75	2.14	2.75	0.01	0.13	4.82	8.04	4.83	8.04	3.01	6.13
15	188	0.03	0.19	2.26	2.65	2.29	2.65	0.05	0.42	5.18	6.84	5.23	6.84	2.95	5.05
16	103	0.00	0.00	2.43	2.36	2.43	2.36	0.00	0.00	5.32	6.12	5.32	6.12	2.79	4.91
17	30	0.00	0.00	2.07	2.03	2.07	2.03	0.00	0.00	4.40	5.30	4.40	5.30	2.77	3.45
18	5	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Total	3518	1.28	2.16	0.85	1.65	2.13	2.45	3.49	6.66	1.78	4.14	5.27	7.31	4.69	7.07

Table B-4
Guyana Oral Health Survey of School Children, 1995
Age-Specific Means and Standard Deviations for Selected Indices of Dental Caries Prevalence: East Indian Descent

Age	N	df-T		DMF-T		df-T + DMF-T		df-S		DMF-S		df-S + DMF-S		d-S + D-S	
		Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.
5	68	2.46	3.75	0.09	0.41	2.54	3.84	7.46	14.16	0.09	0.41	7.54	14.21	7.54	14.21
6	334	3.33	3.53	0.08	0.41	3.42	3.57	9.42	11.73	0.22	1.44	9.64	11.96	9.64	11.96
7	419	3.30	2.91	0.14	0.43	3.44	2.99	9.27	9.97	0.21	0.73	9.48	10.02	9.44	10.04
8	404	3.04	2.46	0.25	0.61	3.28	2.59	7.85	7.78	0.36	1.22	8.21	7.97	8.15	7.92
9	393	1.99	2.02	0.42	0.85	2.41	2.19	5.14	6.16	0.66	1.59	5.80	6.41	5.69	6.37
10	407	1.37	1.77	0.60	1.07	1.97	2.04	3.69	5.44	1.13	2.51	4.82	6.03	4.51	5.99
11	276	0.67	1.19	0.82	1.48	1.48	1.87	1.49	2.87	1.75	3.94	3.24	4.86	2.74	4.33
12	199	0.25	0.73	1.23	1.50	1.47	1.64	0.61	1.91	2.57	3.69	3.19	4.05	2.42	3.50
13	141	0.09	0.45	1.52	1.99	1.61	2.02	0.16	0.80	2.94	4.85	3.10	4.92	2.35	4.43
14	130	0.02	0.12	1.76	2.11	1.78	2.13	0.05	0.39	3.47	5.04	3.52	5.06	2.37	4.26
15	106	0.03	0.17	2.01	2.63	2.04	2.64	0.05	0.29	3.99	5.98	4.04	5.99	2.37	4.11
16	48	0.00	0.00	1.67	2.07	1.67	2.07	0.05	0.00	3.79	5.04	3.79	5.04	2.35	3.62
17	11	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Total	2938	1.86	2.55	0.62	1.33	2.49	2.65	5.04	8.08	1.21	3.09	6.24	8.25	5.90	8.21

Table B-5
Guyana Oral Health Survey of School Children, 1995
Age-Specific Means and Standard Deviations for Selected Indices of Dental Caries Prevalence: African Descent

Age	N	df-T		DMF-T		df-T + DMF-T		df-S		DMF-S		df-S + DMF-S		d-S + D-S	
		Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.
5	55	1.78	2.35	0.00	0.00	1.78	2.35	4.71	7.56	0.00	0.00	4.71	7.56	4.71	7.56
6	207	2.56	3.10	0.05	0.24	2.61	3.14	7.48	11.02	0.07	0.39	7.55	11.05	7.53	11.05
7	247	2.54	2.54	0.14	0.48	2.68	2.64	7.56	8.84	0.28	1.38	7.84	9.09	7.81	9.07
8	223	2.05	2.25	0.33	0.80	2.38	2.58	5.87	7.22	0.59	1.82	6.46	7.92	6.43	7.90
9	242	1.50	1.89	0.39	0.87	1.89	2.21	4.19	5.70	0.80	2.38	4.99	6.48	4.89	6.50
10	209	0.78	1.23	0.50	0.97	1.29	1.47	2.03	3.36	0.98	2.20	3.01	3.85	2.78	3.64
11	237	0.31	0.70	1.11	1.56	1.41	1.71	0.82	2.20	2.23	3.66	3.05	4.29	2.38	3.66
12	230	0.16	0.67	1.53	2.20	1.69	2.30	0.39	1.84	3.70	6.54	4.09	6.85	3.01	6.18
13	226	0.04	0.29	1.69	2.07	1.73	2.07	0.14	1.08	3.48	4.38	3.62	4.50	2.34	3.50
14	211	0.00	0.07	2.09	2.81	2.09	2.81	0.02	0.34	5.18	9.04	5.20	9.03	3.50	7.13
15	155	0.00	0.00	2.08	2.32	2.08	2.32	0.00	0.00	5.15	6.63	5.15	6.63	3.24	5.03
16	84	0.01	0.11	2.55	2.28	2.56	2.29	0.01	0.11	5.51	5.58	5.52	5.59	2.76	3.46
17	36	0.00	0.00	2.53	2.14	2.53	2.14	0.00	0.00	5.39	5.76	5.39	5.76	3.03	3.65
18	7	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Total	2369	1.00	1.93	1.01	1.83	2.01	2.40	2.85	6.23	2.27	4.94	5.11	7.40	4.37	6.99

Table B-6
Guyana Oral Health Survey of School Children, 1995
Age-Specific Means and Standard Deviations for Selected Indices of Dental Caries Prevalence: Amerindians

Age	N	df-T		DMF-T		df-T + DMF-T		df-S		DMF-S		df-S + DMF-S		d-S + D-S	
		Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.
5	16	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	65	2.45	2.23	0.00	0.00	2.45	2.23	7.40	7.24	0.00	0.00	7.40	7.24	7.40	7.24
7	86	3.44	2.90	0.26	0.69	3.70	3.03	10.79	10.88	0.53	1.85	11.33	11.34	11.29	11.36
8	65	3.32	2.77	0.28	0.63	3.60	2.82	10.18	9.30	0.63	1.97	10.82	9.70	10.82	9.70
9	74	2.16	2.15	0.41	0.84	2.57	2.32	6.65	7.06	0.73	1.79	7.38	7.26	7.34	7.22
10	81	1.27	1.57	0.46	0.91	1.73	1.90	4.20	6.14	0.84	1.85	5.04	6.41	4.93	6.41
11	68	0.82	1.67	0.81	1.70	1.73	2.27	2.28	5.15	2.03	4.79	4.31	3.90	7.06	7.06
12	42	0.29	0.83	1.17	1.51	1.45	1.68	0.83	2.63	2.48	3.15	3.31	2.38	3.54	3.54
13	33	0.03	0.17	1.64	2.43	1.67	2.42	0.15	0.87	3.27	4.84	3.42	4.81	2.85	4.40
14	36	0.03	0.17	2.31	3.06	2.33	3.04	0.11	0.67	5.64	7.49	5.75	7.43	3.86	6.10
15	22	---	---	---	---	---	---	---	---	---	---	---	---	---	---
16	6	---	---	---	---	---	---	---	---	---	---	---	---	---	---
17	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Total	594	1.76	2.37	0.74	1.63	2.49	2.60	5.40	7.93	1.65	3.97	7.05	8.29	6.64	8.28

Table B-7
Guyana Oral Health Survey of School Children, 1995
Age-Specific Means and Standard Deviations for Selected Indices of Dental Caries Prevalence: Mixed Race

Age	N	df-T		DMF-T		df-T + DMF-T		df-S		DMF-S		df-S + DMF-S		d-S + D-S	
		Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.	Mean	s.d.
5	22	---	---	---	---	---	---	---	---	---	---	---	---	---	---
6	85	1.86	2.63	0.02	0.15	1.88	2.67	5.44	8.40	0.07	0.55	5.51	8.52	5.49	8.50
7	71	2.68	2.83	0.10	0.30	2.77	2.86	6.76	7.69	0.15	0.65	6.92	7.68	6.92	7.68
8	80	1.79	2.04	0.14	0.50	1.92	2.14	4.80	6.37	0.17	0.65	4.97	6.42	4.97	6.42
9	92	1.71	1.88	0.40	0.71	2.11	2.05	4.84	6.60	0.59	1.07	5.42	6.66	5.34	6.69
10	71	0.87	1.41	0.65	1.11	1.52	1.79	2.38	4.15	1.30	2.59	3.68	4.66	3.34	4.52
11	82	0.48	1.19	0.70	0.96	1.17	1.65	1.33	3.48	1.26	1.88	2.59	4.12	2.16	3.93
12	73	0.10	0.50	1.14	1.54	1.23	1.62	0.26	1.53	2.19	3.55	2.45	3.81	1.62	2.90
13	68	0.01	0.12	1.78	1.74	1.79	1.72	0.01	0.12	3.22	3.65	3.24	3.64	2.57	3.27
14	73	0.00	0.00	2.03	2.52	2.03	2.52	0.00	0.00	4.04	5.20	4.04	5.20	2.30	3.73
15	55	0.00	0.00	2.38	2.83	2.38	2.83	0.00	0.00	5.15	6.81	5.15	6.81	2.47	4.56
16	31	0.00	0.00	3.48	3.13	3.48	3.13	0.00	0.00	8.97	9.69	8.97	9.69	6.39	9.66
17	8	---	---	---	---	---	---	---	---	---	---	---	---	---	---
18	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Total	814	1.02	1.94	0.94	1.76	1.97	2.34	2.76	5.72	1.92	4.15	4.68	6.44	4.00	6.16

Table B-8
Guyana Oral Health Survey of School Children, 1995
Age-Specific Means¹ for DMF-T in the Permanent Dentition by Geographical Region

Age	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8	Region 9	Region 10
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
5	---	0.08	---	0.02	---	---	---	---	---	---
6	---	0.15	0.06	0.05	0.13	0.06	0.03	0.00	0.00	0.03
7	---	0.19	0.09	0.11	0.20	0.24	0.09	0.13	0.52	0.04
8	---	0.36	0.20	0.24	0.37	0.31	0.03	0.39	0.33	0.21
9	---	0.34	0.50	0.38	0.62	0.46	0.33	0.25	0.68	0.24
10	---	0.33	0.51	0.59	0.74	0.65	0.20	0.34	---	0.48
11	---	0.84	0.30	0.85	1.70	1.17	0.52	0.44	1.67	0.81
12	1.10	0.90	---	1.11	2.05	1.70	0.97	---	---	1.20
13	1.90	0.84	---	1.56	---	2.01	1.00	---	---	1.22
14	2.30	1.30	---	1.66	3.22	2.16	1.93	---	---	1.84
15	---	---	---	1.41	2.44	2.53	2.88	---	---	2.06
16	---	---	---	1.61	---	2.75	---	---	---	---
17	---	---	---	---	---	2.64	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---
Total	2.22	0.55	0.31	0.63	1.18	1.22	0.86	0.49	2.86	0.93

¹ Italicized entries represent statistics calculated based on sample sizes greater than 20 but less than 30

Table B-9
Guyana Oral Health Survey of School Children, 1995
Age-Specific Means² for df-S in the Primary Dentition by Geographical Region

Age	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8	Region 9	Region 10
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
5	-.--	4.96	-.--	6.34	10.62	-.--	-.--	-.--	-.--	-.--
6	-.--	3.48	9.27	8.61	14.26	8.88	8.18	3.95	9.38	6.09
7	-.--	8.94	7.99	7.75	11.10	11.41	7.49	7.06	16.19	4.36
8	-.--	5.93	5.63	6.16	9.68	9.25	7.79	8.81	11.52	5.53
9	-.--	3.40	3.03	4.80	9.07	5.61	4.31	5.60	9.91	2.42
10	-.--	3.00	2.34	2.38	5.40	4.10	3.66	4.83	-.--	2.74
11	-.--	1.56	0.84	1.15	1.93	1.43	0.81	2.18	3.17	0.15
12	0.61	0.64	-.--	0.16	0.41	0.70	0.27	-.--	-.--	0.78
13	0.00	0.49	-.--	0.10	-.--	0.10	0.18	-.--	-.--	0.10
14	0.00	0.00	-.--	0.00	0.00	0.02	0.00	-.--	-.--	0.13
15	-.--	-.--	-.--	0.02	0.00	0.02	0.15	-.--	-.--	0.00
16	-.--	-.--	-.--	0.00	-.--	0.02	-.--	-.--	-.--	-.--
17	-.--	-.--	-.--	-.--	-.--	0.00	-.--	-.--	-.--	-.--
18	-.--	-.--	-.--	-.--	-.--	-.--	-.--	-.--	-.--	-.--
Total	0.23	3.54	4.95	3.94	6.12	3.91	3.16	4.56	7.97	1.87

² Italicized entries represent statistics calculated based on sample sizes greater than 20 but less than 30

Table B-10
Guyana Oral Health Survey of School Children, 1995
Age-Specific Means³ for DMF-S in the Permanent Dentition by Geographical Region

Age	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8	Region 9	Region 10
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
5	-.-	0.08	-.-	0.02	-.-	-.-	-.-	-.-	-.-	-.-
6	-.-	0.39	0.11	0.13	0.15	0.12	0.15	0.00	0.00	0.09
7	-.-	0.41	0.10	0.21	0.27	0.39	0.09	0.13	1.29	0.04
8	-.-	0.76	0.37	0.36	0.52	0.42	0.03	1.03	0.48	0.37
9	-.-	0.84	0.87	0.62	1.19	0.68	0.57	0.50	1.27	0.58
10	-.-	0.73	0.91	1.06	1.44	1.39	0.39	0.78	-.-	0.83
11	-.-	1.62	0.82	1.68	3.95	2.25	1.31	1.03	4.21	1.74
12	2.23	2.62	-.-	2.45	4.59	3.61	2.81	-.-	-.-	2.59
13	3.13	2.08	-.-	2.91	-.-	3.79	2.54	-.-	-.-	2.78
14	4.95	3.27	-.-	3.48	6.97	4.55	5.75	-.-	-.-	4.55
15	-.-	-.-	-.-	3.11	4.44	5.19	6.97	-.-	-.-	5.16
16	-.-	-.-	-.-	3.93	-.-	5.71	-.-	-.-	-.-	-.-
17	-.-	-.-	-.-	-.-	-.-	5.32	-.-	-.-	-.-	-.-
18	-.-	-.-	-.-	-.-	-.-	-.-	-.-	-.-	-.-	-.-
Total	4.94	1.44	0.56	1.24	2.43	2.43	2.26	1.08	2.85	2.09

³ Italicized entries represent statistics calculated based on sample sizes greater than 20 but less than 30

Table B-11
Guyana Oral Health Survey of School Children, 1995
Age-Specific Means⁴ for Total Caries Experience (df-S + DMF-S) in the Permanent Dentition by Geographical Region

Age	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8	Region 9	Region 10
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
5	---	5.04	---	6.36	---	---	---	---	---	---
6	---	3.87	9.38	8.74	14.40	9.00	8.32	3.95	9.38	6.17
7	---	9.35	8.09	7.96	11.37	11.80	7.57	7.19	17.48	4.39
8	---	6.69	6.00	6.53	10.20	9.67	7.82	9.84	12.00	5.89
9	---	4.24	3.90	5.43	10.26	6.29	4.88	6.10	11.18	3.00
10	---	3.73	3.24	3.44	6.84	5.49	4.05	5.61	---	3.57
11	---	3.18	1.66	2.83	5.89	3.68	2.12	3.21	7.37	1.89
12	2.84	3.26	---	2.61	5.00	4.30	3.08	---	---	3.37
13	3.13	2.57	---	3.01	---	3.89	2.71	---	---	2.88
14	4.95	3.27	---	3.48	6.97	4.57	5.75	---	---	4.68
15	---	---	---	3.14	4.44	5.22	7.12	---	---	5.16
16	---	---	---	3.93	---	5.73	---	---	---	---
17	---	---	---	---	---	5.32	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---
Total	5.17	4.98	5.51	5.18	8.55	6.34	5.43	5.64	10.82	3.96

⁴ Italicized entries represent statistics calculated based on sample sizes greater than 20 but less than 30

Table B-12
Guyana Oral Health Survey of School Children, 1995
Age-Specific Means⁵ for Untreated Dental Caries (d-S + D-S) in the Permanent Dentition by Geographical Region

Age	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8	Region 9	Region 10
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
5	---	5.04	---	6.36	---	---	---	---	---	---
6	---	3.87	9.38	8.74	14.40	8.98	8.32	3.95	9.38	6.06
7	---	9.35	8.07	7.90	11.31	11.80	7.54	7.19	17.39	4.39
8	---	6.69	5.82	6.51	10.20	9.64	7.82	9.84	12.00	5.82
9	---	4.19	3.67	5.34	10.05	6.27	4.76	6.03	11.18	2.82
10	---	3.67	2.93	3.14	6.42	5.21	3.98	5.46	---	3.43
11	---	2.71	1.34	2.37	4.73	2.93	1.24	3.12	6.87	1.56
12	2.06	2.72	---	1.74	3.54	3.60	1.86	---	---	2.04
13	2.63	2.41	---	1.95	---	2.94	1.54	---	---	1.38
14	4.05	3.17	---	2.47	3.97	3.24	2.87	---	---	2.61
15	---	---	---	1.77	1.96	3.22	2.97	---	---	3.23
16	---	---	---	2.27	---	2.54	---	---	---	---
17	---	---	---	---	---	3.55	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---
Total	4.05	4.81	5.33	4.80	7.75	5.63	4.29	5.34	10.30	3.02

⁵ Italicized entries represent statistics calculated based on sample sizes greater than 20 but less than 30

C. Contribution of DMF-T Components

Table C-1

Guyana Oral Health Survey of School Children, 1995

Contribution of DMF-T Components Among those with DMF-T > 0 (Permanent Dentition), Overall, by Sex, by Race, by Region

		N	N DMF-T>0	%D / DMF-T	%M / DMF-T	%F / DMF-T
Overall		6,740	2,236	79.5	18.4	2.1
Sex						
	Males	3,322	1,010	80.5	17.1	2.4
	Females	3,518	1,226	78.7	16.5	1.8
Race/Ethnic						
	East Indian	2,938	845	82.7	14.9	2.4
	African	2,369	913	77.2	21.0	1.8
	Amerindian	594	174	80.4	18.1	1.5
	Mixed	814	298	77.1	20.7	2.2
	Others	25	---	---	---	---
Region						
	1	123	86	84.3	15.7	0.0
	2	505	123	88.9	11.7	0.0
	3	552	92	84.9	14.7	0.4
	4	2,655	756	79.3	16.9	3.7
	5	439	193	83.5	14.6	1.9
	6	1,178	548	82.4	16.7	0.8
	7	420	140	54.7	42.3	3.0
	8	290	64	81.4	12.7	5.9
	9	175	80	86.3	13.7	0.0
	10	405	154	70.4	28.9	0.7

Section D: Caries-Free and Untreated Decay

Table D-1
Guyana Oral Health Survey of School Children, 1995
Age-Specific Proportions for Caries-Free and Untreated Dental Caries in both Dentitions

Age	N	Caries-Free Permanent		Caries Free Both		Untreated Caries Permanent		Untreated Caries Both	
		N	%	N	%	N	%	N	%
5	163	156	95.7	73	44.8	7	4.3	90	55.2
6	692	663	95.8	231	33.4	28	4.0	461	66.6
7	825	734	89.0	204	24.7	85	10.3	618	74.9
8	775	644	83.1	174	22.5	127	16.4	601	77.5
9	806	606	75.2	211	26.2	190	23.6	591	73.3
10	770	528	68.6	268	34.8	220	28.6	487	63.2
11	664	386	58.1	287	43.2	247	37.2	354	53.3
12	547	246	45.0	223	40.8	268	49.0	293	53.6
13	470	185	39.4	176	37.4	257	54.7	266	56.6
14	453	172	38.0	170	37.5	240	53.0	242	53.4
15	339	125	36.9	123	36.3	186	54.9	188	55.5
16	169	43	25.4	43	25.4	108	63.9	108	63.9
17	55	13	23.6	13	23.6	34	61.8	34	61.8
18	12	---	---	---	---	---	---	---	---
Total	6740	4,505	66.8	2,200	32.6	2,004	29.7	4,340	64.4

Table D-2
Guyana Oral Health Survey of School Children, 1995
Age-Specific Proportions for Caries-Free and Untreated Dental Caries in both Dentitions: Males

Age	N	Caries-Free Permanent		Caries Free Both		Untreated Caries Permanent		Untreated Caries Both	
		N	%	N	%	N	%	N	%
5	81	76	93.8	34	42.0	5	6.2	47	58.0
6	339	323	95.3	104	30.7	15	4.4	235	69.3
7	399	357	89.5	111	27.8	38	9.5	286	71.7
8	377	319	84.6	82	21.8	57	15.1	295	78.2
9	386	296	76.7	82	21.2	85	22.0	303	78.5
10	365	262	71.8	120	32.9	98	26.8	244	66.8
11	341	206	60.4	142	41.6	120	35.2	189	55.4
12	274	126	46.0	111	40.5	130	47.4	147	53.6
13	207	85	41.1	80	38.6	112	54.1	117	56.5
14	204	82	40.2	80	39.2	103	50.5	105	51.5
15	151	55	36.4	55	36.4	85	56.3	85	56.3
16	66	16	24.2	16	24.2	47	71.2	47	71.2
17	25	---	---	---	---	---	---	---	---
18	7	---	---	---	---	---	---	---	---
Total	3222	2,212	68.7	1,026	31.8	912	28.3	2,117	65.7

Table D-3
Guyana Oral Health Survey of School Children, 1995
Age-Specific Proportions for Caries-Free and Untreated Dental Caries in both Dentitions: Females

Age	N	Caries-Free Permanent		Caries Free Both		Untreated Caries Permanent		Untreated Caries Both	
		N	%	N	%	N	%	N	%
5	82	80	97.6	39	47.6	2	2.4	43	52.4
6	353	340	96.3	127	36.0	13	3.7	226	64.0
7	426	377	88.5	93	21.8	47	11.0	332	77.9
8	398	325	81.7	92	23.1	70	17.6	306	76.9
9	420	310	73.8	129	30.7	105	25.0	288	68.6
10	405	266	65.7	148	36.5	122	30.1	243	60.0
11	323	180	55.7	145	44.9	127	39.3	165	51.1
12	273	120	44.0	112	41.0	138	50.5	146	53.5
13	263	100	38.0	96	36.5	145	55.1	149	56.7
14	249	90	36.1	90	36.1	137	55.0	137	55.0
15	188	70	37.2	68	36.2	101	53.7	103	54.8
16	103	27	26.2	27	26.2	61	59.2	61	59.2
17	30	---	---	---	---	---	---	---	---
18	5	---	---	---	---	---	---	---	---
Total	3518	2,293	65.2	1,174	33.4	1,092	31.0	2,223	63.2

Table D-4
Guyana Oral Health Survey of School Children, 1995
Age-Specific Proportions for Caries-Free and Untreated Dental Caries in both Dentitions: East Indian Descent

Age	N	Caries-Free Permanent		Caries Free Both		Untreated Caries Permanent		Untreated Caries Both	
		N	%	N	%	N	%	N	%
5	68	64	94.1	33	48.5	4	5.9	35	51.5
6	334	315	94.3	99	29.6	19	5.7	235	70.4
7	419	372	88.8	90	21.5	43	10.3	327	78.0
8	404	335	82.9	70	17.3	66	16.3	334	82.7
9	393	295	75.1	84	21.4	92	23.4	306	77.9
10	407	271	66.6	125	30.7	122	30.0	272	66.8
11	276	172	62.3	119	43.1	94	34.1	149	54.0
12	199	91	45.7	79	39.7	100	50.3	113	56.8
13	141	60	42.6	57	40.4	69	48.9	72	51.1
14	130	47	36.2	47	36.2	67	51.5	67	51.5
15	106	44	41.5	43	40.6	55	51.9	56	52.8
16	48	22	45.8	22	45.8	23	47.9	23	47.9
17	11	---	---	---	---	---	---	---	---
18	2	---	---	---	---	---	---	---	---
Total	2938	2,093	71.2	873	29.7	760	25.9	1,995	67.9

Table D-5
Guyana Oral Health Survey of School Children, 1995
Age-Specific Proportions for Caries-Free and Untreated Dental Caries in both Dentitions: African Descent

Age	N	Caries-Free Permanent		Caries Free Both		Untreated Caries Permanent		Untreated Caries Both	
		N	%	N	%	N	%	N	%
5	55	55	100.0	26	47.3	0	0.0	29	52.7
6	207	199	96.1	76	36.7	7	3.4	131	63.3
7	247	224	90.7	74	30.0	22	8.9	172	69.6
8	223	181	81.2	67	30.0	41	18.4	156	70.0
9	242	186	76.9	87	36.0	54	22.3	154	63.6
10	209	147	70.3	84	40.2	57	27.3	123	58.9
11	237	124	52.3	101	42.6	104	43.9	130	54.9
12	230	95	41.3	86	37.4	118	51.3	128	55.7
13	226	87	38.5	83	36.7	126	55.8	130	57.5
14	211	78	37.0	77	36.5	119	56.4	120	56.9
15	155	54	34.8	54	34.8	91	58.7	91	58.7
16	84	19	22.6	19	22.6	58	69.0	58	69.0
17	36	5	13.9	5	13.9	24	66.7	24	66.7
18	7	---	---	---	---	---	---	---	---
Total	2369	1,457	61.5	842	35.5	825	34.8	1,450	61.2

Table D-6
Guyana Oral Health Survey of School Children, 1995
Age-Specific Proportions for Caries-Free and Untreated Dental Caries in both Dentitions: Amerindian

Age	N	Caries-Free Permanent		Caries Free Both		Untreated Caries Permanent		Untreated Caries Both	
		N	%	N	%	N	%	N	%
5	16	---	---	---	---	---	---	---	---
6	65	65	100.0	14	21.5	0	0.0	51	78.5
7	86	72	86.7	14	16.3	13	15.1	72	83.7
8	65	52	80.0	8	12.3	13	20.0	57	87.7
9	74	56	75.7	13	17.6	18	24.3	61	82.4
10	81	60	74.1	24	29.6	20	24.7	56	69.1
11	68	42	61.8	26	38.2	20	29.4	38	55.9
12	42	20	47.6	18	42.9	18	42.9	20	47.6
13	33	16	48.5	15	45.5	16	48.5	17	51.5
14	36	17	47.2	16	44.4	16	44.4	17	47.2
15	22	---	---	---	---	---	---	---	---
16	6	---	---	---	---	---	---	---	---
17	0	---	---	---	---	---	---	---	---
18	0	---	---	---	---	---	---	---	---
Total	594	420	70.7	158	26.6	154	25.9	419	70.5

Table D-7
Guyana Oral Health Survey of School Children, 1995
Age-Specific Proportions for Caries-Free and Untreated Dental Caries in both Dentitions: Mixed Race

Age	N	Caries-Free Permanent		Caries Free Both		Untreated Caries Permanent		Untreated Caries Both	
		N	%	N	%	N	%	N	%
5	22	---	---	---	---	---	---	---	---
6	85	83	97.6	42	49.4	2	2.4	43	50.6
7	71	64	90.1	26	36.6	7	9.9	45	63.4
8	80	73	91.2	27	33.7	7	8.8	53	66.2
9	92	65	70.7	25	27.2	25	27.2	67	72.8
10	71	49	69.0	34	47.9	20	28.2	35	49.3
11	82	48	58.5	41	50.0	28	34.1	36	43.9
12	73	37	50.7	37	50.7	32	43.8	32	43.8
13	68	20	29.4	19	27.9	46	67.6	47	69.1
14	73	29	39.7	29	39.7	36	49.3	36	49.3
15	55	22	40.0	22	40.0	25	45.5	25	45.5
16	31	2	6.5	2	6.5	23	74.2	23	74.2
17	8	---	---	---	---	---	---	---	---
18	3								
Total	814	516	63.4	314	38.6	260	31.9	465	57.1

Table D-8
Guyana Oral Health Survey of School Children, 1995
Age-Specific Proportion¹ of Caries-Free Children in their Permanent Dentition by Geographical Region

Age	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8	Region 9	Region 10
	%	%	%	%	%	%	%	%	%	%
5	--	92.3	--	94.8	--	--	--	--	--	--
6	--	93.5	93.8	96.9	89.4	94.0	97.1	100.0	100.0	97.1
7	--	88.4	94.0	91.7	81.6	81.1	91.4	89.6	71.0	96.4
8	--	79.7	87.0	85.0	78.3	77.7	97.4	77.4	66.7	86.8
9	--	83.9	73.1	75.5	66.7	72.3	75.5	85.0	59.1	81.8
10	--	81.2	71.6	68.2	64.4	60.6	87.8	78.0	--	60.9
11	--	57.8	82.1	58.2	38.6	50.5	73.8	76.5	25.0	55.6
12	48.4	68.0	--	51.7	19.5	37.9	43.2	--	--	42.6
13	23.3	56.8	--	42.1	--	33.7	53.6	--	--	40.0
14	25.0	56.7	--	46.6	15.6	24.5	40.0	--	--	52.6
15	--	--	--	47.5	25.9	28.9	30.3	--	--	41.9
16	--	--	--	38.6	--	25.0	--	--	--	--
17	--	--	--	--	--	18.2	--	--	--	--
18	--	--	--	--	--	--	--	--	--	--
Total	30.1	75.8	83.3	71.5	56.0	53.4	66.7	77.9	54.3	62.0

¹ Italicized entries represent statistics calculated based on sample sizes greater than 20 but less than 30

Table D-9
Guyana Oral Health Survey of School Children, 1995
Age-Specific Proportion² of Children with Untreated Dental Caries in their Permanent Dentition by Geographical Region

Age	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8	Region 9	Region 10
	%	%	%	%	%	%	%	%	%	%
5	--	7.7	--	1.6	--	--	--	--	--	--
6	--	6.5	6.2	3.1	10.6	6.0	2.9	0.0	0.0	0.0
7	--	11.6	5.2	7.7	16.3	18.9	5.7	10.4	25.8	3.6
8	--	20.3	10.9	14.6	21.7	22.3	2.6	22.6	33.3	10.5
9	--	16.1	24.4	23.3	31.0	27.0	20.4	15.0	40.9	18.2
10	--	16.7	26.3	28.3	34.0	35.9	12.2	19.5	--	34.8
11	--	40.0	12.5	38.2	61.4	43.2	11.9	20.6	62.5	44.4
12	45.2	28.0	--	42.2	75.6	59.8	40.5	--	--	44.4
13	73.3	40.5	--	49.7	--	62.4	32.1	--	--	58.0
14	70.0	40.0	--	46.6	78.1	65.7	40.0	--	--	39.5
15	--	--	--	41.8	63.0	67.5	51.5	--	--	58.1
16	--	--	--	40.9	--	69.6	--	--	--	--
17	--	--	--	--	--	77.3	--	--	--	--
18	--	--	--	--	--	--	--	--	--	--
Total	65.9	22.8	14.9	25.1	41.5	43.4	23.6	20.0	42.3	33.6

² Italicized entries represent statistics calculated based on sample sizes greater than 20 but less than 30

Table D-10
Guyana Oral Health Survey of School Children, 1995
Age-Specific Proportion³ of Children with Untreated Dental Caries in Both Dentitions by Geographical Region

Age	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8	Region 9	Region 10
	%	%	%	%	%	%	%	%	%	%
5	--	42.3	--	57.8	--	--	--	--	--	--
6	--	41.9	72.8	66.0	83.0	78.0	67.6	50.0	90.5	68.6
7	--	63.8	72.4	71.3	89.8	90.1	65.7	79.2	100.0	46.4
8	--	69.5	70.7	75.8	85.0	88.4	76.9	83.9	90.5	63.2
9	--	43.5	66.7	76.1	76.2	83.9	69.4	72.5	95.5	60.6
10	--	54.2	55.8	59.8	82.0	70.4	61.0	68.3	--	69.6
11	--	46.7	33.9	54.5	72.7	60.4	23.8	52.9	83.3	48.1
12	45.2	38.0	--	44.4	78.0	65.2	43.2	--	--	55.6
13	73.3	40.5	--	52.5	--	64.4	35.7	--	--	60.0
14	70.0	40.0	--	46.6	78.1	65.7	40.0	--	--	42.1
15	--	--	--	42.6	63.0	67.5	54.5	--	--	58.1
16	--	--	--	40.9	--	69.6	--	--	--	--
17	--	--	--	--	--	77.3	--	--	--	--
18	--	--	--	--	--	--	--	--	--	--
Total	66.7	50.3	63.0	61.9	78.6	73.7	54.3	65.9	87.4	56.5

³ Italicized entries represent statistics calculated based on sample sizes greater than 20 but less than 30

E. Degree of Dental Caries Experience

Table E-1

Guyana Oral Health Survey of School Children, 1995

Degree of Dental Caries Experience Using PAHO/OMS Cut-off Criteria, Overall, by Sex, by Race, by Region

	N	No Caries		1 ≤ DMF-T < 3		3 ≤ DMF-T < 5		DMF-T ≥ 5	
		N	%	N	%	N	%	N	%
Overall	6,740	4,505	66.8	1,468	21.8	523	7.8	245	3.6
Sex									
Males	3,322	2,212	68.7	662	20.5	236	7.3	112	3.5
Females	3,518	2,292	65.2	806	22.9	287	8.2	133	3.8
Race/Ethnic									
East Indian	2,938	2,093	71.2	608	20.7	163	5.5	74	2.5
African	2,369	1,456	61.5	554	23.4	248	10.5	111	4.7
Amerindian	594	420	70.7	116	19.5	37	6.2	21	3.5
Mixed	814	516	63.4	187	23.0	72	8.8	39	4.8
Others	25	---	---	---	---	---	---	---	---
Region									
1	123	37	30.1	45	36.6	20	16.3	21	17.1
2	505	382	75.6	88	17.4	28	5.5	7	1.4
3	552	460	83.3	68	12.3	20	3.6	4	0.7
4	2,655	1,898	71.5	537	20.2	162	6.1	57	2.1
5	439	246	56.0	117	26.7	48	10.9	28	6.4
6	1,178	629	53.4	329	28.0	145	12.3	74	6.3
7	420	280	66.7	88	21.0	35	8.3	17	4.0
8	290	226	77.9	44	15.2	16	5.5	4	1.4
9	175	95	54.3	49	28.0	18	10.3	13	7.4
10	405	521	62.0	103	25.4	31	7.7	20	4.9

F. Dental Fluorosis and Treatment Urgency

Table F-1
Guyana Oral Health of School Children, 1995
Distribution of Children with Dental Fluorosis, by Sex, by Race, and by Region

		N	Fluorosis	
			Yes	%
Overall		6,740	1,517	22.5
Sex	Males	3,322	685	21.3
	Females	3,518	831	23.6
Race/Ethnic	East Indian	2,938	859	29.2
	African	2,369	509	21.5
	Amerindian	594	16	2.7
	Mixed	814	128	15.7
	Others	25	---	---
Region	1	123	9	7.3
	2	505	13	2.6
	3	552	158	28.6
	4	2,655	445	16.8
	5	439	112	25.5
	6	1,178	734	62.4
	7	420	27	6.4
	8	290	6	2.1
	9	175	0	0.0
	10	405	12	3.0

Table F-2
Guyana Oral Health of School Children, 1995
Urgency of Treatment Needs by Sex, by Race, and by Region

	N	No Need		Non-urgent		Urgent	
		N	%.	N	%.	N	%.
Overall	6,740	2,584	38.3	3,135	46.5	1,021	15.1
Sex							
Males	3,322	1,197	37.2	1,496	46.4	529	16.4
Females	3,518	1,388	39.5	1,639	46.6	491	14.0
Race/Ethnic							
East Indian	2,938	1,012	34.4	1,536	52.3	390	13.3
African	2,369	997	42.1	1,061	44.8	311	13.1
Amerindian	594	187	31.5	218	36.7	189	31.8
Mixed	814	375	46.1	313	38.5	126	15.5
Others	25	---	---	---	---	---	---
Region							
1	123	62	50.4	20	16.3	41	33.3
2	505	280	55.4	120	23.8	105	20.8
3	552	206	37.3	235	42.6	111	20.1
4	2,655	1,105	41.6	1,052	39.6	497	18.7
5	439	93	21.2	346	78.8	0	0.0
6	1,178	318	27.0	853	72.5	6	0.5
7	420	200	47.6	112	26.7	108	25.7
8	290	106	36.6	124	42.8	60	20.7
9	175	22	12.6	62	35.4	91	52.0
10	405	193	47.7	211	52.1	1	0.2

Appendix A

The roster of Examiners/Recorders

Id Number	Name
15	Dr. Chandra
16	Dr. Chandini
17	Dr, Benn
18	Dr, Fraser
19	Dr, Lee
20	Dr. Walters
21	Dr. Stuart
22	Ms. Kansanally
23	Dr. Brook-Joseph
24	Dr, Ali
25	Dr. Winfield
26	Dr, Armstrong
27	Dr. Sullivan
28	Ms. Waldron
29	Ms. Sorjannie
30	Ms. Millicent
31	Mr. Noel
32	Mr. Rambhorose
33	Mr. Harry
34	Mr. Bassir
35	Dr. Ganesh
36	Ms. De Abru

Appendix B

Diagnostic Criteria

For reasons of comparability, most of the diagnostic criteria and disease coding used in this survey correspond to those used by the National Institute of Dental Research (NIDR) in their national oral surveys.

Dental Caries

*A surface is considered **decayed** if:*

1. A frank lesion is detected as gross cavitation.
2. Incipient lesions are diagnosed as caries in pits and fissures, in the occlusal, buccal or lingual surfaces, if the explorer catches after insertion AND one or both of the following is observed:
 - Softness at the base of the area.
 - Opacity adjacent to the area providing clear visual evidence of demineralization.
3. A lesion in the smooth areas (i.e., buccal and lingual) is recorded as caries if the white spot lesion (evidence of previous subsurface demineralization) is accompanied by softness of surface tissue using the explorer. If the white lesion is not soft, you should diagnose the surface as **sound** (no disease).
4. Proximal surfaces should be recorded as carious if you can feel a discontinuity of the enamel in which the explorer catches. In anterior teeth you can use transillumination using the mirror and the front light to detect "characteristic shadows" of proximal caries lesions. In the ideal setting you should be able to detect a break of the proximal enamel surface; however, a clear visual lesion by transillumination is enough to diagnose the surface as carious. In posterior teeth, visual evidence of undermining under a marginal ridge is not acceptable evidence of a proximal lesion unless a surface break can be entered with the explorer.

The explorer should be used **carefully**. Use always a gentle touch or pressure at examination. Never exert medium or strong forces with the explorer, these forces can "create" cavities that did not exist before or disrupt the remineralization of demineralized lesions. Do not introduce the explorer in obvious cavitations.

In case of doubt you should call the surface **SOUND**

A tooth is considered **missing due to caries** only if there is evidence that the tooth has been extracted as a result of caries. If the absence of the tooth can be explained by other reasons, e.g., orthodontic reasons in premolars, congenitally missing teeth in upper lateral incisors or lower bicuspid, and trauma in anterior teeth you should be **not** diagnosed **missing due to caries**. Ask your patient the reason why a particular tooth is absent.

In case of doubt you should diagnose
Missing due to other reasons

Congenitally missing teeth such upper laterals and lower bicuspid are recorded as **unerupted**. Therefore, **missing due to other reasons** should include only teeth lost by orthodontic, traumatic reasons, or secondary to any other oral condition/pathology.

Filled teeth are those with a **permanent or temporary** fillings only as a result of caries involvement. Here you should distinguish between surfaces restored for caries and those restored for other reasons, such as trauma, hypoplasia or malformation. Surfaces that are restored for other reasons should be diagnosed as **sound**.

Dental Fluorosis

Dental fluorosis is the consequence of disturbances at the ameloblast level during enamel formation (matrix deposition and intraalveolar maturation phases). Histologically, fluorosis lesions are hypoplasias that clinically appear as opaque chalky lesions. However, more severe cases are frequently accompanied by loss of enamel structure (pitting).

Fluoride-associated lesions in the enamel are generally bilateral, symmetrical, and tend to show a horizontal striated pattern across the tooth. Because

opacities occurring in the enamel may be due, in addition to an excessive fluoride intake, to a multitude of etiological factors, we need to **distinguish between fluoride and non-fluoride enamel changes**. This distinction is more difficult when facing the milder forms of fluorosis. To help the examiner in this situation we are including a table describing the differential diagnosis between fluoride and non-fluoride enamel opacities.

Examination for fluorosis is a whole different process than the examination for caries prevalence. All permanent teeth should be examined using the same path, i.e., starting on the upper right second molar and ending on the lower right second molar. Deciduous teeth, permanent teeth NOT fully erupted, or teeth in which more than one-half of the visible surface is obscured by a restoration, caries, or an orthodontic appliance, are not assessed for fluorosis.

The diagnostic criteria for other oral diseases/conditions are explained fully in the coding section of this document.

Coding

Note: all codes are enclosed between brackets “[]”

Demographics and Identification variables

The first variable is “**Duplicate**.” This variable will label new versus duplicate examinations. Possible answers for this variable are:

- [Y] Yes, this child is receiving a duplicate examination
- [N] No (or New), this is a new examination

The first variable, labeled “**date**” corresponds to the date the exam has been performed and should be entered by the recorder. A standard American date format (mm/dd/yy) should be used for that purpose.

During the entire survey examiners and recorders will be identified with a two-digit ID number. A team is defined as one examiner and one recorder. Since availability of examiners and recorders is not constant during the examination periods, it is expected that teams will vary throughout the

survey period. To avoid problems the recorders should verify that both the recorder and the examiner are correctly identified in the record.

The variables "**region/county**," "**district**" and "**school**" have a set of valid numbers, all between one and three digits. A list with the appropriate codes for each of these variables will be provided.

Caries Prevalence

- [0] or Unerupted Permanent Tooth: This code should be recorded for congenitally missing and unerupted permanent **teeth** at the time of examination. A tooth has erupted if any of its crown is clinically visible. Include here teeth that are congenitally missing.
- [1] or Sound Permanent Tooth: This code should be recorded for each non-carious permanent **tooth**.
- [2] or Decayed Permanent Tooth/Surface: This code should be recorded for each permanent **tooth** and **surface** with decay or with restorations where secondary decay is detected.
- [3] or Filled Permanent Tooth/Surface: This code is recorded for each permanent **tooth** and **surface** filled with permanent or temporary materials, e.g., amalgams, composite resins, and inlays. Do not include crowns.
- [4] or Missing Permanent Tooth due to Caries: This code is recorded for each permanent **tooth** which has been lost due to dental caries.
- [5] or Missing Permanent Tooth due to other reasons: This code is recorded for each permanent **tooth** which has been lost by reasons other than dental decay. Do not include congenitally missing teeth.
- [6] or Fractured Permanent Tooth: This code should be used for each permanent **tooth** and **surface** which has been fractured by trauma.
- [7] or Sound Primary Tooth: Use this code for each non-carious primary **tooth**.

- [8] or Decayed Primary Tooth: This code should be recorded for each primary **tooth** and **surface** with decay and/or with restorations where secondary decay is detected.
- [9] or Filled Primary Tooth/Surface: This code is recorded for each primary **tooth** and **surface** filled with permanent or temporary materials, e.g., amalgams, composite resins, cements. Do not include crowns.
- [E] or Crowned Permanent Tooth: This code is recorded for each permanent **tooth** with a crown.
- [R] or Crowned Primary Tooth: This code is recorded for each primary **tooth** with a stainless steel or composite-based crown.
- [U] or Sealed Permanent Tooth/Surface: This code is recorded for each permanent **tooth** and **surface** with a sealant.
- [X] or Excluded: This code is used in specific circumstances: anterior permanent teeth with full crowns for any reason other than caries, such as fracture, malformation or esthetics.

Special Clinical Situations:

1. Incisal edges of anterior teeth are not considered separate surfaces. If a lesion or restoration is confined solely to the incisal edge, its score should be assigned to the nearest adjacent surface.
2. When a filling or a lesion on a posterior tooth, or a caries lesion on an anterior tooth extends beyond the line angle onto another surface, then the other surface is also scored as affected. However, a proximal filling on an anterior tooth is not considered to involve the adjacent labial or lingual surface unless it extends at least one-third into these surfaces. The reason for this criterion is that tooth structure on adjacent surfaces must often be removed to provide access for the restoration of a proximal lesion on anterior teeth.
3. If a permanent tooth has a full crown restoration placed because of caries, the tooth will be coded as [E] which represents the maximum number of surfaces for the tooth type, i.e., four surfaces on anterior teeth and five surfaces on posterior teeth. By convention, all crowns on posterior teeth, including abutment teeth for fixed or removable

prostheses, are considered to have been placed as a result of caries. On anterior teeth, however, the examiner should make the determination of the reason for crown placement. If a crown was placed for any reason other than caries, such as fracture, malformation, or esthetics, the tooth is coded [X] excluded. If a tooth has been restored with less than full coverage, all surfaces not involved should be scored in the usual manner.

4. Teeth that are banded or bracketed for orthodontic treatment are examined in the usual manner and all visible surfaces are scored.
5. Some teeth, typically the first bicuspid, are extracted due to orthodontic reasons. You should label these as "missing due to other reasons." The best hint to identify these patients is to check the status of the contralateral bicuspid and look for evidence of orthodontic treatment. You should be aware that other teeth may also be extracted for orthodontic reasons. In most cases, former or current orthodontic patients recall having extractions if so.
6. Non-vital teeth are scored in the same manner as vital teeth. Therefore, restorations on the lingual surfaces of anterior teeth used as entry for root canal therapy should not be recorded as restorations. This surface should be coded sound.
7. Hypoplastic teeth are scored in the usual manner. However, if a restoration on such a tooth was placed solely for aesthetic reasons, that restoration will not be scored. If a hypoplastic tooth is restored with a full crown, the tooth is coded "excluded" [X].
8. Malformed teeth are scored in the usual manner except when they have been restored with a full crown for aesthetic reasons, in which they are coded "excluded" [X].
9. When the tooth crown is destroyed by caries and only the roots remain, score all surfaces as carious.
10. There is a hierarchy in the coding when more than one code is possible. Sound surfaces/teeth are at the bottom. Sealed surfaces/teeth have precedence over sound surfaces/teeth. Restored surfaces/teeth have precedence over sealed surfaces/teeth. And, finally, untreated caries surfaces/teeth have precedence over restorations
11. In general, when the same tooth surface is both carious and filled (e.g., an upper permanent molar with a mesial pit filled and a distal pit with caries), caries is coded. When examining a filling for recurrent caries, a defective filling is not considered carious in the absence of definitive visual and tactile criteria for caries.
12. Fractured or missing restorations are scored as if the restorations were

intact unless there is caries. If caries is found within or adjacent to the margins of a fractured or missed restoration, caries should be scored only in the surfaces involved.

13. In the case of supernumerary teeth, only one tooth is called for the tooth space. The examiner must decide which tooth is the "main" occupant of the space.
14. If both a primary and a permanent tooth occupy the same tooth space, only the permanent tooth is scored.
15. Third molars are not scored. When examining second molars it is important to note that a drifted molar may occupy the space of a missing second molar. In such cases, the diagnosis and call must relate to the status of the missing second molar, not the third molar. If the second molar, for example, was extracted due to caries and the space is now occupied by a sound third molar, the second molar is scored as "missing due to caries" [4] and the third molar is not scored.
16. A tooth is considered erupted if any of its clinical crown projects through the gum.
17. Stain and pigmentation alone should not be regarded as evidence of decay since either can occur on sound teeth.
18. Missing primary teeth present potential problems in scoring because it is often not possible to distinguish exfoliated teeth from those extracted due to caries, especially during the period of mixed dentition. To avoid this problem, all missing primary teeth are scored as "unerupted" permanent teeth [code 0].
19. A surface is coded as "sealed" if ANY part of the surface remains covered with the sealant. In most clinical situations, the sealant covers the pit and fissure of the surface. A tooth can have more than one surface sealed. Remember that sealant products varied widely in color.
20. There is no "sealed" code for primary teeth. Code the tooth/surface as if the sealant is not present.
21. If you are sure that a composite material has been used as restoration in all or part of the fissure then you should score the surface as filled. In case of doubt and there is composite material present code the surface/tooth as sealed.

A very important note regarding the coding of caries prevalence:

In this survey we will be collecting both tooth and surface data. The diagnosis for the entire tooth (according to the coding) will be performed first. **IF** the diagnosis for the tooth is "unerupted" [code 0], "sound" [codes 1 & 7], "missing due to caries" [code 4], "missing due to other reasons" [code 5], and "crowned" [codes E & R] **THEN it IS NOT** necessary to carry-out a surface by surface diagnosis/recording. The recorder will leave the corresponding cells "empty" and the examiner will move to the next tooth. Expressed in a different way, only teeth diagnosed as "decayed," "filled," "fractured," and "sealed" will have diagnosis at surface level.

Dental Fluorosis:

In this survey, we will measure the prevalence of dental fluorosis, not its severity. In consequence, we will record only the presence/absence of the disease using a 0/1 coding. An examiner will call fluorosis present [code 1] if **at least two teeth** show one or more of the following:

- 1) white transversal striae following the incremental lines of the enamel;
- 2) irregularly shaped white spots in any surface of the tooth;
- 3) pitting, with or without stain;

otherwise, the cell should be recorded as [0].

Special diagnostic and clinical situations during examination for dental fluorosis:

1. Only fully-erupted teeth are scored, using a good source of artificial light. The teeth should not be dried before scoring.
2. A tooth is not evaluated for fluorosis if one-third or more of the visible enamel area is replaced with a restoration or is destroyed by caries or covered with an orthodontic band.
3. Staining per se is not a diagnostic criterion for fluorosis.
4. Fluorosed teeth do not erupt with pits. Instead, pitting occurs posteruptively when the teeth are subjected to masticatory forces. A pit is defined as a discrete, focal loss of the outermost enamel. The defect is partly or wholly surrounded by a wall of enamel. Initially, the enamel wall is usually intact. With wear, however, the enamel wall can be abraded away, so that often only part of the enamel can be detected. In contrast

to intact enamel on which the explorer tip can be moved easily across the smooth surface, pitted areas demonstrate a definite physical defect in which the base of the defective area may be either carious or sound. If it is sound, the base of the pit is rough and offers resistance to the lateral movement of the explorer tip, and a scratchy sound is detected when the explorer is moved across it. If the base is carious, it demonstrates softness upon being probed with moderate pressure. The pitted area is usually stained or demonstrates a different color compared with the surrounding enamel.

Treatment Urgency:

- [0] No obvious need for present treatment: The child is caries-free or had one or more restorations in good clinical status. The parents/guardian will be advised to keep a regular (six months) appointment with a dentist.
- [1] Schedule Visit: The child had one or more carious lesions or defective/broken restorations, secondary caries, or teeth with fractures involving enamel and enamel/dentin without pulp involvement. Children with need for space maintainers, sealants, and presence of calculus should be included here. The parents/guardian will be advised to schedule a dental appointment within the following 2-3 weeks.
- [2] Urgent: The child had extensive carious lesions with possible pulpar involvement, pain in any of his or her teeth, or clinical signs of infection. The parents/guardian will be advised to schedule a dental appointment as soon as possible.

Appendix C Guyana Oral Health Survey of School Children

Duplicate	Update	Date	Examiner	Recorder
Region	District	School	Grade	ID
Gender	Race	Date birth	Age	

	Tooth	Mesial	Occlusal	Distal	Buccal	Lingual
UR17						
UR16						
UR15						
UR14						
UR13						
UR12						
UR11						
UL21						
UL22						
UL23						
UL24						
UL25						
UL26						
UL27						
LL37						
LL36						
LL35						
LL34						
LL33						
LL32						
LL31						
LR41						
LR42						
LR43						
LR44						
LL45						
LR46						
LR47						

Fluorosis	Txurgency		
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