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Report #1

**Documentation: Editing and Processing of
1984 Jamaican Household Expenditure Survey***

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Introduction

The objective of the editing procedure for the 1984 Jamaican Household Expenditure Survey was to provide a set of household and expenditure data useful for analytical purposes. The editing process was applied separately to the three "panels" of the 1984 survey. The original data tapes provided by the Statistical Institute of Jamaica (STATIN) were in essentially the same format for each panel, allowing the computerized "editor" to process the survey records of all three panels with no modification. Applications of this computerized editor resulted in screens, checks, and "fix-ups" applied uniformly to all the sample data. It was anticipated that the overall record quality for the survey would be quite high due to preliminary editing and analysis of the tapes provided by STATIN. This premise was sustained, in general, through a complete examination of all survey records for the three panels. Screens, checks, and fix-ups applied by the editor were based on consultation with STATIN. No screen or adjustment in the survey data was made without approval of STATIN.

Procedure

Using the record layout and the data format provided by STATIN, a series of screens were applied to the data to detect probable errors and inconsistencies. In most cases, when errors or inconsistencies were detected, the computerized editor applied a standard fix-up, based on guidelines provided by STATIN. However, such "corrections" were only possible when the required information could be provided, either by STATIN directly or by imputation according to their instructions, from other information in the records on the tape. As a result of the cleaning and editing process, records were flagged as:

- 1) uncorrected,
- 2) corrected, or
- 3) deleted.

Uncorrected records were those the editor read and "passed" using the applicable screens. Corrected records were changed or altered according to standard procedures after the editor found them not to pass the applicable screens. And, deleted records did not pass the screens, could not be altered by the standard procedures, and were therefore eliminated from the edited data set.

Thus, the edited data sets contained only uncorrected and correct records. A new field was created in each edited record in this data set to identify clearly the changes made in the original records. In position 80 of each record in the files containing the edited data sets, a "C" for corrected or a "U" for uncorrected was coded. Also, corrected and deleted records were placed in two separate files or data bases. These corrected and deleted records are available for examination on the tapes that contain the edited data sets. The layouts for the edited survey data set and the above defined related data files are provided in Appendix A.

Cleaning and Editing Screens Applied

The cleaning and editing process involved a number of checks and screens, ranging from those designed to detect copying errors to those involving imputation and verification of consistent hand calculators. In all, 15 of these general editing procedures were applied. Detailed specifications for these edits are provided below.

- 1) Survey section field positions 13-15 were examined.
- 2) Parish, constituency, and enumeration district codes from the identification field, positions 1 through 12, were examined for validity.

3) Survey type code (A or B) position 22 of each record were examined. In the identification field, several identification codes were found to be in error and appropriate codes were provided by STATIN. This information was substituted for the faulty data. Several subfields of the identification field were examined individually. Specifically, the parish, constituency, and enumeration district codes were compared to a list of valid codes. If the codes were invalid, the record was deleted. Records having invalid section codes or survey type codes that could not be changed based on discussions with STATIN personnel were also deleted. In cases, where validated section codes did not match the validated survey type codes, the survey type code was changed to correspond to the appropriate section code and the record was flagged as corrected.

4) The survey section and survey type fields were examined for all records. In situations where an improper survey section was recorded for the survey type, the survey type field was altered to reflect the proper survey type.

5) A read error check was applied to all records. Each numeric field identified by the "record layout" provided by STATIN was checked to verify that only numeric characters were present. If nonnumeric data were present in the numeric only field, the record was deleted.

6) Price, quantity, and value information were checked for consistency in Sections 5 through 10 (weekly Section 9) and 61. In this edit, if the coded value was reasonable but the price times quantity did not equal the reported value, then, assuming the coded quantity and values were correct, a new "imputed" item price was calculated. A potential problem of this procedure involved the lack of a more careful examination of the quantity information. The new item price was substituted for the item and it was flagged as being

corrected. This process for correcting prices was recommended and approved by STATIN.

7) An item value check was applied to all expenditure sections of the survey. All records from Sections 3, 5 through 13, and 61 were examined for possible errors in the item values. A two-step process was employed in examining these values. First, a "reasonableness bound" was established for each of the sections and the period of reporting for the items. The lower value of the reasonableness bound for all sections was set at zero. The upper value of the bound for the expenditure records varied according to the reporting period for the item. The upper value of the bound for weekly reported data in Sections 3, 5, 6, and 9 was set at \$100; the upper bound for annual values in Section 7 was set at \$30,000; the upper bound for annual values in Sections 8, 9 and 10 was set at \$4,800; the upper bound for values in Sections 11, 12, and 13 varied according to the recording period (\$100-weekly:\$400-monthly:\$1,200-quarterly:\$4,800-annually); the upper bound for the annual values in Section 61 was set at \$1,000. In each case, the recorded item values were checked to determine if they were within the predetermined bounds. If so, the item values were admitted to the edited data set. If the values fell outside the bounds, the values were determined unreasonable and a "price times quantity equals value" expression calculated from other information on the record was evaluated for validity. If the price times quantity value fell within the pre-established bounds, this figure was substituted for the coded value and the item was flagged as being corrected. If the price times quantity value fell outside the bounds, then the item was flagged for deletion.

8) Period information for item values in the records of Sections 7, 11, 12, and 13 was viewed as critical for the processing and analysis of the

survey data. All annualized data were based upon the reported or coded period codes. Errors in the period code caused the item to be flagged for deletion from the sample. Annualization of the expenditure was necessary for comparability of expenditures between sections, since the survey requested expenditure information for different time periods.

9) Evaluations of inconsistencies between the record section fields (positions 13-14), and the record section portion of the item code fields were reconciled for Sections 4 through 13, 15, 16, and 17 by placing the record section codes into the appropriate positions in the item code field. It was felt by STATIN that the record section field was the more accurate.

10) An item code check was applied to the survey data for Sections 4 through 13, 15, 16, and 17. Item codes present in all item fields for the above sections were compared to a complete list of all valid item codes for each survey section provided by STATIN. If the item code in the record did not match a valid item code, then the item was deleted. Preliminary processing revealed for some records the first two digits of the item codes for selected records were not the same as the section codes for the records (see 9 above). When this inconsistency occurred, the first digits of the item codes were changed to those of the section codes and the "constructed" item codes were reexamined using the above process. If the constructed item code was valid, the item was flagged as having been corrected with the new constructed item code substituted for the initial one. For multiple items per record, this check was used in assessing the overall quality of the record. If all items on a record were invalid, the record was flagged for deletion.

11) All the income information in Section 17 was checked to determine if the values reported were greater than \$90,000. If this was true, the income

values were changed to missing and the record was flagged corrected.

12) Section 4 records were checked for valid regularity of purchase codes. When an invalid regularity of purchase code was encountered, the code was changed to 12, indicating an unspecified value.

13) When an invalid outlet code in Section 4 was present, the code was changed to 29, indicating an unspecified value.

14) A similar check to the one used for the item codes was applied to determine valid unit quantity measure codes for Sections 5, 6, 9, and 10. Valid codes for all survey sections ranged from "01" to "32." If a measure code was invalid for a record, it was changed to " " (blank). These errors in the quantity measure codes were viewed as noncritical for the expenditure analysis. However, the records were flagged as being corrected when a fix-up was made. This flagging will indicate possible problems with quantity codes if, for example, food price tables are to be compiled from Section 5 records. For screens 11, 12, 13, and 14, the quantity code errors were viewed as noncritical and the records were included in the edited data set but flagged as corrected.

15) Savings data for the Section 14 records were checked to assure that the different savings categories summed to the "total" field value. A "control total" was calculated from the individual categories, and if this value did not equal the "total" value, the control was substituted and the record was flagged as corrected.

Editing Summary

The computerized editing procedure was developed to clean the large data set based on a set of prespecified general rules and guidelines. The alternative to computerized editing is to review all records and individually clean the records using available original survey schedules, price indices,

and subjective evaluations. Of course, this would be an unmanageable task. General rules for the editing were provided by STATIN. All substantive changes in the records were made based on guidelines from STATIN. As well, records changed were flagged in the final edited survey data set.

Reviewing the results of the editing process showed that the overall quality of the edited data set was superior to the original data set. The specific results of the editing process are provided in tabular form in Appendix B. The appendix tables summarize error and correction rates by survey section. In all three of the 1984 panels, fewer than 1 percent of the records were deleted. It is not likely that the deleted records will significantly change the statistics developed from the survey. Also, the changed records used information and judgments from individuals at STATIN who have been involved for a number of years with the surveys and the hand editing. The value of the survey was increased by the cleaning and editing process, and analyses of the edited data can be viewed with greater confidence.

Appendix A

Edited Data Tapes

There are two tapes with files that contain the edited, corrected, deleted, and computed variable records for all six survey sample periods. All edited records are structured in the same format as the original Household Expenditure Survey records provided by the Statistical Institute of Jamaica (STATIN). Field positions for the codes and data have been left exactly as they were prior to editing. All changes in the edited files have been made by the computerized editor. Therefore, any processing of the edited survey data can follow the original record layouts for each survey section (see Department of Statistics Record Layout, STATIN).

The files on the data tapes that contain corrected and deleted records from the Household Expenditure Survey are composed of two 80 byte records for each corrected or deleted original survey record. For the corrected records the following information is provided:

Record #1: Corrected Survey Record

Record #2:

Position:

1-6: The relative position number of the record from the original survey information.

10-24: Fifteen error flags indicating whether the errors checked for by the computerized editor occurred. Each flag is coded as a 0 or 1. The value 0 indicates that an error of that type (1-15) did not occur for the record and a value of 1 indicates that an error occurred.

30-44: Fifteen correction flags indicating whether the errors checked for by the editor were corrected by the

editor. Each flag is coded 0 or 1, corresponding to the error flags. For example, correction flag 1 position 30 is the correction indicator for error flag 1 position 10. A value 1 indicates that the error detected by the editor was corrected. All errors detected are corrected for records in these files.

45-46: The section number from the Household Expenditure Survey record.

Files that contain deleted records follow the same record layout of the files that contain the corrected records, with two modifications. First, record #1 is the original Household Expenditure Survey record as it appeared to the editor. This repetition of the record is designed to allow reviewers and future users of these records the option of determining the nature of the problems that caused these included records to be flagged for deletion. Second, at least one error type 1-15 occurred that was sufficient for the record to be deleted. This implies that at least one of the error flags has a value of 1, and that the corresponding correction flag is 0.

Computed variables for the 1984 Jamaican H.E.S. are provided in the following format:

Record #1:

Position:

1-12: Household Identification Number
 15-16 Area Code (1=Kingston Metropolitan Area; 2=Other Towns; 3=Rural Areas)
 20-21: Age of Household Head
 25-28: Occupation Code of Household Head
 30: Employment Status of Household Head
 32-33: Actual Count Family Size

- 35-36: Stratum
(1=Kingston M.A.; 2=Montego Bay;
3=Spanish Town; 4=Portmore;
5=May Pen; 6=Mandeville; 7=Rural
8=Other Towns)
- 39-45: Reported Annual Household Income
- 49-50: Household Head Occupation Class
- 51-60: Annual Household Food Expenditure
(Purchased Plus Home Produced Food
- 61-70: Annual Household Goods and Fuel
Expenditure
- 71-80: Annual Household Operating
Expenditure
- Record #2:
- Position:
- 1-10: Annual Household Durable Goods
Expenditures
- 11-20: Annual Household Personal Care
Expenditure
- 21-30: Annual Household Health Care
Expenditure
- 31-40: Annual Household Clothing
Expenditure
- 41-50: Annual Household Transportation
Expenditure
- 51-60: Annual Household Recreation
Expenditure
- 61-70: Annual Household Miscellaneous
Expenditure
- 71-80: Total Annual Household
Expenditure

Record #3:

Position:

1-10: Annual Household Breakfast
Expenditure

11-20: Annual Household Lunch
Expenditure

21-30: Annual Household Dinner
Expenditure

31-40: Annual Household Purchased Food
Expenditure

41-50: Annual Household Home Produced
Food Expenditure

Additional machine generated material as part of Appendix A are provided
as follows:

- 1) A hard copy of the editing program.
- 2) Two computer tapes that contain files on a) edited survey data sets, b) corrected records, c) deleted records, and d) computed annual household variables:

Tape #1:

File #1: Edited 1984 Panel 1 Data

File #2: Edited 1984 Panel 2 Data

File #3: Edited 1984 Panel 2 Data

File #4: Corrected 1984 Panel 1 Data

File #5: Corrected 1984 Panel 2 Data

File #6: Corrected 1984 Panel 3 Data

File #7: Deleted 1984 Panel 1 Data

File #8: Deleted 1984 Panel 2 Data

File #9: Deleted 1984 Panel 3 Data

Tape #2:

File #1: Computed 1984 Annual Household
Data

Note: Both tapes are standard label with the files recorded in EBCDIC at 1600 bpi. All files have a logical record length (LRECL) of 80 bytes and a blocksize (BLKSIZE) of either 32000 or 6160 bytes. Corrected and deleted records are blocked at 6160 bytes, while all other files are blocked at 3200 bytes.

Appendix B

The tables in Appendix B reflect a cross tabulation of error and correction flags by survey section. Their purpose is to identify by error screen and particular survey section, where the errors occurred most frequently. Tables are produced for both the corrected and deleted survey records and from the combined panels of the 1984 survey.

The vertical (row) dimension of the tables includes a numeric representation of the screens (1-15), while the horizontal (column) dimension indicates the survey section (SECTION). The reported screen variables (ERROR and CORRECT) were developed by utilizing the two sets of "flag" information maintained for each corrected and deleted record. When an "error flag" had a value of 1, an error screen variable ERROR was assigned a value corresponding to the error flag's relative position (e.g., when error flag 4 equaled 1 the ERROR equaled 4). The same procedure was followed in assigning the values to CORRECT, using the "correction flags." Therefore, each file of corrected or deleted records can be used to produce two cross tabulation tables. The ERROR by SECTION tables tabulate the number of times a specific error flag was 1 for each survey section and the CORRECT by SECTION tables tabulate the number of times this specific error flag was 1 for each survey section.

For files containing corrected records, the two tables will be the same because all errors for these records have been corrected. However, the files of deleted records had at least one screen detect a potential problem that was sufficient for the record to be deleted. In these situations, the number of times an error occurred by survey section will not equal the number of times that it was corrected by the editor, and corresponding cell frequency statistics will be different. Deleted records always show that an

uncorrectable error occurred. Correction statistics for invalid survey sections are not supplied.

These tables are designed so that a summary can be provided of the types of errors occurring in each of the survey sample periods. Cell frequencies of the ERROR by SECTION tables provide frequencies of counts of number of times the error was corrected by survey section. In the ERROR by SECTION tables individual cell row percentages measure how the errors are distributed by survey section. The interpretations of the CORRECT by SECTION tables are similar except that corrected errors are tabulated instead of errors. By combining the information in both sets of tables, a comprehensive evaluation of the error detection and correction process may be made.

Records in the corrected files appear primarily to be from survey sections 4 and 5. The correctable types of problems associated with the section 4 records pertain to erroneous regularity of purchase codes (error flag 12), implying that many values for these codes were outside the valid range and were set to values indicated by the text. Food records from section 5 were most often corrected for values not equal to "price times quantity" (error flag 6) and for bad measure codes (error flag 14). Generally, records in the deleted files were placed there because of invalid household identification numbers and uncorrectable price times quantity (value) errors. The household identification problems are likely linked to data entry errors, while the value errors may be data entry related or produced by enumerator calculations. Another set of tables that could be produced from the deleted records would include only those records that have valid section numbers. This partitioning of the deleted records file would permit a more complete assessment of types of problems that caused the survey section records to be deleted.

TABLE OF ERROR CODES BY RECORD SECTION
DELETED RECORDS: 1984

TABLE OF ERROR BY SECTION

ERROR	SECTION	TABLE OF ERROR BY SECTION										TOTAL
		0	1	2	3	4	5	6	7	8	9	
1	1	25.00 100.00	25.00 100.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	4
2	1	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	37 82.22	1018 66.41	46 92.00	21 5.82	45 12.03	27 24.52	1533
3	1	0.00 0.00	0.00 0.00	3 50.00	1 20.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	5
5	0	0.00 0.00	0.00 0.00	3 50.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	1 25.00	0.00 0.00	0.00 0.00	4
6	0	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	62 7.76	2 4.00	326 40.80	320 40.00	36 4.51	799
7	0	0.00 0.00	0.00 0.00	0.00 0.00	14 7.29	0.00 0.00	42 21.88	2 1.04	11 5.73	7 1.87	39 20.31	192
TOTAL (CONTINUED)		1	1	6	15	45	1131	50	361	374	111	2854

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TABLE OF ERROR CODES BY RECORD SECTION
 DELETED RECORDS: 1984

TABLE OF ERROR BY SECTION

ERROR FREQUENCY ROW PCT COL PCT	SECTION											TOTAL	
	.	0	1	2	3	4	5	6	7	8	9		
8	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71
9	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11
10	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	212
11	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5
12	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8
14	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10
TOTAL (CONTINUED)		1	1	6	15	45	1131	50	361	374	111		2854

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TABLE OF ERROR CODES BY RECORD SECTION
DELETED RECORDS: 1984

TABLE OF ERROR BY SECTION

ERROR	SECTION										TOTAL
	10	11	12	13	14	15	16	17	50	61	
FREQUENCY ROW PCT COL PCT											
1	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	2 50.00	0 0.00	4
2	217 14.16 58.18	333 12.23	15 51.72	26 50.98	21 100.00	4 0.26	12 0.78	16 94.12	0 0.00	5 11.36	1533
3	1 20.00 0.27	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	5
5	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	4
6	28 3.50 7.51	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	25 56.82	799
7	31 16.15 8.31	18 9.57	6 3.13 20.69	10 5.21 19.61	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	12 27.27	192
TOTAL (CONTINUED)	373	188	29	51	21	22	12	17	2	44	2854

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TABLE OF ERROR CODES BY RECORD SECTION
 DELETED RECORDS: 1984

TABLE OF ERROR BY SECTION

ERROR	SECTION										TOTAL	
	10	11	12	13	14	15	16	17	50	61		
FREQUENCY ROW PCT COL PCT												
8	0 0.00	67 94.37 55.64	0 0.00	2 2.82 3.92	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	71
9	54 54.55 1.61	0 0.00	1 3.09 3.45	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	1 9.09 2.27	11
10	39 39.84 22.52	80 37.74 42.55	7 3.30 24.14	13 6.13 25.49	0 0.00	13 59.09	0 0.00	1 0.47 5.88	0 0.00	0 0.00	1 0.47 2.27	212
11	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	5 100.00 22.73	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	5
12	0 0.00	0 0.00	0 0.00	6 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	8
14	60 60.00 1.61	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	0 0.00	10
TOTAL	373	188	29	51	21	22	12	17	2	44	2854	

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TABLE OF CORRECTED ERROR CODES BY RECORD SECTION
 DELETED RECORDS: 1984

TABLE OF CORRECT BY SECTION

CORRECT FREQUENCY ROW COL	SECTION													TOTAL
	4	5	6	7	8	9	10	11	12	13	15	61		
3	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	100.00 3.03	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	1
6	0.00 0.00	39.08 89.47	2.30 100.00	6.90 100.00	3.62 75.00	1.17 73.91	21.19 57.58	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	6.90 75.00	6	87
7	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	10.54 17.39	0.00 0.00	47.18 21.18	15.79 85.71	26.10 83.33	0.00 0.00	0.00 0.00	0	38
8	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	97.10 78.82	0.00 0.00	2.90 16.67	0.00 0.00	0.00 0.00	0	69
9	0.00 0.00	9.09 2.63	0.00 0.00	0.00 0.00	9.09 25.00	9.09 4.35	54.56 18.18	0.00 0.00	9.09 14.29	0.00 0.00	0.00 0.00	9.09 12.50	1	11
10	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	50.00 3.03	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	1	2
11	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	100.00 100.00	0.00 0.00	5	5
12	100.00 100.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0	8
14	0.00 0.00	30.00 7.89	0.00 0.00	0.00 0.00	0.00 0.00	10.00 4.35	6.00 18.18	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0	10
TOTAL	8	38	2	6	4	23	33	85	7	12	5	8	231	

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TABLE OF ERROR CODES BY RECORD SECTION
 CORRECTED RECORDS: 1984

TABLE OF ERROR BY SECTION

ERROR	SECTION									TOTAL
	3	4	5	6	7	8	9	10		
3	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	1
4	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	14
6	0 0.00 0.00	0 0.00 0.00	5805 60.19 76.37	326 3.32 98.19	976 10.13 98.86	226 2.34 100.00	195 2.02 91.55	1557 16.14 98.98		9645
7	100 28.49 100.00	0 0.00 0.00	0 0.00 0.00	1 0.28 0.50	11 3.13 1.11	0 0.00 0.00	10 2.85 4.69	2 0.57 0.13		351
8	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00		231
9	0 0.00 0.00	2 6.67 0.03	5 16.67 0.07	2 6.67 0.60	0 0.00 0.00	0 0.00 0.00	3 10.00 1.41	0 0.00 0.00		30
TOTAL	100	7453	7601	332	987	226	213	1573		19648

(CONTINUED)

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TABLE OF ERROR CODES BY RECORD SECTION
CORRECTED RECORDS: 1984

TABLE OF ERROR BY SECTION

ERROR	SECTION								TOTAL	
	FREQUENCY ROW PCT COL PCT	3	4	5	6	7	8	9		10
10	0 0.00 0.00	2 2.06 0.03	0 0.00 0.00	3 3.09 0.90	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	2 2.06 0.94	0 0.00 0.00	97
11	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	17
12	0 0.00 0.00	7435 100.00 99.76	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	7435
13	0 0.00 0.00	14 100.06 0.19	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	14
14	0 0.00 0.00	0 0.00 0.00	1791 99.06 23.56	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	3 0.17 1.41	14 0.77 0.89	1808
15	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	5
TOTAL		100	7453	7601	332	987	226	213	1573	19648

(CONTINUED)

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TABLE OF ERROR CODES BY RECORD SECTION:
CORRECTED RECORDS: 1984

TABLE OF ERROR BY SECTION

ERROR	SECTION									TOTAL
	11	12	13	14	15	16	17	61		
FREQUENCY ROW PCT COL PCT										
3	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	1 100.00 16.67	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	1
4	0 0.00 0.00	0 0.00 0.00	1 7.14 2.27	0 0.00 0.00	6 42.86 21.43	2 14.29 2.47	5 35.71 83.33	0 0.00 0.00	0 0.00 0.00	14
6	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	560 5.81 98.77	0 0.00 0.00	9645
7	145 41.31 39.40	40 11.40 63.49	35 9.97 79.55	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	7 1.99 1.23	0 0.00 0.00	351
8	216 93.51 58.70	7 3.03 11.11	8 3.46 18.18	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	231
9	4 13.33 1.09	11 36.67 17.46	0 0.00 0.00	0 0.00 0.00	2 6.67 7.14	0 0.00 0.00	1 3.33 12.67	0 0.00 0.00	0 0.00 0.00	30
TOTAL	368	63	44	6	28	81	6	567		19648

(CONTINUED)

TABLE OF ERROR CODES BY RECORD SECTION
CORRECTED RECORDS: 1984

TABLE OF ERROR BY SECTION

ERROR	SECTION									TOTAL
	11	12	13	14	15	16	17	61		
FREQUENCY ROW PCT COL PCT										
10	3 3.09 0.82	5 5.15 7.94	0 0.00 0.00	0 0.00 0.00	3 3.09 10.71	79 81.44 97.53	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	97
11	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	17 100.00 60.71	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	17
12	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	7435
13	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	14
14	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	1808
15	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	5 100.00 83.33	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	5
TOTAL	368	63	44	6	28	81	6	567		19648

TABLE OF CORRECTED ERROR CODES BY RECORD SECTION
 CORRECTED RECORDS: 1984

TABLE OF CORRECT BY SECTION

CORRECT FREQUENCY ROW PCT COL PCT	SECTION								TOTAL	
	3	4	5	6	7	8	9	10		
3	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	1
4	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	14
6	0 0.00 0.00	0 0.00 0.00	5805 60.19 76.37	326 3.38 98.19	976 10.12 98.89	226 2.34 100.00	195 2.02 91.55	1557 16.14 98.98		9645
7	100 28.49 100.00	0 0.00 0.00	0 0.00 0.00	1 0.28 0.50	11 3.13 1.11	0 0.00 0.00	2 4.65 0.00	10 0.57 0.13		351
8	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	231
9	0 0.00 0.00	2 6.67 0.03	5 16.67 0.07	2 6.67 0.60	0 0.00 0.00	0 0.00 0.00	3 10.00 1.41	0 0.00 0.00		30
TOTAL	100	7453	7601	332	987	226	213	1573		19648

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TABLE OF CORRECTED ERROR CODES BY RECORD SECTION
 CORRECTED RECORDS: 1984

TABLE OF CORRECT BY SECTION

CORRECT FREQUENCY ROW COL PCT PCT	SECTION									TOTAL
	3	4	5	6	7	8	9	10		
10	0 0.00 0.00	2 2.06 0.03	0 0.00 0.00	3 3.09 0.90	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	2 2.06 0.94	0 0.00 0.00	97
11	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	17
12	0 0.00 0.00	7435 100.00 99.76	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	7435
13	0 0.00 0.00	14 100.00 0.19	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	14
14	0 0.00 0.00	0 0.00 0.00	1791 99.06 23.56	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	3 0.17 1.41	14 0.77 0.89	1803
15	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	5
TOTAL	100	7453	7601	332	987	226	213	1573		19648

(CONTINUED)

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TABLE OF CORRECTED ERROR CODES BY RECORD SECTION
 CORRECTED RECORDS: 1984

TABLE OF CORRECT BY SECTION

CORRECT FREQUENCY ROW PCT COL PCT	SECTION								TOTAL	
	11	12	13	14	15	16	17	61		
3	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	1 100.00 16.57	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	1
4	0 0.00 0.00	0 0.00 0.00	1 7.14 2.27	0 0.00 0.00	6 42.86 21.43	2 14.29 2.47	5 35.71 63.53	0 0.00 0.00	0 0.00 0.00	14
6	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	560 5.81 98.77	0 0.00 0.00	9645
7	145 41.31 39.40	40 11.40 63.49	35 9.97 79.55	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	7 1.99 1.23	0 0.00 0.00	351
8	216 93.51 58.70	7 3.03 11.11	8 3.46 18.18	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	0 0.00 0.00	231
9	4 13.33 1.09	11 36.67 17.46	0 0.00 0.00	0 0.00 0.00	2 6.67 7.14	0 0.00 0.00	1 3.33 16.67	0 0.00 0.00	0 0.00 0.00	30
TOTAL	368	63	44	6	28	81	6	567	19648	

(CONTINUED)

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TABLE OF CORRECTED ERROR CODES BY RECORD SECTION
 CORRECTED RECORDS: 1984

TABLE OF CORRECTY BY SECTION

CORRECT		SECTION								TOTAL
FREQUENCY	ROW PCT	11	12	13	14	15	16	17	61	
COL PCT										
10	3.09 0.82	3 5	5.15 7.94	0.00 0.00	0.00 3.00	3.09 10.71	81.79 97.53	0.00 0.00	0.00 0.00	97
11	0.00 0.00	0 0	0.00 0.00	0.00 0.00	0.00 0.00	17 60.71	0.00 0.00	0.00 0.00	0.00 0.00	17
12	0.00 0.00	0 0	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	7435
13	0.00 0.00	0 0	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	14
14	0.00 0.00	0 0	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	1808
15	0.00 0.00	0 0	0.00 0.00	0.00 0.00	5 83.33	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	5
TOTAL		368	63	44	6	28	81	6	567	19648

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