SURVEILLANCE OF RESPIRATORY DISEASE ACROSS THE MINING INDUSTRY USING THE AUTOPSY (PATHAUIT) DATABASE

Project Number: GEN509
Date: December 1998
Safety in Mines Research Advisory Committee

Final Report: Part III

NATIONAL CENTRE FOR OCCUPATIONAL HEALTH

Surveillance of respiratory disease across the mining industry using the autopsy (PATHAUT) database

Procedures manual

Jill Murray, Eva Hnizdo, Lizel Coetzee

Research Agency: National Centre for Occupational Health
Project Number: GEN 509
Date: December 1998
WORKING WITH SAS

A. General information ................................................................. 1

B. Running a session .................................................................. 3
   SAS Statements .................................................................... 3
   Setting up a SAS dataset .................................................... 3
      1. Data name
      2. Infile statement
      3. Input statement
      4. Formats
      5. Assignment statement/creating new variables

C. SQL (Structured Query Language) ......................................... 5

D. Methods & Reports ................................................................ 6

1. Autopsies
   Table 1 Distribution of autopsies by age & ethnic group .......... 7
   Table 2 Mean & SD for ages in the different ethnic groups ...... 10
   Table 3 Distribution of autopsies by type & ethnic group ....... 11
   Table 4 Autopsies sent in by different mines .................... 14

2. Exposures
   Table 5 Distribution of autopsies by mine type and ethnic group 18
   Table 6 Distribution of autopsies by years of service and ethnic group 21
   Table 7 Years of service in goldmines by ethnic group .......... 23
   Table 8 Years of service in coal mines by ethnic group ....... 26
   Table 9 Years of service in platinum mines by ethnic group ... 29
   Table 10 Years of service in asbestos mines by ethnic group ... 32
   Table 11 Percentage of cases with missing years of service by minetype and ethnic group .... 34
   Table 12 Mean years of service by ethnic group and type of mining .... 38

3. Tuberculosis
   Table 13 Distribution of active tuberculosis by site .............. 41
   Table 14 Severity of active PTB by race ............................... 44
   Table 15 Clinico-pathological correlation in the diagnosis of active PTB ... 47
   Table 15b TB mentioned clinically but not confirmed by pathologist ... 47
   Table 16 Severity of active PTB where TB was mentioned but not confirmed ... 50
   Table 17 Distribution of active pulmonary tuberculosis by age and ethnic group ... 53
   Table 18 Distribution of active pulmonary tuberculosis by industry and ethnic group ... 58
   Table 19 Distribution of active PTB by exposure time and ethnic group .... 63

4. Silicosis
   Table 20 Distribution of silicosis by site & ethnic group .......... 66
   Table 21 Distribution of silicotic islets by age & severity & ethnic group .. 69
   Table 22 Distribution of silicotic islets by age & ethnic group ...... 72
   Table 23 Distribution of silicotic islets by industry & ethnic group ...... 77
   Table 24 Distribution of silicotic islets by exposure time & ethnic group ... 82
5. Massive Fibrosis
Table 25 Distribution of massive fibrosis by age & ethnic group..............................85
Table 26 Distribution of massive fibrosis & silicosis by age & ethnic group..................89
Table 27 Distribution of massive fibrosis by industry and ethnic group.......................92
Table 28 Distribution of massive fibrosis by exposure time & ethnic group...................97

6. Coalworker's pneumoconiosis
Table 29 Distribution of coalworker's pneumoconiosis by ethnic group....................100
Table 30 Distribution and prevalence rates of coalworker's pneumoconiosis by age and ethnic group..............................................102
Table 31 Distribution and prevalence rates of coalworker's pneumoconiosis by industry and ethnic group.....................................107
Table 32 Distribution of coalworker's pneumoconiosis by exposure time and ethnic group..............................112

7. Mixed dust fibrosis
Table 33 Distribution and prevalence rates of mixed dust fibrosis by age and ethnic group.................................................................115
Table 34 Distribution and prevalence rates of mixed dust fibrosis by industry and ethnic group......................................................119
Table 35 Distribution of mixed dust fibrosis by exposure time and ethnic group...........124

8. Asbestosis
Table 36 Distribution of asbestosis by ethnic group...................................................127
Table 37 Distribution and prevalence rates of asbestosis by age and ethnic group........129
Table 38 Distribution and prevalence rates of asbestosis by industry and ethnic group...134
Table 39 Distribution of asbestosis by exposure time and ethnic group.......................139
Table 40 Asbestotic plaques by ethnic group..........................................................142

9. Emphysema
Table 41 Severity of emphysema by ethnic group......................................................144
Table 42 Distribution and prevalence rates of emphysema by age and ethnic group........147
Table 43 Distribution and prevalence rates of emphysema by industry and ethnic group...151
Table 44 Distribution of emphysema by exposure time and race..............................156

10. Mesothelioma
Table 45 Distribution and prevalence rates of mesothelioma by age and ethnic group.................................................................159
Table 46 Distribution and prevalence rates of mesothelioma by industry and ethnic group......................................................164
Table 47 Distribution of mesothelioma by exposure time and ethnic group..................169

11. Primary Lung Cancer
Table 48 Distribution of primary lung cancer by ethnic group..................................172
Table 49 Distribution of other lung tumours by ethnic group....................................174
Table 50 Distribution and prevalence rates of primary lung cancer by age and ethnic group..............................177
Table 51  Distribution and prevalence rates of primary lung cancer by industry and ethnic group ................................................................. 181
Table 52  Distribution of primary lung cancer by exposure time and ethnic group ........ 186

12. Causes of death
   Table 53  Causes of death by ethnic group ................................................................................................................................. 190

Appendices
Appendix A  List of variable names/fields
Appendix B  Pathology Examination Booklet with variable numbers
Appendix C  Old causes of death classification
Appendix D  New causes of death classification
Appendix E  Other codes as used on PATHAUT
Appendix F  Data as exported from PATHAUT
Appendix G  Formats as used in the SAS programme
Appendix H  List of new variables created on SAS
Appendix I  Variables used for the different diseases
Appendix J  Complete printed out SAS programme
Appendix K  List of all the tables created on SAS
Appendix L  Programmes written with SQL to create tables
Appendix M  Tables as printed out by SAS in SQL Query Window
Appendix N  List of autopsies sent by the different mines
WORKING WITH SAS

This manual gives detailed procedures for the generation of an annual report based on the pathology data generated from the autopsy examination of all respiratory organs submitted for compensation purposes in terms of the ODMW act. The primary purpose of the annual report is to generate data for a medical surveillance system. Surveillance is very important and can be defined as the continued watchfulness over the distribution and trends of disease incidence by the systematic ongoing collection, analysis and evaluation of health data, which is closely linked with the timely reporting of the information to all involved, to enable them to institute actions for the control and prevention of disease.

This manual also incorporates procedures which will allow the user to perform queries on the SAS system, concerning any of the PATHAUT database. This will allow for ongoing exchange of specific data with the mine medical services and other interested parties.

A. General Information

The SAS system is a software system for data analysis and report writing. With base SAS software you can store data values and retrieve them, modify data, compute simple statistics, and create reports all in one SAS session. The SAS system works with data. The data must be in a SAS data set to use SAS procedures to analyse them. Before you run a SAS session to perform a task, you need to understand how your data relate to a SAS data set. You can relate your task to the parts of a SAS session, and you therefore need an idea of what you want the SAS System to do before you can put together a SAS session.

To be able to analyze data with the SAS System, one needs to create variables for the system to work with. Each kind of information form a column; and the values of each column make up a variable. For example, the surnames make up the surname variable, and the values for silicotic islets in the lungs (0 or 1 for false or true, named data values) make up the variable for silicotic islets in the lungs (named milsili in this case). As you describe your data to the SAS System, you name each variable. The name you choose for your variable, can contain from one to eight characters. It can contain numbers and letters, but must begin with a letter. Variable names were chosen according to: (1) macroscopic/microscopic results and (2) the site (eg. Regional glands, heart, lungs etc.). For example, the variable named milsipe (microscopic, in the lungs, fungal, pneumonia). All the different variables from the booklet, the names chosen for each variable, and the format of the variable (eg. Date: format=DD/MM/YYYY) on PATHAUT are shown in Appendix A. These variable numbers are also shown on the examination booklet as Appendix B. The old and new codes used for the variables used for causes of death in the booklet, is shown in Appendix C & D respectively and the codes used for other variables in the booklet, are shown in appendix E.

The information about each person (all the variables for one case) makes up an observation in SAS. Most collections of data are made up of many observations, each containing several variables. These collections are SAS data sets. In this case, the 1997 PATHAUT data set has 3208 observations and 272 variables.
When entering the SAS System (c:\windows; c:\win, and in windows, simply click on the appropriate icon) the first thing you see is a set of windows that make up the SAS Display Manager System. The SAS Display Manager (DMS) is the main way of operating the SAS System. It is an interactive, full-screen facility that you view and operate through a series of windows. Display Manager can be used to prepare and submit a program, browse the results and view the log for any notes or error messages, and, if necessary, debug, modify, and resubmit the program. The SAS DMS consists of a number of windows (also called the SAS windowing environment) and numerous commands. Some of these commands can be issued from any window and others are window-specific. The three most important windows in display manager are:

- PROGRAM EDITOR window - preparing, editing and submitting programs
- LOG window - source statements, notes and error messages
- OUTPUT window - the results from the program

You move among windows in the display manager system and execute SAS statements with display manager commands. You can type the command on the command line (next to the ✓) of any window and then press ENTER to submit the command.

When you first enter the system, your terminal screen looks like Screen 1.

Starting at the bottom, the PROGRAM EDITOR is where you enter the SAS statements to be executed. The LOG window displays messages from the SAS System as well as your SAS statements as they are executed. When you first enter the SAS System, the LOG window tells you the SAS release number and the name of the company authorized by SAS Institute to run this version. The OUTPUT window is where results output by SAS procedures are displayed.

Screen1:

<table>
<thead>
<tr>
<th>File</th>
<th>Edit</th>
<th>View</th>
<th>Locals</th>
<th>Globals</th>
<th>Options</th>
<th>Window</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LOG (Untitled)


NOTE: SAS (®) Proprietary Software release 6.12 TS020
Licensed to UNIV. OF THE WITWATERSRAND, Site 0014132002

PROGRAM EDITOR (Untitled)
B. Running a session:

In this case the data is stored on the network drive. It can however be typed in (if data set is small). Data is exported from the PATHAUT database by choosing export (pull down menu) and then choosing booklet. When this option is clicked, the exporting process will start and a progress screen will be displayed. The file boo_asci will be created (if viewed in the write apllication in widows, it looks like the example of one case in Appendix F). When this process is completed, the boo_asci file is available on the network, from the path s:\pathaut\96_97\boo_asci (or in the case of the 1998 data, s:\pathaut\98\boo_asci). SAS will be able to read the file from the network.

It is important to note that all SAS statements end with a semi-colon (;).

SAS Statements

SAS programs are made up of statements. The statements are grouped into steps, of which there are only 2 types:
- DATA steps
- PROC steps (procedure steps)

The DATA step is a group of SAS statements that always begin with the DATA Statement. Use the DATA step to:
- get your data into a SAS data set
- edit the data in SAS data sets and create new variables using SAS programing statements
- print reports according to your requirements

The PROC step is a SAS statement or group of SAS statements which always start with the PROC Statement. PROC steps are used for:
- processing and analysing data in a SAS data set

Setting up a SAS data set

1. Data name
   By giving the data set a name, you are telling SAS where to store your Data Set.
   - If you want to create a SAS data set that you want to store permanently on a directory other than your current directory, you give it a two-level name. You tell the SAS System to store the data sets on this directory. In this case, we use sasuser.pathaut

2. Infile statement
   Specifying the path where SAS must find the data with the Infile statement specifying the logic record length (lrec) of an observation. If not specified, SAS only reads 256 columns. By using the missover statement, it prevents SAS to go to a new input line using the next variable if it does not find a value for that variable in the current line, thus it starts with the first variable in the next line, even if there were no values for the last variables in the previous line. We used the following statement for the 1997 data:

   infile ’s:\pathaut\96_97\boo_asci’ lrec=5-28 missover;

3
3. **Input statement**

The **input** statement includes all the variables and fields chosen. For variables containing characters, a $ comes after the variable name. The fields are specified, if not SAS only reads 8 columns per variable. Character variables consist of 1-200 characters and must be enclosed in quotes. If a character includes a single quote, surround it with double quotes. Character variables that take up more than 200 columns, must be split, as SAS only reads 200 columns. Example: the additional comments in this case, takes up 260 columns, and had to be split up as variables magadco1 $ 422-621 magadco2 $ 622-681. The first character must be a letter or an underscore (_). Subsequent characters may be numbers, letters or underscores (NOTE: there are some names reserved for the SAS System, these start and end with underscores, e.g. _N_, _ERROR_, _Y_NAME_). Blanks and special characters (eg. $, #, @) may not be used in variable names. A constant representing a missing character value consists of a blank enclosed in quotes. The variables, the new variable names chosen, the size of the variable field on PATHAUT, the fields specified for each variable on SAS and the format of the variable, are presented in Appendix A.

4. **Formats**

A **format** is assigned to different variables, for example if a variable has numeric values, a format is assigned to tell SAS to print out these values as something else; for example, variable popcode, will print out 1,2,3 or 4 for the different races, but if a format popfmt. is assigned, it will print out as black, white, coloured or unknown. After the input statement, these formats must be associated with the relevant variables:

In this case: popcode popfmt;

All the different formats assigned for this study, are presented as Appendix G.

5. **Assignment statements/creating new variables**

Assignment statements can be used to create new variables or change variables. This can be done by using **operators**. Operators are symbols that request a comparison, logical operation or arithmetic calculation. The three kinds of operators are:

1. **Arithmetic operators**
   
   Indicate that an arithmetic calculation is performed. The operators are:
   
   
   ** Exponentiation
   * Multiplication
   / Division
   + Addition
   - Subtraction

2. **Comparison operators**

   
   = or EQ Equal to
   ^= or NE Not equal to
   > or GT Greater than
   < or LT Less than
   >= or GE Greater than or equal to
   <= or LE Less than or equal to
   IN Equal to one of a list

3. **Logical operators**

   
   & And
   | Or
   ^ Not (if this symbol is not available, use the symbol -)
Other operators

> < Minimum
כי Maximum
‖ Concatenation

This can be used to create new variables, for example the variable `agegrp`:

- If `age>0` and `age LE 19` then `agegrp='0-19'`; else
- If `age GE 20` and `age LE 29` then `agegrp='20-29'`;

Thus, the new variable, `agegrp` now has new values, eg. 0-19, 20-29, 30-39, 40-49 etc.

New variables were created for a number of variables, and are listed in Appendix H. All the variables chosen to be used for the different diseases can be seen in Appendix I.

A complete printed out program containing all the data step, the infile statement, the input statement, the formats and all the new variables created, is shown in Appendix J. This programme must be opened in the Programme editor and submitted by choosing the icon.

C. **SQL (Structured Query Language)**

The SQL procedure, implements Structured Query Language (SQL) for the SAS System. SQL is a standardized, high-level query language used in relational database management systems, that retrieves and updates data in tables and views based on those tables. The SAS System’s SQL procedure enables you to:

- retrieve and manipulate data stored in tables or views
- create tables, views and indexes on columns in tables
- create SAS macro variables that contain values from rows in a query result
- add or modify the data values in a table’s columns or insert and delete rows. You can also modify the table itself by adding, modifying, or dropping columns.

In Proc SQL terminology, a row in a table is the same as an observation in a SAS data set. A column is the same as a variable. But, because Proc SQL implements Structured Query Language, it works somewhat differently from other base SAS procedures, as described here:

- SQL procedure statements are divided into clauses. For example, the most basic SELECT statement contains the SELECT and FROM clauses. Items within clauses are separated with commas in SQL, not with blanks as in the SAS System. For example, if you list three columns (variables), these are separated with commas
- A Proc SQL statement runs when you submit it, without your specifying a RUN statement. If you follow a Proc SQL statement with a RUN statement, the SAS System ignores the RUN statement and submits the statements as usual.

The SQL query window is a point-click interface to Proc SQL and enables you to have a query done without writing programming statements. It is an interactive interface that enables you to build, save and run queries (requests to retrieve data) without being familiar with SQL or with the SAS System’s SQL procedure. The query that you build in the SQL Query Window is passed to the SQL procedure or to Proc Report for processing when you run the query. The SQL Query Window provides you with the following capabilities:

- You can query SAS files and data from database management systems (DBMS’s) for which the Proc SQL Pass-through facility is available, if you have SAS/ACCESS software installed.
If SAS/CONNECT software is licensed at your site, you can use the SQL Query Window to access data that are stored on remote hosts.

You can use Proc Reports to design a report from your query output without exiting the SQL Query Window.

The structured query language was used to create tables for different preset queries, a list which is given as Appendix K. An example of such a programme is one written to produce a table called 'autagra' (autopsies by age & race), selecting the relevant variables needed to do this particular query:

```
proc sql;
  create table asuser.autagra as
  select agegrp, black, white, coloured, unknown, pathcode, report, lastmine, exptype1,
        expyear, pnumber
  from asuser.pathaut;
```

The programmes for all the different tables can be seen in Appendix L. Once these programmes are submitted the SQL Query Window can be activated by choosing the Q icon.

D Methods & Reports

Once in the SQL Query Window, follow the following instructions to run the different queries as listed in Appendix K. An example of the table as it is printed out in the SAS System, is shown as Appendix M. The following tables are in the Word Perfect 6 format, as it looks after following the steps (from entering the Query Window) listed below each table, to importing & editing in Word Perfect 6. If a query is needed that is not listed as a predefined query, choose from available tables in the Query Window, the name asuser.pathaut or asuser.pathauta for the 1997 or 1998 datasets respectively. These tables will contain all the variables from that dataset (the listed tables only contains the variables needed for the particular query) and any query (including the predefined queries) can be run from these tables.
## 1. AUTOPSIES

### TABLE 1: DISTRIBUTION OF AUTOPSIES BY AGE & ETHNIC GROUP

<table>
<thead>
<tr>
<th>AGEGROUP</th>
<th>BLACK N</th>
<th>WHITE N</th>
<th>COLOURED N</th>
<th>UNKNOWN N</th>
<th>ALL RACES N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>0-19</td>
<td>3</td>
<td>0.1</td>
<td>3</td>
<td>0.3</td>
<td>0</td>
</tr>
<tr>
<td>20-29</td>
<td>165</td>
<td>7.4</td>
<td>26</td>
<td>2.9</td>
<td>0</td>
</tr>
<tr>
<td>30-39</td>
<td>648</td>
<td>29.1</td>
<td>61</td>
<td>6.8</td>
<td>3</td>
</tr>
<tr>
<td>40-49</td>
<td>756</td>
<td>34.0</td>
<td>97</td>
<td>10.8</td>
<td>7</td>
</tr>
<tr>
<td>50-59</td>
<td>352</td>
<td>15.8</td>
<td>177</td>
<td>19.7</td>
<td>19</td>
</tr>
<tr>
<td>60-69</td>
<td>37</td>
<td>1.7</td>
<td>220</td>
<td>24.5</td>
<td>23</td>
</tr>
<tr>
<td>70-79</td>
<td>2</td>
<td>0.1</td>
<td>201</td>
<td>22.4</td>
<td>10</td>
</tr>
<tr>
<td>80-89</td>
<td>0</td>
<td>0.0</td>
<td>97</td>
<td>10.8</td>
<td>7</td>
</tr>
<tr>
<td>90+</td>
<td>1</td>
<td>0.0</td>
<td>5</td>
<td>0.6</td>
<td>1</td>
</tr>
<tr>
<td>Missing</td>
<td>259</td>
<td>11.7</td>
<td>10</td>
<td>1.1</td>
<td>0</td>
</tr>
</tbody>
</table>

TOTAL 2223 897 70 18 3208 100%

### IN SAS PROGRAM

New variable *agegrp* was created from variable *age* to categorize ages into groups:

```sas
if age>0 and age LE 19 the agegrp='0-19';
else if age GE 20 and age LE 29 then agegrp='20-29';
else if age GE 30 and age LE 39 then agegrp='30-39';
else if age GE 40 and age LE 49 then agegrp='40-49';
else if age GE 50 and age LE 59 then agegrp='50-59';
else if age GE 60 and age LE 69 then agegrp='60-69';
else if age GE 70 and age LE 79 then agegrp='70-79';
else if age GE 80 and age LE 89 then agegrp='80-89';
else if age GE 90 then agegrp='90+';
else if age=0 then agegrp='Missing';
```

New variables were created for the races namely: *black, white, coloured, unknown* from variable *popcode*:

```sas
if popcode=1 then Black=1; else
if popcode=2 then White=1; else
if popcode=3 then Coloured=1; else
if popcode=4 then Unknown=1;
```

### IN SAS:

Choose the Q icon (To go into the SQL Query Window)
The table source is *sasuser*
In Available Tables choose the table *sasuser.autagra*
- move this table into the selected tables window by using the ▶
- choose OK

In the available columns window, choose all the relevant columns (variables) (usually everything up to unknown) (agegrp, black, white, coloured, unknown)
- move these to the selected columns window by using the ▶
Highlight black, white, coloured, unknown by clicking on all of them
- go to summary functions and choose count
To add percentage columns:
- go to build a column
- choose summary functions, count, variable black
- choose OK
- choose column attributes
  - Type in at Alias name: bia
    Format: percent15.1
    Label: black%
- choose OK and do the same for the white (whi), coloured(col) and unknown(unk) columns

To add the total column:
- go to build a column
- choose , summary functions, count, black, + count, white, + count, coloured, + count, unknown
- choose OK
- choose column attributes
  - Type in at Alias name: tot
    Format:
    Label: ALL RACES
  - To add a % column for the total column, do the same as for black, white, coloured, unknown, but call it Alias name: tota
    Format: percent15.1
    Label: tot%

To set conditions:
- go to Locals (pull down menu)
- choose where conditions for subset
- choose variable pnumber, other operators, contains, <CONSTANT enter value>
  - type in 1997 (to work only with 1997 cases)
- choose OK, OK

To run report
- Choose Actions (pull down menu)
- Choose Run query, design report, begin with default report, autogroup, yes

For titles:
- Go to globals (pull down menu)
- choose options, titles
  - type in title and close

To choose a predefined report definition:
- Go to file (pull down menu)
- choose open, report definition
- choose in library window: sasuser
catelog window: autopsy
  report window: Distribution of autopsies by age & race
- choose OK
IN REPORT WINDOW:
Go to file (pull down menu)
- choose save, report data
- save this report in library: sasuser
  member: (type in name of file you want to save it under)
  - choose OK

TO CHECK
1. Missing races
   where popcode EQ -
2. Missing race (popcode), but most will be U/D cases.
3. If races are punched in correct:
   Print out list of:
   - all whites with pnumbers & full names
   - all coloureds with pnumbers, full names & bureauino (as they all have C.CP numbers)
   - all blacks with pnumbers & full names
   - some will be mispunched as the wrong race, check by going on the names
   - NB will however not be able to distinguish between coloured & whites on the basis of their names.
4. To check unknown races:
   where: unknown EQ 1
   Print out pnumbers
5. Check all blacks from age 60
   where:
   agegrp EQ 60-69 and black EQ 1
   agegrp EQ 70-79 and black EQ 1
   agegrp EQ 80-89 and black EQ 1
   agegrp EQ 90+ and black EQ 1
6. Check all under the age of 20
   where: agegrp EQ 0-19 and black EQ 1 or agegrp EQ 0-19 and white EQ 1 or agegrp EQ 0-19 and coloured EQ 1 or agegrp EQ 0-19 and unknown EQ 1

*check ages by
  - ID numbers
  - check subtractions (death-birth)

EXPORTING FROM SAS:
Go to file (pull down menu)
choose export
choose at library: sasuser
  member: the file where you saved the data
choose next
choose tab delimited file (*.txt), next
choose browse and choose where and as what you want the file to be saved in Word Perfect
  (Eg. c:sas\sasuser\filename)
choose Finish
IN WORD PERFECT:
Go to File (pull down menu)
choose Open
choose the file you saved the data under in SAS
choose ASCII (DOS) Text

Arrange data in a table and save as a Word Perfect 6 document.

---

TABLE 2: MEAN & SD FOR AGES IN THE DIFFERENT ETNIC GROUPS

<table>
<thead>
<tr>
<th>ETHNIC GROUP</th>
<th>MEAN</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>36.9</td>
<td>15.86</td>
</tr>
<tr>
<td>White</td>
<td>61.05</td>
<td>16.55</td>
</tr>
<tr>
<td>Coloured</td>
<td>62.56</td>
<td>12.54</td>
</tr>
<tr>
<td>Unknown</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

---

IN SAS:
Choose the Q icon (To go into the SQL Query Window)
The table source is sasuser
In Available Tables choose the table sasuser.autmeans
- move this table into the selected tables window by using the ⊞
- choose OK

In the available columns window, choose all the relevant columns (variables) (postcode, age, age)
- move these to the selected columns window by using the ⊞ Highlight one age by clicking on it
- go to summary functions and choose avg
- do the same to the other, but choose std

To set conditions:
- go to Locals (pull down menu)
- choose where conditions for subset
- choose variable pnumber, other operators, contains, <CONSTANT enter value>
  - type in 1997 (to work only with 1997 cases)
- choose OK, OK

To run report
- Choose Actions (pull down menu)
- Choose Run query, design report, begin with default report, autogroup, yes

For titles:
- Go to globals (pull down menu)
- choose options, titles
- type in title and close
To choose a predefined report definition:
- Go to file (pull down menu)
- choose open, report definition
- choose in library window: sasuser
  catalog window: autopsy
  report window: Means of ages in different agegroups
- choose OK

IN REPORT WINDOW:
Go to file (pull down menu)
- choose save, report data
- save this report in library: sasuser
  member: (type in name of file you want to save it under)

- choose OK

EXPORTING FROM SAS:
Go to file (pull down menu)
choose export
choose at library: sasuser
  member: the file where you saved the data
choose next
choose tab delimited file (*.txt), next
choose browse and choose where and as what you want the file to be saved in Word Perfect
  (Eg. c:\sas\sasuser\filename)
choose Finish

IN WORD PERFECT:
Go to File (pull down menu)
choose Open
choose the file you saved the data under in SAS
choose ASCII (DOS) Text

Arrange data in a table and save as a Word Perfect 6 document.

<table>
<thead>
<tr>
<th>TABLE 3: DISTRIBUTION OF AUTOPSIES BY TYPE &amp; ETHNIC GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Cardio-respiratory organs only</td>
</tr>
<tr>
<td>Cardio-respiratory organs with autopsy</td>
</tr>
<tr>
<td>TOTAL</td>
</tr>
</tbody>
</table>

IN SAS PROGRAM
New variable report was created from variable reportst to categorize the autopsies into the following groups:
if reportst=1 then report='1'; else
if reportst=2 or reportst=3 then report='2';

a format has been assigned to the new variable:

value refmt=1='Cardio-respiratory organs only'
   2='Cardio-respiratory organs with autopsy';

format report refmt.;

New variables were created for the races namely: black, white, coloured, unknown from variable popcode:
if popcode=1 then Black=1; else
if popcode=2 then White=1; else
if popcode=3 then Coloured=1; else
if popcode=4 then Unknown=1;

IN SAS:
Choose the Q icon (To go into the SQL Query Window)
The table source is sasuser

In Available Tables choose the table sasuser.autyra
- move this table into the selected tables window by using the 
- choose OK

In the available columns window, choose all the relevant columns (variables) (usually everything up to unknown) (report, black, white, coloured, unknown)
- move these to the selected columns window by using the 
Highlight black, white, coloured, unknown by clicking on all of them
- go to summary functions and choose count

To add percentage columns:
- go to build a column
- choose summary functions,count, variable black
- choose OK
- choose column attributes
  - Type in at Alias name: bla
    Format: percent15.1
    Label: black%
- choose OK and do the same for the white (whi), coloured(col) and unknown(unk) columns

To add the total column:
- go to build a column
- choose summary functions, count, black,+ count,white,+ count, coloured+ count, unknown
- choose OK
- choose column attributes
  - Type in at Alias name: tot
    Format:
Label: ALL RACES
- To add a % column for the total column, do the same as for black, white, coloured, unknown, but call it Alias name: tota
  Format: percent15.1
  Label: tot%

To set conditions:
- go to Locals (pull down menu)
- choose where conditions for subset
- choose variable pnumber, other operators, contains, <CONSTANT enter value>
  - type in 1997 (to work only with 1997 cases)
  - choose OK, OK

To run report
- Choose Actions (pull down menu)
- Choose Run query, design report, begin with default report, autogroup, yes

For titles:
-Go to globals (pull down menu)
- choose options, titles
- type in title and close

To choose a predefined report definition:
- Go to file (pull down menu)
- choose open, report definition
- choose in library window: sasuser
catelog window: autopsy
report window: Distribution of autopsies by type & race
-choose OK

IN REPORT WINDOW:
Go to file (pull down menu)
- choose save, report data
-save this report in library: sasuser
  member: (type in name of file you want to save it under)
-choose OK

TO CHECK
1. If reportstatus='.'
   where: report EQ -
   There should be none missing, but occasionally we get an empty bucket with full patient details - this is given a pnumber (eg. 526/1997)

EXPORTING FROM SAS:
Go to file (pull down menu)
choose export
choose at library: sasuser
  member: the file where you saved the data
choose next
choose tab delimited file (*.txt), next
choose browse and choose where and as what you want the file to be saved in Word Perfect
(Eg. c:sas\sauser\filename)
choose Finish

IN WORD PERFECT:
Go to File (pull down menu)
choose Open
choose the file you saved the data under in SAS
choose ASCII (DOS) Text

Arrange data in a table and save as a Word Perfect 6 document.

Table 4 is a list of all the different mines that sent cases for autopsies to the NCOH during 1997 and the numbers of autopsies sent by each mine during this period, and can be seen in Appendix N. Steps to follow for Table 4:

IN SAS PROGRAM
New variable newmine was created from variable lastmine to categorize the different mines and
minetypes in the following groups:
if lastmine=1 or lastmine=27 or lastmine=36 or lastmine=39 or lastmine=77 or lastmine=78 or
lastmine=82 or lastmine=92 or lastmine=102 or lastmine=112 or lastmine=144 or
lastmine=154 or lastmine=172 or lastmine=179 or lastmine=183 or lastmine=195 or
lastmine=204 or lastmine=224 then newmine='1'; else
if lastmine=24 or lastmine=48 or lastmine=129 or lastmine=136 or lastmine=178 or lastmine=217 or
lastmine=226 then newmine='2'; else
if lastmine=25 or lastmine=26 or lastmine=51 or lastmine=159 or lastmine=188 then newmine='3';
else
if lastmine=25 or lastmine=26 or lastmine=31 or lastmine=49 or lastmine=59 or lastmine=75 or
lastmine=152 or lastmine=214 or lastmine=216 or lastmine=229 then newmine='4'; else
if lastmine=47 or lastmine=110 or lastmine=170 or lastmine=73 or lastmine=103 or lastmine=147 or
lastmine=205 or lastmine=231 then newmine='5';
if lastmine=51 or lastmine=121 then newmine='6'; else
if lastmine=21 or lastmine=32 or lastmine=54 or lastmine=58 or lastmine=61 or lastmine=66 or
lastmine=67 or lastmine=76 or lastmine=84 or lastmine=87 or lastmine=88 or lastmine=91 or
lastmine=95 or lastmine=96 or lastmine=97 or lastmine=99 or lastmine=101 or
lastmine=104 or lastmine=106 or lastmine=115 or lastmine=116 or lastmine=118 or
lastmine=119 or lastmine=124 or lastmine=125 or lastmine=126 or lastmine=127 or
lastmine=130 or lastmine=132 or lastmine=134 or lastmine=143 or lastmine=145 or
lastmine=146 or lastmine=149 or lastmine=158 or lastmine=160 or lastmine=161 or
lastmine=162 or lastmine=163 or lastmine=164 or lastmine=167 or lastmine=168 or
lastmine=175 or lastmine=177 or lastmine=180 or lastmine=181 or lastmine=194 or
lastmine=199 or lastmine=200 or lastmine=203 or lastmine=207 or lastmine=212 or
lastmine=220 or lastmine=221 or lastmine=222 or lastmine=228 then newmine='7'; else
if lastmine=65 or lastmine=120 or lastmine=182 or lastmine=185 or lastmine=193 or lastmine=197
or lastmine=198 or lastmine=218 then newmine='8'; else
if lastmine=100 or lastmine=138 then newmine='9'; else
if lastmine=151 then newmine='10'; else
if lastmine=189 then newmine='11'; else
if lastmine=35 then newmine='12'; else
if lastmine=41 or lastmine=71 then newmine='13'; else
if lastmine=28 then newmine='14'; else
if lastmine=65 or lastmine=150 or lastmine=171 or lastmine=184 then newmine='15'; else
if lastmine=74 then newmine='16'; else
if lastmine=141 then newmine='17'; else
if lastmine=93 then newmine='18'; else
if lastmine=128 then newmine='19'; else
if lastmine=148 then newmine='20'; else
if lastmine=2 or lastmine=3 or lastmine=4 or lastmine=5 or lastmine=6 or lastmine=7 or lastmine=8 or lastmine=9 or lastmine=10 or lastmine=11 or lastmine=12 or lastmine=13 or lastmine=14 or lastmine=15 or lastmine=16 or lastmine=17 or lastmine=18 or lastmine=19 or lastmine=20 or lastmine=22 or lastmine=29 or lastmine=30 or lastmine=33 or lastmine=34 or lastmine=37 or lastmine=38 or lastmine=40 or lastmine=42 or lastmine=43 or lastmine=44 or lastmine=45 or lastmine=46 or lastmine=50 or lastmine=52 or lastmine=53 or lastmine=55 or lastmine=56 or lastmine=57 or lastmine=60 or lastmine=63 or lastmine=64 or lastmine=68 or lastmine=69 or lastmine=70 or lastmine=72 or lastmine=79 or lastmine=80 or lastmine=81 or lastmine=83 or lastmine=86 or lastmine=89 or lastmine=90 or lastmine=94 or lastmine=98 or lastmine=105 or lastmine=107 or if lastmine=108 or lastmine=109 or lastmine=111 or lastmine=113 or lastmine=114 or lastmine=117 or lastmine=122 or lastmine=123 or lastmine=131 or lastmine=133 or lastmine=135 or lastmine=137 or lastmine=139 or lastmine=140 or lastmine=142 or lastmine=153 or lastmine=165 or lastmine=166 or lastmine=169 or lastmine=173 or lastmine=174 or lastmine=176 or lastmine=186 or lastmine=187 or lastmine=191 or lastmine=192 or lastmine=201 or lastmine=202 or lastmine=206 or lastmine=209 or lastmine=210 or lastmine=213 or lastmine=215 or lastmine=223 or lastmine=225 or lastmine=227 or lastmine=230 then newmine='21'; else
if lastmine=219 then newmine='22'; else
if lastmine=190 then newmine='23'; else
if lastmine=208 then newmine='24'; else
if lastmine=211 then newmine='25';

a format has been assigned to the new variable:

value newfmt 1='Asbestos'
4='Platinum'
7='Coal'
10='Construction'
13='Steel'
16='Iron & Manganese'
19='Lead & Minerals'
22='Tin'
25='Aluminium';

format newmine newpfmt.;
New variables were created for the races namely: **black, white, coloured, unknown** from variable **popcode**:
- If popcode=1 then Black=1; else
- If popcode=2 then White=1; else
- If popcode=3 then Coloured=1; else
- If popcode=4 then Unknown=1;

**IN SAS:**
Choose the Q icon (To go into the SQL Query Window)
The table source is **sasuser**

In **Available Tables** choose the table **sasuser.autmine**
- move this table into the **selected tables** window by using the 
- choose OK

In the **available columns** window, choose all the relevant columns (variables) (usually everything up to unknown) (newmine, black, white, coloured, unknown)
- move these to the **selected columns** window by using the 
Highlight black, white, coloured, unknown by clicking on all of them
- go to **summary functions** and choose **count**

To add the total column:
- go to **build a column**
- choose , **summary functions, count, black, + count, white, + count, coloured, + count, unknown**
- choose OK
- choose **column attributes**
  - Type in at **Alias name:** tot
    - **Format:**
    - **Label:** ALL RACES

To set conditions:
- go to **Locals** (pull down menu)
- choose where conditions for subset
- choose variable **pnumber, other operators, contains, <CONSTANT enter value>**
  - type in 1997 (to work only with 1997 cases)
- choose **OK, OK**

To run report
- Choose **Actions** (pull down menu)
- Choose **Run query, design report, begin with default report, autogroup, yes**

For titles:
- Go to **globals** (pull down menu)
- choose **options, titles**
- type in title and **close**

To choose a predefined report definition:
- Go to **file** (pull down menu)
- choose **open, report definition**
- choose in library window: sasuser
catelog window: autopsy
report window: Autopsies sent by different mines
-choose OK

IN REPORT WINDOW:
  Go to file (pull down menu)
- choose save, report data
- save this report in library: sasuser
    member: (type in name of file you want to save it under)
-choose OK

EXPORTING FROM SAS:
  Go to file (pull down menu)
  choose export
  choose at library: sasuser
    member: the file where you saved the data
  choose next
  choose tab delimited file (*.txt), next
  choose browse and choose where and as what you want the file to be saved in Word Perfect
    (Eg. c:\sas\sasuser\filename)
  choose Finish

IN WORD PERFECT:
  Go to File (pull down menu)
  choose Open
  choose the file you saved the data under in SAS
  choose ASCII (DOS) Text

  Arrange data in a table and save as a Word Perfect 6 document.
2. EXPOSURES

TABLE 5: DISTRIBUTION OF AUTOPSIES BY MINE TYPE AND ETHNIC GROUP

<table>
<thead>
<tr>
<th>MINETYPE</th>
<th>BLACK</th>
<th>WHITE</th>
<th>COLOURED</th>
<th>UNKNOWN</th>
<th>ALL RACES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Gold</td>
<td>1751</td>
<td>78.8</td>
<td>672</td>
<td>74.9</td>
<td>1</td>
</tr>
<tr>
<td>Platinum</td>
<td>242</td>
<td>10.9</td>
<td>32</td>
<td>3.6</td>
<td>0</td>
</tr>
<tr>
<td>Coal</td>
<td>87</td>
<td>3.9</td>
<td>55</td>
<td>6.1</td>
<td>0</td>
</tr>
<tr>
<td>Asbestos</td>
<td>18</td>
<td>0.8</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>Iscor</td>
<td>5</td>
<td>0.2</td>
<td>42</td>
<td>4.7</td>
<td>0</td>
</tr>
<tr>
<td>Copper</td>
<td>7</td>
<td>0.3</td>
<td>20</td>
<td>2.2</td>
<td>13</td>
</tr>
<tr>
<td>Diamond</td>
<td>13</td>
<td>0.6</td>
<td>9</td>
<td>1.0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td>0.4</td>
<td>22</td>
<td>2.5</td>
<td>0</td>
</tr>
<tr>
<td>Unknown</td>
<td>91</td>
<td>4.1</td>
<td>27</td>
<td>3.0</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2223</td>
<td>897</td>
<td>70</td>
<td>18</td>
<td>19</td>
</tr>
</tbody>
</table>

IN SAS PROGRAM

New variable minetype was created from variable exptype1 to catagorize the industries:
if exptype1=1 then minetype=’1’; else
if exptype1=2 then minetype=’2’; else
if exptype1=3 then minetype=’3’; else
if exptype1=4 then minetype=’4’; else
if exptype1=5 then minetype=’5’; else
if exptype1=6 then minetype=’6’; else
if exptype1=7 or exptype1=10 or exptype1=11 or exptype1=12 or exptype1=13 or exptype1=14
or exptype1=15 or exptype1=16 or exptype1=17 or exptype1=19 or exptype1=20 or
exptype1=21 or exptype1=22 or exptype1=23 or exptype1=24 or exptype1=25 or
exptype1=26 or exptype1=27 or exptype1=28 or exptype1=29 or exptype1=30 then
minetype=’7’; else
if exptype1=8 then minetype=’8’; else
if exptype1=9 then minetype=’9’;

A format has been assigned to the new variable:
value minfmt 1=’Gold’ 2=’Coal’ 3=’Asbestos’
4=’Platinum’ 5=’Copper’ 6=’Diamond’
7=’Other’ 8=’Iscor’ 9=’Unknown’;

format minetype minfmt.

Nr7 (Other) includes:
Quarry, Silica (Silicon smelters), Manganese, Steel, Tin, Zinc, Minerals, Chrome, Construction,
S A Railways, Industry, Iron (put together as there are too few cases in these industries)

New variables were created for the races namely: black, white, coloured, unknown from variable popcode:
if popcode=1 then Black=1; else
if popcode=2 then White=1; else
if popcode=3 then Coloured=1; else
if popcode=4 then Unknown=1;
IN SAS:
Choose the Q icon (To go into the SQL Query Window)
The table source is sasuser
In Available Tables choose the table sasuser.autextra
- move this table into the selected tables window by using the }
- choose OK

In the available columns window, choose all the relevant columns (variables) (usually everything up to unknown) (minetype, black, white, coloured, unknown)
- move these to the selected columns window by using the ]
Highlight black, white, coloured, unknown by clicking on all of them
- go to summary functions and choose count

To add percentage columns:
- go to build a column
- choose summary functions, count, variable black
- choose OK
- choose column attributes
  - Type in at Alias name: bla
    Format: percent15.1
    Label: black%
- choose OK and do the same for the white (whi), coloured(col) and unknown(unk) columns

To add the total column:
- go to build a column
- choose , summary functions, count, black, count,white, count, coloured, count, unknown
- choose OK
- choose column attributes
  - Type in at Alias name: tot
    Format: 
    Label: ALL RACES
- To add a % column for the total column, do the same as for black, white, coloured, unknown, but call it Alias name: total
  Format: percent15.1
  Label: tot%

To set conditions:
- go to Locals (pull down menu)
- choose where conditions for subset
- choose variable number, other operators, contains, <CONSTANT enter value>
  - type in 1997 (to work only with 1997 cases)
- choose OK, OK

To run report
- Choose Actions (pull down menu)
- Choose Run query, design report, begin with default report, autogroup, yes
For titles:
- Go to globals (pull down menu)
- choose options, titles
- type in title and close

To choose a predefined report definition:
- Go to file (pull down menu)
- choose open, report definition
  - choose in library window: sasuser
catalog window: exposure
report window: Distribution of autopsies by industry & race
- choose OK

IN REPORT WINDOW:
Go to file (pull down menu)
- choose save, report data
- save this report in library: sasuser
  member: (type in name of file you want to save it under)
- choose OK

TO CHECK
1  Exposure type codes
   where: minetype EQ (check for odd codes)
2  Missing data must be filled in as 9 (unknown). If not, will appear as 0 or
   where: minetype EQ 0/-

EXPORTING FROM SAS:
Go to file (pull down menu)
choose export
choose at library: sasuser
  member: the file where you saved the data
choose next
choose tab delimited file (*.txt), next
choose browse and choose where and as what you want the file to be saved in Word Perfect
  (Eg. c:sas\sasuser\filename)
choose Finish

IN WORD PERFECT:
Go to File (pull down menu)
choose Open
choose the file you saved the data under in SAS
choose ASCII (DOS) Text

Arrange data in a table and save as a Word Perfect 6 document.
TABLE 6: DISTRIBUTION OF AUTOPSIES BY YEARS OF SERVICE AND ETHNIC GROUP

<table>
<thead>
<tr>
<th>SERVICE (YEARS)</th>
<th>BLACK N</th>
<th>BLACK %</th>
<th>WHITE N</th>
<th>WHITE %</th>
<th>COLOURED N</th>
<th>COLOURED %</th>
<th>UNKNOWN N</th>
<th>UNKNOWN %</th>
<th>ALL RACES N</th>
<th>ALL RACES %</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1</td>
<td>17</td>
<td>0.8</td>
<td>4</td>
<td>0.4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>21</td>
<td>0.7</td>
</tr>
<tr>
<td>1-5</td>
<td>95</td>
<td>4.3</td>
<td>77</td>
<td>8.6</td>
<td>13</td>
<td>18.6</td>
<td>0</td>
<td>0</td>
<td>185</td>
<td>5.8</td>
</tr>
<tr>
<td>6-10</td>
<td>231</td>
<td>10.4</td>
<td>76</td>
<td>8.5</td>
<td>14</td>
<td>20.0</td>
<td>0</td>
<td>0</td>
<td>321</td>
<td>10.0</td>
</tr>
<tr>
<td>11-15</td>
<td>266</td>
<td>12.0</td>
<td>79</td>
<td>8.8</td>
<td>7</td>
<td>10.0</td>
<td>0</td>
<td>0</td>
<td>352</td>
<td>11.0</td>
</tr>
<tr>
<td>16-20</td>
<td>296</td>
<td>13.3</td>
<td>98</td>
<td>10.9</td>
<td>5</td>
<td>7.1</td>
<td>0</td>
<td>0</td>
<td>399</td>
<td>12.4</td>
</tr>
<tr>
<td>21-25</td>
<td>72</td>
<td>3.2</td>
<td>101</td>
<td>11.3</td>
<td>6</td>
<td>8.6</td>
<td>0</td>
<td>0</td>
<td>179</td>
<td>5.6</td>
</tr>
<tr>
<td>26-30</td>
<td>21</td>
<td>0.9</td>
<td>97</td>
<td>10.8</td>
<td>2</td>
<td>2.9</td>
<td>0</td>
<td>0</td>
<td>120</td>
<td>3.7</td>
</tr>
<tr>
<td>31+</td>
<td>9</td>
<td>0.4</td>
<td>193</td>
<td>21.5</td>
<td>8</td>
<td>11.4</td>
<td>0</td>
<td>0</td>
<td>210</td>
<td>6.5</td>
</tr>
<tr>
<td>Missing</td>
<td>1216</td>
<td>54.7</td>
<td>172</td>
<td>19.2</td>
<td>15</td>
<td>21.4</td>
<td>18</td>
<td>100.0</td>
<td>1421</td>
<td>44.3</td>
</tr>
</tbody>
</table>

TOTAL          | 2223   | 997     | 70      | 18     | 3208       | 100.0      |

IN SAS PROGRAM

New variable `expyear` was created from variable `expyear1` to categorize the types of years of service:

- if `expyear1>0` and `expyear1 < 1` then `expyear='1'`; else
- if `expyear1 GE 1` and `LE 5.9` then `expyear='2'`; else
- if `expyear1 GE 6` and `LE 10.9` then `expyear='3'`; else
- if `expyear1 GE 11` and `LE 15.9` then `expyear='4'`; else
- if `expyear1 GE 16` and `LE 20.9` then `expyear='5'`; else
- if `expyear1 GE 21` and `LE 25.9` then `expyear='6'`; else
- if `expyear1 GE 26` and `LE 30.9` then `expyear='7'`; else
- if `expyear1 > 30.9` then `expyear='8'`; else
- if `expyear1=0` then `expyear='9'`;

A format has been assigned to the new variable:

```
value expfmt 1='<1' 2='1-5' 3='6-10'
4='11-15' 5='16-20' 6='21-25'
7='26-30' 8='31+' 9='Missing';
```

New variables were created for the races namely: `black`, `white`, `coloured`, `unknown` from variable `popcode`:

- if `popcode=1` then `Black=1`; else
- if `popcode=2` then `White=1`; else
- if `popcode=3` then `Coloured=1`; else
- if `popcode=4` then `Unknown=1`;

IN SAS:

Choose the Q icon (To go into the SQL Query Window)
The table source is `sasuser`

In `Available Tables` choose the table `sasuser.yearserv`
- move this table into the `selected tables` window by using the 
- choose OK
In the **available columns** window, choose all the relevant columns (variables) (usually everything up to unknown) (expyear, black, white, coloured, unknown)
- move these to the **selected columns** window by using the **highlight black, white, coloured, unknown by clicking on all of them**
- go to **summary functions** and choose **count**

To add percentage columns:
- go to **build a column**
- choose **summary functions**, **count**, variable **black**
- choose OK
- choose **column attributes**
  - Type in at **Alias name**: bla
    - **Format**: percent15.1
    - **Label**: black%
- choose OK and do the same for the white (whi), coloured(col) and unknown(unk) columns

To add the total column:
- go to **build a column**
- choose **summary functions**, **count**, black,+ count,white,+ count, coloured,+ count, unknown
- choose OK
- choose **column attributes**
  - Type in at **Alias name**: tot
    - **Format**:
    - **Label**: ALL RACES
- To add a % column for the total column, do the same as for black, white, coloured, unknown, but call it **Alias name**: tota
  - **Format**: percent15.1
  - **Label**: tot%

To set conditions:
- go to **Locals** (pull down menu)
- choose where conditions for subset
- choose variable **pnumber, other operators, contains, <CONSTANT enter value>**
  - type in 1997 ( to work only with 1997 cases)
- choose **OK, OK**

To run report
- Choose **Actions** (pull down menu)
- Choose **Run query, design report, begin with default report, autogroup, yes**

For titles:
- Go to **globals** (pull down menu)
- choose **options, titles**
- type in title and **close**

To choose a predefined report definition:
- Go to **file** (pull down menu)
- choose **open, report definition**
- choose in **library window: sasuser**
The SAS System

catelog window: exposure
report window: Distribution of autopsies by exposure time & race
-choose OK

IN REPORT WINDOW:
  Go to file (pull down menu)
- choose save, report data
- save this report in library: sasuser
    member: (type in name of file you want to save it under)
- choose OK

TO CHECK
1  Missing data must be filled in as 9 (missing). If not, will appear as 0 or -
    where: minetype EQ 0/-

EXPORTING FROM SAS:
Go to file (pull down menu)
choose export
choose at library: sasuser
  member: the file where you saved the data
choose next
choose tab delimited file (*.txt), next
choose browse and choose where and as what you want the file to be saved in Word Perfect
  (Eg. c:\sas\sasuser\filename)
choose Finish

IN WORD PERFECT:
Go to File (pull down menu)
choose Open
choose the file you saved the data under in SAS
choose ASCII (DOS) Text

Arrange data in a table and save as a Word Perfect 6 document.

TABLE 7: YEARS OF SERVICE IN GOLDMINES BY ETHNIC GROUP

<table>
<thead>
<tr>
<th>SERVICE (YEARS)</th>
<th>BLACK</th>
<th>WHITE</th>
<th>COLOURED</th>
<th>ALL RACES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>&lt;1</td>
<td>16</td>
<td>0.9</td>
<td>3</td>
<td>0.4</td>
</tr>
<tr>
<td>1-5</td>
<td>77</td>
<td>4.4</td>
<td>45</td>
<td>6.7</td>
</tr>
<tr>
<td>6-10</td>
<td>192</td>
<td>11.0</td>
<td>55</td>
<td>8.2</td>
</tr>
<tr>
<td>11-15</td>
<td>252</td>
<td>14.4</td>
<td>57</td>
<td>8.5</td>
</tr>
<tr>
<td>16-20</td>
<td>287</td>
<td>16.4</td>
<td>70</td>
<td>10.4</td>
</tr>
<tr>
<td>21-25</td>
<td>64</td>
<td>3.7</td>
<td>80</td>
<td>11.9</td>
</tr>
<tr>
<td>26-30</td>
<td>18</td>
<td>1.0</td>
<td>86</td>
<td>12.8</td>
</tr>
<tr>
<td>31+</td>
<td>8</td>
<td>0.5</td>
<td>175</td>
<td>26.0</td>
</tr>
<tr>
<td>Missing</td>
<td>837</td>
<td>47.8</td>
<td>101</td>
<td>15.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1751</td>
<td></td>
<td>672</td>
<td></td>
</tr>
</tbody>
</table>
IN SAS PROGRAM

New variable expyear was created from variable expyear1 to categorize the types years of service into the following groups:

if expyear1>0 and expyear1 < 1 then expyear='1'; else
if expyear1 GE 1 and LE 5.9 then expyear='2'; else
if expyear1 GE 6 and LE 10.9 then expyear='3'; else
if expyear1 GE 11 and LE 15.9 then expyear='4'; else
if expyear1 GE 16 and LE 20.9 then expyear='5'; else
if expyear1 GE 21 and LE 25.9 then expyear='6'; else
if expyear1 GE 26 and LE 30.9 then expyear='7'; else
if expyear1 >30.9 then expyear='8'; else
if expyear1=0 then expyear='9';

A format has been assigned to the new variable:

value exyfmt 1='<1' 2='1-5' 3='6-10'
    4='11-15' 5='16-20' 6='21-25'
    7='26-30' 8='31+' 9='Missing';

format expyear exyfmt;:

New variables were created for the races namely: black, white, coloured, unknown from variable popcode:

if popcode=1 then Black=1; else
if popcode=2 then White=1; else
if popcode=3 then Coloured=1; else
if popcode=4 then Unknown=1;

IN SAS:

Choose the $Q$ icon (To go into the SQL Query Window)
The table source is sasuser
In Available Tables choose the table sasuser.yearserv
- move this table into the selected tables window by using the $E$
- choose OK

In the available columns window, choose all the relevant columns (variables) (usually everything up to unknown) (expyear, black, white, coloured, unknown)
- move these to the selected columns window by using the $E$
Highlight black, white, coloured, unknown by clicking on all of them
- go to summary functions and choose count

To add percentage columns:
- go to build a column
- choose summary functions,count, variable black
- choose OK
- choose column attributes
- Type in at Alias name: bla
  Format: percent15.1
  Label: black%
- choose OK and do the same for the white (whi), coloured(col) and unknown(unk) columns
To add the total column:
- go to build a column
- choose, summary functions, count, black,+ count, white, + count, coloured, + count, unknown
- choose OK
- choose column attributes
  - Type in at Alias name: tot
  Format:
  Label: ALL RACES
- To add a % column for the total column, do the same as for black, white, coloured, unknown, but call it Alias name: tota
  Format: percent15.1
  Label: tot%

To set conditions:
- go to Locals (pull down menu)
- choose where conditions for subset
- choose variable pnumber, other operators, contains, <CONSTANT enter value>
  - type in 1997 (to work only with 1997 cases)
- choose and, exptype1, EQ, <lookup distinct values>, gold
- choose OK, OK

To run report
- Choose Actions (pull down menu)
- Choose Run query, design report, begin with default report, autogroup, yes

For titles:
- Go to globals (pull down menu)
- choose options, titles
- type in title and close

To choose a predefined report definition:
- Go to file (pull down menu)
- choose open, report definition
- choose in library window: sasuser
catalog window: exposure
report window: Years of service in goldmines by race
- choose OK

IN REPORT WINDOW:
- Go to file (pull down menu)
- choose save, report data
- Save this report in library: sasuser
  Member: (type in name of file you want to save it under)
- choose OK

TO CHECK
1. Missing data must be filled in as 9 (missing). If not, will appear as 0 or -
   where: minetype EQ 0/-
EXPORTING FROM SAS:
Go to file (pull down menu)
choose export
choose at library: sasuser
   member: the file where you saved the data
choose next
choose tab delimited file (*.txt), next
choose browse and choose where and as what you want the file to be saved in Word Perfect
   (Eg. c:sas\sasuser\filename)
choose Finish

IN WORD PERFECT:
Go to File (pull down menu)
choose Open
choose the file you saved the data under in SAS
choose ASCII (DOS) Text

Arrange data in a table and save as a Word Perfect 6 document.

TABLE 8: YEARS OF SERVICE IN COAL MINES BY ENTHIC GROUP

<table>
<thead>
<tr>
<th>SERVICE (YEARS)</th>
<th>BLACK</th>
<th>WHITE</th>
<th>COLOURED</th>
<th>ALL RACES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>&lt;1</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
<td>1.8</td>
</tr>
<tr>
<td>1-5</td>
<td>1</td>
<td>1.1</td>
<td>10</td>
<td>18.2</td>
</tr>
<tr>
<td>6-10</td>
<td>1</td>
<td>1.1</td>
<td>4</td>
<td>7.3</td>
</tr>
<tr>
<td>11-15</td>
<td>1</td>
<td>1.1</td>
<td>7</td>
<td>12.7</td>
</tr>
<tr>
<td>16-20</td>
<td>2</td>
<td>2.3</td>
<td>3</td>
<td>5.5</td>
</tr>
<tr>
<td>21-25</td>
<td>2</td>
<td>2.3</td>
<td>4</td>
<td>7.3</td>
</tr>
<tr>
<td>26-30</td>
<td>1</td>
<td>1.1</td>
<td>4</td>
<td>7.3</td>
</tr>
<tr>
<td>31+</td>
<td>0</td>
<td>0.0</td>
<td>7</td>
<td>12.7</td>
</tr>
<tr>
<td>Missing</td>
<td>79</td>
<td>90.8</td>
<td>15</td>
<td>27.3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>87</td>
<td>55</td>
<td>1</td>
<td>100.0</td>
</tr>
</tbody>
</table>

IN SAS PROGRAM
New variable expyear was created from variable expyear1 to catagorize the types years of service into the following groups:
if expyear1>0 and expyear1 < 1 then expyear=’1’; else
if expyear1 GE 1 and LE 5.9 then expyear=’2’; else
if expyear1 GE 6 and LE 10.9 then expyear=’3’; else
if expyear1 GE 11 and LE than 15.9 then expyear=’4’; else
if expyear1 GE 16 and LE 20.9 then expyear=’5’; else
if expyear1 GE 21 and LE 25.9 then expyear=’6’; else
if expyear1 GE 26 and LE 30.9 then expyear=’7’; else
if expyear1 >30.9 then expyear=’8’; else
if expyear1=0 then expyear=’9’;
A format has been assigned to the new variable:

<table>
<thead>
<tr>
<th>value</th>
<th>expfmt</th>
<th>exyfmt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&lt;=1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1-5</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>6-10</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>11-15</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>16-20</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>21-25</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>26-30</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>31+</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Missing</td>
<td></td>
</tr>
</tbody>
</table>

format expyear exyfmt;

New variables were created for the races namely: **black, white, coloured, unknown** from variable **popcode**:
if popcode=1 then Black=1; else
if popcode=2 then White=1; else
if popcode=3 then Coloured=1; else
if popcode=4 then Unknown=1;

**IN SAS:**

Choose the Q icon (To go into the SQL Query Window)
The table source is **sasuser**
In **Available Tables** choose the table **sasuser.yearserv**
- move this table into the **selected tables** window by using the [ ]
- choose OK

In the **available columns** window, choose all the relevant columns (variables) (usually everything up to unknown) (expyear, black, white, coloured, unknown)
- move these to the **selected columns** window by using the [ ]
Highlight black, white, coloured, unknown by clicking on all of them
- go to **summary functions** and choose **count**

To add percentage columns:
- go to **build a column**
- choose **summary functions, count, variable black**
- choose OK
- choose **column attributes**
  - Type in at **Alias name**: bla
    - Format: percent15.1
    - Label: black%
  - choose OK and do the same for the white (whi), coloured(col) and unknown(unk) columns

To add the total column:
- go to **build a column**
- choose , **summary functions, count, black, + count, white, + count, coloured + count, unknown**
- choose OK
- choose **column attributes**
  - Type in at **Alias name**: tot
    - Format:
    - Label: ALL RACES
  - To add a % column for the total column, do the same as for black, white, coloured, unknown, but call it **Alias name**: tota
    - Format: percent15.1
    - Label: tot%
To set conditions:
- go to Locals (pull down menu)
- choose where conditions for subset
- choose variable pnumber, other operators, contains, <CONSTANT enter value>
  - type in 1997 (to work only with 1997 cases)
- choose and, exptype1, EQ,<lookup distinct values>, coal
- choose OK, OK

To run report
- Choose Actions (pull down menu)
- Choose Run query, design report, begin with default report, autogroup, yes

For titles:
-Go to globals (pull down menu)
- choose options, titles
- type in title and close

To choose a predefined report definition:
- Go to file (pull down menu)
- choose open, report definition
- choose in library window: sasuser
  categol window: exposure
  report window: Years of service in coal mines by race
-choose OK

IN REPORT WINDOW:
Go to file (pull down menu)
- choose save, report data
- save this report in library: sasuser
  member: (type in name of file you want to save it under)
-choose OK

TO CHECK
1 Missing data must be filled in as 9 (missing). If not, will appear as 0 or -
   where: minetype EQ 0/-

EXPORTING FROM SAS:
Go to file (pull down menu)
choose export
choose at library: sasuser
  member: the file where you saved the data
choose next
choose tab delimited file (*.txt), next
choose browse and choose where and as what you want the file to be saved in Word Perfect
  (Eg. c:\sas\sasuser\filename)
choose Finish
IN WORD PERFECT:
Go to File (pull down menu)
choose Open
choose the file you saved the data under in SAS
choose ASCII (DOS) Text

Arrange data in a table and save as a Word Perfect 6 document.

---

**TABLE 9: YEARS OF SERVICE IN PLATINUM MINES BY ETHNIC GROUP**

<table>
<thead>
<tr>
<th>SERVICE (YEARS N)</th>
<th>BLACK %</th>
<th>WHITE N</th>
<th>WHITE %</th>
<th>ALL RACES N</th>
<th>ALL RACES %</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1</td>
<td>1</td>
<td>0.4</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
</tr>
<tr>
<td>1-5</td>
<td>13</td>
<td>5.4</td>
<td>3</td>
<td>9.4</td>
<td>16</td>
</tr>
<tr>
<td>6-10</td>
<td>35</td>
<td>14.5</td>
<td>5</td>
<td>15.6</td>
<td>40</td>
</tr>
<tr>
<td>11-15</td>
<td>8</td>
<td>3.3</td>
<td>4</td>
<td>12.5</td>
<td>12</td>
</tr>
<tr>
<td>16-20</td>
<td>4</td>
<td>1.7</td>
<td>5</td>
<td>15.6</td>
<td>9</td>
</tr>
<tr>
<td>21-25</td>
<td>3</td>
<td>1.2</td>
<td>4</td>
<td>12.5</td>
<td>7</td>
</tr>
<tr>
<td>26-30</td>
<td>1</td>
<td>0.4</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
</tr>
<tr>
<td>Missing</td>
<td>177</td>
<td>73.1</td>
<td>11</td>
<td>34.4</td>
<td>188</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>242</td>
<td>32</td>
<td>274</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>

---

**IN SAS PROGRAM**

New variable `expyear` was created from variable `expyear1` to categorize the types years of service into the following groups:

If `expyear1` > 0 and `expyear1` < 1 then `expyear='1';` else
if `expyear1` GE 1 and LE 5.9 then `expyear='2';` else
if `expyear1` GE 6 and LE 10.9 then `expyear='3';` else
if `expyear1` GE 11 and LE 15.9 then `expyear='4';` else
if `expyear1` GE 16 and LE 20.9 then `expyear='5';` else
if `expyear1` GE 21 and LE 25.9 then `expyear='6';` else
if `expyear1` GE 26 and LE 30.9 then `expyear='7';` else
if `expyear1` > 30.9 then `expyear='8';` else
if `expyear1` = 0 then `expyear='9';`

A format has been assigned to the new variable:

value `expfmt` 1='<1'
2='1-5'
3='6-10'
4='11-15'
5='16-20'
6='21-25'
7='26-30'
8='31+'
9='Missing';

format expyear expfmt.;

New variables were created for the races namely: black, white, coloured, unknown from variable `popcode`:

if `popcode`=1 then Black=1; else
if `popcode`=2 then White=1; else
if `popcode`=3 then Coloured=1; else
if `popcode`=4 then Unknown=1;
IN SAS:
Choose the Q icon (To go into the SQL Query Window)
The table source is sasuser
In Available Tables choose the table sasuser.yearser
- move this table into the selected tables window by using the
- choose OK

In the available columns window, choose all the relevant columns (variables) (usually everything up to unknown) (expyear, black, white, coloured, unknown)
- move these to the selected columns window by using the
Highlight black, white, coloured, unknown by clicking on all of them
- go to summary functions and choose count

To add percentage columns:
- go to build a column
- choose summary functions, count, variable black
- choose OK
- choose column attributes
  - Type in at Alias name: bla
    Format: percent15.1
    Label: black%
- choose OK and do the same for the white (whi), coloured(col) and unknown(unk) columns

To add the total column:
- go to build a column
- choose , summary functions, count, black, + count, white, + count, coloured, + count, unknown
- choose OK
- choose column attributes
  - Type in at Alias name: tot
    Format:
    Label: ALL RACES
  - To add a % column for the total column, do the same as for black, white, coloured, unknown, but call it Alias name: tota
    Format: percent15.1
    Label: tot%

To set conditions:
- go to Locals (pull down menu)
- choose where conditions for subset
- choose variable pnumber, other operators, contains, <CONSTANT enter value>
  - type in 1997 (to work only with 1997 cases)
- choose and, exptype1, EQ,<lookup distinct values>, platinum
- choose OK, OK

To run report
- Choose Actions (pull down menu)
- Choose Run query, design report, begin with default report, autogroup, yes
For titles:
- Go to globals (pull down menu)
- choose options, titles
- type in title and close

To choose a predefined report definition:
- Go to file (pull down menu)
- choose open, report definition
- choose in library window: sasuser
catalog window: exposure
  report window: Years of service in platinum mines by race
- choose OK

IN REPORT WINDOW:
- Go to file (pull down menu)
- choose save, report data
- save this report in library: sasuser
  member: (type in name of file you want to save it under)
- choose OK

TO CHECK
1 Missing data must be filled in as 9 (missing). If not, will appear as 0 or -
   where: minetype EQ 0/-

EXPORTING FROM SAS:
Go to file (pull down menu)
choose export
choose at library: sasuser
  member: the file where you saved the data
choose next
choose tab delimited file (*.txt), next
choose browse and choose where and as what you want the file to be saved in Word Perfect
  (Eg. c:sas\sasuser\filename)
choose Finish

IN WORD PERFECT:
Go to File (pull down menu)
choose Open
choose the file you saved the data under in SAS
choose ASCII (DOS) Text

Arrange data in a table and save as a Word Perfect 6 document.
TABLE 10: YEARS OF SERVICE IN ASBESTOS MINES BY ETHIC GROUP

<table>
<thead>
<tr>
<th>SERVICE (YEARS)</th>
<th>BLACK</th>
<th>WHITE</th>
<th>COLOURED</th>
<th>ALL RACES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>1-5</td>
<td>2</td>
<td>11.1</td>
<td>3</td>
<td>16.7</td>
</tr>
<tr>
<td>6-10</td>
<td>2</td>
<td>11.1</td>
<td>3</td>
<td>16.7</td>
</tr>
<tr>
<td>11-15</td>
<td>5</td>
<td>27.8</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>16-20</td>
<td>2</td>
<td>11.1</td>
<td>5</td>
<td>27.8</td>
</tr>
<tr>
<td>21-25</td>
<td>1</td>
<td>5.6</td>
<td>2</td>
<td>11.1</td>
</tr>
<tr>
<td>26-30</td>
<td>0</td>
<td>0.0</td>
<td>2</td>
<td>11.1</td>
</tr>
<tr>
<td>31+</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
<td>5.6</td>
</tr>
<tr>
<td>Missing</td>
<td>6</td>
<td>33.3</td>
<td>2</td>
<td>11.1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>18</td>
<td>18</td>
<td>56</td>
<td>100.0</td>
</tr>
</tbody>
</table>

IN SAS PROGRAM

New variable expyear was created from variable expyear1 to categorize the types of years of service into the following groups:
if expyear1>0 and expyear1 < 1 then expyear='1'; else
if expyear1 GE 1 and LE 5.9 then expyear='2'; else
if expyear1 GE 6 and LE 10.9 then expyear='3'; else
if expyear1 GE 11 and LE 15.9 then expyear='4'; else
if expyear1 GE 16 and LE 20.9 then expyear='5'; else
if expyear1 GE 21 and LE 25.9 then expyear='6'; else
if expyear1 GE 26 and LE 30.9 then expyear='7'; else
if expyear1 >30.9 then expyear='8'; else
if expyear1=0 then expyear='9';

A format has been assigned to the new variable:
value expfmt 1='<1'
        2='1-5'
        3='6-10'
        4='11-15'
        5='16-20'
        6='21-25'
        7='26-30'
        8='31+' 9='Missing';

format expyear expfmt.;

New variables were created for the races namely: black, white, coloured, unknown from variable popcode:
if popcode=1 then Black=1; else
if popcode=2 then White=1; else
if popcode=3 then Coloured=1; else
if popcode=4 then Unknown=1;

IN SAS:

Choose the Q icon (To go into the SQL Query Window)
The table source is sasuser
In Available Tables choose the table sasuser.yearserv
- move this table into the selected tables window by using the [ ]
- choose OK

In the available columns window, choose all the relevant columns (variables) (usually everything up to unknown) (expyear, black, white, coloured, unknown)
- move these to the selected columns window by using the 
Highlight black, white, coloured, unknown by clicking on all of them
- go to summary functions and choose count

To add percentage columns:
- go to build a column
- choose summary functions, count, variable black
- choose OK
- choose column attributes
  - Type in at Alias name: bla
    Format: percent15.1
    Label: black%
- choose OK and do the same for the white (whi), coloured(col) and unknown(unk) columns

To add the total column:
- go to build a column
- choose , summary functions, count, black,+ count,white,+ count, coloured+ count, unknown
- choose OK
- choose column attributes
  - Type in at Alias name: tot
    Format: ALL RACES
    Label: ALL RACES
- To add a % column for the total column, do the same as for black, white, coloured, unknown, but call it Alias name: tot%
    Format: percent15.1
    Label: tot%

To set conditions:
- go to Locals (pull down menu)
- choose where conditions for subset
- choose variable pnumber, other operators, contains, <CONSTANT enter value>
  - type in 1997 (to work only with 1997 cases)
- choose and, exptype1, EQ,<lookup distinct values>, asbestos
- choose OK, OK

To run report
- Choose Actions (pull down menu)
- Choose Run query, design report, begin with default report, autogroup, yes

For titles:
- Go to globals (pull down menu)
- choose options, titles
- type in title and close

To choose a predefined report definition:
- Go to file (pull down menu)
- choose open, report definition
- choose in library window: sasuser
**The SAS System**

catelog window: exposure
report window: Years of service in asbestos mines by race
-choose OK

**IN REPORT WINDOW:**
- Go to file (pull down menu)
- choose save, report data
- save this report in library: sasuser
member: (type in name of file you want to save it under)
-choose OK

**TO CHECK:**
Missing data must be filled in as 9 (missing). If not, will appear as 0 or -
where: minetype EQ 0/-

**EXPORTING FROM SAS:**
Go to file (pull down menu)
choose export
choose at library: sasuser
member: the file where you saved the data
choose next
choose tab delimited file (*.txt), next
choose browse and choose where and as what you want the file to be saved in Word Perfect
(Eg. c:sas\sasuser\filename)
choose Finish

**IN WORD PERFECT:**
Go to File (pull down menu)
choose Open
choose the file you saved the data under in SAS
choose ASCII (DOS) Text

Arrange data in a table and save as a Word Perfect 6 document.

---

**TABLE 11 : PERCENTAGE OF CASES WITH MISSING YEARS OF SERVICE BY MINETYPE AND ETHNIC GROUP**

<table>
<thead>
<tr>
<th>MINETYPE</th>
<th>BLACK</th>
<th>WHITE</th>
<th>COLOURED</th>
<th>UNKNOWN</th>
<th>ALL RACES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asbestos</td>
<td>0.5%</td>
<td>1.2%</td>
<td>86.7%</td>
<td>0.0%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Coal</td>
<td>6.5%</td>
<td>8.7%</td>
<td>0.0%</td>
<td>5.6%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Copper</td>
<td>0.4%</td>
<td>1.2%</td>
<td>13.3%</td>
<td>0.0%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Diamond</td>
<td>0.7%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Gold</td>
<td>68.8%</td>
<td>58.7%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>66.0%</td>
</tr>
<tr>
<td>Iscor</td>
<td>0.4%</td>
<td>5.2%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Platinum</td>
<td>14.6%</td>
<td>6.4%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>13.2%</td>
</tr>
<tr>
<td>Other</td>
<td>0.7%</td>
<td>2.9%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Unknown</td>
<td>7.5%</td>
<td>15.7%</td>
<td>0.0%</td>
<td>94.4%</td>
<td>9.5%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
IN SAS PROGRAM

New variable *minetype* was created from variable *exptype1* to categorize the types of industries into the following groups:

if *exptype1*=1 then *minetype*='1'; else
if *exptype1*=2 then *minetype*='2'; else
if *exptype1*=3 then *minetype*='3'; else
if *exptype1*=4 then *minetype*='4'; else
if *exptype1*=5 then *minetype*='5'; else
if *exptype1*=6 then *minetype*='6'; else
if *exptype1*=7 or *exptype1*=10 or *exptype1*=11 or *exptype1*=12 or *exptype1*=13 or *exptype1*=14 or *exptype1*=15 or *exptype1*=16 or *exptype1*=17 or *exptype1*=19 or *exptype1*=20 or *exptype1*=21 or *exptype1*=22 or *exptype1*=23 or *exptype1*=24 or *exptype1*=25 or *exptype1*=26 or *exptype1*=27 or *exptype1*=28 or *exptype1*=29 or *exptype1*=30 then
  *minetype*='7'; else
if *exptype1*=8 then *minetype*='8'; else
if *exptype1*=9 then *minetype*='9';

A format has been assigned to the new variable:

```
value minfmt 1='Gold' 2='Coal' 3='Asbestos'
  4='Platinum' 5='Copper' 6='Diamond'
  7='Other' 8='Iscor' 9='Unknown';
```

format *minetype* minfmt.

Nr7 (Other) includes:
Quarry, Silica (Silicon smelters), Manganese, Steel, Tin, Zinc, Minerals, Chrome, Construction,
S A Railways, Industry, Iron (grouped together as there are very few cases in each)

New variable *expyear* was created from variable *expyear1* to categorize the types years of service into the following groups:

if *expyear1*<0 and *expyear1*<1 then *expyear*='1'; else
if *expyear1* GE 1 and LE 5.9 then *expyear*='2'; else
if *expyear1* GE 6 and LE 10.9 then *expyear*='3'; else
if *expyear1* GE 11 and LE than 15.9 then *expyear*='4'; else
if *expyear1* GE 16 and LE 20.9 then *expyear*='5'; else
if *expyear1* GE 21 and LE 25.9 then *expyear*='6'; else
if *expyear1* GE 26 and LE 30.9 then *expyear*='7'; else
if *expyear1* >30.9 then *expyear*='8'; else
if *expyear1* =0 then *expyear*='9';

A format has been assigned to the new variable:

```
value expfmt 1='<1' 2='1-5' 3='6-10'
  4='11-15' 5='16-20' 6='21-25'
  7='26-30' 8='31+' 9='Missing';
```

format *expyear* expfmt;
New variables were created for the races namely: **black, white, coloured, unknown** from variable **popcode**:
- if popcode=1 then Black=1; else
- if popcode=2 then White=1; else
- if popcode=3 then Coloured=1; else
- if popcode=4 then Unknown=1;

**IN SAS:**
- Choose the Q icon (To go into the SQL Query Window)
- The table source is **sasuser**
- In **Available Tables** choose the table **sasuser.yearperc**
  - move this table into the **selected tables** window by using the 
  - choose OK

In the **available columns** window, choose all the relevant column (variable) (minetype).
- move this to the **selected columns** window by using the 

To add percentage columns:
- go to **build a column**
- choose **summary functions, count, variable black**
- choose OK
- choose **column attributes**
  - Type in at **Alias name**: bla
    - **Format**: percent15.1
    - **Label**: black%
  - choose OK and do the same for the white (whi), coloured(col) and unknown(unk) columns

To add the % total column:
- go to **build a column**
- choose , **summary functions, count, black, + count,white, + count, coloured+ count, unknown**
- choose OK
- choose **column attributes**
- Type in at **Alias name**: tota
  - **Format**: percent15.1
  - **Label**: tot%

To set conditions:
- go to **Locals** (pull down menu)
- choose where conditions for subset
- choose variable **pnumber, other operators, contains, <CONSTANT enter value>**
  - type in 1997 (to work only with 1997 cases)
- choose and, **expyear, EQ, <lookup distinct values>**
- choose OK, OK

To run report
- Choose **Actions** (pull down menu)
- Choose **Run query, design report, begin with default report, autogroup, yes**
For titles:
- Go to globals (pull down menu)
- choose options, titles
- type in title and close

To choose a predefined report definition:
- Go to file (pull down menu)
- choose open, report definition
- choose in library window: sasuser
catalog window: exposure
report window: Missing years of service by race
- choose OK

IN REPORT WINDOW:
- Go to file (pull down menu)
- choose save, report data
- save this report in library: sasuser
  member: (type in name of file you want to save it under)
- choose OK

EXPORTING FROM SAS:
Go to file (pull down menu)
choose export
choose at library: sasuser
  member: the file where you saved the data
choose next
choose tab delimited file (*.txt), next
choose browse and choose where and as what you want the file to be saved in Word Perfect
  (Eg. c:\sas\sasuser\filename)
choose Finish

IN WORD PERFECT:
Go to File (pull down menu)
choose Open
choose the file you saved the data under in SAS
choose ASCII (DOS) Text

Arrange data in a table and save as a Word Perfect 6 document.
TABLE 12: MEAN YEARS OF SERVICE BY ETHNIC GROUP AND TYPE OF MINING

<table>
<thead>
<tr>
<th>MINETYPE</th>
<th>BLACK</th>
<th>WHITE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>MEAN</td>
</tr>
<tr>
<td>Asbestos</td>
<td>18</td>
<td>7.62</td>
</tr>
<tr>
<td>Coal</td>
<td>87</td>
<td>1.48</td>
</tr>
<tr>
<td>Copper</td>
<td>7</td>
<td>5.17</td>
</tr>
<tr>
<td>Diamond</td>
<td>13</td>
<td>6.23</td>
</tr>
<tr>
<td>Gold</td>
<td>1751</td>
<td>7.27</td>
</tr>
<tr>
<td>Iscor</td>
<td>5</td>
<td>0.00</td>
</tr>
<tr>
<td>Platinum</td>
<td>242</td>
<td>2.50</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td>2.33</td>
</tr>
<tr>
<td>Unknown</td>
<td>91</td>
<td>0.00</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2223</td>
<td></td>
</tr>
</tbody>
</table>

IN SAS PROGRAM

New variable minetype was created from variable exptype1 to catagorize the types of industries into the following groups:
if exptype1=1 then minetype='1'; else
if exptype1=2 then minetype='2'; else
if exptype1=3 then minetype='3'; else
if exptype1=4 then minetype='4'; else
if exptype1=5 then minetype='5'; else
if exptype1=6 then minetype='6'; else
if exptype1=7 or exptype1=10 or exptype1=11 or exptype1=12 or exptype1=13 or exptype1=14 or exptype1=15 or exptype1=16 or exptype1=17 or exptype1=19 or exptype1=20 or exptype1=21 or exptype1=22 or exptype1=23 or exptype1=24 or exptype1=25 or exptype1=26 or exptype1=27 or exptype1=28 or exptype1=29 or exptype1=30 then minetype='7'; else
if exptype1=8 then minetype='8'; else
if exptype1=9 then minetype='9';

A format has been assigned to the new variable:
value minfmt 1='Gold' 2='Coal' 3='Asbestos'
4='Platinum' 5='Copper' 6='Diamond'
7='Other' 8='Iscor' 9='Unknown';

format minetype minfmt.

Nr7 (Other) includes:
Quarry, Silica (Silicon smelters), Manganese, Steel, Tin, Zinc, Minerals, Chrome, Construction, S A Railways, Industry, Iron (Grouped together as there are too few cases in each)

New variable expyear was created from variable expyear1 to catagorize the types years of service into the following groups:
if expyear1>0 and expyear1 < 1 then expyear='1'; else
if expyear1 GE 1 and LE 5.9 then expyear='2'; else
if expyear1 GE 6 and LE 10.9 then expyear='3'; else
if expyear1 GE 11 and LE than 15.9 then expyear='4'; else
if expyear1 GE 16 and LE 20.9 then expyear='5'; else
if expyear1 GE 21 and LE 25.9 then expyear='6'; else 
if expyear1 GE 26 and LE 30.9 then expyear='7'; else 
if expyear1 >30.9 then expyear='8'; else 
if expyear1=0 then expyear='9'; 

A format has been assigned to the new variable: 
value expyfmt 1='<1' 2='1-5' 3='6-10' 4='11-15' 5='16-20' 6='21-25' 7='26-30' 8='31+' 9='Missing'; 

format expyear expyfmt.;

New variables were created for the races namely: black, white, coloured, unknown from variable popcode: 
if popcode=1 then Black=1; else 
if popcode=2 then White=1; else 
if popcode=3 then Coloured=1; else 
if popcode=4 then Unknown=1;

IN SAS: 
Choose the Q icon (To go into the SQL Query Window) 
The table source is sasuser 
In Available Tables choose the table sasuser.yeamean 
- move this table into the selected tables window by using the ▼ 
- choose OK 

For the means and std, we have to do the races separately and save the data as two separate files, to combine in Word Perfect. 

In the available columns window, choose all the relevant columns (variable) (minetype, black/white). 
- move this to the selected columns window by using the ▼

To add the mean columns: 
- select black/white again from the available columns and move it to the selected columns window. 
- highlight this variable by clicking on it 
- go to summary functions and choose avg 
- do the same for the std for black/white

To set conditions: 
- go to Locals (pull down menu) 
- choose where conditions for subset 
- choose variable pnumber, other operators, contains, <CONSTANT enter value> 
- type in 1997 (to work only with 1997 cases) 
- choose OK, OK

To run report 
- Choose Actions (pull down menu)
- Choose Run query, design report, begin with default report, autogroup, yes

  For titles:
  - Go to globals (pull down menu)
  - choose options, titles
  - type in title and close

  To choose a predefined report definition:
  - Go to file (pull down menu)
  - choose open, report definition
  - choose in library window: sasuser
catalog window: exposure
  report window: Mean years of service by race
-choose OK

  IN REPORT WINDOW:
  Go to file (pull down menu)
  - choose save, report data
  - save this report in library: sasuser
  member: (type in name of file you want to save it under)
-choose OK

  EXPORTING FROM SAS:
  Go to file (pull down menu)
  choose export
  choose at library: sasuser
  member: the file where you saved the data
  choose next
  choose tab delimited file (*.txt), next
  choose browse and choose where and as what you want the file to be saved in Word Perfect
  (Eg. c:\sas\sasuser\filename)
  choose Finish

  IN WORD PERFECT:
  Go to File (pull down menu)
  choose Open
  choose the file you saved the data under in SAS (for the blacks)
  choose ASCII (DOS) Text

  Arrange data in a table and save

  Go to File and choose open and choose the file (for the whites)
  choose ASCll (DOS) Text
  Highlight this data on choose copy
  go to File, choose close
  go to File, choose open and the name of the file for the blacks
  paste the data for the whites in this table and save as a Word Perfect 6 document