The Arizona Border Study

An Extension of the
Arizona National Human Exposure Assessment Survey (NHEXAS)Study
Sponsored by the Environmental Health Workgroup of the Border XXI Program

Quality Systems and Implementation Plan for Human Exposure Assessment

The University of Arizona
Tucson, Arizona 85721

Cooperative Agreement CR 824719

Standard Operating Procedure **SOP-IIT-A-3.0**

Title: Performance of Analyses on NHEXAS Data

Source: The University of Arizona

U.S. Environmental Protection Agency
Office of Research and Development
Human Exposure & Atmospheric Sciences Division
Exposure & Dose Research Branch

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APPROVALS

☒ Full SOP ☐ Working SOP #pages 4

On Site Principal Investigator:

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Form TP-1

Performance of Analyses on NHEXAS Data

1.0 Purpose and Applicability

The purpose of this SOP is to describe procedures for analyzing NHEXAS data.

These methods will be used for all data analysis associated with the NHEXAS project.

2.0 Definitions

Data Analysis = The statistical examination of data to substantiate or invalidate a hypothesis.

3.0 References

dBase IV, Ashton-Tate Corporation, 1988. Associated Documentation Includes:

(a) "Advanced Topics."
(b) "dBASE IV Change Summary."
(c) "Getting Started with dBASE IV."
(d) "Introduction to the Dot Prompt."
(e) "Guide to dBASE IV."
(f) "Language Reference."
(g) "Learning dBASE IV."
(h) "Network Installation."
(i) "Support and Services Guide."
(j) "TechNotes/dBASE IV."
(k) "Using the dBASE IV Applications Generator."
(l) "Using the Menu System."

"SPSS." SPSS, Inc. 1990. Associated Documentation Includes:

(a) "SPSS Advanced Statistics User's Guide."
(b) "SPSS Base System User's Guide."
(c) "SPSS For UNIX: Operations Guide."
(d) "SPSS Reference Guide."

"SPSS/PC+." SPSS, Inc. 1990. Associated Documentation Includes:

(a) "Data Entry: SPSS/PC+ for the IBM PC/XT/AT and PS/2."
(b) "SPSS/PC+ Advanced Statistics 4.0 for the IBM PC/XT/AT and PS/2."
(c) "SPSS/PC+4.0 Base Manual for the IBM PC/XT/AT and PS/2."
(d) "SPSS/PS+ 4.0 Installation Guide for the IBM PC/XT/AT and PS/2."
(e) "SPSS/PC+ Graphics V3.1 for the IBM PC/XT/AT and PS/2."
(f) "SPSS/PC+ Statistics 4.0 for the IBM PC/XT/AT and PS/2."
(g) "SPSS/PC+ Tables for the IBM PC/XT/AT and PS/2." SPSS Inc. 1990.
(h) "SPSS/PC+ Trends for the IBM PC/XT/AT and PS/2." SPSS Inc. 1990.

"SYSTAT: The System for Statistics." SYSTAT, Inc. 1985.

4.0 Discussion

The complexity of the tasks involved and the ever-changing state of the art of both hardware and software necessitate flexibility in the use of tools for the analysis of data. It is standard practice to leave the choice of programs to perform specific tasks up to the operator or administrator, unless other factors prohibit this choice.

5.0 Responsibilities

5.1 The Co-Principal Investigator (or his designate) is responsible for:

(a) formulation of hypotheses that can be corroborated or disproved using available data.
(b) the choice of available hardware and software needed to perform the data analyses.
(c) composition of logical procedures that will evaluate the hypothesis.
(d) performance of the analysis.
(e) interpretation of the results of the analysis to determine the validity of the hypothesis.
(f) documentation of the analysis.
(g) preparation of displays, presentations, and reports for conferences and publications.

6.0 Materials and Equipment

6.1 System Hardware

The IIT site system hardware consists of Netframe and Challenge class microcomputers. These machines are networked. The IIT LAN is connected to the main IIT VAX through a university owned hardwire.

6.2 DOS Software

(a) Database Management Packages = dBase IV

(b) Presentation Graphics Packages
  (i) Harvard Graphics v3.0

(c) Spreadsheet Packages = Lotus 1-2-3

(d) Statistical Analysis Packages
  (i) SAS
  (ii) SPSS/PC+
    SPSS/PC+ Base System
    SPSS/PC+ Advanced Statistics
    SPSS/PC+ Data Entry
    SPSS/PC+ Graphics
    SPSS/PC+ Tables
    SPSS/PC+ Trends

(iii) SYSTAT

(e) Word Processors and Text Editors = WordPerfect

6.3 VAX System Software

(a) Statistical Packages
(i) BMDP
(ii) SPSS

6.4 Supplies
(a) 3 1/2" 1.4MB Diskettes
(b) 5 1/4" 1.2MB Diskettes
(c) 8 1/2" X 11" Copier/Printer Paper
(d) 9 1/2" X 11" Continuous Form Tractor Feed Paper
(e) HP LaserJet Series II Toner Cartridges
(f) Ribbons for Dot Matrix Printers
(g) Writing Paper

6.5 Reagents

Not Applicable

7.0 Procedure

7.1 Procedure Description

7.1.1 From a general knowledge of trends in the data, form a hypothesis that can be proven through statistical analysis of the data.

7.1.2 Formulate a logical strategy of available statistical processes to prove or disprove the hypothesis. Write the strategy down for later use.

7.1.3 Determine which data files are necessary to carry out the analysis.

7.1.3 Log in to the computer system most suited to the performance of the formulated analysis.

7.1.4 Load and run the processes using the most suitable software available.

7.1.5 Save all iterations of the output to check for logical inconsistencies.

7.1.6 Interpret the results of the analysis to determine the validity of the hypothesis.

7.1.7 Document the analysis using available procedure write-ups and output.

7.1.8 Prepare materials for presentation and/or publication.

7.2 Calculations

Calculations are specific to the database involved. These are recorded in the data generation SOPs.

7.5 QA Checks

7.5.1 The logic of the analysis procedures must be checked and rechecked to assure the validity of the outcome.

7.5.2 Detection Limits: Any detection of invalid logic is cause for corrective action.

7.5.3 Corrective Action: If any errors in the logic are detected they must be corrected and the analysis must be rerun.

8.0 Records

Finished procedural documentation, along with any presentation material or documents for publication shall be archived and retained for no less than 5 years unless specified by the Co-Principal Investigator.