Faculty of Education, Health and Human Sciences

School of Human Sciences

Module title	Applied Epidemiology and Statistics in the Global Context
Module code	PSYC-1115
Module leader	Kafui Adjaye-Gbewonyo
Level	7
Coursework Title	Report
Weighting (%)	100%
Submission details	Via Moodle through Turnitin under Coursework Submission
Submission deadline	10th January 2022
Return date	31st January 2022

Assessment instructions

PSYC-1115: Applied Epidemiology & Statistics in the Global Context[1]

1. Aims and learning outcomes

This assessment involves analysis and interpretation of a public health related data set, and the preparation of technical report.

This assessment has the following aims:
• To increase your understanding of statistical techniques by applying them to data
• To build your confidence in using statistical software
• To gain skills in sourcing and retrieving health and epidemiological information
• To help you acquire the skills necessary to write and present a technical report.

Learning outcomes assessed by this report:

1. Apply fundamental principles of biostatistics to global public health issues.
2. Perform basic statistical tests to analyse public health data.
3. Critically discuss and apply the principles of epidemiology in global public health.
4. Critique the limitations and applications of different epidemiological research designs in public health.

2. Rationale for the assessment

Choosing and applying statistical tests to a dataset provided and interpreting the output will increase students' familiarity with statistical methods, build their critical interpretive skills and enhance their skills in critically appraising epidemiological information and methods.

3. Guidelines for the assessment

Task: Each student will be provided with a dataset and will analyse the data, interpret the results and prepare a technical report of the findings.

The data are derived from the Health Survey for England 2003 dataset. Students will be provided with different versions of the dataset; thus, study findings may differ slightly between students.

Because we are not using the complete survey database and some changes have been made to the description of the methodology to simplify comprehension of the data, we will refer to the country as Pinkland instead of England for the purpose of this assessment.

You will be provided with a dataset (Pinkland.SAV) in SPSS format. Make sure you can open the database in SPSS.

Analysing the data

It is for you to decide what are the appropriate methods using the knowledge you've learned from the material studied in this module.

Analysis:

- Descriptive statistics & descriptive epidemiology of the sample & main outcome variable (BMI)
- Inferential statistics & analytical epidemiology (association between BMI and other variables)

Write an extended technical summary about your findings. At a minimum, the report should provide estimates for men and women of the prevalence of overweight and obesity and identify which population groups are most at risk.

You must carefully consider which of the output from SPSS is necessary to include in the technical report. Do NOT cut and paste tables directly from the SPSS output files without deleting superfluous text and figures. Please edit the charts to make them reader friendly.

Round values for your data to no more than four significant figures. (For the same number of significant figures, different variables will have different numbers of decimal places because they are measured using different units. For example, mean Z scores may have three decimal places, while mean weight in kg might only have one or two.) Also, except for very small p-values, values of most test statistics should be rounded to two decimal places.

Please remember:
For the purposes of writing your report, the data are from Pinkland even though you know that the data are actually from England.

Completing the assessment

While you may wish to discuss ideas with other students about how to analyse the data, it is absolutely essential that you write up your results individually. Working

together on your written work is considered a form of cheating and is an assessment offence.
You will most likely choose to analyse your data and present your findings in different ways from your classmates and there is no single correct approach.

a. Minimum recommended process for data analysis and for reporting of the findings

You should always clearly state the objectives of your analyses. For example, 'A paired t-test was performed to assess the mean difference in x between the two sets of observations.'

Descriptive statistics

- Summarise the demographic characteristics of the sample in terms of age, sex, ethnicity, and marital status. You could treat age as a continuous variable, and/or group it into appropriate categories.
- You can also summarise variables such as car ownership, family size and limiting longstanding illness.
- Create a new continuous variable, BMI, from the values of weight and height. Remember BMI is measured as weight in kilograms (kg) divided by the square of height in metres (m). The units for BMI are kg/m^2.
- Summarise the data relating to BMI. You will need to include measures of location (or central tendency) and measures of spread (variation) and to report confidence intervals.
- In order to give prevalence rates of overweight and obesity, create a new categorical variable from BMI using the threshold values of 18.5, 25 and 30 as follows:
  - BMI <18.5 = underweight
  - BMI from 18.5 to 24.99 = normal weight
  - BMI ≥ 25.00 = overweight
  - BMI ≥ 30.00 = obese
- If the data allows you can further classify the obese group into: Obese class 1 (BMI from 30 to 34.99); Obese class 2 (BMI from 35.00 to 39.99); Obese class 3 (BMI ≥ 40.00).

Inferential statistics and analytical epidemiology

- Investigate if and how BMI is associated with age, sex, and educational attainment.
- You can choose whether you use BMI as a continuous variable or as the derived categorical variable.
- You can choose how to use age (continuous or categorical) and educational attainment (if you prefer to condense education into fewer categories or use the number of categories originally defined).

b. Additional analysis (optional)

Investigate the association of BMI with ethnicity, car ownership, occupation and presence of long-standing illness. You can also look at the association between presence of long-standing illness and ethnicity and check if the burden of disease is distributed evenly across ethnic groups or not. Again, you are free to re-group the

variables. For example, ethnicity could be treated as a binary variable (white vs non-white).

c. Report writing: Guidance on the style of a technical report

Technical/ executive summaries are briefing documents written by technical experts on specific topics for decision-makers (often civil servants, programme managers or administrators.) They are commissioned to provide information on specific questions or issues and to provide a basis for decision- making and action. As such they should put forward all the relevant facts and set out the relevant issues. The aim is to inform the reader sufficiently to enable her/him to understand the reasons for and implications of any decisions and subsequent actions that she/he takes. Information presented in the report should not include personal views that are not supported by the data or by other evidence/literature. You should assume that the person you are writing for is intelligent and proficient, but busy, and not an expert in relation to the issue in hand. The report should include a short background, aim(s) of the report, key results a discussion and conclusions.

Below are suggestions of content that should be covered in each section:

Introduction

- Why overweight/obesity is an important issue in this particular country (You can use data and evidence from England and the UK to support this section).
- Why this survey is needed

Objectives

- Clear statement of the aims of the report

Methods

- Brief description of data collection and sampling procedure
- Important features of the study design and quality control
- Description of how the variables used in the analysis were defined
- Description of the analysis plan for descriptive and inferential statistics (for categorical and continuous variables) and of the software used for analyses

Results

- Description of the sample (e.g. age distribution, gender, socio-economic status, demographics, etc), descriptive statistics for the nutritional variables (BMI) and for other health outcomes used in the analysis
- Presentation of the results of analytical analyses (associations between BMI and other variables).
- At least one table and one graph

Discussion and conclusions

- Compare your findings to the WHO values (for example) which indicate a crisis and to other relevant literature on the topic
- Suggested reasons for the patterns and trends in the data based on the research and literature
- Identify any limitations of your data analysis and the survey methodology

- Identify the need for intervention to address the problems identified and make recommendations

References

- Keep a list of all references in the Harvard format. Preferably use appropriate software for this.

d. **Length (max 2500 words +/- 10%)**

The maximum length of the report is not limited to the text only, this includes tables and figures/charts, but excludes the reference list. To simplify the length estimation, each table (regardless of the size) will count as 100 words and each graph as 50 words.
For example, if you include 4 tables (4 x 100 = 400) and 2 graphs (2 x 50 =100) in your report you have used 500 words. The remaining 2000 will be distributed as text across the report.
IMPORTANT: The reference list is NOT included in the word count.

Marking criteria

The criteria for passing this assessment include:

- Appropriate analysis
- Appropriate presentation of the results
- Conclusions are based on the findings presented
- The style of the text is clear, simple, concise, logical and systematic
- The report addresses a key health issue of interest

Data analysis and interpretation

- Use of appropriate tests
- Appropriate use and display of tables and graphs
- Presentation of results (key prevalence rates, identification of high-risk groups and main associations)
- Adequate interpretation of key results
- Reasons for the patterns and trends in the data
- Explanations clear and understandable
- Limitations of survey methodology and of your data

Academic writing and referencing

- Clarity and logical organisation of the report
- Degree of synthesis / creative thought demonstrated
- Page style / font / margins appropriate
- Reference list and in text references consistent
- References using Harvard style
- Reference list complete and without errors
- Supplementary items cross referenced and appropriate
- Appropriate text explaining tables and graphs
- Clear English with coherent flow and correct grammar
- Appropriate length

4. Recommended reading

See Moodle for additional readings

Author	Title	Publisher	ISBN
Bonita, R., Beaglehole, R., & Kjellstroem, T.	Basic epidemiology (2nd ed.) Available from: https://apps.who.int/iris/bits tream/handle/10665/43541 /9241547073_eng.pdf	World Health Organization	97892415 47079
Bhopal, R.S.	Concepts of epidemiology: Integrating the ideas, theories, principles, and methods of epidemiology (3rd ed.): Electronic book (E-book) available UoG from library: https://ebookcentral.proqu est.com/lib/gre/detail.actio n?docID =4706573	Oxford University Press	97801987 39685
Bruce, N., Pope, D & Stanistreet, D	Quantitative methods for health research: A practical interactive guide to epidemiology and statistics (2nd ed.) E-book available from Ebook Central through UoG library: https://ebookcentral.proqu est.com/lib/gre/detail.actio n?docID =5167243 A companion website is available through UoG library: https://www.wiley.com/leg acy/wileychi/bruce/spss.ht ml	Wiley Desktop Editions	97811186 65411

Woodward, M.	Epidemiology, Study Design and Data Analysis (3rd ed.) E-book available from Ebook Central trough UoG library: https://ebookcentral.proquest.com/lib/gre/detail.actio n?docID=1575748	Taylor & Francis Group	97814398 39706

SAMPLE TITLE PAGE

XXXXXXXXX (your student ID number)

MSc Global Public Health

PSYC-1115

APPLIED EPIDEMIOLOGY AND STATISTICS IN THE GLOBAL CONTEXT M01

Coursework Deadline:

Word Count:

Module Leader: