

Comp Public Health Stats Midterm, F01

Instructions :

- Coverage: Study Design; Data Entry & Validation (*EpiData*); Cohort Studies; Case-Control Studies.
- Please answer on the separate sheets of paper (provided).
- When you are done with Part A, turn in your *answer sheet*, pick up your lab notebook, and then start Part B.
- Read each question carefully.
- Time limit: 1.5 hours.

Part A (Closed Book)

1. *Fill in the blank*: The goal of most surveys is to draw a sample of units from a larger population, measure them, and make statements about the population from which the sample was drawn. The analysis of such survey relies on samples being a _____ sample from the population.
2. *Multiple choice (select single best response)*: The goal of case-control studies is to estimate the relative effect of an exposure on the risk of disease using an odds ratio. The odds ratio parameter is denoted:
(a) $\hat{RR}$ (b) $\hat{OR}$ (c) RR (d) OR
3. *Fill in the blank*: Assuming the relationship between the exposure and disease is causal, a relative risk of 1.5 suggests a _____% increase in the risk of disease.
4. *Multiple choice*: A 95% confidence interval for an odds ratio is (0.8, 1.6). Based on this confidence interval, we can surmise that the association between the exposure and disease _____ statistically significant at $\alpha = .05$.
(a) is (b) is *not*
5. *Short answer*: Provide an example as to when a randomized trial would not be ethical.
6. *Short answer*: What is meant by “intention-to-treat analysis”?
7. *Short answer*: When would you avoid using a chi-square test for data in a 2-by-2 cross-tabulation?
8. *Short answer*: What is the function of an *EpiData* .qes file?
9. *Short answer*: What is the function of an *EpiData* .rec file?
10. *Short answer*: How many degrees of freedom does a chi-square test of independence have when testing data in a 2x2 table?

Part B (Procedure Notebook)

- (1) In a 5-year follow-up study, 11 of the 123 50-year-old men who have first degree relatives with hypertension develop hypertension. In contrast, 8 of the 286 comparably aged men who lack first degree relatives with hypertension go on to develop hypertension. [15 pts]

	Hyperten+	Hyperten-
Fam. history+	11	112
Fam. history -	8	278

- (A) Is this study experimental or observational?
(B) Briefly, explain your response to Question A.
(C) Is this study a cross-sectional study or longitudinal study?
(D) Explain your response to Question C.
(E) Calculate the risk of hypertension in each group.
(F) Conduct a null hypothesis test. *Show all hypothesis testing steps.* (Let $\alpha = .05$.)
(G) Summarize your analyses in a couple of sentences.
- (2) A case-control study looked at risk factor E in relation to disease D. In this study, controls were matched to cases on clinic, age, sex, ethnicity, and smoking status. There were 25 *pairs* in which the case was exposed but not the control. There were 6 *pairs* in which the control was exposed but not the case. [7 pts]
- (A) Calculate the odds ratio associated with the exposure.
(B) Interpret the above odds ratio.
(C) Calculate a 95% confidence interval for the odds ratio.
(D) Does the above odds ratio seek to capture the odds ratio estimate or the odds ratio parameter? Explain.

Part C (Take Home - Due next class)

Using *EpiData*, create a data file with the following data:

LNAME	WEIGHT	SEX	COUNTRY	EPI
SNOW	155	1	ENGLAND	1
DURKHEIM	175	1	FRANCE	1
PRESLEY	255	1	US	2

Make certain the variable names and coding schemes are *exactly* as they appear in the table. Also, for the variable SEX, include the labels 1 = male, 2 = female. For the variable EPI, include the labels 1 = yes, 2 = no. Then, generate a code book for the data set. Finally, export the data to an SPSS file. Save the SPSS SPSS data file. At our next class, hand in the files ex1-f01.qes, ex1-f01.rec, ex1-f01.chk, ex1-f01.not (the code book), ex1-f01.sps, and ex1-f01.sav.