E2040
Week 8 Practice

1. **The 5-year incidence of cardiovascular disease (CVD) in relation to smoking status was determined in a population sample of 1000 men, 18 years and older. At baseline, 40% of the men were classified as being current smokers and 60% as being non-smokers. At the end of the follow-up, 80 CVD events had occurred among the smokers and 60 events among the non-smokers.**

a) Enter the information given in the example above into a 2x2 table

	CVD	No CVD	Total
Smoking			
No smoking			
Total			

b) Calculate the cumulative incidence (incidence risk) of CVD for smokers and non-smokers

c) Calculate and interpret the risk ratio

2. The Whitehall II study of British civil servants started in 1985. There have been nine waves of data collection to date. The numbers given below are for illustration only.

    a. Common mental disorder was captured by the GHQ30 – a 30-item self-completion tool that counts the number of symptoms of common mental disorder. Here, a score of 5 or more out of 30 is classified as a case of common mental disorder. The GHQ30 has been administered at every wave. The table below gives numbers of participants with CMD at waves 1 (1985-8) and 5 (1991-1993).

	No CMD at wave 5	CMD at wave 5	Total
No CMD at wave 1	4277	781	5058
CMD at wave 1	1174	738	1912
Total	5451	1519	6970

a) Calculate the incidence risk (cumulative incidence) of common mental disorder.
Hint: exclude the prevalent cases at baseline.

    b. The number of participants developing new CMD is broken down by employment grade in the following table.

Employment grade	Number with CMD / total N	*Incidence risk*	*Risk Ratio*
High	235/1690		
Medium	388/2496		
Low	158/872		

a) Calculate the incidence risk of CMD in each grade.
b) With high grades as the reference group, calculate the risk ratio of developing CMD in the other grades.

3. At baseline (wave 1) the distribution of participants by civil service grade of employment (a marker of socioeconomic position) was as follows:

Employment Grade	Wave 1 number of participants (%)
High grade	3028 (29)
Medium grade	4943 (48)
Low grade	2337 (23)

By wave 5, the distribution was as follows:

Employment Grade	Wave 5 number of participants (%)
High grade	1446 (41)
Medium grade	1558 (44)
Low grade	521 (15)

Note that 477 participants were promoted from medium to high grade, 168 were promoted from low to medium grade and 7 were promoted from low to high grade.

a) What do you notice about the number of participants in each grade at the two waves?

b) And what do you notice about the distribution of participants by grade at the two waves?

c) Besides promotion, what reasons can you suggest for these differences between waves?

The Whitehall II study set out to examine whether people in lower socioeconomic positions developed poorer health.

d) What is the implication of the loss to follow-up by grade for looking at this research question?

4. The table below shows participation in Whitehall II at wave 5 according to the health status at wave 1. The health status measure is self-rated health in the last year based on the question "How was your health in the last year?"

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Health status	Took part at wave 5 – Number of participants (%)	Did not take part -Number of participants (%)
Very good	2654 (81)	632 (19)
Good	3236 (77)	973 (23)
Average	1612 (71)	648 (29)
Poor	319 (68)	152 (32)
Very poor	27 (59)	19 (41)

a) What does this table tell you?

b) What is the implication of this for studying risk factors for poor health?

EXTRA QUESTIONS

5. Read the abstract, then answer the questions below

'Social avoidance' was measured using binary responses (0,1) to the following four items:

'I don't speak until someone speaks to me first'
'I wish I were not as shy as I am'
'I stay by myself because I fear doing something wrong'
'I am often not in on the group's gossip'

Participants were assigned to one of four groups with score 0, 1, 2, 3 or 4

Answer the following questions.

a) Did the study address a clearly focused question?

b) What was the population?

c) Risk factor(s) over specified time period?

d) What outcome(s) were studied?

e) What was the measure of effect?

f) What was the main result of the study?

g) What further evidence would you want to see on this research question before reaching a conclusion on this association?

Social Avoidance and Long-Term Risk for Cardiovascular Disease Death in Healthy Men: The Western Electric Study

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PURPOSE: Although personality traits may contribute to risk for cardiovascular disease (CVD), inconsistent findings have prompted efforts to refine their measurement to include only the hostile and aggressive components. Data are sparse on the "social avoidance" (SA) subscale that measures more indirectly negative traits such as shyness. Thus, we sought to examine the association between SA and CVD, coronary heart disease (CHD), and non-CVD death.

METHODS: A total of 2107 men (ages 40–55 years) free of baseline CVD were enrolled in 1957 in the Western Electric Study. SA was measured at study entry using the four-item subscale of the Cook-Medley hostility scale to divide the cohort into four groups according to the degree of social avoidance. CHD mortality, CVD mortality, and non-CVD mortality were determined by death certificate.

RESULTS: After 30 years of follow-up, SA was associated with CVD mortality for the highest vs. the lowest SA group in age-adjusted models (hazard ratio 1.39; 95% confidence interval [95% CI] 1.04–1.84) and after adjustment for traditional CVD risk factors (hazard ratio 1.49; 95% CI 1.12–2.00). After further adjustment for measures of hostility, the findings were similar. Findings for CHD mortality were similar. However, there was no significant association between SA and non-CVD mortality.

CONCLUSIONS: Social avoidance is associated with CVD mortality but not with non-CVD mortality in middle-aged men. These findings suggest the hypothesis that social avoidance might promote CVD through physiologic, non-behavioral mechanisms.

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Source: http://www.sciencedirect.com/science/article/pii/S1047279707001445#

6. **The table below describes a hypothetical case-control study that examined the relationship between prostate cancer risk and beer consumption. 5 prostate cancer cases university clinics completed a questionnaire shortly after diagnosis. Controls were recruited from patients in the surgical outpatient clinics of the same hospitals. Cases and controls completed a questionnaire about the frequency and amount of beer consumed in the last year.**

	Cases	Controls
Non-drinkers	51	88
Rarely drinking beers	53	101
Drinking few beers often	86	125
Drinking beer a lot and often	96	74
Total	286	388

a) Calculate the frequency of different levels of beer consumption for cases and controls. What is the interpretation?

b) Calculate the odds ratio for each category of beer consumption compared to non-drinkers. Interpret.

c) What other information would we need?

d) Can the way the cases and controls were recruited affect the results? How and why?

e) What other ways of recruiting probands for a similar study we can consider and what are the advantages and disadvantages?