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A prospective study was conducted to examine the relationship between hepatitis C (HVC) virus (based on the presence of anti-HVC antibodies) and newly developed hepatocellular carcinoma (liver cancer). The table below is based on the study results.

Table 1	Liver Cancer	
Anti-HCV	Present	Absent
Positive	2,692	1,932,975
Negative	9,903	11,509,613

Using the data from Table 1, calculate the following. [Unless otherwise noted, use 1 decimal place for numeric responses.]

1. Incidence of liver cancer among those positive for anti-HCV per 100,000 people.
2. Incidence of liver cancer among those negative for anti-HCV per 100,000 people.
3. RR of liver cancer comparing those are positive for anti-HCV to those who are negative. [2 decimal places]

In the same prospective study of the relationship of hepatitis C virus to newly developed hepatocellular carcinoma (liver cancer), the authors did further analyses to examine the data for a potential interaction between alcohol consumption and hepatitis C virus (HCV). The table below is based on the study results.

Table 2

Alcohol drinking	Anti-HCV	No. of Persons	Incidence rates/100,000	RR	AR
Absent	Negative	9362	82.5	Reference	Reference
	Positive	2587	135.5	4	7
Present	Negative	541	315.2	5	8
	Positive	105	397.1	6	9

Using the data in Table 2 and the category “absent-negative” as the reference, complete the shaded portion of the table based on what is requested in items 4-9. (The numbers in the table correspond to the item numbers below NOT data needed for your calculations.) You will calculate the relative risks and the attributable risks (in the exposed) for those with positive antibodies to HCV only, for those exposed to alcohol only, and for those exposed to both in the following order. [Use 1 decimal place for your final answer for each numeric response.]

4. RR (alcohol absent|Anti-HVC positive)
5. RR (alcohol present|Anti-HVC negative)
6. RR (alcohol present|Anti-HVC positive)

7. AR (alcohol absent|Anti-HVC positive)
8. AR (alcohol present|Anti-HVC negative)
9. AR (alcohol present|Anti-HVC positive)
10. Next, calculate the expected joint relative risk (multiplicative model)
11. Next, calculate the expected joint attributable risk in the exposed (additive model)
12. How would you best describe the observed versus the expected joint relative risk in terms of interaction?
 - a. there is no multiplicative interaction
 - b. synergistic
 - c. antagonistic
13. How would you best describe the observed versus the expected joint attributable risk in terms of interaction?
 - a. there is no additive interaction
 - b. synergistic
 - c. antagonistic
14. Comparing the analysis of the data in table 1 versus the analysis of the data in table 2, do you think it is appropriate to report the calculated incidence measures or the relative risk from the data in table 1?
 - a. yes
 - b. no
 - c. there is insufficient information to make this judgement
15. Justify your response to the question posed in item 14.

In a cohort study of male construction workers, the researchers examined the relationship between smoking and lung cancer. The researchers are concerned that there may be in interaction between exposure to asbestos and current smoking status. The data are below.

Current Smoker	Exposed to Asbestos	Lung Cancer Incidence per 100,000	Attributable Risk per 100,000
No	No	15	0
No	Yes	20	5
Yes	No	30	15
Yes	Yes	105	90

Use the information in the table above to respond to items 16-19. Reorganize the table if needed to facilitate your calculations. [Use 1 decimal place for your numeric responses].

16. Using an additive model, calculate the expected incidence per 100,000 people.
17. Using an additive model, what is the best description of the assessment for interaction based on incidence?
- a. interaction is not present
 - b. antagonistic interaction is present
 - c. synergistic interaction is present
18. Using an additive model, calculate the expected attributable risk per 100,000 people.
19. Using an additive model, what is the best description of the assessment for interaction based on attributable risk.
- a. interaction is not present
 - b. antagonistic interaction is present
 - c. synergistic interaction is present
20. Using the information from your responses to items 16-19, write a brief, appropriate interpretation.
21. Upload the assignment pdf. (0 points) -- REQUIRED



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