Quiz 2

1. (Multiple choice) The following is an excerpt from a recent global health study:

Village development committees (VDCs) in the catchment area of Bharatpur Eye Hospital, Nepal with less than 15,000 people were eligible for inclusion. We randomly assigned (1:1) VDCs to either an intervention group or a control group. In the intervention VDCs, existing female community health volunteers (FCHVs) were trained to diagnose corneal abrasions and provide a 3-day course of ophthalmic antimicrobials to their patients. In the control VDCs, FCHVs did not provide this intervention. Both groups were followed up for 3 years for photographic evidence of corneal ulceration. The primary outcome was the incidence of corneal ulceration, determined by masked assessment of corneal photographs.

Which of the following study designs best describes this study?

1. Randomized controlled trial
2. Case-control study
3. Prospective cohort study
4. Cross-sectional study
5. (Short answer) The American Community Survey is a demographic survey conducted by the Census Bureau. In order to collect information about household agricultural sales, the survey asks the following question:

In the past 12 months, what were the actual sales of all agricultural products from this property?

* 1. None
  2. $1 to $999
  3. $1,000 to $2,499
  4. $2,5000 to $4,999
  5. $5,000 to $9,999
  6. $10,000 or more

Which variable type (nominal categorical, ordinal categorical, discrete quantitative, continuous quantitative) best describes household agricultural sales, as measured by this survey question? Give a one sentence rationale for your answer.

1. (True/False) The sample mean is always larger than the sample median.
2. (Multiple choice) Which of the following measures of spread is most affected by outliers (data points that differ significantly from other observations)?
3. Range
4. Standard deviation
5. Variance
6. Interquartile range
7. (Short answer) The following is an excerpt from a recent public health study:

The omicron variant (B.1.1.529) of SARS-CoV-2 has demonstrated partial vaccine escape and high transmissibility, with early studies indicating lower severity of infection than that of the delta variant (B.1.617.2). We aimed to better characterise omicron severity relative to delta by assessing the relative risk of hospital attendance, hospital admission, or death in a large national cohort.

Based on this excerpt, list the exposure(s) and outcome(s) that are the focus of this cohort study.

1. (Multiple choice) I am interested in the association between high blood pressure and coronary artery disease. I have access to the University of Washington Medical Center electronic health record database. I randomly sample 10,000 adult patients from the database, and record (1) whether or not they have high blood pressure and (2) whether or not they have ever had a cardiovascular event.

This could best be characterized as which of the following study designs?

1. Cross-sectional study
2. Case-control study
3. Retrospective cohort study
4. Prospective cohort study
5. (Short answer) I am interested in the association between high blood pressure and coronary artery disease. I have access to the University of Washington Medical Center electronic health record database. I randomly sample 10,000 adult patients from the database, and record (1) whether or not they have high blood pressure and (2) whether or not they have ever had a cardiovascular event.

Suppose I would like to draw conclusions about the association between blood pressure and coronary artery disease in adults living in the Pacific Northwest. Is my sample likely to be representative of my population of interest? Give a one sentence rationale for your answer.

1. (Multiple choice) Which of the following graph types can be used to describe a categorical variable
2. Bar graph
3. Histogram
4. Scatterplot
5. Boxplot
6. (True/False) Cohort studies are more efficient than case-control studies for studying rare outcomes.
7. (Multiple choice) Which of the following differentiates an experimental study from an observational study?
8. In an experimental study, the investigator controls the exposure, while in an observational study they do not.
9. In an experimental study, subjects are selected based on their outcomes, while in an observational study they are selected based on their exposures.
10. In an experimental study, subjects are followed prospectively through time, while in an observational study they are followed retrospectively through time.
11. In an experimental study, there is no missing data, while in an observational study there may be.