Lec:10 Sampling & Confidence Intervals

Epidemiology Lecture #10

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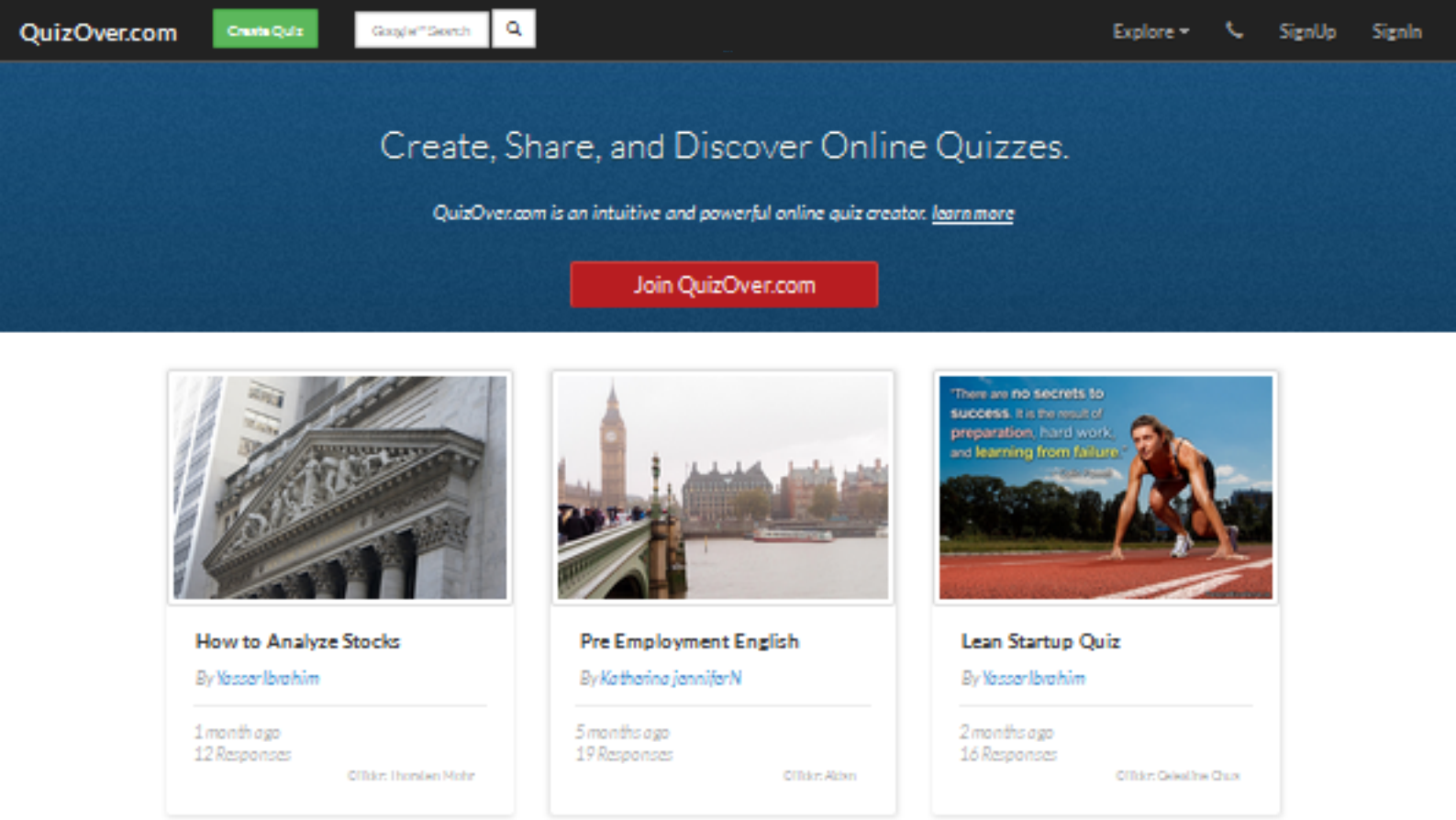

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4. Chapter: Lec:10 Sampling & Confidence Intervals

1. Lec:10 Sampling & Confidence Intervals Questions

4.1.1. In the exposed group, the mean systolic blood pressure was 100 mm H...

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Use the following information for questions 1-3:

In a cohort study of breast cancer in older women, there are two groups, those who were exposed to a known carcinogen and those who were not.

In the exposed group, the mean systolic blood pressure was 100 mm Hg, with a standard deviation of 8 mm Hg. There were 169 men in the exposed group. What is the standard error of the mean systolic blood pressure?

- Standard error = Standard deviation / sqrt(N)
  = 8 / sqrt(169)
  = 8/13 = 0.615

4.1.2. In the unexposed group, the mean systolic blood pressure was 105 mm...

Author: Janet Forrester

Use the following information for questions 1-3:

In a cohort study of breast cancer in older women, there are two groups, those who were exposed to a known carcinogen and those who were not.

In the unexposed group, the mean systolic blood pressure was 105 mm Hg, with a standard deviation of 12 mm Hg. The sample size of the unexposed group was 196. What is the 95% confidence interval for the mean systolic blood pressure of this group?

- First, find the standard error:
  = Standard deviation / sqrt(N)
  = 12 / sqrt(196)
  = 12/14 = 0.857
  Then, calculate the confidence intervals:
  95% CI = mean + 1.96*SE
  = 105 + 1.96*0.857
  = 105 + 1.68
  = (103.3, 106.7)

4.1.3. If we add additional people into the unexposed group while keeping ...

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Use the following information for questions 1-3:

In a cohort study of breast cancer in older women, there are two groups, those who were exposed to a known carcinogen and those who were not.

If we add additional people into the unexposed group while keeping all other factors the same, will the width of the confidence interval increase, decrease, or remain the same?

- The width of the confidence interval will decrease, since the denominator, sqrt (N), increases

4.1.4. Must the standard error always be at smaller than the standard devi...

Author: Janet Forrester

Must the standard error always be at smaller than the standard deviation if there is more than one person in the group of interest? Why or why not?

- Yes, because the standard error is a function of the standard deviation. As long as the sample size is greater than 1, the standard error will always be smaller than the standard deviation.

4.1.5. How does increasing the sample size affect the power of the study?

Author: Janet Forrester

How does increasing the sample size affect the power of the study?

- Increasing the sample size increases the power of the study. In the notes, you'll see that studies with large sample sizes have high power to detect effects or differences. We'll talk more about this in the following lecture.

4.1.6. Which of the following is a TRUE statement?

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Which of the following is a TRUE statement?

Please choose only one answer:

- Confidence intervals are always symmetric.
- Confidence intervals for an odds ratio require that the distribution is normal or Gaussian.
- For large samples, the distribution of sample means will be approximately normal, regardless of the distribution of the population characteristic.
- If group A has a mean of 40, a sample size of 50, and a standard deviation of 10, and if group B has a mean of 40, a sample size of 40, and a standard deviation of 11, then the standard error of Mean A will be larger than the standard error of Mean B.
- If group A has a mean of 40, a sample size of 50, and a standard deviation of 10, and if group B has a mean of 42, a sample size of 50, and a standard deviation of 10, then the standard error of Mean A will be larger than the standard error of Mean B.

4.1.7. Interpret the 95% confidence interval for mean number pounds of cor...

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Interpret the 95% confidence interval for mean number pounds of corn consumed by a sample of cows at an industrial feedlot of a beef farm: (10.7, 21.4)

Please choose only one answer:

- We are 95% certain that the true sample mean pound of corn consumed by cows is between 10.7 and 21.4.
- We are 95% certain that the true population mean pounds of corn consumed by cows is between 10.7 and 21.4.
- We are 95% certain that between 10.7 and 21.4 pounds of corn will be fed, on average, to an individual cow.
- Ninety-five percent of the cows in the sample consumed between 10.7 and 21.4 pounds of corn.