
Errata sheet for AP Statistics

This document lists corrections and/or refinements made to the AP Statistics Course and Exam Description since it was published in May of 2019.

Corrections as of March, 2021

The items listed below have been corrected in the online version of the CED. Teachers can print out the individual pages in order to update their printed CED binders.

- In Topic 6.8 (p. 143) the Essential Knowledge statement UNC-4.J.1 was revised for accuracy. It now includes the phrase “two independent” random samples.
- In Topic 6.10 (p. 147) the Essential Knowledge statement VAR-6.J.1.a was revised for accuracy. It now includes the phrase “two independent” random samples.
- In Topic 7.6 (p. 167) the formula included in Essential Knowledge statement UNC-4.V.1 inadvertently contained a plus symbol. It has been removed.
- In Topic 9.2 (p. 199) the Essential Knowledge statement UNC-4.AC.1 was rewritten for clarity and accuracy. The Essential Knowledge statement UNC-4.AC.2 was revised for accuracy. (Updated 3/2021)

TOPIC 6.8

Confidence Intervals for the Difference of Two Proportions

Required Course Content

ENDURING UNDERSTANDING

UNC-4

An interval of values should be used to estimate parameters, in order to account for uncertainty.

LEARNING OBJECTIVE

UNC-4.I

Identify an appropriate confidence interval procedure for a comparison of population proportions. **[Skill 1.D]**

UNC-4.J

Verify the conditions for calculating confidence intervals for a difference between population proportions. **[Skill 4.C]**

ESSENTIAL KNOWLEDGE

UNC-4.I.1


The appropriate confidence interval procedure for a two-sample comparison of proportions for one categorical variable is a two-sample z-interval for a difference between population proportions.

UNC-4.J.1

In order to calculate confidence intervals to estimate a difference between proportions, we must check for independence and that the sampling distribution is approximately normal:


- a. To check for independence:
 - i. Data should be collected using two independent, random samples or a randomized experiment.
 - ii. When sampling without replacement, check that $n_1 \leq 10\%N_1$ and $n_2 \leq 10\%N_2$.
- b. To check that sampling distribution of $\hat{p}_1 - \hat{p}_2$ is approximately normal (shape).
 - i. For categorical variables, check that $n_1\hat{p}_1$, $n_1(1 - \hat{p}_1)$, $n_2\hat{p}_2$, and $n_2(1 - \hat{p}_2)$ are all greater than or equal to some predetermined value, typically either 5 or 10.

SKILLS

 *Selecting Statistical Methods*

1.D

Identify an appropriate inference method for confidence intervals.

 *Statistical Argumentation*

4.C

Verify that inference procedures apply in a given situation.

 *Using Probability and Simulation*

3.D

Construct a confidence interval, provided conditions for inference are met.

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LEARNING OBJECTIVE

VAR-6.J

Verify the conditions for making statistical inferences when testing a difference of two population proportions.

[Skill 4.C]

ESSENTIAL KNOWLEDGE

VAR-6.J.1

In order to make statistical inferences when testing a difference between population proportions, we must check for independence and that the sampling distribution is approximately normal:

- a. To check for independence:
 - i. Data should be collected using two independent, random samples or a randomized experiment.
 - ii. When sampling without replacement, check that $n_1 \leq 10\%N_1$ and $n_2 \leq 10\%N_2$.

- b. To check that the sampling distribution of $\hat{p}_1 - \hat{p}_2$ is approximately normal (shape):

- i. For the combined sample, define the combined (or pooled) proportion,

$$\hat{p}_c = \frac{n_1\hat{p}_1 + n_2\hat{p}_2}{n_1 + n_2}. \text{ Assuming that } H_0 \text{ is}$$

true ($p_1 - p_2 = 0$ or $p_1 = p_2$), check that

$$n_1\hat{p}_c, n_1(1 - \hat{p}_c), n_2\hat{p}_c, \text{ and } n_2(1 - \hat{p}_c)$$

are all greater than or equal to some predetermined value, typically either 5 or 10.

TOPIC 7.6

Confidence Intervals for the Difference of Two Means

Required Course Content

ENDURING UNDERSTANDING

UNC-4

An interval of values should be used to estimate parameters, in order to account for uncertainty.

LEARNING OBJECTIVE

Identify an appropriate confidence interval procedure for a difference of two population means.

[Skill 1.D]

ESSENTIAL KNOWLEDGE

UNC-4.V.1

Consider a simple random sample from population 1 of size n_1 , mean μ_1 , and standard deviation σ_1 and a second simple random sample from population 2 of size n_2 , mean μ_2 , and standard deviation σ_2 . If the distributions of populations 1 and 2 are normal or if both n_1 and n_2 are greater than 30, then the sampling distribution of the difference of means, $\bar{x}_1 - \bar{x}_2$ is also normal. The mean for the sampling distribution of $\bar{x}_1 - \bar{x}_2$ is $\mu_1 - \mu_2$. The standard

deviation of $\bar{x}_1 - \bar{x}_2$ is $\sqrt{\frac{(\sigma_1)^2}{n_1} + \frac{(\sigma_2)^2}{n_2}}$.

UNC-4.V.2

The appropriate confidence interval procedure for one quantitative variable for two independent samples is a two-sample t -interval for a difference between population means.


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SKILLS

 *Selecting Statistical Methods*

1.D

Identify an appropriate inference method for confidence intervals.

 *Statistical Argumentation*

4.C

Verify that inference procedures apply in a given situation.

 *Using Probability and Simulation*

3.D

Construct a confidence interval, provided conditions for inference are met.