Statistics of Behavioral Sciences Practice Test (Sample)

Study Guide

BY EXAMZIFY

Everything you need from our exam experts!

Table of Contents

Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn’t just about memorization, it’s about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you’re preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You’ll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it’s correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It’s ideal for learners who want to:

- **Practice answering questions under realistic conditions,**
- **Improve accuracy and speed,**
- **Review explanations to strengthen weak areas, and**
- **Approach the exam with greater confidence.**

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn’t about getting every question right the first time, it’s about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let’s begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here’s how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don’t just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There’s no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

1. **Which statement describes the relationship between experiment-wise alpha and per-test alpha?**
   - A. The experiment-wise alpha level is typically greater than the per-test alpha.
   - B. They are always equal.
   - C. The per-test alpha is always greater than the experiment-wise.
   - D. There is no systematic relationship.

2. **What is the chi-square test and what does it measure?**
   - A. a parametric statistics test; it measures mean differences
   - B. a non-parametric statistics test; it measures how well observed frequencies match a hypothesized distribution
   - C. a non-parametric test measuring correlation
   - D. a parametric test for variance

3. **Which variable in regression analyses is the source from which predictions are made?**
   - A. Independent Variable
   - B. Predictor Variable
   - C. Dependent Variable
   - D. Outcome Variable

4. **Which statement best defines effect size?**
   - A. How much difference can be attributed to the independent variable
   - B. P-value
   - C. Sample size
   - D. Mean difference

5. **What is the experiment-wise alpha level?**
   - A. The total probability of a Type I Error that is accumulated from all of the individual tests in the experiment.
   - B. The alpha value used for a single test only.
   - C. The probability of a Type II Error across the experiment.
   - D. The nominal alpha for the last test.

6. Variance equals?

- **A. The square root of the mean squared deviation.**
- **B. The sum of squared deviations from the mean.**
- **C. The mean squared deviation, or the average squared distance from the mean.**
- **D. The absolute deviation from the mean.**

7. In factorial ANOVA, what is a main effect?

- **A. The interaction between two factors.**
- **B. The mean differences among the levels of one factor for factorial ANOVA.**
- **C. The overall mean across all groups.**
- **D. The variance within a group.**

8. What distinguishes simple regression from multiple regression?

- **A. Simple regression uses multiple predictors**
- **B. Simple regression cannot predict**
- **C. Simple regression uses only the intercept**
- **D. Simple regression has one predictor; multiple regression has many predictors**

9. Standard Deviation is?

- **A. The distance between the highest and lowest score.**
- **B. The mean of squared deviations.**
- **C. The positive square root of the variance and provides a measure of the average distance from the mean.**
- **D. The number of standard deviations away from the mean.**

10. Degrees of freedom describe the number of scores in a sample that are independent and free to vary. Why do formulas for degrees of freedom vary?

- **A. Because the degrees of freedom depend on the total sample size.**
- **B. Different formulas for different tests.**
- **C. They are always equal to the sample size minus one.**
- **D. They depend on the number of groups.**

Answers

1. A
2. B
3. B
4. A
5. A
6. C
7. B
8. D
9. C
10. B

Explanations

1. Which statement describes the relationship between experiment-wise alpha and per-test alpha?

A. The experiment-wise alpha level is typically greater than the per-test alpha.

B. They are always equal.

C. The per-test alpha is always greater than the experiment-wise.

D. There is no systematic relationship.

When you run multiple tests, the chance of at least one false positive across all tests adds up. To keep that overall risk at a desired level, you set a smaller threshold for each individual test—the per-test alpha—often by dividing the overall (experiment-wise) alpha by the number of tests. This means the experiment-wise alpha stays at the chosen overall level, while each test uses a more stringent criterion. So, the experiment-wise alpha is typically greater than the per-test alpha. They'd be equal only if there's a single test. If you don't adjust for multiple tests, there isn't a consistent relationship to rely on, but with adjustment, the per-test alpha shrinks as the number of tests grows, maintaining the overall limit.

2. What is the chi-square test and what does it measure?

A. a parametric statistics test; it measures mean differences

B. a non-parametric statistics test; it measures how well observed frequencies match a hypothesized distribution

C. a non-parametric test measuring correlation

D. a parametric test for variance

The chi-square test is a non-parametric method that assesses whether observed categorical frequencies align with what we'd expect under a specific hypothesized distribution. It works by comparing each category's observed count to its expected count, then summing the squared differences divided by the expected counts: sum of $(O - E)^2 / E$. This single statistic is then interpreted using the chi-square distribution to decide if the deviations are likely due to chance. This test is used in two common ways: a goodness-of-fit test, where a single categorical variable is compared to a proposed distribution, and a test of independence in a contingency table, where two categorical variables are assessed for association. Because it relies on counts in categories rather than parameters estimated from a normal distribution or on means/variances of continuous data, it's non-parametric. It's not about mean differences or variance, and it does not measure a correlation between continuous variables.

3. Which variable in regression analyses is the source from which predictions are made?

A. Independent Variable

B. Predictor Variable

C. Dependent Variable

D. Outcome Variable

In regression, predictions come from the information carried by the predictor variables. The model uses these inputs to estimate the value of the outcome (dependent) variable, so the predictor variable is the source of the predictions. The outcome or dependent variable is what you're predicting, not where the predictions come from. The independent variable is a similar concept to predictor, but the phrasing here points to predictor as the source of the predictions.

4. Which statement best defines effect size?

A. How much difference can be attributed to the independent variable

B. P-value

C. Sample size

D. Mean difference

Effect size is about how large the observed effect is—the magnitude of the impact the independent variable has on the dependent variable. It captures the practical or real-world significance of the finding, not just whether an effect exists. It's often reported as a standardized measure so you can compare results across studies and scales. For example, Cohen's d expresses the difference between two group means in units of pooled standard deviation, so a bigger value means a stronger, more substantial effect regardless of sample size. P-values tell you whether an effect could be due to chance, but they don't tell you how big the effect is. Sample size influences how precisely we estimate the effect and our power to detect it, not the size of the effect itself. A mean difference is one way to quantify an effect, but effect size is a broader concept—the standardized magnitude of the effect, which can take various forms (differences, correlations, odds ratios, etc.).

5. What is the experiment-wise alpha level?

- A. The total probability of a Type I Error that is accumulated from all of the individual tests in the experiment.
- B. The alpha value used for a single test only.
- C. The probability of a Type II Error across the experiment.
- D. The nominal alpha for the last test.

The experiment-wise alpha level is the overall risk of making at least one Type I error across all the statistical tests in the study. When you run multiple tests, false positives can accumulate, so the chance of at least one false positive becomes larger than the alpha you set for a single test. If you perform m independent tests at a per-test alpha, the approximate probability of at least one Type I error across the whole set is 1 minus (1 minus alpha_per_test) raised to the m. Researchers often choose a desired experiment-wise alpha (like 0.05) and adjust the per-test alpha accordingly, for example using the Bonferroni method: alpha_per_test = alpha_experiment / m. The other options describe the error rate for a single test, the Type II error, or the last test, which do not capture the idea of the overall, across-the-board false-positive risk.

6. Variance equals?

- A. The square root of the mean squared deviation.
- B. The sum of squared deviations from the mean.
- C. The mean squared deviation, or the average squared distance from the mean.
- D. The absolute deviation from the mean.

Variance is defined as the average of the squared deviations from the mean. In other words, you take each observation, subtract the mean, square those differences, and then average them. This measures how spread out the data are around the mean, with the result in squared units. That's why the correct description is "the mean squared deviation, or the average squared distance from the mean." Why other descriptions don't fit: taking the square root of that average would give a root-mean-square deviation, not the variance. Summing the squared deviations gives the total (not averaged) squared distance. Using absolute deviations yields the mean absolute deviation, another dispersion measure. If you're dealing with a sample rather than a population, variance is still the same idea, but you divide by n–1 instead of n to get an unbiased estimate.

7. In factorial ANOVA, what is a main effect?

A. The interaction between two factors.

B. The mean differences among the levels of one factor for factorial ANOVA.

C. The overall mean across all groups.

D. The variance within a group.

In factorial ANOVA, a main effect asks whether changing one factor changes the dependent variable on average, collapsing across the other factors. It looks at the mean differences across the levels of that single factor, averaged over the levels of the remaining factors. This is different from an interaction, which would indicate that the effect of one factor depends on the level of another factor. The grand mean, or overall mean across all groups, is not a main effect; it summarizes the entire dataset rather than showing how a specific factor influences the outcome. The variance within a group reflects variability inside a single cell, not differences between mean levels across a factor. For example, if you have factors like teaching method and study time, a main effect of teaching method compares average test scores across methods while averaging over study times. A main effect of study time compares average scores across different study times while averaging over teaching methods.

8. What distinguishes simple regression from multiple regression?

A. Simple regression uses multiple predictors

B. Simple regression cannot predict

C. Simple regression uses only the intercept

D. Simple regression has one predictor; multiple regression has many predictors

The main idea is how many predictors are involved. In simple regression you model the outcome using a single predictor, yielding a straight-line relationship $Y = \beta_0 + \beta_1 X + \varepsilon$. In multiple regression you bring in several predictors, $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k + \varepsilon$, to estimate the separate effect of each predictor while accounting for the others. So the defining difference is the number of predictor variables: one in simple regression, many in multiple regression. This matters because adding more predictors can improve prediction and reveal the unique contribution of each factor, but it also adds complexity and potential issues like multicollinearity.

9. Standard Deviation is?

- **A. The distance between the highest and lowest score.**
- **B. The mean of squared deviations.**
- **C. The positive square root of the variance and provides a measure of the average distance from the mean.**
- **D. The number of standard deviations away from the mean.**

Standard deviation is a measure of dispersion that tells you on average how far scores lie from the mean. It is the positive square root of the variance, which is the average of the squared deviations from the mean. Taking the square root brings the measure back to the same units as the data, making it easy to interpret how spread out the scores are around the mean. This is why the standard deviation is described as the positive square root of the variance and as a measure of the average distance from the mean. The other descriptions refer to different concepts: the range is the span between the highest and lowest scores, the variance is the mean of squared deviations, and a z-score indicates how many standard deviations a particular score is from the mean, not the standard deviation itself.

10. Degrees of freedom describe the number of scores in a sample that are independent and free to vary. Why do formulas for degrees of freedom vary?

- **A. Because the degrees of freedom depend on the total sample size.**
- **B. Different formulas for different tests.**
- **C. They are always equal to the sample size minus one.**
- **D. They depend on the number of groups.**

Degrees of freedom measure how many independent pieces of information remain after accounting for the constraints in a calculation. Those constraints differ by the statistical procedure, so the df formula changes with the test. For a simple one-sample mean, you fix the sample mean from the data, which uses up one piece of information, leaving n minus one independent pieces. In more complex designs, such as ANOVA, you estimate multiple group means and an overall mean, creating different pools of independent information: between-group degrees of freedom equals the number of groups minus one, within-group degrees of freedom equals the total observations minus the number of groups. In contingency-table chi-square tests, the margins impose constraints that yield (rows minus one) times (columns minus one) degrees of freedom. Because each test uses information and imposes constraints in its own way, the degrees-of-freedom formulas vary across procedures.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

https://statsofbehavioralsciences.examzify.com

We wish you the very best on your exam journey. You've got this!