PSYC 60 – Statistics
Spring 2012
Notes #4

Review: Probability of individual scores

Book: Section 5.5 – Finding Proportions (but read all of Chapter 5)

To estimate the probability of a selecting an individual score in a certain range, we need to know:

The probability of selecting any exact value, (e.g. 94.13463) is _____

Review: symmetry of z-table, looking up negative z-scores

Probability of sample means

We do experiments with _____ sample sizes to allow chance effects to _____

If there is an effect, it will increase or decrease the sample _____

We need a way to determine the probability of _____

Distribution of Sample Means (DSM)

a.k.a "Sampling Distribution of the Mean" in book

Book: Chapter 9 – Sampling Distribution of the Mean
Video: "Distribution of Sample Means", Professor Parris
youtube.com/watch?v=UkFA9hS7-Wc (skip to 20:56 - 30:53)

Procedure:

1. Determine the sample size (n)
2. Randomly select a sample of size n from the population
3. Calculate and record the sample mean
4. Repeat this MANY times, creating a list of sample means

Definition

Properties

Mean of the DSM

Std. dev. of DSM

Sample size

Standard Error of the Mean (SEM)

Formula:

Meaning:

Use:

Central Limit Theorem

If a distribution isn't normal, we can not _____

Central Limit Theorem says:
Regardless of the shape of the _____,
the shape of the _____ is approximately _____
if the sample size is _____

The distribution of sample means is normal:
- if the original population distribution is _____
- if the sample size is _____

Revisited: Standard Deviation of a Sample

Population Sample

Degrees of freedom (df)

Computational formulas:
found in book but you do NOT need to know these for this course

Our first complete hypothesis test

Assume we know that mean IQ score is 100 and SD = 15. We want to test whether a Kaplan course increases IQ scores. We will take a random sample of 50 students, put them through the Kaplan course ,then test their IQ.

Hypotheses:

What happens by chance?

What is our alpha?

What is our decision rule (criteria)?

We find the sample mean is 103.1

Did the sample mean pass our decision rule (criteria)?

Probability of getting this sample mean by chance:

Conclusion:

Z-test

Book: Chapter 10 – Introduction to Hypothesis Testing: The z Test

The test we have learned is the _____.

We use this kind of test when:

We would use a different kind of test if: (don't have to learn these yet):

Hypothesis Testing

Steps:

1. State the _____
2. Specify the _____
3. Determine the _____
4. Calculate the _____
5. Make a _____

Hypotheses

Null hypothesis predicts that there _____

Alternative hypothesis predicts that there _____

Formulas:

Null hypothesis:

Alt hypothesis:

Review

Forms of chance:

_____

_____

_____

If we know that chance is operating, we can not:

If we can quantify what happens by chance, we can:

Distributions

Values
Frequency
Cumulative Frequency

Shapes

Effects

Samples and Populations

	Population	Sample

Definition:

Characteristics:

Formulas:

x – z – p

Factors that affect our outcomes

Effect size

Variability

Sample size

Alpha