

San Jose State University
School of Social Work
ScWk 242
Spring 2008

Lab Exercise #2b: Independent t test (AKA Independent Samples t test) Answer Key

Research Scenario

The County Board of Supervisors in County “A” is considering eliminating funding for a program that provides Individualized Medication Support to individuals with chronic mental illness. The majority of the Board argues that a Group Medication Support program also being implemented in the County is equally effective and less expensive to operate.

You are a County social worker working in the Individualized Medication Support program and you suspect that this program is more effective in reducing the number of emergency psychiatric hospitalizations experienced by clients in the program. Given the high cost of emergency psychiatric hospitalizations, you suspect that it is more cost-effective to maintain the Individualized Medication Support program than to eliminate it.

You decide to examine administrative data from the county hospitals to compare the annual number of emergency psychiatric hospitalizations experienced by clients in the Group Medication Support ($n=20$), and the Individualized Medication Support ($n=20$) programs. Clients in each treatment condition were assigned to individual or group medication support based on availability of services. After the study is complete, you will then present these results to the Board of Supervisors and describe the implications of your findings.

Using an 8-Step Process for Hypothesis Testing

1. Identify the **independent variable** and **level of measurement**

The independent variable is "Type of medication support." Level of measurement is nominal

2. Identify the **dependent variable** and **level of measurement**

The dependent variable is "Annual number of psychiatric hospitalizations." Level of measurement is ratio

3. State the **null hypothesis**

Null: There is no difference between the mean annual number of psychiatric hospitalizations of the two types of medication support interventions.

4. State the **alternative hypothesis**

Those receiving the individual type of medication support will have lower annual psychiatric hospital admissions than those receiving the group type (one-tailed hypothesis).

5. Identify the **appropriate statistical test**, and **alpha level**

Independent group *t*-test. Alpha = .05

6. Present **table of results** (SPSS Output)

Group Statistics

Type of Medication Support: Group or Ind.	N	Mean	Std. Deviation	Std. Error Mean
Number of Emergency Psychiatric Hospitalizations Group Medication Support	19	10.8947	3.51022	.80530
Individualized Medication Support	19	8.1579	3.74556	.85929

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means							
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
								Lower	Upper	
Number of Emergency Psychiatric Hospitalizations	Equal variances assumed	.019	.891	2.324	36	.026	2.73684	1.17766	.34843	5.12525
	Equal variances not assumed			2.324	35.849	.026	2.73684	1.17766	.34808	5.12560

7. Describe **results** and **decision to accept or reject the null hypothesis**

Those receiving the individual type of medication support showed a lower mean number of annual psychiatric hospitalizations (almost 2.75 days less) than those receiving the group type of medication support, $t = 2.324$, $df = 36$, $p = .026$. Since the p value is less than the alpha of .05, we can reject the null hypothesis in favor of the one-tailed research hypothesis.

8. Provide a **discussion of these results**.

These statistically significant results support our hypothesis that the individual type of medication support is more effective than the group type at reducing psychiatric admissions. However, there are limitations to this study. Since clients were not randomly assigned, we do not know if the two groups were evenly matched in client characteristics. Perhaps there was selection bias resulting from different levels of illness or functioning that led to assignment to the group vs. the individual types of support, which might explain the different levels of psychiatric hospitalization. Threats to internal validity might include those related to history, if clients in one group (such as those receiving individual medication support) had access to other types of treatment or

treatment support. Further research is needed with a more rigorous research design, such as an experimental study with randomized assignment. In addition, data on control variables such as level of illness or functioning, as well as data on other treatments being received, should also be included. Despite the study's limitations, the use of individually-based medication support shows promise in the reduction of psychiatric hospitalizations, and there is justification for further cost-benefit analysis.