Do male and female complete treatment within the same period of time?
An Analysis using Two-sample T-test
By Author
PAD 4702

The data contained in this paper is first-hand data collected by the author, Post-Adjudicatory Drug Court Program Manager for 17th Judicial Circuit, Broward County Florida, his predecessor, and their staff of case managers who entered the data into the Florida Drug Court Case Management System (FDCCMS). The FDCCMS contains 128 data variables relating to participants in post-adjudicatory drug court program ranging from demographic information (age, sex, ethnic group, education level, etc.) to more detailed information on criminal history, substance abuse history, substance abuse treatment, and progress within the drug court. The time period from which the data was collected runs from the inception of the program in 2009 through February 20, 2013 when the dataset for this project was compiled.

As of February 20, 2013, there were 601 participants in the program, consisting of 235 active participants and 366 inactive participants. The five variables chosen for analysis were gender, age at screening, ethnicity, education level at admission, and drug of choice. Drug court client names and identifying information have been omitted to protect confidentiality and comply with Health Insurance Portability and Accountability Act (HIPAA) privacy rules.

STATEMENT OF RESEARCH QUESTION

The research question examined by this study is the following - Do male and female participants in the Broward County Post-Adjudicatory Drug Court Program, on average, complete treatment within the same period of time? This question is of particular interest to me as the program manager since it will give me greater insight of the current state the program, give me a basis to determine whether further study is warranted, and also help me to determine if any modifications to the program are necessary.

Drug court client names and identifying information have been omitted to protect confidentiality and comply with Health Insurance Portability and Accountability Act (HIPAA) privacy rules.

HYPOTHESES TO BE TESTED

In order to answer the research question above, the hypotheses to be tested are:

(Null Hypothesis) H_o = Men and women, on average, complete treatment within the same period of time

(Alternative Hypothesis) H_A = Men and women, on average, do not complete treatment within the same period of time.

METHODOLOGY

The two-independent-samples t test was used in this study as opposed to the paired-samples t test because a determination is being made as to whether two distinctly different populations' - men and women - means for drug court completion time are equal based upon the results observed in two independent samples, one sample from each population. A paired-samples t test would be used for analyzing the results of experiments when the same subject is observed under two different conditions, or studies in which there is a pair of subjects (or

measurements) that are matched in some way (Norusis, 2010, 257). Therefore, this method is not

appropriate for this study.

DESCRIPTIVE STATISTICS

Case Processing Summary

	Gender	Cases					
		Valid		Missing		Total	
		N	Percent	N	Percent	N	Percent
NumberofDaysinDrugCourt	F	30	100.0%	0	0.0%	30	100.0%
	M	196	100.0%	0	0.0%	196	100.0%

Descriptives

	Gender			Statistic	Std. Error
NumberofDaysinDrugCourt	F	Mean		416.767	23.3200
		95% Confidence Interval for Mean	Lower Bound	369.072	
			Upper Bound	464.462	
		5% Trimmed Mean		409.630	
		Median		378.000	
		Variance		16314.737	
		Std. Deviation		127.7292	
		Minimum		133.0	
		Maximum		812.0	
		Range		679.0	
		Interquartile Range		79.8	
	M	Mean		425.724	8.0238
		95% Confidence Interval for Mean	Lower Bound	409.900	
			Upper Bound	441.549	
		5% Trimmed Mean		419.654	
		Median		380.500	
		Variance		12618.631	
		Std. Deviation		112.3327	
		Minimum		126.0	
		Maximum		832.0	
		Range		706.0	
		Interquartile Range		106.5	

Histograms of days in drug court by gender
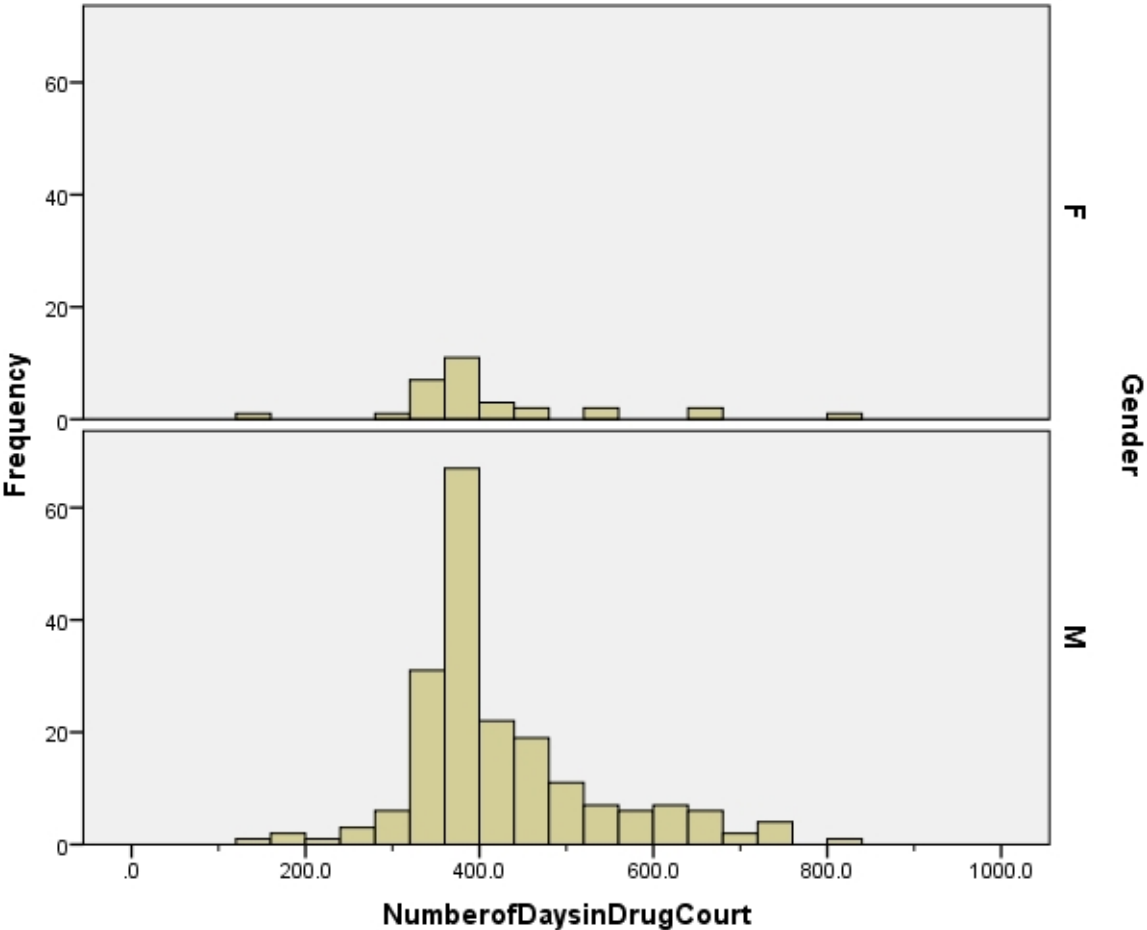
TWO-INDEPENDENT-SAMPLES *T* TEST RESULTS

Independent Samples Test

		NumberofDaysinDrugCourt	
		Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F	.005	
	Sig.	.945	
t-test for Equality of Means	t	.399	.363
	df	224	36.197
	Sig. (2-tailed)	.690	.719
	Mean Difference	8.9578	8.9578
	Std. Error Difference	22.4364	24.6618
	95% Confidence Interval of the Difference Lower	-35.2557	-41.0492
	Upper	53.1713	58.9648

For *Equal variances not assumed* and an observed mean difference of 9 days, the *t* statistic is 0.36. The degrees of freedom for the *t* statistic are 36. The observed two-tailed significance level is 0.719. This means that one would expect to see a sample difference of 9 days or larger fewer than 72 times in 100.

For *Equal variance assumed* and an observed mean difference of 9 days, the *t* statistic is 0.40. The degrees of freedom for the *t* statistic are 224. The observed two-tailed significance level is 0.690. This means that one would expect to see a sample difference of 9 days or larger fewer than 69 times in 100.

CONCLUSION

Since the observed significance level is greater than 5% when the two population variances are assumed to be equal and also when the variances are not equal, I have failed to reject the hypothesis that men and women, on average, complete treatment within the same

period of time. Therefore, I conclude based upon the results of the two-independent-samples *t* test that

the population means for men and women appear to be equal. This conclusion is in line with my

expectation as I had no reason to believe otherwise. Upon further research, I found

within the drug court literature, that "Hartley and Phillips (2001) found that being older, having more

education, and maintaining employment during the Drug Court program were the only

correlates associated with treatment completion; they observed no correlation between successful

completion and gender, race, marital status, number of children, or drug of choice" (as cited in Mattson,

Powers, Halfaker, Akeson, & Ben-Porath, 2012, 938).

REFERENCES

Mattson, C., Powers, B., Halfaker, D., Akeson, S., & Ben-Porath, Y. (2012). Predicting drug

    court treatment completion using the MMPI-2-RF. *Psychological Assessment*, 24(4), 937-

    943.

Norusis, M.J. (2010). *PASW Statistics 18: Guide to data analysis.* New Jersey: Prentice Hall.