Statistical Analysis of Montgomery Dog Park Survey Results

PRESERVE PIONEER PARK

A resident committee to keep Pioneer Park
Clean, Green and Serene

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My name is Timothy Fry and I am both a dog owner and resident of Montgomery. I am an engineering professor at the University of Dayton and I teach a class in engineering experimentation and statistical analysis of data.

The "Off-Leash Recreational Area Executive Summary," provides the following conclusions regarding the on-line survey conducted from December 12 2005 to January 13 2006.

> *Survey responses indicated that a majority of households responding to the survey were in support of the concept and the study site in Pioneer Park.*

I am here tonight to discuss the sampling results and point out why they are not a true reflection of the opinion of the greater Montgomery population.

In simple, terms, the sample size was just too small to draw any meaningful conclusion.

Furthermore, one should never conduct a survey during the peak holiday time of the year if the intent is to accurately gauge public opinion and assure high participation in the survey. Too many people are out of town or otherwise committed and they could very well be unaware of the survey or otherwise unable to participate. In addition, the primary form of resident notification was the Montgomery Bulletin which, the city says, was sent to residents on December 26, a full two weeks into the survey period.

The generally accepted purpose of a survey is to gauge the opinion of a given population by soliciting responses from a statistically significant sample size drawn from that population.

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When gauging opinion, it is correct and expected that the survey takers will extrapolate the opinion of the statistically significant sample size as being representative of the larger population.

I performed a statistical analysis of the online dog park survey to determine if the sample size was sufficient to allow accurate extrapolation of the survey results thereby suggesting they are representative of the larger population.

The analysis unequivocally indicates that, the sample size is simply too small and therefore the results should not be interpreted as reflecting a preference for the proposed dog park in Pioneer Meadow. In fact, it is equally likely, given the data at hand that the true population of residents, to whom this survey intends to extrapolate, prefers not to have a dog park.

In quantitative terms, neither the Residents-Only category (with 234 respondents) nor the Total Respondents category (with 320 respondents) is large enough to make any conclusion other than that the results are evenly split, 50:50.

To illustrate that statistical significance can be achieved; I have also done the analysis of a hypothetical 5,000 data points. If a survey with 5,000 data points resulted in 2,750 for the proposal and 2,250 against the proposal this result would be statistically significant and extrapolation to a larger population would be valid.

I have completed all the above analysis using the internationally recognized JMP statistical analysis software package. The detailed results have been provided to Susan Hamm and I would happy to review them with any individual here tonight from council, PARC or the audience who would like to learn more about my analysis.

In fact, if anyone is really interested in statistics, I should let you know that UD registration for the summer session is currently underway and I'd be happy to have you take my class.

Thank you for your time.

Respectfully,

Timothy J. Fry, Ph.D.

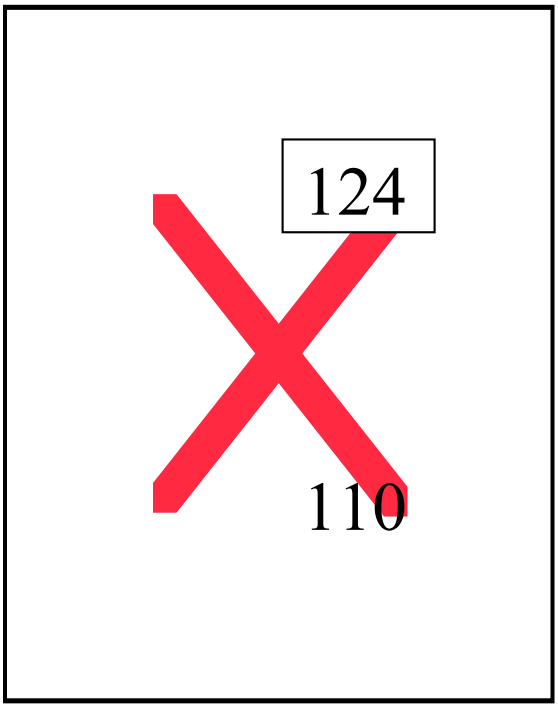

Figure 1 - 234 Resident Respondents

Conclusion: Results are NOT statistically

Different from 50:50 with only 234 respondents

Test Probabilities

Test	ChiSquare	DF	Prob>Chisq
Likelihood Ratio	0.8381	1	0.3599
Pearson	0.8376	1	0.3601

Confidence Intervals

Level	Count	Prob	Lower CI	Upper CI	1-Alpha
Against	110	0.47009	0.407137	0.534001	0.950
For	124	0.52991	0.465999	0.592863	
Total	234				

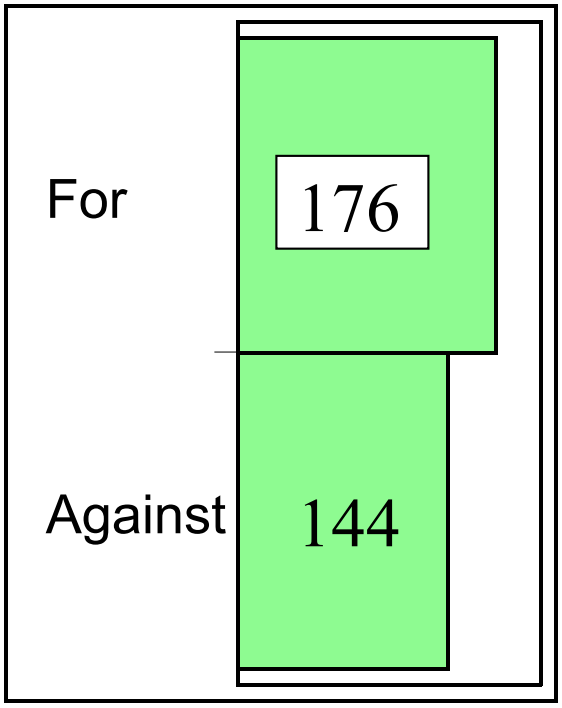

Figure 2 - 320 Total Respondents

Conclusion: Results are NOT statistically Different from 50:50 with only 320 respondents

Test Probabilities

Test	ChiSquare	DF	Prob>Chisq
Likelihood Ratio	3.2054	1	0.0734
Pearson	3.2000	1	0.0736

Confidence Intervals

Level	Count	Prob	Lower CI	Upper CI	1-Alpha
Against	144	0.45000	0.396406	0.50478	0.950
For	176	0.55000	0.49522	0.603594	
Total	320				

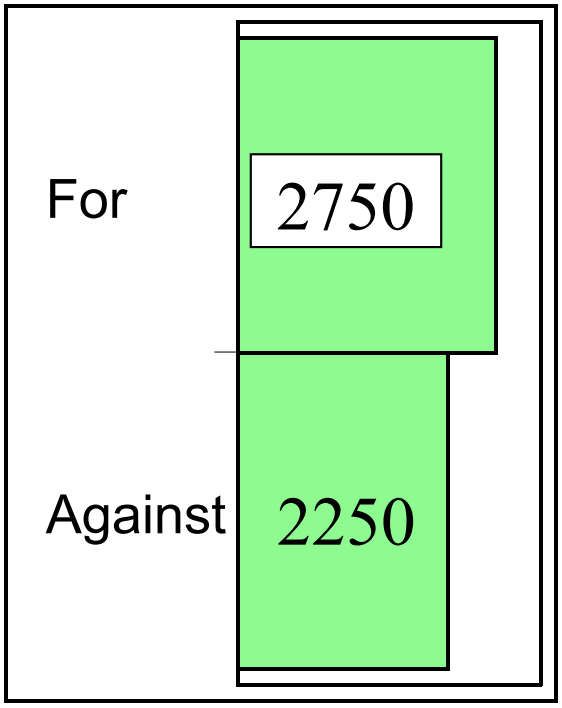

Figure 3 - What if 5,000 People Responded?

Conclusion: Results would be statistically Different from 50:50 if 5,000 people responded

Test Probabilities

Test	ChiSquare	DF	Prob>Chisq
Likelihood Ratio	50.0837	1	<.0001
Pearson	50.0000	1	<.0001

Confidence Intervals

Level	Count	Prob	Lower CI	Upper CI	1-Alpha
Against	2250	0.45000	0.436254	0.463823	0.950
For	2750	0.55000	0.536177	0.563746	
Total	5000				