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16. Abstract
Right-of-way (R/W) acquisitions can be a significant component of a project's total cost. When owners reject the compensation offered for their properties as insufficient, the project comes to a halt until an agreement can be reached and increased funding can be obtained. Moreover, the process of condemnation can delay project completion. The availability of accurate and consistent estimation tools is therefore essential to planning projects, meeting budget constraints, and avoiding project delays. In 2002, the Texas Department of Transportation (TxDOT) embarked on Research Project 0-4079, in which 285 R/W records from six major districts were used to investigate the relationship between parcel characteristics and parcel taking cost along Texas corridors. From these R/W records, hedonic price models were developed to serve as a cost estimation tool for R/W acquisitions. As a follow up, Implementation Project 5-4079 was commissioned in 2005 with the purpose of testing and re-calibrating the price models using data from an additional 500 parcels in five other different districts.

Regression models for five land uses were explored. Further analysis of historical costs of parcels by district and county was conducted and summarized as tables of unit costs by land use. R/W acquisition cost estimates based on regression models, historical unit cost averages, and cost of similar properties have been made available via a user-friendly Microsoft Excel-based tool to assist in the early stages of project planning and budgeting.

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Estimating the Cost of Right-of-Way Acquisitions along Texas Corridors

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Products

This report contains Product 3, "Location Multiplier Matrix," in Appendix G.

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Chapter 1. Introduction

1.1 Purpose

Right-of-way (R/W) costs associated with highway expansions can be a significant component of total project costs. When budget deficits occur before project completion, additional funds become available only by delaying other projects or by soliciting the state. Highway expansions and upgrades are especially vulnerable to public disapproval because of the inconveniences caused by delays. Three components contribute to R/W costs: the cost of land, the cost of improvements, and the cost of damages. Improvements consist of property features that enhance the property, such as fences, swimming pools, signage, driveways, garages, and buildings. Examples of damages include property re-fencing, loss of parking spaces, relocation, and any other change that will require owners to incur expenses to remedy their losses. In some cases, owners can take legal action to obtain additional compensation for their property by arguing that total cost (defined as cost of the land plus improvements and damages) exceeds the state's compensation offer. Studies that offer highway planners cost estimation models are thus crucial to the success of departments of transportation.

The availability of accurate and consistent estimates is essential to the planning of highway projects. The use of such estimates during the planning phase of a project can allow for adequate allocations of funds and for more informed budgeting decisions. The use of regression models as a cost estimation tool for R/W acquisitions has been explored and used by several departments of transportation. In particular, TxDOT's recent Research Project 0-4079 established a clear relationship between key parcel characteristics and parcel costs, where a parcel is defined as any piece of property acquired for federally funded projects. This relationship was in the form of a log-log regression model that was developed using past R/W data from Texas Corridors along Abilene, Corpus Christi, El Paso, Houston, Fort Worth, and San Antonio. The objective of this project is to re-calibrate this developed log-log model by testing its performance with data from five different districts. Alternative cost estimating tools are also explored with the purpose of incorporating the findings of this research into a user-friendly software tool for use by Right-of-Way division offices across Texas.

1.2 Methodology and Scope

This research sought to improve the accuracy of the R/W cost estimates generated by TxDOT's Research Project 0-4079 Texas Corridor log-log regression model by collecting data from additional districts. The scope of the present study is limited by the data collected for this project, which focuses on five districts: Austin, Bryan, San Antonio, Waco, and Wichita Falls.

Alternatives to regression models are provided through the use of historical R/W acquisitions costs for parcels in the entire state of Texas. Over 10,000 historical costs, along with several parcel characteristics, were obtained from Right-of-Way Information System (ROWIS) and used to evaluate the unit costs by land use, district, and county.

Although the developed tool is based on the models that provided the most accurate and consistent estimates, the results should not be used as an appraisal standard but rather as a guide to standardizing budget requests and preventing budget overruns.

1.3 Organization of Report

This report begins with a summary of the data used to develop the aforementioned 0-4079 Texas Corridor model and also discusses the results, which showed great potential for the use of regression models in predicting parcel costs. Chapter 3 discusses the additional data set used to test the 0-4079 model, presents the misprediction of the model on this new data set, establishes the need for new models, and discusses the results of these new models. Chapter 4 presents further analysis of historical R/W costs by county and land use. Lastly, Chapter 5 describes the user-friendly software tool with which the results of this research have been synthesized.

Chapter 2. Background

2.1 Findings of Research Project 0-4079

In September 2002, the Texas Department of Transportation (TxDOT) commissioned Research Project 0-4079 to investigate R/W costs and property values. Completed in August 2004, the project generated three regression models that were implemented as R/W cost estimation tools. Two of the three models developed under Research Project 0-4079 were based on commercial property data collected from (1) the Travis Central Appraisal District (TCAD) and (2) the CoStar Company database, a national provider of commercial real estate information services and comparable sales.

The third model (the Texas Corridor model) was based on data from a sample of 285 parcels that were acquired between 1997 and 2003 in Abilene, Corpus Christi, El Paso, Fort Worth, Houston, and San Antonio. This model is applicable to the following seven land uses: Agriculture, Other[1], Multi-Family Residential, Retail, Service, Single-Family Residential, and Vacant. The 285 sample parcels were generally required for the widening and expansion of existing highways. The Abilene project involved improvements to FM 604 (FM designates Farm-to-Market road) in Callahan County and consisted largely of takings of single-family homes. The Corpus Christi project consisted of an expansion of FM 1889, from an existing two-lane highway to a four-lane facility. The Corpus project was located approximately 20 miles from the city center and called for a number of agricultural parcels. The El Paso project widened FM 76, the city's North Loop road, and saw the greatest diversity in land uses among its R/W acquisitions. The Fort Worth project was a widening and improvement of East Rosedale Street, a major arterial. The Houston project consisted of a 1-mile section of Interstate 10 that was a part of a larger state project; the majority of observations in the section sampled from this project were whole-parcel takings of homes. Lastly, the San Antonio project improved a 6-mile section of US 281 and took in a number of very expensive commercial properties (Kockelman et. al, 2003, pp.15-16).

Data pertaining to the characteristics and R/W costs of the 285 parcels was obtained from TxDOT's Right-of-Way Information Systems (ROWIS), appraisal reports, and R/W maps. A description of the data collected for each parcel is shown in Table 2.1. In this table, the term "indicator variable" refers to a binary variable (i.e., one that can have a value of 0 or 1). These variables were then interacted with each other as shown in Table 2.1 to develop a regression model, where the dependent variable was the total cost of the parcel, defined as the aggregate cost of land, cost of improvements, and cost of damages.

[1] The term "Other" land uses refers to parcels used for churches, medical offices, or dental offices. Parcels used to provide auto repair services were defined as "Service."

Table 2.1. Description of Variables for Texas Corridor Model Sample

Variable Name	Variable Description	Mean	Standard Deviation
TOTALCOST	Total acquisition cost ($2003)	245,300	894,400
LNTOTALCOST	Natural log of total cost	10.36	2.091
LANDSF	Land area of part acquired (SF)	12,120	23,850
FRONTAGE	Length of frontage (feet)	211.1	314.9
DRIVEWYS	Number of driveways for original parcel	1.323	0.600
SHAPEIRR	Indicator variable for irregularly shaped original parcel	0.2491	0.4333
CORNER	Indicator variable for corner parcels	0.3614	0.4813
TIME TREND	Trend variable for year of acquisition (1=1997, 2=1998,…7=2003)	4.393	1.517
IMPSF	Area of improvements taken (SF)	1,545	6,276
IMPAGE	Age of improvements taken (years)	35.746	21.226
IMPCOND	Appraised condition of improvements (1=Poor, 2=Fair, 3=Average, 4=Good)	3.136	0.846
IMPSF2	Area of improvement squared (SF^2)	41,640,000	448,300,000
REMSF	Land area of remainder parcel (SF)	188,200	745,600
CHGHBUSE	Indicator variable for a reduction in highest and best use	0.116	0.321
FRNTLOSS	Loss in frontage (feet)	53.70	159.0
RATIO	Ratio of remainder area to original area	0.5390	0.4264
SHAPECHG	Indicator variable for an acquisition which effected a change in parcel shape	0.1159	0.3209
PARTIALTKG	Indicator variable for partial takings	0.8070	0.3953
VACANT	Indicator variable for vacant land	0.1263	0.3328
AGRI	Indicator variable for agricultural land	0.0772	0.2674
SFAM	Indicator variable for single-family residential	0.5018	0.5009
MFAM	Indicator variable for multi-family dwellings	0.0351	0.1843
RETAIL	Indicator variable for retail uses (e.g., shopping and restaurants)	0.1754	0.3810
SERVICE	Indicator variable for auto repair and service	0.0456	0.2090
OTHER	Indicator variable for other uses (e.g., churches, medical and dental offices)	0.0351	0.1843
ABILENE	Indicator variable for Abilene	0.0561	0.2306
CORPUS	Indicator variable for Corpus Christi	0.2000	0.4007
ELPASO	Indicator variable for El Paso	0.3193	0.4670
FTWORTH	Indicator variable for Fort Worth	0.1439	0.3516

Variable Name	Variable Description	Mean	Standard Deviation
HOUSTON	Indicator variable for Houston	0.1754	0.3810
SANANTONIO	Indicator variable for San Antonio	0.1053	0.3074

The resulting adjusted R-squared value of the log-log model was 0.906, implying that 90.6% of the variation in the natural log of total cost was explained by the twenty-four explanatory variables used. This high adjusted R-Squared value indicated a significant potential for using very few parcel characteristics in the early stages of project planning in order to predict acquisition costs. Appendix A shows that most of the variables used are highly statistically significant in predicting the cost of R/W acquisitions at the parcel level. As an outcome of these results, Implementation Project 5-4079 was commissioned to test the model's accuracy, to calibrate the model with data from another five districts, and to explore alternative cost estimation tools.

Chapter 3. Methodology and Results

3.1 Data Collection

During the summer of 2005, additional parcel data was collected from five Texas districts: Austin, Bryan, San Antonio, Waco, and Wichita Falls. Data pertaining to 500 parcels, 100 from each district, was randomly collected at the TxDOT R/W Division. The majority of the 500 parcels were partial takings, with only 46 whole-taking parcels. Prior to this data collection, the distribution of land uses in each district was analyzed so that the sample collected would be representative of these distributions. For example, 14 of the 100 parcels collected from Austin were Retail, reflecting the fact that 14% of the land in Austin is used for Retail.

The newly acquired data set consisted of parcels acquired from 29 counties (see Figure 3.1 for the list of counties) from 72 different projects that that occurred throughout 2000 and 2005. The 21 projects within the Austin district's 100-parcel data set included the expansion of US 90, SH 71, RM 1431, FM 1322, FM 2439, FM 1460, and FM 619. Within Bryan, there were a total of 11 projects that were related to the expansion of SH 30, SH 6, SH 21, and FM 159. The San Antonio data had ten projects, along Interstate Highway 35, Interstate Highway 410, Spur 98, and Wurzbach Parkway. There were 14 projects pertaining to FM 371, U.S. 84, State Highway 6, FM 933, and FM 937 in the Waco data set. Lastly, the Wichita Falls data set consisted of 16 projects that rehabilitated or upgraded: U.S. 287, U.S. 277, Interstate Highway 35, FM 371, FM 922, and FM 369.

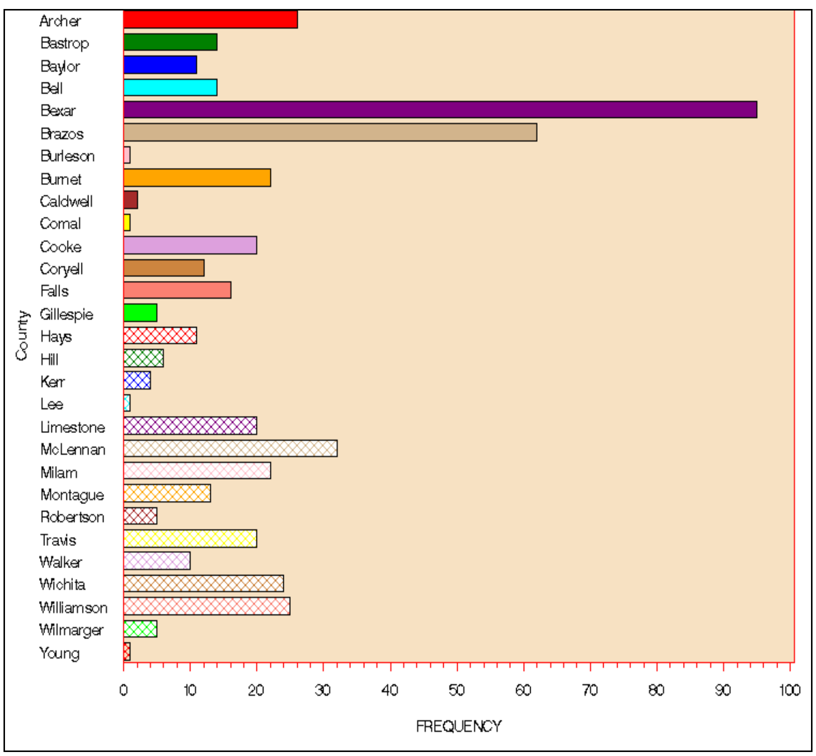

Figure 3.1. Number of parcels collected by county

The data set consisted of parcel characteristics, parcel location, the types of improvements on the taken land, the value of the land, value of improvement, cost of damages, and finally, the actual price by the state paid for the acquisition of the parcel.

Parcel characteristics consisted of the area of the parcel, the area that was acquired, and the area of any improvements, as well as several indicator variables of the parcels. These variables included whether the parcel was located at the corner of an intersection, if there was a change in the highest and best use of the parcel, whether the shape of the acquired and remaining land was irregularly shaped, and if the property underwent a change in frontage or roadway access.

The variables in the new data set were interacted with each other to match the explanatory variables used to develop the Texas Corridor model of Research Project 0-4079. The parameter estimates of the explanatory variables in Texas Corridor model can be found in Appendix A. They were applied to the new data set to test its performance within this new data set.

3.2 Analysis of Misprediction

The Texas Corridor model developed in Research Project 0-4079 was applied to the newly acquired data set and two types of mispredictions were calculated. The first was the absolute misprediction, computed as the absolute difference between the actual and predicted price divided by the actual price. The second was the relative misprediction, computed as the predicted price minus the actual price divided by the actual price, resulting in negative mispredictions if a parcel is under-predicted. Table 3.1 illustrates these mispredictions by land use, while Table 3.2 illustrates them by district and land use.

Table 3.1. Misprediction Using Texas Corridor Model

	Agriculture	Other	Retail	Service	Single- and Multi-Family	Vacant
Number of parcels	77	58	117	5	139	104
Average absolute misprediction	658%	547%	5399%	40%	401%	199%
Average relative misprediction	626%	524%	5351%	24%	383%	163%

Table 3.2. Absolute Misprediction of Texas Corridor Model by Land Use and District

Average Absolute Misprediction	Austin	Bryan	San Antonio	Waco	Wichita Falls
Agriculture	1090% n = 12	166% n = 20	1272% n = 2	69% n = 13	181% n = 29
Other	771% n = 21	111% n = 14	762% n = 10	40% n = 2	437% n = 11
Retail	832% n = 14	101% n = 19	372% n = 64	151% n = 12	226% n = 7
Service	40% n = 5	n/a n = 0	n/a n = 0	n/a n = 0	n/a n = 0
Single and Multi-Family	1788% n = 21	102% n = 32	490% n = 12	138% n = 43	104% n = 31
Vacant	340% n = 27	101% n = 15	230% n = 10	147% n = 30	147% n = 22
All Land Uses	810% n = 100	116% n = 100	625% n = 100	109% n = 100	181% n = 100

With the exception of its predictions for "Service" land use type, this model tends to over-predict parcel costs. Furthermore, these two tables illustrate how the mispredictions among the five land uses vary greatly: such variation suggested that land-use-specific models might provide more accurate results.

3.3 Development of New Models

The need for model improvements was established by the size of the mispredictions presented in Tables 3.1 and 3.2. To further substantiate the apparent need for specific models, a statistical t-test was performed to compare the average unit cost of parcels for each land use. The unit cost was calculated as the sum of the total acquisition costs divided by the sum of the taken area. The results of this test indicated that there was a significant difference in the average unit cost of parcels according to land use type. Further, these results suggested that each land use probably deserves its own regression model. The "Service" type land use was shown to have a comparable average to that of the "Retail" parcels. Consequently, parcels classified as "Service" were combined with the ones classified as "Retail." The differences among the land uses necessitated a regression model for each land use, in contrast to the single model developed in Project 0-4079. The results of the t-test mean comparison can be found in Appendix B.

3.4 Data Preparation

The first step in the development of the new models was to combine the 500-parcel data set with the 285 parcels used in the development of the 0-4079 model. The total data set included takings from 78 projects in 10 of TxDOT's 25 districts. As described earlier, the parcel characteristics that required "yes" or "no" responses were coded as 1 or 0, respectively. These indicator variables were then interacted with the parcel's acquired area as well as the total area of the parcel. The complete set of explanatory variables used in this search for the most accurate models can be found in Appendix C.

Once the explanatory variables were computed, the data was divided into the following five land uses: Agriculture, Residential, Retail/Service, Other, and Vacant. In order to later be able to test the accuracy of the developed models, the data was randomly divided into a "training set" and "testing set." The "training set" consisted of 80% of the data and was used to develop the model. The "testing set" was used to test how well the model specification performed with data that was not used to develop it.

3.5 Exploration of Model Specifications

The initial attempt to develop new models was to estimate linear regression models in which the dependent variable is the actual price, and the explanatory variables are those in Appendix C. Despite high R-squares, the immediate problem was the negative prediction of costs. These negative predictions were most prominent in the Retail/Service model, where over 50% of the 158 records yielded negative estimates of acquisition cost. These negative predictions suggested that some sort of variable transformation would be needed to ensure positive predictions. The first transformation consisted of taking the squared root of the actual price and using this value as the dependent variable. The predicted square root of the price was then squared to get the predicted price. Although negative predictions were completely eliminated, the predicted prices tended to be drastically lower than the actual price paid by the state and this model specification was dismissed from further analysis. Given that there was a large range in the size of the parcels, a linear-log model was attempted. This model specification consists of taking the natural log of the explanatory variables and is commonly used when the explanatory variables have a very large range in values. Linear-log models decreased the number of negative predictions but failed to completely eliminate them.

The final two models that were explored were those where the dependent variable is transformed by taking its natural log. The log-linear and log-log models specification took the following form:

log-linear:

$$\ln(actualprice) = \alpha + \Sigma\beta_{i1}x_1\theta_{i1} + \Sigma\beta_{j1}x_1\phi_{j1} + \Sigma\beta_{i2}x_2\theta_{i2} + \Sigma\beta_{j2}x_2\phi_{j2} + \beta x_3 \quad [1]$$

log-log:

$$\ln(actualprie) = \alpha + \Sigma\beta_{i1}\ln(x_1)\theta_{i1} + \Sigma\beta_{j1}\ln(x_1\phi_{j1}) + \Sigma\beta_{i2}\ln(x_2)\theta_{i2} + \Sigma\beta_{j2}\ln(x_2\phi_{j2}) + \beta x_3 \quad [2]$$

where α and β are a constant and slope parameter estimates, respectively, determined using the method of ordinary least squares (OLS). The term x_1 refers to the area of the acquired parcel, x_2 refers to the total area of the parcel, x_3 refers to the area of improvements, θ refers to binary variables (such as whether the parcel was a partial or whole taking), ϕ refers to continuous variables, such as the number of driveways and main frontage loss, and the actual price of the parcel is in 2005 dollars. By transforming the dependent variable to log form, predictions are guaranteed to be greater than zero because the log function is undefined for values of zero or lower.

For each model specification, a full model, most significant model, and highest adjusted r-squared model were developed. The "full" model includes all the independent variables in Table 3. "Most significant" refers to the model that solely consists of variables that are significant at a 0.10 level. Lastly, the "highest adjusted-r-squared" model refers to the model that resulted in the highest adjusted r-squared.

The results of the log-linear model insured positive predictions, but the misprediction error remained quite high. The results of the log-log model proved to provide the most accurate predictions in terms of average misprediction.

In an attempt to decrease the level of mispredictions, outliers were calculated as anything that fell outside of three standard deviations from the average price, defined as the actual price per squared foot of taken land, of a given land use. These outliers were then eliminated from the data set, and the remaining data was once again randomly divided into training and testing sets. Models were then re-estimated and mispredictions were calculated. In some cases, the improvement in mispredictions was not significant, so the same procedure was used with data two standard deviations from the mean.

The models developed with this "2 sigma" data resulted in the lowest misprediction; however, the range of average misprediction continued to be unsatisfactory. Consequently, quadratic terms were incorporated into the log-linear and log-log models. The use of quadratic terms indicates that the marginal effects of explanatory variable are no longer constant. The specification of the models with squared terms can be seen below, where the variables are the same as those defined earlier.

log-linear model:

$$\begin{aligned}\ln(actualprice) &= \alpha + \Sigma\beta_{i1}x_1\theta_{i1} + \Sigma\beta_{j1}x_1\phi_{j1} + \Sigma\beta_{i2}x_2\theta_{i2} + \Sigma\beta_{j2}x_2\phi_{j2} \\ &+ \beta_{k3}x_3 + \beta_{m1}x_1^2 + \beta_{n2}x_2^2 + \beta_{o3}x_3^2\end{aligned} \qquad [3]$$

log-log model:

$$\begin{aligned}\ln(actualprie) &= \alpha + \Sigma\beta_{i1}\ln(x_1)\theta_{i1} + \Sigma\beta_{j1}\ln(x_1\phi_{j1}) + \Sigma\beta_{i2}\ln(x_2)\theta_{i2} + \Sigma\beta_{j2}\ln(x_2\phi_{j2}) \\ &+ \beta\ln(x_3) + \beta_{m1}\ln(x_1)^2 + \beta_{n2}\ln(x_2)^2 + \beta_{o3}\ln(x_3)^2\end{aligned} \qquad [4]$$

3.5.1 Mispredictions in Log-Log and Log-Linear Models

The predicted prices resulting from the log-log and log-linear models were computed as follows:

Predicted Price = CPI * $e^{\ln(\text{actual price})}$, where ln(actual price) is defined in [1] for log-linear models, and in [2] for log-log models.

For each parcel, the absolute misprediction was computed as:

absolute misprediction = |Predicted Price-Actual Price|/Actual Price

The minimum, maximum, median, and average absolute mispredictions for each land use were computed for each of the log-log and log-linear models as seen in Appendix D.

By incorporating squared terms, four of the five land uses drastically improved in average misprediction. The improvements in misprediction that occurred with the incorporation of squared terms can be seen in Table 3.3. With the exception of the model for Retail, the new log-log models resulted in the best average misprediction.

Table 3.3. Comparison of Misprediction of 2 Sigma Data

RESULTS OF 2 SIGMA TESTING DATA			Dollar Error			Misprediction Error			
Land Use	Model Specification	Model Description	Sum of Actual	Sum of Predicted	Sum of Error =Predicted-Actual	Max	Min	Median	Average
AGRICULTURE		full	$222,734	$385,055	$162,321	1298.46%	7.09%	50.14%	235.59%
n(testing)= 18		highest R2	$222,734	$354,530	$131,796	1039.89%	9.63%	43.20%	171.70%
n(training) = 76	LN - LN	most significant	$222,734	$353,978	$131,245	871.47%	1.89%	91.39%	157.40%
n(total) = 94		full	$222,734	$14,748,550	$14,525,816	67492.17%	0.44%	70.27%	4009.73%
		highest R2	$222,734	$4,185,254	$3,962,520	18255.27%	1.57%	73.17%	1263.78%
	LN - Linear	most significant	$222,734	$1,496,227	$1,273,493	6011.26%	2.14%	58.24%	446.56%
		full	$222,734	$209,359	-$13,375	1861.49%	6.85%	53.11%	195.87%
		highest R2	$222,734	$213,550	-$9,184	1780.99%	3.51%	51.49%	205.66%
	LN-Linear with squared terms	most significant	$222,734	$210,893	-$11,841	448.00%	7.86%	65.26%	109.54%
		full	$222,734	$295,789	$73,055	784.97%	4.06%	37.15%	145.91%
		highest R2	$222,734	$312,664	$89,930	629.61%	2.79%	43.07%	108.35%
	LN-LN with squared terms	most significant	$222,734	$247,226	$24,492	441.91%	0.57%	41.07%	94.78%
	Old Model		$222,734	$397,462	$174,728	26247.08%	3.63%	49.60%	1504.18%
OTHER		full	$339,310	$889,467	$550,156	1017.59%	1.45%	83.91%	316.05%
n(testing)= 12		highest adj.R2	$339,310	$933,278	$593,968	729.92%	0.54%	82.39%	238.69%
n(training) = 54	LN - LN	most significant	$339,310	$1,076,855	$737,545	539.18%	0.97%	79.24%	194.38%
n(total) = 66		full	$339,310	$1,789,762,153,393	$2,000,000,000,000	3.00E+07	69.77%	269.94%	244502906.04%
		highest adj.R2	$339,310	$7,992,413,098,327	$8,000,000,000,000	1.00E+08	39.44%	340.10%	1091859933.88%
	LN - Linear	most significant	$339,310	$4,339,899	$4,000,589	6697.81%	3.43%	244.76%	780.79%
		full	$339,310	$291,952	-$47,358	3835.27%	43.58%	98.95%	666.91%
		highest	$339,310	$361,632	$22,322	2457.41%	33.01%	116.24%	500.93%
	LN-Linear with squared terms	backward	$339,310	$388,011	$48,700	2416.75%	33.07%	120.94%	498.22%
		full	$339,310	$1,220,658	$881,347	1618.37%	30.40%	124.04%	507.36%
		highest R2	$339,310	$1,290,114	$950,803	2401.18%	65.04%	535.13%	738.61%
	LN-LN with squared terms	most significant	$339,310	$1,672,416	$1,333,106	1370.80%	8.73%	158.56%	459.99%
	Old Model		$339,310	$366,128	$26,818	1034.68%	6.15%	74.27%	217.12%
RETAIL		full	$7,601,729	$9,274,836	$1,673,107	7745.14%	11.85%	77.36%	451.14%
n(testing)= 35		highest R2	$7,601,729	$9,287,860	$1,686,131	7975.11%	9.74%	68.07%	434.89%
n(training) = 144	LN - LN	most significant	$7,601,729	$8,737,983	$1,136,254	5436.91%	8.12%	75.28%	357.19%
n(total) = 179		full	$7,601,729	$4,498,819,069	$4,491,217,340	456604.5864	2.19%	223.83%	1536279.98%
		highest R2	$7,601,729	$4,206,663,995	$4,199,062,265	426952.4405	2.56%	202.80%	1436510.23%
	LN - Linear	most significant	$7,601,729	$32,767,848,801	$32,760,247,071	877341.4457	2.67%	96.97%	2507271.50%
		full	$7,601,729	$58,328,114,112,892	$58,328,106,511,163	1827321725046.90%	4.79%	86.37%	52209192280.49%
		highest R2	$7,601,729	$37,030,564,120	$37,022,962,391	1159756997.77%	3.58%	87.57%	33136115.04%
	LN-Linear with squared terms	most significant	$7,601,729	$2,427,580,382	$2,419,978,653	51006623.63%	3.43%	91.14%	1517147.54%
		full	$7,601,729	$4,792,640	-$2,809,089	3756.25%	5.77%	64.77%	221.37%
		highest R2	$7,601,729	$4,959,210	-$2,642,519	3998.46%	3.23%	65.95%	223.56%
	LN-LN with squared terms	most significant	$7,601,729	$4,799,284	-$2,802,445	3607.08%	2.62%	67.03%	210.25%
	Old Model		$7,601,729	$7,220,687	-$381,042	1363.84%	1.54%	90.91%	194.41%
SINGLE FAMILY		full	$2,182,100	$2,727,803	$545,703	525.33%	0.24%	52.35%	106.06%
n(testing)= 52		highest R2	$2,182,100	$2,601,479	$419,380	485.67%	1.74%	54.52%	101.45%
n(training) = 214	LN - LN	most significant	$2,182,100	$2,621,822	$439,722	587.89%	0.09%	54.33%	99.52%
n(total) = 266		full	$2,182,100	$4,000,000,000,000,000	$4,000,000,000,000,000	5.00E+10	5.65%	68.82%	9.07E+08
		highest R2	$2,182,100	$2,000,000,000,000,000	$2,000,000,000,000,000	-2.00E+15	2.86E+10	113.93%	7216.82%
	LN - Linear	most significant	$2,182,100	$236,224,693	$234,042,593	118443.71%	0.29%	64.42%	2521.17%
		full	$2,182,100	$933,125	-$1,248,974	328.44%	2.13%	63.89%	79.76%
		highest R2	$2,182,100	$991,020	-$1,191,080	333.78%	9.07%	64.12%	79.91%
	LN-Linear with squared terms	most significant	$2,182,100	$798,422	-$1,383,677	371.00%	0.08%	66.51%	81.09%
		full	$2,182,100	$923,809	-$1,258,291	190.24%	0.13%	53.44%	58.94%
		highest R2	$2,182,100	$952,039	-$1,230,061	178.07%	7.44%	50.34%	58.00%
	LN-LN with squared terms	most significant	$2,182,100	$933,080	-$1,249,020	197.52%	0.28%	51.78%	59.35%
	Old Model		$2,182,100	$3,419,814	$1,237,714	1554.60%	0.01%	63.88%	151.05%
VACANT		full	$498,903	$325,800	-$173,102	513.11%	2.01%	47.16%	79.25%
n(testing)= 26		highest R2	$498,903	$370,991	-$127,912	323.65%	5.74%	49.69%	72.87%
n(training) = 109	LN - LN	most significant	$498,903	$390,025	-$108,878	298.19%	3.36%	50.53%	68.03%
n(total) = 135		full	$498,903	$1,319,634	$820,732	2321.29%	12.52%	229.77%	495.26%
		highest R2	$498,903	$948,480	$449,577	2275.63%	0.05%	192.19%	451.27%
	LN - Linear	most significant	$498,903	$787,067	$288,164	3749.83%	2.56%	185.83%	574.58%
		full	$498,903	$275,049	-$223,854	536.74%	1.05%	55.83%	107.40%
		highest R2	$498,903	$188,114	-$310,789	453.39%	4.66%	66.80%	109.91%
	LN-Linear with squared terms	most significant	$498,903	$155,018	-$343,884	742.87%	0.35%	78.88%	135.41%
		full	$498,903	$141,951	-$356,952	319.05%	5.24%	62.14%	64.08%
		highest R2	$498,903	$151,735	-$347,168	182.23%	5.47%	50.62%	58.72%
	LN-LN with squared terms	most significant	$498,903	$151,735	-$347,168	182.23%	5.47%	50.62%	58.72%
	Old Model		$498,903	$250,037	-$248,866	237.84%	2.79%	72.48%	82.67%

The parameter coefficients of the log-log models are rather easy to interpret. They represent elasticites, which are the percentage increase in parcel cost for a 1% increase in an explanatory variable.

3.6 Test for Heteroskedasticity

Ordinary least squares (OLS) regression methods assume the error terms are independent across observations and exhibit constant variance. Heteroskedasticity occurs when variances of a model vary across observations. The presence of heteroskedasticity does not bias parameter estimates, but it does mean that the estimates are not as efficient or precise as they could be. Furthermore, the presence of heteroskedasticity results in biased t-statistic values (suggesting some variables are statistically significant when they in fact are not).

3.6.1 Variance Model

A "variance model" was developed by first computing the residuals of the log-log models. The squares of these estimates of variance all must be positive, so the natural log of these squared residuals was then regressed on any explanatory variables that appeared to be highly correlated with the variance estimates. A high adjusted R-squared, a measure of the goodness of fit statistic, indicates that heteroskedasticity is indeed present in the data. As seen in the table below, all five models exhibit a non-constant variance term.

Table 3.4. Evidence of Heteroskedasticity in Log-Log Model

dependent variable:[log(residual)]^2	
Land Use	Adjusted. R^2
Agriculture	0.5148
Other	0.1863
Residential	0.0883
Retail	0.3148
Vacant	0.5996

3.6.2 Feasible Generalized Least Squares

The use of feasible generalized least squares (FGLS) is one option to correct for heteroskedasticity. This method involves using the inverses of the variances as weights and then using the weighted least squares estimation. Each variance was estimated by developing a regression model, where the natural log of the squared residuals, computed as log(actual price)-log(predicted price), is the dependent variable. The results of these FGLS models exhibited a tendency to under-predict costs.

3.6.3 Secondary Variance Model

Given the log-log model's tendency to under-predict actual price of parcels, there was a final attempt to model the non-constant variance observed in the data set. This was done by computing the residuals in dollars, as the exp(predicted log(price)) – actual price. The natural log of this residual squared was then computed and used as the dependent variable in a separate regression model. The explanatory variables were selected based on the level of correlation. The exponential of the predicted log(residuals squared) served as the estimate of the variance, while its square root served as an estimate of the error term. The addition of this predicted error term to the log-log model improved the accuracy of the Agriculture, Residential, and Retail models. These are called the "log-log plus variance" models in Appendix E. The variables that contribute to this variance model can be found in Appendix F.

3.7 Selection of Best Model

The best models were selected based on the how well the models performed on the "2 sigma" testing data (those takings whose unit price fell within two standard deviations of the average unit prices for that land use type). The coefficients that contributed to these models were then selected as the explanatory variables and the model was calibrated using the entire data set for each land use. In addition to the evaluation of the misprediction, the average of the predicted prices was compared to the average of the actual prices.

The summary statistics for the testing data are presented in Appendix D, where it can be seen that the log-log models with squared terms performed the best among all five land uses. Results comparing log-log, FGLS, and log-log plus secondary variance model can be found in Appendix E.

For Agricultural, Retail, and Residential, the log-log plus secondary variance model was selected, and log-log models were used for Other and Vacant land use types. This selection was based on how close the average of the predicted prices came to the average of the actual prices. Preference was give to those models whose average predicted price was slightly greater than the average actual price.

Chapter 4. Alternatives to Regression Model

4.1 Introduction

With the establishment of electronic databases in most DOT offices, historical costs of parcel acquisitions have become readily available. Although these databases do not contain the parcel characteristics that were used on the development of the regression models; key information regarding R/W acquisitions is available.

The research team collected data on R/W historical costs of parcels by land use and county for Austin, Bryan, San Antonio, Waco, and Wichita Falls. The objective was to properly document and organize the data to make it readily available and of good use to R/W planners and administrators.

4.2 Methodology and Results

TxDOT's Right-of-way Information System (ROWIS) made it possible to review data pertaining to information on more than over 10,000 parcels acquired from 1996 through 2005. The data acquired consisted of the costs of land, improvements, and damages as well as the area of the acquired land, area of the parcel's remaining land, the original property usage of the parcel, and key project information. The area of the acquired parcel, as well as information pertaining to the project and to the parcel was included in the database. The availability of this database made it possible to compute summary statistics of the historical cost per area of land acquired, which can be found in Appendix G.

4.2.1 Description of Data

ROWIS data was provided in three different files sets that were combined to match each parcel with its associated cost, CSJ and parcel number, taken area, remaining area, location, and date parcel was acquired. The first task was to extract data pertaining only to the five districts of interest: Austin, Bryan, San Antonio, Waco, and Wichita Falls. As a follow-up to the conclusion that there is indeed a significant difference among the following five land uses: Agriculture, Residential, Retail, Other, and Vacant, the next step was to separate the data into its corresponding land uses. However, TxDOT's classification system includes more than the five land uses. Figure 4.1 shows the property usages of the parcels that have been acquired in Austin. For this analysis track, the different property usages were assigned to one of the five land uses as shown in Table 4.1. The parcels with a property usage of Undetermined were excluded from this analysis.

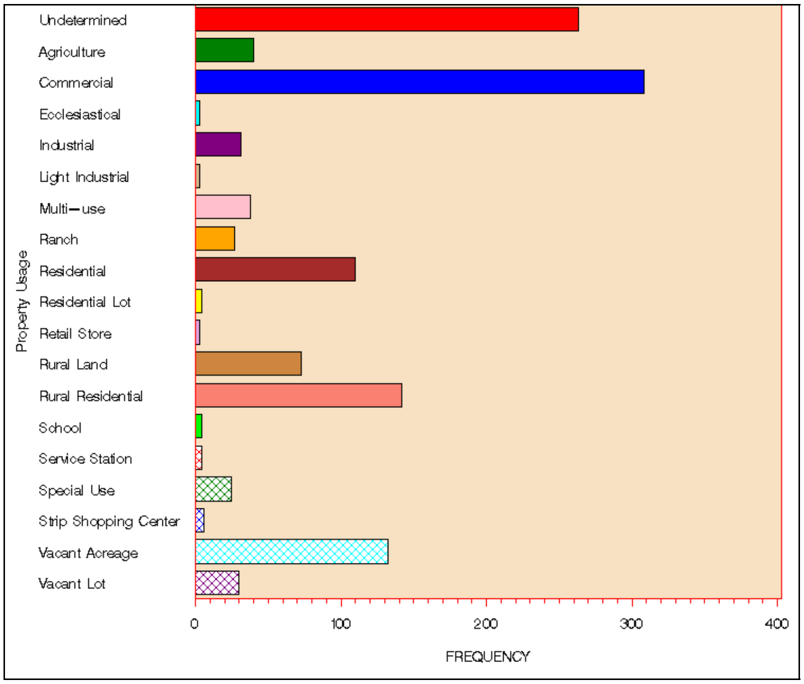

Figure 4.1. Property usage of parcels acquired in Austin

Table 4.1. Classification of the Property Usages

Land Use	Property Usage
Agriculture	Agriculture, Ranch, Rural Land
Residential	Residential, Residential Lot, Rural Residential
Retail	Commerical, Retail Store, Service, Strip Shopping Center
Other	Ecclesiastical, Industrial, Light Industrial, Multi-Use, Special-Use
Vacant	Vacant Acreage, Vacant Lot

Most parcels had multiple costs of improvements and damages; therefore, all costs of damages and costs of improvements of a given parcel were combined. The final step was to reflect all costs in 2006 dollars. This was done by multiplying each cost by the Housing Price Index (HPI) corresponding to the year in which the costs were recorded.

One immediate problem was missing data. In some cases, the costs were available, but the parcel area was missing, or vice versa. These cases, as well as those that had a cost of zero, were eliminated from our analysis, leaving a total of 11,787 parcel records. Furthermore, the available data did not contain any areas pertaining to improvements or damages; therefore, all unit costs were based on the taken area of the acquired parcel.

4.2.2 Analysis of Historical Costs

Unit costs (cost per square foot of taken land area) of parcels with different land uses were computed by county and land use. The sum of all the acquisition costs incurred in county for a specific land use was divided by the sum of the acquired area.

The results of this analysis have been organized by land use and by district. Detailed results for the Austin, Bryan, San Antonio, Waco, and Wichita Falls districts can be found in Appendix G. The number of observations for each county has been documented to promote confidence in the reliability of these estimates. In addition, summary unit costs by property usage for all 25 TxDOT districts are also provided in Appendix H. A sign of N/A indicates that there was no data available for analysis. As seen in Appendix G, in some cases there were very few observations to calculate the unit costs by land use and county. In cases like this, the presence of outliers greatly affected the computation of average unit cost.

The use of historical data can also be used to estimate the cost of future R/W acquisitions. The availability of historical unit costs allows planners to use variables such as the location, land use, and area of the parcel in question to obtain an estimated cost. Such estimates should serve as additional references to budget the cost of acquiring parcels for a given project.

The use of data from ROWIS can improve the estimation of parcel acquisition costs for future projects. By continuing to update the electronic database of R/W costs, the availability of more data will tend to make analyses such as these more accurate. This documentation, properly exploited, should improve budgeting accuracy at the district level by allowing for more informed decisions.

Chapter 5. Developing the Right-of-Way Cost Estimation Tool

5.1 Tool Development

An R/W cost estimation tool was developed to assist planners in the feasibility stages of a project. The tool was developed using Microsoft Excel and Visual Basic. The tool allows R/W personnel throughout Texas to estimate the R/W acquisition costs of a given project based on a few variables pertaining to each parcel in the project. Once the values of these variables are entered for all of the project parcels, the tool calculates four estimates.

The first estimate is based on the Texas Corridor regression model developed in the original Research Project 0-4079. As previously discussed, the variables and coefficients used in this model are described in Appendix A.

The second estimate is based on the five land-use-specific models developed under this Implementation Project 5-4079-01. The variables and coefficients used in this model are described in Appendix D.

The third estimate is based on the adjusted cost of the parcel that shares its most similar properties. This most similar parcel is part of a dataset composed of TxDOT parcel acquisition data collected from ROWIS and incorporated into this tool. The algorithm within the tool was written so that as soon as the property usage and the county in which the parcel in question is located are entered, the 11,787 historical ROWIS records are examined. The algorithm then only uses the subset of records that contain the same property usage and county and then calculates which of the parcels in this subset is most similar to the parcel in question. In the case that there are no historical records of parcels with the same property usage and county in the ROWIS data set, the algorithm classifies counties based on their population density. The counties can be classified as either rural if their population density is less than or equal to 50 people per squared mile, metropolitan if their population density is greater than or equal to 500 people per squared mile, or urban if their population density falls between 50 and 500 people per squared mile. The subset of records used to find the most similar property is then defined as records that have the same property usage and whose county has the same classification (i.e. rural, urban, or metropolitan).

The most similar property is found by calculating the "inter-variable distance" between the parcel of interest and all the parcels in the subset of records with either the same property usage and county or the same property usage and county classification (i.e., rural, urban, or metropolitan). The shortest distance corresponds to the parcel that is most similar to the parcel of interest. This distance is calculated as:

$$\sum_{i=1}^{3}(x_{1i} - x_{2i})^2 / \sigma_i$$

where i refers to the following attributes: area of the taken parcel, the area of the remaining parcel, and population density of the county in which the taking occurred. The term x_{1i} refers to a characteristic pertaining to the parcel in question, and x_{2i} refers to one of the parcels within the subset of records; lastly, σ_i refers to the standard deviation of the *i th* attribute. Once the most similar is found, an area conversion is performed by multiplying the taken area of the parcel in question by the unit cost of the property it found to have the most similarities with. The fourth estimate is based on the average historical unit cost of parcels with the same property usage and in the same county. As discussed in section 4.2, the calculation of unit costs by county and land use yielded very high values for most of the five districts. In order to address this problem, unit costs were based on two different criteria: county and property usage, which as previously stated, is more specific than land use. As in the most similar property algorithm, the unit cost of the subset of historical records is based on these two new criteria and if there are no parcels are found in this subset, then the county classification rather than county is used as a criterion. The estimated cost of each parcel is calculated by multiplying its taken area by the average unit cost of parcels from the subset of records with either the same county and property usage or the same county classification and property usage.

The estimated costs in this tool reflect 2006 dollars. This time adjustment was performed using the Housing Price Index (HPI). The HPI index for future years will need to be added manually.

Instructions on how to do this can be found in the tool's user manual (Product 1).

5.1.1 Results by Project

The final test of the tool's performance was done on the project level. A project was defined as all the parcels with the same ROW CSJ number in the 500-parcel data set collected for this Implementation Project. The 500-parcel dataset does not consist of all parcels actually acquired in each project but rather only those that were in the data set. The actual and estimated costs for all parcels within the same project were added to get the actual project cost and estimated project cost, respectively. A project was defined as the set of parcels with the same CSJ Number within the 500-sample data set. It must be noted that the actual projects consisted of more parcels than the ones available in the sample data set. The four estimated costs provided by the tool for projects with at least five parcels are shown in Table 5.1. The actual price and the relative misprediction of each project are also presented in this table, where a relative misprediction below zero indicates that the project's price has been under-predicted.

Table 5.1 Results of Tool Estimates by Project

District	ROW CSJ	Actual Price	New Regression Estimation		Old Regression Estimation		Most Similar Result		Average Cost	
			Estimate ($)	Misp.(%)	Estimate ($)	Misp.(%)	Estimate ($)	Misp.(%)	Estimate ($)	Misp.(%)
WAC	0015-07-068	$845,324	$281,860	-67%	$135,189	-84%	$602,586	-29%	$1,215,183	44%
WAC	0015-14-117	$2,575,066	$1,579,419	-39%	$144,499	-94%	$1,995,810	-22%	$2,418,473	-6%
WAC	0049-04-056	$69,172	$145,069	110%	$138,078	100%	$94,117	36%	$47,899	-31%
WAC	0055-04-027	$52,537	$42,262	-20%	$36,955	-30%	$81,572	55%	$38,836	-26%
WAC	0209-07-037	$850,586	$991,426	17%	$412,421	-52%	$503,462	-41%	$623,991	-27%
WAC	0567-01-021	$163,941	$262,800	60%	$202,926	24%	$61,006	-63%	$189,783	16%
WAC	1191-04-019	$63,990	$327,872	412%	$254,367	298%	$70,306	10%	$107,750	68%
WAC	1191-04-020	$73,138	$364,952	399%	$218,077	198%	$189,018	158%	$60,756	-17%
AUS	0114-04-060	$676,921	$1,166,665	72%	$295,543	-56%	$884,508	31%	$866,741	28%
AUS	0151-09-039	$1,306,023	$2,009,358	54%	$281,908	-78%	$3,379,780	159%	$2,459,865	88%
AUS	1135-01-020	$94,333	$87,410	-7%	$38,140	-60%	$50,239	-47%	$37,403	-60%
AUS	1378-03-028	$272,091	$331,039	22%	$307,521	13%	$433,471	59%	$522,361	92%
AUS	1378-04-037	$101,250	$31,848	-69%	$68,321	-33%	$82,515	-19%	$77,596	-23%
AUS	2211-02-014	$1,869,570	$1,413,985	-24%	$381,790	-80%	$18,542,815	892%	$5,351,828	186%
SAT	0253-04-125	$4,484,934	$1,495,340	-67%	$28,874,633	544%	$2,250,128	-50%	$1,315,206	-71%
SAT	0291-10-084	$2,613,752	$2,555,944	-2%	$5,088,991	95%	$4,619,818	77%	$1,262,086	-52%
SAT	0521-04-249	$1,071,464	$1,182,622	10%	$1,598,674	49%	$1,340,157	25%	$284,076	-73%
BRY	0049-06-068	$32,173	$30,685	-5%	$35,566	11%	$11,204	-65%	$11,634	-64%
BRY	0050-01-065	$866,460	$661,334	-24%	$66,275	-92%	$575,723	-34%	$465,646	-46%
BRY	0050-02-087	$1,279,885	$3,342,100	161%	$904,143	-29%	$1,403,731	10%	$3,913,857	206%
BRY	0185-04-043	$291,150	$588,314	102%	$217,518	-25%	$204,337	-30%	$152,902	-47%
BRY	0212-02-032	$76,502	$164,598	115%	$146,597	92%	$392,573	413%	$364,949	377%
BRY	0540-08-002	$888,971	$2,409,314	171%	$503,551	-43%	$7,209,715	711%	$5,908,116	565%
WFS	0013-05-047	$361,711	$517,614	43%	$528,095	46%	$152,061	-58%	$363,715	1%
WFS	0124-02-028	$33,673	$19,330	-43%	$44,366	32%	$37,751	12%	$25,295	-25%
WFS	0156-04-095	$161,905	$2,561,929	1482%	$185,209	14%	$149,736	-8%	$651,067	302%
WFS	0156-05-044	$635,549	$577,736	-9%	$366,208	-42%	$773,394	22%	$524,978	-17%
WFS	0802-01-023	$30,985	$73,815	138%	$28,644	-8%	$11,596	-63%	$11,596	-63%
WFS	0822-01-015	$60,545	$83,827	38%	$82,130	36%	$85,091	41%	$213,337	252%

Projects WITHIN +/- 25%	**10**	**34.5%**	**6**	**20.7%**	**8**	**27.6%**	**7**	**24.1%**
Projects WITHIN +/- 50%	**14**	**48.3%**	**10**	**34.5%**	**16**	**55.2%**	**13**	**44.8%**
Projects WITHIN +/- 75%	**20**	**69.0%**	**19**	**65.5%**	**22**	**75.9%**	**20**	**69.0%**
Projects ABOVE +/- 75%	**9**	**31.0%**	**10**	**34.5%**	**7**	**24.1%**	**9**	**31.0%**

As seen in Table 5.1, the land-use-specific regression models and the most similar property algorithm provided the most accurate estimates: 10 out of the 29 projects were estimated within 25% of the actual project price by the land use specific regression models, while 8 out of the 29 projects were estimated within this same accuracy with the most similar property algorithm. The most similar property algorithm was able to predict 16 of the projects within 50% of their actual cost, while the land use specific regression models provided this same accuracy for 14 projects, very close to the accuracy of the historical unit cost algorithm. When evaluating the project estimates that fell within 75% of the actual project price, the most similar property once again provides the best results, with 22 projects that fell in this range. However, at this accuracy level, there were no drastic differences among the four estimates: the land use specific model, Texas Corridor model, and historical cost estimates provided 20, 19, and 20 projects, respectively, that fell in the 75% range. Although the estimates provided by the land-use-specific models and the most similar property algorithm were more accurate than the other two estimates provided by the tool, it must be noted that they both had more than five projects with a relative misprediction greater than 75%.

In summary, the four estimates provided by the tool have performed well for some projects; however, there is no single estimate that consistently performs the best. Furthermore, the projects presented do not consist of all the parcels that were actually acquired for their completion; hence, these results may differ greatly if all parcels had been considered.

Chapter 6. Conclusions and Recommendations

The costs associated with R/W acquisitions generally are quite variable. However, several parameters significantly influence the price paid for R/W and these are of great use in predicting acquisition costs. Multiple model specifications were explored and the final selection of the models was based on their misprediction. As in Research Project 0-4079, log-log models proved to be the most accurate. Relative to the model developed in Project 0-4079, substantial improvements have been made, but the large range of the misprediction underscores the fact that the developed models can serve only as general guidelines in developing cost estimates.

Application of the new models, project by project, suggests that the costs of damages is the most difficult to predict. Further analysis of damages is necessary to avoid the few but extreme under-predictions seen at the project level. Although the historical unit cost of improvements and damages may be of some help in this, it is essential to keep in mind that these unit costs are based on the area of the acquired land; the other areas are not readily available and sometimes cannot be quantified (such as length of fences, area of signage, etc.).

Lastly, the estimates based on historical costs show that the value of properties differs greatly among districts and even among counties. With the on-going collection of data, future analysis will improve the cost-estimating tool's accuracy, and trends may become more easily detected within districts. However, with the data that was made available for this project, the results show that it is indeed possible to estimate costs on relatively few, readily available parcel characteristics. The intricacies associated with the value of improvement and with the sometimes extreme cost of damages are difficult to quantify and lead to some significant mispredictions. These results provide substantial guidance and should help prevent budget deficits while facilitating feasibility analysis and standardizing budget generation.

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Appendix A: Log-Log Regression Results from Research Project 0-4079

Log-Log Regression Results for Texas Corridor Sample			
Dependent Variable:	Natural Log of Total Acquisition Cost		
Number of Observations	285		
Adjusted R-squared	0.906		
Variables	Coefficient	Std. Coef.	p-value
(Constant)	2.73786		0.000
LANDSF	-	-	-
*LANDSF*CORNER*	0.02105	0.0422	0.047
*LANDSF*TIMETREND*	0.49643	0.3612	0.000
*LANDSF*VACANT*	0	n/a	n/a
*LANDSF*AGRI*	-0.04532	-0.0536	0.081
*LANDSF*SFAM*	0.08536	0.1765	0.000
*LANDSF*MFAM*	0.07404	0.0538	0.020
*LANDSF*RETAIL*	0.13481	0.2176	0.000
*LANDSF*SERVICE*	0.07239	0.0556	0.096
*LANDSF*OTHER*	0.07900	0.0609	0.011
*LANDSF*BASE SITES*[1]	0	n/a	n/a
*LANDSF*ELPASO*	0.24731	0.4545	0.000
*LANDSF*FTWORTH*	0.12397	0.1731	0.000
*LANDSF*HOUSTON*	0.33290	0.5822	0.000
*LANDSF*SAN ANTONIO*	0.40861	0.5443	0.000
IMPSF	0.72522	1.3190	0.003
*IMPSF*TIMETREND*	-0.38778	-0.8360	0.020
*IMPSF*BASE USES*[2]	0	n/a	n/a
*IMPSF*RETAIL*	-0.06910	-0.0716	0.038
*IMPSF*SERVICE*	0.05461	0.0328	0.324
*IMPSF*POPDENSITY*	-0.10035	-0.3606	0.094
REMSF	0.03095	0.0769	0.040
*REMSF*CHGHBUSE*	-0.04654	-0.0689	0.005
*REMSF*SHAPECHG*	-0.01723	-0.0232	0.258
*REMSF*FRNTLOSS*	-0.01251	-0.0320	0.145

Appendix B: Statistical T-test for Comparison of Means

Actual Price/SF	Agricultures	Other	Retail	Service	Single Family	Vacant
mean	0.495378854	4.7871779	68.793752	7.7599435	2.688455933	1.5780016
n	77	58	117	5	139	104
s squared	1.116037175	55.533792	45139.483	3.15244	24.46917542	7.5712527

sample variance	Agriculture	Other	Retail	Service	Single Family	Vacant
Agriculture		24.437932	27272.213	1.2178573	16.17553754	4.8304908
Other	24.43793208	55.533792	30285.234	52.098949	33.54960179	24.657907
Retail	27272.2127	30285.234	45139.483	43634.939	20628.17624	23913.059
Service	1.217857316	52.098949	43634.939	3.15244	23.868704	7.4060634
Single Family	16.17553754	33.549602	20628.176	23.868704	24.46917542	17.247242

Vacant

t_{ij}	Agriculture	Other	Retail	Service	Single Family	Vacant
Agriculture		4.993	2.818	14.264	3.838	3.276
Other			2.290	0.884	2.318	3.944
Retail				0.640	3.668	3.225
Service					2.281	4.962
Single Family						2.062
Vacant						

v = N-a	Agriculture	Other	Retail	Service	Single Family	Vacant
Agriculture		133	192	80	214	179
Other			173	61	195	160
Retail				120	254	219
Service					142	107
Single Family						241
Vacant						

$t_{v, \alpha/2}$	Agriculture	Other	Retail	Service	Single Family	Vacant
Agriculture		1.98	1.96	1.99	1.98	1.96
Other			1.96	2	1.96	1.96
Retail				1.98	1.96	1.96
Service					1.96	1.98
Single Family						1.98
Vacant						

To reject the hypotheses that mean of x is equal to mean of y, the absolute value of tij must be greater than tv,α/2

Appendix C: Variables Used in the Development of New Models

Variable Name	Variable Definition
taken area SF	Area (square feet) of the property that will be acquired
year of acquisition	1997=1, 1998=2, ..2005 = 9
number of driveways	Number of driveways for original parcel
abilene	Indicator variable for Abilene
crp	Indicator variable for Corpus Christi
elp	Indicator variable for El Paso
ftw	indicator variable for Fort Worth
hou	Indicator variable for Houston
san	Indicator variable for San Antonio
austin	Indicator variable for Austin
bry	Indicator variable for Bryan
wac	Indicator variable for Waco
wfs	Indicator variable for Wichita Falls
main frontage acquired	Main frontage acquired in feet
population	Population (persons/squared mile)of county in which parcel is acquired
shape irregular	Indicator variable for shape of acquired parcel irregular
shape change	Indicator variable for change in shape
corner	Indicator variable for whether parcel is located on a corner
hb change	Indicator variable for change in highest and best use
partial taking	Indicator variable for partial taking of parcel
total area	Area (square feet) of the original parcel
improvement SF	Area (square feet) of improvements on original parcel

Variables used in Linear and Log-Linear Model	***Variables use in Log-Log Model***
taken area SF	LN(taken area SF)
taken area*year of acquisition	LN(taken area*year of acquisition)
taken area* number of driveways	LN(taken area* number of driveways)
taken area* abilene	LN(taken area)* Abilene
taken area *crp	LN(taken area) *crp
taken area*elp	LN(taken area)*elp
taken area*ftw	LN(taken area)*ftw
taken area*hou	LN(taken area)*hou
taken area*san	LN(taken area)*san
taken area*austin	LN(taken area)*Austin
taken area*bry	LN(taken area)*bry
taken area*wac	LN(taken area)*wac
taken area*wfs	LN(taken area)*wfs
taken area*main frontage acquired	LN(taken area*main frontage acquired)
taken area*population	LN(taken area*population)
taken area*shape irregular	LN(taken area)*shape irregular
taken area*shape change	LN(taken area)*shape change
taken area*corner	LN(taken area)*corner
taken area*hb change	LN(taken area)*hb change
taken area* partial taking	LN(taken area* partial taking)
total area	LN(total area)
total area*number of driveways	LN(total area*number of driveways)
total area*main frontage change	LN(total area*main frontage change)
total area*county population	LN(total area*county population)
total area*shape irregular	LN(total area)*shape irregular
total area*shape change	LN(total area)*shape change
total area*corner	LN(total area)*corner
total*hb change	LN(total area)*hb change
total area*partial taking	LN(total area)*partial taking
improvement [SF]	LN(improvements) [SF]
LN(actual price/CPI)	LN(actual price/CPI)
actual price	actual price
CPI	CPI

Appendix D: Misprediction Error of Testing Data: Log-log and Log-linear Models

Agriculture																		
					Results of testing data (20% of data that was not used to develop the models)							Results of testing and training data (80% of the data was used to develop model and the rest of the 20% was used to test the accuracy of the model)						
					Dollar Error			Percentage Error Abs(error)/actual				Dollar Error			Percentage Error Abs(error)/actual			
Model No.	Model Description			Adj. R-squared of model using 80% for training	Sum of Actual	Sum of Pred.	Sum of Error=Predicted-Actual	Max	Min	Median	Average	Sum of Actual	Sum of Pred.	Sum of Error=Predicted-Actual	Max	Min	Median	Average
1	Not removing		full	0.714	$407,123	$429,315	$22,192	1871.01%	2.46%	92.29%	256.25%	$2,144,486	$2,316,399	$171,913	1871.01%	2.46%	54.19%	134.07%
2	outliers		highest R2	0.735	$407,123	$417,245	$10,122	1405.45%	0.48%	77.61%	188.23%	$2,144,486	$2,171,890	$27,404	1405.45%	0.48%	61.08%	119.00%
3	n(testing)= 20	LN - LN	most significant	0.713	$407,123	$491,896	$84,773	3468.76%	0.45%	85.53%	298.94%	$2,144,486	$2,106,399	-$38,087	3468.76%	0.45%	77.01%	152.07%
4	n(training)=79		full	0.530	$407,123	$395,652,016	$395,244,894	1099369.43%	1.59%	101.74%	61275.54%	$2,144,486	$398,930,370	4.E+08	1099369.43%	0.49%	93.95%	12565.74%
5	n(total)= 99		highest R2	0.585	$407,123	$138,370,618	$137,963,496	457383.95%	0.56%	93.19%	24639.38%	$2,144,486	$141,365,509	1.E+08	457383.95%	0.27%	83.47%	5158.63%
6		LN - Linear	most significant	0.570	$407,123	$1,024,507,158	$1,024,100,035	4776913.20%	6.45%	83.85%	239000.36%	$2,144,486	1.E+09	1.E+09	4776913.20%	0.95%	84.00%	48482.08%
7		Old Model			$407,123	$369,798	-$37,325	26247.08%	5.39%	73.90%	1377.71%	$2,144,486	$185,383,822	$183,239,336	26247.08%	3.63%	63.91%	422.17%
8			full	0.652	$222,734	$385,055	$162,321	1298.46%	7.09%	50.14%	235.59%	$1,015,392	$1,363,510	$348,118	1298.46%	0.13%	59.03%	130.38%
9			highest R2	0.689	$222,734	$354,530	$131,796	1039.89%	9.63%	43.20%	171.70%	$1,015,392	$1,309,490	$294,098	1039.89%	1.13%	61.25%	116.27%
10	removing cases +/-2 std. deviations	LN - LN	most significant	0.680	$222,734	$353,978	$131,245	871.47%	1.89%	91.39%	157.40%	$1,015,392	$1,316,887	$301,495	871.47%	0.13%	76.38%	125.34%
11			full	0.438	$222,734	$14,748,550	$14,525,816	674.9216987	0.004424863	0.702706415	40.09726637	$1,015,392	$16,202,976	2.E+07	67492.17%	0.44%	81.40%	935.03%
12	n(testing)= 18		highest R2	0.510	$222,734	$4,185,254	$3,962,520	18255.27%	1.57%	73.17%	1263.78%	$1,015,392	$5,620,712	5.E+06	18255.27%	1.57%	72.78%	405.24%
13	n(training) = 76	LN - Linear	most significant	0.415	$222,734	$1,496,227	$1,273,493	6011.26%	2.14%	58.24%	446.56%	$1,015,392	$3,180,385	$2,164,993	6011.26%	1.64%	72.11%	314.32%
14	n(total) = 94	Old Model			$222,734	$397,462	$174,728	26247.08%	3.63%	49.60%	1504.18%	$1,015,392	$1,041,127	$25,735	26247.08%	3.63%	60.77%	437.65%
15			full	0.679	$356,781	$401,206	$44,425	1321.69%	3.83%	53.18%	227.28%	$1,314,121	$1,560,567	$246,446	1321.69%	0.91%	57.71%	129.15%
16			highest R2	0.714	$356,781	$390,939	$34,158	914.39%	6.02%	92.80%	159.48%	$1,314,121	$1,483,625	$169,504	914.39%	0.37%	75.39%	125.61%
17	removing cases +/-3 std. deviations	LN - LN	most significant	0.699	$356,781	$369,108	$12,328	1128.47%	7.41%	55.32%	172.72%	$1,314,121	$1,513,373	$199,252	1128.47%	1.00%	59.46%	115.82%
18	n(testing)= 19		full	0.482	$356,781	$15,952,999	$15,596,218	59001.97%	2.86%	74.17%	3466.29%	$1,314,121	$17,708,881	2.E+07	59001.97%	0.95%	79.42%	850.32%
19	n(training) = 77		highest R2	0.547	$356,781	$4,229,434	$3,872,653	17343.98%	8.52%	95.65%	1039.97%	$1,314,121	$13,452,997	1.E+07	15040.07%	0.46%	72.82%	425.16%
20	n(total) = 96	LN - Linear	most significant	0.495	$356,781	$11,662,396	$11,305,615	15040.07%	0.46%	75.02%	1337.98%	$1,314,121	$5,938,579	5.E+06	17343.98%	2.01%	84.88%	401.20%
21		Old Model			$356,781	$428,749	$71,968	26247.08%	3.63%	50.17%	1429.05%	$1,314,121	$1,085,149	-$228,972	26247.08%	3.63%	61.99%	430.29%

Other																		
					Results of testing data (20% of data that was not used to develop the models)							Results of testing and training data (80% of the data was used to develop model and the rest of the 20% was used to test the accuracy of the model)						
					Dollar Error			Percentage Error Abs(error)/actual				Dollar Error			Percentage Error Abs(error)/actual			
Model No.	Model Description			Adj. R-squared of model using 80% for training	Sum of Actual	Sum of Pred.	Sum of Error=Predicted-Actual	Max	Min	Median	Average	Sum of Actual	Sum of Pred.	Sum of Error=Predicted-Actual	Max	Min	Median	Average
1	Not removing		full	0.770	$1,503,910	$369,057,131	$367,553,220	39690.78%	5.82%	116.88%	3179.52%	$12,475,031	$384,662,388	$372,187,357	39690.78%	0.51%	67.89%	731.70%
2	outliers		highest adj.R2	0.819	$1,503,910	$222,448,733	$220,944,822	23871.86%	15.83%	88.50%	2005.86%	$12,475,031	$236,901,660	$224,426,629	23871.86%	2.52%	62.25%	483.11%
3		LN - LN	most significant	0.791	$1,503,910	$18,566,439	$17,062,529	1830.59%	8.38%	91.12%	344.04%	$12,475,031	$29,418,837	$16,943,805	1830.59%	0.24%	70.10%	156.03%
4			full	0.512	$1,503,910	2.E+57	2.E+57	2.E+51	6.57%	182.00%	1.E+50	$12,475,031	2.E+57	2.E+57	2.E+51	6.57%	157.38%	2.E+49
5	n(testing)= 14		highest adj.R2	0.621	$1,503,910	2.E+43	2.E+43	3.E+37	12.91%	132.90%	2.E+36	$12,475,031	2.E+43	2.E+43	3.E+37	8.03%	108.61%	4.E+35
6	n(training)=54	LN - Linear	most significant	0.565	$1,503,910	8.E+32	8.E+32	8.E+26	37.44%	246.63%	6.E+25	$12,475,031	8.E+32	8.E+32	8.E+26	10.93%	134.01%	1.E+25
7	n(total)= 68	Old Model			$1,503,910	$11,822,421	$10,318,510	1169.82%	58.27%	86.04%	160.25%	$12,475,031	$89,695,418	$77,220,386	2488.99%	1.24%	80.20%	262.72%
8			full	0.607	$344,309	$889,467	$545,157	1996.85%	19.99%	224.58%	631.70%	$3,797,865	$11,117,576	$7,319,711	1996.85%	0.08%	97.67%	252.82%
9			highest adj.R2	0.711	$344,309	$933,278	$588,969	1242.45%	12.84%	181.24%	443.15%	$3,797,865	$10,348,754	$6,550,890	1242.45%	0.38%	86.25%	192.39%
10	removing cases +/-2 std. deviations	LN - LN	most significant	0.690	$344,309	$1,076,855	$732,546	949.82%	31.86%	138.30%	346.30%	$3,797,865	$9,442,472	$5,644,607	949.82%	2.18%	97.99%	189.70%
11			full	0.468	$344,309	2.E+12	2.E+12	3.E+07	69.77%	269.94%	2.E+06	$3,797,865	1.78977E+12	2.E+12	3.E+07	15.02%	134.32%	4.E+05
12	n(testing)= 12		highest adj.R2	0.550	$344,309	8.E+12	8.E+12	1.E+08	39.44%	340.10%	1.E+07	$3,797,865	7.99242E+12	8.E+12	1.E+08	5.49%	114.73%	2.E+06
13	n(training) = 54	LN - Linear	most significant	0.436	$344,309	$4,339,899	$3,995,590	6697.81%	3.43%	244.76%	780.79%	$3,797,865	$11,262,777	$7,464,912	6697.81%	1.05%	145.26%	465.73%
14	n(total) = 66	Old Model			$344,309	$366,128	$21,819	1034.68%	6.15%	74.27%	217.12%	$3,797,865	$2,864,654	-$933,210	1763.43%	1.24%	78.84%	197.59%
15			full	0.700	$1,263,910	$379,164,800	$377,900,890	40806.74%	11.79%	112.67%	3616.29%	$5,797,865	$386,539,385	$380,741,520	40806.74%	2.11%	81.72%	803.95%
16			highest adj.R2	0.864	$1,263,910	$290,800,136	$289,536,226	31276.30%	27.36%	99.17%	2710.53%	$5,797,865	$296,679,324	$290,881,459	31276.30%	1.24%	74.20%	604.06%
17	removing cases +/-3 std. deviations	LN - LN	most significant	0.731	$1,263,910	$33,364,166	$32,100,256	3396.35%	25.68%	161.44%	602.71%	$5,797,865	$40,090,455	$34,292,591	3396.35%	1.61%	83.17%	228.55%
18			full	0.453	$1,263,910	3.E+57	3.E+57	3.E+51	18.37%	224.02%	2.E+50	$5,797,865	2.89928E+57	3.E+57	3.14E+51	5.40%	148.87%	4.68E+49
19	n(testing) = 13		highest adj.R2	0.505	$1,263,910	1.E+39	1.E+39	1.E+33	20.00%	163.59%	1.E+32	$5,797,865	1.29794E+39	1.E+39	1.40E+33	3.54%	106.46%	2.10E+31
20	n(training) = 54	LN - Linear	most significant	0.565	$1,263,910	3.E+33	3.E+33	3.E+27	38.59%	263.57%	3.E+26	$5,797,865	3.06323E+33	3.E+33	3.31E+27	9.16%	130.24%	4.94E+25
21	n(total) = 67	Old Model			$1,263,910	$24,063,346	$22,799,436	2462.97%	6.15%	81.57%	389.88%	$5,797,865	$78,341,651	$72,543,786	2488.99%	1.24%	81.57%	265.60%

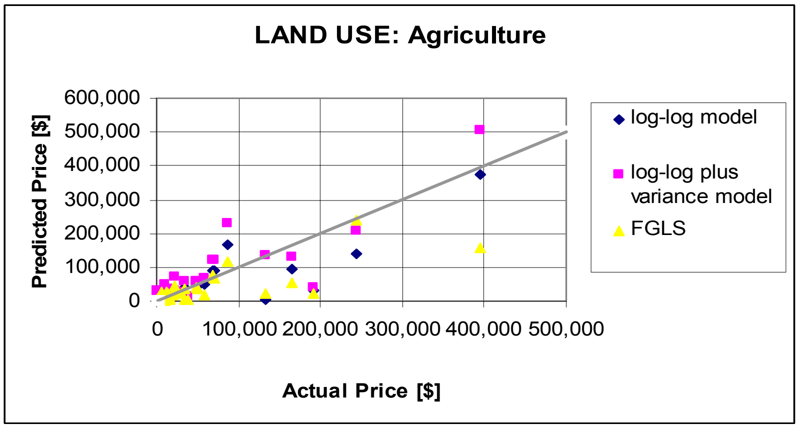
Retail																		
					Results of testing data (20% of data that was not used to develop the models)							Results of testing and training data (80% of the data was used to develop model and the rest of the 20% was used to test the accuracy of the model)						
					Dollar Error			Percentage Error Abs(error)/actual				Dollar Error			Percentage Error Abs(error)/actual			
Model No.	Model Description			Adj. R-squared of model using 80% for training	Sum of Actual	Sum of Pred.	Sum of Error=Predicted-Actual	Max	Min	Median	Average	Sum of Actual	Sum of Pred.	Sum of Error=Predicted-Actual	Max	Min	Median	Average
1	Not removing		full	0.622	$19,731,960	$16,178,539	-$3,553,421	8204.74%	1.93%	82.78%	450.32%	$60,184,078	$73,608,985	$13,424,907	8204.74%	0.94%	99.42%	293.35%
2	outliers		highest R2	0.650	$19,731,960	$17,969,812	-$1,762,148	9274.82%	0.47%	79.42%	450.34%	$60,184,078	$71,490,933	$11,306,856	9274.82%	0.47%	95.44%	288.79%
3		LN - LN	most significant	0.646	$19,731,960	$18,328,532	-$1,403,427	9277.87%	2.35%	79.94%	442.93%	$60,184,078	$73,687,271	$13,503,193	9277.87%	0.69%	97.00%	294.57%
4			full	0.409	$19,731,960	2.E+11	2.E+11	6.E+06	3.45%	202.18%	2.E+05	$60,184,078	2.E+11	2.E+11	6.E+06	0.93%	233.54%	3245763.62%
5	n(testing)= 36		highest R2	0.446	$19,731,960	8.E+10	8.E+10	21592.3148	0.094386205	1.735038015	1101.688206	$60,184,078	8.E+10	8.E+10	2159231.48%	1.23%	216.23%	22020.25%
6	n(training)=149	LN - Linear	most significant	0.437	$19,731,960	$604,343,259	6.E+08	5172450.98%	0.54%	140.22%	175371.33%	$60,184,078	$758,643,923	$698,459,845	5172450.98%	0.54%	195.50%	34743.08%
7	n(total)= 185	Old Model			$19,731,960	$3,148,068	-$16,583,892	758.83%	20.09%	95.19%	122.33%	$60,184,078	$54,157,101	-$6,026,977	1919.39%	1.54%	86.57%	193.17%
8			full	0.604	$7,601,729	$9,274,836	$1,673,107	7745.14%	11.85%	77.36%	451.14%	$31,133,021	$51,521,197	$20,388,176	7745.14%	1.24%	102.08%	294.53%
9			highest R2	0.630	$7,601,729	$9,287,860	$1,686,131	7975.11%	9.74%	68.07%	434.89%	$31,133,021	$51,508,360	$20,375,339	7975.11%	0.08%	101.14%	286.61%
10	removing cases +/- 2 std. deviations	LN - LN	most significant	0.619	$7,601,729	$8,737,983	$1,136,254	5436.91%	8.12%	75.28%	357.19%	$31,133,021	$48,447,135	$17,314,114	5436.91%	0.34%	98.23%	290.94%
11			full	0.367	$7,601,729	4.E+09	4.E+09	456604.5864	0.021907782	2.238262239	15362.79979	$31,133,021	$4,574,141,122	$4,543,008,102	5.E+05	0.55%	223.83%	300961.78%
12	n(testing)= 35		highest R2	0.405	$7,601,729	4.E+09	4.E+09	426952.4405	0.025609822	2.027968219	14365.10229	$31,133,021	$4,277,094,604	$4,245,961,584	426952.4405	0.004856343	2.027968219	2814.136335
13	n(training) = 144	LN - Linear	most significant	0.372	$7,601,729	3.E+10	3.E+10	877341.4457	0.026681006	0.969678821	25072.71504	$31,133,021	$32,847,510,551	$32,816,377,531	877341.4457	0.023804829	1.677438029	4908.641452
14	n(total) = 179	Old Model			$7,601,729	$7,220,687	-$381,042	1363.84%	1.54%	90.91%	194.41%	$31,133,021	$28,758,049	-$2,374,972	1919.39%	1.54%	84.31%	189.17%
15			full	0.590	$7,601,729	$10,711,171	$3,109,442	8015.23%	12.72%	83.65%	487.05%	$36,001,439	$58,362,381	$22,360,942	8015.23%	0.10%	114.99%	324.92%
16			highest R2	0.617	$7,601,729	$9,839,367	$2,237,637	9789.94%	4.66%	77.82%	504.17%	$36,001,439	$54,780,990	$18,779,551	9789.94%	0.61%	120.69%	327.22%
17	removing cases +/- 3 std. deviations	LN - LN	most significant	0.614	$7,601,729	$10,098,836	$2,497,106	9644.60%	8.13%	78.75%	491.35%	$36,001,439	$56,706,818	$20,705,379	9644.60%	1.67%	118.26%	330.75%
18			full	0.376	$7,601,729	5.E+11	5.E+11	168319210.6	0.017568948	2.18116215	4809689.084	$36,001,439	5.E+11	5.E+11	2.E+08	1.76%	230.43%	9.E+05
19	n(testing) = 35		highest R2	0.411	$7,601,729	4.E+11	4.E+11	10813259.43	0.009725446	1.823015832	323394.6185	$36,001,439	4.E+11	4.E+11	1.E+07	0.97%	209.01%	6254042.10%
20	n(training) = 146	LN - Linear	most significant	0.397	$7,601,729	2.E+12	2.E+12	775493061.3	0.037900699	1.950677813	22174469.46	$36,001,439	2.E+12	2.E+12	8.E+08	0.39%	206.06%	4.E+06
21	n(total) = 181	Old Model			$7,601,729	$7,220,687	-$381,042	1363.84%	1.54%	90.91%	194.41%	$36,001,439	$28,983,012	-$7,018,426	1919.39%	1.54%	84.76%	188.14%

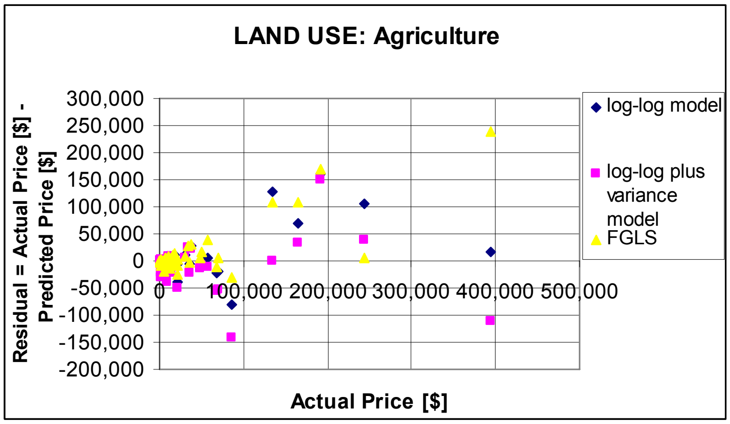
Single Family					Results of testing data (20% of data that was not used to develop the models)							Results of testing and training data (80% of the data was used to develop model and the rest of the 20% was used to test the accuracy of the model)						
					Dollar Error			Percentage Error Abs(error)/actual				Dollar Error			Percentage Error Abs(error)/actual			
Model No.	Model Description			Adj. R-squared of model using 80% for training	Sum of Actual	Sum of Pred.	Sum of Error=Predicted-Actual	Max	Min	Median	Average	Sum of Actual	Sum of Pred.	Sum of Error=Predicted-Actual	Max	Min	Median	Average
1	Not removing		full	0.862	$3,241,524	$3,788,326	$546,802	478.04%	2.49%	63.91%	93.03%	$17,541,132	$20,401,007	$2,859,875	478.04%	0.14%	42.42%	73.67%
2	outliers		highest R2	0.868	$3,241,524	$3,699,307	$457,782	441.32%	0.74%	50.37%	91.45%	$17,541,132	$20,263,174	$2,722,042	441.32%	0.08%	35.49%	70.57%
3		LN - LN	most significant	0.862	$3,241,524	$3,735,570	$494,046	446.63%	0.23%	50.03%	92.78%	$17,541,132	$20,461,808	$2,920,677	446.63%	0.23%	35.69%	71.66%
4			full	0.696	$3,241,524	7.E+13	7.E+13	849715421.9	0.031809184	58.91%	2.E+07	$17,541,132	7.E+13	7.E+13	849715421.9	0.001124481	55.91%	3.E+06
5	n(testing)= 57		highest R2	0.710	$3,241,524	4.E+13	4.E+13	506324459.7	0.015175963	57.36%	9.E+06	$17,541,132	4.E+13	4.E+13	506324459.7	0.00496322	54.96%	2.E+06
6	n(training)=226	LN - Linear	highest R2	0.687	$3,241,524	$183,640,362	$180,398,837	914.3234067	0.002105561	48.07%	1865.56%	$17,541,132	$212,533,071	2.E+08	914.3234067	0.002105561	62.42%	525.70%
7	n(total)= 283	Old Model			$3,241,524	$4,219,529	$978,004	222.04%	5.82%	86.24%	87.66%	$17,541,132	$21,622,022	$4,080,890	1554.60%	0.01%	45.45%	94.24%
8			full	0.814	$2,182,100	$2,727,803	$545,703	525.33%	0.24%	52.35%	106.06%	$10,238,857	$11,988,950	$1,750,093	525.33%	0.24%	42.79%	77.63%
9			highest R2	0.821	$2,182,100	$2,601,479	$419,380	485.67%	1.74%	54.52%	101.45%	$10,238,857	$11,788,888	$1,550,031	485.67%	0.60%	40.05%	76.59%
10	removing cases +/- 2 std. deviations	LN - LN	most significant	0.817	$2,182,100	$2,621,822	$439,722	587.89%	0.09%	54.33%	99.52%	$10,238,857	$11,752,812	$1,513,955	587.89%	0.09%	44.41%	78.49%
11			full	0.617	$2,182,100	4.E+15	4.E+15	5.E+10	5.65%	68.82%	9.E+08	$10,238,857	4.E+15	4.E+15	5.E+10	0.37%	60.51%	2.E+08
12	n(testing)= 52		highest R2	0.664	$2,182,100	2.E+15	2.E+15	-2.E+15	3.E+10	1.14%	72.17%	$10,238,857	2.E+15	2.E+15	3.E+10	0.31%	60.15%	1.E+08
13	n(training) = 214	LN - Linear	most significant	0.599	$2,182,100	$236,224,693	$234,042,593	118443.71%	0.29%	64.42%	2521.17%	$10,238,857	$249,692,681	$239,453,825	118443.71%	0.29%	63.11%	649.83%
14	n(total) = 266	Old Model			$2,182,100	$250,037	-$1,932,063	237.84%	2.79%	72.48%	82.67%	$10,238,857	$10,221,116	-$17,741	1304.15%	0.45%	74.31%	110.91%
15			full	0.855	$3,241,524	$3,925,531	$684,007	502.54%	0.35%	48.03%	95.67%	$16,179,601	$19,042,950	$2,863,349	502.54%	0.02%	39.78%	72.13%
16			highest R2	0.862	$3,241,524	$3,688,810	$447,286	442.06%	0.49%	50.35%	91.82%	$16,179,601	$18,678,636	$2,499,035	442.06%	0.24%	35.40%	71.24%
17	removing cases +/- 3 std. deviations	LN - LN	most significant	0.855	$3,241,524	$3,786,649	$545,125	482.72%	3.15%	57.72%	94.33%	$16,179,601	$18,797,208	$2,617,606	482.72%	0.25%	42.44%	74.40%
18			full	0.650	$3,241,524	3.E+12	3.E+12	33641281.51	0.055012274	0.682642031	600739.8548	$16,179,601	3.E+12	3.E+12	33641281.51	0.001256173	0.625959801	120579.2823
19	n(testing) = 56		highest R2	0.665	$3,241,524	3.E+12	3.E+12	34293214.48	0.002725217	0.69340858	612385.7963	$16,179,601	3.E+12	3.E+12	34293214.48	0.002725217	0.625414644	122916.8167
20	n(training) = 223	LN - Linear	most significant	0.658	$3,241,524	$3,579,443	$337,919	457.928844	0.044877624	0.693671306	9.373689625	$16,179,601	$10,225,326	-6.E+06	457.928844	0.003974816	0.628626166	2.568712728
21	n(total) = 279	Old Model			$3,241,524	$1,002,177	-$2,239,348	237.84%	2.79%	72.36%	81.26%	$16,179,601	$12,723,962	-$3,455,639	1304.15%	0.45%	73.33%	109.82%

Vacant																		
					Results of testing data (20% of data that was not used to develop the models)							Results of testing and training data (80% of the data was used to develop model and the rest of the 20% was used to test the accuracy of the model)						
					Dollar Error			Percentage Error Abs(error)/actual				Dollar Error			Percentage Error Abs(error)/actual			
Model No.	Model Description			Adj. R-squared of model using 80% for training	Sum of Actual	Sum of Pred.	Sum of Error=Predicted-Actual	Max	Min	Median	Average	Sum of Actual	Sum of Pred.	Sum of Error=Predicted-Actual	Max	Min	Median	Average
1	Not removing		full	0.844	$8,347,578	$14,604,721	$6,257,143	738.21%	0.94%	63.50%	120.45%	$16,446,836	$25,218,862	$8,772,026	738.21%	0.06%	37.71%	85.14%
2	outliers		highest R2	0.855	$8,347,578	$12,104,269	$3,756,691	615.12%	1.24%	65.02%	112.44%	$16,446,836	$22,522,657	$6,075,821	615.12%	0.01%	39.16%	85.62%
3		LN - LN	most significant	0.852	$8,347,578	$14,495,065	$6,147,488	443.33%	1.84%	63.30%	99.17%	$16,446,836	$25,262,942	$8,816,106	612.41%	0.03%	43.68%	87.44%
4			full	0.523	$8,347,578	$525,576,465	$517,228,887	28754.05%	7.53%	257.65%	1832.67%	$16,446,836	$544,054,439	$527,607,603	28754.05%	4.48%	138.57%	657.93%
5	n(testing)= 27		highest R2	0.570	$8,347,578	$212,376,596	$204,029,018	10121.32%	18.56%	199.64%	989.88%	$16,446,836	$228,801,381	$212,354,544	10121.32%	5.68%	127.89%	471.38%
6	n(training)=113	LN - Linear	highest R2	0.518	$8,347,578	$378,496,912	$370,149,334	204.9685354	0.018674814	2.120142597	13.01464692	$16,446,836	$397,016,490	$380,569,654	20496.85%	0.08%	177.73%	599.75%
7	n(total)= 140	Old Model			$8,347,578	$4,219,529	-$4,128,049	222.04%	5.82%	86.24%	87.66%	$16,446,836	$21,008,843	$4,562,007	1304.15%	0.45%	73.82%	109.92%
8			full	0.822	$498,903	$325,800	-$173,102	670.14%	0.36%	53.91%	97.48%	$5,564,721	$7,233,485	$1,668,764	670.14%	0.22%	35.39%	81.73%
9			highest R2	0.836	$498,903	$370,991	-$127,912	451.79%	4.77%	62.73%	99.57%	$5,564,721	$7,453,900	$1,889,178	639.49%	0.71%	39.04%	89.54%
10	removing cases +/-2 std. deviations	LN - LN	most significant	0.829	$498,903	$390,025	-$108,878	424.23%	4.12%	48.92%	90.80%	$5,564,721	$7,389,044	$1,824,322	748.08%	1.01%	42.76%	92.94%
11			full	0.516	$498,903	$1,319,634	$820,732	2321.29%	12.52%	229.77%	495.26%	$5,564,721	$12,084,396	$6,519,674	7835.64%	1.88%	122.20%	362.96%
12	n(testing)= 26		highest R2	0.564	$498,903	$948,480	$449,577	2275.63%	0.05%	192.19%	451.27%	$5,564,721	$11,379,620	$5,814,898	7011.09%	0.05%	106.04%	330.64%
13	n(training) = 109	LN - Linear	most significant	0.502	$498,903	$787,067	$288,164	3749.83%	2.56%	185.83%	574.58%	$5,564,721	$12,496,348	$6,931,627	8707.41%	2.21%	159.93%	431.19%
14	n(total) = 135	Old Model			$498,903	$250,037	-$248,866	237.84%	2.79%	72.48%	82.67%	$5,564,721	$10,221,116	$4,656,394	1304.15%	0.45%	74.31%	110.91%
15			full	0.834	$1,851,942	$12,802,234	$10,950,292	819.29%	1.11%	63.19%	141.72%	$8,284,565	$20,988,498	$12,703,933	819.29%	0.32%	38.86%	96.19%
16			highest R2	0.847	$1,851,942	$6,458,275	$4,606,333	438.94%	5.14%	65.00%	112.12%	$8,284,565	$14,693,601	$6,409,036	649.81%	0.43%	39.64%	90.01%
17	removing cases +/-3 std. deviations	LN - LN	most significant	0.829	$1,851,942	$3,975,675	$2,123,733	418.64%	4.07%	55.35%	95.49%	$8,284,565	$12,370,121	$4,085,556	740.65%	0.30%	42.23%	93.70%
18			full	0.527	$1,851,942	$942,822,695	$940,970,753	69300.43%	16.31%	242.84%	3161.81%	$8,284,565	$956,110,859	$947,826,294	69300.43%	4.90%	121.69%	885.45%
19	n(testing) = 27		highest R2	0.574	$1,851,942	$136,810,864	$134,958,921	9905.47%	5.12%	213.44%	844.50%	$8,284,565	$148,708,773	$140,424,208	9905.47%	1.98%	111.92%	416.22%
20	n(training) = 110	LN - Linear	most significant	0.503	$1,851,942	$10,629,982	$8,778,040	3861.83%	1.06%	204.93%	618.34%	$8,284,565	$24,115,597	$15,831,032	9116.49%	1.06%	170.85%	462.76%
21	n(total) = 137	Old Model			$1,851,942	$1,002,177	-$849,766	237.84%	2.79%	72.36%	81.26%	$8,284,565	$12,723,962	$4,439,397	1304.15%	0.45%	73.33%	109.82%

Appendix E: Performance of Models for the Five Land Uses

Agriculture

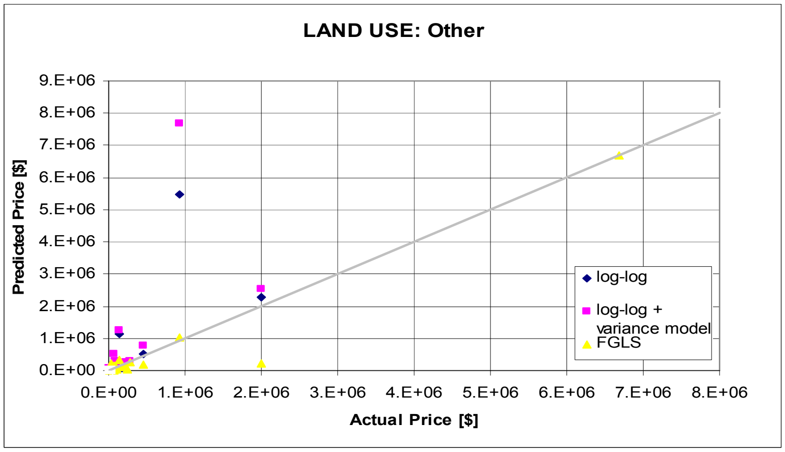


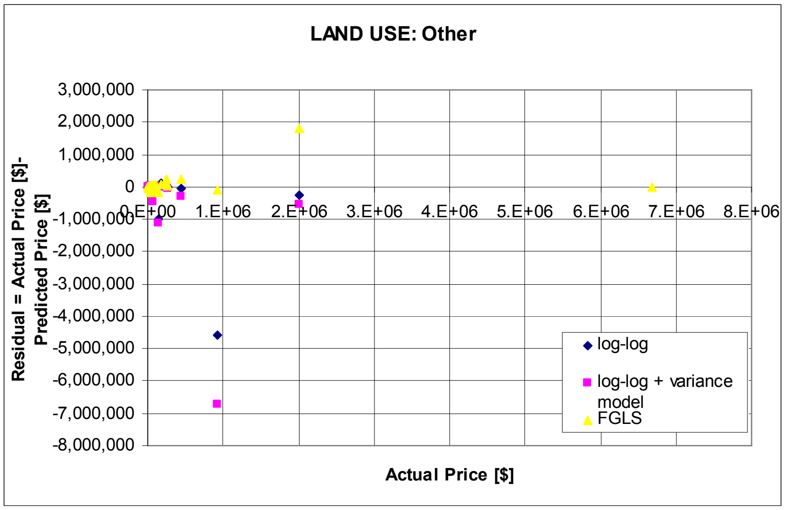


Absolute Misprediction	log-log model	log-log plus variance model	FGLS	Old Model
min	1%	0%	2%	3.63%
max	1787%	2941%	884%	26247.08%
median	44%	53%	49%	63.91%
average	98%	153%	86%	422.17%

	log-log model	log-log plus variance model	FGLS
Sum of Actual	$2,144,486	$2,144,486	$2,144,486
Sum of Predicted	$1,804,848	$2,592,009	$1,458,716
Dollar Error	-$339,638	$447,523	-$685,770
Average Actual Price	$21,661	$21,661	$21,661
Average Predicted Price	$18,231	$26,182	$14,735

Other

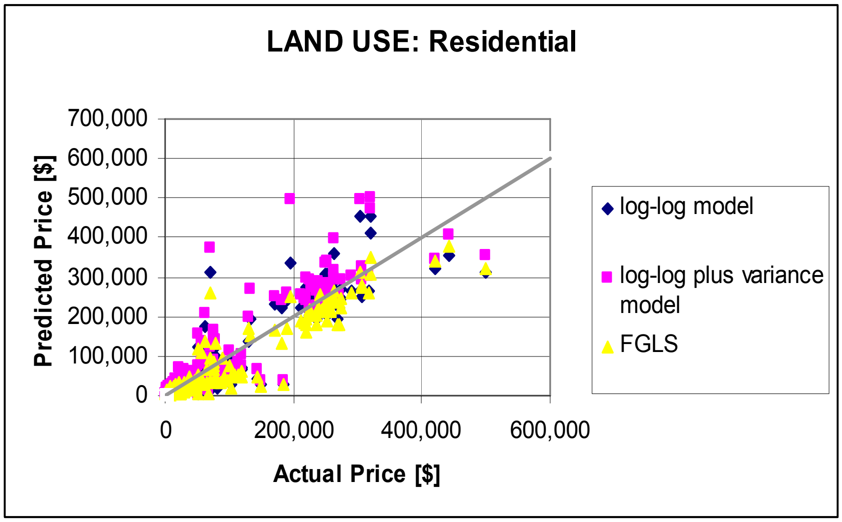


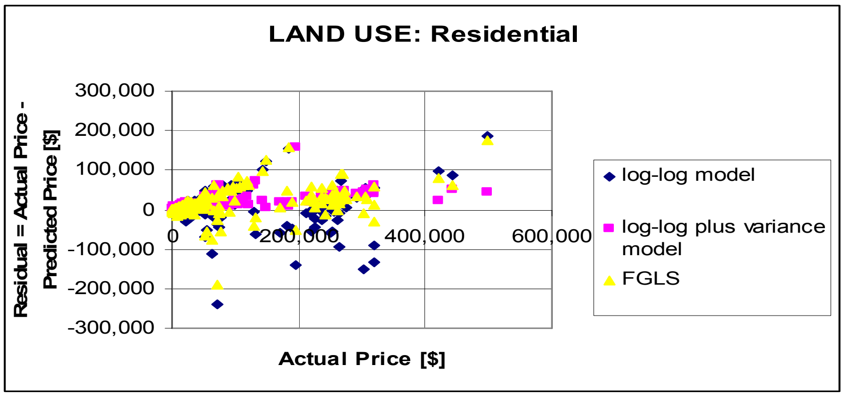


Absolute Misprediction	log-log model	log-log plus variance model	FGLS	Old Model
min	0%	0%	0%	1%
max	1017%	1823%	1428%	2489%
median	39%	51%	45%	80%
average	114%	190%	123%	263%

	log-log model	log-log plus variance model	FGLS
Sum of Actual	$12,475,031	$12,475,031	$12,475,031
Sum of Predicted	$18,003,443	$21,937,436	$10,405,745
Dollar Error	$5,528,412	$9,462,404	-$2,069,286
Average Actual Price	$183,456	$183,456	$183,456
Average Predicted Price	$264,757	$322,609	$153,026

Residential

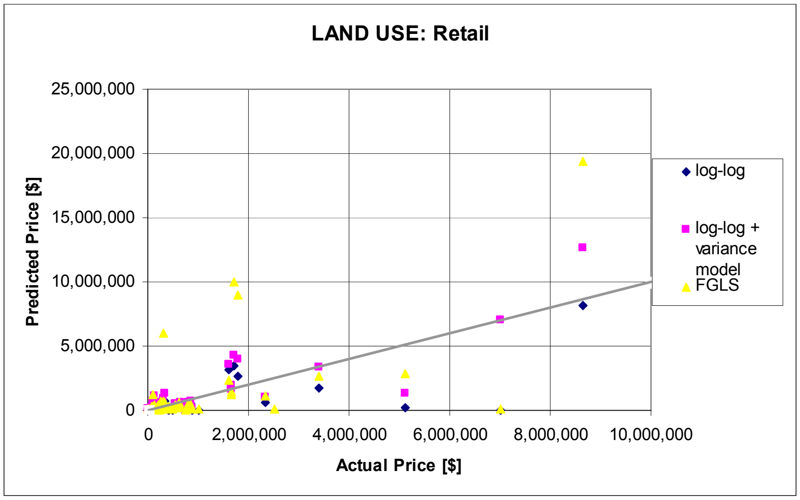


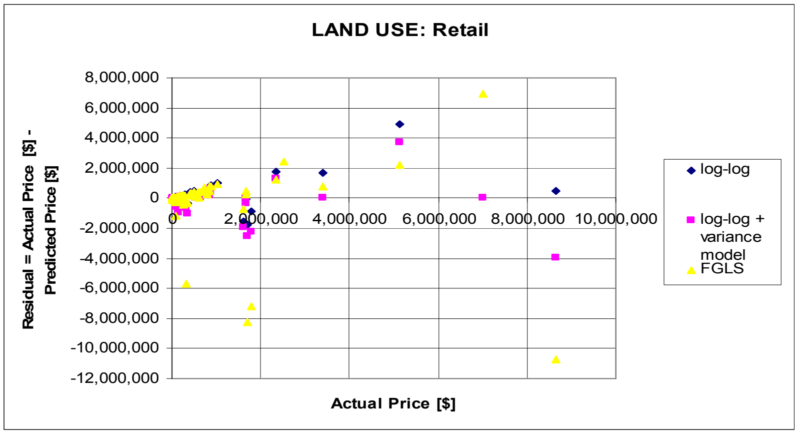


Absolute Misprediction	log-log model	log-log plus variance model	FGLS	Texas Corridor Model
min	0%	0%	0%	0%
max	361%	519%	1182%	1555%
median	31%	40%	31%	45%
average	51%	77%	52%	94%

	log-log model	log-log plus variance model	FGLS
Sum of Actual	$17,547,462	$17,547,462	$17,547,462
Sum of Predicted	$17,130,246	$20,315,710	$14,953,404
Dollar Error	-$417,216	$2,768,248	-$2,594,058
Average Actual Price	$62,033	$62,033	$62,033
Average Predicted Price	$60,557	$71,819	$52,860

Retail

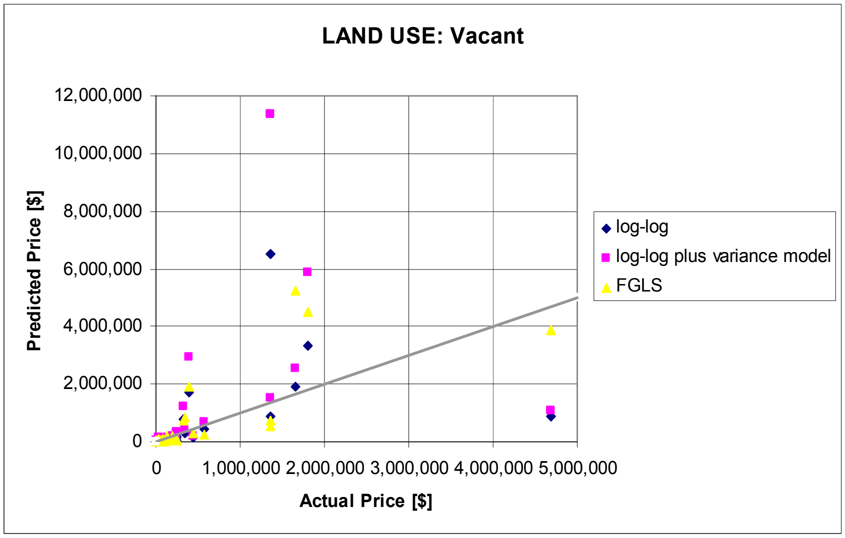


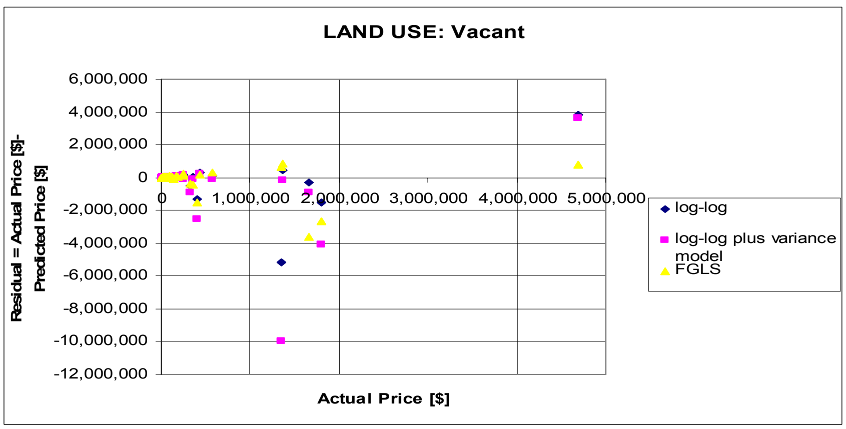


Absolute Misprediction	log-log model	log-log plus variance model	FGLS	Texas Corridor Model
min	0.00%	0.00%	0.00%	1.54%
max	1012.13%	6881.96%	2037.47%	1919.39%
median	62.86%	71.57%	64.05%	86.57%
average	111.43%	228.10%	142.27%	193.17%

	log-log model	log-log plus variance model	FGLS
Sum of Actual	$60,184,078	$60,184,078	$60,184,078
Sum of Predicted	$36,849,944	$63,594,280	$72,273,582
Dollar Error	-$23,334,134	$3,410,202	$12,089,504
Average Actual Price	$325,319	$325,319	$325,319
Average Predicted Price	$199,189	$343,753	$390,668

Vacant





Average Absolute Midprediction	log-log model	log-log plus variance model	FGLS	Texas Corridor Model
min	2%	0%	1%	0%
max	513%	736%	3607%	1304%
median	44%	40%	39%	74%
average	73%	112%	113%	110%

	log-log model	log-log plus variance model	FGLS
Sum of Actual	$24,794,414	$24,794,414	$24,794,414
Sum of Predicted	$30,525,027	$50,168,374	$30,585,737
Dollar Error	$5,730,614	$25,373,961	$5,791,323
Average Actual Price	$148,470	$148,470	$148,470
Average Predicted Price	$182,785	$300,409	$183,148

Appendix F: Log-Log Results of Implementation Project 5-4079

Log-Log Regression Results for 'Agriculture' Land Use				
Dependent Variable	Natural Log of Actual Price			
Number of Observations	99			
Adjusted R-Squared	0.71			
Variable	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	2.33571	2.6106	0.89	0.3737
LN(taken area SF)	-1.39353	0.83925	-1.66	0.1008
LN(taken area) squared	0.04495	0.02479	1.81	0.0736
LN(taken area*year acquisition)	0.65753	0.54192	1.21	0.2287
LN(taken area* number of driveways)	0.50852	0.30704	1.66	0.1017
LN(taken area) *crp	0.10936	0.05695	1.92	0.0585
LN(taken area)*san	0.11171	0.05926	1.89	0.0631
LN(taken area)*austin	0.04734	0.03314	1.43	0.1571
LN(taken area)* abilene	0	n/a	n/a	n/a
LN(taken area)*elp	0	n/a	n/a	n/a
LN(taken area)*ftw	0	n/a	n/a	n/a
LN(taken area)*hou	0	n/a	n/a	n/a
LN(taken area)*bry	0.02503	0.03079	0.81	0.4189
LN(taken area)*wac	0.04403	0.03611	1.22	0.2264
LN(taken area)*wfs	0	n/a	n/a	n/a
LN(taken area*main frontage acquired)	0.39788	0.19786	2.01	0.0478
LN(taken area)*shape irregular	-0.48639	0.19894	-2.44	0.0167
LN(taken area)*shape change	-0.06676	0.14935	-0.45	0.6561
LN(total area*number of driveways)	-0.29803	0.19899	-1.5	0.1382
LN(total area*main frontage change)	-0.24033	0.14771	-1.63	0.1078
LN(total area*county population)	0.28606	0.09559	2.99	0.0037
LN(total area)*shape irregular	0.33036	0.1332	2.48	0.0153
LN(total area)*shape change	0.05965	0.10842	0.55	0.5838
LN(total area)*corner	-0.02328	0.02078	-1.12	0.266
LN(improvement area SF)	-1.19397	0.96653	-1.24	0.2204
LN(improvement area)squared	0.19807	0.13651	1.45	0.1508

Log-Log Regression Results for 'Agriculture' Land use				
Dependent Variable	Natural Log[(Actual Price-Predicted Price)^2]			
Number of Observations	99			
Adjusted R-Squared	0.86			
Variable	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	4.09017	7.03173	0.58	0.5624
LN(taken area SF)	-6.92018	3.69834	-1.87	0.0649
LN(taken area squared)	0.1101	0.06619	1.66	0.1001
LN(taken area* number of driveways)	4.68357	3.30425	1.42	0.1601
LN(taken area)*san	0.52504	0.1605	3.27	0.0016
LN(taken area*main frontage acquired)	1.5284	0.52878	2.89	0.0049
LN(taken area*population)	1.13559	0.22726	5	<.0001
LN(taken area)*shape irregular	-2.05028	0.56055	-3.66	0.0004
LN(taken area)*corner	0.53348	0.40133	1.33	0.1874
LN(total area SF)	2.93901	2.16134	1.36	0.1776
LN(total area*number of driveways)	-2.74443	2.05262	-1.34	0.1849
LN(total area*main frontage acquired)	-1.03611	0.40789	-2.54	0.013
LN(total area)*shape irregular	1.3934	0.37389	3.73	0.0004
LN(total area)*shape change	0.11547	0.06089	1.9	0.0615
LN(total area)*corner	-0.38462	0.29607	-1.3	0.1976
LN(improvement area SF)	38.85078	2.59269	14.98	<.0001
LN(improvement area) squared	-5.76278	0.3628	-15.88	<.0001

Log-Log Regression Results for 'Other' Land Uses				
Dependent Variable:	Natural Log of Actual Price			
Number of Observations	68			
Adjusted R-Squared	0.74			
Variables	Parameter Estimate	Standard Error	t value	Pr > |t|
Intercept	4.77666	1.16675	4.09	0.0001
LN(taken area SF)	0.91886	0.24847	3.7	0.0005
LN(taken area* number of driveways)	-0.85764	0.40516	-2.12	0.0389
LN(taken area)*houston	0.48491	0.16426	2.95	0.0047
LN(taken area)*san antonio	0.21166	0.05001	4.23	<.0001
LN(taken area)*austin	0.08504	0.03776	2.25	0.0284
LN(taken area)*bry	0.07906	0.04255	1.86	0.0686
LN(taken area*main frontage acquired)	0.72464	0.25927	2.79	0.0072
LN(total area*number of driveways)	0.47747	0.24321	1.96	0.0548
LN(total area*main frontage acquired)	-0.73764	0.22726	-3.25	0.002
LN(total area)*shape irregular	-0.04327	0.02893	-1.5	0.1406
LN(total area)*corner	0.11192	0.03384	3.31	0.0017
LN(improvement area SF)	1.20152	0.39601	3.03	0.0037
LN(improvement area SF)squared	-0.13421	0.04846	-2.77	0.0077

Log-Log Results for 'Residential' Land Use				
Dependent Variable	Natural Log of Actual Price			
Number of Observations	281			
Adjusted R-Squared	0.87			
	Parameter Estimate	Standard Error	t value	Pr >| t|
Intercept	8.48897	1.54268	5.502727	<.0001
LN(taken area SF)	0.55987	0.05806	-9.64261	<.0001
LN(taken area) *abilene	-0.05791	0.02306	2.511971	0.0126
LN(taken area)*crp	-0.06437	0.02154	2.988311	0.0031
LN(taken area)*ftw	-0.13684	0.02975	-4.6	<.0001
LN(taken area) hou	0.06728	0.02112	3.185906	0.0016
LN(taken area)*bry	-0.04292	0.01521	-2.82135	0.0051
LN(taken area)*wac	-0.02108	0.01522	1.385641	0.1673
LN(taken area*county population)	0.164	0.03414	-4.80312	<.0001
LN(taken area)*shape irregular	-0.02753	0.01051	2.61916	0.0094
LN(taken area)*shape change	0.09463	0.07079	-1.33791	0.1825
LN(taken area)*hb change	0.04971	0.01609	3.088689	0.0022
LN(total area)	-1.05826	0.27888	-3.79473	0.0002
LN(total area) squared	0.02851	0.01077	2.64764	0.0086
LN(total area*number of driveways)	0.15084	0.07649	-1.97231	0.0496
LN(total area)*shape change	-0.08878	0.05622	1.577973	0.1155
LN(total area)*corner	0.02385	0.00855	-2.78747	0.0057
LN(improvement area SF)	-0.56001	0.16711	3.351119	0.0009
LN(improvement area) squared	0.09367	0.02251	4.16173	<.0001

Log-Log Results of 'Residential' Land Use				
Dependent Variable	Natural Log of (Actual Price-Predicted Price)²			
Number of Observations	282			
Adjusted R-Squared	0.49			
Variable	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	13.07175	6.85103	1.91	0.0575
LN(taken area SF)	2.15413	0.86495	2.49	0.0134
LN(taken area)squared	-0.08438	0.04974	-1.7	0.091
LN(taken area)* abilene	-0.17953	0.09908	-1.81	0.0711
LN(taken area) *crp	-0.27594	0.08735	-3.16	0.0018
LN(taken area)*ftw	-0.59193	0.12528	-4.73	<.0001
LN(taken area)*houston	-0.17684	0.0842	-2.1	0.0367
LN(taken area*population)	0.38645	0.12816	3.02	0.0028
LN(taken area)*shape irregular	0.81059	0.25645	3.16	0.0018
LN(taken area)*corner	0.24283	0.28664	0.85	0.3977
LN(total area SF)	-2.29616	1.22399	-1.88	0.0618
LN(totalarea)squared	0.09465	0.05214	1.82	0.0706
LN(total area)*shape irregular	-0.77858	0.21569	-3.61	0.0004
LN(total area)*corner	-0.21265	0.23355	-0.91	0.3634
LN(improvement area SF)	-1.99422	0.72173	-2.76	0.0061
LN(improvements)squared	0.29818	0.09754	3.06	0.0025

Log-Log Results of 'Retail' Land Use				
Dependent Variable	Natural Log of Actual Price			
Number of Observations	185			
Adjusted R-Squared	0.58			
Variables	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1.94456	5.30976	0.37	0.7147
LN(taken area SF)	1.01845	0.78913	1.29	0.1988
LN(taken area) squared	0.05471	0.0316	1.73	0.0853
LN(taken area*year of acquisition)	-0.04154	0.27939	-0.15	0.882
LN(taken area *number of driveways)	0.63633	0.30639	2.08	0.0395
LN(taken area)*abilene	0	n/a	n/a	n/a
LN(taken area)*crp	0	n/a	n/a	n/a
LN(taken area)*elp	0.09976	0.11391	0.88	0.3825
LN(taken area)*ftw	-0.08847	0.1292	-0.68	0.4945
LN(taken area)*hou	0.3073	0.17054	1.8	0.0735
LN(taken area)*san antonio	0.2168	0.09876	2.2	0.0296
LN(taken area)*austin	0.14381	0.07538	1.91	0.0583
LN(taken area)*bry	0.17406	0.08708	2	0.0473
LN(taken area)*waco	0.22633	0.08567	2.64	0.0091
LN(taken area)*wfs	0	n/a	n/a	n/a
LN(taken area*main frontage)	0.0539	0.19805	0.27	0.7859
LN(taken area*population)	-1.79101	0.82719	-2.17	0.0319
LN(taken area)*shape irregular	0.09697	0.16203	0.6	0.5504
LN(taken area)*shape change	-0.19617	0.16057	-1.22	0.2237
LN(taken area)*corner	-0.16127	0.14356	-1.12	0.263
LN(taken area)*hb change	-0.47671	0.22043	-2.16	0.0321
LN(taken area)*partial taking	0.02581	0.05745	0.45	0.6539
Ln(total area SF)	-1.22391	1.0892	-1.12	0.2629
LN(total area) squared	-0.0478	0.04102	-1.17	0.2457
LN(total area*number of driveways)	0	n/a	n/a	n/a
LN(total area*main frontage change)	-0.05086	0.16463	-0.31	0.7578
LN(total area*county population)	2.00807	0.83076	2.42	0.0168
LN(total area)*shape irregular	-0.03013	0.12046	-0.25	0.8028
LN(total area)*shape change	0.14512	0.11858	1.22	0.2229
LN(total area)*corner	0.12854	0.10594	1.21	0.2269
LN(total area)*hb change	0.40185	0.18346	2.19	0.03
LN(total area)*partial taking	0	n/a	n/a	n/a
LN(improvement area SF)	-0.01234	0.1479	-0.08	0.9336
LN(improvement area) squared	0.00997	0.01486	0.67	0.5034

Log-Log Results of 'Retail' Land Use				
Dependent Variable	Natural Log(Actual Price-Predicted Price)²			
Number of Observations	185			
Adjusted R-Squared	0.6			
Variable	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	7.95445	2.20626	3.61	0.0004
LN(taken area SF)	-3.76425	0.46661	-8.07	<.0001
LN(taken area*number of driveways)	4.34929	0.38066	11.43	<.0001
LN(taken area)*ftw	-0.69639	0.1845	-3.77	0.0002
LN(taken area)* austin	0.18545	0.09982	1.86	0.0649
LN(taken area)* shape change	-0.13991	0.07115	-1.97	0.0508
LN(total area)*shape irregular	0.07847	0.04664	1.68	0.0942
LN(total area)*partial taking	-0.22876	0.10011	-2.29	0.0235
natural log(predicted price)	0.76463	0.30381	2.52	0.0127

Log-Log Results for 'Vacant' Land Use				
Dependent Variable	Natural Log of Actual Price			
Number of Observations	113			
Adjusted R-Squared	0.85			
Label	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	-2.54523	1.68997	-1.51	0.1352
LN(taken area SF)	1.1952	0.33095	3.61	0.0005
LN(taken area*year	-0.87484	0.30103	-2.91	0.0045
LN(taken area) *crp	-0.23193	0.05812	-3.99	0.0001
LN(taken area)*hou	0.11056	0.05468	2.02	0.0459
LN(taken area)*san	0.20626	0.02883	7.16	<.0001
LN(taken area)*austin	0.10143	0.01976	5.13	<.0001
LN(taken area*population	0.38508	0.05278	7.3	<.0001
LN(taken area)*shape change	-0.06479	0.01809	-3.58	0.0005
LN(taken area)*corner	0.22746	0.12656	1.8	0.0754
LN(total area)	0.66418	0.25844	2.57	0.0117
LN(totalarea)squared	-0.02	0.0098	-2.04	0.0439
LN(total area*number of driveways)	-0.04752	0.02838	-1.67	0.0972
LN(total area)*corner	-0.17763	0.09971	-1.78	0.0779

Appendix G: Location Multiplier Matrix (Product 3)

District: Austin

Land Use: Agriculture

Agriculture refers to parcels whose property usage is classified as Agriculture, Ranch, or Rural Land.

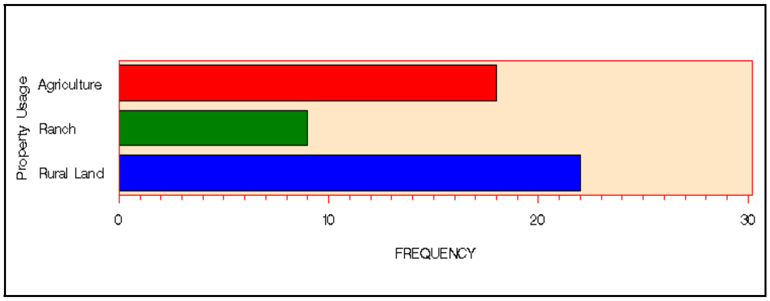


Figure G1: Number of parcels with an associated cost and area

Table G1: Unit costs [2006 dollars/SF]

COUNTY	BASTROP	BURNET	CALDWELL	GILLESPIE	HAYS	TRAVIS	WILLIAMSON
Unit Cost of Land	$0.21	$0.19	$0.08	$0.15	$1.44	$0.42	$1.01
Unit Cost of Improvements	$0.00	$0.01	$0.00001	$0.00001	$0.02	$0.002	$0.01
Unit Cost of Damages	$0.03	$0.13	$0.07	$0.26	$0.06	$0.51	$0.02
Total Unit Cost	$0.25	$0.34	$0.15	$0.42	$1.52	$0.92	$1.04

Note: unit costs are defined as sum of costs divided by sum of acquired area.

Table G2: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]					Unit Cost of Improvements [2006 dollars/SF]				
County	Number of Observations with Cost of Land	Mean	Min	Max	County	Number of Observations with Cost of Improvements	Mean	Min	Max
BASTROP	3	$0.22	$0.20	$0.24	BASTROP	3	$0.00001	$0.00	$0.00001
BURNET	20	$0.22	$0.12	$0.50	BURNET	20	$0.04	$0.00001	$0.48
CALDWELL	4	$0.15	$0.04	$0.40	CALDWELL	4	$0.00003	$0.00001	$0.00007
GILLESPIE	1	$0.15	$0.15	$0.15	GILLESPIE	1	$0.00001	$0.00001	$0.00001
HAYS	1	$1.44	$1.44	$1.44	HAYS	1	$0.02	$0.02	$0.02
TRAVIS	15	$3.99	$0.01	$34.41	TRAVIS	6	$0.61	$0.00	$3.32
WILLIAMSON	5	$2.71	$0.14	$7.75	WILLIAMSON	4	$0.13	$0.00001	$0.35

Unit Cost of Damages [2006 dollars/SF]					Total Unit Cost =Cost of Land + Cost of Improvements + Cost of Damages [2006 dollars/SF]				
County	Number of Observations with Cost of Damages	Mean	Min	Max	County	Total Number of Observations	Mean	Min	Max
BASTROP	3	$0.04	$0.03	$0.05	BASTROP	3	$0.26	$0.22	$0.29
BURNET	19	$0.21	$0.04	$1.03	BURNET	20	$0.47	$0.19	$1.49
CALDWELL	4	$0.12	$0.03	$0.28	CALDWELL	4	$0.27	$0.07	$0.68
GILLESPIE	1	$0.26	$0.26	$0.26	GILLESPIE	1	$0.42	$0.42	$0.42
HAYS	1	$0.06	$0.06	$0.06	HAYS	1	$1.52	$1.52	$1.52
TRAVIS	7	$0.28	$0.01	$0.95	TRAVIS	15	$4.36	$0.01	$37.73
WILLIAMSON	4	$0.11	$0.01	$0.26	WILLIAMSON	5	$2.90	$0.31	$7.75

Land Use: Other

Other includes parcels with a property usage classified as Ecclesiastical, Industrial, Light Industrial, Multi-Use, School, or Special Use.

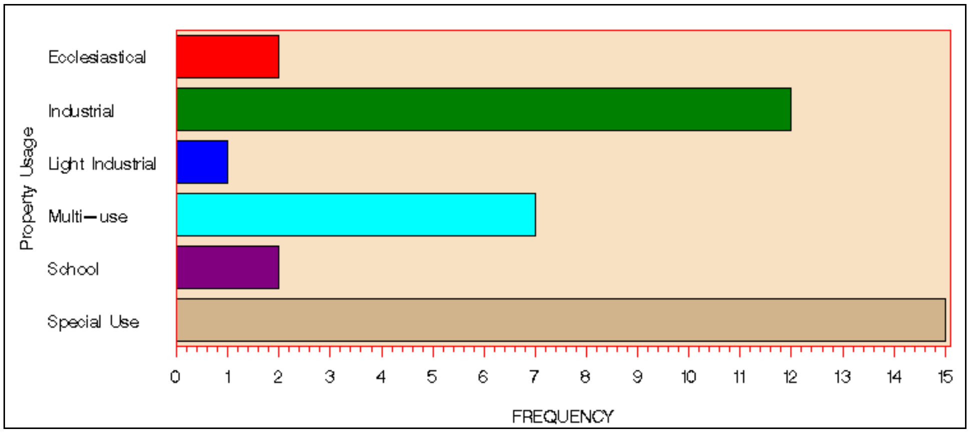


Figure G2: Number of parcels with an associated cost and area

Table G3: Unit costs [2006 dollars/SF]

COUNTY	BASTROP	BURNET	HAYS	LEE	TRAVIS	WILLIAMSON
Unit Cost of Land	$0.70	$0.22	$1.90	$1.29	$1.58	$1.60
Unit Cost of Improvements	$1.00	$0.21	$0.44	$0.00	$0.12	$0.17
Unit Cost of Damages	$0.05	$0.09	$1.22	$0.00	$0.17	$0.32
Total Unit Cost	$1.75	$0.51	$3.56	$1.29	$1.86	$2.09

Note: unit costs are defined as sum of costs divided by sum of acquired area.

Table G4: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]					Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum	COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
BASTROP	6	$0.86	$0.46	$1.70	BASTROP	4	$0.96	$0.05	$2.21
BURNET	3	$0.22	$0.22	$0.22	BURNET	3	$0.36	$0.01	$0.94
HAYS	12	$2.91	$0.34	$5.63	HAYS	10	$0.78	$0.17	$2.00
LEE	1	$1.29	$1.29	$1.29	LEE	0	N/A	N/A	N/A
TRAVIS	11	$2.36	$0.82	$7.20	TRAVIS	3	$10.33	$0.04	$28.82
WILLIAMSON	6	$2.03	$0.29	$2.83	WILLIAMSON	3	$1.02	$0.09	$1.73
Unit Cost of Damages [2006 dollars/SF]					**Total Unit Cost [2206 dollars/SF]**				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum	COUNTY	Total Number of Observations	Mean	Minimum	Maximum
BASTROP	1	$0.32	$0.32	$0.32	BASTROP	6	$1.55	$0.80	$2.99
BURNET	2	$0.32	$0.01	$0.63	BURNET	3	$0.79	$0.24	$1.79
HAYS	7	$5.67	$0.19	$19.87	HAYS	12	$6.87	$0.51	$26.55
LEE	0	N/A	N/A	N/A	LEE	1	$1.29	$1.29	$1.29
TRAVIS	2	$3.96	$2.19	$5.73	TRAVIS	11	$5.89	$0.82	$36.68
WILLIAMSON	1	$8.09	$8.09	$8.09	WILLIAMSON	6	$3.89	$0.38	$12.65

Land Use: Residential

Residential refers to parcels whose property usage is classified as Residential or Rural Residential.

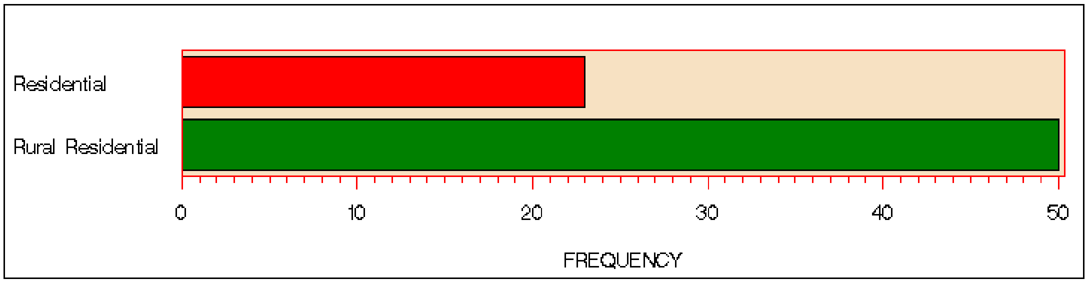


Figure G3: Number of parcels with an associated cost and area

Table G5: Unit costs [2006 dollars/SF]

COUNTY	BASTROP	BLANCO	BURNET	CALDWELL	HAYS	TRAVIS	WILLIAMSON
Unit Cost of Land	$0.55	$0.12	$0.16	$0.43	$1.78	$0.28	$1.06
Unit Cost of Improvements	$1.18	$0.00	$0.03	$1.70	$0.41	$0.09	$0.002
Unit Cost of Damages	$0.08	$0.05	$0.12	$0.06	$0.14	$0.12	$0.001
Total Unit Cost	$1.81	$0.17	$0.31	$2.19	$1.94	$0.49	$1.15

Note: unit costs are defined as sum of costs divided by sum of acquired area.

Table G6: Summary statistics of unit costs

Cost of Land [2006 dollars/SF]					Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Min	Max	COUNTY	Number of Observations with Cost of Improvements	Mean	Min	Max
BASTROP	10	$0.50	$0.15	$0.66	BASTROP	9	$2.44	$0.00	$13.61
BLANCO	1	$0.12	$0.12	$0.12	BLANCO	1	$0.00	$0.00	$0.00
BURNET	13	$0.18	$0.12	$0.30	BURNET	13	$0.04	$0.04	$0.20
CALDWELL	3	$0.46	$0.31	$0.62	CALDWELL	3	$2.56	$0.00	$7.67
HAYS	11	$1.41	$1.12	$1.86	HAYS	10	$0.75	$0.04	$3.87
TRAVIS	28	$1.10	$0.14	$8.25	TRAVIS	17	$3.03	$0.00	$25.32
WILLIAMSON	7	$0.89	$0.08	$2.14	WILLIAMSON	7	$0.47	$0.00	$1.46
Cost of Damages [2006 dollars/SF]					**Total Cost [2006 dollars/SF]**				
COUNTY	Number of Observations with Cost of Damages	Mean	Min	Max	COUNTY	Total Number of Observations	Mean	Min	Max
BASTROP	9	$0.15	$0.001	$0.77	BASTROP	10	$2.83	$0.15	$14.74
BLANCO	1	$0.05	$0.05	$0.05	BLANCO	1	$0.17	$0.17	$0.17
BURNET	13	$0.19	$0.04	$0.62	BURNET	13	$0.42	$0.23	$0.84
CALDWELL	3	$0.05	$0.001	$0.08	CALDWELL	3	$3.07	$0.38	$8.29
HAYS	9	$0.24	$0.00	$0.46	HAYS	11	$2.28	$1.52	$5.73
TRAVIS	16	$6.98	$1.00	$101.86	TRAVIS	28	$6.94	$0.14	$135.44
WILLIAMSON	5	$0.41	$0.00	$1.97	WILLIAMSON	7	$1.66	$0.13	$3.78

Land Use: Retail

Retail includes parcels whose property usage is classified as Commercial, Retail Stores, or Shopping Center.

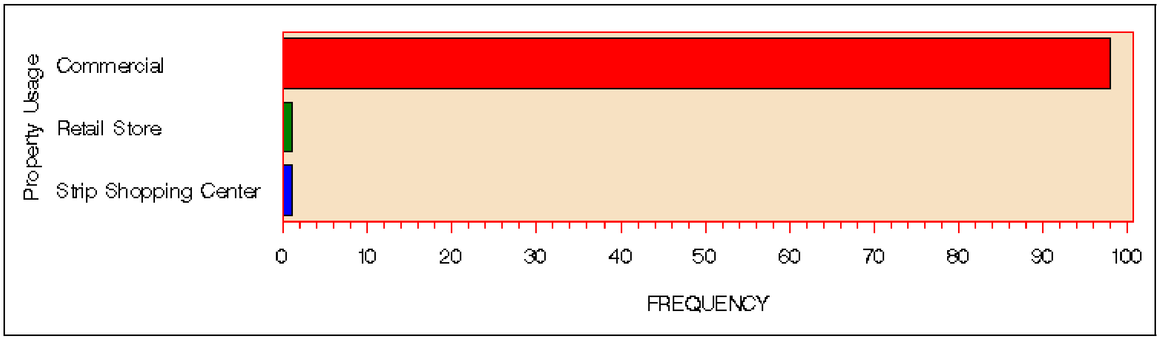


Figure G4: Number of parcels with an associated cost and area

Table G7: Unit costs [2006 dollars/SF]

COUNTY	BASTROP	BURNET	CALDWELL	HAYS	TRAVIS	WILLIAMSON
Cost of Land	$0.70	$0.22	$1.90	$1.49	$0.28	$0.91
Cost of Improvements	$1.00	$0.21	$0.44	$0.34	$0.09	$0.05
Cost of Damages	$0.05	$0.09	$1.22	$0.11	$0.12	$0.03
Total Cost	$1.75	$0.51	$3.56	$1.94	$0.49	$1.00

Note: unit costs are defined as sum of costs divided by sum of acquired area.

Table G8: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]					Unit Cost of Improvement [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum	COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
BASTROP	9	$7.06	$0.02	$47.78	BASTROP	5	$23.47	$0.03	$102.41
BURNET	5	$0.32	$0.05	$0.65	BURNET	5	$0.16	$0.00	$0.29
CALDWELL	1	$0.11	$0.11	$0.11	CALDWELL	1	$0.13	$0.13	$0.13
HAYS	6	$5.64	$0.04	$21.28	HAYS	5	$0.23	$0.001	$0.48
LEE	1	$14.67	$14.67	$14.67	LEE	0	N/A	N/A	N/A
TRAVIS	32	$47.86	$0.02	$333.47	TRAVIS	23	$58.43	$0.00003	$632.68
WILLIAMSON	34	$54.93	$0.04	$1,025.47	WILLIAMSON	22	$11.65	$0.00	$164.46

Unit Cost of Damages [2006 dollars/SF]					Total Unit Cost [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum	COUNTY	Total Number of Observations	Mean	Minimum	Maximum
BASTROP	10	$3.56	$0.001	$29.67	BASTROP	13	$16.66	$0.001	$150.19
BURNET	3	$2.22	$0.22	$5.91	BURNET	5	$1.81	$0.42	$6.45
HAYS	5	$0.45	$0.001	$1.05	CALDWELL	1	$0.24	$0.24	$0.24
HAYS	0	N/A	N/A	N/A	HAYS	6	$6.20	$0.04	$22.23
LEE	0	N/A	N/A	N/A	LEE	1	$14.67	$14.67	$14.67
TRAVIS	23	$305.17	$0.0004	$6,380.46	TRAVIS	40	$247.36	$0.02	$7,058.20
WILLIAMSON	11	$50.53	$0.01	$293.72	WILLIAMSON	34	$78.82	$0.05	$1,025.47

Land Use: Vacant

Vacant refers to parcels whose property usage is classified as Vacant Acreage or Vacant Lot.

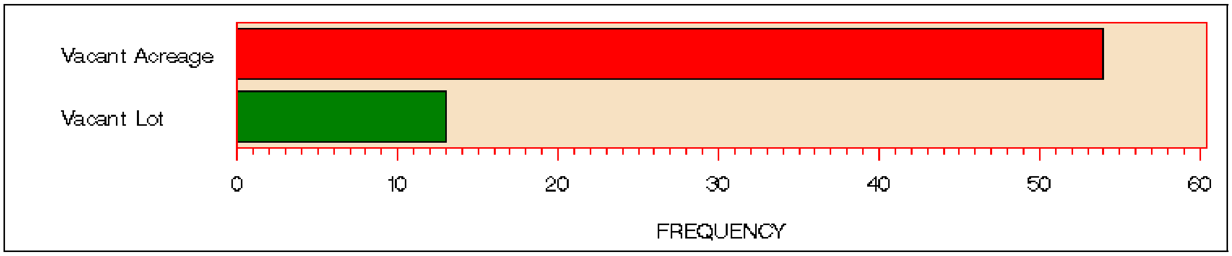


Figure G5: Number of parcels with an associated cost and area

Table G9: Unit costs [2006 dollars/SF]

COUNTY	BASTROP	BURNET	CALDWELL	HAYS	TRAVIS	WILLIAMSON
Unit Cost of Land	$0.30	$0.39	$0.32	$2.45	$1.30	$0.29
Unit Cost of Improvemer	$0.01	$0.00	N/A	$0.02	$0.001	N/A
Unit Cost of Damages	$0.13	$0.21	N/A	$0.06	$0.83	N/A
Total Unit Cost	$0.44	$0.60	$0.32	$2.53	$2.14	$0.29

Note: unit costs are defined as sum of costs divided by sum of acquired area.

Table G10: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]					Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Min	Max	COUNTY	Number of Observations with Cost of Improvements	Mean	Min	Max
BASTROP	18	$0.44	$0.11	$2.19	BASTROP	11	$0.02	$0.00	$0.19
BURNET	7	$0.39	$0.38	$0.39	BURNET	6	$0.0004	$0.00	$0.0011
CALDWELL	6	$0.41	$0.15	$0.57	CALDWELL	0	N/A	N/A	N/A
HAYS	15	$1.75	$0.00	$4.92	HAYS	6	$0.04	$0.00	$0.08
TRAVIS	19	$3.02	$0.27	$8.55	TRAVIS	1	$0.04	$0.04	$0.04
WILLIAMSON	2	$0.29	$0.27	$0.31	WILLIAMSON	0	N/A	N/A	N/A
Unit Cost of Damages [2006 dollars/SF]					**Total Unit Cost [2006 dollars/SF]**				
COUNTY	Number of Observations with Cost of Damages	Mean	Min	Max	COUNTY	Total Number of Observations	Mean	Min	Max
BASTROP	11	$0.23	$0.03	$0.90	BASTROP	18	$0.60	$0.20	$2.19
BURNET	6	$1.24	$0.13	$3.77	BURNET	7	$1.45	$0.39	$4.16
CALDWELL	0	N/A	N/A	N/A	CALDWELL	6	$0.41	$0.15	$0.57
HAYS	5	$0.10	$0.05	$0.20	HAYS	15	$1.80	$0.001	$4.92
TRAVIS	3	$2.82	$1.14	$5.43	TRAVIS	19	$3.46	$0.27	$8.93
WILLIAMSON	0	N/A	N/A	N/A	WILLIAMSON	2	$0.29	$0.27	$0.31

District: Bryan

Land Use: Agriculture

Agriculture refers to parcels whose property usage has been classified as Agriculture, Ranch, or Rural Land.

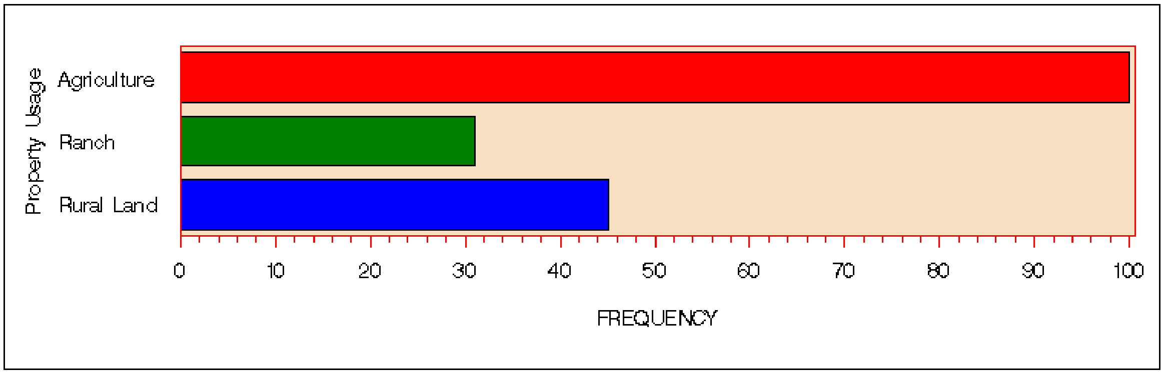


Figure G6: Number of parcels with an associated cost and area.

Table G11: Unit Costs [2006 dollars/SF]

COUNTY	BRAZOS	BURLESON	GRIMES	MILAM	ROBERTSON	WALKER
Unit Cost of Land	$0.15	$0.55	$0.04	$0.06	$0.05	$0.04
Unit Cost of Improvements	$0.05	$0.49	$0.01	$0.03	$0.03	$0.02
Unit Cost of Damages	$0.05	$0.55	N/A	$0.04	$0.04	N/A
Total Unit Cost	$0.25	$1.60	$0.04	$0.13	$0.12	$0.06

Note: unit costs calculated as sum of cost divided by sum of acquired area.

Table G12: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum
BRAZOS	72	$0.15	$0.00	$0.72
BURLESON	2	$0.36	$0.02	$0.71
GRIMES	2	$0.04	$0.03	$0.04
MILAM	24	$0.09	$0.03	$0.53
ROBERTSON	71	$0.06	$0.03	$1.05
WALKER	5	$0.09	$0.03	$0.26

Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Improvement	Mean	Minimum	Maximum
BRAZOS	59	$0.11	$0.001	$0.65
BURLESON	1	$0.64	$0.64	$0.64
GRIMES	2	$0.01	$0.003	$0.01
MILAM	10	$0.04	$0.002	$0.32
ROBERTSON	26	$0.12	$0.001	$1.43
WALKER	2	$0.02	$0.02	$0.03

Unit Cost of Damages [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum
BRAZOS	54	$0.15	$0.01	$0.91
BURLESON	1	$0.72	$0.72	$0.72
GRIMES	0	N/A	N/A	N/A
MILAM	17	$0.10	$0.01	$0.47
ROBERTSON	54	$0.08	$0.01	$0.38
WALKER	0	N/A	N/A	N/A

Total Unit Cost = Cost of Land + Cost of Improvements + Cost of Damages [2006 dollars/SF]				
COUNTY	Total Number of Observations	Mean	Minimum	Maximum
BRAZOS	72	$0.34	$0.00	$1.67
BURLESON	2	$1.04	$0.02	$2.07
GRIMES	2	$0.04	$0.04	$0.05
MILAM	24	$0.19	$0.03	$0.55
ROBERTSON	71	$0.17	$0.03	$1.49
WALKER	5	$0.10	$0.04	$0.26

Land Use: Residential

Residential refers to parcels whose property usage has been classified as Residential, Residential Lot, or Rural Residential.

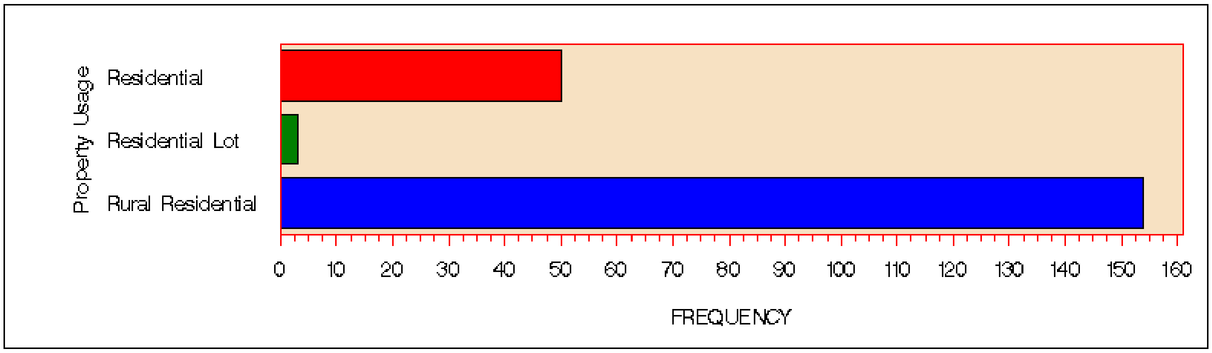


Figure G7: Number of parcels with an associated cost and area.

Table G13: Unit costs [2006 dollars/SF]

COUNTY	BRAZOS	BURLESON	MADISON	MILAM	ROBERTSON	WALKER
Unit Cost of Land	$0.15	$0.07	$0.03	$0.17	$0.13	$0.25
Unit Cost of Improvements	$0.20	$0.11	$0.01	$0.64	$0.16	$0.02
Unit Cost of Damages	$0.12	$0.03	$0.03	$0.15	$0.03	$0.05
Total Unit Cost	$0.47	$0.21	$0.07	$0.97	$0.32	$0.33

Note: unit costs calculated as sum of cost divided by sum of acquired area.

Table G14: Summary statistics of unit costs

Cost of Land [2006 dollars/SF]					Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum	COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
BRAZOS	90	$25.17	$0.002	$150.81	BRAZOS	70	$42.53	$0.00	$718.54
BURLESON	68	$9.58	$0.002	$53.14	BURLESON	50	$19.61	$0.00	$121.44
MADISON	2	$19.52	$14.29	$24.75	MADISON	2	$3.45	$1.54	$5.36
MILAM	11	$5.63	$0.47	$9.64	MILAM	6	$38.08	$0.68	$93.65
ROBERTSON	20	$19.82	$1.35	$69.42	ROBERTSON	19	$25.35	$0.04	$100.35
WALKER	16	$28.62	$0.83	$109.40	WALKER	5	$8.58	$0.28	$25.06
Cost of Damages [2006 dollars/SF]					**Total Cost = Cost of Land + Cost of Improvements + Cost of Damages [2006 dollars/SF]**				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum	COUNTY	Total Number of Observations	Mean	Minimum	Maximum
BRAZOS	61	$29.71	$0.06	$470.09	BRAZOS	90	$78.38	$0.002	$1,249.35
BURLESON	59	$4.50	$0.16	$29.92	BURLESON	68	$27.91	$0.002	$138.94
MADISON	2	$18.68	$14.68	$22.69	MADISON	2	$41.66	$30.52	$52.80
MILAM	5	$11.03	$1.16	$30.84	MILAM	11	$31.42	$1.64	$115.19
ROBERTSON	11	$9.67	$2.65	$18.32	ROBERTSON	20	$49.22	$2.39	$124.38
WALKER	9	$10.92	$1.66	$37.39	WALKER	16	$37.44	$0.97	$120.31

Land Use: Retail

Retail refers to parcels whose property usage has been classified as Commercial, Retail Store, or Strip Shopping Center

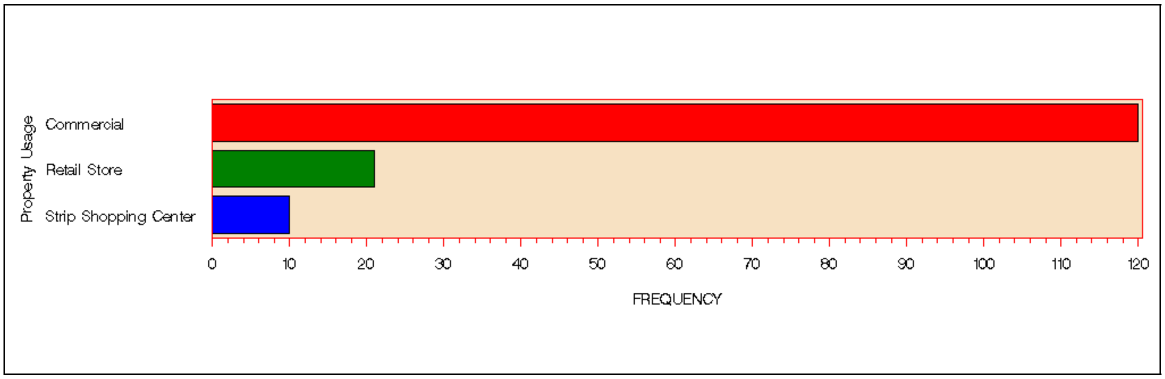


Figure G8: Number of parcels with an associated cost and area.

Table G15: Unit costs [2006 dollars/SF]

COUNTY	BRAZOS	BURLESON	MILAM	ROBERTSON	WALKER
Unit Cost of Land	$2.35	$0.04	$44.69	$0.23	$0.72
Unit Cost of Improvements	$1.47	$0.01	$71.81	$0.17	$0.05
Unit Cost of Damages	$1.15	$0.91	$101.19	$0.49	$0.07
Total Unit Cost	$4.98	$0.97	$217.70	$0.89	$0.84

Note: unit costs calculated as sum of cost divided by sum of acquired area.

Table G16: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]					Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum	COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
BRAZOS	89	$3.37	$0.001	$35.55	BRAZOS	77	$1.15	$0.00	$9.47
BURLESON	4	$0.03	$0.01	$0.04	BURLESON	2	$0.06	$0.03	$0.10
GRIMES	1	$1.25	$1.25	$1.25	GRIMES	1	$0.31	$0.31	$0.31
MILAM	19	$0.01	$0.002	$0.05	MILAM	13	$0.04	$0.0002	$0.42
ROBERTSON	23	$0.01	$0.002	$0.06	ROBERTSON	13	$0.02	$0.0002	$0.05
WALKER	15	$0.07	$0.001	$0.18	WALKER	8	$0.01	$0.001	$0.03
Unit Cost of Damages [2006 dollars/SF]					Total Unit Cost = Cost of Land + Cost of Improvements + Cost of Damages [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum	COUNTY	Total Number of Observations	Mean	Minimum	Maximum
BRAZOS	54	$11.54	$0.0005	$159.74	BRAZOS	89	$11.36	$0.001	$180.92
BURLESON	3	$0.06	$0.003	$0.16	BURLESON	4	$0.10	$0.02	$0.30
GRIMES	0	N/A	N/A	N/A	GRIMES	1	$1.56	$1.56	$1.56
MILAM	9	$0.13	$0.001	$0.46	MILAM	19	$0.10	$0.002	$0.93
ROBERTSON	16	$0.03	$0.001	$0.24	ROBERTSON	23	$0.03	$0.002	$0.29
WALKER	7	$0.01	$0.0001	$0.04	WALKER	15	$0.08	$0.001	$0.22

Land Use: Other

Other refers to parcels whose property usage has been classified as Ecclesiastical, Industrial, Light Industrial, Multi-Use, or Special Use.

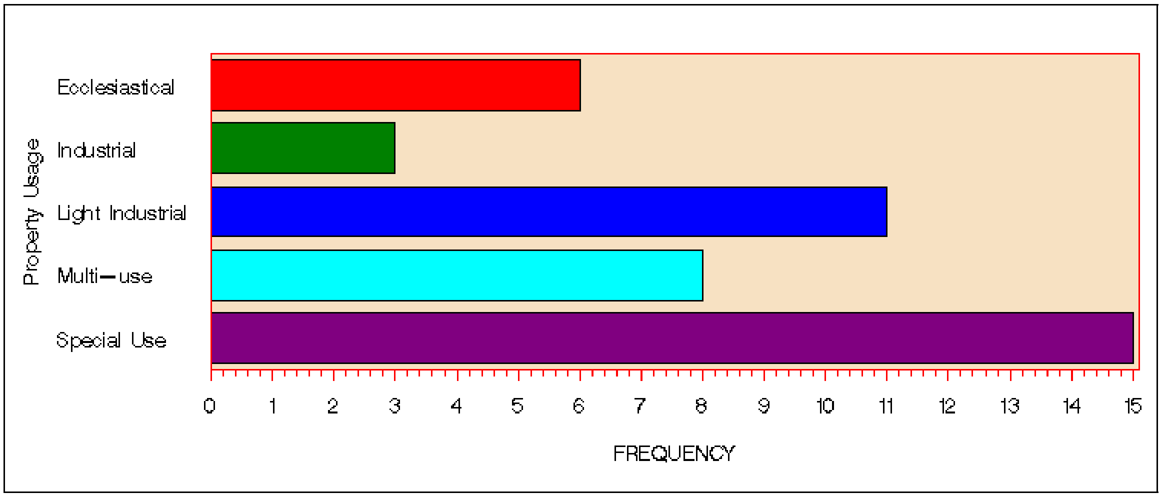


Figure G9: Number of parcels with an associated cost and area.

Table G17: Unit costs [2006 dollars/SF]

COUNTY	BRAZOS	MILAM	ROBERTSON	WALKER
Unit Cost of Land	$1.65	$3.70	$0.14	$0.60
Unit Cost of Improvements	$0.55	$0.76	$8.21	$4.18
Unit Cost of Damages	$0.27	$0.06	$1.02	$0.46
Total Unit Cost	$2.47	$4.52	$9.37	$5.24

Note: unit costs calculated as sum of cost divided by sum of acquired area.

Table G18: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum
BRAZOS	39	$2.38	$0.07	$9.66
MILAM	1	$9.65	$9.65	$9.65
ROBERTSON	2	$0.14	$0.13	$0.15
WALKER	1	$0.60	$0.60	$0.60

Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
BRAZOS	35	$0.91	$0.00	$3.61
MILAM	1	$1.45	$1.45	$1.45
ROBERTSON	1	$15.55	$15.55	$15.55
WALKER	1	$4.18	$4.18	$4.18

Unit Cost of Damages [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum
BRAZOS	21	$0.99	$0.02	$4.07
MILAM	1	$7.72	$7.72	$7.72
ROBERTSON	2	$0.97	$0.05	$1.88
WALKER	1	$0.46	$0.46	$0.46

Total Unit Cost = Cost of Land + Cost of Improvements + Cost of Damages [2006 dollars/SF]				
COUNTY	Total Number of Observations	Mean	Minimum	Maximum
BRAZOS	39	$3.72	$0.29	$12.44
MILAM	1	$18.82	$18.82	$18.82
ROBERTSON	2	$8.88	$0.20	$17.57
WALKER	1	$5.24	$5.24	$5.24

Land Use: Vacant

Vacant refers to parcels whose property usage has been classified as Vacant Acreage or Vacant Lot.

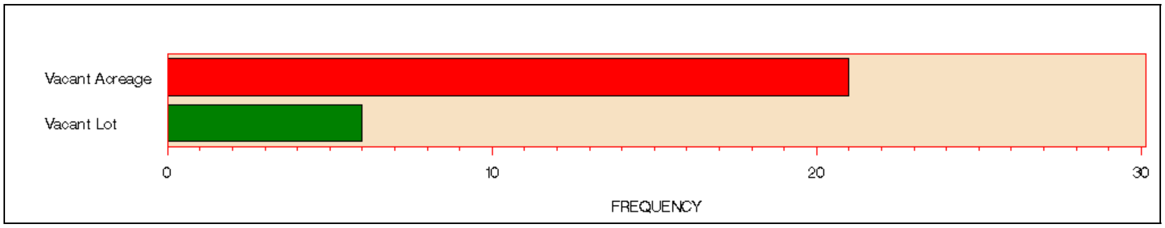


Figure G10: Number of parcels with an associated cost and area.

Table G19`: Unit costs [2006 dollars/SF]

COUNTY	BRAZOS	FREESTONE
Unit Cost of Land	$1.16	$0.01
Unit Cost of Improvements	$0.01	$0.01
Unit Cost of Damages	$0.02	$0.00
Total Unit Cost	$1.18	$0.02

Note: unit costs calculated as sum of cost divided by sum of acquired area

Table G20: Summary statistics of unit costs

Cost of Land [2006 dollars/SF]					Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum	COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
BRAZOS	26	$8.18	$0.10	$63.88	BRAZOS	7	$0.29	$0.01	$0.91
FREESTONE	1	$0.84	$0.84	$0.84	FREESTONE	1	$0.41	$0.41	$0.41
Cost of Damages [2006 dollars/SF]					**Total Cost = Cost of Land + Cost of Improvements + Cost of Damages [2006 dollars/SF]**				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum	COUNTY	Total Number of Observations	Mean	Minimum	Maximum
BRAZOS	9	$0.33	$0.04	$0.77	BRAZOS	26	$8.38	$0.10	$63.88
FREESTONE	1	$0.22	$0.22	$0.22	FREESTONE	1	$1.47	$1.47	$1.47

District: San Antonio

Land Use: Agriculture

Agriculture refers to parcels whose property usage is classified as Agriculture, Ranch, or Rural Land.

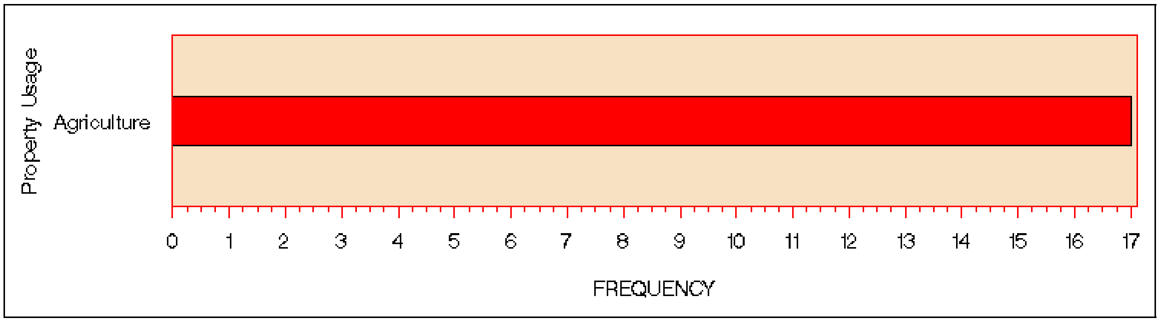


Figure G11: Number of parcels with an associated cost and area.

Table G21: Unit costs [2006 dollars/SF]

COUNTY	BEXAR	COMAL	GUADALUPE	KERR	MEDINA
Unit Cost of Land	$1.65	$0.46	$0.36	$2.20	$0.08
Unit Cost of Improvements	$0.00	$0.04	$0.15	$0.01	$0.00002
Unit Cost of Damages	$0.22	$0.13	$0.85	$0.03	$0.07
Total Unit Cost	$1.87	$0.61	$1.37	$2.24	$0.16

Note: unit costs calculated as sum of cost divided by sum of acquired area.

Table G22: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]					Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum	COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
BEXAR	3	$3.95	$1.43	$7.75	BEXAR	2	$0.01	$6.09	$0.02
COMAL	11	$0.41	$0.21	$0.98	COMAL	10	$0.03	$0.00001	$0.27
GUADALUPE	1	$0.36	$0.37	$0.36	GUADALUPE	1	$0.15	$0.15	$0.15
KERR	1	$2.20	$2.20	$2.20	KERR	1	$0.01	$0.01	$0.01
MEDINA	1	$0.08	$0.08	$0.08	MEDINA	1	$0.00	$0.00002	$0.00002
Unit Cost of Damages [2006 dollars/SF]					**Total Unit Cost [2006 dollars/SF]**				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum	COUNTY	Total Number of Observations	Mean	Minimum	Maximum
BEXAR	2	$0.14	$0.05	$0.24	BEXAR	3	$4.05	$1.67	$7.75
COMAL	9	$0.27	$0.06	$1.03	COMAL	11	$0.66	$0.22	$1.33
GUADALUPE	1	$0.85	$0.85	$0.85	GUADALUPE	1	$1.37	$1.37	$1.37
KERR	1	$0.03	$0.04	$0.03	KERR	1	$2.24	$2.24	$2.24
MEDINA	1	$0.07	$0.08	$0.07	MEDINA	1	$0.16	$0.16	$0.16

Land Use: Other

Other refers to parcels whose property usage has been classified as Ecclesiastical, Industrial, Multi-use, School, or Special Use.

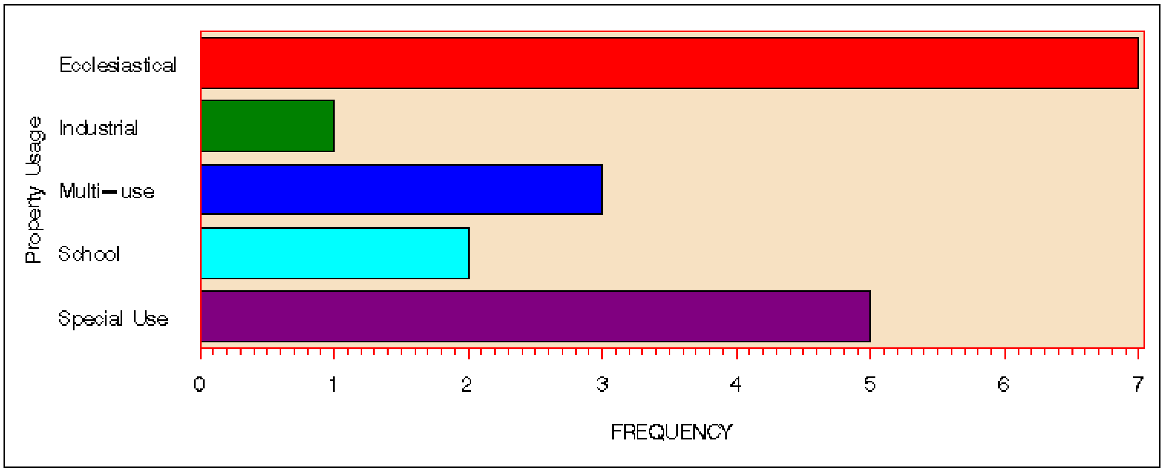


Figure G12: Number of parcels with an associated cost and area.

Table G23: Unit costs [2006 dollars/SF]

COUNTY	BEXAR
Unit Cost of Land	$1.40
Unit Cost of Improvements	$0.13
Unit Cost of Damages	$1.88
Total Unit Cost	$3.42

Note: unit costs are defined as sum of costs divided by sum of acquired area.

Table G24: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]					Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum	COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
BEXAR	18	$6.14	$0.06	$16.31	BEXAR	13	$1.28	$0.06	$7.61
Unit Cost of Damages [2006 dollars/SF]					**Total Unit Cost = Cost of Land + Cost of Improvements+ Cost of Damages [2006 dollars/SF]**				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum	COUNTY	Total Number of Observations	Mean	Minimum	Maximum
BEXAR	9	$16.37	$0.06	$64.68	BEXAR	18	$15.25	$0.06	$84.30

Land Use: Retail

Retail refers to parcels whose property usage has been classified as Commercial, Retail Store, Service Station, or Strip Shopping Center.

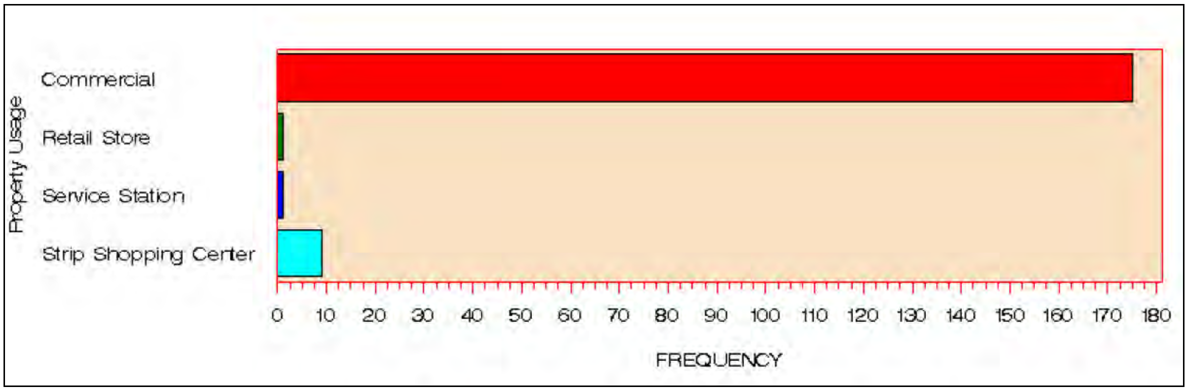


Figure G13: Number of parcels with an associated cost and area.

Table G25: Unit costs [2006 dollars/SF]

COUNTY	BEXAR	COMAL	KERR
Unit Cost of Land	$7.81	$2.99	$4.49
Unit Cost of Improvements	$1.65	$0.68	$2.38
Unit Cost of Damages	$13.04	$2.12	$0.27
Total Unit Cost	$20.33	$5.74	$6.89

Note: unit costs are defined as sum of costs divided by sum of acquired area.

Table G26: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]					Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum	COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
BEXAR	177	$11.50	$1.47	$204.72	BEXAR	167	$4.01	$0.00	$79.18
COMAL	6	$4.45	$0.32	$9.67	COMAL	5	$8.24	$0.002	$39.56
KERR	2	$4.32	$4.11	$4.52	KERR	2	$1.33	$0.04	$2.61

Unit Cost of Damages [2006 dollars/SF]					Total Unit Cost [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum	COUNTY	Total Number of Observations	Mean	Minimum	Maximum
BEXAR	119	$58.26	$0.03	$1,039.80	BEXAR	178	$53.84	$1.95	$1,069.96
COMAL	5	$12.09	$1.41	$31.60	COMAL	6	$21.39	$1.77	$69.17
KERR	1	$0.27	$0.27	$0.27	KERR	2	$5.78	$4.42	$7.14

Land Use: Residential

Residential refers to parcels whose property usage has been classified as Residential, Residential Lot, or Rural Residential.

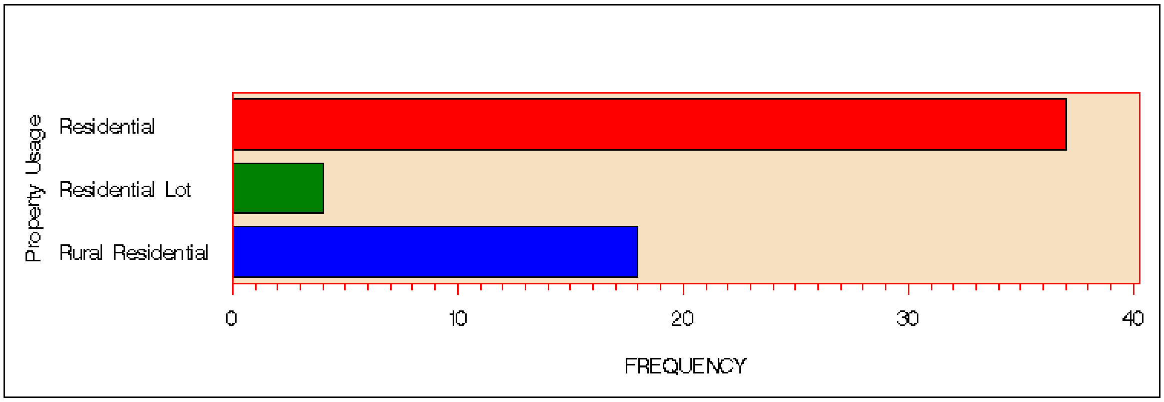


Figure G14: Number of parcels with an associated cost and area.

Table G27: Unit costs [2006 dollars/SF]

COUNTY	BEXAR	COMAL	GUADALUPE	KERR
Unit Cost of Land	$2.24	$0.63	$0.57	$1.30
Unit Cost of Improvements	$0.25	$1.54	N/A	N/A
Unit Cost of Damages	$0.30	$0.52	N/A	$0.03
Total Unit Cost	$2.79	$2.69	$0.57	$1.33

Note: unit costs are defined as sum of costs divided by sum of acquired area.

Table G28: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum
BEXAR	32	$4.79	$0.12	$14.51
COMAL	25	$1.03	$0.25	$3.15
GUADALUPE	1	$0.57	$0.57	$0.57
KERR	1	$1.30	$1.30	$1.30

Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
BEXAR	30	$1.11	$0.00001	$9.83
COMAL	24	$3.99	$0.00005	$21.65
GUADALUPE	0	N/A	N/A	N/A
KERR	0	N/A	N/A	N/A

Unit Cost of Damages [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum
BEXAR	20	$7.61	$0.04	$14.22
COMAL	18	$2.03	$0.03	$15.78
GUADALUPE	0	N/A	N/A	N/A
KERR	1	$0.03	$0.03	$0.03

Total Unit Cost = Cost of Land + Cost of Improvements+ Cost of Damages [2006 dollars/SF]				
COUNTY	Total Number of Observations	Mean	Minimum	Maximum
BEXAR	32	$10.59	$0.70	$29.19
COMAL	25	$6.32	$0.43	$29.10
GUADALUPE	1	$0.57	$0.57	$0.57
KERR	1	$1.33	$1.33	$1.33

Land Use: Vacant

Vacant refers to parcels whose property usage has been classified as Vacant Acreage or Vacant Lot

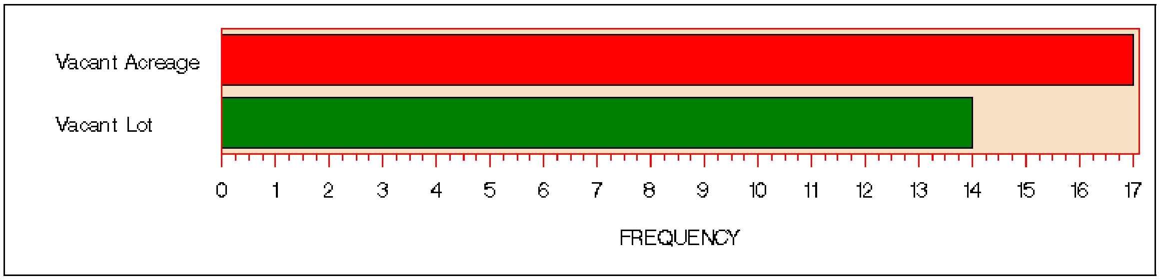


Figure G15: Number of parcels with an associated cost and area.

Table G29: Average unit cost [2006 dollars/SF]

COUNTY	BEXAR	COMAL	GUADALUPE	KERR
Unit Cost of Land	$4.40	$1.24	$3.74	$4.44
Unit Cost of Improvements	$0.02	$0.00	N/A	N/A
Unit Cost of Damages	$0.19	$0.00	N/A	$0.05
Total Unit Cost	$4.62	$1.24	$3.74	$4.49

Note: unit cost calculated as sum of costs divided by sum of area.

Table G30: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]					Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum	COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
BEXAR	27	$7.95	$0.00	$23.91	BEXAR	16	$0.51	$0.00	$3.76
COMAL	1	$1.24	$1.24	$1.24	COMAL	0	N/A	N/A	N/A
GUADALUPE	1	$3.74	$3.74	$3.74	GUADALUPE	0	N/A	N/A	N/A
KERR	2	$2.70	$0.50	$4.89	KERR	0	N/A	N/A	N/A
Unit Cost of Damages [2006 dollars/SF]					Total Unit Cost = Cost of Land + Cost of Improvements+ Cost of Damages [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum	COUNTY	Total Number of Observations	Mean	Minimum	Maximum
BEXAR	10	$1.33	$0.01	$6.58	BEXAR	27	$8.75	$0.00	$29.77
COMAL	0	N/A	N/A	N/A	COMAL	1	$1.24	$1.24	$1.24
GUADALUPE	0	N/A	N/A	N/A	GUADALUPE	1	$3.74	$3.74	$3.74
KERR	1	$0.06	$0.06	$0.06	KERR	2	$2.73	$0.50	$4.95

District: Waco

Land Use: Vacant

Vacant refers to parcels whose property usage has been classified as Vacant Acreage or Vacant Lot.

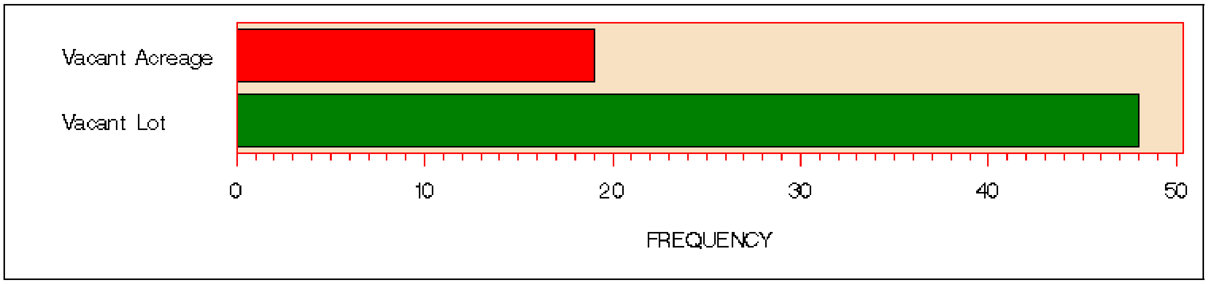


Figure G16: Number of parcels with an associated cost and area.

Table G31: Unit costs [2006 dollars/SF]

COUNTY	BELL	FALLS	HILL	MCLENNAN
Cost of Land	$0.93	$0.02	$0.16	$0.20
Cost of Improvements	$0.04	$0.00	$0.03	$0.02
Cost of Damages	$0.00	$0.00	$0.00	$0.03
Total Cost	$0.98	$0.02	$0.19	$0.25

Note: unit costs are defined as sum of costs divided by sum of acquired area.

Table G32: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]					Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum	COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
BELL	15	$2.57	$0.03	$7.33	BELL	3	$0.21	$0.0001	$0.62
FALLS	1	$0.02	$0.02	$0.02	FALLS	0	N/A	N/A	N/A
HILL	25	$1.43	$0.09	$2.65	HILL	10	$0.97	$0.12	$5.62
MCLENNA	26	$0.47	$0.04	$2.87	MCLENNA	10	$0.16	$0.00	$0.65
Unit Cost of Damages [2006 dollars/SF]					**Total Unit Cost = Cost of Land + Cost of Improvements+ Cost of Damages [2006 dollars/SF]**				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum	COUNTY	Total Number of Observations	Mean	Minimum	Maximum
BELL	3	$0.06	$0.01	$0.12	BELL	15	$2.62	$0.34	$7.33
FALLS	0	N/A	N/A	N/A	FALLS	1	$0.02	$0.02	$0.02
HILL	6	$0.19	$0.01	$0.55	HILL	25	$1.87	$0.09	$7.89
MCLENNA	11	$0.09	$0.03	$0.18	MCLENNA	26	$0.56	$0.06	$2.87

Land Use: Agriculture

Agriculture refers to parcels whose property usage has been classified as Agriculture, Ranch, and Rural Land.

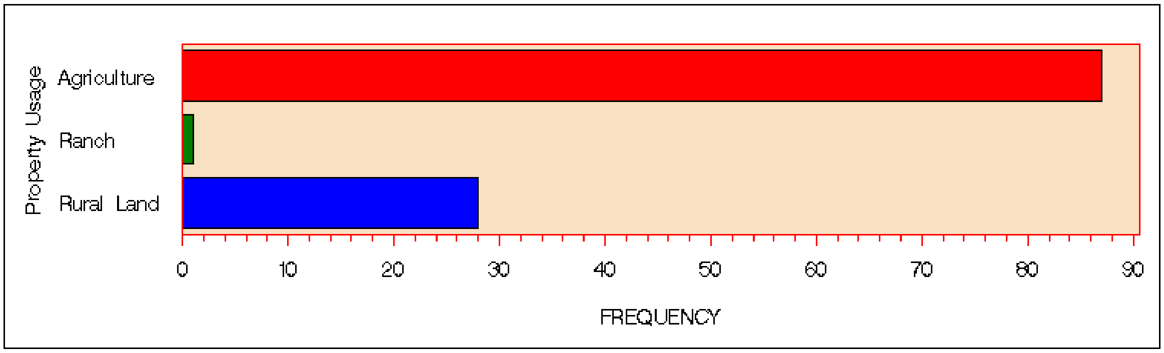


Figure H17: Number of parcels with a corresponding cost and area

Table G33: Unit costs [2006 dollars/SF]

COUNTY	BELL	BOSQUE	CORYELL	FALLS	HAMILTON	HILL	LIMESTONE	MCLENNA	WILLIAMSON
Unit Cost of Land	$0.06	$0.06	$0.11	$0.04	$0.03	$0.07	$0.02	$0.09	$0.05
Unit Cost of Improvements	$0.01	$0.01	$0.25	$0.02	N/A	$0.09	$0.03	$0.01	N/A
Unit Cost of Damages	$0.01	$0.13	$0.11	$0.06	$0.68	$0.13	$0.01	$0.06	$0.16
Total Unit Cost	$0.07	$0.20	$0.47	$0.11	$0.72	$0.29	$0.07	$0.16	$0.21

Note: unit costs are defined as sum of costs divided by sum of acquired area.

Table G34: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]					Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum	COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
BELL	7	$0.04	$0.03	$0.07	BELL	2	$0.13	$0.10	$0.16
BOSQUE	2	$0.06	$0.06	$0.07	BOSQUE	1	$0.03	$0.03	$0.03
CORYELL	31	$0.13	$0.01	$0.71	CORYELL	14	$1.04	$0.01	$5.24
FALLS	32	$0.09	$0.02	$1.43	FALLS	22	$0.02	$0.00003	$0.21
HAMILTON	3	$0.04	$0.03	$0.04	HAMILTON	0	N/A	N/A	N/A
HILL	17	$0.09	$0.02	$0.24	HILL	1	$0.35	$0.35	$0.35
LIMESTONE	9	$0.03	$0.00	$0.03	LIMESTONE	9	$0.27	$0.00	$1.87
MCLENNAN	14	$0.10	$0.03	$0.41	MCLENNAN	9	$0.05	$0.00	$0.35
WILLIAMSON	1	$0.05	$0.05	$0.05	WILLIAMSON	0	N/A	N/A	N/A
Unit Cost of Damages [2006 dollars/SF]					Total Unit Cost = Cost of Land + Cost of Improvements+ Cost of Damages [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum	COUNTY	Total Number of Observations	Mean	Minimum	Maximum
BELL	3	$0.07	$0.02	$0.12	BELL	7	$0.11	$0.03	$0.29
BOSQUE	2	$0.15	$0.10	$0.21	BOSQUE	2	$0.23	$0.16	$0.29
CORYELL	28	$0.33	$0.04	$1.74	CORYELL	31	$0.89	$0.05	$5.32
FALLS	27	$0.09	$0.02	$0.56	FALLS	32	$0.19	$0.02	$1.43
HAMILTON	3	$1.02	$0.09	$2.77	HAMILTON	3	$1.06	$0.12	$2.81
HILL	9	$0.34	$0.02	$0.62	HILL	17	$0.29	$0.04	$0.87
LIMESTONE	9	$0.04	$0.00	$0.27	LIMESTONE	9	$0.34	$0.01	$2.16
MCLENNAN	9	$0.14	$0.03	$0.48	MCLENNAN	14	$0.22	$0.04	$0.71
WILLIAMSON	1	$0.16	$0.16	$0.16	WILLIAMSON	1	$0.21	$0.21	$0.21

Land Use: Retail

Retail refers to parcels whose property usage has been classified as Commercial, Mall Shopping Center, Retail Store, Service Station, or Strip Shopping Center.

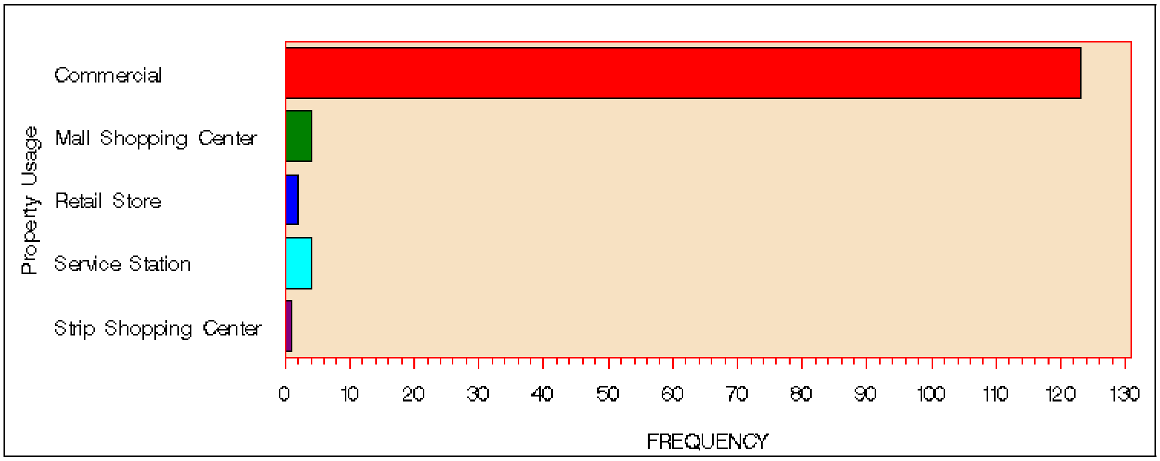


Figure G18: Number of parcels with an associated cost and area

Table G35: Unit costs [2006 dollars/SF]

COUNTY	BELL	BOSQUE	CORYELL	FALLS	HILL	MCLENNAN
Unit Cost of Land	$9.05	$4.39	$0.94	$0.15	$0.50	$0.53
Unit Cost of Improvements	$4.14	$16.21	N/A	$2.23	$0.75	$0.20
Unit Cost of Damages	$9.19	$104.11	N/A	N/A	$0.26	$1.03
Total Unit Cost	$22.38	$124.71	$0.94	$2.38	$1.51	$1.75

Note: unit costs are defined as sum of costs divided by sum of acquired area.

Table G36: Summary statistics of unit costs

Unig Cost of Land [2006 dollars/SF]					Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum	COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
BELL	72	$8.56	$0.93	$21.63	BELL	48	$5.88	$0.04	$38.42
BOSQUE	5	$2.98	$0.87	$3.58	BOSQUE	4	$22.25	$2.43	$60.55
CORYELL	1	$0.94	$0.94	$0.94	CORYELL	0	N/A	N/A	N/A
FALLS	1	$0.15	$0.15	$0.15	FALLS	1	$2.23	$2.23	$2.23
HILL	29	$1.73	$0.06	$3.25	HILL	21	$8.86	$0.03	$61.80
MCLENNAN	25	$0.82	$0.12	$5.77	MCLENNAN	16	$1.32	$0.14	$4.55
Unit Cost of Damages [2006 dollars/SF]					Total Unit Cost = Cost of Land + Cost of Improvements+ Cost of Damages [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum	COUNTY	Total Number of Observations	Mean	Minimum	Maximum
BELL	43	$32.99	$0.01	$290.46	BELL	72	$32.18	$0.93	$306.94
BOSQUE	4	$125.02	$2.44	$353.06	BOSQUE	5	$120.79	$0.87	$417.08
CORYELL	0	N/A	N/A	N/A	CORYELL	1	$0.94	$0.94	$0.94
FALLS	0	N/A	N/A	N/A	FALLS	1	$2.38	$2.38	$2.38
HILL	11	$6.63	$0.01	$54.46	HILL	29	$10.66	$0.08	$65.05
MCLENNAN	13	$4.44	$0.05	$39.10	MCLENNAN	25	$3.97	$0.12	$44.46

Land Use: Other

Other refers to parcels whose property usage has been classified as Ecclesiastical, Heavy Industrial, Light Industrial, Multi-Use, School, or Special Use.

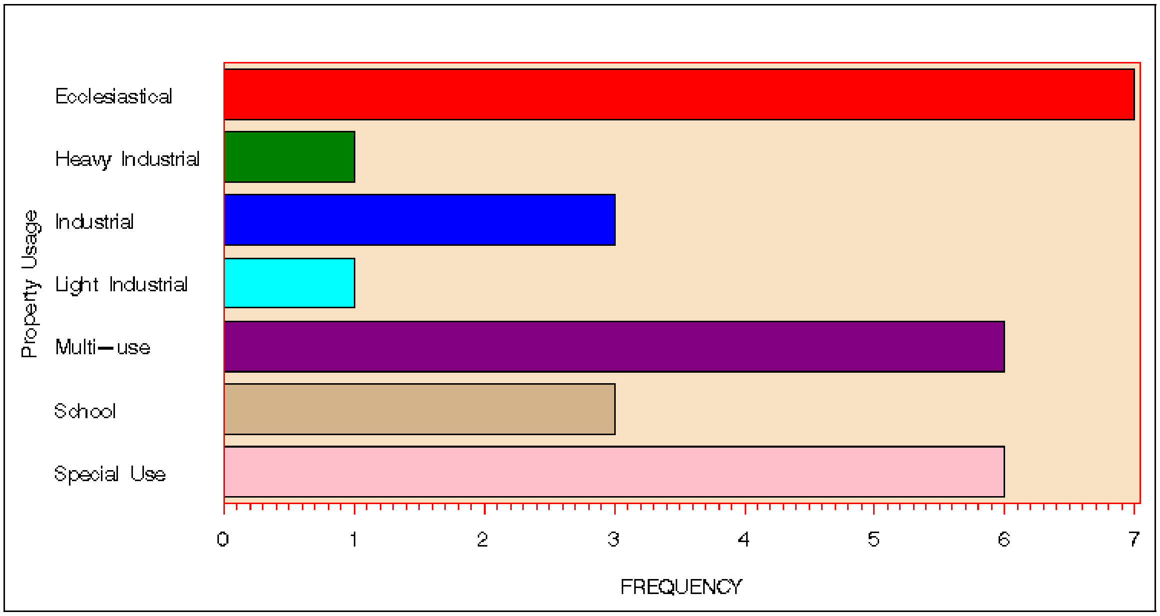


Figure G19: Number of parcels with an associated cost and area.

Table G37: Unit costs [2006 dollars/SF]

COUNTY	BELL	FALLS	HILL	MCLENNAN
Unit Cost of Land	$3.15	$0.02	$0.24	$0.72
Unit Cost of Improvements	$0.38	$0.00	$0.06	$0.02
Unit Cost of Damages	$0.76	$0.00	$0.01	$0.22
Total Unit Cost	$4.29	$0.02	$0.30	$0.96

Note: unit costs are calculated as sum of costs divided by sum of acquired area.

Table G38: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]					Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum	COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
BELL	16	$4.09	$1.17	$13.90	BELL	10	$2.88	$0.03	$17.03
FALLS	3	$0.03	$0.02	$0.04	FALLS	0	N/A	N/A	N/A
HILL	3	$0.60	$0.12	$1.46	HILL	1	$1.99	$1.99	$1.99
MCLENNAN	5	$1.15	$0.12	$4.12	MCLENNAN	3	$0.68	$0.26	$0.97
Unit Cost of Damages [2006 dollars/SF]					Total Unit Cost = Cost of Land + Cost of Improvements+ Cost of Damages [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum	COUNTY	Total Number of Observations	Mean	Minimum	Maximum
BELL	8	$3.77	$0.00	$15.78	BELL	16	$7.77	$1.17	$25.34
FALLS	0	N/A	N/A	N/A	FALLS	3	$0.03	$0.02	$0.04
HILL	1	$0.31	$0.31	$0.31	HILL	3	$1.37	$0.24	$2.42
MCLENNAN	3	$0.21	$0.09	$0.26	MCLENNAN	5	$1.68	$0.38	$4.12

Land Use: Residential

Residential refers to parcels whose property usage has been classified as Residential, Residential Lot, or Rural Residential.

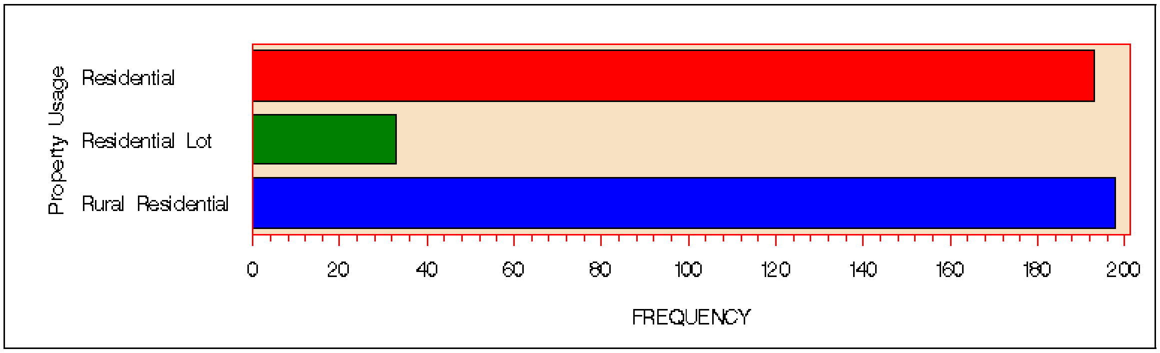


Figure G20: Number of parcels with an associated cost and area.

Table G39: Unit costs [2006 dollars/SF]

COUNTY	BELL	BOSQUE	CORYELL	FALLS	HILL	LIMESTONE	MCLENNAN
Unit Cost of Land	$0.28	$0.77	$0.13	$0.10	$0.66	$0.03	$0.28
Unit Cost of Improvements	$0.14	$0.35	$0.11	$0.26	$0.90	$0.05	$0.44
Unit Cost of Damages	$0.08	$1.15	$0.12	$0.08	$0.83	$0.05	$0.22
Total Unit Cost	$0.50	$2.27	$0.36	$0.44	$2.39	$0.13	$0.95

Note: unit costs are defined as sum of costs divided by sum of acquired area.

Table G40: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]					Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum	COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
BELL	117	$0.96	$0.06	$7.30	BELL	73	$1.58	$0.001	$17.47
BOSQUE	2	$0.66	$0.44	$0.88	BOSQUE	1	$0.46	$0.46	$0.46
CORYELL	20	$0.37	$0.04	$3.38	CORYELL	14	$0.53	$0.0001	$2.46
FALLS	75	$0.20	$0.02	$0.70	FALLS	51	$0.55	$0.000	$2.79
HILL	26	$1.67	$0.44	$5.95	HILL	20	$5.32	$0.01	$40.65
LIMESTONE	58	$0.17	$0.00	$1.57	LIMESTONE	48	$0.17	$0.001	$2.36
MCLENNAN	124	$0.49	$0.03	$1.75	MCLENNAN	113	$0.91	$0.0001	$14.38

Unit Cost of Damages [2006 dollars/SF]					Total Unit Cost = Cost of Land + Cost of Improvements+ Cost of Damages [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum	COUNTY	Total Number of Observations	Mean	Minimum	Maximum
BELL	64	$1.92	$0.003	$44.68	BELL	117	$3.00	$0.09	$46.33
BOSQUE	1	$1.53	$1.53	$1.53	BOSQUE	2	$1.65	$0.44	$2.87
CORYELL	16	$0.62	$0.02	$1.99	CORYELL	20	$1.23	$0.07	$4.74
FALLS	42	$0.43	$0.01	$9.51	FALLS	75	$0.81	$0.05	$10.82
HILL	16	$6.70	$0.02	$24.89	HILL	26	$9.89	$0.48	$47.19
LIMESTONE	40	$0.20	$0.0001	$2.78	LIMESTONE	58	$0.44	$0.002	$3.00
MCLENNAN	82	$1.02	$0.01	$14.76	MCLENNAN	124	$2.00	$0.07	$17.65

District: Wichita Falls

Land Use: Vacant

Vacant refers to parcels whose property usage has been classified as Vacant Acreage or Vacant Lot

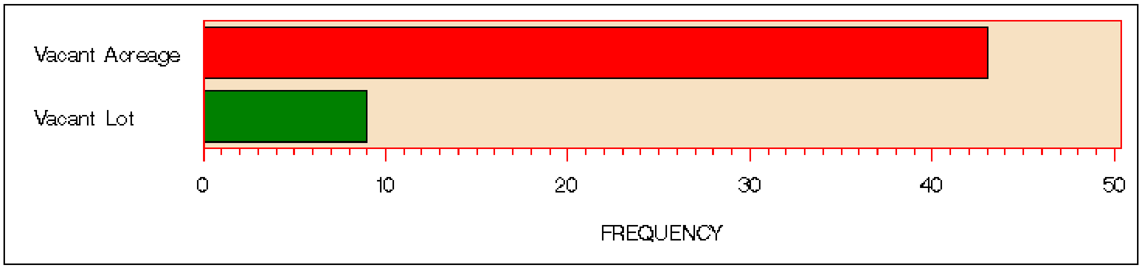


Figure G21: Number of parcels with an associated cost and area.

Table G41: Unit costs [2006 dollars/SF]

COUNTY	ARCHER	COOKE	MONTAGUE	THROCKMORTON	WICHITA	WILBARGER
Unit Cost of Land	$0.03	$0.69	$0.16	$0.04	$2.11	$0.03
Unit Cost of Improvem	N/A	$0.01	$0.02	$0.001	N/A	$0.00001
Unit Cost of Damages	$0.11	$0.24	$0.01	$5.09	N/A	$0.06
Total Unit Cost	$0.14	$0.94	$0.19	$0.55	$2.11	$0.09

Note: unit costs are defined as sum of costs divided by sum of acquired area.

Table G42: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum
ARCHER	17	$0.04	$0.02	$0.10
COOKE	13	$0.80	$0.05	$7.21
MONTAGUE	11	$0.15	$0.11	$0.18
THROCKMORTON	1	$0.04	$0.04	$0.04
WICHITA	6	$2.45	$0.90	$3.81
WILBARGER	4	$0.08	$0.01	$0.17

Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
ARCHER	0	N/A	N/A	N/A
COOKE	8	$0.01	$0.00	$0.04
MONTAGUE	6	$0.02	$0.00	$0.09
THROCKMORTON	1	$0.00	$0.00	$0.00
WICHITA	0	N/A	N/A	N/A
WILBARGER	2	$0.00	$0.00	$0.00

Unit Cost of Damages [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum
ARCHER	13	$0.35	$0.05	$0.79
COOKE	9	$0.73	$0.08	$1.74
MONTAGUE	5	$0.07	$0.02	$0.16
THROCKMORTON	1	$0.51	$0.51	$0.51
WICHITA	0	N/A	N/A	N/A
WILBARGER	2	$0.24	$0.05	$0.44

Total Unit Cost = Cost of Land + Cost of Improvements + Cost of Damages [2006 dollars/SF]				
COUNTY	Total Number of Observations	Mean	Minimum	Maximum
ARCHER	17	$0.31	$0.03	$0.82
COOKE	13	$1.31	$0.09	$7.21
MONTAGUE	11	$0.19	$0.15	$0.31
THROCKMORTON	1	$0.55	$0.55	$0.55
WICHITA	6	$2.45	$0.90	$3.81
WILBARGER	4	$0.20	$0.06	$0.49

Land Use: Retail

Retail refers to parcels whose property usage has been classified as Commercial, Retail Store, Service Station, or Strip Shopping Center.

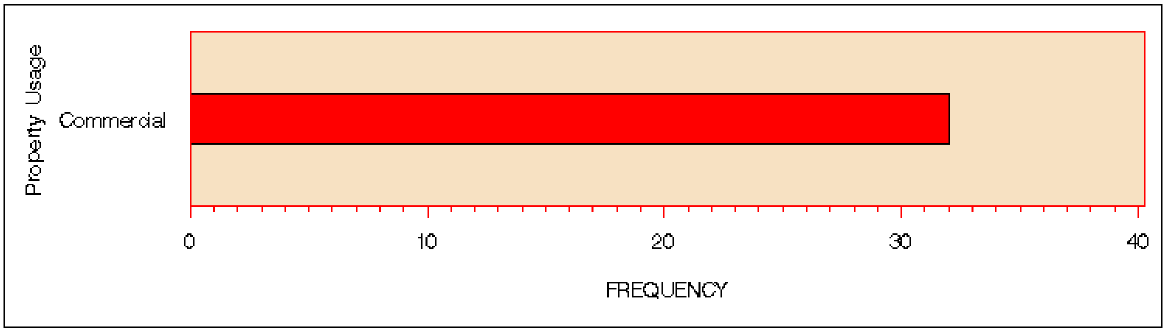


Figure G22: Number of parcels with an associated cost and area.

Table G43: Unit costs [2006 dollars/SF]

COUNTY	BAYLOR	COOKE	WICHITA
Unit Cost of Land	$0.44	$5.40	$1.66
Unit Cost of Improvement	$0.91	$17.39	$3.54
Unit Cost of Damages	$0.54	$3.49	$1.43
Total Unit Cost	$1.89	$26.29	$6.63

Note: unit costs are calculated as sum of costs divided by the sum of acquired area.

Table G44: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]					Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum	COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
BAYLOR	10	$0.68	$0.14	$1.03	BAYLOR	6	$2.42	$0.0002	$9.94
COOKE	7	$3.17	$0.11	$7.21	COOKE	5	$17.79	$0.03	$43.68
WICHITA	14	$2.55	$0.08	$8.13	WICHITA	9	$3.40	$0.05	$9.56
Unit Cost of Damages [2006 dollars/SF]					Total Unit Cost = Cost of Land + Cost of Improvements + Cost of Damages [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum	COUNTY	Total Number of Costs	Mean	Minimum	Maximum
BAYLOR	6	$3.60	$0.06	$12.66	BAYLOR	10	$4.29	$0.21	$23.56
COOKE	3	$14.39	$0.41	$41.36	COOKE	7	$22.05	$0.16	$75.49
WICHITA	6	$30.06	$0.15	$11.42	WICHITA	14	$17.62	$0.33	$113.53

Land Use: Agriculture

Agriculture refers to parcels whose property usage has been classified as Agriculture, Ranch, or Rural Land

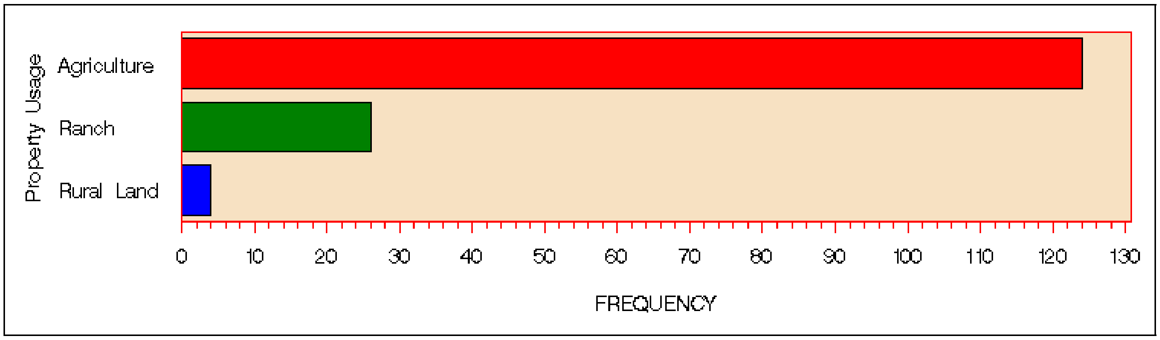


Figure G23: Number of parcels with an associated cost and area.

Table G45: Unit costs [2006 dollars/SF]

COUNTY	ARCHER	BAYLOR	COOKE	MONTAGUE	THROCKMORTON	WICHITA	WILBARGER	YOUNG
Cost of Land	$0.03	$0.02	$0.09	$0.03	$0.02	$0.04	$0.01	$0.02
Cost of Improvemenets	$0.001	$0.003	$0.02	N/A	$0.0001	$0.04	$0.01	N/A
Cost of Damages	$0.06	$0.09	$0.56	$0.15	$0.35	$0.16	$0.08	N/A
Total Cost	$0.09	$0.11	$0.67	$0.18	$0.37	$0.24	$0.10	$0.02

Note: unit costs are calculated as sum of costs divided by sum of acquired area.

Table G46: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]					Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Obervations with Cost of Land	Mean	Minimum	Maximum	COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
ARCHER	28	$0.06	$0.01	$0.39	ARCHER	9	$0.01	$0.000	$0.05
BAYLOR	36	$0.06	$0.01	$1.18	BAYLOR	29	$0.01	$0.000	$0.07
COOKE	13	$0.13	$0.02	$0.47	COOKE	11	$0.04	$0.001	$0.16
MONTAGUE	5	$0.04	$0.02	$0.08	MONTAGUE	0	N/A	N/A	N/A
THROCKMORTON	6	1.53E-02	1.52E-02	1.53E-02	THROCKMORTON	0	N/A	N/A	N/A
WICHITA	35	$0.05	$0.02	$0.11	WICHITA	31	$0.08	$0.001	$0.22
WILBARGER	30	$0.04	$0.01	$0.66	WILBARGER	17	$0.07	$0.000	$0.59
YOUNG	1	$0.02	$0.02	$0.02	YOUNG	0	N/A	N/A	N/A
Unit Cost of Damages [2006 dollars/SF]					Total Unit Cost = Cost of Land + Cost of Improvements + Cost of Damages [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum	COUNTY	Total Number of Observations	Mean	Minimum	Maximum
ARCHER	22	$0.18	$0.02	$0.47	ARCHER	28	$0.20	$0.02	$0.62
BAYLOR	30	$0.28	$0.01	$2.96	BAYLOR	36	$0.29	$0.01	$3.03
COOKE	13	$0.73	$0.13	$2.84	COOKE	13	$0.89	$0.25	$2.99
MONTAGUE	5	$0.19	$0.08	$0.34	MONTAGUE	5	$0.23	$0.10	$0.42
THROCKMORTON	6	$0.39	$0.25	$0.60	THROCKMORTON	6	$0.41	$0.27	$0.62
WICHITA	30	$0.25	$0.03	$1.04	WICHITA	35	$0.34	$0.02	$1.09
WILBARGER	15	$0.24	$0.03	$1.24	WILBARGER	30	$0.21	$0.01	$1.26
YOUNG	0	N/A	N/A	N/A	YOUNG	1	$0.02	$0.02	$0.02

Land Use: Other

Other refers to parcels whose property usage has been classified as Ecclesiastical, Industrial, Light Industrial, Multi-Use, or Special Use.

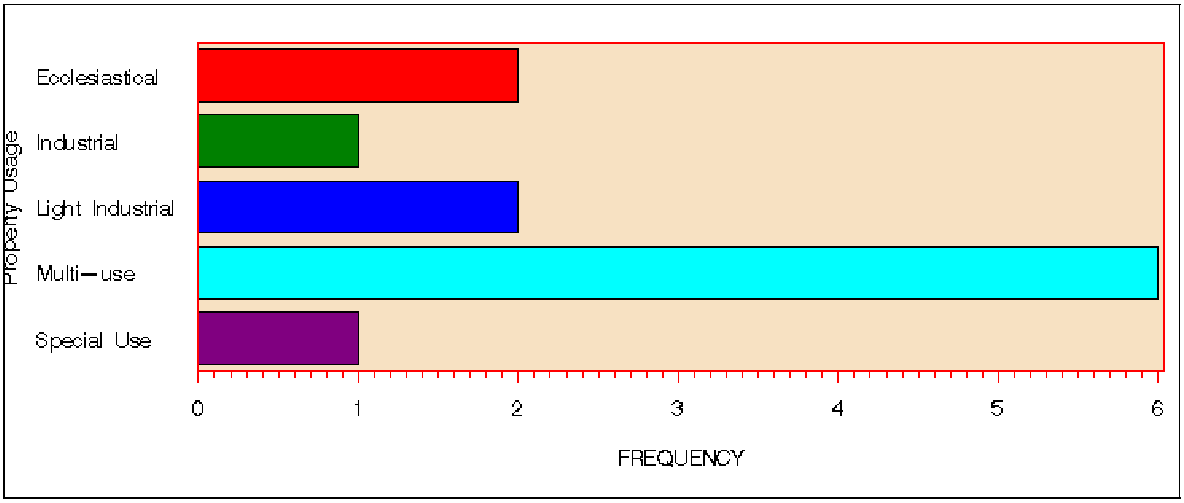


Figure G24: Number of parcels with an associated cost and area

Table H47: Unit costs [2006 dollars/SF]

COUNTY	ARCHER	BAYLOR	COOKE	WICHITA	WILBARGER
Unit Cost of Land	$0.10	$0.06	$3.42	$0.13	$0.09
Unit Cost of Improvements	$0.03	$0.03	$0.01	$0.12	$0.56
Unit Cost of Damages	$1.47	$0.06	$0.43	$1.26	$5.18
Total Unit Cost	$1.60	$0.15	$3.85	$1.51	$5.84

Note: unit costs are calculated as sum of costs divided by sum of acquired area.

Table G48: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]					Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum	COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
ARCHER	1	$0.10	$0.10	$0.10	ARCHER	1	$0.03	$0.03	$0.03
BAYLOR	2	$0.14	$0.02	$0.26	BAYLOR	2	$0.05	$0.01	$0.08
COOKE	5	$1.79	$0.17	$7.26	COOKE	2	$0.02	$0.01	$0.02
WICHITA	2	$0.20	$0.09	$0.30	WICHITA	2	$0.32	$0.02	$0.61
WILBARGER	2	$0.09	$0.09	$0.09	WILBARGER	2	$0.68	$0.30	$1.06
Unit Cost of Damages [2006 dollars/SF]					Total Unit Cost = Cost of Land + Cost of Improvements + Cost of Damages [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum	COUNTY	Total Number of Observations	Mean	Minimum	Maximum
ARCHER	1	$1.47	$1.47	$1.47	ARCHER	1	$1.60	$1.60	$1.60
BAYLOR	2	$0.12	$0.04	$0.20	BAYLOR	2	$0.31	$0.07	$0.55
COOKE	2	$1.19	$0.88	$1.50	COOKE	5	$2.27	$0.17	$7.26
WICHITA	2	$1.68	$1.04	$2.32	WICHITA	2	$2.20	$1.15	$3.24
WILBARGER	2	$6.70	$1.84	$11.55	WILBARGER	2	$7.47	$2.23	$12.71

Land Use: Residential

Residential refers to parcels whose property usage has been classified as Residential or Rural Residential.

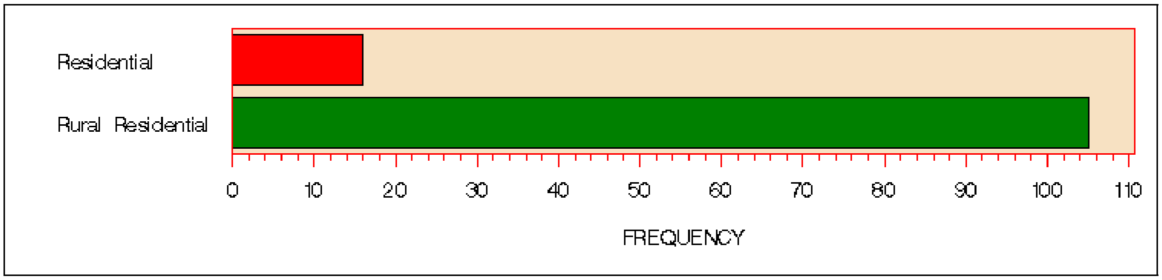


Figure G25: Number of parcels with an associated cost and area.

Table G49: Unit costs [2006 dollars/SF]

COUNTY	ARCHER	BAYLOR	CLAY	COOKE	MONTAGUE	WICHITA	WILBARGER
Unit Cost of Land	$0.09	$0.10	$0.04	$0.12	$0.18	$0.08	$0.02
Unit Cost of Improvements	$0.27	$0.76	$0.00	$0.20	$0.35	$0.73	$0.08
Unit Cost of Damages	$0.12	$1.04	$1.11	$0.27	$0.00	$0.39	$0.10
Total Unit Cost	$0.48	$1.90	$1.16	$0.59	$0.52	$1.20	$0.20

Note: unit costs calculated as sum of costs divided by the sum of acquired area.

Table G50: Summary statistics of unit costs

Unit Cost of Land [2006 dollars/SF]					Unit Cost of Improvements [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Land	Mean	Minimum	Maximum	COUNTY	Number of Observations with Cost of Improvements	Mean	Minimum	Maximum
ARCHER	17	$0.20	$0.03	$0.63	ARCHER	15	$1.56	$9.29	$6.51
BAYLOR	9	$0.16	$0.04	$0.31	BAYLOR	8	$0.96	$0.00	$2.96
CLAY	2	$0.04	$0.02	$0.06	CLAY	0	N/A	N/A	N/A
COOKE	76	$0.29	$0.02	$4.14	COOKE	58	$0.45	$0.00	$3.82
MONTAGUE	4	$0.18	$0.18	$0.18	MONTAGUE	4	$0.38	$0.13	$0.63
WICHITA	9	$0.08	$0.03	$0.10	WICHITA	9	$0.77	$0.02	$3.14
WILBARGER	3	$0.04	$0.01	$0.09	WILBARGER	3	$0.30	$0.07	$0.75
Unit Cost of Damages [2006 dollars/SF]					Total Unit Cost = Cost of Land + Cost of Improvements + Cost of Damages [2006 dollars/SF]				
COUNTY	Number of Observations with Cost of Damages	Mean	Minimum	Maximum	COUNTY	Total Number of Observations	Mean	Minimum	Maximum
ARCHER	12	$0.83	$0.03	$4.13	ARCHER	17	$2.16	$0.07	$7.12
BAYLOR	8	$14.97	$0.22	$92.39	BAYLOR	9	$14.31	$0.15	$92.95
CLAY	2	$1.11	$1.05	$1.17	CLAY	2	$1.15	$1.07	$1.22
COOKE	58	$1.31	$0.02	$36.09	COOKE	76	$1.62	$0.05	$37.55
MONTAGUE	0	N/A	N/A	N/A	MONTAGUE	4	$0.56	$0.30	$0.80
WICHITA	6	$0.57	$0.11	$1.70	WICHITA	9	$1.23	$0.10	$4.14
WILBARGER	1	$0.19	$0.19	$0.19	WILBARGER	3	$0.40	$0.09	$0.85

Appendix H: Historical Unit Costs by District and Property Usage

HISTORICAL UNIT COSTS [2006 DOLLARS/ACQUIRED SQUARE FOOT]	ABL	AMA	ATL	BMT	BWD	BRY	CHS	CRP	DAL	ELP	FTW	HOU	LRD	LBB	LFK	ODA	PAR	PHR	SJT	SAT	TYL	WAC	WFS	YKM
Agriculture	0.04	0.08	0.17	0.07	0.17	0.14	0.05	0.11	0.93	1.91	0.32	1.42	0.07	N/A	0.11	0.00	0.19	0.21	N/A	1.38	0.12	0.17	0.07	0.12
Commercial	1.43	0.22	3.25	4.68	5.44	2.41	0.82	0.62	15.08	10.89	0.16	38.32	9.36	29.33	9.70	N/A	0.73	1.50	0.65	18.27	4.30	10.62	4.30	2.03
Ecclesiastical	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	45.60	N/A	N/A	15.17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Golf Course	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	56.52	N/A	3.93	1.30	N/A	N/A	5.82	N/A	N/A	N/A	N/A	N/A	N/A	0.24	N/A	N/A
Heavy Industrial	N/A	15.88	0.04	0.02	0.50	N/A	N/A	2.34	2.67	1.27	5.36	20.64	N/A	N/A	3.68	N/A	N/A	N/A	N/A	23.41	0.73	13.43	0.64	2.81
Industrial	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	56.52	N/A	3.93	1.30	N/A	N/A	5.82	N/A	N/A	N/A	N/A	N/A	N/A	0.24	N/A	N/A
Light Industrial	N/A	N/A	N/A	N/A	N/A	2.77	3.46	0.79	6.29	N/A	7.44	5.84	N/A	23.68	30.39	N/A	N/A	0.13	N/A	N/A	N/A	5.60	7.36	3.29
Mall Shopping Center	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14.73	N/A	N/A	133.56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	29.63	N/A	2.15	N/A	N/A
Multi-use	N/A	N/A	N/A	1.89	N/A	3.67	N/A	0.87	3.87	4.36	3.42	34.82	11.07	13.26	0.36	N/A	N/A	1.06	N/A	52.11	N/A	0.73	0.17	1.40
Ranch	0.02	N/A	0.06	0.10	0.08	0.20	0.06	0.07	N/A	N/A	0.34	N/A	N/A	N/A	N/A	0.02	N/A	2.02	0.07	N/A	N/A	0.08	0.17	0.12
Residential	0.43	N/A	0.75	0.95	0.53	0.58	0.51	2.47	5.91	6.86	1.18	14.70	4.83	29.67	1.20	N/A	0.63	3.62	0.10	3.27	1.68	0.85	2.61	2.07
Residential Lot	0.15	0.27	1.10	0.35	N/A	0.19	0.17	1.21	5.00	3.31	0.85	2.77	N/A	97.09	0.91	N/A	0.62	0.54	N/A	0.47	0.24	3.83	N/A	N/A
Retail Store	3.51	N/A	9.99	25.70	N/A	23.78	N/A	N/A	14.55	N/A	N/A	74.30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	23.71	8.39	21.56	N/A	4.68
Rural Land	0.04	0.09	0.09	0.14	0.12	0.32	0.03	0.11	0.10	N/A	0.25	0.82	0.02	N/A	0.17	0.12	N/A	N/A	0.03	N/A	0.34	0.10	0.14	0.22
Rural Residential	0.37	0.21	0.57	0.47	0.34	0.33	1.33	0.56	2.21	N/A	0.55	2.59	N/A	N/A	0.38	N/A	0.14	0.70	0.11	2.74	0.89	0.27	0.30	0.47
School	0.08	N/A	1.98	0.66	N/A	N/A	N/A	13.29	5.09	0.72	1.65	4.30	N/A	326.72	N/A	N/A	N/A	1.46	N/A	18.67	N/A	3.44	N/A	N/A
Service Station	N/A	N/A	N/A	1.14	17.16	N/A	N/A	9.52	52.40	N/A	62.67	0.05	N/A	35.69	N/A	N/A	N/A	N/A	N/A	55.83	34.35	34.02	N/A	N/A
Special Use	N/A	0.01	0.76	0.07	0.86	2.49	0.02	0.14	43.17	N/A	0.48	4.12	N/A	21.13	0.24	N/A	N/A	1.85	N/A	1.90	2.65	0.21	1.21	N/A
Strip Shopping Center	N/A	N/A	N/A	N/A	N/A	34.78	N/A	N/A	32.62	9.34	N/A	94.82	N/A	38.82	N/A	N/A	N/A	N/A	N/A	97.43	N/A	12.44	N/A	N/A
Vacant Acreage	0.07	0.04	0.13	0.13	0.85	0.75	0.05	0.10	5.15	0.38	2.06	0.24	0.40	3.02	0.52	N/A	0.12	0.67	0.06	4.01	0.37	0.28	0.13	0.30
Vacant Lot	0.17	N/A	0.63	0.83	1.76	1.44	0.28	0.89	1.47	N/A	4.05	9.47	0.22	1.27	0.41	N/A	0.21	3.13	N/A	8.13	0.73	1.58	3.05	0.74