

## Final Case Study Project

Yoo et al. (2014) recently studied the impacts of a variety of factors influencing house prices in Prescott, Arizona. Prescott metropolitan area in Central Arizona includes five recreational lakes – Granite Basin Lake, Watson Lake, Willow Creek Reservoir, Lynx Lake and Upper Goldwater Lake. The five lakes in the study area provide a range of benefits – recreational opportunity, scenic beauty, clear water, etc - to the residents of Prescott, and hence easier access to those lakes is expected to increase nearby residential property prices. Higher level of sedimentation in the lake or rivers leads to physical disruption of water quality and creates high levels of turbidity by limiting penetration of sunlight into the water column. Therefore, higher level of sedimentation is expected to decrease nearby residential property values. Using a regression model(s), you will investigate a variety of environmental, structural, and socio-economic factors that affect residential property values using this dataset (Prescott\_Parcel.xlsx).

Description of variables included in the dataset is shown below:

Variable	Description
Price	Residential property sales in dollar (Year: 2003)
Land_fcv	Land full cash value in dollar (reflection of the market value of your property and consists of land and improvements)
Age	The age of property
Time	Traveling time to the nearest lake in minute
Pop_sqml	Number of population/mile <sup>2</sup> in 2000 (measured on a Census tract level)
Gr_fl_ar	The area of ground floor (sq)
Patio_Floor	The ratio of patio area to total area (Total area=ground floor area+patio area)
sedi_per_lake	Tons of sediment loads/lake acre in the nearest lake from each residential property
Imp_fcv	Improved full cash value

Provide a 10-page case study report that covers the following issues at the minimum:

- What are the research questions you want to investigate using this dataset?
- Based on a multiple linear regression model, which variables are significant, and which variables are not? Did the signs of each variable come out as expected?
- What does the results from the linear regression model show about the economic value of access to recreational lakes?
- Does water quality have a significant impact on house prices?

- Are structural variables statistically significant and their signs come out as expected?
- How would you explain the impact of population density on housing price?
- Based on the results, what would you suggest property developers, house buyers, or local government decision makers should do to improve the environmental and economic quality (welfare) of local community?

Make sure your case study report includes the following structures: (1) Introduction, (2) Data Presentation, (3) Model Specification, (4) Interpretation of Results, (5) Integration of Biblical Principle, and (6) Policy Recommendations & Conclusion.

1. **Introduction** – Paper must define the problem scope and outline the objectives of the analysis in a clear, concise, and professional manner (1 page)
2. **Data Presentation:** Paper must present a summary of data in an accurate and professional manner, and provide accurate interpretation of the data. Make sure you must provide a table showing summary statistics of selected variables in your regression model and provide a brief description of those data. (1 page)
3. **Model Specification & Development:** Paper must specify the appropriate linear regression model(s) in an accurate and professional manner. Provide accurate equations for selected linear regression model(s) with the detail description of the notation of each variable. If you estimate more than 2 regression models, provide the detail justifications for doing it(2 pages)
4. **Interpretation of Results:** Paper must provide a clear, concise, consistent and accurate summary of results from linear regression model(s). Discuss the statistical significance of each variable, and justify the sign of each variable. Also, discuss the meaning of slope for each variable. The interpretations must be understandable to the general public. (2.5 pages)
5. **Policy Recommendations & Conclusions:** Paper must address policy recommendations and/or implications in the business world in a professional manner. In other words, students must provide a clear recommendation and plan of action that government agency or property developers must take in their future decision making process, based on the results from linear regression model(s). (2.5 pages)
6. **Integration of Biblical Principle:** Paper must identify and integrate biblical principles into the decision making process in an appropriate and insightful manner (1 page)