

Final Project Report

Wanqi Yuan (wy21) & Jonathan Gan (wg18)

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1 Introduction

1.1 Problem Statement

The parking garage problem is currently structured to assume that demand is deterministic and constant. This is not representative of real world conditions as demand is highly dynamic and will change in response to various city conditions. For our final project, we want to better capture the variance in demand for parking, particularly in Houston. We will explore through research the relationship between price of parking and the demand of parking to implement into our `get_action` function. We will mathematically represent this relationship through a equation derived from our research. We will be considering the case where we are taking yearly time steps to represent a garage that rents out spots on a yearly basis. At the end of each year, we will evaluate whether demand of that year given the elasticity of demand, exceeds capacity enough to justify building an additional level. We will analyze this case for multiple demand vs. price curve.

Demand is a quantifiable variable for many cases outside of parking that determine whether a given action will be taken. By more accurately modeling this relationship between how the price of *something* might change the demand of it, and therefore the construction that might take place as a result, we can apply this to other climate scenarios that would require sequential decision making. For example, the decision to expand a solar farm on an annual basis dependent on the demand of the energy for the clients it serve.

1.2 Selected Feature

Describe the feature you have selected to add to the existing decision-support tool. Discuss how this feature relates to the problem statement and its potential to improve climate risk assessment.

2 Literature Review

Provide a brief overview of the theoretical background related to your chosen feature. Cite at least two relevant journal articles to support your approach (see [Quarto docs](#) for help with citations). Explain how these articles contribute to the justification of your selected feature.