

# SOK-3020 Econometric Project 1: Motel Damage Assessment

## Project Overview

You are a consulting economist hired to assess economic damages for a motel that suffered construction defects. The motel had to take rooms out of service for repairs over several months, and the owners need to quantify their financial losses for potential legal action.

Your analysis should apply sound econometric principles to estimate what the motel's performance would have been without the defect, and calculate the resulting economic damages. This is the type of work professional economic consultants perform in litigation settings, where methodology and results must withstand expert scrutiny.

The data is the *motel* data in POE5, described here:

<https://www.principlesofeconometrics.com/poe5/data/def/motel.def>

It is used in exercises 2.27, 3.19, 3.20 and 3.28 of the textbook. Answers to odd exercises are found on the textbook web-page.

## The Business Problem

A 100-unit motel discovered defective construction materials that required extensive repairs. During the 7-month repair period, approximately 14 rooms were taken out of service each month. The owners believe this significantly impacted their occupancy rates and revenue, but they need rigorous economic analysis to quantify these losses.

You have access to 25 months of data covering periods before, during, and after the repairs. This includes the motel's occupancy and pricing data, as well as information about competitor performance in the local market.

## **Your Task**

Using econometric methods in R, develop a comprehensive analysis that addresses the fundamental question: How much revenue did the motel lose due to the construction defects? Your approach should consider relevant economic factors that affect demand in the hospitality industry and provide defensible damage estimates, but limited to the available data. This project do not require you to gather more data.

Think carefully about different methodological approaches you could take, from simple comparisons to more sophisticated econometric models. Consider what economic theory suggests about hotel demand, the role of pricing and competition, and how to isolate the impact of the repairs from other market factors.

## **Deliverables**

### **1. Economic Analysis Report (Main deliverable)**

Prepare a professional consulting report that includes your methodology, analysis, and conclusions. Your report should be suitable for use in legal proceedings and demonstrate mastery of econometric principles applied to damage assessment.

### **2. AI Interaction Assessment**

Document your use of AI tools (ChatGPT, Claude, etc.) during this project. Evaluate which prompts were most/least successful, what you learned about effective AI collaboration, and how AI assistance assisted your research methods. Be honest about both successes and failures.

### **3. Methodology Validation Procedure**

Outline the steps you would take to validate that your econometric approach is sound and your results are reliable. This must include the standards you would apply to ensure your analysis could withstand expert review.

## **Getting Started**

Use the textbook exercises as a foundation, but approach this as a real consulting engagement rather than just completing homework problems. Consider the broader economic context and professional standards that apply when economic analysis is used in high-stakes business decisions.

The data and exercises will guide your technical work, but think critically about the economic story you're telling and whether your methods appropriately capture the business reality of the situation.

## **Practicalities**

Create project groups of 2-3 students. Each member of the group should submit one pdf report in Canvas, but state on the front page all the members of the group. For this project full use of AI is permitted as a creative partner; e.g. simulating scenarios, designing, optimizing designs, creating text content, coding, translations.