

Computational Economics: Problem Set 3

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Guidelines:

- At least one *.py script that creates your images
- PNG files of figures
- A pdf compiled from TeX that includes your 3 images as well as a description of them (data used, what they mean, etc.)

Figures:

- All figures below are generated from the US automobile transaction data (of timeline: 2011-July to 2013-July).

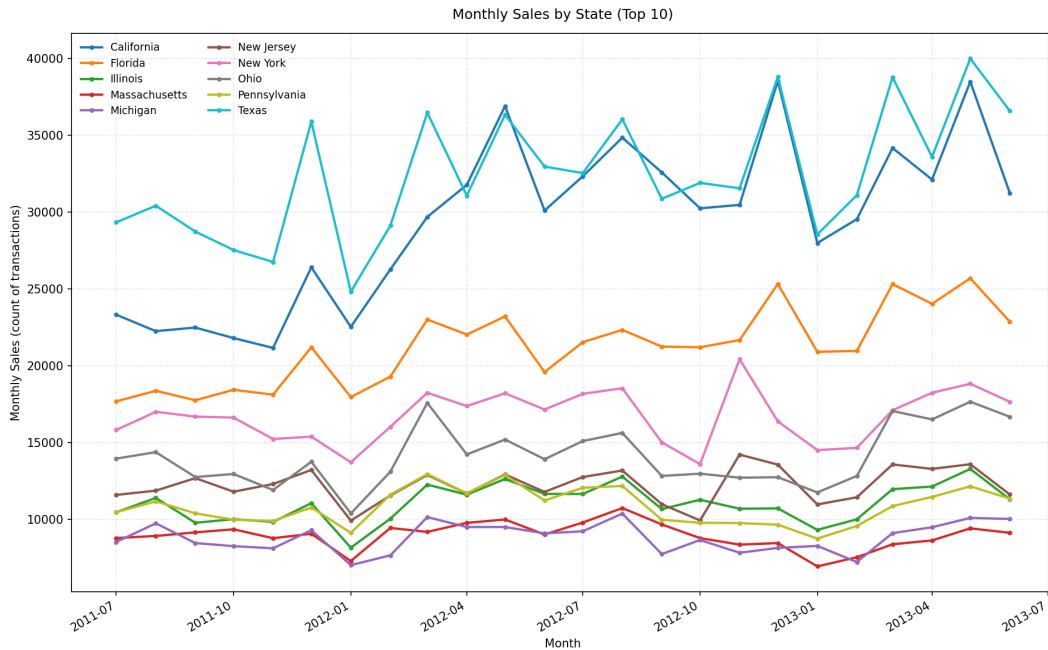


Figure 1: Automobile Sales by State in Month Level (line plot)

Aggregated to the state \times month-of-sale level from the original transaction-level dataset. Each line traces monthly sales for a state over time, allowing comparisons of within-state seasonality and between-state levels. The figure displays the 10 states with the highest automobile sales volume (out of all 50 states).

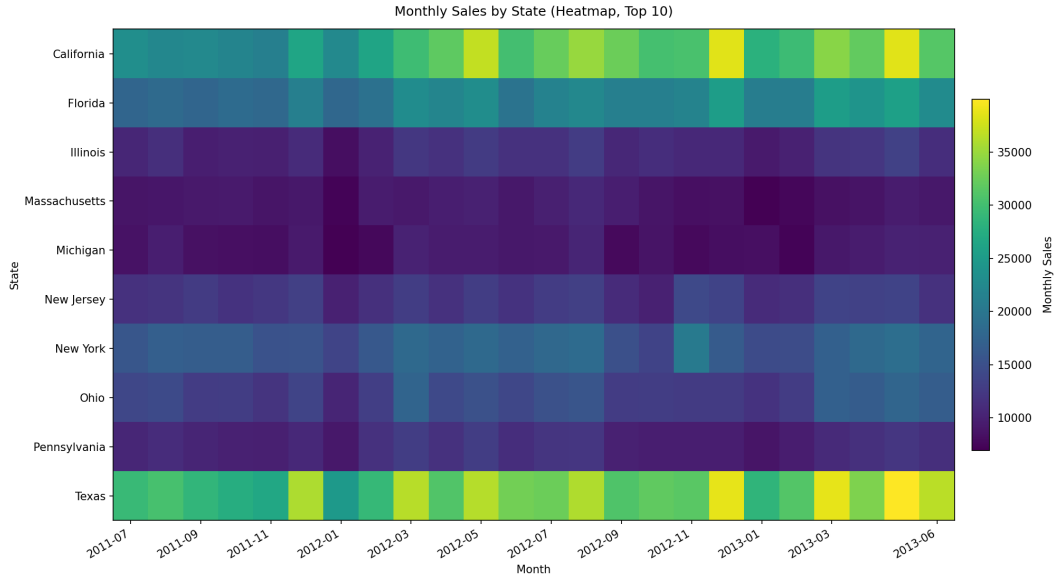


Figure 2: Automobile Sales by State in Month Level (heatmap plot)

Aggregated to the state \times month-of-sale level from the original transaction-level dataset. For each state-month level, as same as figure 1, the 10 states with the highest total sales over the sample period are listed; then the months are arranged chronologically on the x -axis and states on the y -axis. Each cell's colour encodes the monthly sales count (see colorbar explanation). Cross-state and temporal patterns in sales intensity are represented with this figure. The darker colour more lower in the total sales. The darker (purple/blue) cells (in square shape) indicate lower monthly sales; mid-tones (green) indicate moderate sales; lighter (yellow) cells indicate higher monthly sales. Note that the colorbar maps colours to exact counts.

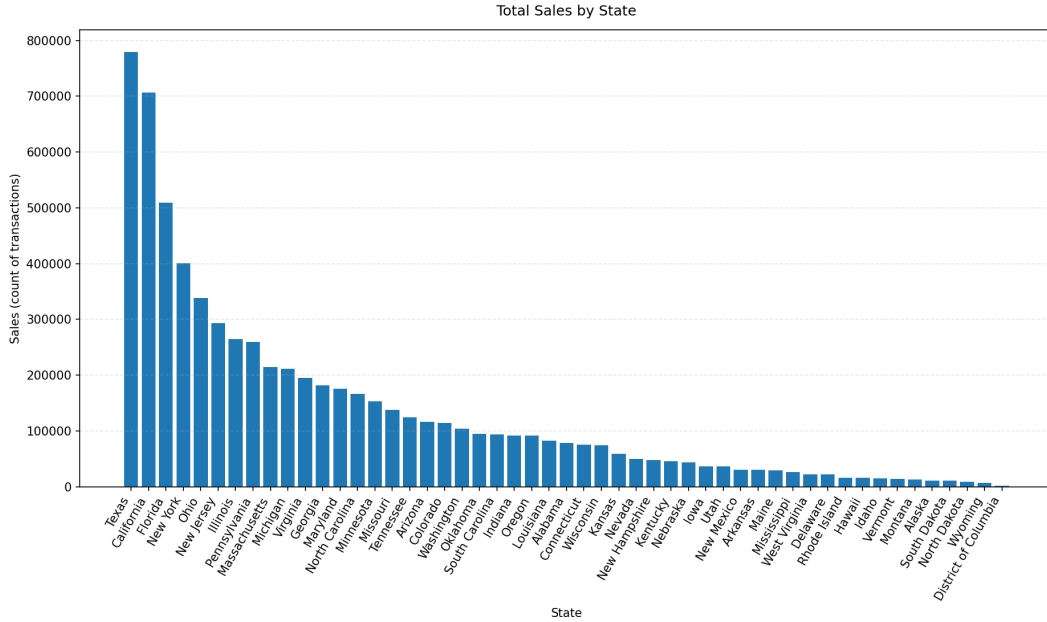


Figure 3: Total automobile sales by state (bar chart; sorted by states with high volume to low volume).

As shown in figure 1 and 2, the automobile transaction-level dataset was aggregated to the state level over the full sample period. It is summed up the number of transactions across all months for each state. The overall ranking of states are sorted from left to right by total sales. Taller bars indicate greater total sales volume (counts of transactions).