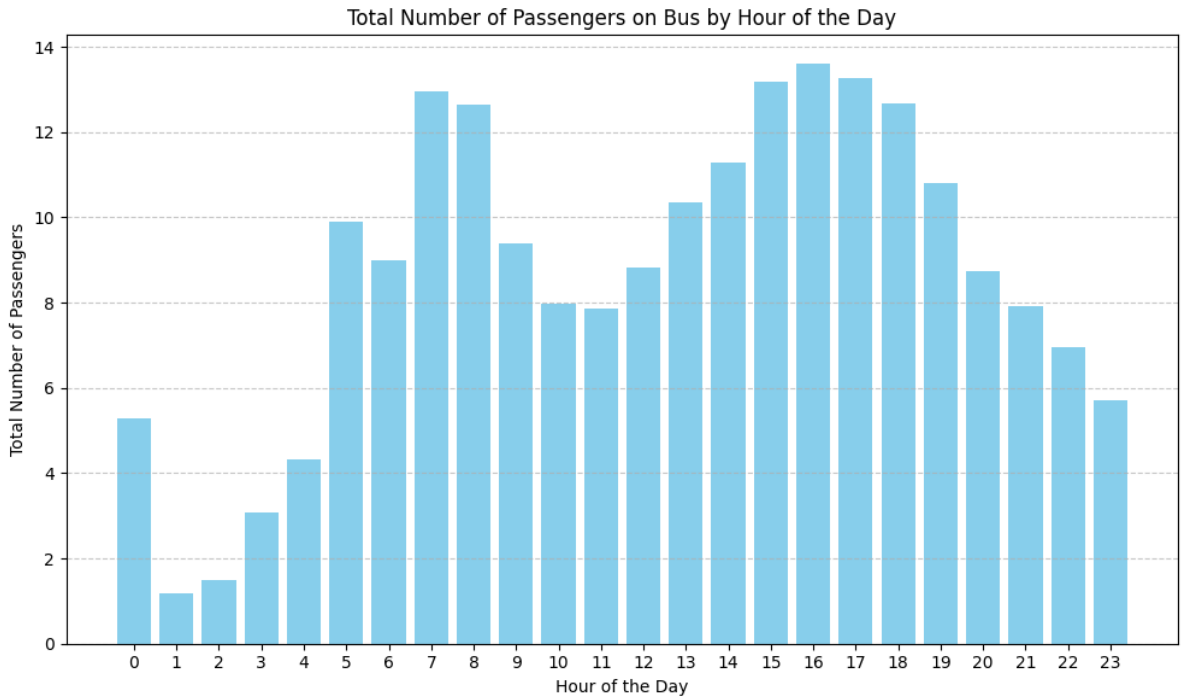
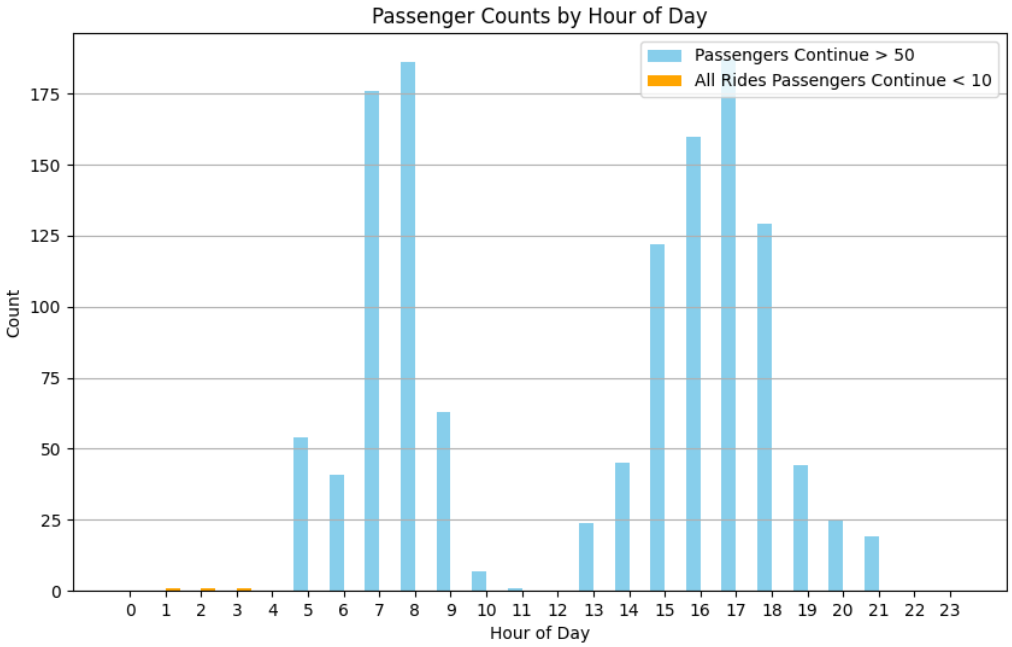
Data Exploration:

A graph of the average amount of passengers on each bus at different hours of the day:



The graph confirms our initial assumption: peak public transport usage occurs during mornings (7-9 AM) and afternoons (3-6 PM). Afternoon ridership increases and decreases more gradually compared to mornings. Based on this data, we recommend increasing bus availability during these peak hours.

A graph of hours that are too busy and hours that have too many buses.

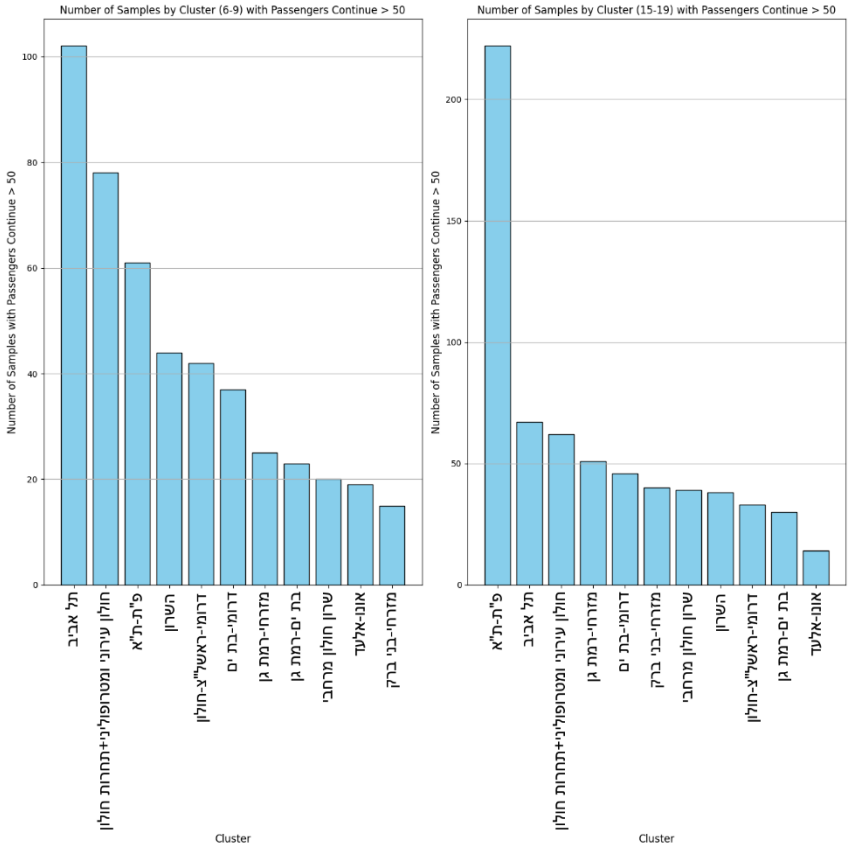


The blue bars represent the number of instances where passenger counts exceed 50 (estimated average bus capacity) within a given hour. Orange bars indicate rides where passenger counts never surpassed 10 throughout the route.

Blue bars effectively identify busy hours, while orange bars highlight potential resource inefficiencies regardless of location, cluster, or line number. Interestingly, the data suggests minimal "wasted" bus trips. However, during traditional rush hours (6-9 AM and 3-6 PM), particularly 7-8 AM and 4-5 PM, there's a shortage of buses.

This data is valuable for planning resource allocation (buses and drivers) to meet peak public transport demand.

.



The graph reveals varying levels of busyness across different clusters. Additionally, considering the proximity of most clusters, resource reallocation during peak hours might be feasible to enhance efficiency. For instance, during the 6 AM to 9 AM window, shifting buses from Bnei Brak lines to Tel Aviv lines could improve passenger distribution across buses.