**73-315 Project Proposal**

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With significant growth in population and consumption capacity in tourism, a convenient transportation service plays an essential role in the economy. Airplane and car rentals are the most typical modes of public travel. While air transport has earned significant focus for ages, car rental industry has raised people’s attention in the most recent decade, and it has experienced some drastic transformation during a relatively short period, becoming one of the most prominent industries in fleet transportation.

Manufacturers and consumers rely on various car rental schemes, which are cost-effective, such as leasing cars from their owners for a period of three years and then putting these cars on rental through app-based bookings. In addition, car rentals majorly contribute to curb the pollution level by reducing the volumetric sales of owned vehicles. Moreover, with increase in air traffic and growth in trend of online car booking, car rentals are the preferred options to travel, as cars are the most economical and faster mode of transportation. These advantages promote the growth of the market at an exponential rate.

Car rental companies, spread across the United States or other countries, face a problem of allocating cars to be rented among their various locations. Each location needs to have a selection of rental cars available for increased demand, but not so many sitting unused that they lose profits. With the added complication of renters who want to travel in one direction, for example, there is also a flow between rental locations. How do car rental companies control these factors, essentially a market within their own company, to meet consumer demand? One such method is the use of ‘drop-fees’ for one-way rentals to either discourage or encourage customer travel to specific locations. For instance, providing a zero drop-fee coupon for select trips saves the company money as it eliminates the need for workers to instead transport the vehicle while also meeting customer demand. Additionally, branches often prefer cars with in-state registrations as each branch bears the cost of any repairs performed on cars belonging to its fleet at the time of the accident/damage, as repair done out of state is often significantly more expensive.

For this project, we wish to analyze the car allocation model of a select car-rental company (possibly Enterprise) and propose an alternative solution which better meets consumer demands and branch needs.

**Proposed Sources**

1. <https://www.researchgate.net/publication/227427188_Modeling_and_solving_the_short-term_car_rental_logistics_problem>
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3. <https://etda.libraries.psu.edu/files/final_submissions/2098>
4. <https://www.statista.com/outlook/270/109/car-rentals/united-states>
5. <https://www.citylab.com/transportation/2019/05/car-sharing-apps-hourly-rentals-peer-to-peer-turo-getaround/589087/>