

1. Impacts of Automated Vehicles on Airport Landside Terminal Planning, Design, and Operations

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Source: *Transportation Research Record*, 2019; **ISSN:** 03611981, **E-ISSN:** 21694052; **DOI:** 10.1177/0361198119850473; **Publisher:** SAGE Publications Ltd, Article in Press

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Abstract: Income from parking, rental car facilities, and other ground access modes for most commercial airports in the United States is a significant component in revenue. With the emergence of automated vehicles (AVs), or so-called "self-driving vehicles," these fundamentals could change. Airport stakeholders need to understand the impacts of the emerging AVs to airport planning, design, and operation. If the impact hurts the operational resilience and financial sustainability of the airports, the stakeholders should come up with countermeasures to alleviate the impacts and to ensure the smooth operation and continuous growth of the airport. To serve these needs, this study quantifies the potential impacts of AV on airport parking and ground access by building a simulation platform and applying scenario analyses. Two airports are selected for case study: Tampa, FL (TPA) and San Francisco, CA (SFO). To fill in the gaps of historical data, statistical methods are used to generate inputs for study airports based on historical information of passenger demand, ground access mode split, and parking categories and durations. Furthermore, future scenarios are developed based on reasonable assumptions of the emergence of AVs. Outcomes of the case study show that the emergence of AVs will significantly affect airport operation if nothing as of now was changed. However, the impacts could be different for airports that are more auto-dependent versus those in metropolitan areas with various ground access options. Moreover, this study discusses possible strategies that can help airports generate revenue in the era of emerging AVs. © National Academy of Sciences: Transportation Research Board 2019. (34 refs)

Main heading: Airports

Controlled terms: Simulation platform - Vehicles

Uncontrolled terms: Airport operations - Automated vehicles - Commercial airports - Financial sustainability - Historical information - Metropolitan area - Scenario analysis - Terminal Planning

Classification Code: 431.4 Airports

Database: Compendex

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Data Provider: Engineering Village