

Transportation Network Companies

Impacts to Airport Revenues and Operations



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Above: Passengers wait for their rideshare pick-ups at Louis Armstrong New Orleans International Airport in Louisiana. Explosive growth in transportation network companies since 2014 has posed a challenge to airports, both in revenue extraction and management.

In most U.S. metropolitan areas, transportation network companies (TNCs)—for example, Uber and Lyft—provide on-demand transportation services. These companies emerged rapidly and now operate in ground transportation markets at all major domestic commercial airports. Although customers appreciate the convenience offered by these access options, the continued use of TNCs presents multiple challenges to states, regional transit authorities, municipalities, and airport operators.

In 2017, the Airport Cooperative Research Program (ACRP) published *ACRP Synthesis 84: Transportation Network Companies—Challenges and Opportunities for Airport Operators*, which identified the opportunities and challenges from ride apps that airport operators need to confront and manage (1). Some of the early impacts, identified from additional analysis of changing receipt volumes from parking and rental car transactions, indicated that the nonaeronautical revenue landscape and traditional space needs for

cars and parking were changing quickly and dramatically.

As researchers collected and summarized this information, it became clear that more research was needed to help airports develop strategies to better adapt to TNC operations. Additional research addressing these issues was published in early 2020. *ACRP Research Report 215: Transportation Network Companies (TNCs)—Impacts to Airport Revenues and Operations* is a reference guide for airport operators to identify strategies for adapting airport land-side access programs to reflect the evolution of ground transportation modes and their impacts on airport revenue and operations (2).



ACRP Research Report 215 documents how airport operators

- Develop permitting procedures and enforce regulations,
- Assign passenger drop-off and pick-up areas within the overall context of ground access operations,
- Manage vehicle staging and holding areas,
- Establish trip fees charged to TNCs and collect and confirm payment of such fees,
- Monitor and respond to revenue impacts and the effects on airport finances, and
- Update capital plans to support evolving ground transportation operations.

ACRP Research Report 215 presents best practices that have proven to be effective tools for airport operators to manage TNC operations and in developing sustainable revenue models. It examines TNCs from multiple perspectives: regulatory, financial, operational, and managerial. The research included a survey of large-, medium-, and small-hub airports, interviews with land-side managers, a disaggregate mode choice model, and a comprehensive review of the revenue and business impacts of TNCs.

Data Collection: Airport Survey and Ground Transportation Revenue

Both ACRP Synthesis 84 and ACRP Research Report 215 drew from a survey of the 100 largest U.S. airports that examined TNC experience and practices. The survey data contained detailed information about the TNC operations at each of these airports, the resulting access mode shares, and the revenues received from TNC fees. Reported and calculated TNC access mode shares ranged from 2 percent to 30 percent across the airports surveyed, with an average share of 13 percent. The data show significant increases in TNC use by air passengers over the period 2014 to 2017 (the most recent year of data provided in the survey).¹

¹ More detail on the survey data is available online at <https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4415>.

The survey responses indicate that airports have adapted to increases in TNC use in many ways, including improved wayfinding, managing pick-up and drop-off areas, providing holding lots, and imposing pick-up and drop-off fees that average between \$2.50 and \$3.

Corresponding to the increase in TNC use and fees, revenues from the TNC fees collected by airports have grown over this period—and most noticeably between 2015 and 2017, with a five- to tenfold increase in revenues. Over this same two-year period, taxi fee revenues declined by approximately 20 percent.

An important research task was to examine how TNCs have affected airport revenue and rental car transactions and the possible long-term consequences for overall airport financial performance. Airports have continued to realize sufficient revenues to support ongoing operations and to provide sufficient debt service coverage on outstanding airport bonds.

The team assembled data from three key sources: the Federal Aviation Administration Certification Activity Tracking System data, publicly available data from 37 airports, and proprietary data from several large-hub airports. Key findings include the following points.

GROUND TRANSPORTATION REVENUE

Ground transportation revenue per passenger has remained relatively flat, calculated using either total enplaned passengers or origin and destination enplaned passengers.

A recurring topic for airport operators is what constitutes a level playing field for commercial ground transportation operators. Of all the commercial ground transportation operators at airports, who should pay what fees? Airports have longstanding fiscal policies and business practices underlying these fees. At some airports, social equity considerations and living-wage goals now complicate the development of fee structures.

FINANCING

There has been no significant negative impact on near-term ability to finance

airport facilities. Airports have generated replacement ground transportation revenue sources, and airport operators generally have been successful at developing the revenue necessary to support capital programs.

Model Development, Application, and Results

DEVELOPMENT

Using the data from the airport survey, the research team developed integrated supply and demand models to estimate the effects of TNC growth and TNC-related pricing policies on airport access mode shares and revenues. These models describe the ways and how many people choose to travel to and from airports. The models were developed using previously collected passenger survey data for two case study airports: San Francisco International Airport (SFO) and Reagan National Airport (DCA). Those two models were used as the core demand component of the integrated supply and demand models and then were combined with data describing current ground access mode shares, fees, and revenues.



Photo: Karl Schultz, Flickr

Rideshare drivers and users are directed to designated pick-up and drop-off spots at San Francisco International Airport in California, one of the airports examined in ACRP research on TNCs at airports.

APPLICATION

Application of these models resulted in some interesting findings. Although TNCs drew most of their initial market share from taxis and parking, they also drew from other modes and now appear to draw market share from all of the major modal alternatives. The extent to which they draw market share from other modes depends on the competitive mix at each airport.

The price elasticities of demand for parking and rental cars are near -1.0 at one or both of the airports studied. This means that the reliable past practices of simply raising airport parking prices to increase revenues may now result in the reverse effect: further reductions in revenue.

Similarly, simply increasing TNC fees may result in shifts to lower-revenue access alternatives such as private vehicle drop-off, and thus these will not result in net increases to airport revenues.

The ground access-related revenue and fee structures used by airports result in complex interactions as a result of demand effects and significant differences in the amount of revenue derived from each mode's air passenger trips. The net result of fee changes can be very different if either or both of these effects are not appropriately accounted for.



Photo: Cory Doctorow, Flickr

ACRP Research Report 215 offers tools for airport operators to maintain efficient and effective TNC operations on terminal roadways, curbs, and staging areas.

The case studies of SFO and DCA demonstrate the value to airports of developing a tool that can estimate the effects of changing commercial ground transportation fee structures. The work required to build and apply an integrated disaggregate supply and demand model that can be used to properly calculate all of these effects is relatively straightforward. And, since the effort required to build a model that can be used both for ground

access planning and for revenue analysis is relatively small, airports may want to consider developing and applying their own versions.

Pulling it All Together

An important theme in *ACRP Research Report 215* is that airport operators need tools not only to manage current operations but also to seek insight into the consequences of changes to their operations, regulations, and revenue models. The result of this research comprises specific tools, guidelines, and policy levers that airport operators can use to support decision making in a rapidly evolving environment.

The report presents practices that encompass the issues airport operators frequently encounter in the management of TNCs. The report details 24 practices, organized into four categories:

- **Policy development and permits** focuses on broad initiatives and regulatory tools.
- **TNC-ground access management, operations, and analysis** covers land-side management tools available to airport operators for maintaining efficient and effective TNC operations on terminal roadways, curbs, and staging areas.



Photo: Tony Webster, Flickr

Passengers at Honolulu International Airport in Oahu, Hawaii, are greeted not only with "aloha" but also an advertisement for ridesharing. ACRP research examined the effect of TNCs on modal market share.

- **Financial and business development, revenue analysis, and capital programming** includes methods for monitoring revenue impacts, including a model that can estimate the broad impacts of trip fee changes on mode share and revenue based on supply and demand.
- **Technology** covers current and emerging practices that use automated vehicle identification, PIN matching, and other technology-based tools and concepts.

These practices are packaged to inform a variety of audiences that have direct involvement in TNC operations at airports. Executive-level managers, planners, and legal staff are provided tools to assist with ground access policy development and managing their airport's TNC regulatory framework. Land-side supervisors will benefit from information to assist with their day-to-day responsibility for ensuring the safe and efficient operation of ground transportation operations and facilities. Also offered is information for transportation engineers and planners responsible for analyzing curb operations and developing capital improvements.

Finance and business development analysts can find the relative contributions and trends of commercial ground transportation revenue as well as impacts on airport finances and capital programs. Historical commercial ground transportation data and activities are included to assist information technology staff responsible for implementing, tracking, and identifying trends.

Summary

The rapid introduction and expansion of TNC activity generated immediate regulatory and revenue management responses from airport operators to ensure safe vehicle operations, vetting of TNC

Related TRB Titles

- *Special Report 319: Between Public and Private Mobility—Examining the Rise of Technology-Enabled Transportation Services*
- *ACRP Report 146: Commercial Ground Transportation at Airports*
- *TCRP Research Report 195: Broadening Understanding of the Interplay Among Public Transit, Shared Mobility, and Personal Automobiles*
- *ACRP Project 03-47: Rethinking Airport Parking Facilities to Protect and Enhance Non-Aeronautical Revenue*

drivers, adequate insurance coverages, and trip fees sufficient to support land-side management and fiscal objectives. Airports progressed from initially reacting to TNCs to the current situation in which they are actively managing and controlling TNC operations in keeping with broad strategic goals.

As airport operators gain experience working with TNCs, they adjust operations, fee structures, capital programs, and technology to more effectively incorporate ride apps into their commercial ground access programs. Accordingly, the *Reference Guide* describes strategic approaches and practical tools that can serve as a resource to support ground access programs that are consistent with an airport's overall policy goals.

Additional work to assist airport operators in the changing landscape from ride apps can be found in ACRP Project 03-47, "Rethinking Airport Parking Facilities to Protect and Enhance Non-Aeronautical Revenue."²

² For more information on ACRP Project 03-47, see <https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4426>.

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REFERENCES

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