Airport-MPO Collaboration: Challenges and Opportunities for Cooperative Megaregional Transportation Planning

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16. Abstract

This study explores the challenges and opportunities that aviation market changes present for existing transportation governance structures and institutions. In particular, we examine the capacity of existing planning institutions–largely siloed in separate air and surface transport planning domains—to address the megaregional dynamics associated with aviation sector shifts. For instance, how do U.S. airport ownership and governance models enhance or hamper airport engagement in regional and megaregional transportation planning? Extensive review of planning documents and interviews with key informants allow us to report on the relationship between airport planning and planning by MPOs.

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Executive Summary

Changing dynamics in U.S. aviation have significant reverberations across ground transportation systems within and beyond metropolitan regions. Yet, studies of transportation planning in the U.S. have paid generally little attention, however, to the influence of aviation trends on surface transportation demand in and among metro regions. Further, most studies of the metropolitan planning organizations (MPOs) responsible for federally required transportation plans and spending programs in urban regions say little about the role of airports in transportation decision-making.

This is the first study of its kind to examine the state of connections between regional surface transportation planning and airport and air travel panning. We aim to discern the formal and informal linkages between the different governance structures underpinning airport operations and broader regional transportation planning. How do airport sponsors, or owners, interact with MPOs and other key transportation agencies responsible for the planning, operation, and improvement of regional and megaregional transportation systems? Second, we aim to identify the potential for advancing integrated air-and-surface transportation planning, given the institutional landscape of airport and regional transportation governance and given aviation market changes that increasingly stretch airport demand to the megaregional scale.

We focus on the Texas Triangle, one of the fastest growing megaregions in the country and home to two large hub airports as well as several MPOs. Extensive review of planning documents and interviews with key informants allow us to report on the relationship between airport planning and planning by MPOs. Our case study shows that level of collaboration between MPOs and airports varies across the megaregion. We observe a higher degree of MPO involvement in Dallas-Fort Worth region, reflected in its MPO's (NCTCOG) governance structure, data collection, long-range planning process, inter-agency collaboration in airport related planning and initiative regarding megaregional planning studies. However, for other regions, we find comparatively limited airport-MPO institutional overlaps or formal coordination. Our study contributes to planning practice and scholarship by revealing potential areas of focus for improved airport-MPO collaboration; these include airport representation on MPO boards and committees, the inclusion of airport issues in MPOs' long-range plans, airport-MPO data and information exchange, collaborative funding for

ground access projects, and integrated air-and-surface transportation planning in Regional Aviation System Plans (RASPs).

Chapter 1. *Introduction*

Integrated air-and-surface-transportation planning is critical for managing traffic congestion on regional roadways and promoting airport access. Airports are major trip generators, drawing passengers from around the region and—increasingly—beyond, and planning for airport access via local roads, transit systems, and highways requires airport sponsors, metropolitan planning organizations (MPOs), state and regional transportation agencies to work together (1). However, underlying institutional structures, funding constraints, differing agency priorities, and siloed planning processes for air and surface transport all can limit such efforts.

These challenges to collaboration are exacerbated by aviation industry dynamics that are expanding the geographic scale at which airport access occurs. The widely observed phenomenon called "airport market leakage" means that air travelers increasingly make longer distance trips, often by private vehicles, to access key hub airports with higher levels of service (1). This dynamic has implications for regional and, importantly megaregional, surface transportation systems that must serve vehicle and transit trips generated by air travel and for the airport sponsors and transportation agencies that together must improve those systems to meet growing demand for airport access across multiple regions.

Studies of transportation planning in the U.S. have paid generally little attention, however, to the influence of aviation trends on surface transportation demand in and among metro regions. Further, most studies of the metropolitan planning organizations (MPOs) responsible for federally required transportation plans and spending programs in urban regions say little about the role of airports in transportation decision-making.

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airport and regional transportation governance and given aviation market changes that increasingly stretch airport demand to the megaregional scale.

Chapter 2. *Context and Background*

Achieving an effective, integrated, and intermodal transportation system in complex metro areas depends on the planning and investment decisions made by MPOs. Federal law stipulates that any urbanized area with a population over 50,000 must have a designated metropolitan planning organization (MPO) to plan for and program significant transportation investments. MPO governing boards – comprised of a region's city and county elected officials and state and local transportation agency representatives – provide for local and state input on investment decision-making. Any regional transportation projects using federal dollars must align with the board-approved 20-year long range transportation plan and appear in the MPO's board-approved 5-year spending program, or "transportation improvement program" (TIP).

The U.S. government looks to MPOs' planning and investment decisions to provide for the "safe and efficient management, operation, and development of surface transportation systems," i.e. regional roads and transit systems, to serve the movement of people and goods. Nonetheless, air travel and airport planning developments are clearly relevant to MPOs' responsibility for integrated and intermodal metropolitan transportation. Federal guidelines explicitly direct MPOs to develop their regional plans and TIPs with "due consideration" of other planning activities in the region – including planning for airport operations – and to coordinate and consult with the officials responsible for those activities (US Code TITLE 23, Ch. 1, § 134).

Significant recent changes in the aviation industry give MPOs important reasons to consider the role of airports in regional—and interregional—travel. The geography of airport catchment areas has widened dramatically since the mid-2000s, as six major US airlines have merged into three and also consolidated their networks and air service around key hub airports (2,3). Consequently, the service gap between large airports and surrounding small and medium sized airports has increased significantly over time.

The consolidation of air service at large airports has led to airline travelers increasingly to choose a larger "substitute" hub airport, typically 100 to 300 miles away, over the more proximate local airport, in order to access cheaper air fares, non-stop routes, and more frequent flights, drawing scholars' and professionals' attention to airport market leakage (2-4). The magnitude of passengers leaking from proximate to more distant airports is significant. One study of airports in the Piedmont

Atlantic, Texas Triangle-Gulf Coast, and Arizona Sun Corridor megaregions estimated that roughly 16 to 32 percent of passengers shifted from local airports to substitute hub airports (1).

Market leakage dynamics also transform airport access and expand the spatial scope of airport-to-airport connections, demanding a tighter coupling of airport and surface transport planning. As air passengers drive further to hub airports, market leakage impacts reverberate regionally and megaregionally, increasing traffic congestion and air pollution, as well as shifting economic development from smaller to larger cities. For interstate highways connecting smaller airports with hub competitors, air passenger leakage contributes 1–3 percent of average daily traffic on heavily congested sections and 10–12 percent of traffic on lower density sections by some estimates (1).

Existing transportation planning institutions are not well matched to integrated MPO-Airport planning dynamics. Airports, for one, have limited influence over the air service that is present at their airports (as airlines decide the quantity and destination of routes they serve); however, this dynamic is changing as large airports employ lucrative incentive packages to encourage airlines to launch new routes to targeted destinations (5). Moreover, the cities and local authorities operating individual airports within a megaregion typically compete more than collaborate, as air service is viewed increasingly as a means for cities to attract businesses, residents, tourism, and economic development (6-7).

Additionally, MPOs themselves are structured to address metropolitan but not megaregional transportation challenges. Some MPOs have established working agreements with neighboring MPOs within a megaregion context, but such interactions are limited (8). Furthermore, planning activities for airports and surface transportation are fairly siloed, complicating the integration of air and surface transportation concerns in the planning process. Federal guidance encourages MPOs to consult with airport partners but does not require airport representation on MPO boards (9). We find in a related study that only 11 percent MPOs (45 of 404) provide voting seats for airports and only 2.5 percent MPOs (10 of 404) have dedicated aviation committee (10). Finally, federal law generally prohibits airports from spending revenue on projects outside airport territory or on roadway infrastructure not exclusively used by airport users (11).

Various federal government resources acknowledge the importance of integrated air-and-surface transportation planning and recommend best practices for overcoming such challenges. The

FHWA and FAA's "Intermodal Ground Access to Airports: A Planning Guide" detail guidelines how to improve airport ground access both on and off airport property, in part by initiating collaborative data collection by airports and MPOs to characterize airport access travel (12). Other guidebooks encourage airport officials to participate in MPO meetings and to address ground transportation issues through regional planning processes (13). A separate ACRP self-assessment tool helps airports and surface transportation agencies to evaluate how inter-agency relationships might facilitate collaboration in airport and regional transportation planning (14).

Additionally, the optional Regional Aviation System Plan (RASP) presents a unique avenue for addressing critical aviation issues in regional planning process. MPOs with large and medium hub airports can be approved by FAA to conduct RASP which complements FAA, state and airport plans (15-16). MPOs, through RASPs can address critical aviation issues such as multimodal integration, air quality and noise issues, integration of land use and airport planning, or alternatives for managing aviation demand across multiple airport system (MAS) in a megaregion. Yet, implementation of RASP recommendations often faces multiple challenges, including airport-to-airport competition, the RASP's inherently advisory status, and the limited room for influencing an airport's capital investment decision (17).

In spite of the growing importance of intermodal collaboration, it is unclear whether and how existing institutions for airport governance and metropolitan transportation planning can make important connections across the siloed domains for air travel, airport, and surface transportation planning. For example, to what extent airport sponsors and MPOs engage in regional and megaregional transportation planning? How specific governance structures contribute to or hamper such planning efforts? What lessons can be learned from efforts in different regions to address the role of airports and air travel within regional and megaregional planning? In this study we seek to answer these questions by following a case study approach.

Chapter 3. *Case Study Approach*

We set our case study region as the Texas Triangle megaregion to understand how and to what extent airport sponsors and regional planning agencies collaborate to address aviation and airport related issues in transportation planning, within individual metropolitan regions at the megaregional scale. We considered a number of criteria to select a megaregion for case study. The presence of at least two or more large hub airports would allow us to examine interactions between a single MPO and airports within or near its planning service area as well as to consider the dynamics among multiple airports and MPOs within a megaregion. We also looked for cases where adjacent hub airports might compete with one another, making the potential for airport market leakage an important factor when planning for regional and megaregional transportation improvements. Exploring the influence of different kinds of institutional structures on planning was a second objective of our study. Thus, we also considered the constellation of airport sponsors within a regional or megaregional airport system, seeking a case where we could observe a variety of governance arrangements at work, for the airports as well as the MPO(s).

To develop the case, we sought first to understand the landscape of transportation planning in the region. In particular, we aimed to develop an initial understanding of the organizations whether and how airport planning or aviation issues fit in and to what extent regional transportation planning processes integrate airport and surface transportation planning concerns (Table 1). We began by reviewing planning and organizational documents of the airports, MPOs, and key transport agencies in the region, drawing information from public websites.

Building on our desk research, we next interviewed 12 key informants from MPOs and airports within the four regions in the Texas Triangle. We used these semi-structured interviews to enhance and clarify our understanding of the airports' and MPO governance structures; the connections between airport-specific plans (e.g., Regional Aviation System Plans) and regional surface transportation plans by MPOs, and the megaregional dimensions of air travel, including airport market leakage dynamics and related impacts on regional/megaregional surface transportation.

Table 1: Areas of Inquiry Used to Develop Case Study

Topic	Variables/main issues	Source/documents
Airport governance	• Airport ownership • Airport operation • Board structure and appointment	Airport website, interview
Airport representation in MPO governance	• Airport representation on MPO policy board/ technical committee • Dedicated airport committee for MPO	MPO website, interview
Surface transportation issues in airport plans	• Demand-capacity assessments of airport and regional roadways • Airport related projects discussed in regional transportation plan • Airport ground access improvements (roadway/transit) discussed in regional transportation plan	Airport Master Plan (AMP)/Airport strategic plan
Aviation and airport issues in regional transportation plans	• Specific goals, policies and programs related to aviation and airports • MPOs method of travel demand forecasting and use of airport data	Long Range Transportation Plan (LRTP); TIP joint airport/MPO Planning studies
Geographic aspects of airport passenger travel	• Origin and destination data for airport passengers • Regional air travel demand forecast	Airport Passenger Survey Reports/Airport Master Plans/LRTP/ Regional Airport System Plan (RASP)

Chapter 3. *Texas Triangle Megaregion*

Texas Triangle is one of the 11 emerging US megaregions identified by the Regional Plan Association (RPA) in its *America 2050* report, a framework to guide economic growth in the 21st century U.S. (18). The megaregion contains over 22 million residents in 80 counties stretching nearly 70,000 sq miles. Over the past three decades (1990-2020), population in the Triangle increased by just under 11 million, the most growth experienced by any megaregion in the US. Five of the nation's 15 largest cities are in the Texas Triangle, and Triangle metros are highly complementary to each other in their economic roles (19). For instance, Houston specializes in oil and gas industry, Austin in tech industry, Dallas-Fort-Worth in service and distribution, and major export industries in these metro areas support each other through forward and backward linkages (19-20).

The Triangle's high level of economic integration is reflected by the high volume of goods and passenger flows among its constituent metro areas. Air transportation plays an important role in this inter-metro linkage. In fact, Texas Triangle has one of the highest intra-megaregional air passenger flows among all megaregions (21). Air routes connecting Dallas-Fort Worth and Houston, Dallas-Fort Worth and San Antonio, and Dallas-Fort Worth and Austin are among the busiest short-haul intercity routes in the USA (22).

There are 10 primary commercial airports in Texas Triangle, including two of the busiest U.S. airports: Dallas-Fort Worth International Airport (DFW) and George Bush Intercontinental Airport (IAH) (Figure 1), which rank 2nd and 12th respectively in annual passenger enplanements (FAA, 2021). Four other hub airports are Dallas Love Field (DAL), Austin Bergstrom International Airport (ABIA), San Antonio International Airport (SAT), and Houston's William P. Hobby Airport (HOU). Governance structures also vary among these airports, with DFW is governed by an airport board (a special purpose authority) and other airports operated by aviation departments of the owner cities.

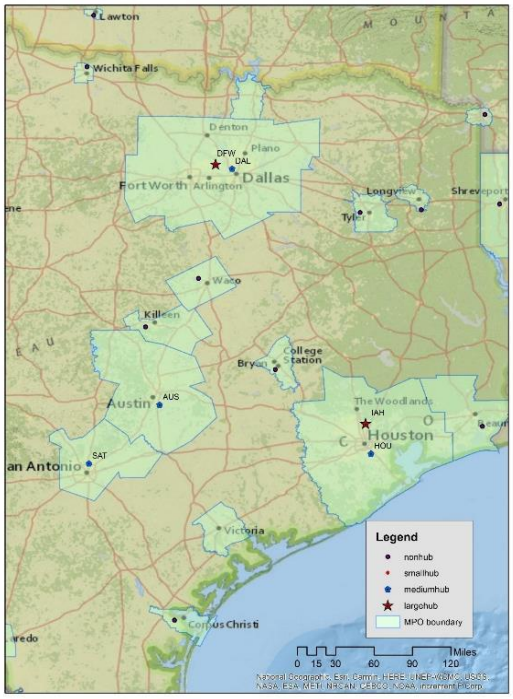

Figure 1: Airports and MPOs in Texas Triangle Megaregion

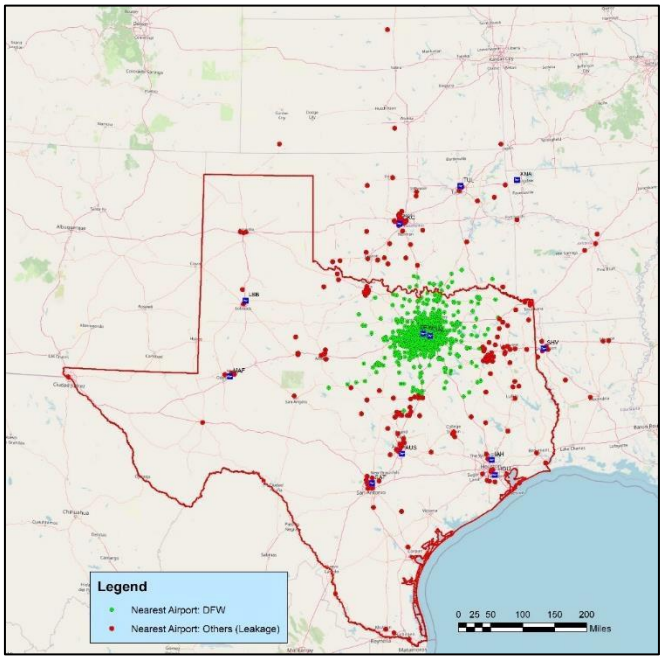

Figure 2: Trip origins of airport passengers traveling from DFW airport (based on NCTCOG airport passenger survey data, 2015)

The presence of multiple competing airports and their overlapping catchment areas make the Texas Triangle a rich case for examining connections between airport planning and regional transportation planning. The distance separating airports within the Triangle ranges from 80 miles to 240 miles, and competition among the airports is apparent. The numbers of destinations and flight options offered by large airports such as DFW enables those airports to draw passengers from neighboring airports, even those beyond Texas (23). Indeed, Ryerson and Kim (2018) highlight the service differential between DFW and neighboring airports and estimate that 27% of Oklahoma City (OKC) air passengers and 32% of Shreveport Regional (SHV) passengers "leak" to DFW (1). The Figure 2 illustrates how DFW bound air passengers are drawn from catchment areas of airports in Texas and neighboring states such as Oklahoma, Louisiana, and Arkansas.

Chapter 4. *Case Study Result*

To develop the case study, we first examined the organizational structures underpinning transportation planning for the region and its airports. We asked whether airport representatives had a dedicated voting seat on the MPO policy board or whether airport concerns were addressed through other MPO mechanisms like technical committees or subcommittees dedicated to aviation. Next, to understand whether and how planning efforts for regional surface transportation and for airports might intersect, we examined how MPO-led long range transportation planning addressed aviation. Below, we report our findings for each of the four regions within in Texas Triangle megaregion: 1) North Central Texas, 2) Austin, 3) Houston-Galveston, and 4) San Antonio.

North Central Texas Region

The North Central Texas Council of Governments (NCTCOG) is the region's local government association and its MPO. Its governance structure provides a formal institutional platform for airport representation in the MPO through its policy board, the Regional Transportation Council (RTC), and its dedicated aviation advisory committee. The NCTCOG policy board, the RTC, consists of 44 members, including elected officials from local cities and counties; representatives of area transit authorities, TxDOT, the North Texas Tollway Authority; and one board member from DFW Airport.

A 32-member Air Transportation Advisory Committee (ATAC) assists the policy board by monitoring the regional aviation system, facilitating stakeholder collaborations, ensuring compatible land use and environmental protection, and working with NCTCOG and TxDOT to develop regional transportation projects and capital improvement programs. In particular, it advises NCTCOG staff preparation of the Regional General Aviation and Heliport System Plan, which addresses all civil aviation aircraft operation except commercial air carriers. The committee includes officials of commercial and general aviation airports and representatives from local jurisdictions, industry groups, educational institutions, and major regional aviation employers.

The region's long range plan, Mobility 2045, includes a separate chapter for aviation and identifies both broader regional goals and specific policies and programs related to airport and aviation planning. The plan addresses surface access planning, data collection and performance tracking,

continuous aviation system planning, compatible land-use planning, and coordination of unmanned aircraft systems. The MPO also conducts periodic surveys of airport passengers originating at DFW and DAL, which NCTCOG officials use to understand patterns in airport generated trips, including trip origins, mode share, further to identify ground transportation needs within the long range planning process.

The NCTCOG prepares the RASP, which provides regional airport demand-capacity analysis and recommendations and is an important regional input for the state Aviation System Plan prepared by TxDOT. The RASP analysis helps TxDOT to identify aviation investment priorities for receipt of FAA State Block Grant Program (SBGP) funds. Because the RASP is limited to GA facilities, however, two primary commercial airports (DFW and DAL) are not included in the plan. NCTCOG officials interviewed for this study say the RASP mainly serves to fulfill requirements for GA facilities to receive federal planning funds. Large airports like DFW and DAL do not seek NCTCOG involvement because they already have their own resources for planning.

Apart from long range plan and RASP, we identified the following areas where MPO's involvement is prominent in airport related planning:

- Transit connection to airport
- Airside emission reduction
- Roadway projects connecting to airport
- Megaregional initiative regarding High-Speed Rail

Transit Connection to Airports: DFW airport is located at the intersection of two cities served by two separate transit agencies (DART of Dallas and The T of Fort-Worth). Historically, NCTCOG's collaboration with transit agencies played important role connecting DFW with both cities. In 2008, NCTCOG initiated a conceptual engineering and funding study of the Cotton Belt Rail Corridor connecting DFW with northernmost DART cities. In 2010, NCTCOG and DART signed a memorandum of understanding (MoU)to implement Cotton Belt Corridor rail service, to provide crucial connections to DFW airport across multiple transit routes (TexRail line with Fort-Worth, DART orange line at DFW, Green Line in Carrollton and Red Line in Plano area). In 2017,

RTC approved $100 million for the Cotton Belt Corridor project, currently being implemented by DART.

Long-range regional transportation plans crafted by NCTCOG—like Mobility 2030 (2007)—have long envisioned a rail connection to DFW airport. In 2002, NCTCOG jointly sponsored the DFW Rail Access Study together with DFW Airport, DART, the T to explore potential light rail alignments serving the DFW central terminal area. It followed DART's 2000 corridor-level study to consider connecting DFW airport to DART's extensive light rail network. The project's final phase connecting to the airport terminal opened in 2014. Effective collaboration among NCTCOG, DFW Airport, DART, TxDOT, and federal agencies (FTA and FAA) was crucial to project implementation. DART sponsored the project while DFW airport built the new station through its terminal renewal program.

Airside Emission Reduction: Air quality planning is another area presenting opportunities for collaboration between NCTCOG and regional airports. The 10-county NCTCOG region is a nonattainment area given high concentrations of ground level ozone. In 2018, DFW airport authority requested NCTCOG's assistance to fund electric buses to reduce airport access-related air pollution. After extensive negotiations, NCTCOG successfully brokered a partnership to purchase 4 electric buses and associated infrastructure and equipment using $3.5 million in regional toll revenue funds.

Roadway development projects connecting to airport: NCTCOG has collaborated with airports on a number of ground access projects. The 'East-West Connector' project, featured in the LRTP as a "Regionally Significant Arterial," is currently under construction and expected to enhance DFW's connectivity with the regional highway system. The proposed four-lane project would combine federal funds with local airport matching funds. According to airport officials, a significant challenge involved in airport ground access project is funding, particularly managing local match for this project. Federal restriction on airport revenue diversion is another barrier. Due to this funding restriction, the TIP (FY 2019-2022) approved funding for two-lane road construction (instead of four-lane).

The DFW Connector project is another significant investment highlighting the importance of collaborative funding and private-public partnership (PPP) for airport ground access projects. The

Connector was included in NCTCOG's LRTP (Mobility 2030) and approved in the TIP (2008-2011). The project cost totaled 1.02 billion of which $696 million was funded by state gas tax, $261 million by Federal funds as part of the American Recovery and Reinvestment Act (ARRA) and $127 million in Proposition 14 bonds used for right-of-way acquisitions. The unique features of this project, including the large size of infrastructure development with managed express lanes, provided considerable advantage of design-build delivery system through public-private partnership (PPP).

Megaregional Initiative Regarding HSR: NCTCOG is also currently studying high-speed transportation alternatives to connect Dallas-Fort Worth and other parts of the megaregion. The MPO has engaged airports in the DFW region as study stakeholders. MPO officials interviewed here reveal that airport officials, especially at DFW, are interested HSR more for it freight than passenger capabilities. For instance, a new HSR connecting Dallas and Fort Worth could allow DFW airport to relocate its freight terminal off-airport and to use the HSR or hyperloop for instantaneous freight-airport connections. Freeing up on-airport space currently used for freight operations could allow the DFW airport to expand runways and passenger terminals and increase revenue. Further, NCTCOG officials believe that high speed rail would expand DFW's passenger market, by enhancing first and last mile airport connectivity.

Austin Metropolitan Region

In the Austin metropolitan region, direct channels for airport engagement in the MPO are limited, and there is little institutional overlap between the MPO and the Austin Bergstrom international Airport (ABIA). The Capital Area Metropolitan Planning Organization (CAMPO) 22-member Transportation Policy Board (TPB) is assisted by a Technical Advisory Committee (TAC), but neither the board nor the TAC includes an airport representative. Nor is there an airport related committee of the MPO to coordinate aviation and MPO activities.

Both MPO and airport staff interviewed for this study also report that communication between airport and MPO officials is infrequent. Nonetheless, airport officials interviewed for this research report that ABIA's status as a City of Austin-owned facility means that city representatives (councilmembers) active on the MPO indirectly represent the airport's interests.

In contrast to the Dallas-Fort Worth region, there are no MPO-led airport-related studies such as RASP or airport passenger travel survey conducted for the CAMPO region. The MPO's long range transportation plan highlights the growing demand for air cargo facilities in ABIA but offers only broad policy recommendations for multimodal freight transportation. Further, the MPO's plan contains no specific goals, policies, or programs for integrating surface and air transportation.

The MPO officials we interviewed acknowledge, however, that engaging ABIA in their ongoing regional planning activities important. Further, they point to a number of current or recent MPO efforts that relate directly to the airport's presence in the region. Recently, CAMPO worked with the City of Austin on the Bergstrom Spur Corridor Study to examine the potential for redeveloping an abandoned railway track as a multimodal transportation corridor linking to ABIA. The proposed corridor is expected to increase transit access to the airport. The study includes airport officials among other stakeholders on its steering committee.

CAMPO is also conducting a joint corridor study with the Alamo Area MPO in San Antonio to address increased inter-city travel demand between Austin and San Antonio. CAMPO officials believe this collaborative effort could benefit airport passengers, as many air passengers drive to Austin Bergstrom from San Antonio.

Houston-Galveston Region

The two hub airports (IAH and HOU) in Houston-Galveston region are owned and operated by City of Houston under Houston Airport System (HAS). HAS is represented in MPO through the Transportation Advisory Committee (TAC) of Houston-Galveston Area Council (HGAC). The 42-member Transportation TAC includes one voting member from HAS. However, unlike NCTCOG, HGAC does not include any airport representative in their governing board - the Transportation Policy Council (TPC). Nor any dedicated aviation committee is present to coordinate airport and MPO planning.

The TAC offers formal communication between airport and MPO officials. However, project specific collaborations and joint planning initiatives between MPO and airport are limited in HGAC region. The Long-Range Transportation Plan (LRTP) includes general goals, performance measures and strategies, however, no specific goals and policies related aviation and surface access

to airports are mentioned in the plan. Also, there is no joint study or airport passenger survey conducted by HGAC to address aviation issues in regional planning.

HGAC prepares the Regional Aviation System Plan (RASP) for the 26 public use general aviation airports located in the HGAC area. The plan includes inventory analysis and forecasts for general aviation operations and recommended projects and policy changes at the Federal and State levels. The principal outcome of RASP is an "optimal plan" over 20 years' time horizon, which includes the projects listed in TASP and project recommended by RASP to accommodate future demand. The master plans of IAH and HOU have analyzed the demand-capacity of existing roadway infrastructure connecting to the airports. Both plans have identified future transportation improvements in vicinity of airports, recommended in the LRTP and TIP. The HOU master plan has evaluated alternative strategies to accommodate future light rail connection. Airport officials informed that they are coordinating with Houston Metro (transit agency) regarding proposed transit connection to HOU (extension of the Green Line and Purple Line). However, the proposed plan is at very initial stage; airport officials see the opportunity of more intensive collaboration in the later phase of the project.

San Antonio Metropolitan Region

Like HGAC, MPO's technical committee is the only way of formal communication between airport and MPO. However, San Antonio International Airport (SAT) does not hold a voting seat in MPO boards (neither policy committee nor technical committee). The technical committee (TAC) includes one SAT representative, who is a non-voting member but plays more of an advisory role in the technical committee. The principal task of the airport representative is to inform MPO about the ongoing Strategic Development Plan of SAT. Although SAT does not hold a voting seat on MPO board and has little ability to influence MPO's policy level decision, presence of an airport representative in TAC meetings has created a new channel of communication between these two agencies. According to MPO officials, the SAT representative, since started attending MPO's meeting from 2018, has been assisting MPO's planning by providing important technical inputs regarding the future plan of airport expansion, for example, land use compatibility, noise abatement, and improvement of roadways connecting to the airport.

SAT master plan analyzed demand-capacity of the roadways surrounding the airport based on AAMPO travel demand model and aviation forecast. Unlike master plans of other airports, it includes regional road network, not limited to roads that fall inside airport territory. The plan also identifies necessary roadway improvements and a list of proposed projects in the TIP. Recommendations on transit connection (Vision 2040 Plan, ConnectSA) are also extensively discussed in the plan. However, aviation and airport issues got less priority in MPO's plan. The Long-Range Plan (Mobility 2045) provides a brief general discussion about airport. However, there is no specific goals, policies and programs included in the plan. Also, there is no MPO-led airport related studies such as RASP, or airport passenger surveys conducted for San Antonio region.

Chapter 5. *Discussion of Results*

Airports are increasingly becoming important in regional and megaregional planning, as demand of air passengers are growing over time, particularly at hub airports. The changing dynamics of aviation industry draw further attention of transportation scholars and professionals to the linkages between airport and surface transportation planning. Based on the case study, described above, we observe the following four areas of focus to foster MPO-airport collaboration in regional transportation planning.

- Institutional structure/governance
- Integration of plans
- Funding
- Megaregional planning

Table 2: Institutional overlaps between MPOs and Airports

		Dallas Fort-Worth (NCTCOG)	Houston-Galveston (HGAC)	Austin (CAMPO)	San Antonio (AAMPO)
Airport representation in MPO	Airport holds a voting seat in MPO policy board		×	×	×
	Airport holds voting seat in MPO technical committee			×	×*
	Presence of dedicated airport/aviation committee		×	×	×
MPO leads the RASP				×	×
LRTP includes specific goals/policies/programs related to aviation and airport			×	×	×
MPO conducts airport related survey/data collection			×	×	×
MPO conducts special study related to airport ground access		×	×	×	×

**SAT holds a non-voting seat in AAMPO technical committee*

Institutional structure/governance

Our review of the literature and examination of MPO planning in the Texas Triangle reveal modest functional overlaps and formal coordination of planning activities between airports and MPOs. In most regions, formal institutional mechanisms connecting airport and regional surface transport planning are missing. Airport representation on MPO boards is generally uncommon, and even fewer MPOs have aviation-specific working groups.

The MPO serving Dallas Fort-Worth is a notable exception. The NCTCOG policy board and aviation advisory committee provide a useful platform for inter-agency collaboration in regional transportation planning. Although the committee is mainly focused on specific aviation related activities such as UAS, drone operation and NextGen technologies, regular meetings and interactions through this committee have created a durable communication network between airport and MPO officials. This communication network, enabled by formal institutional mechanism, facilitated broader collaboration in regional transportation such as conducting joint studies, partnership in collaborative projects and exploring possible funding opportunities (e.g., East West Connector Project, airside emission reduction, Cotton Belt Rail Corridor to DFW).

Integration of plans

Federal law requires the LRTP to be comprehensive, considering all aspects of the regional transportation system and all possible modes, including aviation, and to be developed by MPOs in cooperation with state, local governments, and transportation operators, including airport sponsors. However, the lack of specific federal guidance about how the regional transportation plan can or should address airport ground access issues presents a critical gap in regional planning practice.

Our examination of the Long Range Transportation Plans of Texas Triangle MPOs suggests that it is more common for the LRTPs to provide little or no discussion related to airports. That said, the NCTCOG LRTP addresses airport ground access more thoroughly.

The preparation of Regional Aviation System Plans, or RASP, presents another opportunity to connect planning for regional surface transportation with airport planning. Two MPOs in our study area – NCTCOG and HGAC conduct such plans. However, both MPOs focus the RASP on

GA facilities without considering primary commercial airports, thus the full scope of these plans remains underutilized. We learn in interviews with MPO officials that a primary objective of RASP plans is to guide state aviation system planning and to qualify GA airports for State Block Grant funding. Further, MPOs are reluctant to interfere with planning for primary commercial airports, as they have their own funds to conduct their own master plans. MPO officials are also skeptical that an MPO-led RASP, even one that includes primary commercial airports, would influence airport development, as MPOs have no authority and funding decisions over the airports.

These challenges aside, we also find evidence that MPOs can use the RASP process to identify critical aviation issues and integrate different transportation modes, particularly where multiple hub airports are present in the same megaregion. The RASP produced by the Regional Airport Planning Committee (RAPC) in the San Francisco Bay Area provides a good example. Representatives from the Bay Area MPO (Metropolitan Transportation Commission) worked on the Committee alongside the region's Association of Governments, its major airports, and other key regional agencies responsible for air quality and conservation. The resulting RASP considers demand management strategies to guide airport master planning, identifies surface transport needs for major airports, and analyzes the environmental effects of airport development. The RASP also informs the regional plans prepared by the MPO and the other agencies on the Regional Airport Planning Committee.

State statutes can also institutionally support for MPO-airport collaboration in regional planning. California law (SB-10) requires the San Diego County Regional Airport Authority (SDCRAA) and the region's MPO—the San Diego Association of Governments—to coordinate airport multimodal planning. Following the law, the airport develops the RASP and the MPO develops a corresponding Airport Multimodal Accessibility Plan (AMAP), leading the MPO to outline a multimodal airport access strategy that includes future transit, roadway, and high-speed rail improvements.

Funding

Funding structure of US transportation systems follow separate tracks for different modes. FAA administers the federal Airport Improvement Program (AIP) which provides federal grants to eligible projects for airport development. Another major source of airport fund is Passenger

Facility Charge (PFC) program, which allows airport sponsors to impose fixed charge to airport passengers for using the facility. Project eligibilities for both programs are more or less same except few differences. Usually, airport ground access projects funded by federal programs and airport revenues are limited to airport property and exclusive to airport use, as mandated by federal law. Our discussions with airport and MPO officials revealed several challenges in funding airport ground access projects, which are typically intermodal, involve significant investment, and require multiple funding sources for support. Eligibility criteria for federal and state surface transportation funds can limit their use for such projects, even if those projects would benefit the airport.

Competing priorities pose another challenge for advancing regionally planned airport-access projects. Airports themselves often prioritize airport projects improving there is little prospects of using some of these grants for ground access projects. For example, AIP discretionary funds can be used for on-site ground access projects, however,airport capacity, safety and security over ground access, even when on-site access projects are eligible for federal grants. Airlines also have a voice in airport investment decisions, and their competitive concerns can make them reluctant to use airport revenues for road or transit improvements instead of revenue generating projects (e.g., airfield and terminal development).

Our research underscores the value of wider regional collaborations among airports, MPOs, and other agencies and public and private stakeholders to secure the funding needed to realize ambitious airport ground access projects. Within the Dallas-Fort Worth case study, large scale cost intensive ground access projects—like the DFW Connector, DART Orange line—have been possible due to collaborative funding including federal (e.g. TIFIA loan), state, local sources and regional toll revenue, as well as private sector involvement through a PPP.

Megaregional Planning

The geography of air passenger travel extends far beyond the metropolitan region boundary. As shown in this study, a significant volume of airport market leakage is taking place from smaller to larger airports. The multijurisdictional nature of airport travel demonstrates the importance of megaregional planning efforts. Issues like market leakage demand a system perspective, working across multiple airports and regions, beyond the geographic coverage of a single MPO.

The New England Regional Airport System Plan (NERASP) for wider Boston offers a compelling illustration. Prepared by New England Airport Coalition, including six New England state aviation agencies and major airport sponsors including Massport, the plan showed how the regional aviation system would benefit more from spreading flights across underutilized regional airports than from concentrating service at a single major airport (5). Further, it shows how multimodal integration of the regional rail system with air transportation could accommodate the growing demand of megaregional travel.

Within the Texas Triangle, we find some evidence of MPOs planning for transportation mega-regionally, in ways that could benefit aviation. We note NCTCOG's leadership in engaging other MPOs in its HSR study. Although HSR is sometimes viewed as a mode competing with airports and airlines, airports also stand to benefit from HSR's ability to increase connectivity between airports and surrounding regions. According to NCTCOG officials, HSR should not be viewed as a competitor to airlines but as a complementary provider of multimodal transportation system, given the congestion on regional roadways and excessive demand at large airports like DFW. Apart from HSR, NCTCOG has signed MoUs with neighboring MPOs such as Waco, Texas and Little Rock, Arkansas regarding freight transportation and highway development. Such initiatives can indirectly benefit airport access since a significant number of DFW passengers travel from outside Dallas Fort-Worth Metropolitan Area. The CAMPO-AAMPO joint corridor study of I-35 offers another example of inter-regional collaboration. Though not explicitly focused on air passenger travel, the study examines cross-regional challenges from growing intercity trips along the congested corridor, some of which are surely air passengers driving to access desired flights.

These examples reveal some degree of inter-regional collaboration taking place in the Texas Triangle megaregion, beyond the bounds of federally required metropolitan planning. Still, these megaregional efforts are at nascent stages of development (feasibility analysis, assessment of alternative strategies) and not yet producing intensive collaboration.

Additionally, the MPO officials we interviewed noted overarching barriers to megaregional planning, including the lack of federal or state legislation or other institutional mechanisms to convene multiple MPOs to address shared challenges like air travel demand. Striking the proper balance between local and regional interests in megaregional discussion is difficult too. "It's

important to understand what is important to each of the MPOs and what…their elected officials and their citizens would accept," remarked one MPO official about megaregional efforts. Moreover, intensive collaboration requires time and resources, and most MPOs have insufficient bandwidth or resources to engage in megaregional planning, given other mandatory tasks and demands.

Chapter 6. *Conclusion and Policy Implications*

The case study presented in this paper shows how airports are engaged in MPO planning activities across the regions with varying degrees of institutional formality and structure. The findings from our case study indicates that although some forms of communication channels are present between airport and MPO staffs, airport sponsors are not actively involved in regional planning and decision making in most regions, which is reflected in lack of intersection of airport and surface transportation issues in regional transportation plans and absence of joint planning efforts related to aviation and airport ground access planning. An exception is NCTCOG where we observe MPO's strong involvement in aviation and airport related planning such as data collection, addressing specific policies and programs to address aviation issues in regional plan, joint studies, and project collaboration between MPO and airport. NCTCOG's example also points out the importance of formal instructional mechanisms to coordinate air-and-surface transportation planning; for example, inclusion of airport representatives in MPO boards and committees can help MPO's planning activities (e.g. transit connectivity, air quality and land use issues) where the airport can lend technical expertise and staff support. At the same time, airports can be also benefited by having a voice over regional transportation funding decision.

Opportunity exists for airport sponsors to address airport access issues in regional transportation planning. Airport's participation in long-range planning process can benefit both parties for example, identifying joint challenges, visioning, and developing strategies to integrate surface transportation and air transportation. Since, these plans are fiscally constrained, addressing airport issues can guide MPO's project prioritization and inclusion of projects in the TIP. Moreover, it can create an opportunity of further collaboration through joint studies (e.g. separate multimodal access plan) and inter-agency data sharing.

The changing dynamics of aviation industry indicates the megaregional dimension of airport travel. Yet, market leakage issue has received scant attention in ongoing megaregional planning. Neither airports nor MPOs are tasked to address the needs of long-distance airport travelers. While some airports collect information about origin-destination of air passenger travel, these data are not shared or made publicly available. MPO officials interviewed in this study view that understanding airport passenger demand and getting information about airport's future plan of

expansion and project timelines are crucial for MPO's planning. Robust data and information sharing between airport and MPO can help regional transportation planning in many ways, for example, enhancing MPO's travel demand models, projecting transit demands for air travelers and assessing the impacts of future aviation demand changes on air quality and traffic congestion.

Finally, RASP provides a further prospect to integrate air-and-surface transportation planning, particularly in the regions with key hub airports and Multi-Airport System (MAS). MPO-led airport planning can address important planning issues such as regional demand management, air quality, land use compatibility, integration of surface transportation with air transportation, identifying funding priority for airport related projects, conflict resolution among stakeholders and balancing local vs regional interest. Furthermore, considering the recent change of aviation industry and increasing market leakage, FAA should strengthen the role of regional aviation planning which should have a more comprehensive focus on regional development rather than narrow objectives of airports and airlines.

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