



Significance and Prospects of Transportation Planning at the Megaregional Scale

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16. Abstract: Megaregions are defined as connected networks or clusters of metropolitan areas where the U.S. population and employment growth is increasingly concentrating. Fashioning strategies and new institutional arrangements to better manage growth in these tightly connected metropolitan areas has been identified a crucial challenge calling for new thinking and policies at national and subnational scales. This research explores the conceptual issues and policy salience of planning and project activities at the megaregional scale. This project has two main components: a literature and case study review of planning across metropolitan regions; and a survey of Metropolitan Planning Organizations (MPOs) on inter-regional and megaregional collaboration. The review of the literature and case studies suggests that the megaregional scale does have some resonance, particularly in the area of transit infrastructure planning. However, in only a handful of cases did the partners in these initiatives strongly frame their activities around a megaregional space. Analyzing the results of a 2018 survey of 382 designated MPOs, we find support for the notion that MPO partnerships operating at the megaregional scale are somewhat widespread and involve MPOs along with other partners. A subset of common concerns—especially multi-modal freight, major transportation corridors, economic development, intercity rail service, and air quality—appears to motivate megaregional partnerships. MPOs were most likely to engage in megaregion-scale collaborations requiring relatively modest levels of organizational resources versus more substantive collaborative efforts to develop joint plans or coordinated project investments. At the same time, a minority of MPO respondents viewed megaregional scale collaborations as a high priority or as highly effective.				

<p>For the majority of MPOs, it appears likely that the costs of such collaborations currently outweigh prospective benefits. Survey respondents identified increased staff funding, requiring state DOTs to address megaregional issues in statewide plans and facilitating and enabling inter-local agreements for megaregional planning as actions that would increase the effectiveness of megaregional planning. These actions will likely occur only if planning at the megaregional scale is embraced as a priority by federal and state policymakers.</p>			
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Chapter 1. The Value of the Megaregional Concept for Spatial Planning and Policy Making

Concern with larger scales of urban growth and urban regional forms has a very long history dating to the work of Mumford, and later Gottmann (Mumford, 1938; Gottmann, 1957). The megaregional concept has more direct roots in the work of the European Spatial Development Perspective in the 1990s as well as work depicting the rapid development of connected urban agglomerations and subsequent “mega infrastructure” initiatives in China (Harrison and Hoyler, 2017). It could be argued that the take-off of the megaregion discourse in the U.S. was inspired in part by a “catch-up” concerns related to presumably superior and more aggressive large scale planning initiatives in Europe and East Asia (Dewar and Epstein, 2007).

In the contemporary U.S. context, the term and initial conceptual architecture first appeared in the work of Robert Yaro and Peter Carbonnel in 2004-2005 (Carbonnel and Yaro 2005). In classroom studios, conferences and published work they delineated megaregions as a set of connected networks or clusters of metropolitan areas where “70% of U.S. population growth and 80% of and employment growth was likely to occur” over the next 50 years” (Carbonnel and Yaro 2005 and Lang and Dhavale, 2005). *America 2050* issued a series of reports and policy briefs in 2006 that helped shape the megaregional discussion (America 2050, 2006a and 2006b). This initiative, with its various collaborators, advanced important definitions of the megaregion along with a set of arguments promoting megaregional planning and policy interventions. These commentators argued it was crucial that planners and policy makers recognized and appropriated this larger scale to devise institutions and policies that could manage the spatial concentration of growth and sustain these regions as economic engines for the nation (Dewar and Epstein, 2007).

All megaregional definitions and specifications start with a basic notion of spatial population and economic concentration – connected networks or clusters of proximate metropolitan areas (in the U.S., MSAs). But what are the specific or unique connections that define the megaregion and make it such a compelling spatial unit of analysis and policy? Megaregions can be characterized by “environmental, cultural, infrastructural and functional characteristics” (America 2050 2006b, p. 3)... [these relationships are] “environmental systems and topography, infrastructure systems,

economic linkages, settlement patterns and land use, and shared culture and history“...the emerging megaregions of the United States are defined by layers of relationships that together define a common area that can be used to organize policy decisions.”...” (America 2050 2006a, p.8.. and from Dewar and Epstein 2007. p. 113). For several reasons these very broad definitions could be viewed as problematic for the task of drawing boundaries and delineating specific linkages and unique functional relationships concentrated at the megaregional level.

For example, the most referenced delineation of environmental systems are ecological regions defined by the Ecoregions project sponsored by the U.S. EPA and other university and North American government agencies and NGOs. None of the eco-regional levels specified in the Ecoregions project map in any systematic way to urban-regional concentrations (Wiken et al, 2011). Similarly, the meaning and mapping of “cultural regions” is a long and contested project, made increasingly intractable by robust domestic and international migration, rapid economic change and restructuring, and growing inequality at numerous scales. Even the seemingly obvious claims for the centrality of the megaregional scale in economic development processes rests on questionable analytical and empirical foundations (e.g. exactly how does the position of New York City as a global center of finance, producer services and media depend on improved linkages and flows with Baltimore?).

As the megaregional discourse progressed, there was a more discrete focus on relationships and scales tied to population settlement patterns and economic linkages, namely the “infrastructure systems, economic linkages, settlement patterns and land use” parts from America 2050 elements detailed above. With this more discrete specification of relationships and linkages potentially concentrated at a megaregional scale, a number of arguments were advanced for the unique value of this scale in addressing pressing policy and planning problems. A prominent and perhaps overarching rationale for the salience of the megaregional scale is that it represents the dominant spatial scale shaping economic growth and competitiveness for both urban regions and national economies (Florida et al 2008; UN-Habitat, 2010; Harrison and Hoyler, 2017). It is an urgent priority, therefore, that regional and national policies and investments be targeted to enhance the efficient movement of goods, information, and people across these critical megaregional spaces.

These rationales mimic durable arguments for fitting spatial institutional structures and policies to the spatial scales most strongly influencing specific functional process that have been made for inter-jurisdictional planning within metro regions - classic efficiency gains from economies of scale, more effective scales to address network frictions and to manage externalities. Most specific planning and policy activities referencing the megaregional scale have dealt with collaboration between metro-regional jurisdictions and institutions to address functional problems (largely relating to transportation networks, modes and systems across larger special scales).

There have been several lines of argument that planning and policy making at the megaregional scale is not a clear or important priority. First, as suggested above, many functional systems that have been subject to multijurisdictional planning and policy-making do not map to megaregional geographies. Planning and governance at larger spatial scales in the U.S. has been common and long-lived in a number of specific functional domains. Surface and groundwater management challenges have generated inter-jurisdictional and interstate regulatory and resource development frameworks such as Colorado River Compact governing water rights allocations among seven states (initiated in 1922). Similarly, numerous river basin and waterway authorities such as the Tennessee Valley Authority and the Columbia River Gorge Commission are long lived (Loftus-Otway et al., 2017). Large scale inter-jurisdictional collaborations are even seen in the economic development realm, such as the 13 state Appalachian Regional Commission that has focused on alleviating poverty and underdevelopment in the Appalachian region since its establishment in 1965. It is noteworthy that these governance frameworks focus on discrete territorial functions/problems/activities and are sanctioned and facilitated by higher-level government institutions (federal and state) (Friedman and Weaver, 1979; Loftus-Otway et al, 2017). None are related to the megaregional geographies mapped by proponents, begging the question about what specific functional systems or problems would best be addressed at the megaregional scale.

The second critique of megaregional planning is the territorial ambiguity that has plagued the concept from the onset. Four prominent early studies employed various methods to delineate megaregional boundaries (Lang and Dhavale. 2005; Florida, 2008: Ross et al., 2009; Hagler, 2009). There is some consistency in the methods utilized in that all four studies attempt to combine form and certain functions to delineate interrelated urban areas as megaregional spaces. However,

due to the dearth of data capturing flows across metros, outside of journey to work and commodity freight origin-destination data, the delineation and analysis of deeper functional linkages across metros is quite limited. In general, all the specification of U.S megaregional space is “form heavy,” based on metro area proximity and select linkages between metro regions (Harrison and Hoyler 2017). And with the exception of Ross et al., the studies use some adjustments or “penciling in” to generate (usually smoother and more contiguous) megaregional boundaries. The central problem is that the maps generated by each of these studies offered distinct megaregional geometries that cross state boundaries and built and natural systems in quite different ways. Ross et al., designate one California megaregion, while America 2050 and Florida propose two, America 2050 outlines Gulf Coast and Front Range (Colorado) megaregions not found in Ross and so on. (Ross et al., 2009; Hagler, 2009; Florida 2008). Then there is the issue of national borders. Only Florida offers a multinational megaregion, encompassing the Buffalo-Toronto-Rochester metro region (Florida, 2008). Without an agreed upon definition of U.S. megaregions, it is hard to determine exactly what geographies should shape inter-jurisdictional collaboration.

This definitional problem has seen some practical resolution over the past five years. Catherine Ross and her various collaborators have developed a systematic and rigorous methodology to delineate megaregions which combine urban form and certain functions. Interestingly, the resulting megaregional maps are more “jagged.” with megaregional spaces sporting complex and distended geometries with holes and gaps for counties that do not meet the specified criteria (Ross et al, 2009, Read et al., 2017). The megaregional maps developed by Ross and various collaborators have been used as a reference by a number of institutions, most significantly by the Federal Highway Administration (FHWA). At least in the transportation planning and policy realm there is some agreement about which megaregional geography should serve as the benchmark.

A third critique of the megaregional project is that planning at the megaregional scale is even more subject to the profound barriers to inter-jurisdictional collaboration and governance than other interconnected geographic spaces. A substantial literature has explored significant mismatches between functional processes and the territorial scope of government institutions at the metropolitan level (see, for example, Hamilton, 1999; Burchell et al., 2005). However, action at the metro- regional scale has been constrained by citizen resistance to encroachments on local

prerogatives and control, the disinterest or opposition of local public officials in surrendering powers to regional entities, collective action or free rider issues, and resistance of the development and business communities to any new regulatory control over their actions (Lewis 1996; Oakerson, 1999; Basolo, 2003; Mahtesian, 2006). Against these formidable forces of localism, one wonders how planning and governance could take root in much larger, more complex megaregional areas involving multiple MSA's, and in many cases multiple state governments.

In light of these serious questions about the megaregion as a compelling scale to address infrastructure, economic development or environmental problems, in the following section we examine the extent to which the concept has influenced actual planning and policy making processes. We briefly examine the case study literature reviewing meaningful inter-jurisdictional collaboration involving multiple metro regions (i.e. at scales larger than a MSA). These cases are drawn from the megaregional literature where scholars and megaregional proponents have explicitly profiled these initiatives as case studies of megaregional planning.

Chapter 2. Inter-jurisdictional Collaboration and/or Megaregional Planning?

Reflecting upon the challenges to establishing multijurisdictional government or governance frameworks to more systematically manage problems at appropriate spatial scales, there have been two obvious fetters. The first, detailed in the above chapter, is the pervasive resistance to governing at the scale of the metro-region (or larger scales) based upon preferences for local control, perceived risks by local governments in ceding control and opposition by local interest groups. The second is simply institutional capacity and resource constraints. After decades of devolution and budget pressures affecting, local jurisdictions struggle executing their basic functions and have a limited capacity for inter-jurisdictional collaboration or joint project development. Given these two constraints, we can reasonably speculate that local government and governance institutions will only engage in meaningful collaborations at larger scales if the risks are low and if the benefits are substantial. Lowering risks and increasing benefits of inter-jurisdictional collaboration would in part be contingent on additional support and resources from higher levels of government (state and federal).

Given these constraints, serious engagement by state and local governments in activities and projects and at the megaregional scale seems to face serious obstacles. In terms of both government and governance, there is no clear institutional scaffolding to support a megaregional scale activity or interventions. Organizing multiple jurisdictions and interests around initiatives at the metro scale has proven extremely challenging. Regional collaboration and governance at the megaregional scale would be more complex in orders of magnitude as it would involve numerous local governments and local governance institutions, and in many cases multiple state governments. The risks and transaction costs to local entities at operating at such a large and complex scale would likely be perceived as high, while the benefits to individual local parties would be hard to specify. Local and state governments would naturally resist the allocation of time and resources to megaregional collaborations or activities. The set of inter-jurisdictional governance frameworks that already exist numerous scales (from the metro level to multi-region, multi-state institutions) are normally organized around a discrete and pressing functional domains (water, transportation, environmental hazards) where the scales are more obvious and potential benefits of participation are legible.

Given the newness and fluidity of the megaregional concept, is there any evidence of meaningful inter-jurisdictional collaboration and action at the scale of the megaregion? To investigate this question we evaluated 19 inter-jurisdictional initiatives involving multiple metro regions (i.e. at scales larger than an MSA). From this larger set of cases, we examine six cases drawn directly from the megaregional literature where scholars and megaregional proponents explicitly profiled these initiatives as case studies of megaregional planning. To evaluate the character and degree of inter-jurisdictional collaboration we first reviewed scholarly literature referencing the initiatives (Dewer and Epstein, 2007; Peckett and Lyons 2012; Ross et al. 2011; Reed et al., 2017; Loftus-Otway et al., 2017). We then reviewed publically available reports and documents and digested information from websites profiling the initiatives as well as websites from individual government or non-profit participants in the collaborations.

In analyzing the details of these larger scale initiatives, a number of dimensions were explored. The governmental/institutional partners were delineated and the role of higher (federal and state) level government agencies was categorized. For each collaboration, it was important to determine if national or state government had a leadership role in organizing and supporting (via regulation or funding) the initiative, or if the initiative was more “bottom-up” with local entities organizing the initiative and then reaching out to include higher level agencies. We then reviewed the various texts related to each initiative, including document word searches, to ascertain if the scope of the collaborative initiatives could be characterized as operating at a megaregional scale (by any of the above four specifications of U.S. megaregions) and if any of the participants or documents referred to the initiative as megaregional planning, megaregion, or a megaregion project.

Table 1 – Character of Six Larger Scale Multi-Jurisdictional Initiatives

Multi-Jurisdictional Activity	Key Participants	Federal Government Leadership	State Government Leadership	Megaregional Scale	Megaregional Language
Florida MPO Regional Alliances	Multiple MPOs in Florida Urban areas and State Department of Transportation	Weak/ Indirect	Strong	Yes	No
Great Lakes Interagency Task Force/ Great Lakes Restoration Initiative	U.S. and Canadian Federal Agencies with task forces involving state, provincial, and local jurisdictions	Strong	Strong	No	No
I-95 Corridor Coalition	State DOTs, transportation and port authorities, and federal transportation agencies. MPOs on the corridor participate as affiliate members.	Strong	Strong	No	No
Arizona Sun Corridor Projects	State government agencies, local governments, MPOs and Arizona –based NGOs	Weak	Strong	Yes	Yes
Buffalo-Toronto-Niagara Joint Planning Initiatives	U.S. and Canadian Federal Agencies with working groups involving state, provincial, and local jurisdictions in the regions.	Strong	Strong	Yes	Yes
Southern California Transportation Planning	Local MPOs and Councils of Governments and State Agency (Caltrans)	Weak/Indirect	Strong	Yes (for two of the four megaregions specifications)	No

The case evaluations reveal that these larger scale collaborative initiatives were generally organized to address a single or discrete set of functional issues. The government levels and institutions involved and territory from which the collaborators were drawn were shaped by the spatial nature of the functional problem that needed to be addressed. The cases are in this regard consistent with historic patterns where larger scale interventions focus on discrete territorial functions/problems/activities and are sanctioned and sponsored by higher-level government institutions (federal and state). It is noteworthy that all the inter-metro collaborations were linked to infrastructure or natural systems and none were defined centrally around socioeconomic activity. Issues of distribution of opportunities or access and equity within the various regional spaces were not foregrounded.

In most cases the territory and focus of the collaboration was shaped by the specific functional domain: the large water and environmental area of the Great Lakes Restoration Initiative; the interstate highway corridor running from Maine to Florida in the case I-95 corridor coalitions; transit system issues in the growing and closely proximate metro areas in the case of the Central Florida MPO alliance and the West Florida MPO Chairs Coordinating Committee; and transit corridor and border crossing management for the Niagara International Transportation Technology Coalition. In four cases, the Florida MPO alliances, the Arizona Sun Corridor initiatives, the Buffalo-Toronto-Niagara Joint Planning Initiatives (in the Richard Florida megaregional map only) and the Southern California MPO collaboration, the spatial scope of the inter-metro collaboration did map to a defined megaregional space. The Southern California collaboration was focused on developing a Multi-County Goods Movement Action Plan to address congestion, environmental and economic development concerns related to the major transit corridors (port, rail, trucking) in the region (Peckett and Lyons, 2012). This functional focus eventually spilled outside the defined megaregional space to encompass border-crossing issues via a bi-national strategic planning process involving the federal governments of the U.S. and Mexico and Tijuana and the state of Baja California (Ibid, 2012). Again, the functional space seemed more relevant than a specific megaregional space.

The Arizona Sun Corridor initiatives stand out as an interesting and somewhat anomalous case where the scope of the initiative mapped to a megaregional space and where the participants and produced texts used the megaregion as the frame for the initiative and activities (AECOM, 2010; Loftus-Otway

et al., 2017). Beginning as a partnership between MPOs in the Phoenix and Tucson metros and the Arizona State Department of Transportation that focused on freight and passenger travel, the Sun Corridor megaregional concept expanded into other functional domains such as economic development and water management (Peckett and Lyons, 2012; Gibson et al., 2016). Profiling the Sun Corridor as a megaregion seemed to emerge as an attractive branding element for a range of Arizona urban initiatives. Indeed, the fact that the Sun Corridor megaregion involved only two major metro regions contained within a single state may have allowed for the easy appropriation of the term and concept. For state and local officials in Arizona, hosting a megaregion may have suggested a certain status and glamor associated with robust growth and development. A focus on multiple functional domains – transportation, economic development and water management – related to growth management challenges of the two metros. Even here, however, the megaregional space became fluid and ambiguous over time. Recent studies and initiatives have brought other Arizona metro areas into the Sun Corridor fold (Flagstaff and Nogales) and recent literature and reports have delineated an “Arizona-Sonora transborder megaregion,” that spans most of Arizona and northern Sonora (Gibson et.al. 2016).

As suggested in table 2 below, most of the cases of larger scale inter-metro collaborations saw limited coordination among the parties related to specific plans or project investments. The most interesting exception is the collaborative frameworks of multi-metro MPOs in Florida. Two networks of proximate and rapidly growing metro areas in Florida have formed transportation planning alliances involving joint planning and project development: the Central Florida Metropolitan Planning Organization Alliance comprising eight counties and several metro areas including Orlando, Melbourne and Daytona Beach; and the West Central Florida MPO Chairs Coordinating Committee that includes a seven county area on the west coast of the state that includes the major metro’s of Tampa, St. Petersburg and Sarasota.

Table 2 – Character of Six Larger Scale Multi-Jurisdictional Initiatives

Multi-Jurisdictional Activity	Functional Foci	Information exchange and discussion of issues of mutual interest	Collaboration to produce joint studies or recommendations about common issues or projects	Adopted memoranda of understanding (MOUs) between participating institutions.	Proposed joint projects and investments with other participating government institutions
Florida MPO Regional Alliances	Transportation Planning and Project Development	Yes	Yes	Yes	Yes
Great Lakes Interagency Task Force/ Great Lakes Restoration Initiative	Water quality and environmental restoration	Yes	Yes	No	Yes –largely related to federal funding of proposed projects
I-95 Corridor Coalition	Transportation issues related to Interstate-95 corridor	Yes	Yes	No	No
Arizona Sun Corridor Projects	Freight and highway transportation planning – evolved into border and economic development issues	Yes	Yes	Yes	No
Buffalo-Toronto Niagara Joint Planning Initiatives	Transportation corridor and border crossing issues	Yes	Yes	Yes	No
Southern California Transportation Planning Collaboration	Freight Transportation and border crossing issues	Yes	Yes	No	No

Under a set of State of Florida statutes, MPOs in closely proximate metro areas are encouraged and incentivized to engage in joint transportation planning and project development. While each individual MPO in these collaborative groups remains responsible for their own Long Range Transportation Plans and their Transportation Improvement Plans (detailing proposed short-term project investments), in 2005 the state provided funding matches for “MPOs, counties or regional

transportation authorities that form regional transportation areas for critically needed projects that benefit regional travel and commerce” (National Cooperative Highway Research Program, 2007). These state funds are dedicated to projects involving multiple MPOS in these regional areas via the Florida Department of Transportation a Transportation Regional Incentive Program (TRIP). These funds flowing to multi-metro joint transportation projects have supported inter metro rail projects, highway corridor and bridge projects and multi-modal transit projects (Ross et al., 2011). These collaborations are related to specific functional transportation challenges in closely proximate metro areas, and are not linked to any megaregional geography. The Florida cases do represent significant regional governance actions to address tangible network and spillover problems at the multi-metro scale.

The case further suggests that when higher government levels (in this case state government) clear roadblocks, create collaborative frameworks and provide resource incentives fragmented local governments can mobilize to deal to deal with crucial region-wide processes. It is not clear, however, that the partners in inter-jurisdictional collaborations across these metro areas viewed their activities as megaregional planning.

The six cases from the megaregional literature profiled above, suggest that megaregional scale does not have clear resonance or salience with government or governance institutions. The spatial scale and framing of the initiatives is shaped by the territory of the functional element or system(s) that present problems or opportunities for improvement. It should be strongly emphasized, in all fairness, that most scholars and commentators in the megaregional discourse do not claim that the megaregion is the appropriate scale to address most functional problems effecting multiple metros of local or state jurisdictions. Almost all authors note that the scale of government or governance initiatives should fit the scale of the functional system at issue.

Chapter 3. Survey of MPOS on Megaregional Planning and Project Activities

We administered a survey of Metropolitan Planning Organization (MPOs) in the spring of 2018 focused on collaboration between MPOs at multiple scales. This survey project was supported by the Cooperative Mobility for Competitive Megaregions (CM²) center, a US-DOT, Tier -1 University Transportation Center housed at the University of Texas at Austin. The research team generated a list of MPOs from the U.S Department of Transportation and The Association of Metropolitan Planning Organizations. A final list of 382 MPOs were identified to receive our survey. Because the focus was on collaborations between multiple MPOS and other partners, MPOs from Alaska, Hawaii and Puerto Rico were not surveyed. The survey consisted of 20 questions and was administered by email using the Qualtrics survey software. The survey was mailed to MPO directors or senior transportation planners.

The survey instrument had two key components and associated question batteries. In the first section we explored forms of collaboration between multiple MPOs at any spatial scale which could include collaboration or joint work between MPOs and other partners in neighboring regions, across a state, or at larger scales not identified as a megaregion. In the second part of the survey we explained the megaregion concept and asked respondents if their MPO was in, or adjacent to a megaregion. The survey included a map of nine “emerging megaregions” from Read et.al 2017, p. 2. For those MPO respondents that identified their areas as being in, or adjacent to the megaregions designated in the map, we asked as series of questions about the types of partnerships, forms of collaboration, and topics or project areas associated with their collaborative activities at the megaregional scale. We also queried about the significance and success of megaregional collaborations, barriers to more extensive joint work and changes in state or federal level policies and support that might facilitate more extensive megaregional planning and project work. Our survey questions were in part inspired by the only prior survey of U.S MPOs on megaregional planning that we are aware of conducted by Ross et al. in 2012 (Ross et al., 2014)¹

¹ In the Ross et al. survey, they surveyed 384 MPOs as well as State Departments of Transportation. We did not survey state DOTs.

Out of the 382 MPOs surveyed, we received responses from 192 MPO leaders, an overall response rate of slightly over 50 percent. Of the 192 respondents, 142 MPOs identified as being in one of the nine megaregions and answered the questions in this section of the survey (50 MPOs identified as not being in a megaregion).

We report and analyze these survey results in a recent journal article (Oden and Sciara, 2020). In what follows we summarize the data and results outlined in this article. The respondents to the section of the survey related to megaregional activities corresponded to the universe of MPOs in the 48 U.S. states. We wanted to ensure that the results were not dominated by MPOs of certain population sizes. As shown in figure 1, below, large and medium-size MPOs are slightly over-represented the 142 MPOs that responded to the megaregion section of the survey. This likely reflects the fact that megaregions are defined as agglomerations of larger metro regions. However, we did get a reasonable response rate from smaller MPOs, with about 43 % of the MPOs responding to the megaregion questions serving areas of under 200,000 people (Oden and Sciara, 2020).

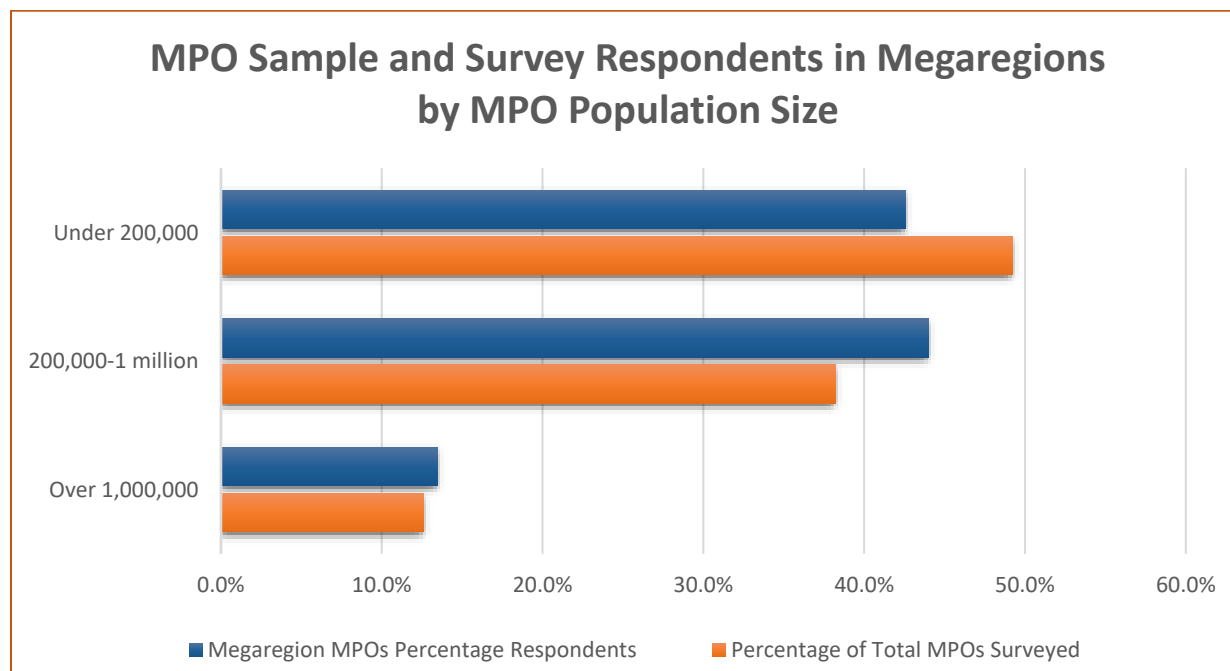


Figure 1- MPO by Populations Served

In terms of the state distribution of respondents, there was some overrepresentation of certain states in megaregions, but there was no strong pattern as we received relatively low response rates for some states within megaregions.

We first wanted to know what types of organizations led or organized planning activities related to issues at the megaregional scale. As noted in the sections above, we hypothesize that a significant degree of federal or state leadership is important in facilitating activities focused on transportation issues at the megaregional scale.

<i>Table 3: Response to "Which organization, if any, has led or organized planning activities focused on transportation and related planning issues at the mega-regional scale? (click on all that apply below)"</i>			
#	Answer	%	Count
1	State Department of Transportation	23.70%	50
2	A Group of MPOs	20.85%	44
3	Federal Transportation Agency	17.06%	36
4	Other Organizations (please specify below)	9.95%	21
5	Councils of Governments	7.11%	15
6	A Single MPO	5.69%	12
	Not aware of any mega-regional planning activities	15.64%	33
	Total Responses	100%	211

A significant leadership role for higher level-government agencies in megaregional transportation planning activities seems to be generally supported by these survey results (Table 2, above). State DOTs were the most common leadership entity identified and federal transportation agencies were seen as the third most common facilitator of megaregional planning activities. However, a significant subset of megaregional planning activities, almost 21%, involved a strong leadership role for groups of multiple MPOs (Oden and Sciara, 2020). The fact that a number of respondents selected more than one leadership organization suggests that megaregional initiatives may often involve flexible, multi-organizational governance that likely varies according to the main issues being addressed. It is finally

worth noting that 33 respondents, or about 23 percent of the total respondents to the megaregional section, were not aware of any planning initiatives related to the megaregional scale (Ibid, 2020).

We next wanted to get a sense of the relationships between jurisdictional categories and boundaries and the type of partners in megaregional collaborations (see table 3, below). In the same question we also probed the substantive nature of the activities. In this regard, respondents were asked to evaluate the activities on spectrum from softer actions involving information gathering and data and information sharing, to adopting formal agreements (MOUs), to actually proposing and implementing joint projects (see table 3, below). The aim was to determine the extent to which the collaborations involved significant investments in time and resources into the initiative on the part of the participants.

To analyze responses to this question, we decompose results to first examine the territoriality and types of partnerships associated with megaregional initiatives. Next, we look at the number and percentages of respondents by type of activity (See table 4, below).

In terms of the geography and types of institutional partners, the most common form of inter-jurisdictional megaregional collaboration was among MPOs within a given state (table 3, below). This is unsurprising because four of the nine megaregional geographies in the map are contained within single states and working across state boundaries is typically more difficult (Ibid, 2020). Less common, but still significant, were partnerships with MPOs in adjacent states. This indicates that a significant subset of regional partnerships cross state boundaries to address megaregional issues at larger scales in the five megaregions that span multiple state boundaries. These responses also show that partnerships with other government or agency partners (state DOTs, Councils of Governments etc.) were somewhat common again suggesting that a range of transportation-related institutions were engaged to address larger scale issues.

Table 4: Response to "What forms of collaboration has your MPO been involved in that addressed issues at the mega-regional scale over the past five years... - check all that apply below"

Question	Other MPOs in Our State	Other MPOs in Adjacent State(s)	Other MPOs in Non-Adjacent States	Planning Organizations in Other Countries	Other Partners (e.g. State DOTs, Councils of Governments, Transit Operators)
Met with leadership and staff of other MPOs and/or organizations in our mega-region to exchange information and discuss issues of mutual interest.	41.52%	25.15%	10.53%	2.34%	20.47%
Collaborated with other MPOs and/or organizations to identify joint challenges, strategies and priorities in our mega-region.	43.18%	23.48%	11.36%	1.52%	20.45%
Collaborated with other MPOs and/or organizations to produce joint studies or recommendations about common issues or projects in our mega-region	57.38%	18.03%	1.64%	0.00%	22.95%
Have adopted memorandum of understanding (MOUs) with other MPOs and/or organizations in our mega-region.	53.23%	19.35%	3.23%	0.00%	24.19%
Worked with other MPOs and/or organizations in our mega-region to propose joint projects and investments advancing mega-regional goals in our Long Range Transportation Plans (LRTP).	54.17%	20.83%	4.17%	0.00%	20.83%
Included projects identified through collaboration with other MPOs and/or organizations in our mega-region into our Transportation Improvement Plan (TIP).	57.50%	10.00%	2.50%	0.00%	30.00%

To analyze participation and the level of commitment associated with these six categories of collaborative activity, we broke out the number and percentage of MPOs that reported being engaged in each category of activity and the average number of partners associated with each activity type. The results clearly show that the share of MPOs engaged in the activity type is inversely related to the level of commitment implied by the collaborative activity.

Table 5: Response to "What forms of collaboration has your MPO been involved in that addressed issues at the mega-regional scale over the past five years... - check all that apply below"

Question	Number	Share of Megaregion Respondents	Average Number of Partnerships with Other Organizations
1. Met with leadership and staff of other MPOs and/or organizations in our mega-region to exchange information and discuss issues of mutual interest.	83	58.5%	2.05
2. Collaborated with other MPOs and/or organizations to identify joint challenges, strategies and priorities in our mega-region.	65	45.8%	2.03
3. Collaborated with other MPOs and/or organizations to produce joint studies or recommendations about common issues or projects in our mega-region.	42	29.6%	1.45
4. Have adopted memorandum of understanding (MOUs) with other MPOs and/or organizations in our mega-region.	40	28.2%	1.55
5. Worked with other MPOs and/or organizations in our mega-region to propose joint projects and investments advancing mega-regional goals in our Long Range Transportation Plans (LRTP).	31	21.8%	1.58
6. Included projects identified through collaboration with other MPOs and/or organizations in our mega-region into our Transportation Improvement Plan (TIP).	28	19.7%	1.43

The greatest number of MPOs were engaged Categories # 1 and #2 above involving less intensive collaborative activities such as joint meetings, information exchange, data sharing, and identifying joint challenges and potential strategies. These less resource intensive activities also involved a larger number of partners (on average). Inter-jurisdictional collaborations confined to these activities do not require significant time or resources commitments. Nor do they demand explicit ongoing coordination among the parties related to studies, plans or project investments. The information and knowledge exchange in such collaborations may influence decisions made within the participating government or governance institutions, but leave control with the local participants. In this form,

there is minimal risk or ceding of local control, while the benefits of considering how local plans and actions relate to larger functional scales may provide some benefits (Oden and Sciara, 2020)

There is a large and steady drop-off in the number of MPOs that report being involved in more substantive efforts involving more intensive or directed coordination to produce joint studies, plans or coordinated project investments. In addition as the substantive nature of the collaborative activity increases the number of partners declines. This likely relates to the increasing level and complexity of interaction associated with more substantive activities that would increase with the number of partners involved. Reflecting upon our hypotheses or expectations, committing time and resources to plans and projects that expand beyond the jurisdiction domain of the participants involves risks and some ceding of control. It is more likely that MPOs that actually commit to joint projects in their LRTPs or TIPs would need carrots (some direction and resource incentives) from higher-level governments (state and federal) (Ibid, 2020).

We were further interested in the specific transportation or related policy issues that were the subject of megaregional MPO collaborations. From our scan of the literature and prominent cases of megaregional planning, core transportation issues were central with interstate corridor issues, freight and inter-metro rail projects being common topics for megaregional or larger scale multi-jurisdictional initiatives.

Table 6: Response to: “What topics and/or project areas at the mega-regional scale have been a focus of your collaborations with other MPOs and/or other organizations in your mega-region? (click on all that apply)”

#	Answer	%	Count
1	Multi-modal Freight Issues and Services	16.30%	66
2	Major Transportation Corridor Issues	15.31%	62
3	Economic Development Issues	9.88%	40
4	Intercity Passenger Rail Service	8.89%	36
5	Intercity High Speed Rail Service	7.65%	31
6	Air Quality Issues	7.65%	31
7	Coordination of Transportation and Land Use Planning Issues	6.91%	28
8	Congestion Management Issues	6.67%	27
9	Intelligent Transportation Systems/Operations	6.17%	25
10	Intercity Passenger Bus Service	5.68%	23
11	Planning for Potential Future Growth in Driverless Vehicles	4.69%	19
12	Other Environmental Issues	2.22%	9
13	International Border Transit and Crossing Issues	1.98%	8
	Total	100%	405

As seen in the response in table 6, above, freight and transit corridor issues were the most common foci of megaregional collaboration and intercity rail was also a significant topic (Oden and Sciara, 2020). These issues logically flow from basic rationales for megaregional planning; the need to address functional issues with clear spillovers and bottleneck problems at larger scales to enhance both local and system- wide efficiency. Economic development as a somewhat common topic might be considered as surprising. Even though proponents of megaregional planning have highlighted relationships between action at the megaregional level and economic competitiveness (see Ross 2009), economic development was not directly a major focus of the most of specific cases we reviewed (in Chapter 2, above). An important result of the responses in table 6 is that respondents picked multiple topic areas (405 responses). This suggests that MPOs are highly cognizant of the intrinsic interrelationships between transportation system decisions and a range of related issues such as economic development, air quality, and land use.

The next battery of questions queried MPPOs about their views on the importance of megaregional planning and project work and about the effectiveness of these collaborations. Here we find that megaregional planning does not seem to be a priority given other demands on MPOs time and resources. Over 56% of the 117 MPOs that responded to this question ranked megaregional collaborations as “not very or only “somewhat important.” Fewer than 14% of respondents viewed these collaborations as very important (Oden and Sciara, 2020).

Table 7: Response to "In light of the other planning and implementation priorities of your MPO, how would you rank the importance of your collaborations with other MPOs and/or other organizations to address transportation and related planning issues at the mega-regional scale? (click on one of the choices below)"

#	Answer	%	Count
1	Not very important	23.08%	27
2	Somewhat important	33.33%	39
3	Important	29.91%	35
4	Very Important	13.68%	16

Table 8: Response to "How would you rate the effectiveness of your collaborations with other MPOs and/or other organizations to address transportation and related planning issues at the mega-regional scale? (click on one of the choices below)"

#	Answer	%	Count
1	Not effective	32.04%	33
2	Somewhat effective	33.01%	34
3	Effective	28.16%	29
4	Very Effective	6.80%	7
	Total	100%	103

Not only were planning collaborations at the megaregional scale not viewed by MPO respondents as a high priority, they were broadly skeptical about the effectiveness of these activities. Over 65% of respondents to this questions ranked their megaregional collaborations as not effective or only somewhat effective, while a slim 6.8 % sated that their joint activities were very effective (table 8).

This set of results strongly indicate that collaborations to address issues at the megaregional level remain a relatively low priority for MPOs and may, to date, not have yielded the benefits emphasized by megaregional proponents. Implicitly for the majority of MPOs, the costs of the collaborations seem to be outweighing the prospective benefits (Oden and Sciara 2020).

<i>Table 9: Response to "In your view, what are the major barriers to more extensive collaboration with other MPOs and/or other organizations to address transportation and related planning issues at the mega-regional scale? (click on all that apply)"</i>			
#	Answer	%	Count
1	There are not sufficient financial resources for staff to engage in more extensive collaborations on mega-regional issues	26.21%	76
2	Working with other MPOs and/or other organizations on issues at the mega-regional scale is not a major priority given other demands on our time and resources	23.10%	67
3	There are not specific funding sources to support joint projects at the mega-regional level with other MPOs and/or other organizations	21.72%	63
4	Working with other MPOs and/or other organizations on issues at the mega-regional scale is not facilitated by the planning frameworks and requirements of our State Department of Transportation	17.24%	50
5	Working with other MPOs and/or other organizations on issues at the mega-regional scale is not facilitated by the planning frameworks and requirements of the Federal transportation agencies	11.72%	34
	Total	100%	290

In the last set of questions we attempt to flesh out what MPOs view as significant barriers to more meaningful collaboration to address issues at the megaregional scale and what specific policies or support mechanisms might foster megaregional transportation planning. We first asked respondents to identify major barriers to more extensive collaboration to address megaregional scale transportation and related issues. In these responses “bandwidth and resource constraints were advanced as the most significant barriers (table 9, above). Respondents reported that limited funds to support staff for megaregional collaborations and the lack of specific funding to support projects at the megaregional level. The second most common response was that megaregional planning was not a priority given other demands. Arguably, additional funding for organizational support and increased funding for joint megaregional projects might elevate megaregional planning as a priority. It seems obvious that the lack of dedicated funding for megaregional planning and projects would be a powerful disincentive for MPO leaders to allocate resources to megaregional activities. The fact that the transportation planning frameworks and requirements of state and federal transportation

departments do not facilitate megaregional planning is another barrier to more extensive megaregional planning.

Table 10: Response to "In your opinion would the following changes in planning frameworks and requirements at the state or federal levels facilitate more extensive collaboration with other MPOs and/or other organizations to address transportation and related planning issues at the megaregional scale... - click yes or no"						
#	Question	Yes	Count	No	Count	Total
1	If additional federal funds were made available to increase MPO staff resources for mega-regional planning.	92.6%	100	7.4%	8	108
2	If the Code of Federal Regulations (CFR) were amended to include mega-regional definitions and boundaries and directed state DOTs to consider mega-regional issues in their statewide Long Range Transportation Plans and Transportation Improvement Plans.	69.4%	77	30.6%	34	111
3	If state DOTs more explicitly encouraged MPOs and other local transit organizations to advance projects as part of system-wide investments at a mega-regional level aimed at moving transit users more efficiently and safely.	65.1%	67	35.0%	36	103
4	If the CFR were amended to explicitly allow MPOs to use inter-local agreements to conduct mega-regional planning with MPOs and other local transit organizations in their mega-regions.	58.6%	58	41.4%	41	99
5	Other actions or policies (explain below)	45.2%	19	54.8%	23	42

Loftus-Otway and her co-authors conducted a systematic review, of “U.S. Code (USC), U.S. Code of Federal Regulations (CFR), transportation planning literature and megaregion studies, preemption case law, and interstate commerce case law to provide a basis for the United States Department of Transportation (USDOT) and U.S. Federal Highway Administration (FHWA) to continue supporting megaregion transportation planning” Loftus-Otway et al., 2017b, p. 2). Based upon this research the identified a series of fetters and bottlenecks to megaregional planning initiatives. Drawing from this work we identified four changes in policy frameworks and regulations that might facilitate and encourage megaregional planning by MPOs and other state and local institutions (table, 10 above). We queried our MPO respondents to ascertain if these four changes might significantly facilitate collaborations to deal with megaregional issues.

Far and away the most powerful change identified by our MPO respondents, was to provide, within streams of federal transportation funding, additional support for MPO staff to engage in megaregional planning activity. But clearly defining megaregional boundaries and directing state DOTs to consider mega-regional issues in their statewide LRTPS and TIPs was also seen as a critical move that would clarify and elevate megaregional activity as a state priority. Amending the Code of Federal Regulations to easily allow MPOs to use inter-local agreements for megaregional planning was also seen as a boon to megaregional planning activity by the majority (58.6%) of our survey respondents.

Taken together these financial and regulatory changes would reduce the costs (explicit or implicit) for MPOs to engage more extensively in megaregional transportation planning. Providing increased staff funding, requiring state DOTs to incorporate megaregional concepts and issues in their statewide planning frameworks and facilitating inter-local agreements in the domain of megaregional planning could overcome some ambivalence about the salience and effectiveness of megaregional planning among MPO leaders (as seen in tables 6 and 7, above. This assumes, of course, that planning at a megaregional scale is seen an important priority by federal and state policy makers. To date this remains an open question.

When evaluating the results of this survey some important caveats must be made. First, it is assumed that the MPO leaders responding to the survey could accurately self-report the focus of their organization and of their organization's activities and policies. In particular, it is assumed that they accurately interpreted the concept and boundaries of the megaregions and accurately depicted specific collaborations and activities as centered on a megaregional territory. Based upon some responses to open ended questions there is some doubt about this assumption. In some cases multi-state interstate highway initiatives (e.g. the I-10, I-95 corridor coalitions) were mentioned as megaregional collaborations, even if they mapped to the functional space of the corridor rather than a defined megaregion (Oden and Sciara, 2020). This is indicative of the sometimes fuzzy perceptual difference between large scale multi-state functional planning activities and planning truly at a megaregional scale.

Chapter 4. Conclusions

In nations with more central government control, the challenges of rapid urbanization, including expanding megaregions are a subject for national policy. In the U.S., the elaborate and highly territorialized nature of federalism often leads to serious mismatches between broader challenges of urbanization and the territorial reach of government or governance institutions. The megaregion has been advanced as a compelling scale to deal with infrastructure modernization, environmental impacts and socioeconomic changes. However, there remain questions about the megaregional concept as a key geography for planning and policy-making. Megaregions often do not obviously map to specific functional systems (river basins, rail networks, interstate highway corridors), megaregional geographies do not have clear or consistent definitions, and the complexity of inter-jurisdictional collaboration is formidable at large, megaregional scales.

The aim of this research was to assess the significance of the megaregional scale for actual planning and policy making by public institutions. Our review of cases of large scale planning activity and our survey of MPOs clearly shows that the megaregional concept is having some influence planning and policy making at federal, state and local levels. In the survey, a majority of MPO leaders who were in defined megaregions had familiarity with the concept and were engaged in some activity focused on megaregional issues. However, it remains an open question if the some of the activities identified by respondents were actually focused on the megaregional scale versus large scale corridor, rail or other transportation system issues involving different scales.

The survey results suggest that megaregional planning in the transportation domain is at an early stage. Megaregional collaborations involving MPOs involved less intensive collaborative activities such as joint meetings, information exchange, data sharing, and identifying joint challenges and potential strategies. Very few respondents engaged in more intensive or directed coordination to produce joint studies, plans or coordinated project investments, suggesting that the costs of more serious megaregional planning and project work exceeded prospective benefits.

Most MPO survey respondents did not see megaregional planning activities as a priority or particularly effective. Given other pressing priorities and resource commitments MPOs seemed to

lack the bandwidth or resources to seriously engage in joint project work and investments at the megaregional scale. In sum, the results of our research suggest that unless the costs of engaging in megaregional activities are reduced, additional resources for MPO staff are provided, and regulatory guidance and incentives are put in place, megaregional planning will not expand into more substantive joint activities. This implies the megaregional scale will move toward the center of the U.S. transportation policy and planning system if planning at this scale is embraced as an important priority by federal and state policy makers.

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