THE MISSING MIDDLE: UNDERSTANDING THE UNIQUE CHALLENGES OF AV ADAPTATION FOR MID-SIZED METROS

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THE AV/EMERGING TECH DISCUSSION HAS BEEN LIMITED

• Most AV/emerging tech testing and implementation occurs in high density and top-tier metropolitan economies and built environments

• Large urban bias is understandable
  • Concentration of tech workers and tech knowledge production
  • Marriage of iconic urban symbols with iconic technological possibility
  • Greater testing environment diversity, more complex set of possible use cases and deployment scenarios
  • Larger populations for deployment
MID-SIZE METROS CANNOT BE OVERLOOKED

• 68 million people—or one in five Americans—live in one of the nation’s 135 midsized metro areas.
• Urbanization is exacerbating large urban/midsized/rural disparities.
• Mid-sized metros are experiencing new attention amidst rising costs of large urban life.
• Given the capacity, resources, and scale differences, mid-sized metros need more attention to ensure the benefits and impacts of emerging tech is equitably spread.
TODAY’S DISCUSSION

DEFINING THE MISSING MIDDLE
RISE OF THE MIDDLE
BATON ROUGE TODAY
BATON ROUGE 2030
WHERE DO WE GO FROM HERE?
DEFINING THE MIDDLE
WHAT IS MID-SIZED?

There are varying definitions of what counts as “mid-sized,” but they all capture a core group of metros between 500k – 1m

Top Mid-Sized Metros by Population Rank (2018 Census Estimate)

54. Fresno, CA 994k
55. Tulsa, OK 994k
56. Honolulu 980k
57. Worcester, MA 948k
58. Bridgeport, CT 944k
59. Omaha, NE 942k
60. Albuquerque, NM 915k
65. McAllen, TX 866k
70. Columbia, SC 833k
71. Baton Rouge, LA 831k
75. Greensboro, NC 767k
80. Boise, ID 730k
85. Madison, WI 660k
90. Provo-Orem, UT 634k
95. Jackson, MS 580k
100. Scranton PA 555k
Mid-sized metro areas can be found in 44 of 50 U.S. states.
Mid-size metros face many of the same growth and competitiveness challenges of large metros, but lack the image, economic and population diversity, and the real and perceived quality of life advantages that large urban regions have in abundance.
The common issue all mid-sized cities may face — no matter what their other circumstances — is suffering from obscurity in urban and metropolitan policy discussions.
LARGE URBAN ADVANTAGES

Symbolic scale (history/architecture/narrative) and strong identities

Concentration of firms, infrastructure, culture – high “Bohemian Index”

Agglomerative effects from knowledge spillovers and innovation clusters

Urbanization economies; specialization and diversity; social capital and networks

Concentration of financial activity, skilled-labor markets, higher wages, access to education, leisure and culture, healthcare, and high-order services
MID-SIZED REALITIES

**Lower densities**, sprawled out land use, racial and spatial **stratification**

Overly **car-dependent**/underdeveloped mass transit

Lots of parking, **strip mall development**, and office parks

Less diversified economy – usually dependent on a **dominant industry**

Business/institutional base often owned and managed somewhere else, hence powerful **business leaders are disengaged**
<table>
<thead>
<tr>
<th>Category</th>
<th>Markers</th>
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<tbody>
<tr>
<td>Urban Mobility</td>
<td>AV/micro-mobility deployment, drone delivery</td>
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<tr>
<td>Land Use</td>
<td>The curb, repurposed parking, mall makeovers, density, CRE impact</td>
</tr>
<tr>
<td>Smart City Integration</td>
<td>Sensors, big data management, privacy</td>
</tr>
<tr>
<td>Spatial &amp; Social Equity</td>
<td>Digital divides, affluent-centric tech deployment, rising inequality</td>
</tr>
<tr>
<td>Governance</td>
<td>Municipal revenue impacts, Federal/State/Local regulation and coordination</td>
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URBAN MOBILITY

LARGE METRO
- Mobility infrastructure largely developed before the introduction of automobile (street grid/sidewalks/etc.)
- Culture of transit usage and infrastructure development
- Public resource allocation supports varying mobility modes

MID-SIZED METRO
- Mobility infrastructure largely developed after the introduction of automobile
- Scale and resource base limits competitiveness for major transit-grant funding
- Transportation planning is dominated by road expansion
LAND USE

LARGE METRO
- Legacy of planned growth
- Pre-automobile development (central city density, central parks, urban infrastructure)
- Public support and built-in incentives for TOD
- Higher densities and support for increasing density

MID-SIZED METRO
- Legacy of unplanned, incremental growth
- Post-automobile development, mid-20th century design patterns and development economics
- Pervasive low densities, suburban-oriented approach to new development
SMART CITY INTEGRATION

LARGE METRO

- Agglomerative benefits of large economies, top talent attraction and robust “knowledge economy”
- Large media markets provide greater exposure that maintain momentum and attract other participants or stakeholders
- Attractive as testing ground for new tech

MID-SIZED METRO

- Challenges with attracting “knowledge jobs” and C-suite jobs, less vibrant tech economies
- Smaller and under resourced media markets with limited coverage capacity
- Small and under resourced local government (tax base) with limited tech investment or innovation capacity
LARGE METRO

Marginalization by displacement – gentrification challenges drive policy discussions around affordable housing and equitable development

Spatial diversity can accommodate thriving identity-based districts that create cultural attractions (Chinatowns, barrios, etc.)

MID-SIZED METRO

Marginalization by invisibility – slower pace of development and preference for low density makes it unlikely that demographic growth will impact spatially segregated areas

Smaller scale makes it harder to sustain identity/culture-based district economies
GOVERNANCE

LARGE METRO

- Ability to develop varied expertise and bureaucratic specialization; generally well-resourced
- Size of economy allows for greater workforce opportunities, including those drawn to public service
- More robust sub-governance & participatory infrastructure (neighborhood groups, CDCs, NGOs)

MID-SIZED METRO

- Strained resources with limited specialization
- Expected attrition rates through baby boomer retirements creating significant knowledge gaps
- Sub-governance structures largely under-resourced, volunteer based
RISE OF THE MIDDLE
INCREASED ATTENTION ON MID-SIZED MARKETS

• USDOT announced unprecedented $40M+ to fund a Smart City Challenge focused on helping to facilitate a mid-sized smart city model for others to utilize.

• Steve Case’s “Rise of the Rest” fund plans to invest $150 million in venture capital in middle America.

• Boomerangs leaving large markets for “second-tier cities” – cheaper cost of living, closer to home and family, and “the lines are shorter.”
Mid-sized cities are becoming smarter through collaborative partnerships, strong policy measures, and forward-looking infrastructure.
EXPECT MORE INVESTMENT IN MID-SIZED METROS

• Seattle, Atlanta & Nashville were once mid-sized metros.
• Since 2000, more than 5.5 million Americans have left the nation’s three largest cities for smaller cities (e.g., Oklahoma City).
• Decades of infrastructure needs that have accumulated are becoming more of a priority (e.g., roads, sewer, bridges, etc.) and will require a new wave of capital investment that has to date mostly focused on large metros.
WELCOME TO BATON ROUGE
ABOUT BATON ROUGE

- Louisiana State Capital
- 830,000+ metropolitan area population
- Economy: petrochem/industrial/higher ed/government
- Most of the current built environment via mid-20th century
  - Strip mall domination
  - Many roads built without sidewalks, crosswalks
  - Limited mass transit with inadequate transit infrastructure
  - Racial segregation drove most early urban land use and development decisions
THE IDEAL MID-SIZED METRO FOR AV/EMERGING TECH ADAPTATION

• Local universities to drive research and workforce availability
• Flat terrain + above sea level
• Low transit use and need for first-mile/last-mile connectivity
• Open-ended policy environment
• Established foundation for data liberation and partnerships for data sharing (e.g., Waze Connected Citizens Program)
• Recent momentum in capital planning due to worsening traffic and mobility conditions – 13th worst congestion in U.S.
### ADAPTABILITY FACTORS

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<th>Land Use</th>
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<tr>
<td>• Limited transit network, few choice riders</td>
<td>• Open data advancements but limited capacity for analysis, storage, and integration into decision-making framework</td>
<td>• Pervasive low-density development in both urban core and periphery</td>
<td>• Urban core marked by significant racial and spatial stratification</td>
<td>• Heavy reliance on automobile-related fees for state and local funding</td>
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<td>• Crippling gridlock</td>
<td>• Fragmented data-sharing contributes to siloed decision making</td>
<td>• Continued suburban sprawl even after significant natural disaster</td>
<td>• Concentration of zero car households and transit-dependent riders in poorer, blacker neighborhoods</td>
<td>• No consistent policy framework at the state level to guide local readiness</td>
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<td>• No transit-oriented development</td>
<td>• University partnerships for data analysis and research funding</td>
<td>• Parking-centric approach to new development</td>
<td>• Spatial mismatch between North Baton Rouge low-income residents and South Baton Rouge service jobs</td>
<td>• Traditional government structure not conducive to “ownership” of AV adaptation (technology vs. transportation)</td>
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<td>• Road-expansion dominated approach to mobility improvement</td>
<td>• Capital improvements must be combined with policy measures</td>
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<td>• Lower quality infrastructure development in poorer, blacker neighborhoods</td>
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WELCOME TO BATON ROUGE  2030
EMERGING TECH 2030: KEY ASSUMPTIONS

• Emerging tech explodes with advances in AVs, drone delivery, micro-mobility
  • Industry will shift from hundreds of start-ups to a select few that own the IP and scale for deployment
  • Cities caught between investing in capacity building and tech deployment
• Level 3 AV widely adopted, Level 4 less so
  • Affluent travelers in semi-autonomous vehicles in dedicated highway lanes
  • TaaS in urban areas and controlled environments
  • Level 4 autonomy present in long haul trucking and logistics
• Smart city tech commonplace – sensors, big data, embedded tech, etc.
• Drone delivery and sharing economy impacting CRE
Baton Rouge in 2030: Key Assumptions

- New demographic pressures create urgent demand for new development
  - Continued coastal erosion + major hurricane increases coastal outmigration and BR-area resettlement
  - Baby Boomer/Millennial Critical Mass (retirement/household formation)
  - Resettlement largely in suburban areas, increasing sprawl and stress on existing road network
- New Mississippi River bridge connecting to I-10
- TaaS & expanding electrification impact global oil market, pressures on Baton Rouge & south Louisiana’s petrochem economy
- AVs on dedicated highway lanes benefit affluent residents in suburban locations
**UTOPIA**

- Sensor-equipped semi-automated and fully automated cars travel existing road capacity with precision, greatly reducing traffic gridlock
- Micro-mobility (scooters, etc.) along with ride-sharing form first-mile/last-mile network supported expanding mass transit
- After expanding I-10 and upgrading roads per complete street principles, infrastructure spending has shifted to support other modes
- Growing public support for public spending that compliments rise of ride-sharing, micro-mobility, and long-haul autonomous driving
- Autonomous long-haul trucks re-route around the center city, using a new bridge to cross the Mississippi, greatly reducing traffic and congestion

**DYSTOPIA**

- Cheap semi-automated cars clog highways, leading policymakers to call for more road expansion
- Over-focus on road construction dis-incentivizes more multi-modal infrastructure spending, leading to a “double down” on automobiles and roads
- Semi-automated vehicles ease the stress of long commutes, inducing a new wave of low-density, sprawling development away from the urban core.
- Semi-automated vehicles diminish political support for mass transit spending
- Lack of planning to coordinate new mobility with land use
## SMART CITY INTEGRATION

### UTOPIA

- Regional, open source data-sharing network provides near-real-time access for policymakers, engineers, and planners to make decisions that fully take “downstream” impacts into account
- University researchers conducting leading applied research into civic challenges that augments local government capabilities
- Recent investments in infrastructure projects not only build roadway capacity but grid management capacity
- Trained workforce attracts economic activity and investment in areas historically prone to disinvestment

### DYSTOPIA

- Underfunding leads to incremental implementation, lack of integration of data sources and platforms
- Lack of foresight for future connectivity needs limit the impacts of generational infrastructure improvements program
- Siloed decision-making leads to siloed impact
- Missing smart city infrastructure handicaps ability to land businesses increasingly looking for cities with highly developed tech infrastructure
- Haphazard approach leads to wasteful spending and rent-seeking by an array of sub-par consultants and technology providers that prey on relative lack of sophistication
LAND USE

UTOPIA

• More efficient automobile networks decrease focus on streets – fewer and smaller lanes increase walkability, sidewalk width and multi-modal mix as cars are relegated to the periphery
• Increased support for TOD amidst the rise of ITS that incorporate connected and autonomous vehicles, alternative fuels, management of AV fleets and analysis of traffic patterns
• Strip centers repurposed for affordable housing, experientially-based retail, warehousing; excess parking lots retrofitted for built-to-street development

DYSTOPIA

• Without complete streets upgrades to major thoroughfares, incapable of accommodating micro-mobility and curb-centric mobility modes
• CRE crisis as large boxes go dark, large parking lots on thoroughfares built solely for automobiles – strip mall apocalypse
• Lack of planning and political commitment to planning leads to DIY approaches, producing low quality of place and compounding “ugliness” factor
• Affluent use semi-automobiles on dedicated highway lanes, exacerbating suburban sprawl
UTOPIA

• Strong networks of well-funded, affordable automated buses and train services

• Coastal sea-level rise and storm-related resettlement spread throughout the metro area, integrating neighborhoods as redevelopment efforts focused on high density design to accommodate emerging tech remedy racial and spatial stratification

• Public and private-sector support for low-income participation in emerging tech

DYSTOPIA

• Semi-automated vehicles shift commuter preferences away from public transit, reducing monies spent on public transit and underfunding badly maintained systems, devastating impact on transit-dependent riders

• Affluent AV adoption intensifies digital divide – poor relegated to DIY networks as public transit support evaporates, social divides intensify

• North Baton Rouge/South Baton Rouge divide intensifies – NBR low tech environment, SBR affluent and tech rich

• As other metros use emerging tech to improve social equity, BR stigmatized as retrograde
GOVERNANCE

UTOPIA

• Local government restructured to streamline technology platforms and decision-making
• Regional approach to mobility-planning, land use, environmental resilience and social equity structurally secured across State/Parish/Local/Sub-local units
• Strong and well-organized sub-governance functions within the community generate bottom-up innovation and accountability, increasing civic pride

DYSTOPIA

• Regional governance becomes more fragmented and provincial, stalling collaboration and innovation
• Fear of the unknown leads to slow adoption of basic policy frameworks and infrastructure to support the full integration of emerging tech
• Failure of state leadership spawns multiple and competing local policy approaches that frustrate emerging tech providers
• Failure of local leadership accelerates out-migration of nascent existing tech industry
SO WHERE DO MID-SIZED METROS LIKE BATON ROUGE GO FROM HERE?
Though still a few years away, a Louisiana House committee considered and advanced Monday legislation that would set up the legal and regulatory framework for driverless trucks operating on the state’s highways.

Starsky Robotics, a San Francisco-based company, is developing the technology that allows trucks to drive down the road autonomously using standard for wireless broadband.

“We’re expecting to start next year, at the earliest, but definitely within three-to-five years,” said Kameron Simmons, handling public policy and government affairs at Starsky.

The trucks would operate on software for most of the ride and remotely from a facility in Jacksonville, Fla. when the driverless trucks enter and exit the freeways and for the final miles on city streets.
BUILD AN OPEN SOURCE DATA ENVIRONMENT
ACT BIGGER (LARGER) BEYOND CITY LIMITS

227K CITY OF BATON ROUGE
446K EAST BATON ROUGE PARISH
800K CAPITAL REGION MSA

23 PARISH AREA – FROM THE MS RIVER TO THE TO LA STATE CAPITOL
LEVERAGE TRADITIONAL INFRASTRUCTURE PROGRAMS TOWARD FUTURE MOBILITY
BUILD AND PROMOTE AN EXPERIMENTATION ENVIRONMENT
LEVERAGE EXISTING RESOURCES IN NON-TRADITIONAL WAYS

Riegel: Grappling with Baton Rouge’s 5G future

By Stephanie Riegel • November 28, 2019

Not many people were paying attention in 2017, when the Metro Council passed a hastily crafted ordinance laying out the parameters for how and where telecommunications companies can place the small cell towers that will bring high-speed, 5G wireless technology to Baton Rouge.

No one seemed to notice either in July, when the Metro Council approved an amended version of the ordinance, which had been rewritten by the Parish Attorney’s Office.

5G Rollout Causes “Chaos” in Baton Rouge

November 14, 2018 • 8:03 am

AT&T is installing 50 new small cell 5G poles on the streets of Baton Rouge, and it “has created a lot of chaos downtown,” according to City-Parish Chief Administrative Officer Daryl Goswadi. In mid-October, an AT&T subcontractor struck an underground power line during one installation creating a massive power outage in the city.

Adding to the deployment woes, local residents expressed shock and opposition to the 29-foot black metal poles upon unexpectedly seeing their installation. Executive director Davis Rhome said several property owners have contacted the Downtown Development District to dispute the locations of the towers, and how close they will be to their businesses and homes. Metro Council passed an ordinance establishing the
For the past 7 years, automakers, technology companies and local and state governments have been working together to implement AV–friendly policies around road testing that address safety concerns…. 

… but these conversations have largely left out public transportation, local right-of-way issues, environmental concerns, infrastructure costs and regional coordination.

- Colleen Quinn, Axios Autonomous Vehicles Expert Voice, May 2019
QUESTIONS?

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