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Avenues of Institutional Change: Technology and Urban Mobility in Southeast Michigan

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Abstract

The rules of the game in urban mobility may be shifting. App-based technologies have transformed daily travel, and advancements in automation and machine learning have brought visions of a self-driving vehicle future. In Southeast Michigan, the historic center of American automotive manufacturing, the "new mobility" revolution may be big business. However, while a coalition of business interests has latched on to mobility technology as a vital economic development lifeline, high-profile political initiatives and novel experiments on city streets have thus far done little to improve everyday mobility for the region's residents and workers. In this working paper, we argue that improving the region's transit system must be an essential component of strategies to distribute the benefits of future growth in the automotive sector and beyond. We show how, in the evolving political economy around transportation decision-making, an attraction toward top-down, technological fixes to long-standing accessibility constraints may elide the possibility of deeper institutional reform. Through historical analysis and a slate of semi-structured interviews, we identify a set of institutional barriers that detract from efforts to better serve disproportionately Black and low-income Detroiters, particularly those without a personal vehicle. Technology alone cannot remedy the mobility constraints these people face, and will perpetuate existing inequities absent institutional change. Innovation can facilitate incremental improvement, and experiences with new technologies may indeed hold the kernel of system-wide reform. Channeling the heightened attention to everyday transportation challenges toward systemic change marks a significant opportunity for improving lives and fostering a more competitive workforce.

* indicates equal contribution

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Introduction

From AV Technology to Institutions and Access

Recent developments in automation and artificial intelligence have the potential to transform both automotive manufacturing and the vehicles of the future. Given its legacy as the car capital of the US, Southeast Michigan may be well positioned to win the ensuing race to "self-driving" vehicle production. While this race is likely to endure over a decade or longer,[1] the flood of investment into automated vehicle (AV) research by incumbent firms and well-funded startups[2] – alongside the growth of related "new mobility" enterprises (e.g., Uber, Lyft, scooter sharing platforms) and electric vehicle technologies – signals a potentially vital economic development lifeline for the region.

Developing a strategy that can leverage Southeast Michigan's advantages while planting the seeds of shared, equitable growth raises a number of difficult questions. Among them are those centered on the impact of new technology itself. For instance, policymakers often ask how automated cars will change travel behavior, or look to project the impacts of self-driving technology on parts of the economy – like trucking or public transport – where human drivers form a large labor force.[3] However, guiding the *technological* determinants of social and economic development in a new mobility future are a set of norms and practices that structure how technological change happens. The region's *institutions* – the "rules of the game" that structure relationships between and among organizations – are important, particularly as their strengths and weaknesses intersect with the raw capabilities unlocked by technical innovation. This working paper explores the nature of those institutions and how they affect intertwined technological and labor challenges in the mobility system, a crucial policy domain shared by a wide array of public and private stakeholders.

Southeast Michigan is familiar terrain for the kind of technological and institutional transformations that may accompany the AV turn. Amid decades-long changes, the region has come to serve as a token of the pernicious impacts associated with new geographies of manufacturing, technological change, and the decline of union power.[4] Global forces of economic change have intersected powerfully with institutions at the local level – such as those that structure political representation, tax collection, or urban planning, as we will discuss – to produce a racialized poverty that limits opportunity for many of the majority-Black residents of Detroit.[5] Attempts to fuel business in services and the "innovation economy" – expansive sectors that increasingly capture the highest rates of growth in developed economies like the US – pay significant attention to challenges around workforce skills and training. Such approaches, elevated during technological junctures, tend to emphasize skill-biased economic dislocation and its implications for the

quality of jobs and the security of existing workers as they fend off obsolescence.[6] Today, these challenges may indeed blunt the region's competitive edge in the automated vehicle fight.[7] However, as Southeast Michigan crafts workforce policies to shepherd an emerging AV industry, issues that structure who can *access* and benefit from such programs remain. Indeed, mobility is a fundamental problem underlying nearly *all* of the region's workforce development efforts. Across Southeast Michigan and within Detroit, peoples' ability to physically access employment, education, and workforce training is highly uneven.

Positioning Mobility as a Workforce Issue

This working paper takes as its starting point the critical importance of mobility issues to *workforce issues*. Practitioners in Southeast Michigan regularly attend to workforce challenges that take root in access and mobility constraints. In the media discourse, transportation and employment are routinely linked, whether in covering one man's 21-mile commute on foot, or airing the frustrations of local business elites whose failed bid for Amazon's second headquarters was said to have been partly undermined by the region's limited transit network.[8] As we will discuss, these challenges reflect a contested history of transport decision-making and job access that cuts across race, class, and neighborhood. provides a sense of the real barriers imposed by the geographies of mobility and employment, highlighting a stark asymmetry of high-income suburban workers commuting into the city, and low-income Detroiters commuting to fill service sector jobs in the suburbs.

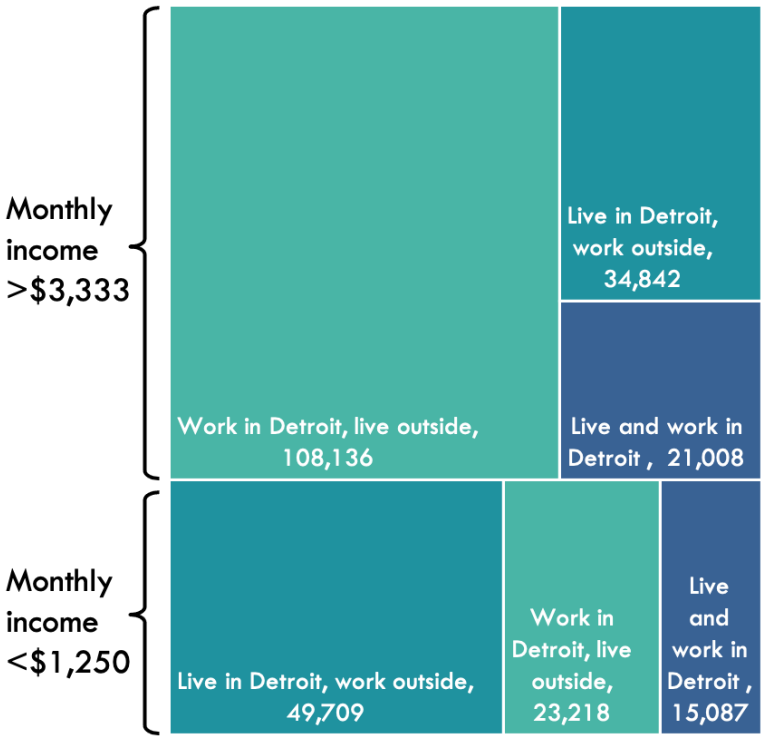

Figure 1: Inflow/outflow of high- and low-income workers in the Detroit-Warren-Dearborn MSA (Source: U.S. Census Bureau OnTheMap)

Although we encounter the mobility system today as a behemoth forged in iron and concrete, the now ordinary ways we get around have been decisively shaped by a handful of moments across history. These moments, like the highway building era, are realized amid simultaneous political, economic, and technological developments. Such junctures are unique in that they offer rare openings for change in systems that otherwise resist redirection. While history nevertheless conditions decision-making in Southeast Michigan, there is good reason to think of the present moment as an opening for significant evolution in the mobility status quo. In addition to centering mobility as a fundamental workforce issue, this paper also positions the current atmosphere of technological experimentation, political mobilization around transit issues, and a powerful urban-centered economic development agenda as a significant fork in the road – one that may have an outsized impact on future trajectories of the region and its institutions.

Developments over the last several years suggest that the contingencies of the existing transport network – dominated by gas-powered personal vehicles and a fractured bus network – may be relaxing. Political will continues to be spent on a host of new mobility programs, pilots, and initiatives. These efforts, which will be covered in detail in later sections, take the form of new government offices, public-facing automated shuttle pilots, partnerships with ridehailing platforms (e.g., Uber and Lyft), employer-sponsored subsidies for e-bikes and scooters, as well as redesigned bus routes and upgraded fare collection schemes. Renewed attention on mobility intersects with a broader workforce agenda where, given the hard-fought jobs recovery since the Great Recession, one of the lasting employment challenges in the region remains persistent gaps in matching employees to employers, and in enrolling target workers in the education and training programs that can connect them to a larger pool of opportunity. Both of these gaps are exacerbated by the (in)ability of people to get to job interviews or to reliably commute to and from work or school. The quality of access produced by the mobility system is a crucial factor in employment outcomes. Dismantling this system of uneven access in order to cultivate pathways of greater economic opportunity therefore becomes a critical workforce challenge.[9]

Research Questions: Uncovering Avenues of Institutional Change

The central aim of this working paper is to understand how emerging transport technologies affect the institutions governing Southeast Michigan's unequal mobility system. Thus, a motivating question asks: are new technologies changing the accessibility of employment centers and workforce resources among economically marginalized groups? From these impacts on the ability of people to forge new links to the job market, we look to reveal implications for *institutions*. Are experiences with new mobility technologies – evidenced in the suite of hotly debated policies, pilots, and programs – altering the rules of the game? Are the norms that structure transportation decision-making being challenged, or

has business as usual prevailed? Has this period witnessed an elevation or demotion of any key organizations or coalitions that preside over mobility issues?

Taken together, the above questions look to contextualize the broader impact of technological change in Southeast Michigan by focusing on the radiating institutional implications of new mobility technologies. We also consider historical precedents that are both instructive in understanding periods of technological and institutional change, and that continue to shape the region's transportation system. What institutions and technologies were instrumental in shaping the geographies of access as they exist today, and how have they changed over time? Why and how does access to employment and other opportunities remain unevenly distributed across the region?

Finally, a key goal of this work is to produce relevant and practicable insights for workforce policy. To that end, we synthesize our findings by asking: how might a focus on mobility institutions inform policy interventions to address the stark inequalities of opportunity across Southeast Michigan?

Key Takeaways: Institutions in Motion

We document a number of examples of shifting public sentiment around mobility issues, present evidence of a more robust and effective transportation planning and policy culture, and highlight the emergence of an urban-centered growth coalition that has taken up mobility as a key employment and development issue. Technology can – and often does – figure into these organizational and institutional dynamics, but it tends to be one of many forces at play. Certainly a powerful force remains the entrenched institutional architecture inherited from a growth and decision-making apparatus – one designed to support suburbanization and manufacturing – that often stands in tension with today's public goals.

1. Although pilots can increase access for a limited number of people, they are far from a cure-all – an overemphasis on new technology can unintentionally detract from essential investments in core transit service. Policy discourse that uncritically speculates about possible technological futures shifts public perception in a potentially harmful way – chipping away at support for existing and essential transportation investments, such as bus service. This is clear in the recent failure of regional transit ballot measures where an ethos of "why invest in buses when Uber is coming tomorrow?" was one factor impeding the 2016 RTA proposal.

2. New pilots and programs, if implemented inclusively, can provide a venue for fostering coordination and forging new coalitions that can more effectively advocate for mobility needs. Beyond their operational impacts, these opportunities can start new conversations and foster collaboration.

In doing so, pilots can challenge the fractured and often siloed status quo. Further, as signs of incremental change, successful pilots nurture organizational learning and provide a meaningful sense of progress toward solving seemingly intractable challenges. Many of these initiatives are spearheaded by an emerging coalition of business elites and philanthropy to change the rules of the urban mobility game through mechanisms like public-private partnerships, outside the confines of established institutions. Equity and planning concerns arise when these private investments are exclusionary by design, whether that be due to user cost, technology requirements (e.g. requiring a smartphone or bank account), or stigma (e.g. riders feeling that a service is not "for them"). The most institutionally impactful pilots are those that are built from the bottom-up, as opposed to being implemented under top-down directives.

3. Inherited institutions run the risk of replicating familiar racialized and spatialized patterns of access. In particular, the fragmentary nature of decision-making remains vulnerable to age-old divides between suburb and city, white and Black, private car and public bus. This fragmentation stems from an emphasis on the autonomy of local governments and remains deeply institutionalized through the municipal financing scheme for transportation investments that includes property tax limits and restrictions, local spending requirements, and an "opt-in, opt-out" structure for public service provision. Taken together, these norms and practices create veto points that can obstruct attempts at broader reform.

4. The layered crises brought on by the COVID-19 pandemic and nationwide protests against anti-Black violence at once underline the intersecting systems of racial injustice, including mobility. In the context of unprecedented job loss and extreme economic uncertainty, the broader workforce and economic development agenda continues to shift in order to address urgent needs among front-line workers and the unemployed. In Southeast Michigan, public transit use is concomitant with other social determinants of health (e.g., income or race). Through the lens of COVID-19, the precarious wellbeing of Black and low-income bus riders in Detroit is accentuated by the unequal toll of the pandemic.[10] In the context of mass mobilizations against police violence, Southeast Michigan's transport network manifests yet another systemic injustice faced by Black people and other people of color.[11] While some of the mobility technologies we discuss have been instrumental in new strategies for providing safe and dependable access for front-line workers, automated vehicle pilots have mostly receded from public view, a number of mobility platforms have faltered as ridership has plummeted, and even the QLine streetcar has ceased running.[12] We interpret connections between our findings and this historic moment in greater detail in the discussion section.

Structure of this Working Paper

The structure of the working paper is as follows. First, we briefly discuss the methodology, which included extensive interviews, documentary analysis, and data collection. Next, we summarize the existing state of the mobility system and trace back the roots of this system through a detailed historical-institutional analysis. This historical section pays particular attention to the effects of mobility technology and infrastructure policy across levels of government (e.g., federal/state highway spending) in shaping institutions that continue to pattern access today. The following section outlines our present findings, documenting the mobility and workforce issues that animate experiments with new technology and a range of policy proposals. We then turn to a discussion that synthesizes these findings in the context of our research questions, before concluding with a set of high-level insights for mobility and workforce policy.

Methods

General Analytic Framework

In order to analyze the effects of technological and economic change on Southeast Michigan's mobility system and the access it provides to workers, a productive starting point is to ask: how are transportation services provisioned in the first place? We can point to the organizations formally tasked with *doing* transportation planning and building infrastructure, but where did these organizations and the processes that animate them come from? Theories that explain how political processes shape the world adopt vastly different units of analysis as their starting point. Depending on whether you investigate the structure of everyday life from the starting point of individuals, cultures, technologies, or social classes, it is possible to wind up with markedly different understandings of how the world works.

The analytic framework we adopt here focuses on institutions as the central unit of analysis. By institutions, we refer to the rules, sets of practices, and norms that shape social, economic, and political relationships between and among public and governmental, civic, private and philanthropic organizations. Institutions, conceived in this broad sense, are central to understanding transportation planning and policy decisions, particularly during periods of social and technological change. Given the contingent nature of institutions, this perspective naturally turns attention to the historical dynamics that punctuate and sustain different norms and practices, as well as the relationships between them. A historical framework that incorporates insights from previous eras of institutional change may prove useful in explaining present efforts and inherited power dynamics. Indeed, one such era of particular importance in this context, as will be discussed, is the highway building era of the mid-twentieth century.

A Mixed-Methods Extended Case Study

To operationalize the framework described above, we adopt an extended case study approach. An extended case study is one that links the processes and outcomes we observe within a specific, time-bound research site to an extended array of other places, spaces, and times.[13] Simply put, this approach takes the form of a case study, but in doing so emphasizes a broader conception of potentially relevant and explanatory connections. With an expanded sense of what, where, and whom is relevant, we aim to deliver a more robust analysis.

In order to develop this analysis, we took a mixed methods approach to studying the Southeast Michigan case. Data collection included semi-structured interviews, documentary and discourse analysis, as well as quantitative and geospatial analysis. Between 2018 and 2020, the team conducted over 25 semi-structured interviews with practitioners and stakeholders including transit providers, public officials, philanthropic organizations, academics, and transit advocates. We also collected and analyzed the relevant policies, budgets, legislation, media articles, vision documents, and plans produced by these stakeholders. A map of the organizational network we attempted to trace over the course of this study can be found in Figure 2 below.

Figure 2: Map of the Organizational Universe in Southeast Michigan

Contested Access: Current Conditions and Historical Background

Over the last century, Southeast Michigan has experienced the effects of different industrial, social, and political transformations. In the early 1900s, the region emerged as a beacon of the industrial age driven largely by expansion in the automotive sector. Employment in its factories and assembly plants typified the stable and lucrative work that could be found in America's Rust Belt. While this growth systematically excluded Black people and other racialized minorities from positions that offered the greatest prospects for prosperity, Detroit nevertheless became one of the primary poles of The Great Migration of agricultural workers to northern cities. From its industrial heyday, many politicians, scholars, activists, and residents point to the uneven waves of boom and bust that followed. Scenes from Southeast Michigan have captured the highs of the "Great Society," the struggle for civil rights, the rise and fall of the labor movement, the growth of suburbs and the deliberate hollowing out of urban centers, as well as more recent effects of deindustrialization and the rise of the service economy. Mobility issues have often figured prominently across this history. As the region arrives at its present juncture, one finds potent traces of this technological, demographic, political, cultural, and economic history.

The historical section below aims to do two things. First, it provides a brief snapshot of the current mobility system, using a mix of data sources to identify the current uneven state of access, emphasizing key fractures by space, race, and income. Next, the section documents in detail the institutional history through which the current state of access has been contested. This history draws out a series of important constituencies and policy decisions – at the local, state, and national level – that continue to play an important role in shaping mobility decision-making today. A summary of the detailed historical narrative and its core implications for contemporary mobility issues concludes this section.

Today's Mobility System: A State of Uneven Access

Southeast Michigan's transport system, dominated by highways and buses, produces a state of unequal access, differentiated by race, class, and space. The first thing to note about the region is its sprawling geography, with clear but now blurring patterns of racial segregation. In particular, job opportunities are spread throughout the region, with many low-income/low-skill jobs in the manufacturing and service sectors found throughout the suburbs and notably missing from Detroit outside its downtown core (Figure 3). This spatial orientation causes the asymmetric nature of commuting noted in Figure 1, with high-wage workers facilitated by an extensive network of highways that provides direct access to jobs in downtown Detroit and across a number of significant suburban job centers. Meanwhile, many low-wage workers in the region

and particularly in the city are excluded from the automobile system due to the high barriers to car ownership, yet are forced to commute outward to fill service jobs in the suburbs.

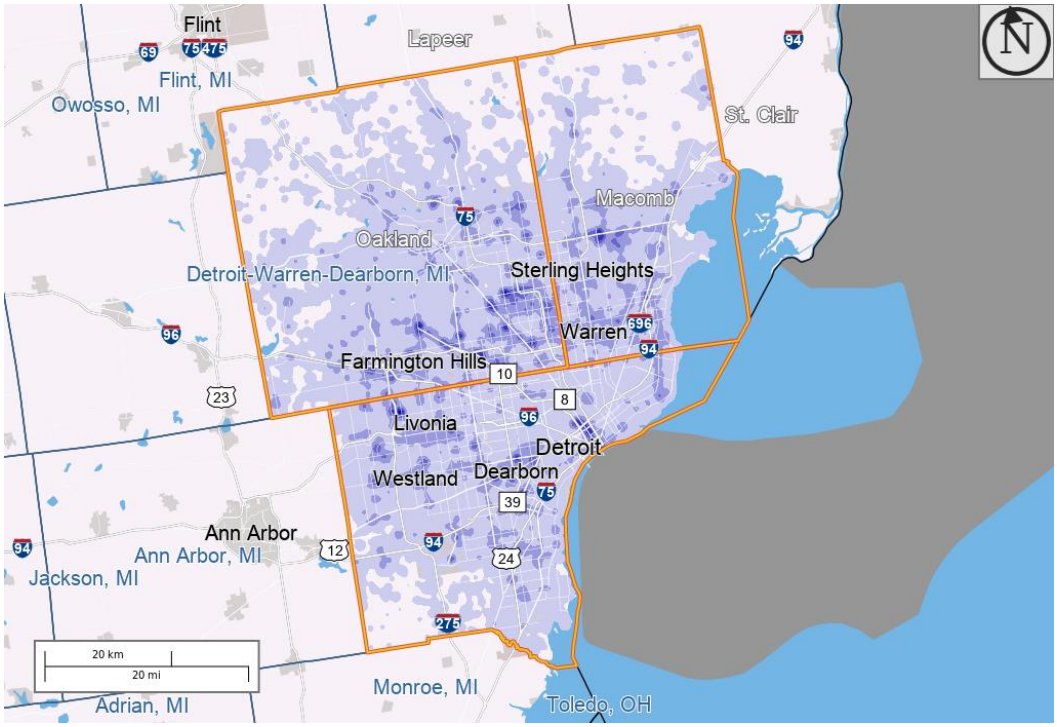

Figure 3: Location of jobs paying $1250/month or less in 2017 (Source: U.S. Census Bureau OnTheMap)

Automobile accessibility across the region is high and evenly sprawled out, with high access in Detroit due to its geographic centrality. The major differentiating factor in the region is a "modal mismatch", where those without access to an automobile face drastically different outcomes.[14] Figure 4 illustrates this through a comparison of job accessibility between Black and non-Black people in the four-county region in 2018. High accessibility is spread evenly among non-Black people, whereas Black people either experience high accessibility due to Detroit's central location, or near-zero accessibility due to lack of car access and reliance on the limited transit system. What is particularly worrying is the substantially higher Black population without vehicle access compared to the non-Black population. Such measures of access, while informative, likely conservatively estimate the magnitude of disparity and do not account for the quality and ease of travel, neglecting factors such as delayed buses, unreliable automobiles, and congestion. Further, these studies can only illustrate geographic access, and leave out well known barriers of racial employment discrimination and exclusion from social networks important for a more holistic understanding of job "access".[15]

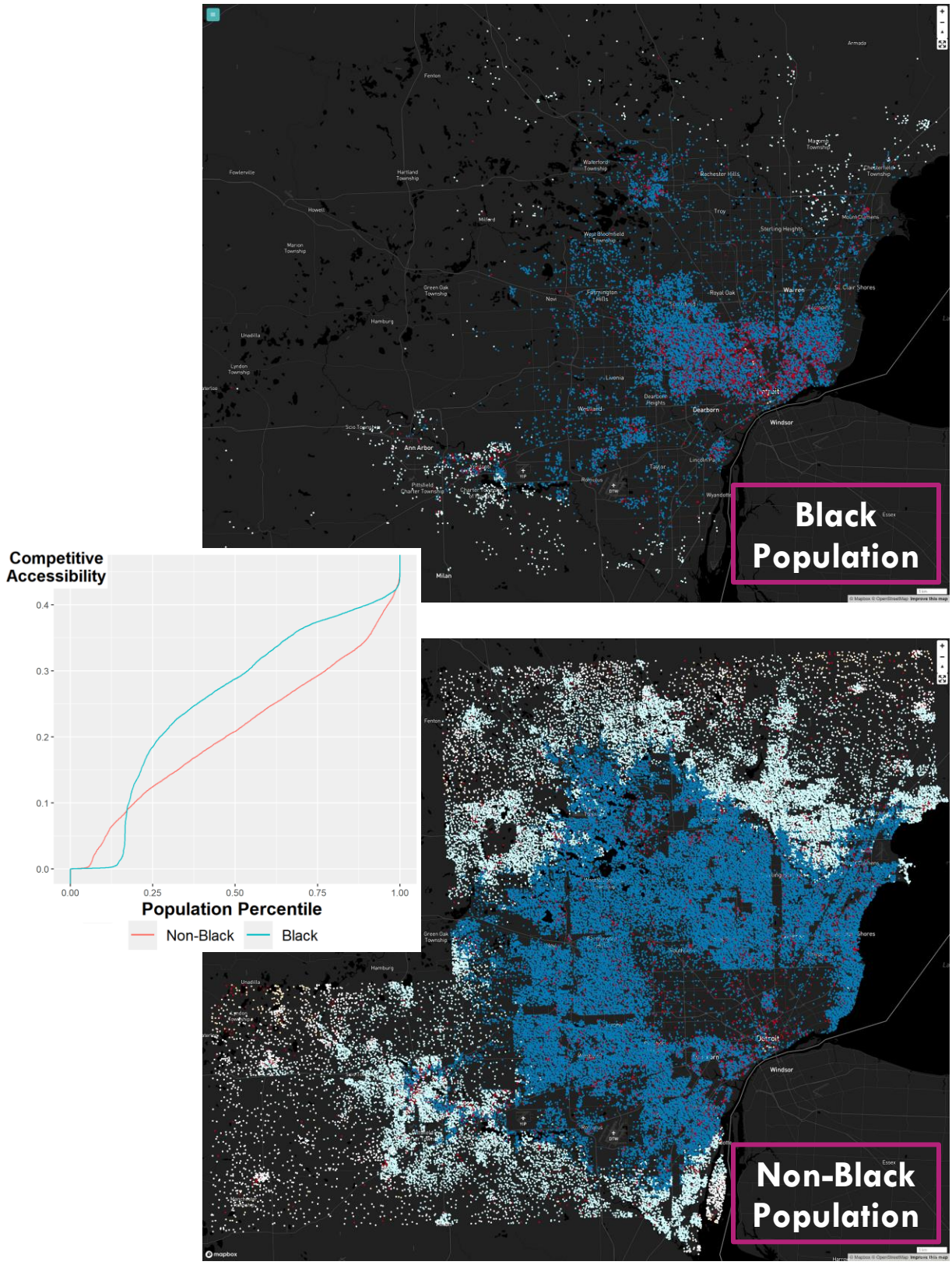

Figure 4: Accessibility to work by race, Detroit four-county region, 2018. Red dots indicate low accessibility (generally transit-dependent), while blue dots indicate high accessibility (generally car-owning). One dot per person age 16 and over; not all dots are able to be displayed. [16] *Racial disparities are highlighted by the differences in the lines in the graph's lower population percentiles.*

Given sprawling land use patterns and a limited transit system, the automobile is a major lifeline for people to access jobs and livelihoods. Many thus drive illegally due to high barriers to automobile access such as high insurance rates,[17] an ongoing struggle to bear the high costs of car ownership, non-driving reasons for license suspension, and excessively harsh misdemeanors and civil infractions that effectively criminalize driving while poor. This feeds into a policing system that targets poor and Black drivers, and a district court system that extracts huge sums of money from drivers with perverse incentives to be self-funding. Vulnerable drivers can easily enter a vicious cycle of job loss, arrest, and incarceration leading them deeper into the criminal justice system.[18]

Meanwhile, despite some philanthropic attention, transportation assistance policies (e.g. car maintenance vouchers, subsidized transit passes) are meager for people facing significant barriers. Low-income individuals seeking assistance are forced to navigate a patchwork of small scale transportation services.[19] Many assistance programs try to incorporate new mobility technologies, though many in their target populations lack internet access or are unbanked.

Per capita transit operating spending in Southeast Michigan is among the lowest of major metro regions (Figure 5), and is decreasing (Figure 6). SMART, the suburban transit authority, has raised its funding and expenditures through a recent 70% millage increase in 2014, while the city's DDOT has decreased its funding as it competes with other city services for apportionment from the general fund that is subject to severe fiscal constraints. This city-suburb dynamic continues despite DDOT providing more service and serving a population with much lower automobile access. Agencies deeply cut transit services through the Great Recession as well, with SMART and DDOT yet to recover to pre-recession service levels.

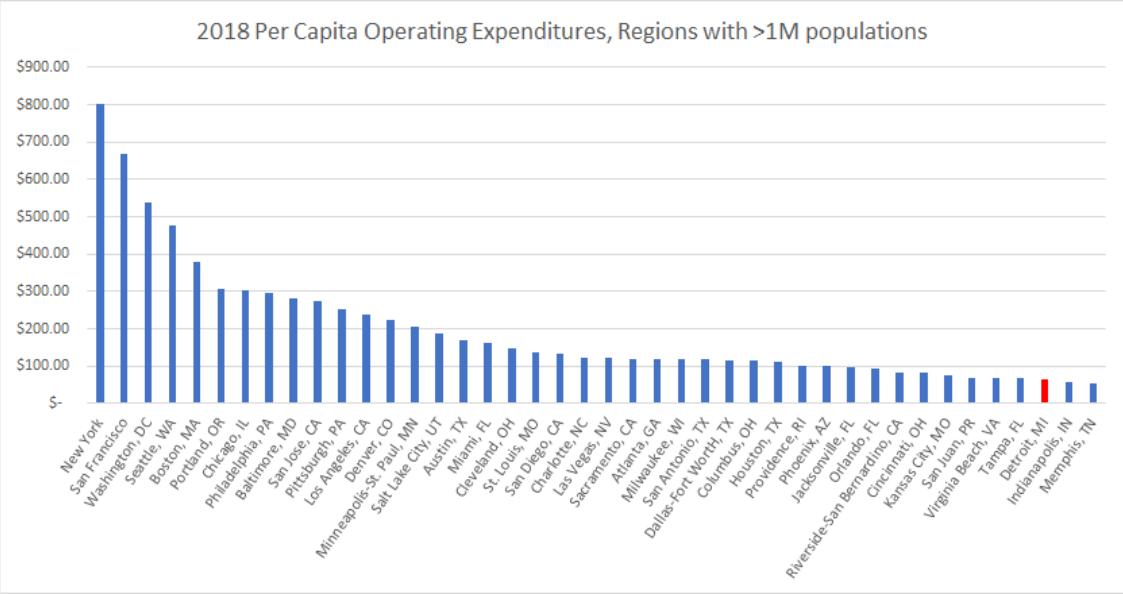

Figure 5: 2018 Per Capita Transit Operating Expenditures (Source: FTA National Transit Database, Transportation Riders United)

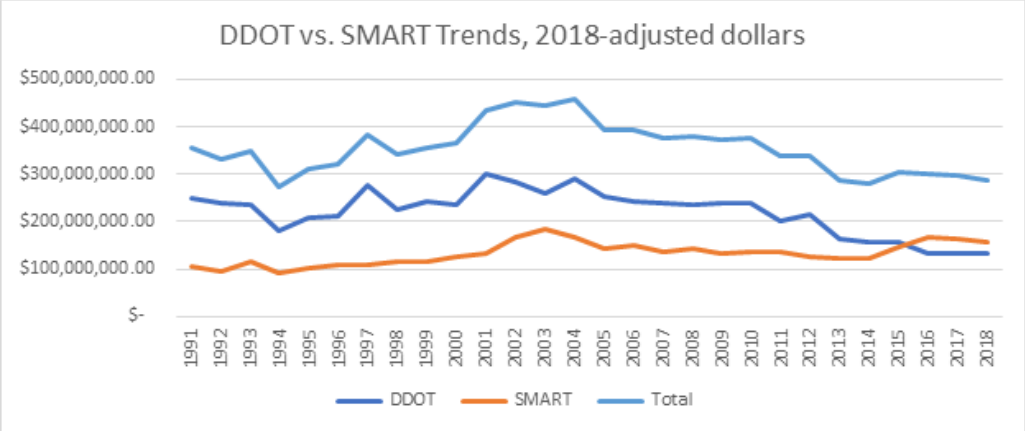

Figure 6: Southeast Michigan Operational and Capital Transit Spending Over Time. (Source: FTA National Transit Database)

The current state of uneven access is both shaped by present day actors and an historical legacy. It is to that history that we now turn.

A Motor City Built on Rails (1860's - 1920's)

The peculiar immobility of the Detroit region is the direct result of over a century of complex urban political and economic histories. Publicized narratives often lean upon the surface coherence between the hegemonic dominance of the private automobile in the Motor City and regional mobility systems. However, delving into the intricate regional dynamics at play in every era, through the region's rise to prominence, to its reorganization into the dislocated economic engine of today, reveal the competing coalitions, modes of production, and cultural narratives that fashioned the mobility outcomes confronting the region in the 21st century.

Despite its astronomical centrality in the 20th century Detroit, the personal automobile inherited a regional mobility system reliant on rails. Transit workers themselves were a powerful constituency in a nascent industrial dynamo which tied the development of regional manufacturing to rapidly expanding urban neighborhoods. It was the streetcar, before the glut of highways and auto-oriented development, which shaped the Detroit of the Model T through the Model A, and set the regional contours upon which an industrial behemoth developed.

Detroit was an advantageous regional trading and manufacturing center during the 1800's, 50,000 strong by 1863. Oriented along five radial thoroughfares which connected the central city with regional nodes,[20] private horse-drawn railcar companies were the first mass-transit solution for a thronging Midwestern city. Charging 5 cents per ride, enough to fund line extensions as demand grew, these transit lines drove geographic expansion through annexation, and inter-urban routes responded to increasingly regional mobility demand.[21]

By the turn of the century, a maturing industrial hub developed, and transit was the site of massive consolidation, as individual companies struggled to maintain adequate service, and electrification, the first mobility revolution to take hold in Detroit. Public transit was itself a powerful component of a nascent industrial working class in the region, which drove a progressive impulse for higher wages and improved services. Restless working classes interacted with tight partnerships between the energy production industry and streetcar companies — often wound together — creating dynamic capital pools capable of major infrastructure investments that fed rapid expansion.[22] Progressive movements, harnessed by leaders such as Mayor Hazen Pingree, exercised the robust powers granted to cities and townships laid out in the Michigan Constitution known as Home-Rule, to subordinate transit provision to municipal regulation.

These powers of municipal self-government were ratified anew in the 1908 Constitution, and would play a defining role in regional mobility during the 20th century. A legacy of Jeffersonian planning, state Home Rule retained powers such as taxation under State legislative control, though cities had broad authority to incorporate, dissolve, combine, and otherwise manipulate their charters and public rights of way.[23] Municipally subsidized "Pingree three-cent lines" and a consolidated Detroit United Railway (DUR) company, therefore, were fixtures of early regional mobility, which incorporated a web of inter-urban lines, and forming the nation's most extensive regional system with service as far as Flint, Ann Arbor and even Toledo, Ohio.[24]

The rapid scale of service expansion still lagged the expansion of demand. Detroit's exploding population reached 500,000 by the second decade of the 1900s, and city boundaries crept into the suburban landscape.[25] Riders grew increasingly unsatisfied with DUR service, as it struggled to keep pace with the most dynamic city in America, and fare hikes soured relationships. In the wake of entrenching Home Rule powers granted by the State of Michigan's 1909 Home Rule Cities Act and Detroiters' decision in 1913 to amend the city charter, municipal ownership of public transit gained major political thrust.[26]

Mayor James Couzens, formerly of the Ford Motor Company, was elected after World War I on the progressive promise to bring the DUR under municipal ownership. Home Rule laws supported municipal bond-issues to fund competing municipal lines, and muscular assertions of city control of property. The city system purchased the bulk of DUR trackage through a further municipal bond issue, and the Department of Street Railways (DSR) was born in 1922, with the DUR reduced to a few suburban lines.[27] Detroit now owned and operated its own transit system, and looked to the future through the Rapid Transit Commission (RTC), proposing integrated regional systems from subways to highways, including innovative hybrids.[28] The Motor City was a national leader in municipal public transit provision, the backbone in the lives of auto workers and an industrial working class.

Fragmentation (1920's - 1940's)[29]

Transit consolidation, expansion, and designation as a public good were attempts to compensate demand in a young industrial behemoth. Before widespread car ownership and suburban road construction, public transportation was the main conveyor system in an unprecedented economic dynamo. Worker bargaining inaugurated a defining contract between capital and labor where the 5-dollar day and Fordist employer-based social development programs, including subsidized housing, health, and education programs, supported vast migration waves of workers and their families, outstripping geographic boundaries and service levels.[30] Annexation along transit corridors, which colocated this industrial bloom further into the hinterlands, proceeded until 1926 Detroit reached its current size of 139 square miles. The population approached 1.5 million — a staggering five times its population in 1900 and catapulting Detroit to the 4th largest city in the country.[31]

This geographic expansion, however, was halted by the very Home Rule laws which facilitated municipal control and consolidation. State legislation during the 1920s favored incorporation over consolidation and robust regional transit made newly incorporated villages and townships around the city possible.[32] Maturing auto giants Ford and later General Motors consolidated regional companies, and pursued massive production facilities in these newly incorporated territories, as with Ford's River Rouge vertically integrated mega-plant. In Highland Park and Hamtramck, large manufacturers leveraged their economic control to resist incorporation as the city expanded around them.[33] These facilities took advantage of greater space and lower property taxes, but still benefited from Detroit public services such as transit.[34] The automobiles these giants mass-produced created intensifying demand for the segmented suburban lifestyle, including single-family home construction and investment in regional roads and highways.

Racial inequality pervaded Detroit's geographic and employment development as well, shaping the ethnic enclaves of the city divided further into jurisdictional boundaries as whites accessed the hinterlands only to deny Black and Latino families entry. The restrictions exemplified by the Ossian Sweet case in 1925 entrenched a lurking hostility between Detroiters and their suburban neighbors, which would continue to plague regional integration in perpetuity.[35] As the nation plunged into the Great Depression, a rapidly decentralizing population and tax base faced deep troubles, as resources shifted heavily toward subsidizing segregated suburban development.[36]

The economic hardship of the 1930s precipitated massive instability and unrest in Detroit, leading to major changes and elucidating growth machine fault lines. At the beginning of the decade for example, the state refused to back Detroit's proposal for a subway, and by the end of the decade, the wholesale shift from rails to rubber tires was underway.[37] A resurgence of organized labor power, once instrumental in securing

transit industry improvements during the Progressive Era, inaugurated a new paradigm of strong union membership through the United Auto Workers. Labor protections won, including the right to collective bargaining through the National Labor Relations Act in 1937, secured rising standards of living, coupled with New Deal programs. This legal and labor apparatus steeled the industry for intensified production during World War II, igniting an economic engine known as the Arsenal of Democracy.[38] Echoing early industrial Detroit, transit itself was a major sector of employment, especially for African Americans migrating North who found work with the DSR when other industries remained off limits.[39] These shared industrial gains shifted to consumer production following the war, and federally-backed mortgages and highways supercharged the regional economy, but often neglected the central city and its growing proportion of minority residents. A highly subsidized white prosperity predominated in the suburbs, with Black Detroiters intentionally barred from such wealth creating programs.[40] These ongoing tensions boiled over on numerous occasions in increasingly divided public spaces, such as a deadly race-riot in 1943.[41]

Depression, War, and Highways (1940's - 1960's)

Public transportation policy beyond highway construction during this era was largely dormant. The emergent middle class spread out and bought cars, while transit hemorrhaged ridership and funding, unable to tap state gas taxes or benefit from wartime highway funding.[42] Confined to the city, Black Detroiters depended on thinning resources to access increasingly dispersed regional opportunities.[43] Labor and racial tensions were key drivers in corporate restructuring and regional planning.[44] Highways, coupled with slum-clearance programs, aimed to drain congestion in central cities, and secure the futures of the white suburban middle class through expanded roads and highways, linking regional plants and homes with parking alongside major corporate property downtown.[45]

Major legislation, such as the Federal Aid Highway Act of 1944, combined with state allocations of private vehicle gas tax revenue, to deepen auto dependence. Detroit elected Mayor Albert Cobo in 1949 who in stark opposition to transit forebears, overruled a stream of expert planning counsel during this period to practice unadulterated highway boosterism, dismissing "prohibitively" expensive and "ancillary" forms of mobility beyond cars. Cobo and his allies thus protected downtown real estate values through a regional mobility model built to whisk new suburban homes to their downtown cathedrals of the consumer economy, embodied in the downtown convention center bearing his name.[46]

The Detroit Plan of 1947 reflected this dominant planning paradigm, privileging slum-clearance, redevelopment, and expressway construction. Codified in the 1951 Master Plan dedicated to downtown preservation, the plans drew highways directly through urban districts slated for redevelopment. City, state, and county leadership bathed in fresh concrete, tapping federal largess or funneling state tax

dollars through powerful county road commissions, and granting expanded municipal bond financing powers.[47] Michigan's Public Act 51, passed in 1951, set funding apportionment and municipal bond guidelines into law, favoring powerful trucking interests and county road commissions to set state transportation planning agendas in perpetuity. With bond issue rights extended to municipalities small and large, as well as increasingly suburban seats of county government in the Detroit region, exorbitant expenditures accrued on regional balance sheets, whetting the vicious cyclical appetite for massive state and federal subsidies for road construction at the expense of transit.[48]

By 1952, a Wayne State survey revealed the caustic decline of the bus and streetcar system in Detroit, ranking in the top 3 of important issues facing residents. Both white and Black residents still reported purely economic promise, it revealed the pernicious effects of regional segregation by race and class, and public transit especially remained a space where whites bemoaned "intermingling."[49] In response, Cobo and a cadre of state and county officials riding the wave of highway construction lobbied hard not only for the passage of the 1956 Federal Highway Act but its unprecedented 90% federal matching funds allocation for highway construction, where state and local government pitched in 10%.[50]

Concurrent with regional development policy which structurally privileged autos over public transit, rubber over rail, the DSR continued to struggle, using limited funds to replace its iconic fixed rail routes with buses. In 1956, the same year as the Federal Highway Act, the city sold its last crop of streetcars to Mexico City.[51] The transformation from the fixed-guideway rail transit that bound a mature industrial metropolis to the fragmented suburban region of roads was complete. Implicated in this transformation was the rise of a newly preeminent corporate decentralization strategy, which sucked employment further toward the edges of the region, and began the relocation of production to the weak labor environments of the South and West.[52] As Detroit hit its peak population, then, the structural unraveling of regional solidarity was in process. Municipalities gorged on plentiful federal dollars for highways and suburban construction at the expense of an increasingly poor city of Detroit, with a growing population of Black and other people of color locked out of suburban gains. The transit system they depended on was summarily ignored by regional boosters until the 1960s.

Urban Crisis (1960's)

Thus, by 1960 deindustrialization in Detroit was in full effect, with Detroit's East Side alone losing 70,000 jobs and 20% of its population, predominantly white. Destruction of prominent Black neighborhoods adjacent to downtown, such as Paradise Valley, proceeded through urban renewal and highway policies.[53] Despite the bleak picture, a countervailing force was beginning to emerge, led by an increasingly assertive plurality of Black residents, coupled with a dawning recognition of central city mayors across the

country. The rise of the automobile was sapping public transit ridership not only in Detroit, but nationwide, including legacy regional transit systems in eastern cities such as New York and Philadelphia.

A growing working group of mayors from a range of American cities were confirming the impact of a 1959 report by the American Municipal Association entitled *The Collapse of Commuter Service*. The report detailed the creeping inability of further highway construction to deal with regional congestion, and the subsequent bankrupting of hundreds of cities, especially in places like Southeast Michigan, unable to adequately pay off skyrocketing municipal debt from highway projects, as their revenue options were limited by state government. Public transit, an afterthought for decades, was recognized as an absolute necessity for maintaining urban mobility, but systems nationwide suffered serious neglect.[54]

Invigorated by the common tumult of urban crises, mayors included urban mass transit in an urban agenda acknowledging the federal government as uniquely capable of encompassing the scale of the crisis. Reaching the ears of the 1959 Kennedy campaign, a working group of planners and local leaders were careful to ensure both highways and mass transit were addressed, and Kennedy's constituency launched a move toward legislation after his election. Thanks to a modicum of recognition about the failures of previous urban policy, transit was presented as a boon for downtown interests, enabling a broad coalition of mayors, governors, and corporations to support transit as part of a larger package of urban measures.[55]

The first ever federal provisioning for urban mass transit, therefore, was included in the 1961 Housing Act. This first inkling of federal attention provided a few hundred million dollars for transit demonstration programs, regional transit planning, and capital repairs. Inclusion in the 1962 Highway Act, extending similar small-scale initiatives, exemplified a thematic ambivalence about the place transit should occupy within federal policy. Finally, the growing coalition of transit advocates, including the first national urban public transit lobbying group, the Urban Public Transit Association (UPTA), a forerunner to today's American Public Transportation Association (APTA), achieved a major victory in 1964 with the passage of the Urban Mass Transportation Act of 1964. This act extended the demonstration programs, and devoted $400 million to be distributed to transit agencies nationwide.[56]

Thus, urban problems, including mass transit beyond highways, were becoming a priority for the federal government, animated by growing congressional and mayoral constituencies, as well as open conflagrations brought on by the urban crisis. Urban uprisings, from Watts in 1965 to Detroit in 1967, dominated the public consciousness, and national recognition of the state of society found voice in the Kerner Commission's warning of "two societies," "separate and unequal."[57] A new reform-minded mayor, Jerome Cavanaugh, was elected in 1962 with the support of newfound Black political power in Detroit.

Later that decade, a new Republican governor, William Milliken, would take up the cause of urban strife, and preside over a new era of public transit possibility in Detroit.[58]

A Window of Opportunity (1960's - 1980's)

Milliken's ascension to gubernatorial power in Michigan reflected a momentous coalition between downtown corporate interests, urban social movements, central city mayors, a growing network of transit campaigners, and regional governance structures, fueled at last by the promise of the federal purse. The decentralization of industry and living in the American metropolis created a recognition of regional necessity, crucially led by reform-minded governance and residual corporate alliances. The stark symbology of urban conflagration rhymed with a burgeoning technical expertise. State-of-the-art urban research such as the Detroit Regional Transportation and Land Use Study (TALUS) reiterated the growing consensus among decision makers that the urban crisis — the fragmentation of regions and subsequent insufficiency of local resources to provide for their constituencies — had already wrought indelible divisions.[59]

In response, federal and state policy, built toward regional alliances. The Southeast Michigan Council of Governments (SEMCOG) and the Southeast Michigan Transportation Authority (SEMTA) were products of state legislation designed to negotiate regional differences and establish the consensus requisite for federal assistance.[60] By 1968, a dedicated Urban Mass Transit Administration under a freshly minted federal Department of Transportation boasted a growing phalanx of public transit professionals with hundreds of millions of dollars worth of planning, demonstration, and capital grants at its disposal.[61] Though dwarfed by the unassailable dominance of highway interests, an exuberant coalition was developing, spanning all levels of government, and key corporate boosters. The boards of the New Detroit Committee and Metropolitan Fund, for example, invoked the hard lessons of the 1960s and charted a new regional vision capable of securing downtown property values and suburban employment centers through regional transit networks.[62]

The goals of this era were clear and urgent. Through SEMTA, Southeast Michigan embarked on an effort to unify the 88% of regional transit ridership supported by the city's DSR[63] with the rest of the regional system, upgrade rolling stock, expand this unified system along regional routes, attract growing urban and suburban ridership, and serve as the recipient agency for federal capital and later operating assistance necessary to build a modern regional transit system. By the early 1970s, SEMTA was off to a good start, incorporating a number of suburban routes and upgrading its old buses. Planning was advancing rapidly, including a comprehensive radial system, including a modern subway line from downtown Detroit to Pontiac out in Oakland County along the central corridor of Woodward Avenue. Federal commitments

continued to expand under the Nixon administration, and with state and local support, were scheduled to become a reality within a decade.[64]

Despite a congealing governmental and advocacy apparatus in support of public transit in Detroit, the fragile regional project confronted powerful barriers. At the state level, executive support from Milliken and his Urban Affairs office struggled to sell regional transit to "outstate" rural and suburban legislators, unconvinced by what they perceived as a giveaway to urban areas decreasingly representative of their own constituencies.[65] Inflamed by backlash politics against urban uprisings during the preceding decades, the vulnerabilities of regional structures were increasingly exposed. Instead of robust proscriptions for regional structures, Home Rule interpretations, as furthered in a new 1961-62 Michigan Constitutional Convention, reiterated broad freedoms for voluntary cross-jurisdictional alliance and bond financing, but kept taxing restrictions firmly within state legislative control, and incentivized local government competition over cooperation.[66]

Early in the planning process, therefore, SEMCOG and SEMTA struggled to maintain membership, as outstate legislators and suburban municipalities threatened to opt out. In 1973, Detroit elected its first Black Mayor, Coleman A. Young, just as tensions over cross-jurisdictional school busing came to a head. Now a firmly majority Black city, Detroit and its new mayor felt increasingly isolated within a rapidly diffusing region. By 1974, the old DSR was redubbed the Detroit Department of Transportation (DDOT), and city interests looked to state and federal sources for support, justifiably wary of unreliable regional governments. Though Milliken and Young struck up a productive partnership, the governor and mayor struggled to raise the matching funds and bind enough suburban support to unlock federal grants.[67]

By the mid-1970s, regional transit was thus making substantial improvements in ridership and planning goals. Improved infrastructure and flagging economic growth driven by the oil crisis supported a growing transit constituency both within and surrounding Detroit. DDOT and SEMTA remained separate, however, and though regional planners designed a comprehensive, tiered system, complete with radial trunk routes that linked city and suburb, consensus was continually frustrated. Mistrust pervaded negotiations, leading to individualized planning efforts, such as Mayor Young's Moving Detroit Forward plan, released in 1975, largely reflective of regional efforts, but incorporating a subway down Woodward and a People Mover, in high demand across American cities, to crown a downtown renaissance. These plans were intended for individual federal urban grants, but the ascension of prominent Michigander Gerald Ford to the presidency invigorated fresh optimism for a comprehensive regional system. This optimism came with a $600 million program for SEMTA's regional vision, if matching funds could be raised from state and local sources at 20% of the total cost.[68]

This was a powerful incentive, but still exemplified the second-tier status of regional mass transit compared to the 90-10% split available for highway projects. Galvanized by the federal commitment, Milliken spent valuable political capital lobbying for vehicle license fees and bond issues to raise $150 million, and by 1978, the legislature sent fuel tax increases and an allocation of sales tax revenue to his desk for signature. In 1979, SEMTA approved its final "M-1" alternative plan, complete with regional bus routes, park-and-ride options for regional rail commuters, light rail down Woodward, and Young's People Mover in the Central Business District. The total cost of the plan was estimated at just over $1 billion, with the state pitching in about 25% of the cost.[69]

The final push for comprehensive regional transit was delayed by a backlash from outstate legislators and suburban counties and municipalities which continued to threaten withdrawal from a plan for which they saw little outstate benefit, with an economic crisis deepening local scarcity. Time finally ran out in 1980. Milliken was forced to acknowledge the economic recession gripping Michigan's depleted economy, with jobs gone to the South, West or overseas, alongside increasing competition and the oil crisis.[70] The federal funding expansion for urban mass transit was slashed repeatedly by the Reagan administration. Though funding for existing systems remained, the result of a hard-nosed transit lobby that developed since the 1960s, Detroit's divided system lacked the capital infusion seized by other regions during the 1970s upon which to build a comprehensive system.[71] Declining ridership and further economic hardship in the central city was marred by vestigial transit construction, such as the People Mover- made possible only through direct federal funding and hopelessly over-budget.[72]

Historical Summary: Lasting Fractures of a Turbulent Century

Before there were highways, Detroit built a metropolitan mobility-productivity system that was the envy of the nation. Hard-won through worker mobilization and effective capital response, the spokes of the wheel extended and consolidated, fueled by wage gains carved from a booming industrial region. A combustible relationship between labor, the city, the state, and private capital recognized the irreplaceability of public investment in mobility to water growth. Once catalysts for consolidation and expansion during the progressive era, state Home Rule statutes ingrained legal and geographic divisions for the rest of the century. Economic depression and racial division wracked Detroit after two decades of astronomical growth, and the public transit engine which fed a diverse working class splintered alongside macroeconomic forces, and began the slow march to rubber tires over regional rail.

Amid significant gains from organized labor during the New Deal era and through the production booms of the war, capital fled an increasingly Black city, first to private suburban enclaves made possible by the automobile and Home Rule, and later to weaker labor environments in the South, West, and abroad.

Crucially, the might of a maturing global hegemon sank dollars into the elements of segmented suburban life– the suburban home and the highway. With full federal backing, municipalities borrowed, gorging on home and highway construction. In Detroit, the city and state legal apparatus which created the ghettos now ripped them apart, laying suburban-access highways through neighborhoods and destroying the social and economic fabric supported by public transit. From their adopted vantage point outside the city that birthed them, the white middle and capitalist classes exercised state legislative powers to restrict the growing Black constituency in Detroit, and funnel federal and state dollars toward highway construction, often through powerful county road commissions, that served private suburban interests. By the 1960s, municipal highway construction debt was a scourge across the region, and urban conflagration alarmed the remaining capital coalitions with stakes in the downtown.

A call for regionalism and public transit investment rang out in city and state offices, and found an audience in the federal government. From the later 1960s through 1980, regional planning agencies SEMCOG and SEMTA worked with downtown capital, Mayor Young, and Governor Milliken to inaugurate a regional blueprint for investment, articulated through opt-out regional structures and designed in accordance with national formula grants. In the end, the coalition splintered along county lines, strangled by the logics of competing localisms for depleting resources. Faced with the choice of roads for outstate counties or broad regional mobility for Detroit, the state legislature, county road commissions, and consolidated suburban capital chose the former, dooming regional planning and practice for decades.

With the demise of federal support for long-term regional projects by the 1980s, regional transportation in Southeast Michigan was resigned to a lopsided system, bifurcated along geographic, class, and racial lines. The dream of a unified SEMTA collapsed, dissolving into the Suburban Mobility Authority for Regional Transportation (SMART), and DDOT, confined to the central city. Though the coalition for transit built painstakingly since the 1960s secured capital grants and a trickle of operations funding, it was set against a tide of tax cuts and domestic infrastructure spending cutbacks. Detroit's schismatic system limped through the 1980s and 1990s. The departure of the political alliance between Milliken and Young, and the continued capital relocation to the suburbs, relegated the region to a loose patchwork of local units, each competing for state and federal resources with opt-out authority ingrained in robust Home Rule structures.

For expanding metropolitan areas in the South and West, regional systems grew around newly incorporated tax revenues, and nurtured by the cycle of limited federal grants now routinely on offer. In contrast, declining revenues in Detroit, held in check by state legislative barriers, and the indifference or hostility to mass transit in suburban areas, doomed the city to servicing a poorer population of under one million in a city built for a booming middle class twice that size. The housing crash of the late 2000s was

therefore the final deluge following a stream of departures that crippled city budgets and resulted in bankruptcy as the crash of 2008 took its toll.

The regional dynamics of mobility confronted in the most recent decade continue to bear the rifts and scars of a century past. Establishing the RTA in 2012 was a dormant engine sputtering to life after decades of neglect, despite myriad attempts to spark it. Creating bureaucratic structures is only a start, however, and voters continue to block the investment necessary for a unified regional system. Patterns of reactive capital-driven initiatives with the potential to bolster downtown circulation but which still neglect true regional connectivity bloom and wither.

Recent Interventions in Urban Mobility

Against the backdrop of a contested history, current interventions in Southeast Michigan's mobility system draw from a range of motivations, depending on who you talk to. These motivations are usually some combination of:

1. A desire to experiment with new technological solutions
2. An economic development prerogative
3. A political response to apparent access issues

Recognizing that these developments are densely interwoven, it is illustrative to break out the urban mobility institutional interventions we encountered, far from a comprehensive list, among these three categories.

The promise of technology

The role of experimentation as a learning process for the implementation of new mobility technologies has become increasingly salient in recent decades. The emergence of new private services in conjunction with persistent public sector budget constraints has created an environment that rewards entrepreneurial pilots and tech-forward experiments with valuable political capital. This dynamic, while gaining steam in the mobility sector specifically over the last several years, reflects a broader trend in governance associated with new attitudes toward uncertainty and entrepreneurship.

Some of the earliest mobility pilots had their origins in welfare reform in the 1990's (e.g., JARC), where federal transportation funding for job access programs momentarily spiked with the inclusion of transportation access as a key component of reducing welfare dependence.[73] In Southeast Michigan, this coupled with the Empowerment Zone designation of much of the city, which motivated incremental mobility experimentation while overall operating and capital funding peaked. Many of these experiments internal

to transit providers were spurred by GIS, new modeling techniques, GPS technologies (e.g., automatic vehicle location) and other non-technological service improvements, and some took a community-based approach:

- **EZ Ride:**[74] Following the Empowerment Zone designation in 1993, a multi-agency and community oriented *Community Based Mobility Strategy Task Force* was created in Detroit led by the Metropolitan Affairs Coalition (SEMCOG) and DDOT. With a growing number of community-based transportation services up to the late 1990's, they identified the need for an automated scheduling dispatch system costing around $280,000 to coordinate the multiple services into a single phone number to call and reserve a ride. The dispatcher would then deploy the nearest transportation service agency, encouraging community-based organizations to serve the community as a whole and also save costs. Though the nonprofit handling this service has since disbanded, this was a uniquely community-based service pitched as a technological fix to more coordinated transportation services.

Some of the latest technology-centric mobility experiments continue in this vein: not necessarily enabled by innovative technologies or business models, but instead focused on testing new markets and creative approaches to implementation.

- **D2A2**: With a lineage in student-organized University of Michigan sponsored shuttle services contracted to Indian Trails (e.g. CSG Airbus to DTW airport, Detroit Connector to Detroit), D2A2 is an RTA-sponsored hourly shuttle between Ann Arbor and Detroit. The service is framed as a three-year demonstration project budgeted for ~$8.5M and funded mostly through FHWA CMAQ grants, after which success metrics will be evaluated for the decision to continue or shut down the service. Optimistically, this would lead to support for the long contested and over studied Detroit-to-Ann-Arbor commuter rail. Though there is not much uncertain about operating a shuttle bus, uncertainty in implementation and public support as well as short-term funding sources lead to its "pilot" designation.
- **refleX and FAST:** Despite a contested legacy between SMART and DDOT over consolidation and federal funding splits, transit planners from both agencies partnered in 2016 to create branded two limited stop buses/BRT-lite lines along Gratiot (SMART) and Woodward (DDOT) Avenues, known as refleX. In 2018, given refleX's positive reception, SMART took over the service, increasing peak headways to 15 minutes and adding a Michigan Avenue corridor. Now, with evidence of FAST recruiting especially untenable choice riders, SMART is considering adding a fourth corridor. Again, testing a technical rearrangement of service (an express bus is hardly *new* technology) with an incremental process of scaling up defines these projects as pilots. The major uncertainty here is whether the service would recruit enough riders to be financially viable. Further though, this pilot positively impacted

On the other hand, riskier technology-centric mobility experimentation has largely been routed through new offices, partnerships, and organizational relationships:

- **City of Detroit Office of Mobility Innovation (OMI):** With origins in the city's Smart Cities Challenge bid in 2016, Mayor Duggan created the OMI as one of the first distinct public sector offices tasked with solving mobility problems. Its broad mandate is to make it easier for people to get around Detroit by collaboratively ideating, piloting, operationalizing, and funding effective new transit solutions to improve transit access and experience. It has played the role as a public-private facilitator through many pilot projects, is generally well funded, and is rooted in a human-centered design approach. As an example of this approach, this office recognizes the problem of uneven access, and seeks to pilot new technical fixes. Though, cultural pressures for "innovation" are vulnerable to capture by precarious tech companies (e.g. Lyft, micromobility companies) with troubling labor implications for gig workers, whereas efforts involving simple shuttle buses run into onerous procurement issues.
    - **Essential Workers Micromobility Pilot:**[75] A recent "super-fast" pilot addresses the immobility of essential workers during the COVID-19 pandemic, and explores the leasing of 120 e-bikes and 150 e-scooter to employers for 16 weeks. The motley partnership between mobility startups, public-private ventures, philanthropic funding from NUMO, and involvement of large companies such as NextEnergy and GM represents an unconventional organizational alliance with notably little involvement of the public sector.
    - **Night Shift:** In a partnership with Lyft and Detroit Cab, sponsored by philanthropic New Economy Initiative grants, the OMI sought to address the issue of lack of transportation as a barrier to job access, specifically the issue of getting to/from a bus stop late at night. Starting in July 2018, this pilot provided $7 Lyft or taxi credits to commuters from 11pm to 5am along 24-hr DDOT bus routes. After 2,000 rides, the pilot will stop and be evaluated. The risk in this pilot comes with the precarity of the TNC business model as well as consumer adoption. The public sector procurement process was a major noted barrier to moving fast at small scales. The new "technology" solution of the Lyft platform in this case, compared to any other ridehailing service (e.g. taxis), comes from an exploitative business model that allows significantly cheaper rides and the veneer of new technology. With this also comes the major setback of negotiation over data (e.g. origins and destinations of trips) for public sector evaluation.
- **Ride United:** United Way has started a Lyft subsidy pilot for eligible people through 211 in Southeast Michigan, targeted to those seeking jobs or in their first weeks of work. This is funded by a $150,000 grant from the GM foundation, aiming to serve 1500 people. Like the Night Shift

pilots, this came with little negotiating power over data, with uncertainty in how their clients would use the service, all hinging on Lyft's precarious business model.

- **Michigan Mobility Challenge 2018:** On the state level, Governor Snyder announced in May 2018 for a $8M grant program funded through the state's general fund to encourage "public-private partnerships to design pilot projects that use technology to improve mobility for the target populations" of seniors, persons with disabilities, and veterans across the state. Spearheaded by MEDC and MDOT, this grant program funded 13 projects, ranging from trip planning and sharing apps to automated shuttle pilots. The scale of this state-sponsored private sector mobility technology experimentation is significant.

Whereas the public sector has traditionally been responsible for providing core transportation service, political and budgetary pressures have combined to promote service partnerships and technological experiments with widely varying levels of risk. Beyond the technical and operational considerations, these entrepreneurial approaches to urban governance have significant institutional implications for racialized patterns of mobility, public sentiment, and pathways of urban economic development.

Striving for economic growth

Renewed reflection on urban and transportation planning in Southeast Michigan also draws heavily from ongoing dialogues around the region's economic recovery since the fiscal crisis and recession – led by strong growth coalitions. The impetus of economic development has long been featured in the urban mobility discourse, and continues to surface in a variety of policies and programs

First, the collective reimagining of the region's automotive industry towards a global, connected, "mobility" industry fuels new visions of and interventions in the mobility system. This is explicitly tied to the fate of the automotive industry as a core component of the region's economic base, and pressure to ensure Detroit's "Renaissance" comes to fruition. This vision is pushed by a network of economic development interests that bridge the private and public sectors, with notable influence from the Big Three and other automotive stakeholders. Ford, for example, makes clear its intentions in broadening into a "mobility company" at its Corktown campus and increasing investments and acquisitions in venture-backed tech companies through Ford Smart Mobility, joined by other OEM's corporate venture capital investments (e.g. GM/GM Ventures). The state provides a supportive role, and MDOT in particular encourages experiments by providing access to the road infrastructure it owns and operates. This coalition has been a staple of the region's history, but now takes a technological flair:

- **Project Kinetic:**[76] In 2018, BCG spearheaded the Detroit Mobility Innovation Initiative, which brought together ten different public, private, and philanthropic partners in an "Innovation Sprint",

brainstorming and filtering solutions into six feasible 12-month pilot projects, each costing between $200,000 and $600,000 and funded by the partners. Their model of a public-private partnership was one in which all partners had "skin in the game", and "cities can address their transit issues... startups can get the opportunity to pilot their innovative ideas, and corporations can help create a better working environment that will attract talent". These pilots were optimistically framed as a win-win, solving mobility issues for Detroiters while also promoting mobility sector growth.

- **MEDC and PlanetM:** The Michigan Economic Development Corporation (MEDC) has long been involved in bringing together public and private money under the banner of economic development, pushed by interstate and international competition.[77] In 2016, Gov. Snyder announced PlanetM as a specific marketing campaign within MEDC for Michigan's "mobility" shift. Now, PlanetM funds pilot projects through grant programs totalling $2M since 2018,[78] hosts a startup incubator called the "Landing Zone", and acts as a state-led convener of the mobility industry.
- **Office of Future Mobility and Electrification (OFME):** In July 2020, Governor Whitmer announced the OFME as a partnership between PlanetM, MDOT, and the Department of Labor and Economic Opportunity, to continue the work of the state's mobility initiatives. This again has an impetus from inter-state competition, as Chief Mobility Officer Trevor Pawl says, "the year 2030 will belong to the *state* that prepares for it the best" [79] (emphasis added), invoking Silicon Valley as a major competitor. Though the details of this office are still being negotiated, this partnership will result in more state-led investment and facilitation of investment in mobility technologies.
- **Automated Vehicle Testing Areas:** One often cited piece of Michigan's new mobility ecosystem is the high number of AV testing centers in the state,[80] many associated with large AV development operations, but also many that are open to the broader private sector, including startups (e.g. ACM, MCity). Efforts at connected vehicles also seek to build mobility ecosystem assets, such as the recently announced "OEM-neutral" connected vehicle corridor along I-94 in partnership with Sidewalk Labs subsidiary Cavnue.[81] These stand in competition with facilities in California (e.g. GoMentum station, the largest secure AV test bed in the US), Nevada, Texas, Florida, and internationally.
- **SAVe Act in 2016:**[82] The mobility sector growth machine is also embedded within the state's legislation. Given the lack of federal action on creating a unified framework for AV implementation, states have created a patchwork of regulations, starting in 2011 with Nevada, Florida, and then California. In 2016, GM helped draft state model legislation with a couple notable features: 1) AV's would be allowed on public roads, without safety drivers, though in applying existing traffic laws, the "automated driving system" is deemed the "driver" or "operator" of the vehicle; and 2) limits various regulation relaxations to vehicle manufacturers (i.e. OEM's) or SAVE projects in partnership with manufacturers, with outcries of protectionism from

Uber and Waymo. The bills passed with almost unanimous bipartisan consensus, and spurred similar bills in Tennessee, Maryland, Illinois, and Georgia. Meanwhile, this legislative maneuver is designed to attract AV development to the state as opposed to others, with PlanetM touting Michigan's CAV-friendly regulations.[83]

The urban mobility system has directly impacted efforts to attract and retain firms and workers, including those with the skills and expertise needed to support pathways of economic growth associated with the future of work. For instance, Detroit's bid for Amazon's second headquarters, led by local developer and cofounder of Quicken Loans, Dan Gilbert, hinged on improvements to the regional transit network alongside a host of other "creative city" strategies – its failure signaled more work to be done.[84] At the same time, firms employing more precarious workers are slowly realizing that lack of transportation is a major contributor to turnover.[85] Of Detroiters without a vehicle, 43% have missed work, an appointment, or an outing due to lack of transportation, three times as high as those with a car.[86] Despite this, few employers offer public transit passes or transportation assistance. Though this potential economic gap is well-known, little has been done to facilitate the coordination and involvement of competing private firms on transporting employees.[87]

Lastly, the city-centered growth coalition— spearheaded by downtown and midtown real estate investments by Dan Gilbert— has played a significant role in shaping recent mobility interventions to maximize property value. As discussed in the historical section, real estate interests have always been a major factor in the development of the region's urban mobility system. In this moment, these interests have focused on optimistic visions of an AV-filled future and championed the return of the streetcar. The extent to which these efforts are actually useful in transporting people in the community is up for debate.

- **May Mobility Pilot:** Though May Mobility has implemented pilots across the country with a variety of different motivations, its Detroit implementation is notably exclusive to the Quicken Loans family of companies' employees, and done without much public sector involvement. The implementation adds to existing shuttles from Campus Martius to the Bricktown Garage, a five-minute walk away. For May Mobility, this is a good opportunity to demonstrate and test its technologies, while for Bedrock, this pushes a positive impression for employees and draws positive attention.
- **NAIAS Michigan Mobility Challenge 2020:** Drawing from the 2018 program, Governor Whitmer announced a second Michigan Mobility Challenge partnering with the North American International Auto Show (NAIAS) in 2020. Through a competitive bidding process for a defined set of AV demonstration routes around Detroit, 7 AV provider teams were selected with grants totalling $5.4M. Given the virtual nature of NAIAS 2020 due to the coronavirus pandemic, these demonstrations are delayed into 2021. This is expressed not as an actual deployment for helping

Detroiters around, but a demonstration project to serve exclusively auto show attendees and boost Detroit's reputation as a hub of AV development during an international gathering.

- **QLine:** Following a trend across cities in the US in streetcar construction,[88] the QLine was conceptualized in 2006, secured public and private funding for $144M of capital costs in 2013, and opened for service in May 2017 along Woodward Ave.[89] It was championed by a newer growth coalition in Detroit with real estate interests along the Woodward Ave corridor, including: Penske Corporation, Dan Gilbert of Quicken Loans, the Illitch Family, and the Kresge Foundation. It overlaps and travels slower than the existing DDOT Woodward Ave and SMART's FAST buses, and for a hefty cost, making it a less efficient choice in helping Detroiters get around. The choice to align the streetcar along the curb rather than the more efficient median reflected the coalition's focus on boosting property values and local businesses rather than listening to community engagement and actually improving how residents get around. The FTA did leverage federal funding for the QLine in ensuring the RTA's creation, a positive step towards addressing uneven access, though the QLine's implementation continued to neglect meaningful community engagement.

To conclude, many urban mobility interventions have been justified under the guise of economic development, which oftentimes favors speculation and deploying unproven technologies over improving the lives of residents through greater access. This economic development interest takes place at different scales, with a focus on real estate and creating a "mobility" industry ecosystem at the state level. This also aligns with state and federal policies— opportunity zones, empowerment zones, and enterprise zones— which give tax incentives to attract private investments. Where economic development interests align with providing access for residents and workers via transit, very little has been done.

Mobility politics and seeking solutions

Technological and economic forces provide the most conventional explanations for patterns of mobility investment, but these forces crucially exist in a broader political and cultural context that has profound implications. Among practitioners, there is hope that incremental technological fixes, demographic shifts, and turnover in political leadership can help overcome political and cultural barriers to expanding access. At the same time, however, community input in transportation decisions is routinely subverted by the persistence of top-down decision-making.

Through the history of the region, urban mobility practitioners have been hamstrung to provide service beyond the status quo. Within transit agencies, practitioners have noted that in the past, the loss of managerial capacity due to successive rounds of austerity drove a culture of hopelessness and survival instinct— what some academics would call "muddling through".[90] This is starting to change, particularly with

positive feedback from low-cost incremental improvements. These actions are well intentioned and incrementally meaningful in improving the political reputation of transit in the region, with efforts in shifting transit's perception away from its stigma entrenched in racist rhetoric and public sector distrust. However, these actions are only one part of a broader solution, and still confront institutional conditions that continue to underfund the system and impede progress.

- **Rebranding and route simplification:** At DDOT in 2018, simplification and increased frequency and service of the ten most frequently traveled routes via ConnectTen, as well as a repainting of buses to a new design were efforts by transit planners to increase ridership using their available resources. With refleX and FAST, DDOT and SMART redid bus exteriors and created branded bus shelters to attract riders and boost perception. Many of these small improvements are inexpensive, relatively uncontroversial, and are indeed worth the money.
- **Dart fare integration:** In 2019, fare integration between SMART and DDOT greatly facilitated transfers between systems. However, this integration also raised the DDOT base fare from $1.50 to $2.00, a large increase without any accompanying reduced fare options for low income, homeless, or unemployed riders.[91] A low income fare analysis prepared by WSP for DDOT estimated that such a program would reduce farebox revenues by $3.5-10M, and recommended against it without a dedicated revenue source or overall fare increase. Meanwhile, recent mobile app integration of fare payment showcases the political favoring of measures catering to digitally connected and banked "choice" riders.

Demographic shifts suggest shifting political coalitions in suburban and exurban areas traditionally against coordinated regional transit. This is coupled with the phasing out of an explicitly racist, anti-city old guard exemplified by the late L. Brooks Patterson.[92] Given the veto power of local municipalities in regional transit ballot referendums old and new, these changes suggest potential breaks from the past.

- **Regional transit and the RTA:** Attempts at regional transit starting with SEMTA in the 1960's lived on through the Regional Transit Coordinating Council (RTCC) under SEMCOG in 1989.[93] As noted in the historical section, transit endured as a split system – merging SMART and DDOT became a political focus.[94] The RTCC's legislative authority was limited to coordinating and planning, without any power to withhold funding to the transit agencies.[95] Many plans were made but little was done until many years later during negotiations for federal funding of the QLine, when US Department of Transportation Secretary Ray LaHood pushed the business leader coalition to lobby for the Regional Transit Authority (RTA), enacted in state legislation in 2012.[96] The RTA is authorized to seek voter approval for locally generated transit revenue through taxes, and also has the funding leverage that the RTCC did not. Despite this, long term regional plans funded by millage have not made it through existing processes that require unanimous approval by a suburb-dominated board of directors and public ballot.[97]

- **2016 ballot referendum:** In 2016, a proposed 20-year master plan, costing $4.6B and funded by a 1.2 mil property tax, included regional rail from Ann Arbor to Detroit, BRT routes, and cross-county transit service. Together, these investments would fill many transit gaps across the region. The four-county ballot measure failed by a mere 18,000 votes, with particular resistance from exurban municipalities in Oakland and Macomb counties.[98] Interviewees mentioned an emerging narrative surrounding Uber and Lyft's arrival in the region around 2015, where technological hype for a shared and automated future fueled votes against essential core bus service.[99]
- **2018 attempt:** In 2018, a new proposal sought to increase the millage to 1.5 but was stymied by Oakland and Macomb county representatives, who argued that many communities would not experience direct benefits of transit despite strict 85% local spending requirements. These officials ultimately pushed for another opt-in/opt-out model.[100]
- **2020 attempt:** Following the flipping of the Oakland County executive in 2019, a new 2020 proposal sought to first amend the state Municipal Partnership Act to allow for a three-county proposal excluding Macomb. Despite widespread support from Detroit's city-level growth machine (e.g. philanthropy, large private sector actors, workforce training institutions, and economic development organizations), opposition by Koch-funded Americans for Prosperity, Devos-funded Michigan Freedom Fund, and the Oakland County Association of Township Supervisors, along with resistance from a Republican House and Senate, led the bill to be shelved and dimmed prospects for a ballot initiative. Transit planners are looking to 2022 as the next opportunity to create a regional transit system via the ballot measure strategy.

- **Suburban shifts:** Inner-ring suburbs, particularly those with relatively dense and walkable downtowns, are interested in enhancing bicycle and pedestrian infrastructure, and to some extent transit. Further, racial diversification of suburbs has the potential to boost transit-friendly coalitions.[101] Notable shifts are occurring in Oakland County, a historically republican stronghold, with now growing centers of Democratic support in Royal Oak, Birmingham, West Bloomfield, and Southfield.
- **Aging populations:** The region's aging suburban populations also potentially create a coalition backing transit, given increased needs for ADA paratransit and other senior services. A patchwork of community services currently helps transport seniors, though the retirement of the Baby Boomer generation may call for larger scale transit and paratransit services. The myride2 resource and upcoming mobile booking app also point to the RTA's efforts at engaging and serving this population.

Although top-down ("Big") political actors collectively acknowledge the inadequate transportation system, high-level decision-making processes tend to exclude voices of advocates and community members who experience these issues as an everyday reality. Though there are some lessons to be learned from current efforts, overall they are insufficient in addressing pervasive and historically rooted uneven access.

- **Community Benefits Ordinance:** In the City of Detroit, a lackluster Community Benefits Ordinance was passed in 2016, which requires a Neighborhood Advisory Council (NAC) to be formed for large projects meeting narrow criteria. This affects a small number of projects and unfortunately can be done with evading meaningful community engagement (only 2 of 9 council members are elected by the community).
- **Limited public engagement:** Specifically within urban mobility, while Mayor Duggan was big on transportation issues early in his tenure, following his role leading SMART, he has neglected them recently following the QLine and Strategic Plan for Transportation released in 2018. A majority of DDOT's interaction with riders happens at community service meetings once a month, mostly consisting of a formalized public comment and airing of grievances. SMART hosts monthly meetings for its Board of Directors that are open but not well attended by the public, though SMART does reach out for input regarding major service changes. DDOT has also seen success during service changes through interactive workshops.

To conclude, though a top-down institutional structure pervades the urban mobility system, low-cost technical interventions by practitioners and overall demographic shifts show signs of political and cultural change surrounding urban mobility in the region.

Discussion

The trajectory of technological change in mobility is rife with significant unknowns. And although the fate of many of the pilots and programs documented above likewise remains uncertain, the region's history offers an interpretive tool with which to better understand the institutional stakes. This section synthesizes – through four key findings – the opportunities and challenges that new technologies, political coalitions, and economic development initiatives bring to addressing the long-standing fractures in transportation service and decision-making.

1. Although pilots can increase access for a limited number of people, they are far from a cure-all – an overemphasis on new technology can unintentionally detract from essential investments in core transit service.

Experiments with emerging technologies enable a modest number of connections limited across space and time. While limited in terms of sheer volume, these new links can "punch above their weight" if appropriately targeted. Indeed, the existing approach to pilot programs is most successful when it prioritizes trips with the greatest impact. This is the case with the Night Shift partnership with Lyft and Detroit Cab, which enhances late-night connectivity for workers and complements the 24/7 service provided by DDOT on its ConnectTen routes. Similarly, United Way of Southeast Michigan's partnership with Lyft subsidizes critical trips for job applicants and recently hired workers that otherwise lack a reliable way to get around. While this service offers crucial urban-suburban links for a limited number of Detroiters at the margin, the latent demand for these kinds of trips to and from suburban job centers cannot be sufficiently met by one-off subsidies. Further, the program's logic assumes new workers will be able to fund their own transportation once they begin to collect a paycheck, but it is likely that their wages will leave them unable to overcome high-cost barriers to car ownership.

Ridehailing partnerships make creative use of new services to rectify the historically determined access issues faced acutely by Black and low-income Detroiters, including those with a tenuous connection to the labor market. As a strategy for short term fixes, the limited public-private partnership approach benefits from not becoming mired in the fractured decision-making processes that ultimately allocate transit spending. The experience with regional ballot measures demonstrates how, time and again, small suburban municipalities are able to exploit "veto" points carved out under the banner of "local control."

From a longer-term service perspective, targeting key rides at the margin is most impactful as a complement to frequent, reliable core service along key city-suburb corridors. Further, there remain some crucial drawbacks even in these limited cases. For one, among the mobility-disadvantaged groups mostly likely to benefit, many are unsure whether the new services were "for them." To boost participation, the program's managers needed to think seriously about marketing and outreach in order to overcome the feeling of otherness that left many hesitant to participate. Beyond the powerful effects of stigma, there were additional practical barriers to making use of the pilots that included lack of a smartphone, wireless access, or a bank account. As a backdrop to these operational issues, there remains serious uncertainty and concern over the business models and labor practices upon which platforms like Uber and Lyft are based. This uncertainty should, at the very least, temper policymakers' reliance on volatile private businesses that lack accountability and transparency. Given the number of micromobiltiy companies that folded in the

early days of the COVID-19 pandemic,[102] there is good reason to question the long-term viability of platform services.

2. New pilots and programs, if implemented inclusively, can provide a venue for fostering coordination and forging new coalitions that may more effectively advocate for mobility needs.

Our findings show the ways in which coordination across Southeast Michigan has long been stymied by institutional fractures. Particularly when approaches to funding shared services – like transit – draw resources from local governments, each militantly committed to guarding tax revenues and ensuring benefits for their residents, the push for collaboration faces unfavorable political odds. As has been the case with attempts to pass regional transit ballot measures, opposition routinely crystallizes – in line with the region's history – around divides between suburb and city, white and Black, car driver and bus rider.

The repeated failure of ballot measures underscores how challenging the regional mobility question remains. However, experiences with small-scale pilots and programs have been effective in planting the seed of progress. Not only do such experiments move the needle on service quality, as discussed in the previous section, they also provide a venue for information sharing and institutional learning. Collaboration on pilots can spur new approaches to old problems, forge connections across siloed organizations, and help to make coordination a more routine part of transportation planning and policymaking.

Among the groundswell of new programs, some have helped to bridge political divides between the region's two largest transit agencies, SMART and DDOT. In particular, staff-driven initiatives have been successful in piloting high-frequency trunk routes (i.e., refleX/FAST) and integrating fares to enhance connectivity (i.e., Dart). These pilots offered a proving ground for a degree of inter-agency coordination that had previously struggled to gain traction. In addition, the new high quality service and simplified fare structure removed complex and punitive rules and helped broaden the base support for transit by recruiting new riders. Some initiatives help cultivate new coalitions of support for transit, such as the RTA's myride2 tool for seniors, which increases awareness of transit services among a growing segment of votership in the aging suburbs.

Upsides to pilots and demonstration programs notwithstanding, there remain a number of institutional and organizational pitfalls. Although fostering scalable coordination is a major potential benefit, pilots can also be pursued under top-down directives that hinder some of the institutional learning made possible by staff-level and bottom-up approaches. When implemented under the banner of ad-hoc organizations with

unclear and often overlapping mandates, pilots and partnerships run the risk of fading quickly from the region's institutional memory and thus hinder the potential for deeper change. Further, attempts to broaden the transit coalition through pilots specifically targeted at "choice" riders maintains a problematic notion of "residual" transit users – often Black and low-income people systematically excluded from other modes – whose personal mobility has been unjustly ignored in its own right.

3. Inherited institutions run the risk of replicating familiar racialized and spatialized patterns of access.

Southeast Michigan's mobility institutions were largely intended to support a model of manufacturing-led growth that has, for the better part of a century, privileged sprawling car-centric development and consolidated regional power in the predominantly white suburbs. The suburban-manufacturing growth model remains deeply entrenched, notwithstanding the emergence of a new coalition actively promoting city-centered economic growth in services and the innovation economy. Alongside boosters for urban-innovation, the region's auto companies – traditionally at the helm of regional economic interests – have steered resources to support research and development in digital mobility platforms and automation in Detroit proper. Although the political economy of mobility is firmly articulated to new technology and the automotive industry, a series of cultural and demographic transformations are also in play. Recent changes include a modest degree of racial and ethnic integration among inner suburbs, and a growing appetite for urbanist planning principles in communities with historic downtowns along the urban periphery. Echoing trends in other parts of the country, preferences for an urban lifestyle – popularly imagined to include transit, walking, and biking – have been elevated by the urban-innovation coalition that holds stakes in Downtown and Midtown Detroit real estate.

Overall, this conjuncture – new economic development trajectories, shifting public perceptions, and generational transformations in the political establishment – has had significant implications for mobility and economic development discourse. The flood of investment into strategic growth districts in Detroit (e.g., Techtown, Corktown, Midtown), while not yet challenging the long-held position that the suburbs can thrive with or without the city, has shuffled the geography of economic activity. However, with the optimism of an unfolding urban "renaissance" – and new streams of tax revenue – comes a sense that Detroit will now be able to "pay its way" for better public services. This framing, consistent with decades of suburban resistance to "bailing out" Detroit's public spending, is misguided on several fronts. Not only does it perpetuate racist narratives about Detroit's public administration and neglect the history of organized deprivation, it reinforces a superficial division between suburb and city interests that undercuts the potential for shared *regional* benefits from more efficient coordinated spending.

Intersecting political-economic and technological forces have implications for the types of mobility investments pursued. In particular, interventions and experiments with new technology are filtered through the urban-innovation growth agenda and positioned to support the automakers' AV prerogatives. These institutional filters – and the powerful interests they serve – lead the public sector to prioritize high profile capital investments in the mobility system. Wielding mobility as a tool of economic development leads to projects like Quicken's QLine and Cavnue's highly speculative Detroit-Ann Arbor AV corridor. In neither case do the outlays of political will or funding actually alter the state of access or improve the quality of transit operations in the near term. Indeed, the emphasis on unproven technologies or big-ticket capital projects may detract from popular support for core transit service – particularly buses – by shifting attention toward what is new and away from what is useful, practical, and needed. Further, the rhetoric around such projects often presents new infrastructure as apolitical. Closer inspection reveals how the pattern of investments caters to white professionals and – both explicitly and implicitly – maintains a system bifurcated by race and income.

It is important, however, to caution against readings that ascribe development interests an unlimited agency. Indeed, these concentrations of power nevertheless exist alongside a dense matrix of public institutions and organizations that hold levers to support or counter their agenda. The case of the regional transit ballot measure is once again instructive. Supported by both transit advocates *and* urban-innovation growth interests, the measure was nevertheless thwarted by political veto points – expressions of the power maintained by outstate municipalities – that have an outsized impact in regional decision-making. The Regional Transit Authority, which only recently came into existence upon a wave of transit enthusiasm, privileges suburban voices through the composition of its governing board.

4. The layered crises brought on by the COVID-19 pandemic and nationwide protests against anti-Black violence at once underline the intersecting systems of racial injustice, including mobility.

Both the COVID-19 pandemic and the nationwide uprising against systems of racial injustice highlight the stakes of safe and affordable transportation for Black people, whose personal mobility – within and beyond Southeast Michigan – has been systematically undermined, controlled, and otherwise neglected. As a site of political possibility in the emancipatory struggle, mobility justice is integral to racial and economic justice. For essential workers in and around Detroit, transit has been both a crucial economic lifeline and a source of significant health risks for the individuals and communities most likely to harbor other comorbidities. Recognizing the seriousness of the crisis, DDOT bus drivers have advocated heroically for

safer conditions on the city's buses, staging multiple labor actions since the pandemic took hold in March. The tragic death of DDOT operator Jason Hargrove only underlined the human toll of maintaining essential service in the throes of the pandemic.

While Detroit's buses became a flashpoint, the quiet shuttering of the QLine streetcar in late March reveals the dual nature of Southeast Michigan's mobility system during the pandemic: buses crowded with essential workers on the one hand, an expensive streetcar rendered purposeless on the other as Downtown and Midtown professionals started to work from home. Early into the pandemic, the momentum behind new mobility technologies quickly started to evaporate as service models were disrupted and pilots were taken out of commission. AV testing has been put on pause, and a number of micromobility companies – some of which had a significant footprint in Detroit – permanently suspended service. However, there have been some successful applications of mobility technology to provide flexible, personal mobility options in light of transit service cuts and safety concerns. For example, Detroit's Office of Mobility Innovation partnered with local employers to provide e-bikes and scooters to eligible essential workers on lease.

Across the country, the budgetary future for local governments and transit agencies remains dire absent adequate and sustained federal assistance. Locally, while SMART and DDOT funding streams are not as vulnerable as some other systems, ridership losses due to lower service levels and safety concerns may undermine public support for transit – perhaps more detrimental than funding cuts in the long run. Buses in Detroit already suffered from a damaging stigma that has taken years to reverse – fear that buses are a hotbed for virus transmission may undo this progress.

Forging a Pathway Forward

In the present moment of great potential for change, it is imperative that future mobility and workforce policy and programs consider the region's history of racial and spatial exclusion. Below we highlight a few broad policy recommendations that are already being implemented or considered in the region and elsewhere.

Broad Policy and Programmatic Recommendations

1. Coordinated regional transit policy is good workforce policy, and incremental improvements are a meaningful complement to "silver bullet" ballot measures. Our findings show that core transit investments – particularly in *operations*, not just capital projects – offer the most impactful near-term benefits and provide a reliable path to sustained, transformative change. Meaningful improvements to access can be achieved through practical operational innovations such as refleX/FAST high-frequency

corridors, which are heavily used by city-suburb commuters in both directions. Further, these investments are well aligned with a more systematic approach to economic development — *better transit means better workforce outcomes*. While many employers recognize the lack of transportation as a major contributor to employee turnover, they lack the collective action to coordinate collective interests. With the next major RTA push for regional transit investment slated for 2022, it is essential to continue building coalitions that can sustain pressure for better transit and vigorously pursue incremental improvements alongside "silver bullet" ballot measure efforts. Integrating support from well-positioned workforce development actors may bolster transit's ranks.[103] A broader coalition can promote flexible strategies for overcoming restrictive state legislation on regional coordination and procurement and engage a wider network of community-based organizations, advocates, and riders whose experiences are instrumental to creating lasting change.

2. Support mobility pilots with clear, inclusive goals and accountability. New technologies can be incrementally useful in rectifying historically rooted access issues in that they circumvent political gridlock and open new paths of institutional learning. However, although many recent innovations claim to address transportation equity, the dominance of top-down decision-making and private interests associated with high-tech pilots merits caution and skepticism. As advocates and even some practitioners have agreed, many pilots serve industry interests as opposed to mobility needs, or downplay concerns over long term financial sustainability of pilot business models.[104] Nevertheless, the near-term political and operational benefits contain the kernel of broader institutional change. Pilots that clearly center disadvantaged populations are especially crucial, such as the City of Detroit OMI's Night Shift pilot focusing on job access and retention.[105] To actually achieve inclusive goals, these pilots must be well documented, define and execute genuine data collection and evaluation schemes, and provide opportunity for feedback loops – particularly among users.[106] Explicit equity mandates within mobility pilot RFP's and grant opportunities are relatively uncommon, but some influential voices have called for their inclusion.[107]

3. Beyond public engagement, create opportunities for communities to meaningfully direct projects and have a seat at the table. Much of the region's history of uneven access stems from a legacy political culture of top-down decision-making that sidelines community voices. The current juncture marks an opportunity to change this status quo. Though efforts at public engagement are made through traditional public meeting processes, these retain barriers (such as the location and timing of meetings) that prevent more equitable representation in decision-making. Public engagement needs to be a proactive undertaking that meets people along the course of their everyday lives. Planners and policymakers may explore using planning support systems, such as GIS-enabled tools, that can facilitate workshops for collaborative planning with the public.[108] Further, agencies should be held accountable to communities, particularly those who have been sidelined in the past. Improving upon the existing legislatively required neighborhood

committees beyond their "advisory" role and narrow scope by furthering community ownership can be beneficial for both transit agencies and the communities they serve.[109]

4. Affirmatively implement anti-racist mobility policies and practices. The historical section documents the explicitly anti-Black logic that has propelled transportation planning in Southeast Michigan through periods of destructive highway building, slum clearance, white flight, and austerity. With the spotlight on these systems of exclusion through the COVID-19 pandemic and recent nationwide protests against systemic racism, the time is now to make meaningful efforts to rectify past injustices. Transportation planning and policymakers are indeed implicated in these injustices. However, while mobility institutions and new technologies may serve to replicate or reinforce the status quo, transportation offers a unique site of political possibility. Inclusive access not only enhances one's quality of life, it unlocks paths to economic justice and breaks cycles of targeted control and deprivation. High-quality, convenient, and affordable transit service holds the greatest potential for addressing long-standing accessibility disparities and improving the lives of people historically excluded from transportation planning. Ending the criminalization of low-income and Black Detroiters through excessive traffic misdemeanors and transit policing via investments in community-based services is likewise essential.[110]

The story of Southeast Michigan's mobility system is rife with complexity— tangled interests, actors, and institutions. Despite this, it is clear that the current moment holds significant possibilities for reimagining a future of free and fair movement. The right to mobility, as mentioned in the proposed Detroiters' Bill of Rights,[111] is imperative as we seek to improve opportunity for all.

Notes

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[42] Hyde, "Planning a Transportation System."
[43] Sugrue, *Urban Crisis,* Pg. 55 and Thomas, *Redevelopment and Race*. Pg. 6-7.
[44] Murray and Schwarz. *Wrecked*. Pg. 9-10.
[45] Biles, Roger. 2014. "Expressways before the Interstates: The Case of Detroit, 1945–1956." *Journal of Urban History 2014, Vol. 40(5) 843–854*.
[46] Biles, "Expressways." Pg. 846-847.
[47] Ibid, and Thomas, *Redevelopment and Race,* 68-69.
[48] Biles. "Expressways"
[49] Kornhauser, Arthur. 1952. "Detroit as the People See It: A Survey of Attitudes in an Industrial City." Detroit, MI: Wayne University Press.
[50] Biles. "Expressways."
[51] "The P.C.C. Era in Detroit - Part 5 (The Ending of an Era in Detroit and The Mexico City Sale)," Detroit Transit History, http://www.detroittransithistory.info/PCC/DetroitPCC-5.html.
[52] Murray and Schwarz, *Wrecked*.

[53] There is a plaque which commemorates paradise valley downtown- most people don't see it because it is now built over by the Chrysler freeway. Black Bottom is Lafayette Park. A portion of Paradise Valley, and key institutions such as the Paradise Theater, a jazz "mecca" was demolished where the DSO now stands. The Ford Field complex now contains portions of the neighborhoods as well. Also see "Uprising of 1967," *Encyclopedia of Detroit*, Detroit Historical Society. https://detroithistorical.org/learn/encyclopedia-of-detroit/uprising-1967; and "Paradise Valley," *Encyclopedia of Detroit*, Detroit Historical Society. https://detroithistorical.org/learn/encyclopedia-of-detroit/paradise-valley

[54] Smerk, George M. 1991. *The Federal Role in Urban Mass Transportation*. Bloomington, IN: Indiana University Press.

[55] Smerk, Urban Mass Transportation. 72-78.

[56] Ibid, 78-79 and 87.

[57] Kerner Commission. 1968. *Report of the National Advisory Commission on Civil Disorders*. Washington: National Criminal Justice Reference Service. Accessed at https://www.ncjrs.gov/pdffiles1/Digitization/8073NCJRS.pdf

[58] Goetz, Mario J. 2015. "A Dream Derailed: Public Transit Policy in Southeast Michigan Late 1960s- Early 1980s." Undergraduate Thesis in History, University of Michigan. Pg. 19-22.

[59] Goetz. "Dream Derailed." Pg. 29.

[60] Ibid. Pg. 20.

[61] Smerk. Urban Mass Transportation. Pg. 106-107.

[62] Goetz. "Dream Derailed." Pg. 20, compiled from: The Metropolitan Fund. 1970. "Regional Goals Setting- 1976," *Metropolitan Fund, Inc.*. SEMCOG General (Mel Ravitz), Box 914, William G. Milliken Papers, Bentley Historical Library, University of Michigan.

[63] D'Anieri, Philip J. 2007. *Regional Reform in Historic Perspective: Metropolitan Planning Institutions in Detroit, 1950-1990*. University of Michigan: PhD Dissertation, Urban and Regional Planning. pg. 132.

[64] Goetz. "Dream Derailed. Pg. 33, 40-42.

[65] Ibid., Pg. 8.

[66] D'Anieri. *Regional Reform*. Pg. 121-130.

[67] Goetz. "Dream Derailed."

[68] Ibid.

[69] Ibid.

[70] Ibid.

[71] Smerk, Urban Mass Transportation.

[72] Ibid.

[73] Sanchez, Thomas W. 2008. "Poverty, Policy, and Public Transportation." *Transportation Research Part A: Policy and Practice* 42 (5): 833–41. https://doi.org/10.1016/j.tra.2008.01.011.

[74] Lyons, William, and Phillip VanderWilden. 2002. "Innovative State and Local Planning for Coordinated Transportation." https://rosap.ntl.bts.gov/view/dot/15492/dot_15492_DS1.pdf;
Laube, Melissa, William Lyons, and Phillip VanderWilden. 1997. "Transportation Planning for Access to Jobs: Job Access and the Metropolitan Planning Process in Hartford, St. Louis, and Detroit Access." https://rosap.ntl.bts.gov/view/dot/13302.

[75] "RELEASE: Detroit New Mobility Pilot Provides Essential Workers with E-Bikes and E-Scooters for Reliable, Safe Transportation during COVID-19 Recovery," New Urban Mobility Alliance (NUMO). Jun. 29, 2020. https://www.numo.global/news/detroit-new-mobility-pilot-provides-essential-workers-e-bikes-and-e-scooters-covid-19

[76] Sullings, Glynn. "Detroit's Mobility Innovation Initiative", Centre for Public Impact, a BCG Foundation. Apr. 4, 2019, https://www.centreforpublicimpact.org/case-study/detroits-mobility-innovation-initiative/

[77] In Michigan, the closing of the Willow Run GM plant in Ypsilanti after a publicized competition with Texas in 1992 led to then Governor John Engler's increase in state-led economic development programs, including MEDC. Bartik, Timothy, Peter Eisinger, and George Erickcek, "Economic Development Policy in Michigan," in *Michigan at the Millennium*, ed. Charles L. Ballard, et al. (East Lansing: Michigan State University Press, 2003). Cited in https://www.mackinac.org/archives/2009/S2009-06.pdf.

[78] E.g. a COVID-19 solutions grant program. Achtenberg, Kathleen. "Five companies to deliver mobility solutions for COVID-19 challenges in Michigan," PlanetM. May 26, 2020, https://www.planetm.com/press-releases/2020/05/five-companies-to-deliver-mobility-solutions-for-covid-19-challenges-in-michigan/.

[79] *Economic Growth Institute*. "Webinar - Understanding the middle-skill workforce in the connected & automated vehicle sector" Jul. 29, 2020, video, 59:57, https://youtu.be/XNr0fHvhCdo?t=195.

[80] These testing centers are documented by MICHauto, part of the Detroit Regional Chamber at https://michauto.org/map, and at the US DOT NHTSA at https://www.nhtsa.gov/automated-vehicles-safety/av-test-initiative-tracking-tool.

[81] Grinnell, Michelle. "Michigan, Cavnue Creating Road of Future Between Ann Arbor and Detroit," PlanetM. Aug. 13, 2020, https://www.planetm.com/press-releases/2020/08/michigan-cavnue-creating-road-of-future-between-ann-arbor-and-detroit/.

[82] Senate Fiscal Agency. "S.B. 995-998: Analysis as Enacted," Feb. 3, 2017. Accessed at https://www.legislature.mi.gov/documents/2015-2016/billanalysis/Senate/pdf/2015-SFA-0995-N.pdf

[83] Achtenberg, Kathleen. "DRIVING INNOVATION: Michigan first in nation to develop comprehensive regulations for autonomous vehicles," PlanetM. Dec. 9, 2016, https://www.planetm.com/news/2016/12/driving-innovation-michigan-first-in-nation-to-develop-comprehensive-regulations-for-autonomous-vehicles/; Also see PlanetM pamphlet at https://www.planetm.com/4a14b2/globalassets/documents/pdfs/what_the_hell_planetm_web.pdf

[84] While the full text of Detroit's bid was never publicly released, leaked excerpts make use of a number of transportation assets in fashioning an attractive image of the region – these assets include both the QLine streetcar, as well as the SMART FAST corridors, and both are positioned alongside other "place making" strategies that fall within the creative city and innovation economy paradigm. Further, in an editorial of sorts reflecting on the bid, Dan Gilbert highlighted the transport system as one of two particular shortcomings that may have contributed to the city's failure to compete, but noted that "reputational fallout" following decades of crisis and mismanagement likely had an inordinate influence. See summary of bid obtained by Crain's at https://www.crainsdetroit.com/assets/PDF/CD1136541220.PDF, and Dan Gilbert to Amazon HQ2 Detroit Bid Committee, Jan. 23, 2018, The Elephant in the Room, http://1md1ifcdgpn3hahxo2l2bzt6.wpengine.netdna-cdn.com/wp-content/uploads/2018/01/The-Elephant-in-the-Room.pdf.

[85] Workforce Intelligence Network. 2019. "Turnover Study Results: WIN Region." https://winintelligence.org/report/win-region-turnover-study/.

[86] Gerber, Elisabeth, Jeffrey Morenoff, and Conan Smith. 2017. "Detroiters ' Views on Transportation and Mobility." https://poverty.umich.edu/files/2018/05/W2-Transportation-F.pdf.

[87] Though, in workforce training and manufacturing, cooperation of firms is sometimes negotiated through industry associations and employer resource networks (ERN's) with explicit goals of reducing turnover.

[88] King, David A., and Lauren Ames Fischer. 2016. "Streetcar Projects as Spatial Planning: A Shift in Transport Planning in the United States." *Journal of Transport Geography* 54 (June): 383–90. https://doi.org/10.1016/j.jtrangeo.2016.02.005. See ongoing list compiled at http://www.heritagetrolley.org/PlannedSystems.htm.

[89] Lowe, Kate, and Joe Grengs. 2020. "Private Donations for Public Transit: The Equity Implications of Detroit's Public–Private Streetcar." *Journal of Planning Education and Research* 40 (3): 289–303. https://doi.org/10.1177/0739456X18761237.

[90] Lindblom, C. E. (1959). The Science of "Muddling Through." *Public Administration Review*, 19(2), 79. https://doi.org/10.2307/973677

[91] Verse, Larry D., Serena Cole, and Kim Smith. "Verse, Cole and Smith: Detroit bus service needs to hit minimum standards." *Crain's Detroit Business*. Sep. 22, 2019, https://www.crainsdetroit.com/crains-forum/verse-cole-and-smith-detroit-bus-service-needs-hit-minimum-standards

[92] Williams, Paige. "Drop Dead, Detroit!" *New Yorker*. Jan. 20, 2014.

[93] Nelles, Jen. 2013. "Regionalism Redux: Exploring the Impact of Federal Grants on Mass Public Transit Governance and Political Capacity in Metropolitan Detroit." Urban Affairs Review 49 (2): 220–53. https://doi.org/10.1177/1078087412458255.

[94] These merger attempts are by no means insignificant, but wound up unsuccessful and brooding even more schismatic service up until the RTA in 2012. One major merger example happened in 1994 pushed by Mayor Archer, but the unfulfilled promises up worsening the divide for years, see "D-DOT Suburban Bus Routes - 1994," Detroit Transit History, http://www.detroittransithistory.info/DDOT/DDOTsuburbanroutes-1994.html. See also Hall, Stephen, and Andrew E G Jonas. 2014. "Urban Fiscal Austerity, Infrastructure Provision and the Struggle for Regional Transit in 'Motor City.'" Cambridge Journal of Regions, Economy and Society 7 (1): 189–206. https://doi.org/10.1093/cjres/rst031.

[95] Anderson, Scott. 2014. Funding Structures and Competing Priorities for Regional Transit in Metro Detroit. Mineta National Transit Research Consortium.

[96] Lowe, Kate, and Joe Grengs. 2020. "Private Donations for Public Transit: The Equity Implications of Detroit's Public–Private Streetcar." Journal of Planning Education and Research 40 (3): 289–303. https://doi.org/10.1177/0739456X18761237.

[97] As some have counted, there have been 29 attempts at regional transit in the three- or four-county region, so though the RTA changed the game slightly, regional tax mechanisms have long been in place (e.g. SMART) and recent ballot measures face similar difficulties with the region's politics. E.g. Detroit Free Press Editorial Board. "Not again! Don't derail metro Detroit transit hopes for 27th time." Jul. 27, 2016, https://www.freep.com/story/opinion/editorials/2016/07/27/transit-regional-detroit/87566050/. Other regions (e.g. Denver) are similar in the many attempts towards regional transit.

[98] Motor City Freedom Riders. "Mapping the RTA Vote," Dec. 6, 2016, https://motorcityfreedomriders.org/2016/12/06/mapping-the-rta-vote/

[99] Such arguments are frequently made by conservative organizations like Americans for Prosperity, where ride sharing has been used to counter regional transit proposals nationwide. See Americans for Prosperity. "Here's Why We Don't Need the Nashville Transit Plan," Apr. 20, 2018, https://americansforprosperity.org/heres-why-we-dont-need-the-nashville-transit-plan/

[100] Pratt, Chastity. "Detroit regional mass transit plan dead for 2018," *Bridge Michigan*. Jun. 27, 2018, https://www.bridgemi.com/detroit-journalism-cooperative/detroit-regional-mass-transit-plan-dead-2018

[101] Visualizations of this diversification of the suburbs can be found in Daily Detroit. "New Maps Show 20 Years of Racial Change in Metro Detroit in Sharp Detail," May 4, 2017, http://www.dailydetroit.com/2017/05/04/new-maps-show-20-years-racial-change-metro-detroit-sharp-detail/; and University of Minnesota's Institute on Metropolitan Opportunity's Metro Area Maps and Data at https://www.law.umn.edu/imo-detroit.

[102] Weinberg, Cory. "Lime's Valuation May Fall 80% in Emergency Fundraising," *The Information*. Mar. 25, 2020; Bergman, Ben. "'It Felt Like a Black Mirror Episode' The Inside Account of How Bird Laid off 406 People in Two Minutes via a Zoom Webinar," *dot.LA*. Apr. 1, 2020.

[103] FTA-required coordinated human services plans (e.g. RTA's OnHand) are a designated space for this, and have the potential to include more substantial interaction with workforce development actors. Documentation of the OnHand process and a draft final plan can be found at https://rtamichigan.org/regional-coordinated-human-services-plan-aka-onhand/.

[104] In Cavnue's RFP response, equity is tacked on as a goal without meaningful plans for engagement. See https://storage.googleapis.com/sidewalk-infrastructure-partners/images/Cavnue-Michigan-RFP-Response-Understanding-of-Service.pdf

[105] Not only centering disadvantaged populations, but also being accountable to them is key. OMI's Justin Snowden makes this clear: "We "pilot" new technologies, services in Black/Brown neighborhoods... the services vanish and residents who'd come to rely on the services are left in a lurch.... [Need] a "leave it better than you found it" approach to pilots." https://twitter.com/DetroitTransit/status/1318683648963608579.

[106] Matlen, Stacey, Hind Ourahou, and Mark de la Vergne. 2020. "Job Access + New Mobility White Paper." City of Detroit Office of Mobility Innovation Unpublished White Paper.

[107] Fedorowicz, Martha, Emily Bramhall, and Richard Ezike. 2020. "New Mobility and Equity." Washington, DC. Urban Institute.

[108] Geertman, Stan, Joseph Ferreira, Robert Goodspeed, and John Stillwell, eds. 2015. *Planning Support Systems and Smart Cities*. Lecture Notes in Geoinformation and Cartography. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-18368-8.

[109] DDOT's Local Advisory Councils, SMART's SMART Advisory Councils, and the RTA's Citizens' Advisory Committee are positive efforts allowing for agencies to incorporate community perspectives, but are limited in scope (i.e. an ADA focus) and by only being mandated to "review and comment" on plans. See quotes from disheartened CAC members in Sutcliffe, John B, and Sarah Cipkar. 2017. "Citizen Participation in the Public Transportation Policy Process: A Comparison of Detroit, Michigan, and Hamilton, Ontario." *Canadian Journal of Urban Research* 26 (2): 33–51. See https://detroitmi.gov/sites/detroitmi.localhost/files/2020-06/Local%20Advisory%20Council%20Membership%20Applicatin%20Infomation.pdf and https://www.smartbus.org/Portals/0/Documents/SAC%20By%20Laws.pdf for more information about LAC's and SAC's.

[110] Advocates and academics have thought deeply about addressing racial mobility injustice. See The Untokening and Pueblo Planning. "Report: COVID-19, Uprisings, & Mobility Justice." Sep. 27, 2020, http://www.untokening.org/updates/2020/9/27/report-covid-19-uprisings-amp-mobility-justice; Batterman, Joel. "To Fund Transit, It's Time to #DefundDPD," Motor City Freedom Riders. Jun. 11, 2020. https://motorcityfreedomriders.org/2020/06/11/to-fund-transit-its-time-to-defunddpd/; Chowning et al. "Highway Robbery"; and Attoh, Kafui. "Op-Ed: Protest Lay Bare Structural Racism in Mass-Transit

Policing," *Streetsblog NYC*. Jun. 4, 2020. https://nyc.streetsblog.org/2020/06/04/op-ed-protests-lay-bare-structural-racism-in-mass-transit-policing/

[111] Rahal, Sarah. "Council members rally support for 'Detroiters' Bill of Rights'," *The Detroit News*. Jul. 29, 2020. https://www.detroitnews.com/story/news/local/detroit-city/2020/07/29/councilmembers-rally-support-detroiters-bill-rights/5534870002/