Must (Only) the Rich Have Their Trains?

An Examination of the Past, Future, and Present of Mainline American Urban and Suburban Rail Transit

A Master’s Paper presented in fulfillment of the requirements of the University at Albany Master’s in Regional Planning Program. Advisor: Catherine Lawson

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Sandy Johnston
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Author’s Note and Acknowledgements

From a recent perspective, this paper is the ultimate product of the University Transportation Research Center’s generous AITE scholarship. From another, it is part of a much longer train of thought\(^1\) that traces back perhaps to my childhood railfandom. My interest in the particular topic of improving commuter rail operations might well stem from my family’s move to Chicago when I was 15. Living in a lovely, dense, walkable neighborhood, transit trips generally involved a local bus ride and a transfer to the L. Meanwhile, just under a mile away from the apartment silver Metra “scoots” flashed by at high speed, offering the promise of a quicker trip downtown—but without a convenient stop in the neighborhood, and at a higher fare than other transit. Despite geographic proximity, Metra’s UP-North Line would be essentially irrelevant to our lives until my little brother ended up using to reverse-commute to high school in a North Shore suburb years later. My (tiny, private, Jewish, suburban) high school had a cute tradition of giving out “Paper Plate Awards” to each student at the end of the year; one year, I was honored with the “Hitchhiker’s Guide to CJHS” for always looking for a ride to school events in the ‘burbs. Perhaps I should have known at the time that I would be interested in ways to build not only better suburban transit but transit that can cross the urban-suburban frontier.

Planning is ideally a collaborative enterprise, and while the research, opinions, and perspective to be found within this paper are mine, I could not have produced this (hopefully!) quality of study without support and encouragement from a wide variety of folks. First off, of course, I owe a great debt to the MRP program at UAlbany and its faculty, especially my advisor Catherine Lawson, who together with David Lewis read my drafts and provided invaluable feedback. Ted Orosz, David Lewis, John Pipkin, and Carlos Balsas have also been strong

\(^{1}\) Pun intentional
influences on my thinking. Lisa Baker has helped my navigate bureaucracy and helped assuage my anxiety on numerous occasions. And while it is the university that will be awarding my diploma, much of my education in planning has taken place outside the classroom. Bruce Katz and Jennifer Bradley wrote in their *The Metropolitan Revolution* (Washington, DC: Brookings, 2013) that “the cadre of metropolitan rapporteurs is growing in number and sophistication…Twitter has become the town square by which they communicate” (203). My knowledge of and thoughtfulness about urban and transit issues has been immeasurably enhanced by my participation in the Transit Twitter community. In particular (and in no special order), Alon Levy, Stephen Smith, Ted Rosenbaum, Bjorn Swenson, Charlie Kruger, and Matthew Danish all read parts of this paper and provided feedback. Numerous others fact-checked or provided perspective for tidbits of research I posted on the web.

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Abstract
This paper examines the current paradigm of mainline American “commuter rail” transit operations and compares it to international parallels. The paper proceeds from the premise that many other countries have created comprehensively useful rail transit linking cities and suburbs, while American commuter rail systems remain stuck in a paradigm of providing service that is frequent service at peak periods and in the peak direction and nearly nonexistent otherwise. The paper further posits that the barriers to providing more comprehensive, useful “regional rail” service in the US are primarily political rather than technical.

Chapter 1 of the paper lays out the core argument and provides some literature review and scholarly context. Chapter 2 examines the history, development, and current status of the commuter rail paradigm, with an eye toward understanding the political inertia behind it and the challenges it poses. Chapter 3 presents several case studies of international metropolitan areas that have leveraged legacy mainline rail networks to create useful transit linking urban and suburban areas. Chapter 4 takes a closer look at an American case study, Chicago. Chapter 5 is synthetic, linking together all of the existing strands to create a political and technical agenda for regional rail in the US.

Themes of the research include equity, labor policy, coordination of land use and transit, distribution of knowledge among planners and policymakers, and technical progress. Ultimately, this research has found American mainline rail planning to be lacking on many of these measures, and calls for significant progress in the name of transit utility and social equity.
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Chapter 1: Introduction, Need for Research, and Hypothesis

This paper, the culmination of an overarching multi-semester research project, represents an attempt to crack one of the more difficult nuts in American transit: the role in the broader transit network of the commuter rail systems that speed travelers into some urban cores in the morning and back out at night. Whether intentionally or not, ridership on these trains is often limited to those of privileged socioeconomic status, and the systems themselves represent a world apart from the broader transit network. Fares generally lack integration into other modes of transit, and schedules are rarely coordinated. This paper is premised on the idea that this situation is suboptimal and neither foreordained nor necessary. Indeed, it argues that the status quo of commuter rail is inherently linked to structures of class- and often race-based inequality within American society, representing a betrayal of both the possibilities of mainline rail’s utility and the highest ideals of publicly managed transit operations.

Much of the potential of mainline rail lies in its ability to bridge gaps and address social concerns across the sometimes gaping urban-suburban divide. As has become almost cliché to say (see, for example, Duany, Plater-Zyberk, and Speck 2000), America is a suburban nation. Though cities, especially hip areas near downtowns, have seen a remarkable revival in recent years, significant growth continues to occur in suburbs, and the effects of sprawl continue to be the most challenging issue facing American planners. In addition to longstanding environmental concerns, in the 21st century suburbs come with a new set of social and economic challenges. Long a bastion of social exclusion (a frequent topic of discussion in this paper), some suburbs are now seeing an explosion of residents who are poorer and more likely to rely upon transit for many aspects of daily life, a phenomenon that has led to discussions about the “suburbanization of poverty” in the popular media as well as policy circles (Semuels 2015). This process also
corresponds to—but was not caused by—another phenomenon with broader societal effects and significant relevance to the discussion at hand, job sprawl (Raphael and Stoll 2010).

Nor are only residential patterns changing; job sprawl, the proliferation of jobs in the suburbs that can be hard to reach without a car, has rocketed to the forefront of planning priorities as never before—to the point that it has even been addressed by Vice President Joe Biden (Maddow 2016). Job sprawl is, arguably, an even more destructive phenomenon than residential sprawl, since it sucks employment away from city centers, where jobs are more easily accessible without a car. American transit systems are singularly poorly equipped to deal job sprawl: many are fractured along urban-suburban lines, and suburban systems typically provide poor, infrequent service. One study found that “as job opportunities disperse into lower density areas, Philadelphia’s existing high-capacity systems are underutilized, and transportation systems throughout the region that were designed for relatively low demand are becoming overwhelmed in time” (Weinberger 2007, p. 1). Correspondingly, another found that transit’s modal share for work trips in the Greater Toronto Area could decline by up to 5% over 25 years if nothing was done to expand suburban transit or arrest job sprawl (Jewell and Wyatt 2013). Intriguingly, a study of transit in Denver indicated that station proximity to a commuter’s job was a greater determinant of their likelihood to use transit than proximity to their home (Kwoka, Boschmannn, and Goetz 2015). As a transit service whose infrastructure links city and suburb, mainline rail has the potential to grow into a critically important part of a unified 21st-century transportation and planning strategy that can continue to grow transit’s mode share, serve commutes in both directions and help to concentrate jobs near transit—but only if current operational patterns and practices change fundamentally.
As much as the specter of sprawl looms over the transit landscape in 2016, so does the prospect of fiscal scarcity in the time of transit’s greatest need. Though the idea of a robust transit system has inarguably been growing in popularity over the past several decades, and several metropolitan areas have made inspiring advances toward regional transit financing, federal funding remains especially scarce and uncertain—and very often, so does state funding. Many transit agencies face pressure to use every last dollar, operational and capital, well—a situation to which some stakeholders, trained in the Great Society days of abundant federal cash, have not adjusted. And yet, many cities, especially those with legacy commuter rail systems, have paid scarce attention to a potentially massive transit asset that has sat largely un- or under-utilized for decades: mainline rail. Many cities have extended massively expensive light-rail or even heavy rail lines parallel to (or even on!) existing mainline rail routes without even considering the possibility of leveraging the already existing capital asset before them. Though it is not a potential solution in every case, implementing frequent transit over mainline rail tracks can serve a wide variety of transit network roles that currently often fall to expensive new infrastructure: taking the place of new infrastructure that might otherwise be built, providing capacity relief to overburdened services, linking suburbs and cities, and providing for trips through, rather than to, the urban core. There is a place for fresh transit infrastructure expansion in American cities—indeed, much is needed—but in many cases policymakers would do well to consider a much less costly investment in improving existing infrastructure instead.

If, as this paper argues, mainline regional rail is one of the “missing links” in metropolitan transportation planning, this paper also seeks to fill in some gaps in the scholarly and planning literature relevant to this mode. Studies of suburbanization—by historians, planners, sociologists, and professionals in other fields—are commonplace, indeed voluminous.
Many of them rightfully place transportation policy in a leading role in the drama (or is it a tragedy?) of urban decline and accelerating sprawl. And yet, such studies typically pay little heed to mainline rail. Many such works—influenced, perhaps, by Sam Bass Warner’s pioneering, and still influential, *Streetcar Suburbs*, deal with what Americans have tended to call “steam roads” briefly, mentioning their role in the early stages of suburbanization but moving on quickly to the era of streetcars, and then the automobile. Scarcely do works such as Dolores Hayden’s *Building Suburbia* or Robert Beauregard’s *When America Became Suburban* touch on mainline rail after the 1850s. In this telling, only the streetcar networks and interurbans that were steadily abandoned starting in the 1920s held the promise of a robust transit network linking suburban and urban areas. And yet, as this paper will argue, other countries have made suburban-urban mainline rail networks mainstream—a policy path that the US actively chose not to take.

Humanities analysts of suburbia have done a valuable service by chronicling the social exclusion that underpins the basic premise of that kind of built form—but they are not scholars of transportation.

Not that those who study transportation have necessarily done a better job. The dominant theme in analyses of American transportation policy in the 20th century has been, for good reason, that of the dominance of the automobile. Narratives of the decline of urban transit feed nicely into the federally-funded postwar growth of the Interstate system—but they are not the entire story. Analysis of the decline of urban transit systems is just as voluminous as humanities analysis of suburbia, but scholars have paid relatively little attention to the squandered potential for a more robust suburban transit system. Glenn Yago’s *The Decline of Urban Transit* is typical of the genre in that it provides an extensive (and somewhat conspiracy-minded) analysis of the end of the era of transit dominance, but ignores mainline railroading nearly entirely. This dearth
of analysis is remarkable given the potential of mainline rail. Though examples of maximally utilized mainline passenger rail in American cities are few and far between, they are common across much of the rest of the globe. So why has fast, frequent, rapid-transit quality mainline rail (which, for the ease of simplicity, this paper typically refers to as “regional rail”) not come to the United States?

Though the idea of regional rail has not caught on at a mass scale in the US, a small but growing cadre of academics, planners, and transit advocates have kept it alive. Part of the mission of this paper is to continue that advocacy—but also to analyze why it has, thus far, failed to gain a toehold in the consciousness of American planners and policymakers despite its international popularity, apparent rationality, cost-effectiveness, and efficiency. Certainly, there are technical and regulatory barriers that exist in the US, with its extensive use of mainline rail by long, heavy freight trains, which do not apply in other countries. These concerns, however, do relatively little to explain why the idea of regional rail has caught on nowhere in the US—despite, as we shall see, having existed previously in at least one case. Instead, the key argument of this paper is that the key barrier to making mainline rail more useful in the US problem has been social and political, not technical. Regional rail, though potentially effective in a North American context, lacks the “natural” political base and coalition boasted by either the existing paradigm of “commuter” rail or inner-city transit—perhaps because it requires cities and suburbs to work together, and (the crux of the issue?) their populations to mix. Regional rail is, arguably, crucial to a 21st-century transit system, but making it work may require fracturing and rebuilding the downtown- and labor-dominated coalition that has, in numerous places, sustained much of US transit for many decades.
This paper will seek to break down the circumstances that led to this point in American attitudes toward mainline rail, compare them to global standards, and then use that historical perspective to build up a potential path toward a better system. This chapter, Chapter 1, lays out the argument for the importance of this research and explains the paper’s basic thesis. Chapter 2 traces the development of American commuter rail from the 19th century to the present, with a special emphasis on the postwar era and the transition of most services from private to public management (and in most cases, ownership). Chapter 3 narrates several examples of mainline rail as practiced in other countries, and attempts to isolate roles that this particular mode, when effectively utilized, can play within the larger transit network. Chapter 4 is a case study of Chicago’s commuter rail network, a particularly fascinating example because it was once home to one of the few American mainline railroads truly run as rapid transit, the Illinois Central suburban services, and because it had, until the 1970s, a strong tradition of technological and operational innovation that has since come to a screeching halt. Chapter 5 examines lessons learned and implications from this research, and—with guidance from several of the lonely expert voices in the field—begins to lay out a path forward on the topic, including identifying potential cases where regional rail might become a useful, effective reality.

The topic of this paper—a focus on a single mode—may seem esoteric or even inaccessible to many, especially laypeople. But in the months spent researching, this author has come to a strong conviction that this topic, while specialized, connects intrinsically to some of the deepest social divisions and inequalities in American society. It is his hope that this work will shake some trees not only in the transit world but well beyond—because it is not the planners, but the people, who will benefit from change, and it is they who must demand it.
Chapter 2: The Development of American Commuter Rail

In order to understand the potential future of American mainline rail transit, planners and policymakers must first understand its past and present. The technologies, modes, and policies that shape our transit today exist in a historical, economic, sociological, and political context that in many cases stretches back over a century. Decisions about basic matters such as job titles can only be understood by reference to arcane law going back to the 19th century. And in many ways, American mainline rail is an anomalous mode of transit in that it has—or sees itself as having—closer ties to the railroading world than to the transit world—an identity that seems to apply regardless of what or who is being carried, or where the railroad is located. As such, this chapter will position the discussions to follow on a specific historical analysis—a look at the development of “commuter rail” as a social, political, and technical construct. Building up this context demonstrates that what Americans know today as “commuter rail” is something of an anachronism, a paradigm that emerged partially through social construction of planning priorities and partially through historical accident of regulation and politics. And history truly matters here. If the existing model can be changed to provide broader public benefit, any effort at change will have to start with a thorough understanding of how that model came to be.

If transit planning has a bible, it is the Transportation Research Board’s Transit Capacity and Quality of Service Manual, or TCQSM. TCQSM (p. 2-18) defines commuter rail as

Generally a long-distance transit mode using trackage that is part of the general railroad system, although portions may be used exclusively for passenger movement. A few commuter rail operations…were built solely for passenger movement…Track may be owned by the transit system or access may be by agreement with a freight railroad. Similarly, train operation may be by the transit agency, the track owner, or a third-party contractor. Service is heavily oriented towards the peak commuting hours, particularly on the smaller systems. All-day service is operated on many of the main lines of the larger commuter rail systems and the term regional rail is more appropriate in these cases.

[7]
This definition hits most of the important points. Commuter rail uses trackage connected to the national rail network; it may or may not share trackage with freight trains; trains can be directly operated by a public entity or contracted out to a private company; and service is very “peaky,” concentrating on the AM and PM rush hours when traffic congestion is at its worst and high-income commuters are perceived as more likely to use transit. Observers from the rest of the world might think TCQSM’s definition of “regional rail” as encompassing sparse midday service is strange, considering that in many countries mainline networks provide much more frequent service at off-peak times, (see in chapter 3). Indeed, few American commuter systems run trains more than every half-hour on a particular line\(^2\) at off-peak periods. Brock and Souleyrette (2013) offer a—by now slightly out of date—rundown of existing commuter rail systems in the US, sorted into “legacy” and “new start” phases.

In the US, the concept of commuter rail—though not known as such at the time—dates back in some areas as far as the 1850s; Chicago’s first such operation, for example, began in 1854. As cities became increasingly crowded and dirty—or were perceived as such—wealthier families moved out to still-rural areas or small villages along newly constructed railroads. With the poor and the middle class unable to afford rural land prices or railroad fares, everyday travel on steam trains became essentially reserved for these higher-status families. Often, a wealthy businessman would maintain a family home in the country and an apartment in the city for late nights at work. Recognizing the revenue potential of in-in-the-morning, out-in-the-evening service, railroads began offering discounted defined-period passes that would “commute” part of a traveler’s fare, thus defining the word “commuter” forevermore. Picking up on the pastoral, yet

\(^2\) Metro-North’s New Haven Line runs two trains every hour during weekday off-peak and weekend times, though they are offset at 20- and 40-minute intervals. Long Island Railroad’s Port Washington branch runs service half-hourly at many off-peak times. And there are many circumstances where multiple lines converge on a main trunk near downtown terminals to offer combined frequent service.
sometimes stressful, aspects of the commuter lifestyle, a 1912 article argued that “The commuter may be sufficiently defined as a citizen who digs in a garden and detests railway presidents.” (The Complete Suburbanite 1912, p. 230). As suburbanization became more widespread by the end of the 19th century, a class-zoned geographic pattern emerged organized by transportation options, as Sam Bass Warner influentially detailed in his 1962 Streetcar Suburbs. Though rail-based transit had come to the middle class and even some relatively successful working-class households with the advent of the electric streetcar, mainline railroading generally remained the province of the upper classes. Steam-powered trains could travel further and faster than the usually lightly constructed streetcars, and infrequent stops ensured the journeys would not take too long. But they were also more expensive to operate, which meant that fares remained relatively high—high enough to discourage those who could not afford them on an everyday basis. Even so, frequent steam service emerged in some cities.

While TCQSM’s definition of commuter rail assumes public ownership, that is a relatively recent phenomenon. The emergence of rail commuting—the term “commuter rail” had not yet emerged—was, like almost all 19th-century American transit, exclusively the province of the private railroads that operated it. And it was a profitable business, as noted railroad economist and historian George Hilton explained in a 1962 paper:

Successively greater percentages of the urban labor force, largely in the higher income brackets, fled the city for the suburbs. Most of these suburbs grew along the railroad main lines. The railroads, by providing fast access to the cities, made them possible and, indeed, had instituted the low mileage rates characteristic of suburban travel largely to stimulate residence in the suburbs. Thus, during the years in which other short-distance passengers were deserting the railroads, population was growing rapidly in suburban towns which were, from the first, highly dependent upon the railroads (Hilton 1962, pp. 171-172).

Though the growing popularity of cars and government funding for highways meant a steady fall in the percentage of suburbanites who rode trains through the 1920s, suburban growth overall
was so explosive that *absolute* ridership actually increased. Indeed, Hilton labels the late 1920s “the golden age of railroad commutation,” though he admits the services were even then only marginally profitable (Hilton 1962, p. 172). There was enough capital available for several railroads to undertake major infrastructural investments, including, in some cases, electrification. 

Like much of American life, all of that came to a crashing halt during the Great Depression. Overall national levels of commute ridership fell by more than a third, and several commuter services were abandoned as unprofitable. There were several factors in the decline: the obvious economic malaise, increased competition from government-funded roads (which were especially popular as stimulus labor opportunities during the Depression), onerous federal and state regulation prompted by the railroads’ own domineering attitudes and practices, and the struggles of the broader railroad industry, which was entering a period of general decline. Aside from a few bright spots, the commuter operations were for the most part, an afterthought relative to the massive for-profit rail industry, and they also lacked access to government muscle and capital—something that was not always true of urban transit operations, which garnered more political attention in the Progressive and New Deal eras thanks to their more economically diverse ridership.

Though the wartime boom in traffic offered a temporary reprieve, the Depression had irrevocably set the private commuter railroads on a long path of decline. Indeed, the railroads were becoming more decrepit even as suburban growth outpaced the boom years of the 1920s, as a 1948 *Life* article about the Long Island Rail Road--whose ridership grew from 47,600 daily riders in 1930 to 74,000 in 1956 (Hilton 1962, p. 173)—vividly illustrates:

The 100,000 commuters on Long Island—the brave souls who try to combine a job in New York City with a home among the trees—represent all shades of opinion on politics, religion, and baseball. But they are firmly agreed on one thing—they believe that the Long Island Rail Road, which constitutes their frail and precarious life line between
home and office, is positively the worst railroad in the world. This belief is probably ill considered, because no one has ever made a scientific survey, and it is quite possible that there are certain short haul lines in the less populous parts of Mongolia or the Belgian Congo where the service is just as bad if not worse. But no Long Islander, after years of being trampled in the crowded aisles and arriving consistently late to both job and dinner, would ever admit this (Life 1948, p. 19).

The article goes on to detail woes that would become familiar to commuters in many cities in the years to come, if they were not yet far too knowledgeable: ancient rolling stock, unresponsive officials (the article points out that the LIRR’s president at the time lived in Philadelphia, unsurprising since the LIRR was a subsidiary of the massive Pennsylvania Railroad), incompetent employees (including a tower operator who routed a train onto the wrong track, leaving it stranded for two hours), and a system that lacked any hint of resiliency in the face of snow storms.

The Life article is notable not just for its humorous depiction of the LIRR’s decay, though, but also for what it says about the social and political context in which commuting by mainline rail existed in the early postwar era. Life notes that the LIRR commuters “represent all shades of opinion on politics, religion, and baseball.” But this tongue-in-cheek emphasis on the “diversity” of the commuters reveals a deeper lack of variety—a lack of diversity that goes unmentioned because there seemed to be no need to explain it. LIRR commuters were, like the suburbs they lived in, almost exclusively relatively well-off, and white, as a 1954 Saturday Evening Post article explains:

The commuter car is a club. A train with eight cars is a train composed of eight rolling men's clubs. True, there are occasional female invasions, but the clubs really belong to the men. And they are perhaps the most remarkable fraternal group on earth. They have an unwritten but well-defined code of conduct and they require adherence to it. Without the use of blackball or ballot they are accustomed to expel any member who violates that code and shows no sign of repentance (Smith 1954, p. 98)
Commuter rail cars were—and often remain—rolling bastions of privilege, and their inhabitants were unafraid to use their power effectively. As *The Nation* wrote of the stereotypical commuter in 1912, “Railway presidents are afraid of him. They may mock at him, revile him, tell him he is unprofitable traffic and is not wanted; but they end by making excuses about terminal facilities and delays incident to regrading and electrification” (The Complete Suburbanite 1912, p. 230).

As the railroad industry proved increasingly financially unstable, the target of commuter wrath moved from the private to the public sector. The public meeting commuters organized with the New York Public Service commission in the wake of one particular snow-induced LIRR meltdown (*Life* 1948) is representative some of the earliest steps of government intervention into the affairs of private railroads carrying suburbanites—because those same suburbanites had the political savvy and muscle to involve regulators. Indeed, commuters often had significant political pull at all levels; Hilton noted in 1962 that

> Political pressure on commissions for perpetuation of commuter services has been strong enough that the doctrine of confiscation has been less rigorously applied than in other cases of partial abandonment, or of rate adjustment in the face of chronic losses. Railroads have generally encountered more difficulty in total or partial abandonment of commutation than, for example, in abandonment of unprofitable branch lines. The ICC adheres to a doctrine that a railroad should not be required to operate an unprofitable branch indefinitely on the ground that the railroad as a whole is profitable (Hilton 1962, p. 175).

As postwar decline set in, then, commuter operations were, regardless of profitability, frequently shielded from abandonment by the privilege of their users—a distinct contrast to the political and social status of many urban transit networks in the era.

Despite frequently benefiting (or suffering, from the perspective of profit-minded railroad owners) from the political shielding provided by wealthy, connected commuters, commuter operations did decline in the postwar period. Rather than leveraging existing infrastructure to create comprehensive rail transit networks in the growing suburbs, as many other countries did in
the 1945-1970 period (see chapter 3), American policymakers allowed suburban rail to become a specialized service, providing high-quality rush-hour service to those who could afford it, with little benefit to anyone else. It might, therefore, be more accurate to say that the political firepower provided by wealthy constituents did not improve the commuter roads but rather cemented their niche status, bending them to their purpose of shuttling 9-to-5 white collar suburban commuters from bedroom communities to the city. This had always been the primary purpose of mainline railroads in metro areas, but as long-distance service started to fall apart, and funding in general was hard to come by, suburban services were pared down to the very basic in many areas.

The most significant effect of the postwar commute-oriented winnowing of suburban services was the near-complete evisceration of off-peak service. As suburban shoppers found new retailers—generally accessible most easily or exclusively by automobile—closer to where they lived than in traditional CBDs, off-peak ridership cratered. Without a public hand at the tiller to stabilize the ship and preserve off-peak service, railroads responded quite reasonably by cutting levels of service. Naturally, this was the beginning of a “vicious cycle” where ridership dropped even further because of mediocre service. And this concomitantly exaggerated commuter railroading’s traditional “peakiness” problem, whereby massive amounts of rolling stock and crew are needed at rush hour but sit unused for the rest of the day (Hilton 1962, p. 174). The New York Central, for examples, needed in 1961 300 cars to move its morning and evening rush traffic—and only 60 the rest of the day and on weekends (Morris 1961, p. 85). Southern Pacific’s Peninsula Commute trains, the biggest service on the West Coast at the time, faced exactly this situation in 1950, despite overall increasing ridership:

The concentration of traffic on rush hour SP commuter trains was virtually complete. Seventy-five percent of the total movement to San Francisco traveled during the morning
peak hour. Eighty-three percent of all passengers paid commutation fares to go
downtown and back home. The railroad found that two-thirds of its locomotives and
coaches utilized in peninsula passenger service were used for only three hours per day.
All costs were increasing, as they were for every transit operator, with the exception of
fuel oil (!) (Adler 1980, p. 98).

As such, the railroad sought to increase fares—its third rate hike since the end of the war. The
coalition of forces that came together to oppose the increase is telling:

A coalition of real estate interests, home builders and commuters opposed the SP fare
increase proposal before CPUC [California Public Utilities Commission]. The opposition
hired its own expert; he agreed that SP was losing money, but $340,000 less than the
railroad claimed. The coalition was led by the David Bohannon organization, one of the
largest real estate developers in the Bay Area. All protestants charged that increased fares
would be a deterrent to home building and buying on the peninsula; property values
would be threatened. The coalition argued that it was entirely appropriate for the SP to
subsidize passenger train losses from profitable freight operations. This was the

While urban transit fare increases were and are typically opposed by a coalition of progressive
and social-justice minded groups, the group opposing SP’s fare increase was actually a classical
“growth machine” made up of the wealthy people who already lived in what Adler calls
“stockbroker suburbs” on the Peninsula and those who sought to profit from its further
development. Somewhat ironically, the coalition (which contained the key elements of the
sprawl machines that have dominated suburban land use ever since) co-opted the politically
powerful language of Progressivism to argue for, essentially, further corporate subsidy for the
lifestyle of the wealthy. While the protesters lost in a hearing before the California Public
Utilities Commission, their logic is indicative of the policy agenda that has, essentially, shaped
public policy toward suburban rail: preservation of a service useful to existing riders at almost
any cost—but no more.

The Beginnings of Government Involvement

Given the power of suburban rail’s constituency, and the politics involved, it was perhaps
inevitable that government would become involved in salvaging this mode of transportation.
Although public ownership of transit facilities had been part of the Progressive agenda for decades, efforts had primarily focused on purely urban systems. Efforts started modestly, and perhaps in an unexpected place. In 1958 the City of Philadelphia began funneling subsidies to its two competing suburban railroads, the Pennsylvania and the Reading, which operated competing and parallel services to the Chestnut Hill neighborhood in northwestern Philadelphia. In terms of physical characteristics the Chestnut Hill lines, dubbed “East” (Reading) and “West” (Pennsylvania), are among the most rapid transit-like such properties in the country, operating fully within the boundaries of the City of Philadelphia. Chestnut Hill is a relatively wealthy neighborhood with a somewhat suburban feel, and it had seen its railroad service deteriorate as both competing roads fell into economic doldrums. Dubbed Operation Northwest, the six-month trial starting in October 1958 provided modest subsidies to both railroads in exchange for increased off-peak and weekend service and lower fares, and the plan also coordinated rail schedules with connecting bus and streetcar lines. Operation Northwest was a qualified success, yielding moderately increased ridership (though not meeting the target of 6,000 additional riders set by city leaders) with, by the city’s estimate, 600 fewer cars driving into Center City every day (Business Week 1959).

Operation Northwest is believed to be the first such effort in the country—certainly the first to subsidize expansion, rather than status quo, of service. Its success led to the incorporation in 1960 of the Public Service Improvement Corporation, or PSIC, to funnel subsidy funds to the railroads (Business Week 1960), and eventually to contributions from

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3 This author first wrote about Operation Northwest as part of a blog post: [https://itineranturbanist.wordpress.com/2014/11/25/frequency-works-again/](https://itineranturbanist.wordpress.com/2014/11/25/frequency-works-again/)

4 Business Week’s article on the experiment (1959) notes that Boston and other towns had begun subsidizing New Haven’s Old Colony operations around the same time, but this subsidy provided no additional service and was short-lived, as the lines were abandoned the same year over government objections.
suburban counties as well, resulting in the incorporation of the Southeastern Pennsylvania Transportation Authority, or SEPTA, in 1964 (DeGraw 1994, p. 107). Although government would not take over full operation of Philadelphia’s suburban lines until 1983, the city took on an increasing role there over the intervening two decades—as indeed government did elsewhere.

**Commuter Rail Revival**

In the early 1960s, the state of the railroad commute business was such that an eminent authority on railroading such as George Hilton (1962, p. 187) could confidently predict that “under any institutional arrangements we must plan to witness the continued decline of the commuter train and, probably, its eventual extinction.” And yet, 53 years later, that prediction looks hopelessly out of date—despite the fact that the service patterns offered by the North American commuter railroad have hardly fundamentally changed. 2013 alone saw the publication of articles with titles like “Accommodating Long-Term Growth on North America’s Commuter Railroads” (Allen and Levinson 2013) and “Commuter Rail Ridership Declining Despite Increase in Lines,” the latter published in Governing magazine. An industry that had fallen to fewer than ten operations at any given time before the 1980s—and were only six metropolitan areas have retained “legacy” systems that have remained in continuous operations—the growth to a total of around twenty systems by the early 2010s is nothing short of remarkable. Indeed, Allen and Levinson estimate that “[overall national] commuter rail ridership overall is around or even slightly greater than the earlier peak of 1929” (Allen and Levinson 2013). Obviously the per-capita numbers would look different—the country has far

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5 The National Transit Database counted 22 “commuter rail” operations in 2013, two of which (the Boston-Portland Downeaster and Philadelphia-Harrisburg Keystone Service) are semi-intercity services operated by Amtrak. There are also five “Hybrid Rail” systems operated with Diesel Multiple Unit equipment, with several more set to open in 2016 and beyond; these systems operate with schedules somewhere between those of commuter rail and those of rapid transit.
more people now than it did in 1929—but the accomplishment is still remarkable considering the pessimism shared by Hilton and many others about the industry in the 1950s and early 1960s.

![Figure 1: Regional Population and Downtown Area Employment, Selected North American Commuter Rail Cities (Allen and Levinson 2013)](image)

And this growth occurred even though Hilton’s prediction of increasingly polycentric, sprawling cities very much came true. Indeed, as Allen and Levinson’s chart demonstrated, CBD job growth has generally been anemic, and “commuter” rail systems are incapable of serving most reverse commutes well. Nor have any North American cities yet succeeded in producing a
comprehensive suburban rail transit network that can take advantage of the explosive growth in suburbs by capturing robust all-day ridership. So how did the commuter rail industry salvage itself? To a large extent, the answer lies in the very phrase George Hilton used in 1962: “institutional arrangements.” Indeed, in his 1962 paper Hilton, without recognizing it, put his finger on the factor that would prove strongest in the policy determination to continue commuter rail service. In the context of an analysis of ICC regulation of railroad service abandonments, he wrote that

Political pressure on commissions for perpetuation of commuter services has been strong enough that the doctrine of confiscation has been less rigorously applied than in other cases of partial abandonment, or of rate adjustment in the face of chronic losses. Railroads have generally encountered more difficulty in total or partial abandonment of commutation than, for example, in abandonment of unprofitable branch lines (Hilton 1962, p. 175).

Typically, railroads were able to protest government forcing them to continue an unprofitable service under the doctrine that it represented confiscation of their profits. But the political power of commuter rail riders was such that this doctrine was applied much less evenly to the services they used. The upshot was that while the ICC frequently allowed abandonment of unprofitable branches, cutting off all rail service to small towns, money-losing commuter services were forced to continue at the railroad’s expense even when alternative forms of transportation existed. Though commuter rail services were, until the mid-1960s, mostly operated with exclusively private funds, their riders had no problem using the muscle of government to force their continuation even in a hostile environment. One of the few major systems abandoned, the now-revived Old Colony Lines on Boston’s South Shore, was allowed to expire after years of complaints from owner New Haven Railroad only when a parallel freeway opened.\(^6\)

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\(^6\) Thanks to Alon Levy (personal communication) for this insight.
This sociopolitical dynamic is the crucial element that would lead to increasing government involvement with the commuter rail industry over the next two decades, and indeed to the boom planners and policymakers see today. Even so, extensive government involvement has not led to strong leadership with the goal of the creation of a comprehensive suburban transit network. Instead, what the US has seen is the mere continuation of the status quo, emphasizing peak-hour services in most areas—and active decline in others. A full history of the transition of private commuter services to government management could be the length of a book, and is certainly beyond the scope of this paper. However, Chapter 4 will provide an in-depth analysis of some of the dynamics of this process through its case studies of the Chicago & Northwestern, Rock Island, and Illinois Central suburban operations in Chicago. The next section of this chapter will profile one of the political dynamics of commuter rail—the role of organized labor, and especially its relationship with government—that has had a perhaps surprising role in cementing commuter rail’s place as a niche, inegalitarian mode.

**Labor, Management, Ridership, and the Status Quo Inertia**

Any attempt to understand the state of the commuter rail industry in the US at any time from the 1950s to the present must begin by considering what is possibly the largest single factor shaping it: the importance of the industry’s unique labor structure. While transit labor relations have often been contentious, those in the railroad industry have notoriously been among the most conflictual of all American industries. Notably, commuter railroads are regulated like railroads, not like other transit operations. Little has changed in the industry since Vukan Vuchic, the intellectual godfather of the effort to modernize regional rail systems in the US, wrote in 1982, “Because of the railroad origins and traditions, [regional rail] systems in North American cities largely operate under obsolete, labor-intensive practices” (Vuchic 1982, p. 50). The most important of these practices included—and still include—staffing trains with large numbers of
crewmembers and insisting on collecting tickets manually, both of which exist in distinct contrast to customary best practice on most non-North American regional rail systems, not to mention contemporary North American transit operators.

Despite Vuchic’s clarion call, little has changed over the last 30 years, although a small but vocal segment of advocates has made more efficient operations a centerpiece of its efforts. Allen (1999) made crew reform a central plank of his suggestions for rapid transit-style operation on the Metra Electric District, while acknowledging that former operator Illinois Central’s own efforts to achieve such reform were stymied by restrictive labor agreements as far back as the 1960s (see chapter 4 for more details). Most recently, the cause of crew reform has been taken up by younger, non-academic (and indeed, non-planner) writers such as Stephen Smith (Smith 2012) and Alon Levy (Levy 2015a and 2015b). It is worth noting that while some crew reform advocates have focused on excessive compensation, their biggest critique has generally centered on US commuter rail’s low productivity—a measure having more to do with work rules than compensation. The effort for crew reform, then, should be understood mostly not as an attack on the principle of unionization—few would dispute that the railroad remains and will remain a stronghold of organized labor—but on the effects that blatantly inefficient crewing practices can have on the possibility of the introduction of a new mode of socially valuable transit.

Though readers should be aware of the pro-management tilt of the source, perhaps the best brief summary American railroad labor dynamics from the second half of the 20th century and onwards comes from a World Bank report on the “Best Methods of Railway Restructuring and Privatization”:

Organized labor has traditionally played a dominant political and economic role in the U.S. railroad industry…work forces are organized by craft; dealing with specialized crafts compounds the difficulties of collective bargaining. Craft-by-craft negotiations
allow for less flexibility in the modification of work rules, which are carried out with modern technological advances. Thus, while competitive pressures and technological change have rendered many work rules outmoded, both the craft union organization and the limited negotiating flexibility allowed under railroad law make it difficult for the management of large railroads to change work rules (Kopicki and Thompson 1995, p. 268).

The craft union structure of railroad labor makes negotiations for reform particularly difficult. For example, as this analysis is being written, New Jersey Transit’s commuter rail division is in the process of dealing with the potential for a strike from a coalition of 17 separate unions representing its workers (Franz 2016). This makes the potential to convert conductors into train operators—a cherished goal of crew reformers—fraught because it would, in many situations, mean the total elimination of one union chapter to the advantage of another.

Railroad labor law, like much of the rest of policy that shapes commuter rail’s status quo, shows what Kopicki and Thompson (1995, p. 268) call a “strong status quo ante bias” rooted in the foundational 1926 Railway Labor Act, or RLA. Intended to protect the national economy from extended disruption by work stoppages initiated by either management or labor, the RLA specifies that when labor contracts expire the previous terms—including those customary in practice but unstated in writing—remain in place unless a new consensus is reached through an extensive bargaining process. If no consensus is immediately reached the dispute goes to mandatory mediation, and only after that process has been exhausted can management change rules or labor strike (Kopicki and Thompson 1995, p. 268). As intended, the RLA process protects passengers and freight shippers from extended disruptions—but makes reform and long-term elimination of inefficiencies difficult.

The very structure of commuter rail operations exaggerates the fiscal problems caused by ancient labor agreements. “Peakiness”—ridership, and therefore service, concentrated very heavily in rush hours—represents a fundamentally inefficient pattern of crew and equipment
utilization. Between a peaky schedule and work rules that often forbid the hiring of part-time employees, current arrangements often result in crew members being paid a full day’s wage for less than a full day’s work. Because of commuter rail’s origins in the private rail sector, many labor agreements governing it resemble those applicable to intercity rail operations—where stops are infrequent, speeds higher, and passenger comfort more important—more than commuter rail. Eminent rail economist and historian George Hilton wrote in 1962 that “an employee may have two hours of duty in the morning, plus two in the evening, over a period of thirteen hours. If so, he will be paid for a standard eight-hour day plus four hours of overtime. Most railroads, it should be said, do not look upon it as unreasonable to pay trainmen a full day's pay for service in rush hours.” (Hilton 1962, p. 174). Little, too, has changed since then. And because the unions insisted on high levels of staffing for all trains, management was unwilling to provide more robust off-peak service that might utilize already paid labor more efficiently. The inefficient peakiness of commuter rail service was, and is, then, a joint effort of several self-interested constituencies: suburban riders happy to advocate for a status quo approach but no more; unions that enjoyed occupying a point of leverage in the governance and fiscal affairs of the railroads; and conservative railroad managers, who feared little more than major labor disruptions and in many cases not-so-secretly hoped that they could use the lack of labor reform as an excuse to do away with unprofitable suburban passenger operations entirely.

But suburban passenger operations didn’t die. Saved as they were by political pressure from powerful users, they existed in a kind of stasis in the 1960s and ’70s. Some operations were able to turn an operating profit in some years; others sunk into a tailspin of recurring losses and mounting debt. Almost everywhere infrastructure and rolling stock sank into decrepitude; even on systems that made a small profit, the small margins proved insufficient for the needed capital
investment. With increased government involvement, railroad management shifted priorities for suburban service from abandonment (though that remained an option in many cases) to increasing government subsidy, in some cases agitating for an outright takeover. This reduced the incentive to attempt fundamental crew reform, although, as detailed in Chapter 4, the Illinois Central attempted such an effort in 1968, only to be shot down by the RLA-mandated mediator.

Nor would government takeover of support for the commuter services provide much relief for increasing costs. Indeed, in a pair of articles for the *Journal of the American Planning Association* in 1981 and 1982, John Pucher made a strong case that labor expenditures had accelerated disproportionately in the 1970s as government took increasing responsibility for transit operations, and that this was one of the factors behind the increasingly inequitable distribution of transit subsidies. Wage and benefit growth, of course, is not inherently a bad thing, but in the 1970s transit industry it was paired with actually decreasing productivity. Pucher suggests that while transit wage growth was not much higher than in the rest of the economy in the 1970s, fringe benefits grew much faster, with the skyrocketing rate of absenteeism perhaps reflecting employees taking advantage of newfound benefits (Pucher 1981, p. 393). Low productivity—relative to historic norms, not to mention international standards—was, at least in part, a function of huge work forces mandated by long-time labor agreements along with “no-layoff contracts, inefficient work rules, and, in a few cities, deliberate overstaffing of transit vehicles” (Pucher 1981, p. 393).

While Pucher’s analysis is of the transit sector generally, the last two named factors represent the most relevant concerns for the commuter rail industry, then and now. Indeed, “overstaffing of transit vehicles” virtually defines the commuter rail mode by international standards. What is near-certain is that the beginning of subsidy, which would in many case be
followed eventually by government takeover of planning and operations, did not solve the productivity issue and may have in fact increased it. As Pucher suggests, “at least some portion of subsidy funds has simply produced higher labor costs rather than more, better, or cheaper service for transit riders” (Pucher 1981, p. 393). This was particularly true for commuter rail riders, for whom the public pocketbook produced the highest subsidies on a per-ride basis—and who were very disproportionately wealthy (Pucher 1982). When it came to commuter rail labor practices, then, increasing government involvement in commuter rail produced not reform but a continuation of the inequitable status quo. Given the strong role that organized labor plays in politics—especially on the left, which generally stands more for transit—this is perhaps unsurprising. Transit unions, in particular, exist at a leverage point in politics, as Joshua Freeman argued of the Transit Workers Union of New York City in In Transit. Transit labor combines service to a sector of government and industry that labor’s primary political allies support strongly with significant capacity to create disruption. To many liberals—the primary benefactors of public transportation—to support mainline rail transit without strong union input would be quite incongruous. And if union input was to be strong, the chances for reform would be virtually nil.

To many reformers—and to most planners—commuter rail operations are just another transit mode, differentiated primarily by their equipment and peaky scheduling. But the distinct railroad labor and regulation structure sets them apart, a dynamic that was codified by the United States Supreme Court in 1982’s United Transportation Union v. Long Island Rail Road. Acquired in 1966 by the state of New York and made a subunit of what would become the Metropolitan Transportation Authority (MTA), the LIRR had come a long way from its 1948 “worst in the world” days. When the contract governing the road’s 17 unions expired in 1979, a
protracted negotiation—including a brief strike in 1980—broke out, punctuated by the MTA’s attempt to bar the unions from striking on the grounds that public employees are enjoined from striking under New York State’s Taylor Law. By the time the dispute reached the Supreme Court, it had taken on strong implications about the right of states to regulate railroads relative to the federal government. In a unanimous ruling written by Justice Warren Burger, the Court reversed the ruling of the district court, holding that

a) The LIRR, despite operating entirely in the state of New York and primarily as a passenger operator, was engaged in interstate commerce.
b) “Operation of a railroad engaged in interstate commerce is not an integral part of traditional state activities generally immune from federal regulation.”
c) “To allow individual states, by acquiring railroads, to circumvent the federal system of railroad bargaining, or any of the other elements of federal regulation of railroads, would destroy the uniformity thought essential by Congress, and would endanger the efficient operation of the interstate rail system.”

As such, the employees of the LIRR retained their ability to strike, and the federal government retained the right to regulate even publicly owned commuter railroads that operated entirely within one state. And while Burger’s opinion is clearly most concerned with the balance of regulatory power between state and federal authorities, the opinion also—perhaps unintentionally—enshrines commuter railroads as having a special status relative to other transit operations, since their employees are legally considered *railroad* employees and not public employees. Indeed, when the MTA’s city transit unions went out on a major strike in 2005, LIRR and MNRR employees did not join them and provided alternative service (NYCDOT 2006). Interestingly, in 1997 the LIRR “spun off” its few remaining freight operations to a new private corporation, the New York & Atlantic Railway, making it a purely intrastate passenger carrier. Though LIRR still has connections to the national railroad network, the case that it is a truly a carrier of interstate commerce would be much harder to make today.
Although the MTA’s intention in converting the LIRR to a public benefit corporation and arguing for an exemption from the RLA was not to turn it into a regional rail operation, the ruling in *UTU v. LIRR* closed off one potential path to labor reform—the possibility of joining commuter rail with other transit operations, rather than with other railroads. A year later, another event—a raucous 108-day strike by the unions of Philadelphia’s commuter rail division—would raise managerial and political barriers to reform that have gone largely unchallenged in the years since. The SEPTA strike was in fact one of several job actions launched by unions at a particularly traumatic time for Northeastern passenger railroading; in 1981 Congress had exempted Conrail, the quasi-public corporation created in 1976 to pick up the pieces of the shattered Northeastern railroad industry, from its ongoing commuter rail obligations. Conrail’s obligations ended at the end of 1982, with states picking up from there if they so desired. Since this all-at-once transition left existing contracts hanging, and unions saw an opportunity to extract more generous terms from a purely public-sector owner, several Northeastern metro areas saw strikes in the winter and spring of 1983. SEPTA’s, though, was the only one to explicitly involve the question of converting the commuter network to a rapid transit operation—and probably not coincidentally, became the longest and most bitter.

There were several issues at stake in the SEPTA strike. The transition from Conrail management to direct SEPTA control was a major adjustment for all involved. With SEPTA forced to take on direct operating responsibilities, management had made a strategic decision to shift from the relatively frequent service provided under the PSIC model to a more suburban-centric model that would yield higher fare payments—unless costs could be cut (Blumgart 2015). The long-promised Center City commuter tunnel, which would unify the former Pennsylvania and Reading lines and force workers from the two legacy railroads to work together for this first
time, was set to open the following year. SEPTA had for several years experimented with one-man operation on an isolated section of the Newtown branch, running a shuttle with a Budd RDC from the end of electrification at Fox Chase (still within the limits of the City of Philadelphia) to the end of the line at Newtown. The operation saw only mixed success, largely because of the decrepitude of both the rolling stock and the track infrastructure—the RDCs were sometimes unable to activate grade crossing signals, resulting in several accidents—but the unions saw the experiment, probably not unreasonably, as a proving ground for crew reductions on busier lines. Additionally, SEPTA sought to lower the pay of engineers to correspond to that of subway motormen on the reasoning that they did essentially the same job, and, intending to reduce staffing and find alternate methods of ticket collection, initially offered jobs to only 150 of the 450 conductors it inherited from the Pennsylvania and Reading via Conrail. Also, SEPTA announced publicly that the entire network would be shut down for two weeks pending a transition to rapid-transit style operation (Thoms 1983, p. 31).

Faced with an array of challenges and feeling “backed up against the wall,” (Thoms 1983, p. 30), the United Transportation Union caught SEPTA management unawares by offering to continue running the trains from January 1, 1983, essentially on whatever terms management chose. Unprepared, management swiftly lost the PR battle and was forced to resume regular—but not rapid-transit—service after only an 18-hour administrative shutdown, while dropping its plans to hire nonunion ticket collectors (Thoms 1983, p. 301). With many issues unresolved, the Regional Rail division’s 12 unions then struck on March 15th. The 108-day strike was costly for both sides. SEPTA was forced to more or less permanently drop plans for rapid transit service, and ridership dropped significantly as commuters found alternative routes (not a difficult task, since SEPTA’s lines are mostly short and generally have stronger alternative transit options than
is true in other American cities). As the strike ground on, unity among the various unions began to fracture—perhaps unsurprising given their fragmented organization along craft lines. The SEPTA Brotherhood of Railway Carmen local, for example, had 37 members; the American Train Dispatchers Association local had 10; and the latest holdout, the Brotherhood of Railway Signalmen, had 44. When the dust cleared, SEPTA had won “the right to assign work in maintenance shops without onerous craft-union restrictions, as well as the right to assign engineers to drive between the old lines of the Reading Railroad and the Pennsylvania Railroad” (Smith 2012), as well as managed to eliminate up to 600 unionized jobs, and negotiated some wage concessions. The preexisting seniority system would stay in place, and fringe benefits improved from the Contrail era (Sigmond 2011).

The 1983 strike is the single best test case for the labor and political implications of operating commuter rail service as rapid transit. The strike—or more likely, the political backlash it created—caused SEPTA management to give up plans to run the network as rapid transit, quashing the most serious attempt to convert a traditional commuter network into rapid transit that the US has ever seen (although Chapter 4 will detail the unique case of the Illinois Central’s Chicago suburban operations, which moved in the opposite direction). And yet, the legacy of the strike is to a large extent still up for debate. In 1994, SEPTA employee Ronald DeGraw wrote in a Transportation Research Record article that SEPTA was still examining the possibility of “running ‘metro’ type service or even light rail operation on some of the lines, segregating them from the rest of the system so that they can operate under standard rapid transit or light rail operating rules rather than under railroad rules” (DeGraw 1994, p. 112). This represented a partial retreat from the idea of turning the entire system into rapid transit, although one imagines the reaction of the unions would have been similar. More interestingly, David
Gunn, the head of SEPTA at the time of the strike, told Stephen Smith in 2012 that SEPTA had in fact won the right to set train crew assignments at rapid-transit levels at the 1983 strike settlement. In the same article, Vukan Vuchic, who had designed a book-length operating plan for turning the Regional Rail network into rapid transit once the Center City tunnel opened, blamed the death of the plan on both labor and management: “‘I don’t think they have even pressed the unions to do it, but they’re using them as an excuse to not make any change,’ he said, referring to the authority’s management. ‘They’re not even trying!’” (Smith 2012).

The roots of SEPTA’s reluctance to implement the rapid transit plan, though, may lay neither in labor intransigence nor in managerial apathy, but in political pressure from suburban stakeholders. Before the strike had even begun, riders had filed a class-action suit that led to a court order to continue service (Thoms 1983, p. 31). The strike and following service disruptions had caused huge declines in Regional Rail ridership, and SEPTA management was justifiably wary of accusations that they were in fact trying to cancel suburban service altogether. When understood in context of a longtime political pattern of suburban rail riders standing up for their peak-hour rides but no more, SEPTA’s decision-making process becomes a little bit clearer. Management could not be assured of political support for a rapid-transit plan if it led to more extended disruptions of service, such as those the recalcitrant unions threatened. Even if management had—and likely will continue to have—the right to impose rapid transit style work rules, there would be no assurances that ridership would support them in the face of an almost certain labor backlash. True regional rail operation has thus remained on the back burner for these past 33 years, in Philadelphia as across the country.

To state that the unique labor structure of commuter rail operations makes transformation of the suburban rail network more difficult is not to fully blame that difficulty on union
intransigence. Certainly, labor insistence on retention of craft traditions and ancient work rules plays a role in the difficulty of reform, as does the rivalry between the various and fragmented unions that represent commuter rail, since significant reform would likely eliminate at least some of the individual trades (more detail on what reform might entail can be found in chapter 5). But, as the aftermath of the 1983 SEPTA strike demonstrates, in many cases management is too conservative (or paranoid!) to attempt reform even when it has the ability to do so.

Nor are management motivations always reform-minded. In the winter of 2014-2015, MBTA commuter rail operations suffered a major service meltdown in the midst of a record-breaking winter. As complaints about late, cancelled, or broken-down trains cascaded in, the newly elected Republican Charlie Baker administration decided (to be fair, on the basis of some rider complaints) that in addition to restoring resiliency, a major plank of the state’s response would be to ensure all fares were being collected by hiring additional, non-unionized fare collection personnel. From a reform perspective, this was a positively absurd response that doubled down on dysfunction rather than attempting a fix.

From a political perspective, though, the MBTA winter imbroglio nicely demonstrates the “iron triangle” governing commuter rail composed of labor, management, and ridership. The winter of 2014-2015 galvanized MBTA riders into action—but, despite the efforts of Boston-area transit advocates, they organized to reinforce the status quo, not achieve reform. There was at the time no hard evidence that fare evasion was a significant problem on MBTA commuter trains—indeed, the discussion led to the agency admitting it actually had only a vague idea of how many people rode its trains, period (Koczela 2015)—nor has any evidence been produced since. Yet a few vocal complaints from riders who had seen their fares go uncollected and wanted to make absolutely sure that wouldn’t be true of others created a decisive response from
the Baker administration. In a way, rider paranoia over fare evasion represents gatekeeping—the sense that commuter rail riders pay a premium for a premium service and want operators to spare no expense to make sure no one gets to ride without paying their “fair share.” This is perhaps unsurprising on a system (MBTA Commuter Rail) whose riders were, at last study, 86% white, and wealthy, with 80% reporting household incomes above $50,000 and 53% above $100,000 (MBTA 2010).

There may not be a commuter rail riders’ union, but rider complaints have nonetheless received solicitous attention from various elected officials, demonstrating again the power of even a relatively unorganized wealthy ridership base. The Baker administration, which has spent the year since its installation in office making noises about reforming the MBTA, has shown no awareness that its major change to commuter rail policy in fact represents a step backwards, confirming advocate and progressive fears that its transportation agenda is more about weakening labor and transit than true reform. And labor has spent its energy fighting the additional fare collectors on the basis that they are not unionized—because to say they are unnecessary would be to admit that so, too, are the multiple conductors assigned to each commuter rail train. Without any real malice (except for possibly the administration’s labor policy), this “iron triangle” took an opportunity for serious reform and made it into an affirmation of the exclusivist status quo—yet again. So while pinning the high fares and operating costs of commuter rail on any one of the three primary actors may be too simplistic, advocates of a more egalitarian suburban rail network will have to find a way to break the tragic cycle.

Realities of Inequitable Commuter Rail

American suburban rail has long been recognized as generally serving a higher-income market. For most of the 20th century, that was both accepted and unsurprising; suburbs were
much wealthier than the inner cities, especially before the mass exodus of the white working class in the postwar era. Nor was the inegalitarian reality of commuter rail much of a focus for public policy, since the trains were a private, for-profit affair. Indeed, many railroads made their high-class pretensions a part of their marketing strategy, as chapter 4 demonstrates through the experience of the Chicago & Northwestern. Starting in the late 1950s, though, government involvement in the nation’s commuter railroads increased, making questions of the equitable distribution of subsidies relevant, as indeed they still are today. In some ways, it is completely natural that suburban riders should have higher incomes than urban riders; after all, the areas they serve tend to have higher incomes, so this is not *prima facie* evidence of inegalitarian planning or operations—although it would be a solid starting place for a more thorough investigation of this dynamic, especially as it regards commuter rail lines operating in urban areas. We have already seen significant qualitative evidence that American commuter rail was, and continues to be, designed around the principle of a high-class service accessible only to those able to pay, but it would be remiss not to present at least some quantification of the dynamic as well.

Certainly, there is no guarantee that more egalitarian service planning would flatten the discrepancy between suburban and urban transit riders, although we have already seen that there is significant opportunity for cost savings in mainline rail that could be put to the use of lowering fares. The point is not so much to argue that better planning will, overnight, make commuter rail an egalitarian mode as to point out that, should current operational styles continue, the mode *has no chance* of serving the diverse populations now populating American suburbs, nor of helping to solve the growing “spatial mismatch” by linking urban job seekers to suburban job growth. **Moving from commuter rail to regional rail is not a guarantee of a more equitable**
transportation system, but failing to move is a guarantee that transit will never compete in many American suburbs.

As government involvement in rail became more pronounced, John Pucher published a pair of articles on the issue of the distribution of subsidies among transit riders, drawing primarily on the 1977-78 National Personal Transportation Study. Unsurprisingly, he found that commuter rail passengers skewed heavily to the very high-income segment of the population:

<table>
<thead>
<tr>
<th>Income class</th>
<th>Less than $6,000</th>
<th>$6,000-$9,999</th>
<th>$10,000-$14,999</th>
<th>$15,000-$19,999</th>
<th>$20,000-$24,999</th>
<th>$25,000 and over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto drivers</td>
<td>8.9</td>
<td>11.6</td>
<td>21.1</td>
<td>20.2</td>
<td>15.0</td>
<td>23.2</td>
</tr>
<tr>
<td>Auto passengers</td>
<td>11.3</td>
<td>12.2</td>
<td>22.3</td>
<td>19.4</td>
<td>14.0</td>
<td>20.9</td>
</tr>
<tr>
<td>Transit (Total)</td>
<td>24.9</td>
<td>17.8</td>
<td>19.1</td>
<td>14.1</td>
<td>10.0</td>
<td>14.2</td>
</tr>
<tr>
<td>Bus and streetcar</td>
<td>28.3</td>
<td>19.2</td>
<td>16.7</td>
<td>13.5</td>
<td>8.5</td>
<td>11.7</td>
</tr>
<tr>
<td>Subway</td>
<td>16.2</td>
<td>17.2</td>
<td>27.7</td>
<td>14.4</td>
<td>11.7</td>
<td>12.9</td>
</tr>
<tr>
<td>Commuter rail</td>
<td>9.3</td>
<td>6.0</td>
<td>7.9</td>
<td>18.9</td>
<td>20.1</td>
<td>37.8</td>
</tr>
<tr>
<td>Taxi</td>
<td>26.8</td>
<td>17.9</td>
<td>18.5</td>
<td>16.9</td>
<td>4.9</td>
<td>15.1</td>
</tr>
<tr>
<td>Bicycle</td>
<td>15.0</td>
<td>10.2</td>
<td>20.3</td>
<td>19.2</td>
<td>9.8</td>
<td>25.4</td>
</tr>
<tr>
<td>Walk</td>
<td>26.7</td>
<td>16.1</td>
<td>19.7</td>
<td>13.8</td>
<td>9.4</td>
<td>14.4</td>
</tr>
<tr>
<td>All travelers</td>
<td>12.2</td>
<td>12.5</td>
<td>21.1</td>
<td>19.1</td>
<td>13.9</td>
<td>21.1</td>
</tr>
<tr>
<td>All people</td>
<td>16.1</td>
<td>13.9</td>
<td>21.4</td>
<td>17.7</td>
<td>13.1</td>
<td>17.8</td>
</tr>
<tr>
<td>All households</td>
<td>21.6</td>
<td>15.3</td>
<td>21.4</td>
<td>15.7</td>
<td>11.0</td>
<td>14.9</td>
</tr>
</tbody>
</table>

Source: Calculated from the four computer tapes of the 1977–78 Nationwide Personal Transportation Study, Federal Highway Administration, U.S. Department of Transportation.

Note: Each figure represents the percentage of each mode's riders in each income class. Each row adds to approximately 100 percent.

Figure 2: Percentage composition of each mode's users by household income, 1977-78 (Pucher 1981, p. 389.)

In fact, “Commuter rail passengers had the highest income profile of any group—significantly higher than auto drivers (38 percent with incomes of $25,000 or more versus 23 percent of auto drivers)” (Pucher 1981, p. 389). The data showed an ironic overall pattern: “Those types of transit most frequently used by the poor are the least subsidized, and those most used by the affluent are the most heavily subsidized.” (Pucher 1981, p. 389). Worth noting is how Pucher’s overall numbers incorporate both capital and operating subsidies, and that commuter rail trips are typically many miles longer than other transit trips, such that subsidies to them do not look as bad on a per-mile basis. And many of the federal capital subsidies given out over the study time period went to the growth of new rapid transit systems in Washington, DC, Baltimore, Atlanta,
and Miami. Nevertheless, Pucher’s analysis pointed to an ongoing political situation already familiar from earlier sections of this chapter: the ability of powerful interest groups to reel in government subsidy for their preferred mode of transit, no matter how niche.

There could be little doubt that subsidies to commuter rail—a mode whose deficits grew decisively in the ‘70s—accrued mostly to the wealthy.

<table>
<thead>
<tr>
<th>Income class</th>
<th>Below $6,000</th>
<th>$6,000–$9,999</th>
<th>$10,000–$14,999</th>
<th>$15,000–$19,999</th>
<th>$20,000–$24,999</th>
<th>$25,000 and over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating subsidies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bus and streetcar</td>
<td>471</td>
<td>319</td>
<td>311</td>
<td>225</td>
<td>141</td>
<td>195</td>
</tr>
<tr>
<td>Rail rapid transit</td>
<td>94</td>
<td>99</td>
<td>160</td>
<td>63</td>
<td>60</td>
<td>75</td>
</tr>
<tr>
<td>Commuter rail</td>
<td>38</td>
<td>24</td>
<td>32</td>
<td>77</td>
<td>82</td>
<td>154</td>
</tr>
<tr>
<td>Total, all modes</td>
<td>603</td>
<td>442</td>
<td>503</td>
<td>385</td>
<td>291</td>
<td>424</td>
</tr>
<tr>
<td>Percent distribution</td>
<td>23%</td>
<td>17%</td>
<td>19%</td>
<td>15%</td>
<td>11%</td>
<td>16%</td>
</tr>
<tr>
<td>Capital subsidies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bus and streetcar</td>
<td>179</td>
<td>121</td>
<td>118</td>
<td>85</td>
<td>54</td>
<td>74</td>
</tr>
<tr>
<td>Rail rapid transit</td>
<td>272</td>
<td>289</td>
<td>465</td>
<td>242</td>
<td>196</td>
<td>216</td>
</tr>
<tr>
<td>Commuter rail</td>
<td>28</td>
<td>18</td>
<td>24</td>
<td>57</td>
<td>60</td>
<td>113</td>
</tr>
<tr>
<td>Total, all modes</td>
<td>479</td>
<td>428</td>
<td>607</td>
<td>384</td>
<td>310</td>
<td>403</td>
</tr>
<tr>
<td>Percent distribution</td>
<td>18%</td>
<td>16%</td>
<td>23%</td>
<td>15%</td>
<td>12%</td>
<td>16%</td>
</tr>
<tr>
<td>Total transit subsidy</td>
<td>1,082</td>
<td>870</td>
<td>1,110</td>
<td>769</td>
<td>601</td>
<td>827</td>
</tr>
<tr>
<td>Percent distribution of subsidy</td>
<td>21%</td>
<td>17%</td>
<td>21%</td>
<td>15%</td>
<td>11%</td>
<td>16%</td>
</tr>
<tr>
<td>Percent distribution of urban population</td>
<td>16%</td>
<td>14%</td>
<td>21%</td>
<td>18%</td>
<td>13%</td>
<td>18%</td>
</tr>
</tbody>
</table>

Source: The distributions were calculated on the basis of the income data in Table 1 and the subsidy data in Tables 2 and 1.
Note: The amount of subsidy assigned to each income class equals the total subsidy for each mode multiplied by the percentage of that mode’s riders belonging to the indicated income class. The distributions in this table assume equal per-rider subsidies within each modal grouping and do not reflect intramodal cross-subsidies.

Figure 3: Distribution of transit subsidies among income classes, 1978 (Pucher 1981, p. 392).

Commuter rail subsidies were inequitable both internally and externally to the mode. Overall, “the average per-trip operating subsidy to commuter rail passengers in the U.S. has been about four times as large as the per-trip subsidy to bus riders” (Pucher 1981, p. 389). Additionally, both legacy commuter rail systems and newly built regional rapid transit systems were in some capacity a subsidy to downtown landowners. In a follow-up 1982 paper, Pucher pointed out that the inequities he had described could potentially threaten transit agencies’ compliance with Title
VI of the Civil Rights Act, calling out particularly practices such as heavily discounted monthly passes most likely to be used by wealthy riders (Pucher 1982, p. 320).

Pucher updated his analysis in a joint 2013 paper with Ralph Buehler that compared ridership characteristic for transit in Germany and the US. Though not disaggregated by mode, the data is still striking:

In 2008/2009, bus and rail passengers in Germany had the same median income as each other and the national average ($52,000)—reflecting public transport’s appeal to all income groups. In the USA, rail passengers had the highest incomes ($68,000) of any modal user group and considerably higher than average income in this sample ($61,000). In sharp contrast, bus passengers had incomes that were only a third of national average income ($21,000). Spatial segregation of poorer households in inner cities and wealthier households in the suburbs may help explain the discrepancy in incomes between rail and bus in the USA. Commuter rail services typically run from high-income suburbs into downtown business districts with lucrative jobs. Poorer neighborhoods are usually served by slower, more crowded, and less attractive bus service. Moreover, buses in the USA are stigmatized as the travel option of last resort, used mainly by poor people and ethnic minorities (Pucher and Buehler 2013, p. 10).

Though most rail passengers in the US are carried by subway or light rail systems rather than commuter rail, it is clear that the patterns of high-income ridership Pucher identified 30 years ago are still apparent even as suburbia has diversified. This discrepancy is not, as some leftist groups such as the Los Angeles Bus Riders’ Union have taken it, a prima facie argument for buses and against trains, but rather an indication the planners must take careful consideration of who will have access to the service when they are planning and siting expensive new rail infrastructure—or even making changes to legacy systems.

The most comprehensive summary document of commuting trends in the US is the *Commuting in America* (CIA) series, a joint effort of AASHTO and the federal Department of Transportation. The program has produced three primary documents, published in 1990, 2000, and 2006, and most recently a series of smaller briefs on specific topics using more recent data. Brief 13, on transit commuting, contains several elements that are relevant to this analysis. The
Census Transportation Planning Products (CTPP) data upon which CIA relies has its limits, primary among them that it only covers work trips; nevertheless it is one of the best products available. Notably, the CIA analysis brings home that commuter rail (classed in ACS as “railroad”) is a fairly marginal mode in terms of overall share:

Figure 4: Transit Commuting by Region and Transit Sub-Mode by Region (AASHTO and USDOT 2015, p.7).

Unsurprisingly, “railroad” commuting is heavily concentrated in the Northeast, where three of the six “legacy” systems that have been in continuous operation since before World War II are located. CIA’s data also confirms that commuter rail ridership is composed almost entirely of higher-income people:
Notice that virtually all commuter rail riders have household incomes above $50,000 per year, with many far higher than that. This is true even though the concept of commuter rail has spread well into the Sunbelt, with its endless sprawl of supposedly more egalitarian suburbs, suggesting that the mode’s enormous operational costs—and resultant high fares—are precluding any possibility of it becoming useful outside of a certain high-income niche.

Conclusion

This chapter has examined the past and present of commuter rail in the United States. Though the emphasis of this paper is on the future, on what can be changed, any analysis of the way forward must be rooted in history. Understanding the political, social, and economic trends that have shaped the present of urban-suburban rail transit is crucial to determining a path through which planners and advocates can help shape the future. This chapter identified commuter rail, as it exists in the US, as a highly inegalitarian mode dependent on an expensive operating model, with the consequent high fares ensuring a vicious cycle that excludes the possibility of more diverse ridership. It then extended the analysis to the question of why that remains the case, coming to the conclusion that commuter rail is highly influenced by an “iron triangle” of wealthy and vocal ridership whose primary interest is preserving the status quo;
conservative and risk-averse management with every incentive to avoid disruption, and therefore, reform; and organized labor that benefits from the current path of inertia and is riven by internal divisions that also form a large obstacle to reform.

Planners should not lose sight of the political and moral importance of fixing the commuter rail paradigm. Anecdotal evidence suggests that non commuter rail riders are aware that the mode is “not for them.” The town planner of Lincoln, RI, indicated to a team studying the possibility of intrastate commuter rail service linking Woonsocket, Providence, and points south that the working-class residents of an enclave known as Manville within his town had no interest in a commuter rail station, despite having historically had one. Commuter rail, he said, was too peaky, and could not serve residents who worked nontraditional hours (The Providence Foundation 2009, p. 71). Lai (2015) details the extent to which residents of Boston’s poor Dorchester/Roxbury area regard the Fairmount Line that traverses their neighborhood as being reserved solely for wealthy suburbanites—when they are even aware of its existence, so infrequent is the service. How different would the attitudes of these residents be if instead of “commuter” rail, they were offered “regional rail”—with frequent, all-day service. To demonstrate the potential for that future, Chapter 3 turns its attention to the international stage to provide a meaningful baseline to which planners can compare American commuter rail.
Chapter 3: International Case Studies for Regional Rail

Chapter 1 laid out the history, background, and context for the particular American practice of “commuter” rail. It made the case that what Americans call commuter rail is a product not of thoughtful planning but of the socially exclusionary development of American suburbs and of a particularly anachronistic “iron triangle” composed of status-quo-seeking riders, conservative management, and reactionary unions. But without a frame of reference, it is hard for planners and policymakers to understand just how different the American approach to urban-suburban rail is from that of other countries—and what the socioeconomic implications of that difference are. Beauregard (2006, p. 14), among others, argues that car-based suburbia is the ultimate expression of the doctrine of American exceptionalism. International systems of transportation and land use, then, are the baseline from which American deviance can be measured—and, if

![Figure 6: List of more than 50 cities that have implemented regional rail-style service (Metrolinx 2016, p. 6).]
needed, reformed. This chapter examines the paths taken by urban-suburban mainline rail in other parts of the world, with the intention to create an understanding of just how different American methods are, and how the US system can move in a direction of greater overall utility. This chapter does not make a claim to be comprehensive; rather, it provides snapshots of several leading systems that can be regarded as holding lessons for the US.

Japan

Japan is widely acknowledged as having the best—certainly the most technically advanced—mainline rail network in the world. And while Japan’s dense settlement pattern may not be replicable—or even desirable—in less constrained physical settings, it is home to some of the world’s best transit-oriented cities and suburbs. The backbone linking those metropolitan areas—especially the Tokyo area—together is the nation’s strong and technically advanced rail network. Although Japanese suburbs today look very different from their American peers, their histories betray some remarkable similarities if one looks back far enough—and some equally remarkable, and extremely informative, points of divergence. In particular, the Japanese urban-suburban rail network is characterized by several things: extremely close coordination between transit and land use; the dominance of the private sector in operations and planning; cooperation between different operators and indeed, different modes in the service of a larger network; and highly technically advanced trains and infrastructure. And while the Japanese model may not be importable whole cloth to the US, it can certainly inform American planners and policymakers about the boundaries of what is possible—and the importance of some elements that are often left behind in American transit planning.

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Much of this section was originally researched for an independent study paper substituting for APLN 510 on Japanese methods of coordinating suburban transit and land use, fall 2015.
Coordination of Land Use and Transit by the Private Sector

Perhaps the most remarkable element of the development of urban-suburban rail in Japan is the prominent role played by the private sector from a very early period through to the present. Both intercity and urban surface operations were in public hands by the 1920s, leaving the suburban railways as a niche for the private sector. The circumstances were right for profit; as Mizutani writes, “During the Taisho era [1912-1926], the population grew rapidly in the central city and suburbs of large cities such as Tokyo and Osaka…The Great Earthquake of 1923 in Tokyo had prompted an exodus to the suburbs, increasing the demand for private commuter rails.” (Mizutani 1993, pp. 11-12). A permissive planning atmosphere accompanied demand for railway-based suburban growth: “Since there was a strong tendency to readily permit private railway companies in areas with no railway lines, in order to survive, the newly-established companies had to increase the population near their lines and attract as many passengers as possible by creating entertainment near their lines.” (Saito 1997, p. 4). Like the streetcar companies that laid out many American suburbs from the late 19th century through the 1930s, Japanese suburban rail companies were most fundamentally in the business of housing and land development. Suburban growth, for which there was significant and accelerating demand, had to be coordinated with transit, not only because that was the transportation that was available, but because the companies responsible for the growth would otherwise go bankrupt.

Figure 7: Development of railways in Tokyo up to 1925 (Siebert 2001, p. 17).
Japanese railway suburbs were, originally, largely based on Ebenezer Howard’s Garden City ideal, but—as was common in the rest of the world—Japanese developers turned their Garden Cities into more of a bedroom suburb than Howard’s intended self-sufficient mixed-use city (Hall 2013, p. 132). As such, though, the railway station represented the absolute center of both prewar and postwar suburbs—something common in the US in the prewar era, but abandoned after the war (Ito and Chiba 2001, p. 8). The railroads often owned the commercial development around this core. The rail industry, like Japanese capitalism generally, was highly organized; the 1938 Land Transportation Enterprise Regulation had created a regional monopoly for commuter rail in the Tokyo area and consolidated suburban service in several other major cities. Several railroad companies had, by the time of World War II, evolved into highly complex, diversified conglomerates—and despite considerable tumult and turnover within the economy, several retain that status today.

In distinct contrast to the American experience, the trauma of World War II spawned not an automobile revolution but increased dependence on rail for transportation—even in growing suburbs. Given the devastation that major Japanese cities experienced toward the end of the war, this is perhaps not surprising. Japan saw massive migration to metropolitan areas after the war, and private companies—of which the railway conglomerates were some of the biggest—were given largely free rein to develop the newest suburbs as they wished. In the absence of a massive government intervention like the US’ Interstate Highway Program, the resulting model of transportation and development largely carried forward the prewar paradigm. Given economic stresses, the nine consolidated suburban rail companies became fourteen slightly less consolidated ones (Mizutani 1993, p. 12). Those companies, though, enjoyed an enviable situation: dominance of the postwar transportation market, as well as a rapidly urbanizing
population. Migration from rural areas to cities, common 1910s and ‘20s, picked up again. With many migrants headed for the suburbs, the real estate development schemes operated by the railways profited (Mizutani 1993, p. 13). There was no real competition for rail’s complete dominance in the immediate postwar era; in 1950 it represented 52% of freight and 92% of passenger transportation (Imashiro 1997, p. 50).

Though denser than its American counterpart, postwar Japanese suburban development was still sprawly, a byproduct both of arcane, unreformed land law and of the incentives baked into development of land by for-profit railways, which could and did charge distance-based fares (Sorensen 2002, p. 207). Distance-based fares allowed—and still do allow—railways to charge more for longer journeys, as well as to and build residential developments far out on the urban fringe, where land was cheaper. Since many Japanese employers subsidize their employees’ fares (Sorensen 2002, p. 207), the employees would not feel the financial pain. Financial returns allowed the railways—suburban and otherwise—to continuously upgrade their infrastructure with items such as electrification, quadruple-tracking, and grade separations. And although this pattern of development does chew up a significant amount of land, the need to be near a train station makes Japanese suburbs more compact than their American counterparts.

Nor did the development vigor of the railway companies dim as Japan recovered from the disastrous end to World War II and gradually regained its prosperity. Indeed, buoyed by the modernization of suburban lines and especially the opening of the first Shinkansen high speed line in 1964, railway companies began to build entire New Cities on the suburban fringe at massive scale. The Tokyu company, for example, built its Den-en-toshi (the Japanese term for Garden City) line through the southwestern suburbs of Tokyo from 1963 to 1984, with 15 stations along its 20 kilometers (a stop spacing much more closely resembling that of urban
transit than commuter rail in the US). (Saito 1997, p. 4). The company simultaneously developed a massive New Town known as Tama Den-en-toshi over 50 hectares along the line. Tama Den-en-toshi had, as of Saito’s 1997 writing, over 500,000 inhabitants—more than any single American Edge City or single suburban municipality. New Town-style development continued on the suburban fringe for at least 30 years, reaching a crescendo in the 1980s. In a vivid illustration of the way corporate profit, transit, and land use have been and continue to be intertwined in Japan, noted TOD expert Robert Cervero writes of that period that “During the 1980s at the height of railway/new-town codevelopment and a surge in Japanese real-estate prices, railway companies were earning investment returns on ancillary real-estate projects in the range of 50% to 70%, with profit margins from real estate far outstripping those from transit services” (Cervero 2009, p. 24). And this was a time well after the end of the railway companies’ near-monopoly over transportation, when car ownership was growing in Japan! To a certain extent, this ability to profit from suburban demand reflects a distinct flexibility on the part of the railway-development companies—to take advantage of good times through development and growth and hunker down with the profits from their core function, efficiently run rail service, in the bad.

**Coordination of Modes and Operators**

To the eye of an American transit planner, one of the other truly outstanding aspects of Japanese railway operations is the extent to which different modes and systems work together. The Tokyo region provides the dominant example. As postwar growth strained the existing systems, the region’s transit stakeholders sought a way to fight congestion by making them more efficient—but they chose to do so not by working separately, in siloes, but together. Before the 1960s, the circular JR Yamanote Line around downtown Tokyo was something of a barrier to smooth transit operations. All privately run suburban operations terminated on the Yamanote
Line, while Tokyo’s municipally owned subways did the same on the other side; only three lines, JNR’s Chuo Line and two subway lines, operated inside the Yamanote loop (see Figure 8). This allowed excellent circulation in the urban core, but forced many passengers to make complex, time-consuming, and inefficient transfers (Sato and Essig 2000, p. 37). As population concentrations shifted to the suburbs after World War II, the Yamanote transfer and the stub-end terminals on it became a burden on efficient operation. Starting with a 1956 report, the Japanese Ministry of Transport led the way in planning for new subways to have strong connections—infragrastuctural, not just transfers—with suburban lines. The central subways connect to a suburban operator on both sides of the Yamanote loop, leading to a complex-but-efficient operational paradigm whereby

The central (most underground) section between the two connections is served alternately by trains of the subway operator (TMG or TRTA) and each of the two connected private operators. Similarly, the suburban sections on the outer sides are served alternately by trains of the subway and the private operators. The train crews usually change at the connecting stations. Sometimes, trains are terminated at the connection stations, but in such a case, cross-platform transfer is used to facilitate a quick change (Sato and Essig 2000, p. 37).

Though it involved multiple operators and up to three train crews operating one set of equipment, this arrangement was—and is—inherently more efficient than a stub-end terminal could ever be, allowing much more frequent operation of trains, and carriage of significantly more riders. Indeed, as one Japanese evaluator put it, “This solution, more than any other, made Tokyo’s railway system the efficient marvel it is today” (Hirooka 2000, p. 25).
The Japanese through service paradigm is a marvel of high-quality cooperation between the public and private sectors, and indeed between various private sector stakeholders. Today, the Tokyo region has at least 18 different operators running 1,000 km of track involved in through service. Many through operations involve three different operators; the most complex is a recently introduced service involving five separate companies (Ito 2014). Japanese through services operate with a clear delineation of duties at handoff points between operators; revenues accrue to each operator from time a train spends on its track, and crews change at handoff points. Unlike the vertical separation of infrastructure and operations that has become common in Europe, Japanese operators bundle infrastructure and operations—but share rolling stock within a single trip (Kurosaki 2014, p. 22). Many of the operators are public, but the public sector also plays a crucial role in organizing and funding the infrastructure necessary for such cooperative operations. In 1962, the government introduced infrastructure subsidies for the publicly owned subways, which, unlike the private suburban railways, do not generally earn a profit. In 1986, a new regulation allowed for-profit urban railways to raise fares for a set period of time and set aside the money in a tax-free account in order to finance up to 25% of the cost of infrastructure improvements (Hirooka 2000, pp. 29-30). Recently, the government has also begun subsidizing infrastructure intended to connect lines and stations belonging to different lines to increase overall network efficiency (Ito 2014, p. 19).

Japan and the US

One of the most remarkable documents uncovered in research for this paper is a 1982 report from a Japanese-American transportation professional exchange program, organized by the Japan Society and the International House of Japan, and written up in the journal of the International Association of Traffic and Safety Sciences. The teams examined transportation infrastructure, operational practices, and urban fabric in each other’s countries, with each
member writing out his observations in the journal afterwards. Reading through the observations of the Americans is an experience in wonder, amazement—and, indeed, jealousy. Harre Demoro—a longtime transportation journalist and analyst—wondered at the fact that one could ride 1920s-technology streetcars nearly identical to those of his Oakland youth to a seamless transfer with 130 mph Shinkansen trains in Hiroshima, and that they split traffic with an electrified conventional railway in a dense suburban area (IATSS 1982, p. 16). Norman Emerson, at the time a transportation commissioner in Los Angeles, marveled at the New Town developments, especially the Tokyu company’s Tama Den-en-toshi, and correctly identified the key characteristic of Tokyo’s planning strategy as “the coordinated relationship between land use and transit.” (IATSS 1982, p. 25). C. Kenneth Orski, an academic and thinktanker, noted the close similarities between Japanese and American “streetcar suburb” experiences through the 1920s, but enthused over the fact that 13 of the 14 major Japanese suburban railways remained profitable in 1981. He attributed this long-term success to the “close—virtually symbiotic—relationship that has developed between the railroads and the residential and commercial developments they serve.” (IATSS 1982, p. 31). This team of Americans put their fingers on the two most important aspects of the success of rail-based transit in Japan—close coordination with land use and strong cooperation between different operators—but 34 years later, their observations remain unheeded in their home country.

The S-Bahn

With origins stretching back before World War II, the S-Bahn concept—a paradigm for urban-suburban mainline rail operations native to Germany and common in the German-speaking world, and, increasingly, elsewhere—is one of the most influential models for regional rail today. The earliest origins of the concept can be traced to early Imperial Berlin, which in 1882 opened the 12-km elevated Stadtbahn across the center of the city. With two tracks for
local service and two for intercity service—a format maintained to this day—the Stadtbahn provided the same benefits seen in other crossings of urban cores: higher efficiency compared to the several existing stub-end terminals, and better access to the city core for suburban trains. The Stadtbahn combined with the radial Ringbahn to form, by the early 20th century, a highly organized and complex, but efficient, urban-suburban network (Weigelt 1986, p. 98).

Though highly efficient in its day, the combined structure of urban trunk, loop line, and branches was unable to compete with the expanding Berlin U-Bahn (subway) in the post-World War I era, leading the national rail carrier, Deutsche Reichsbahn, to develop a new mode of operation that more closely resembled rapid transit. Dubbed “S-Bahn,” the new mode was intended to be “Compatible with normal railway-operation, therefore using main line-tracks to as much as possible and designed especially for suburban services, but also being able to serve the urban relations along their corridors effectively” (Weigelt 1986, p. 99). The S-Bahn was highly technically advanced, running two-car electric multiple units with four double automatic doors per side, and advanced signaling that by the time of the 1936 Berlin Olympics allowed operations at headways of 90 seconds, very low even by 2016 standards. Deutsche Reichsbahn established geographically zoned ticketing and created a consistent brand for S-Bahn service. In 1939, a north-south tunnel through Berlin dedicated to S-Bahn service opened to complement the east-west Stadtbahn (Weigelt 1986, p. 99). Before the outbreak of World War II, Hamburg had also established an electrified S-Bahn system (Rossberg 1988, p. 154).

Though the Berlin S-Bahn system would, understandably in a bombed and then divided city, fall into disrepair after World War II, eventually a “second generation” of S-Bahn systems emerged in many German-speaking cities. As in its erstwhile ally Japan, war damage took a significant amount of time for recovery, resulting in slow government investment in
transportation in postwar years; but unlike Japan, Germany had already evolved an Autobahn system and something of a car culture before the war (Busch 1948). Beginning in the 1960s, West German politicians and planners realized that many of their cities were beginning to suffer from some of the same afflictions common in American cities, namely, traffic congestion, pollution, and sprawl. The 1967 Urban Transport Finance Act sought to rein in the stampede, imposing a gas tax dedicated to mass transit. From 1967 through 1988, about one-third of that revenue had been distributed to S-Bahn systems, which German planners had quickly seized on as a way to utilize existing infrastructure to make quick improvements cheaply, despite the expense of establishing new center city connections (Rossberg 1998, p. 154). In the face of urban dispersal, German policymakers accepted that "The planner’s task should be to manage the disintegration of the city–and even of the conurbation–shaping the coming diffusion into compact small towns rather than sprawl. The notion that such an end could be accomplished through regional express rail systems…underpinned the design of S-Bahn networks in post-war Germany" (Hebbert 2014, p. 178).

The first and most prominent of the “second generation” (as many analysts refer to them). S-Bahn systems launched in Munich in 1972. As with the 1936 Berlin Olympics, the awarding of the Games proved to be a motivation for officials to show off the shiny new system (Munich opened a U-Bahn at the same time). Munich’s system centered on a new 4.2-km tunnel connecting its traditional stub-end terminal stations through the city CBD. By connecting existing rail infrastructure with the new tunnel, Munich constructed a network of approximately 400 km of S-Bahn in six years at a cost of about 1 billion DM (approximately $1.8 billion US in 2016 dollars). In the wake of its opening, daily ridership on suburban lines increased from 160,000 to 250,000, and would rise to 620,000 by 1986 (Weigelt 1986, p. 101).
In addition to the central tunnel, the Munich S-Bahn also showed off two other, interrelated frameworks that have since become key to the S-Bahn paradigm: regional transit governance linking different modes together and a highly systematized timetabling system organized around precisely timed transfers at various points. The Munich S-Bahn itself, like other “second generation” systems, was operated by the West German national railways, Deutsche Bundesbahn, with financial responsibility shared between DB and regional stakeholders. Integration of operations with the national network meant that dispatching, too, was coordinated with intercity trains—a major positive, as anyone familiar with the squabbles between Amtrak and various commuter services on the Northeast Corridor can attest (Weigelt 1986, pp. 102-103). Planning and governance for the S-Bahn was—and is—handled by an entity known as a Verkehrsverbund, or, roughly, “public transport federation” or “transport association.” The first Verkehrsverbund was established in Hamburg in 1965, and Munich adopted the concept when the S-Bahn opened in 1972. The purpose of the Verkehrsverbund is to deal with sprawl and transportation issues by ensuring that schedules are coordinated between modes, allowing true competition with the automobile through speedy travel (Mees 2009, p. 73). The Verkehrsverbund model proved highly successful and has since spread into Austria, Switzerland—where it was adopted with the opening of the Zurich S-Bahn in 1990—and even Madrid, albeit under a different name (Mees 2009, p. 153). By focusing on “tactical planning,” the Verkehrsverbund allows existing entities to do what they do best, operations, while allowing public interest rather than operational ease to dictate planning (Mees 2009, p. 73).

The Verkehrsverbund concept exists in concert with—indeed, largely in order to plan—the complex timetabling approach known as the *integraler taktfahrplan*, or ITF. The term comes from “*Integraler*: integrated; *Takt*: heartbeat, musical beat, or the steady pulse of a fixed-interval
schedule; and *Fahrplan*: timetable or schedule, from *fahren*: to ride—hence, ‘ride plan.’” (Maxwell 1999, p. 1). The basic premise is familiar from small-town American bus systems, which often bring all or many routes together at a particular point at the same time to enable transfers in any direction, even if it means some riders must go somewhat out of their way geographically. Mees (2009, pp. 142-143) provides a snapshot of such a system in action in the small (approximately 44,000 people) city of Schaffhausen on the outskirts of the Zurich region. Six full-time bus routes operate every ten minutes at most hours, converging on the railway station six times per hour at the same time. At off hours, the bus takts are timed to coincide with S-Bahn arrivals, since services are less frequent.

The ITF approach has significant cost benefits, but also introduces a level of complexity to planning, as Mees explains:

Rather than offering high frequencies at all times, different lines are timed to meet at designated transfer points, at intervals such as every 10, 15, 30, or (generally only in rural areas) every 60 minutes...this approach is less expensive to operate than a high-frequency random-transfer network, but harder to plan. It requires careful coordination of timetables, and reliable operations (Mees 2009, p. 167)

An ITF approach can scale this up to a regional or even (as in Switzerland) a national level, pulling in trams, buses, and even intercity trains. The complexity inherent in the scheduling means that service changes cascade across the entire network and thus must be planned very carefully. As of 2009, Munich was engaged in a process of “taktverdichtung,” or “speeding the beat,” with the goal of boosting frequencies on the popular S-Bahn network from their 15-minute basic level to every 10 minutes. As with any ITF system, this means that rescheduling had to include not only the S-Bahn trains

Figure 9: The geometric personification of Organization before Electronics before Concrete (Nash and Weidmann 2005)
themselves but also *all of their connections*, making the process much more complex (Hale 2009, p. 9). When executed well, however, the payoff of an ITF scheduling system is enormous: ultimately, highly reliable operations and well-executed transfers can substitute for the need for more capital investment, a concept represented by the German phrase Organisation vor Elektronik vor Beton, or “Organization before Electronics before Concrete” (see Figure 9). Indeed, before establishing a country-wide IFT plan, Swiss voters rejected a plan for a true, infrastructurally independent high-speed rail system in the 1970s (Nash and Weidmann 2005, p. 2), just as Zurich-area voters rejected several more intensive plans before approving the S-Bahn that ultimately opened in 1990 (Mees 2009).

One of the benefits of an ITF system is that it means the S-Bahn concept can be applied to regions that in other countries might lack the population density or concentration generally thought to be required for effective rail transportation. One example of this is, of course, Switzerland, where a national *takt* system makes access to the entire country easy by rail. Nash and Weidmann (2005) detail the process of creating the Stadtbahn Zug, a regional rail service that began operating in that Swiss canton in 2004. Despite a relatively small population, a decent amount of sprawl, and high rates of car ownership by European standards, Stadtbahn Zug opened with an operational frequency of four trains per hour. Because partnerships between national railway operators and regional planning organizations are a typical part of S-Bahn operations, Stadtbahn Zug was able to take advantage of Swiss National Railways (SBB)’s operational expertise and new equipment orders. Within Germany, perhaps the best example is the polycentric Rhein-Ruhr S-Bahn, which serves a wide region centered on the mid-size city of Nuremberg. Weigelt explains the unique ability of the S-Bahn concept with its *takt* scheduling to provide a low-cost service in a smaller area in a 1982 article for *Railway Gazette* titled
“Adapting the S-Bahn concept to suit a medium conurbation.” Seidenglanz, Chvátal, and Nedvedová (2014) describe efforts to bring the S-Bahn quality of service to the Czech Republic, explicitly drawing on Nurnberg’s experience as an inspiration. It is perhaps this aspect of the larger S-Bahn concept that is most applicable to the American experience.

Paris: the RER

While the S-Bahn concept has spread across Europe, some more recent suburban network modifications, including those in London and upcoming in Toronto, have cited as their inspiration (accurately or not; see below) a different system: Paris’ Reseau Express Regional (Regional Express Network, adapted by English-speakers as “Regional Express Rail” so the acronym makes sense), or RER. Constructed beginning in the 1960s, with modification and expansion ongoing to this day, the RER network is notable for its rapid-transit-like qualities, with services divided into five “lines,” and its close, planning- and government-driven coordination with the growth of the Paris metro area. The RER serves as a supplement to Paris’s dense, but (for now) relatively geographically restricted Metro system, speeding passengers from the recently developed New Towns on Paris’s periphery, which are often home to disadvantaged groups, into the core of Paris, and across it to newly developed commercial areas. As a result, as Hall (2014) argues, the RER has had, more than the average transit system, a decisive role in the shaping of Paris’ contemporary metropolitan form.

As in many cities, Paris’ original rail lines tended to end at stub-end terminals at the edges of the city’s core; indeed, the problem may have been more severe in Paris than in many other cities, since the city functioned as the main node out of which French railways radiated. As such, in Paris as in other places, the idea of tunneling through the core of the city to connect those mainline railroads is decades older than the actual plan to do so. The 1889 International
Exposition demonstrated the inability of the city’s existing, rudimentary transit system to handle massive crowds, leading the railway companies to propose a kind of cross-Paris connection that might have better served the city. However, most city stakeholders felt that this project would “benefit through travelers, international travel and the profits of the provincial companies but at the expense of Parisians whose environment would be damaged in order to provide a service which was not for local needs.” (Webster 1989, p. 49). As a result, the city chose instead to build a publicly owned Metro subway network—with a loading gauge small enough to forever prevent interoperability between it and the mainline railways (Hall 2013, p. 180). The initial proposal might indeed not have met Paris’s needs—but in a fit of spite all too common to the transit planning process, the city made sure the “Tokyo solution” of fully integrating mainline and subway rail transit would never work for it. A through-city suburban system would have to create its own infrastructure, potentially on the example of the Petite Ceinture orbital rail line, which featured frequent passenger service.

As in many major metropolitan centers, the early 20th century saw major growth in suburban Paris—growth that was hampered by an inadequate transportation system, as well as by an official reluctance to recognize many informal suburban developments, leading to an inferior standard of living. Suburban commuters to Paris utilized the existing stub-end mainline railways, whose terminals were mainly located around, rather than in, the urban core, on the broad Haussmanian boulevards under which the Paris Metro ran. Most riders had to transfer to reach their destinations in the core, virtually replicating the situation present in Tokyo at the time, where suburban mainlines ended on the Yamanote Line loop (Hall 2013, p. 180). This situation was in many ways indicative of the shortcomings of the Metro system, which provided excellent service within the urban core and very little anywhere else. The initial Metro lines were tunneled
directly beneath Haussman’s Grand Boulevards in order to minimize construction impact, a move that reinforced, rather than changing, existing pre-suburbanization travel patterns (Webster 1989, p. 49). A 1959 analysis indicated that the Metro system—which had survived World War II with relatively little damage—had only three lines extending more than five miles from the city center, and none more than ten miles out (Netz 1959, p. 160). To accommodate accelerating suburban growth—and indeed, the French government’s plans for the future of the Paris metropolitan area—the capital would need Metro to grow (and it would), but it would also need an entirely new transit network.

The plan for Paris’s growth was laid out in the 1965 Schema Directeur, a grand plan for the future of the entire metropolitan region. The Schema Directeur was very much a product of government planning, with significant top-down involvement from the Gaullist administration that provoked some backlash from the Left. The document laid out spectacular plans for New Towns, new commercial districts, and new infrastructure, including both highways and an express rail system that would become the RER that was actually built. On the other hand, it also had significant shortcomings. There was no financial plan to accompany the desire for massive infrastructural works. The overall theme was disorganized, presenting as, in the words of one analyst, “a random shopping list, not a plan” (Webster 1989, p. 76).

And yet, the blueprint for the RER laid out in the 1965 Schema Directeur transformed, eventually, into reality. The RER as it initially functioned combined infrastructure from two different operating entities, Paris’s RATP (which managed a lonely, unimportant suburban line to Sceaux) and the national railway company SNCF. SNCF’s suburban lines had, to quote Webster, “always been a low prestige retreat for the unambitious railway manager,” and as such the existing managerial class saw any outside cooperation or influence as a threat to its status,
even if the goal was improved service (Webster 1989, p. 87). The territorial attitude of the SNCF suburban management class likely sounds depressingly familiar to anyone familiar with American commuter rail operations, but unlike in most American cities, in Paris government took action to deal with it. In 1971, SNCF appointed one manager for suburban services; the ongoing RER project would be managed out of one department housed in RATP. For inspiration in solving the various technical and organizational challenges posed by integrating RATP and SNCF operations on the RER, the management team turned to Tokyo, which had recently begun its through-running operations (see above). Aside from creating a plan to tackle any number of technical issues—voltage changes, signaling, platform height, even the height of the train throttle—the management team also copied one of Tokyo’s techniques for creating easy connections between lines and operators. Under this modification to the 1965 Schema Directeur RER blueprint, the east-west RER A line, linking SNCF lines and completed in stages up to 1977, met the north-south RER B, which began as an extension of the RATP Sceaux Line, at Chatelet-les-Halles in central Paris. RER B then continued north to connect to SNCF operations in the northern suburbs. At Chatelet-les-Halles itself, the two lines converge on a pair of platforms that enable cross-platform transfers from one line to the other (Sato and Essig 2000). With a head start on solving the challenges of interoperability, both of trains from two

![Diagram of RER A and RER B in central Paris as envisioned in 1972 (Sato and Essig 2000).](image)
operators on the same tracks and of inter-system transfers, the RER network would grow from its initial two lines to a total of five, with numerous branches, at the time of writing. Rather than the S-Bahn style of multiple lines funneling into one or more downtown trunks to provide high overlapping frequencies, the five RER lines operate more like subways, with each providing high frequencies on its own discrete tracks (although some tracks are shared), obviating the need for precisely timed transfers at most times.

Perhaps the most interesting aspect of the RER is the extent to which system has served national, rather than local, political priorities. Though Paris’s growth in the postwar period was not, proportionally, quite as rapid as its peak in the interwar era, it was fast enough that the national government took upon itself a plan to accommodate that growth. New suburbs were built on the taxpayer dime, as were massive new office areas—really, secondary CBDs—such as the famous La Defense. The government saw the RER—and, often, an expanded roadway network—as the key to unlocking the newly developed areas. Local stakeholders, unsure of the benefits of growth, tended to see an expanded Metro as more desirable, since its benefits would accrue mainly to existing residents (Webster 1989, pp. 195-198). RATP leadership, too, tended to be skeptical of the need for the RER, an attitude that was not helped by cost blowouts on the initial underground sections. With national-level and professional-class leadership, though, both the new suburbs and developments and the RER intended to serve them were eventually constructed, and proved to be popular. The Metro system, too, has been expanded, and, as of this writing, plans are underway for a major new phase of Metro in suburban areas known as the Grand Paris Express. In the meantime, the RER has been decisive in shaping the urban form of the newly expanded—though still compact—Paris metropolitan area around itself. As Peter Hall writes,
Far from becoming a polycentric city region, the Île-de-France — 11.4 million people, nearly 19 per cent of the French population, living on only 2 per cent of its area — remains a single compact agglomeration, lacking a distinct zone of nearby medium-sized towns such as is found in South East England… The key difference is that, in Paris, the RER is superimposed on the much denser city-based Métro system. But, in effect, the Paris of 2012 resembles an enlarged version of the London of 1939, not the London mega-city region of 2012 (Hall 2013, pp. 182-183).

Despite its “suburban” orientation, the RER allowed Paris-region planners to get a handle on the region’s quick growth and shape it around transit, rather than auto-oriented sprawl. Although Desjardins and Drevelle (2014) note that job sprawl, also a very American issue, has continued, and call into question whether the RER has in fact connected low-skill workers to job opportunities as it was in part intended to, there are few who question the system’s necessity or overall success today.

London: Thameslink, the Overground, and Crossrail

London is one of the most interesting test cases for the applicability of a regional rail approach, in no small part because it has been late in adopting the paradigm relative to many other European cities. This is true despite the geography of London’s many disparate mainline rail terminals, which have since the mid-19th century virtually cried out for some kind of linkage (see Figure 11).

That London has been tardy to develop a regional rail network is largely a product of historical factors that made the niche for regional rail in London’s transportation landscape.
smaller than in Paris or many German cities. One of these was the early implementation of the London Underground, which began with the Metropolitan Line in 1863—more than 30 years before construction of the Paris Metro began. And those initial Tube lines extended well beyond city limits, as Peter Hall recalls: “These early deep-level lines initially burrowed only under existing city streets and served existing residents in existing houses in the dense inner city. But, in every case, they were soon extended into the fields…the system rapidly extended quickly and cheaply above ground to open up new ‘semi-detached suburbs’” (Hall 2013, p. 179). Netz’s 1959 analysis indicated that even at that relatively early postwar point, the Underground extended as far as 35 miles from the city center—well beyond the reach of either of his two comparisons, the New York City subway and Paris Metro (Netz 1959, p. 160). With the Underground essentially serving the role that inner-ring mainline rail would typically serve in many parts of the London metropolitan area, there was less incentive to develop a rapid-transit-like mainline service well into the postwar era, although London did and does have a significant and complex set of commuter services into stub-end terminals.

By the late 20th century, though, the rapid growth of the London area had developed beyond even the Underground’s extensive reach. Government attempts to impose a greenbelt around London succeeded—but simply resulted in suburban development leapfrogging the open space. Peter Hall details the pattern of growth:

Because the population in the region continued to rise from the 1950s, the growth leapfrogged the green belt, and people settled in a series of separate towns beyond it in the 35–50-km ring from London, including the eight new towns designated for the overspill population and employment. These original eight London new towns, started in 1946–1950 and completed some 20 years later, are 35–55 km (20–35 miles) from London; their three successors, started in the 1960s, are 80–130 km (50–80 miles) distant. The 1961 census showed that population growth in the ring around London during the 1950s had amounted to 800,000 people — one-third of the net growth of population in Britain. And, contrary to the expectations of the architects of the 1947 system, the vast
majority had been housed not in planned new or expanded towns, but in privately built suburban estates on the familiar interwar model (Hall 2013, p. 181).

The result has been a huge mega-region that is both extremely focused on London and quite polycentric, with numerous subcenters developing at a significant distance from the city core. Government policy has incentivized this kind of development, trying to funnel new development into areas around outer-ring cores and along corridors into the city near rail or highways. This new (though not so new anymore in 2016) broad London region has seen the growth of a new kind of long-distance rail commuting. Even if a majority of workers near a secondary center can find a job close to home, a significant minority—enough to create significant demand—still commute to downtown London (Hall 2013, p. 181). Since 1983 London proper has also grown explosively, so by the late 20th century the region was faced with a dual challenge: how to accommodate exploding demand within the City of London, and how to create an efficient, speedy long-distance commuting service. The answer to both would to a large extent be regional rail, in several different forms.

Thameslink

The first London effort that a contemporary observer might label as “regional rail” is Thameslink. The plan originated from the 1974 London Rail Study, a joint effort of several governmental stakeholders (Hebbert 2014, p. 180). The idea—the simplest of several proposed—was to utilize the semi-abandoned Snow Hill tunnel through central London to create a north-south linkage between two commuter rail networks. The tunnel itself had seen no passenger service since 1916, and freight traffic was in the process of winding down as well. The northern suburban network to which it connected, running to places like Bedford, Peterborough, and Cambridge in the range of 50-70 miles north of London (Hall 2013, p. 182), was electrified with overhead 25 kv AC catenary. On the southern side, the suburban network in Kent and Sussex
used 750v DC third rail, and extended to Brighton, about 50 miles from the core of London.
Traditionally, the two networks had been governed separately, but restructuring of British Rail in the 1980s brought them both under the responsibility of one division (McCormick 2014b). The Thameslink scheme was cheap—signaling and track work cost just £4 million (approximately $15.18 million US in 2016 dollars), with the bulk of overall expense being tied to procurement of new dual-mode Electric Multiple Units (EMUs) (Barrow 2014)—and technical problems proved, as in other regional rail examples, very much solvable, and after reconstruction of the Snow Hill tunnel Thameslink opened in 1988.

![Figure 12: Position of Thameslink within the London network as originally constituted in 1988 (McCormick 2014b).](image)

From the very beginning, Thameslink was a victim of its own success. Capacity through the tunnel—and, in particular, at the stations—was limited, and frequencies were not particularly
high. Indeed, while today the project is seen as London’s first step toward an S-Bahn-style network, at the time “The project was seen by many as more about increasing capacity and stock utilization by reducing the need for trains to terminate on arrival in London than providing strategic links between north and south.” (Purley 2013). Thameslink utilized the inherent efficiency of through operations relative to stub-end stations, but was not intended to take full advantage of the possibilities such service offered. Indeed, service was distinctly un-rapid-transit-like, and indeed, “Somewhat tentative at first: the off-peak service consisted of just 6 trains per hour (tph), and they ended up clumped so that there were some 20-minute gaps. The morning rush hour actually had fewer trains through the core, because Thameslink was merely added on top of existing rush-hour service patterns, rather than replacing them.” (McCormick 2014b). Because of various limitations of platform and track configuration, the Thameslink core could originally handle a maximum of only eight trains per hour in each direction, each a substandard eight cars long. Despite these impediments, Thameslink was, somewhat predictably, a massive hit with riders, and quickly overwhelmed available capacity. Ridership quadrupled within the first year of operation (McCormick 2014c), and increased further as rider routines and routes became further solidified. Yet done on the cheap, Thameslink had a capacity problem.

Government’s answer to Thameslink’s unanticipated success was an upgrade and capacity improvement program, initially known as Thameslink 2000 but later—after full funding was not received until 2008—renamed the Thameslink Programme. Since 2008, the £6.5 billion (really only £3.5 billion, or $6.88 billion US in 2016 dollars, when rolling stock is excluded according to Purley 2013) Thameslink Programme has implemented a slew of incremental capacity upgrades, with work scheduled to continue until 2018. Upgrades include better signaling, grade separation of flat junctions (interlockings in US parlance) in several places, and
most importantly reconstruction of several stations, especially London Bridge, to accommodate more and longer trains. The end goal is for Thameslink to finish the decade as a true rapid transit railway, serving up to 24 trains per hour in each direction—triple original capacity (Barrow 2014). Though it has received far less attention than the much more complex Crossrail, Thameslink will be in many ways the north-south counterpart of the larger project. Though Hebbert (2014) mentions that Peter Hall had high hopes for Thameslink as a kind of London RER, it is better understood, like Crossrail, as the central link in an S-Bahn-like network, with large suburban and regional networks feeding into one high-frequency central corridor.

Figure 13: Possible future Thameslink network post-Thameslink Programme. (http://www.dailymail.co.uk/news/article-2737498/Stunning-aerial-photos-new-shape-London-6-5billion-Thameslink-rail-project-takes-shape.html)

The London Overground

The least glamorous—and least publicized—of London’s regional rail efforts is also perhaps the most important for the American context. The London Overground represents not so
much a new infrastructural investment but a new operational paradigm—a shift in mindset from providing “commuter” service to rapid transit service on underutilized mainline rail lines. In just a few years, the Overground effort has leveraged a series of relatively small infrastructural investments into a massively popular new transit network that is, as of spring 2016, well on its way to expanding across much of the inner part of the London region (see Figure 15).

Since the early 1990s, London suburban services—like the British rail network generally—have been competitively tendered to private companies for operation, though ownership of infrastructure remains in public hands. Each operator is awarded a “franchise” to operate the service on a particular set of terms for a particular amount of time, with the public sector picking up the tab if the line does not turn a profit. As such, the network has been fractured—something that has been true for most of the network’s history—and uncoordinated, with the less profitable services within the City of London and other areas close to the core generally receiving poor treatment. The origins of the London Overground paradigm lie with a 2004 report from the national-level Department for Transport, titled *Future of Rail*. *Future of Rail* recommended concentrating administrative power over the Greater London suburban rail network in the hands of the regional agency Transport for London (TfL), overseen by the newly (2000) created position of Mayor of London (Department for Transport 2004, pp. 86-88).

Without mandating specifics (other than that ownership of the infrastructure would remain with national network manager Network Rail), *Future of Rail* set the agenda for transforming London’s mainline rail network. With enthusiastic support from Mayor Ken Livingstone, TfL took over the former Silverlink franchise in 2007 and began operating it as the London Overground.
TfL made several significant changes in transforming the Silverlink lines to the Overground brand. Perhaps most importantly, it transformed the contractual agreement between government and operator; although the Overground is still contracted out to a private operator (in this case, an arm of MTR, the Hong Kong transit agency), it operates under a concession rather than a franchise. The difference between the two models is one of degree rather than fundamental contrast, but a concession—which is bid on by private operators for a set fee—transfers significant risk from the private operator to TfL, whose large size gives it a better capability to absorb potential losses. In return, TfL controls ticket prices, rolling stock, service standards, and policy (Transport Committee 2015, p. 18; Sims, Roberts and Wilson, p. 34). More obviously from a rider perspective, Overground introduced significant service improvements, including much more frequent service (from a base of 4 trains per hour all the way up to 16 on some sections), modern rolling stock, refurbished stations, and integration into the OysterCard fare system (Sims, Roberts, and Wilson 2016, pp. 32-33). Where a franchise model might have incentivized a negative spiral of disinvestment from poorly performing services, operation as a concession gives TfL an incentive to improve performance, since it reaps the financial benefits.

Starting from a takeover of a few decrepit lines from one franchise, the Overground network has proven to be a hit with riders, and has grown significantly (see Figure 14).
Since the initial burst, Overground has expanded onto new lines, including former freight and Underground infrastructure. Taken together, several of its routes now form an orbital path around central London (see Figure 15). And ridership has followed the improvements:

Since gaining control of services, TfL have used increased frequencies and extensions of the network to double the number of kilometres per annum operated on the network, from 3.4 to 7.8 million (Fig. 3). The number of passenger journeys has increased even faster from 28.8 (38 if the East London line is included) to 139.8 million between 2007/8 and 2014/15 (Fig. 4). In the first four years of the Overground alone, ridership jumped 80 per cent, with around three quarters of this growth being directly attributable to the upgrades rather than wider economic factors which also drive passenger demand (Sims, Roberts, and Wilson 2016, p. 35).
In a rapidly growing urban area, the Overground was a way to provide significantly more rapid transit service in many underserved areas at relatively little cost—and consequentially proved quite popular.

Indeed, the popularity of the Overground has made a significant impact in the political sphere, taking on a momentum of its own. The original *Future of Rail* report had, of course, raised the issue of Transport for London taking over the *entire* inner-suburban network, and Mayors Ken Livingstone and Boris Johnson have kept up the pressure on that front reasonably consistently. Political involvement has in particular focused on devolution of the mainline rail system—with a presumed or stated intention to bring it up to Overground standards—in the southern part of London. South London is both more disadvantaged and less well served by rail transit of all sorts than the area north of the Thames, but the original

![Frequency of rail service is variable across the Capital](image)

*Figure 16: Frequency map of rail service in London, from Mayor of London, Department for Transport, and Transport for London 2016. Note poor service in South London.*
Overground, based on the Silverlink concession, does not serve it particularly well. The potential of the Overground model to serve South London was driven home recently by two reports, the London Assembly Transport Committee’s *Devolving Rail Services to London: Towards a South London Metro*, and the Centre for London’s *Turning South London Orange: Reforming Suburban Rail to Support London’s Next Wave of Growth*. Released within months of each other—October 2015 and January 2016, respectively—the two reports emphasize the success of the Overground operational paradigm, the sturdiness of the concession model, and the need for better transit to keep up with rapid growth in South London. And, in a remarkably swift development given that the Overground network had only begun operation in 2007, on January 21st, 2016 the Department for Transport, Mayor of London, and TfL announced that devolution of the inner suburban network would be completed; as each franchise expires in the coming years (until 2021 or so), TfL will take over the service and run it on the concession model, with many of the lines being upgraded to Overground operations (Stone 2016).

**Crossrail**

The most ambitious of London’s three regional rail projects, and the only one intended from the beginning to solve the downtown terminal problem common in regional rail cities, the massive Crossrail tunneling program has also received far and away the most attention from academics, planners, and the media. As such, it receives a more cursory look here than do Thameslink or the Overground. That said, as London’s premier ongoing infrastructure project, and as one of the biggest regional rail projects in the world, Crossrail is certainly deserving of significant attention.

As previously noted, London’s variety of railway terminals surround a dense urban core that contains a significant concentration of business, government and cultural activity—but
where mainline railways have traditionally been prohibited. As such, it is hardly surprising that a wide variety of schemes to integrate the systems have popped up over the decades, only to be shot down (For a good summary history of these plans, see Hebbert 2014.). The Crossrail concept itself dates to approximately 1974, when the Greater London Council and Department for the Environment released the London Rail Study. The 1974 concept—the first to be named Crossrail—called for two parallel east-west tunnels. But it had a rather significant distinguishing factor, as the official history of Crossrail emphasizes:

Crucially though, the study was almost certainly the first time that it was acknowledged that Crossrail needed to be more than just another Tube line. For London – and areas beyond - to get the most benefit from the scheme it needed to be a mainline railway that just happened to spend a good deal of time underground…“Crossrail would be similar to solutions which are being increasingly adopted throughout the world, eg, the Réseau Express Régional [RER] in Paris, and the German S-Bahn systems in Hamburg and Munich…This proposal seemed to us an imaginative and exciting solution to the problems of overcrowded public transport in central London” (Crossrail n.d.).

Rather than conceiving of the cross-London link as providing primarily for intercity service, or as local rapid transit, planners were beginning to understand that perhaps its potential lay somewhere in the middle. The RER-like vision similarly inspired the great geographer and chronicler of cities Peter Hall, who would write about it on and off for the rest of his life (Hebbert 2014, p. 182)

Actual approval of the Crossrail scheme, was, however, quite a bit further down the road. After a variety of false starts through the 1980s and 90s, momentum for Crossrail began to pick up again in the early 2000s as overcrowding and lack of reliability on the Underground network became more of a problem. A few external factors also came together. Mayor Ken Livingstone, also a key figure in the creation of the Overground, was also a strong supporter of Crossrail, pushing it hard in the 2004 city plan. The ongoing buildout of the Docklands district in eastern
London—already home to an autonomous light rail system—provided additional justification for the project’s eastern branches, especially since the Docklands developers were willing to chip in to the cost of Crossrail (Hebbert 2014, p. 186). The new Crossrail proposal leveraged several funding sources, including significant value capture, to meet the project’s cost. As Crossrail’s history puts it, “The funding deal for the scheme was complex but the basic principle was simple—the cost would be shared between the Government, TfL and the business community.” (Crossrail n.d.). The cost of Crossrail was to be enormous—nearly £15 billion—but the benefits would be as well, and backers had finally assembled a significant political coalition. Crossrail finally received Parliament’s approval in 2008, survived multiple challenges to its funding status during the Great Recession, and is on track to open its first services in 2018.

So what is Crossrail? It is certainly regional rail, but whether it fits neatly into any existing paradigm is not as clear. It is not a rapid transit line like the London Underground; over one stretch between Ealing Broadway and Stratford, Crossrail will have 7 stops where the parallel Central Line has 20 (McCormick 2014a). Rather, Crossrail links lines to many diverse destinations across the spread-out London metropolis, much like the contemporary version of its
north-south counterpart, Thameslink. The same MTR-led consortium that runs the London
Overground will operate Crossrail, so clearly it will have strength as local transit, but its ultimate
value is in tying together a polycentric region, linking subcenters to the core and to each other.
Given that structure, Crossrail (and, for that matter, Thameslink) resemble not the RER-like
system envisioned by Peter Hall in middle age, but the vision he wrote near the end of his life:

These are akin to the German or Swiss S-Bahn systems, connecting the city to a wider rural sphere of influence around it. But they are most certainly not akin to the Parisian Réseau Express Régional (RER) network, which is a very different phenomenon. The sole similarity is that they have more widely spaced stations in the central area, with the earlier Underground/Métro networks serving intermediate stops (2013, p. 182)

Inasmuch as Crossrail (and Thameslink) are single-trunk cores serving a wide variety of funneled-in routes to many destinations, Hall’s comparison to the S-Bahn paradigm is valid. Yet it may not be fully accurate. The S-Bahns were and are intended to shape development, not respond to it, something that is not true of Crossrail. One of the key aspects of the S-Bahn model—as stressed above—is the Verkehrsverbund, the association that plans all transit in the region. Although TfL is moving in the direction of being such an institution, the Tube and buses within London still function separately from the mainline rail network, meaning the precision scheduling necessary in an S-Bahn paradigm is not found in London or in the suburbs, exurbs, and secondary cities beyond. Whether London will pursue that path to maximize the utility of its transit, or whether it will blaze a different trail, remains to be seen. Ultimately, perhaps the lesson of London’s diversity of regional rail schemes lies not in their particulars—indeed, progress has been somewhat halting and even somewhat dysfunctional—but in the very fact of their success in spite of planning and political barriers. That all three of Thamelink, the Overground, and Crossrail are essentially on or planning for their Phase II at the moment

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(political discussions about a Crossrail 2 and even 3 are picking up momentum) should not be taken lightly.

Lessons from International Case Studies

This chapter has presented case studies of four leading regional rail systems or concepts, from regions that set the world standard for this mode. And while each case study has its own value, perhaps the greater value for importing regional rail to the US comes from analyzing what the models presented here have in common. Certainly, any astute analyst could draw a number of conclusions from the presented material; here are a few of mine.

- **A willingness to learn from each other.** Alon Levy, one of the web’s smartest transit analysts, has for years lambasted American transit agencies for their unwillingness to listen to, much less conform to, international best practices and standards on any number of issues. He lays out these issues most cogently in a 2015 post titled “Local and Global Knowledge” (Levy 2015) that attempts to understand American transit’s vicious Not Made Here syndrome. So from an American perspective, one of the most remarkable aspects of researching international regional rail norms is the extent to which these systems borrow and learn from each other. Paris’ RER relied heavily on technical exchange with the pioneering Tokyo through-service system. S-Bahns all ultimately stem from adaptation of the prewar Berlin and Hamburg systems. And the English, living up to the stereotype of being incorrigible overanalysts, have spent several decades debating whether Thameslink and Crossrail are more like RER or an S-Bahn. Recently, Toronto—of course, a former British colony—has announced plans to create a regional rail system that it is labeling an RER. There is significant knowledge being bandied about; it seems that only the US does not partake. Schofer and Chan (2014) offer a potential path to defeating this “Not Invented Here” syndrome in the transit world, suggesting that planners take a more experimental approach, allowing recalcitrant agency managers to learn from practical examples in front of them.

- **Connections across the city.** In these case studies, a physical connection across the center of the city defines their ability to be regional rail. Of all the projects analyzed, only the London Overground does not have such a link—and it will soon be part of a larger network that does include such connections. In the US, such connections are rare. Philadelphia’s Center City Commuter Connection is the best such example, but has never reached its full potential. Through-running from New York to New Jersey is possible at Penn Station, but plans to connect Penn to Grand Central Terminal have never gotten off the ground—never mind connections between the New York region’s other stub-end terminals at Hoboken, Flatbush, and Long Island City! Through-running is technically possible at Union Station in Washington, DC but suffers from freight traffic constraints. Boston’s North-South Rail Link is entering its tenth decade on someone’s agenda and is being studied yet again. The only connection between the northern and southern sides of
the Metra system is one pair of run-through tracks at Chicago Union Station that are used exclusively by Amtrak. Los Angeles is in the process of constructing run-through tracks at Union Station, but there is no indication they will be used for frequent service.

- **Coordination with land use.** All of the case study systems exhibit a high level of coordination between transit and land use, though mechanisms and arguably direction of causation vary wildly. Certainly in all cases, the degree of coordination exceeds anything that has been attempted in the US since the days of streetcar suburbs, with the possible exception of the Portland, Oregon area. Whether through private-market profit (as in Japan), or public-sector master planning (as in Paris), or somewhere in between, coordination helps—indeed, might be necessary to—justify government’s investment in such systems.

- **Centralize planning (but not necessarily operations) in some way.** The systems presented here are all centrally coordinated with other regional transit in one way or another, though they certainly span the spectrum of models for centralization of planning. That spectrum would certainly feature the Verkehrsverbund model at the “organized” end, and intelligent people can debate the ordering of other systems. Even in Japan, which features the most autonomy for private industry, the national government has stepped in at times to maintain efficiency, fill gaps, and coordinate between different private sector actors. Allen and Lu (2009) provide a broader breakdown of the differing ways in which regional rail networks can be organized. Having a strong central actor helps to reduce the kind of turf fights that are common in American transit, and which will play a significant role in Chapter 4’s case study of Chicago. The converse of this principle is that there seems to be no need for the centralization of operations in order for regional rail to work; on S-Bahns and the RER they are, and in Tokyo and London, they are not. This accords with the conclusions of Mees (2009) that networked transit planning necessitates a strong central hand but that centralizing operations is not necessary. One benefit of centralized planning is integrated ticketing with other operators and modes, something noted prominently as a benefit of the Tokyo, S-Bahn, and RER models, although it is an ongoing challenge in London. Passenger Transport Research Group (2009) lays out the benefits of integrated ticketing.

- **Technical barriers are very solvable.** The regional rail networks in these case studies have all dealt with, and dispensed with, a staggering number of technical barriers that are generally considered unsolvable in American commuter rail. The Tokyo, Paris, and London systems all feature trains switching voltages and even propulsion systems mid-trip. Paris and Tokyo have both figured out how to have multiple operators share tracks, or even a train. The early S-Bahns contended with curved platforms that limited operator visibility. Integrating SNCF and RATP operations in Paris required a process of cultural and equipment adaptation that took real effort; and when SNCF suburban division management dragged its feet, they were removed. Through-routing, say, New Jersey Transit and Long Island Railroad trains would mean technical barriers—but they are barriers that have been overcome dozens of times elsewhere in the world.

- **Flexibility in role and benefit.** One of the convenient things about (mostly) using existing infrastructure is that it confers a certain flexibility on the regional rail model(s). Regional rail can provide relief to overstressed core rapid transit systems, as in Paris, Tokyo, and London. It can serve as a semi-express service to far-flung secondary cores and suburbs, as in many German metropolitan areas, the entire country of Switzerland,
and London. And it can substitute for expansion of other, more costly rapid transit investments in areas that need rail access even within dense urban areas, as the London Overground does. Arguably, each of the systems studied here fulfill more than one of these roles. And that might be their single biggest benefit.

- **Electrification** All of the systems profiled here operate exclusively or near-exclusively with electric propulsion (some S-Bahn branches and a dwindling number of London suburban lines operate with DMUs). Electric propulsion allows trains to accelerate much faster than diesel, a key to making significant numbers of stops at relatively close spacing while still maintaining relatively high overall speeds. Electrification requires significant upfront investment but tends to pay for itself over time, especially when frequencies are very high.

- **Rapid transit-style crew policies** One of the key aspects of transforming mainline rail into rapid transit-like regional rail in many non-US contexts has been the ability to cut crewing costs to the bare minimum. In Germany, S-Bahn systems have typically striven to operate with one-man crews (a driver, engineer in American railroading terminology), and little to no station staffing; fares are checked at random by inspectors (Weigelt 1982). As far back as the 1980s, this was true even where curved platforms and long trains necessitate expensive CCTV monitoring to ensure doors could close safely (Rossberg 1988, p. 155). In Zurich, conductors were added to S-Bahn trains only for late nights, and only after passenger requests based on safety (Mees 2009, p. 137). One- or two- person operation is the norm in Paris and Tokyo as well, although a train is likely to see several individual drivers given crossings of operator boundaries. In all of these contexts, tickets are checked at faregates at stations as on a subway or through random proof-of-payment inspections, with heavy fines levied for evasion.
Chapter 4: Chicago, Commuter Rail, and Innovation Lost

Having examined the development of the American model of “commuter” rail, and documented the more common forms of urban-suburban rail that have taken hold elsewhere in the world, this analysis now turns to a specific case study of an American system to help make the lessons learned more concrete. Chicago’s suburban network provides a fascinating case study for these purposes for several reasons. As the (self-described) “most complex” commuter system in the country, it includes a full spectrum of the challenges facing American commuter rail, including longstanding class and racial tensions; heavy freight traffic on some lines; antiquated technology; and dispersion of downtown arrivals among several stub-end terminals.

Perhaps most interestingly, Chicago was at one time home to some of America’s most innovative and promising experiments in mainline suburban rail. Though a full-scale analysis of the entire Metra system is beyond the intention or capacity of this analysis, a focus on a few parts of the system will allow unpacking of some of the disappointment, tension, and continuing potential that characterizes Chicago’s mainline passenger rail system. This analysis does not seek to provide a full history of each operation; rather, it seeks to capture a snapshot of political, social, economic, and technical dynamics that can be of use to planners and policymakers in shaping the future of both Chicagoland and the American transportation system at large.

There are two primary case studies, covering a time period from the turn of the 20th century to the present. The Chicago & Northwestern Railway actually sought to invest in and improve its suburban lines in the postwar era, a marked contrast to the economic straitjacket and planning desperation that engulfed most other lines at the time. In contrast, the Illinois Central, once the country’s only example of a true mainline rapid transit operation, fell into disrepair and operational decline over the second half of the 20th century, and now operates like a regular
commuter rail line—but with the infrastructure for much more. Together, these brief capsules will further illuminate the dynamics that have already been named in previous chapters, and lead into a specific discussion of the potential for regional rail in Chicago.

Chicago & Northwestern
The earliest predecessor of the Chicago & Northwestern, the Galena & Chicago Union, was also Chicago’s first railroad, opening in 1848. It also hosted the first commuter service in the region beginning in 1854—the forerunner of today’s very busy Union Pacific-West service. Over time, through corporate growth and consolidation, the C&NW suburban operations grew to cover three lines, the North, Northwest, and West, all of which retain their names today under Union Pacific ownership and Metra operation. The three lines radiate from a central terminal in downtown Chicago—until 1912, on Water Street on the current site of the Merchandise Mart and since then at Northwestern Terminal (now Ogilvie Transportation Center) in the West Loop (Schwieterman 2014, p. 40). Unlike most of Chicago’s other downtown terminals, Northwestern Terminal has only rarely hosted trains belonging to other railroads, and today remains dedicated to trains from the former C&NW lines alone. Today, the three lines are among Metra’s busiest, carrying 34,200 (North), 39,900 (Northwest) and 28,100 (West) riders per day as of June 2015.

Like most commuter operations, the C&NW suburban lines saw gradual decline that accelerated with the onset of the Great Depression, even as suburban growth along their axes exploded. By 1950, the infrastructure and rolling stock was beginning to fall apart, a familiar story all across Chicago and indeed the country. In 1955, commuter service drained C&NW’s coffers by $2.5 to $3 million per year; overall, passenger service losses consumed more than 95% of the railroad’s net freight revenues (Grant 1996, p. 191). In the face of such challenges, most profit-minded private operators responded by divesting and trying to shed themselves of the
burden of passenger service. But C&NW reacted differently. The key figure in the renaissance of the C&NW commuter service was Ben Heineman, who took over as CEO in 1956. A Hyde Park resident “Stevensonian liberal” with government experience, a business and law background, and a keen political sense (Grant 1996, p. 202; Lorenz 2012), Heineman recognized that a) commuter service would be politically difficult or impossible to retire completely and b) it threatened to bankrupt the entire railroad if kept in its current, decrepit state. To a certain extent, the C&NW was running into the same political problem numerous other suburban operators had run into—a growing and powerful suburban constituency that was willing to fight to preserve its peak-hour service no matter the expense to the private railroad or the public pocketbook but could not or would not deliver the increased capital investment or government leadership necessary to turn a “commute” service into a full suburban network. The suburban services did not exist in a vacuum, though; for the C&NW, they were part of a larger railroad that needed some degree of public help. As analyst A. Sheffer Lang of MIT noted, Heineman’s motives were “reasonably transparent…they needed public approbation for discontinuance of long-distance trains; they bought the public favor.” (Business Week 1970). Heineman and his staff, therefore, decided to attempt to modernize the service rather than abandoning it or letting it continue at its current pace.

And modernize they did. C&NW’s efforts, though impressive, took on a distinctly American, and conservative tone, compared with the rapid technological developments suburban networks in Japan and other countries were undergoing at the time (see Chapter 3). The ancient heavyweight wooden coach fleet, once the elegant keystones of a service now described by one writer as “an alcoholic duchess expiring on Skid Row, still attired in silks and tiara,” (Grant
1996, p. 201), were replaced by modern steel bilevel “gallery” cars of a design pioneered by the neighboring CB&Q commuter operations in 1950. By the end of 1961, 200 bilevel cars had replaced 417 original coaches (Dorin and Roth 2006, p. 8); the railroad spent $6 million of capital funds on them in 1959 alone (Grant 1996, p. 203). The new cars, which featured 2x2 row seating on the lower level and single seats on the upper, with an open center aisle from floor to ceiling, made ticket collection easier for conductors. C&NW also introduced “flash” tickets that were color-coded to the rider’s zone, such that they could be “flashed” at the conductor instead of punched (Morlok and Viton 1980). With suburban ridership growing, C&NW would continue to add bilevel equipment with its own funding throughout the 1960s.

If the gallery cars were a major innovation, allowing shorter trains to carry more passengers more comfortably, the C&NW considered the operating practices it implemented along with their delivery nothing short of revolutionary. C&NW introduced the now-standard “push-pull” technique to American railroading. In this paradigm, a locomotive stays consistently at one end of a trainset, with a “cab car”—a standard coach with an engineer’s cab on one end—occupying the other end. Push-pull operation eliminates the need to turn the entire consist of the train (or at least the locomotive) around at terminal stations, allowing much faster turnaround times. C&NW completion of full dieselization of the commuter fleet in 1956 allowed for full utilization of this revolutionary technique, which railroad management claimed was borrowed from observations of a short-lived experiment with Budd RDCs in 1950 and of EMU operation, such as on the IC (Grant 1996, p. 203). The push-pull model quickly spread to other Chicago-

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8 Grant calls this equipment “galley” cars, while most other sources use “gallery,” which seems to have become the accepted usage over time.
area commuter operations, and then to the rest of the country where commuter trains operated with diesel power.

The C&NW took pride in its investment-focused approach to suburban service, leveraging it into a notable PR campaign, political credibility, and indeed increased ridership. But its model of modernization was very narrow—a “commuter” approach, not a “suburban transit” approach. At a time when suburban operations in most other industrialized countries were electrified or becoming so in the face of suburban growth, C&NW doubled down on diesel power as the future. Given the railroad’s sparse financial resources and the complexity and expense of electrification, this was probably the rational choice, and perhaps inevitable, but it still provides a striking contrast to the meaning of “modernization” in international peer systems. And the devotion to diesel propulsion had very real operational consequences. Diesel locomotives pulling or pushing heavy coaches cannot accelerate as fast as electric equipment (and in some cases not even as fast as the preceding steam locomotives), which is a major detriment in suburban operations with relatively frequent stop spacing, where acceleration performance matters more than absolute top speed. As a result, for C&NW speeding newly popular suburban trains along meant closing numerous inner-city stations, primarily along the North and Northwest lines. And while the “flash ticket” system made the lives of conductors easier and presumably lowered expenses, it also reinforced the expectation that tickets would be checked on board by a human being—in distinct contrast to the growing emphasis on automation and proof-of-payment on international systems, and to the paradigm-shifting ambition shown by IC’s experiment with moving to an automated faregate system starting in 1966. Finally, instead of raising platforms to car floor height in order to enable level boarding and shorten station stops,
C&NW invested in bilevels that had low-level doors, meaning rapid transit-style level boarding would be impossible.

Along with the Northwestern’s upgrade efforts came an equally conscious effort to brand the commuter trains as a service for a particular social class. As everywhere in the US, the suburbs of Chicago were growing enormously during the Heineman years, and the railroad rightly saw a new market—or at least a hugely different market—emerging. Heineman repeatedly justified the closing of urban stations by telling observers that “We don’t want to run a street car type operation,” a comment that had as much to do with the conscious class stratification of Chicago-area transit as it did with stop spacing (Grant 1996, p. 205). Closing close-in urban stations surely did have a positive impact on travel times to the Loop, but the stated justification—increased competition from CTA trains and buses—was no more true in when the ax fell in 1958 than it had been for half a century before that (although extensions to what is now the CTA Blue Line would indeed render several stations on the Northwest Line redundant over the next several decades). C&NW spent, by 1968,
$300,000 annually on advertising for its services on Chicago radio stations, especially—and cheekily—at peak drive times (Hearings 1968, pp. 116-119). In a 1980 retrospective on C&NW’s remarkably efficient services over the past two decades, Morlok and Viton identified four significant concepts that helped the railroad succeed: “High quality of service, a relatively high fare, a targeting of the service toward users who are willing to pay the high fare in return for the high level of service provided, and finally, providing information that is readily available to both regular transit users as well as prospective new riders.” C&NW’s service guidelines were developed with competition with the car for suburb-to-downtown trips, rather than comprehensive transit utility, in mind.

Everything about the C&NW’s suburban operation—except, that is, the technology of the equipment used—screamed that its market was high end. In that sense, the railroad met its market well; Chicago’s northern suburbs, served by C&NW’s North Line, are its most favored quarter, followed closely by similarly upscale towns along the Northwest and West lines. As Morlok and Viton (1980) concluded, service such as that provided by the post-1956 C&NW “Must be provided only in those markets where the riders can be expected to want the high quality and be willing to pay the high price. It would be expected that this type of service would be desired primarily by middle- to upper-income families.” Marketing of the suburban service to the high end was both personal ambition and calculated political move for Ben Heineman. One colleague thought that at least part of Heineman’s strategy was to “impress influential bankers from the North Shore communities.”9 (Grant 1996, p. 205). Another Chicago railroader told Business Week in 1970 that “Heineman made a conscious decision to make people think he had

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9 It is worth noting that as a Jew Heineman was relatively unusual in the railroad industry and Grant’s history of the C&NW records at least one case in addition to this one where criticisms of him implied some degree of anti-Semitic stereotyping (p. 209).
rehabilitated his entire railroad by rehabilitating the hell out of the 2 percent most people see.” (Business Week 1970). What is apparent is that Heineman’s strategy for suburban services worked—from the perspective of the railroad.

Evaluating the C&NW Commuter Lines

There can be no dispute that, by the standards of the mid-1960s, C&NW’s efforts at revitalization of the commuter services were a success. The railroad claimed a profit on the suburban operations every year from 1963 through 1975 (Grand 1996, p. 204; Morlok 1980). although there have always been relatively unsubtle whispers, including from within the company, that the profitability of suburban service was a mirage based on manipulative accounting methods (Grant 1996, p. 204; Business Week 1970). C&NW also continued to invest in new rolling stock and in infrastructure at a rate that other railroads were unable or unwilling to sustain—and that the public coffers, too, would be unable to match, as we will see in the profile of the Illinois Central. That ability to invest was certainly backed by the relative strength of the C&NW overall; although it had been hemorrhaging money when Heineman’s management team took over, the Chicago-based railroads were generally in much better shape than their Eastern counterparts, and the C&NW’s financial situation improved in the ‘60s. That the strength of the overall railroad allowed continued investment in commuter services was a point that Heineman and his executives hammered home in 1968 Congressional hearings about railroad consolidation; they sought a merger with one or more additional Midwestern roads and held out the suburban services of evidence of what a strong private-sector railroad could give back to the public (Hearings 1968. P. 114). C&NW, in other words, demonstrated the financial muscle that a motivated, financially stable, and (somewhat) publicly minded private-sector railroad could bring to bear for public transit.
So the C&NW renaissance was certainly remarkable, and holds numerous positive lessons for the future of suburban transit—including the possible role of the private sector. But it also had distinct downsides. Mass station closures in Chicago proper in 1958 cut off city residents from using C&NW trains, contributing to today’s situation whereby the Metra network remains mostly useless for reverse commuters even as job sprawl continues to affect the region. Nor is trying for reverse-commute ridership pointless even in a commuter rail paradigm; Ravenswood on the UP-North Line has significant reverse-commute ridership, and Metro-North has seen rapid growth in reverse-commute ridership on both the Harlem and New Haven lines in recent years. Heineman’s intentional campaign to market C&NW’s commuter service as upscale and high-class, complete with high fares even though the service was relatively financially healthy, certainly contributed to its marginalization as a mass form of transit. Perhaps most damagingly, the Heineman-era modernization efforts were of a distinctly conservative nature. Rather than truly modernizing the network, perhaps with public assistance, and turning it into the basis of a true transit network, C&NW coasted along with better—but not fully modern, which is to say, electrified—rolling stock, and without attempting the kind of true crew reform that would have allowed it to lower prices and create a more mass-market product. Indeed, C&NW prices rose in lockstep with inflation throughout the period of profitability—a key contribution to that same success (see Figure 19).
TABLE 4: Chicago and North Western Fare Increases, Traffic and the Consumer Price Index 1969-1974

<table>
<thead>
<tr>
<th>Year</th>
<th>Fare Increase, %</th>
<th>CPI Increase, %</th>
<th>Passengers 1,000,000</th>
<th>% change</th>
<th>Passenger-miles 1,000,000</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1969</td>
<td>5</td>
<td>5.9</td>
<td>25.729</td>
<td>-2.7</td>
<td>528.6</td>
<td>-2.2</td>
</tr>
<tr>
<td>1970</td>
<td>6</td>
<td>4.3</td>
<td>25.046</td>
<td>-1.1</td>
<td>517.9</td>
<td>+0.6</td>
</tr>
<tr>
<td>1971</td>
<td>7</td>
<td>3.3</td>
<td>24.763</td>
<td>-0.6</td>
<td>521.1</td>
<td>-0.5</td>
</tr>
<tr>
<td>1972</td>
<td>5½</td>
<td>6.2</td>
<td>24.606</td>
<td>+0.8</td>
<td>518.3</td>
<td>+0.6</td>
</tr>
<tr>
<td>1973</td>
<td>7</td>
<td>11.0</td>
<td>24.812</td>
<td>+2.6</td>
<td>521.4</td>
<td>+2.5</td>
</tr>
<tr>
<td>1974</td>
<td></td>
<td></td>
<td>25.452</td>
<td></td>
<td>534.4</td>
<td></td>
</tr>
</tbody>
</table>


Figure 19: C&NW fare increases and inflation, 1969-1974 (Morlok and Viton 1980)

Each raise had to be approved by the Illinois Public Service Commission. Although the service could not have continued to provide the quality that it did without the raises, the raises also functioned to mitigate the need for true cost control that might have made the service more accessible. And instead of trying to extract reform and frequent service useful beyond the white-collar niche from the railroad, the PSC allowed C&NW to continue on its path, making the public sector at least partially complicit in the aristocratization of the service. Ultimately, the C&NW was a profit-seeking company with an agenda: to stay independent, stable, and profitable. If that agenda gave it the muscle to provide a high-quality commuter service, it may very well have prevented the road—or government—from providing a comprehensive transit service.

Illinois Central/Metra Electric

The Metra Electric District—formerly the suburban operations of the Illinois Central Railroad—is far and away the most interesting test case for the possibility of using mainline rail
as rapid transit in the US. This is true if for no other reason than that the line was, until relatively recently, used for precisely that kind of service. It is also one of the best physical plants in the entire country for the implementation of rapid transit service, with full electrification, complete grade separation both from roads on the mainline and from other rail traffic, all high-level platforms, and more track capacity than can realistically be used under most operating scenarios. And yet, a line that boasted multiple hundreds of trains per day now has gaps of an hour or more between midday arrivals at most stations. If a line—really, a full system consisting of a mainline, two branches, and a closely related sister operation, the South Shore Line, which shares much of the route—that once had rapid transit style operations has now lost them, is there any hope for implementation in other areas?

The route today known as Metra’s Electric District was the second suburban rail service to be implemented in the Chicago area, with the first train running in 1856, one year after a predecessor to the C&NW began service between Chicago and Waukegan (Carlson 2006, p. 2). Like many such operations of the period, it was a proxy for real estate development that opened up huge swaths of land for development on the South Side. Unlike many of the cheaply built suburban operations of the later 19th century, both steam and electric, the IC saw increasing levels of investment that turned it, by the end of the century, into a true rapid-transit operation. The line was equipped with specialized tank steam locomotives, multiple-door cars, and full high-level platforms by 1893, largely in preparation for that year’s Columbian Exposition. The quality of the operation allowed IC official W. L. Smith to boast in a series of lectures to professional peers in 1906 that his suburban network “enjoys the reputation, not only among professional railroad men, but among all who are well acquainted with railroad operation, of conducting the best suburban railroad service in the world” (Smith 1906, p. 37). At the time, the
IC carried approximately 15 million passengers per year—40,000-50,000 per weekday—or 12 percent of all suburban rail passengers in the country.

With high-quality infrastructure in place, the passage of Chicago’s Lakefront Ordinance in 1919 that forced IC to electrify its suburban lines resulted in an even more sophisticated operation. IC grade-separated the suburban district as far as Richton Park, 29 miles from Randolph Street Station, and completed electrification of the suburban lines by 1926 (Carlson 2006, p. 4). A comprehensive renovation program also refreshed the line’s stations with long-lasting wooden platforms, many of which survived to be included in Metra’s purchase of the line in 1987—and some of which, for better or for worse, remain in service (Dorin and Roth 2006, p. 76). The heavyweight EMU cars purchased during the electrification program would also remain in service until replaced by publicly financed Highliner bilevels starting in 1971. The electrification program, then, modernized what was already a high-quality suburban rapid transit operation, turning it into one of the most advanced such systems in the world.

The IC’s difference from other US suburban rail operations was such that as late as 1968 IC president William Johnson proudly testified before Congress that

The Illinois Central suburban operations, for example, differ greatly from all others with which I am acquainted. The Illinois Central suburban operation typifies the concept of railroad commutation service as service, a semi-rapid transit serving more as an in-city distributor than as a long-haul suburban service. Our basic operational characteristics, such as electrification, high-level platforms, automatic doors, trackage, stations, and repair facilities separated from through operations, are the same as those of a rapid transit operator. Our operation involves service to 49 stations, 36 of which are within the City of Chicago and 13 of which are in the suburban communities to the south of the City of Chicago. This type of operation differs drastically from the essentially long-haul suburban carriers (Hearings 1968, p. 240).

The IC’s special status would begin to erode the very next year, but it is worth taking some time to consider just how intensive the line’s operations were in its heyday. The South Chicago branch,
which runs in the middle of a major street like a light rail operation, saw trains every 10 minutes all
day long from 1935 to 1949, then every 20-30 minutes until 1981. The suburban terminus of Richton
Park actually saw its base frequency bumped from every 40 to every 30 minutes in 1973 as ridership
patterns changed (Carlson 2006, p. 5). In 1956, there were 107,000 daily passengers on 335
scheduled IC trains, plus an additional 76 South Shore Line trains (Carlson 2006, p. 4). In 1969,
there were still 249 IC trains carrying approximately 78,000 daily passengers, with 64 to Blue Island,
107 to South Chicago, and 78 to Richton Park (Dorin and Roth 2006, p. 25). Service ran 24 hours
per day, though only once every two hours from 12:30 to 5:10 AM. As late as Johnson’s 1968
congressional testimony, 40% of all IC suburban ridership actually occurred within the city of
Chicago. Stop spacing within the city reflected the line’s role as rapid transit, with stations every
6/10 of a mile on average, as opposed to twice that in the suburbs, when measured by a 1979 study
(Chicago South Suburban Mass Transit District 1979, p. 147). A 1947 Rand McNally map included
the IC system together with the rest of Chicago’s rapid transit operations—an honor extended to no
Figure 20: Metra Electric District track diagram. Note local and express tracks and significant capacity for rapid transit-style operation (Allen 1998).
Although IC ridership was still robust in the late ‘60s, all was not well. As with virtually all transit in the US, the advent of the freeway and the spread of car ownership meant ridership numbers were well down from the wartime peak, and costs were beginning to rise. In addition, the uniquely city-fed IC operation had always existed somewhat in competition with other forms of urban transit, and those tensions were beginning to come to a head. In a perceptive 1975 paper titled “Public Policy and Private Choice: Mass Transit and the Automobile in Chicago Between the Wars,” Paul Barrett pointed out that Chicago’s transit system had always had internal social stratifications based on geography and mode. With parallel, and directly competing, modes in operation at the same time on many routes—for some trips, there was a choice between surface transit (bus or trolley), interurbans, L trains, or steam railroads—travelers could and did make choices based on what they could afford and whom they wanted to ride with. Barrett reports a remarkably early case from the 1880s of a South Side woman who complained to the Tribune about the lack of heat on streetcars while noting that “the rich have their [Illinois Central commuter] trains to ride” (Barrett 1975, p. 479). As white flight gathered momentum in the IC’s South Side neighborhoods even as white-collar ridership from the suburban stations grew, the class divisions along the line became even more apparent.

Like the C&NW, though, and unlike many Eastern railroads, the IC found itself in a strong enough financial position to attempt some modernization even in the face of declining ridership. Ridership actually increased 6% from 1966 to 1967, as did revenue, putting the suburban operations into the black for the latter year, if only very slightly (a rare occurrence for any passenger rail in the postwar period) (Johnson 1968, p. 241). In 1966, the IC had implemented a technically advanced automated ticket vending system known as Automatic Revenue Collection System, or ARCS—essentially a system of faregates and magnetic cards.
scanned at entrance and exit similar to those in operation on heavy rail systems with distanced-based fares such as BART and WMATA today. ARCS would have completed IC’s transformation into a true rapid transit system, moving it away from verification of every purchased ticket by a staff member toward automated collection more suitable for a modern system. The major motivation, of course, was to reduce staffing costs, then as now the bane of transit operations. At the time of ARCS implementation, IC trains operated with at least three staffers—an engineer, conductor, and ticket collector. Longer trains had extra ticket collectors. With the investment in ARCS, IC tried to reduce crews to two per train—an engineer and a conductor. Labor protested, and a combination of an arbitration ruling and a strike in 1969 ensured that most trains would continue to be staffed with three crewmembers (Allen 1998, p. 130).

In any case, ARCS never fully worked as intended, which might not be surprising to contemporary Chicagoland transit riders considering it was designed by Cubic, the same company behind the messy rollout of Chicago’s contemporary Ventra fare system. The technology was somewhat ahead of its time by American standards, and maintenance and customer service requirements turned out to be more intensive than anticipated, with the savings correspondingly lower than expected. In 1981, faced with rigid staffing requirements and declining revenue from fares and subsidy, IC began checking tickets on-board again, although the ARCS system remained in place until 2003, resented to the end by South Side riders who felt insulted because their fares were checked twice. Ultimately, the story of IC’s attempt to modernize fare collection is something of a transit tragedy. IC’s intentions in implementing ARCS were remarkable—at a time of financial stress for American railroads, a private company put significant money into what would still in 2016 have a claim to be the most advanced ticket
collection system on any mainline American passenger railroad, a system designed to bolster a suburban operation that was at best marginally profitable. Though the ARCS system fell victim to the special rigidities of railroad labor, and later political pressure under public ownership, it remains a tantalizing glimpse of what could have been—and what still could be.

The IC suburban operations were, in the late 1960s, at a tenuous point. Ridership was in flux. It had cratered since World War II, falling from its peak of around 128,000 per day in 1946 to 53,872 per day in 1960. Operations were profitable some years—three times from 1945 to 1962—but only just, and not frequently, and depreciation of the physical plant ate up many of the profits (Hilton 1962, p. 173). Additionally, by 1962 traffic was so concentrated in the AM and PM peaks that the IC needed hardly any of its 280-car fleet at off-peak times—but needed to deadhead about a quarter of them back to Randolph Street terminal for a second run in the PM peak. As such, capital funds were scarce; IC could afford to attempt modernization of the fare collection, but not to replace the aging rolling stock dating back to the original electrification in 1926.

Starting in 1969, though, the IC network faced an even greater challenge: the opening of a rival rapid transit operation that duplicated much of its South Side domain, the L line in the median of the Dan Ryan expressway. The IC had always coexisted with the old South Side L, today’s Green Line, but that route was relatively slow and went only as far south as 63rd Street, allowing IC to dominate longer-distance traffic from Hyde Park south. The new line, though, had fewer stops, was built for high-speed running, and terminated at 95th Street, only about a mile west of the IC’s stop on that street.

The effect of publicly funded competition (the city’s L network had been under public ownership since 1947, and the IC did not yet receive subsidies) was immediate. Ridership at
main line stations between 75th Street and 111th Street fell by three quarters, while the South Chicago branch saw a 49% decline (Dorin and Roth 2006, p. 25). By 1979, loss from the stations between 75th and 111th had reached almost 90% (Chicago South Suburban Mass Transit District 1979, p. 148). Certainly there were many riders for whom the switch to L service lengthened their trips—many may have switched from walking to IC stations to taking buses to the Dan Ryan Line—but there were other appeals to the rapid transit line, including better off-peak service and the fact that it was fully integrated into the city bus network. With one-person crews, the Dan Ryan line was significantly cheaper to operate than the IC, which was, as we have seen, prevented from streamlining down to two-person crews in the same year the Dan Ryan line opened.

The new rapid transit line, too, offered a fare advantage over the existing IC—an advantage that would only grow during the 1970s. Indeed, one of the IC’s first actions after the opening of the Dan Ryan line was to raise its fares in response to the lost ridership (Allen 1996, p. 97). In 1969 the difference between the IC and L fares was relatively modest, and many South Siders were perfectly willing to pay it for better service, but by 1973 the IC premium had jumped to 40%. The prices of the two fares would continue to diverge, especially after the implementation of Regional Transportation Authority (RTA) subsidies in 1976. The RTA set a standardized fare zone for all commuter rail lines by distance from the Loop; as one of the few lines with a significant number of in-city stations remaining, IC’s fares saw a more dramatic rise than those on other lines. The basic CTA fare in 1976 was 50 cents; when the fare zone was implemented, a ride from Hyde Park to the Loop on IC jumped from 65 cents to a full dollar, with fares from more distance areas being higher. In 1980, the CTA fare was 60 cents, and the IC
$1.15 from Hyde Park (Allen 1996, pp. 256-257). The rise both in absolute and differential fares seems to have contributed significantly to ongoing decline on the IC.

Although the IC, as a private operator, did not share a fare system with the public bus lines serving the South Side, the opening of the Dan Ryan line had a significant effect on its feeder structure as well. When 95th Street terminal opened, virtually all of the bus routes operating south of there were switched from a grid system along key arterials to a feeder network serving the new terminal. That meant that far South Side residents whose previous best transit option had previously been to take a bus across their neighborhood to the IC were now more or less forced to hang a turn north at Halsted or Michigan and travel north to 95th.

Figure 21: A 1965 CTA system map demonstrates the gridded nature of the pre-Dan Ryan Line far South Side bus system. The buses on 95th St. and 103rd St. travel E-W for long distances (http://www.chicago-l.org/maps/route/maps/1965map.jpg).

After the opening of the Dan Ryan Line, the South Side bus network not only lost its gridded nature—a structure that enabled easy local travel and facilitated bus-bus transfers—but became
considerably more complex as more and more routes were sent to the 95th St. terminal. A contemporary CTA system map demonstrates the complexity and fractured nature of the existing system.

![Figure 22: Contemporary (2016) CTA far South Side system map.](image)

Routes across 95th St., 103rd St., and 111th St. have been split into two, and while the system retains traces of a grid structure, it is clearly designed to feed into the 95th St. Red Line terminal at the expense of other travel options (see Figure 22). Note also the presence of the J14 Jeffrey Jump quasi-BRT service, which has become another CTA competitor to the IC.

Starting in 1969, then, the already-precarious position of the IC suburban services was beginning to weaken considerably. Unable to pay for new equipment, the railroad turned to the public purse for help, receiving assistance from the newly created Chicago South Suburban Mass Transit District (CSSMTD) in leveraging federal funding to acquire the new bilevel Highliner cars, which were technically owned by CSSMTD and leased to IC (Dorin and Roth 2006, p. 25). The Highliners were thoroughly modern, with air conditioning, among other new features, but
they were also clearly more suited for long-range suburban service than in-city rapid transit service, with fewer doors than the ancient equipment they replaced. The interior also mimicked the semi-bilevel design of the diesel-pulled “gallery” cars that had been in operation on several other Chicago-area commuter roads for two decades already, a design intended to facilitate easy ticket collection by conductors despite reduced interior mobility and seating capacity. This despite the fact that IC had installed ARCS just five years before the first Highliners were delivered!

Notwithstanding the delivery of the Highliners, the IC suburban operations fell into what transit professionals call a “vicious circle” in the early 1970s, with losses leading to threats of higher fares and service reductions. Unlike other commuter railroads, IC had eliminated few of its urban stations that now saw relatively low ridership, and with urban ridership falling and suburban ridership growing, now faced the perceived need to re-orient service to a new passenger base. The result of this and various other public- and private-sector Chicagoland transit crises at the time was the creation of the Regional Transit Agency in 1976 as a coordinating and subsidizing body for regional transit operations. Though (then as now) plagued by city-suburban tensions, the RTA managed to stabilize transit in many areas and even improve it in some.

With subsidy from public funds, the IC, and other railroads, could expect to arrest their decline and even see new investment in decaying infrastructure. But subsidy from taxpayers also meant exposure to public funding crises, which is exactly what unfolded from 1979 to 1981. In 1979, the state legislature declined to renew the RTA’s authorization to collect a 5% gas tax in the Chicagoland region, replacing it with a 1% sales tax in Cook County and 0.25% in the collar counties, while simultaneously eliminating another state subsidy (Allen 1996, pp. 239-240). The
effects were immediate and dramatic: CTA fares shot up 50% during the year of 1981 alone. The commuter railroads, including IC, were even more heavily affected:

The impact was greater on the commuter railroads. First, effective March 1, 1981, the RTA cut about 19% of the previously existing trains from the schedules, affecting only mid-day, evening, and weekend service. Also, there were three fare hikes during 1981, taking effect on January 1, July 6, and October 1. The result was that by October 1981, commuter rail fares had roughly doubled over the previous year's levels. Riders on the Milwaukee Road paid even more. The railroad had entered bankruptcy in 1979, and its trustees tried to protect themselves from further losses in case the RTA collapsed altogether. They imposed an additional surcharge of about 10% on top of the already-doubled fares (Allen 1996, p. 241).

As we have seen, the 1980 fare differential between CTA and IC operations was already significant. But the fares on both services had been hiked significantly in absolute terms, and when measured from Hyde Park at the end of 1981 the IC fare was a staggering 139% higher than its CTA equivalent (Allen 1996, p. 257). Though the RTA would walk back some of the fare hikes in the following years, the damage had been done. The IC lost about a third of its overall ridership as a consequence, with losses heavily focused, predictably, in the city. Ridership on the South Chicago branch—notably, the furthest from the new Dan Ryan line, and thus the least likely to suffer from its competition—tumbled from 9,900 daily inbound boardings in 1969 to fewer than 3,000 by the end of 1981 (Allen 1998, p. 130). Despite the later attempts at recovery, the RTA’s actions in the first five years of its involvement with the IC spoke volumes about the public agency’s agenda: prioritizing fast service at peak hours for a growing suburban constituency, while making few or no attempts to maintain or grow urban ridership through measures such as more frequent service, competitive fares, or fare integration with CTA.

The 1981 cuts set the agenda for IC—soon to become Metra’s Electric District—in another, fundamental way as well: they shaped the pattern and level of service provided in ways that have changed little to this day. The IC had traditionally been run as a semi-rapid transit
service, and while schedules had gradually been cut since the end of World War II, it retained some aspects of that legacy despite the introduction of zoned schedules in the suburbs during the 1970s. The RTA budget crisis in 1981, though, proved devastating in a way that the operation has, in 2016, yet to recover from. John Allen traced the decline of service levels in his 1999 paper advocating for a renewal of MED’s rapid transit legacy:

<table>
<thead>
<tr>
<th>Year</th>
<th>Main line to south suburbs</th>
<th>South Chicago</th>
<th>Blue Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>1946</td>
<td>Every 40 minutes, all day, every day, plus additional rush hour service</td>
<td>Every 10 minutes (20 minutes evenings and Sundays), plus additional rush hour service; also rush hour locals serving since abandoned stops between 37th and 47th Streets</td>
<td>Every 40 minutes, all day, every day, plus additional rush hour service</td>
</tr>
<tr>
<td>1965</td>
<td>Every 40 minutes (60 minutes evenings and Sundays), plus additional rush hour service</td>
<td>Every 20 minutes (60 minutes evenings and Sundays), plus additional rush hour service</td>
<td>Every 40 minutes (60 minutes evenings and Sundays), plus additional rush hour service</td>
</tr>
<tr>
<td>1974</td>
<td>Every 30 minutes (60 minutes evenings and Sundays), plus additional rush hour service</td>
<td>Every 30 minutes (60 minutes evenings and Sundays), plus additional rush hour service</td>
<td>Every 30 minutes (60 minutes evenings and Sundays), plus additional rush hour service</td>
</tr>
<tr>
<td>1979</td>
<td>Every 30 minutes (60 minutes evenings and Sundays), plus additional rush hour service</td>
<td>Every 30 minutes (60 minutes evenings and Sundays), plus additional rush hour service</td>
<td>Every 60 minutes all day, every day, plus additional rush hour service</td>
</tr>
<tr>
<td>1982 to date</td>
<td>Every 60 minutes Monday through Saturday (every 2 hours on Sundays), plus additional rush hour service</td>
<td>Every 60 minutes Monday through Saturday (every 2 hours on Sundays), plus additional rush hour service</td>
<td>Every 2 hours Monday through Saturday (but every 60 minutes during evenings), plus additional rush hour service (no service on Sundays)</td>
</tr>
</tbody>
</table>

Source: Published Illinois Central Electric and Metra Electric timetables.

Figure 23: Sample of Illinois Central/Metra Electric service 1946-1998 (Allen 1998).

Service to the south suburbs had always been sporadic, but generally maintained headways in the vicinity of 30 minutes all day long. In 1981, that dropped to hourly, and has stayed there at off-
peak. The South Chicago branch, once the rapid-transit glory of American railroading with trains every ten minutes, has since 1981 seen a train at midday only every hour. The Blue Island branch—which could be operated as a shuttle with just two trainsets--lost Sunday service entirely and sees a train only every two hours midday. Though sporadic and isolated improvements have been made to stations over the past 35 years, the schedules on today’s Metra Electric are very similar to those implemented in 1981. And there is little stronger indication of political and planning priorities than that.

The Future of Regional Rail in Chicago

Since RTA fare cuts devastated the last vestiges of rapid transit-style operations on the Illinois Central in 1981, the status of mainline rail transit in Chicago has been essentially equivalent to that of commuter rail operations elsewhere in the United States, even as parts of the city saw an urban revival. Unsurprisingly, various attempts have been made to bring rapid transit operation back to mainline rail in Chicago, focusing on the Illinois Central (now Metra Electric). These attempts have generally run into resistance from entrenched bureaucracy and political interests within the region’s transit hierarchy, including both CTA and Metra. This section details some of those plans, as well as attempting to analyze some of the reasons behind their lack of success—and suggesting possibilities for an expanded set of regional rail ideas.

Before envisioning the future, though, we must document the present. And the present of regional rail in Chicago is, at best, dysfunctional. As Chapter 3 documents, if there is one aspect of planning that is crucial to the establishment of a regional rail system, it is the ability of various organizations, companies and agencies to cooperate and integrate in planning and operations. Despite the gradual takeover of all Chicagoland transit operations by the public sector, cooperation has declined rather than improved. **Competition, rather than cooperation, has characterized Chicago’s transit planning.** Instead of working together to improve transit
service to the South Side, CTA chose to extend rapid transit into territory served by decent—and improvable—IC and Rock Island mainline rail service on the far South Side, driving those operations further into financial ruin. A similar effect was observed when the northwest extension of what is now the L Blue Line opened paralleling the C&NW Northwest Line (Johnson et al 1976). As IC ridership fell, rather than responding supportively, CTA intensified its competition by, in 1982, enhancing service on its competing express buses running along Lake Shore Drive and Jeffery Boulevard—today’s familiar #6 Jackson Park Express and J14 Jeffery Jump. As John Allen wrote in his 1996 PhD thesis: “If CTA's planners had wanted to design a bus route to take over from the IC in Hyde Park and South Shore, they could hardly have done a better job than with the Jeffery Express...The results were predictable. Large numbers of former IC passengers now showed up at Jeffery Express bus stops, and crowded aboard the bus” (Allen 1996, pp. 257-258). Although RTA later worked out a fare rebalancing system that sent some riders back to rail, the 1981 service cuts remained in place—and ridership on the soon-to-be-renamed Metra Electric District (MED) remained mediocre.

Indeed, aside from general transit woes, it is likely that the structure of regional transit governance in Chicago and the tendency of the various transit agencies to protect their own turf rather than working together is the single largest factor in the continued absence of any consideration of regional rail service in Chicagoland. EnoTrans’ 2015 report on regional transit governance is worth quoting at length on that topic:

Under the 1983 RTA Act, RTA relinquished its operating role and became an umbrella agency and parent of the boards of CTA, Metra, and Pace…the Chicago region began pioneering a new approach to transit governance. While transit agencies across the country were consolidating, Chicago took a different tack and devolved its system by creating separate agencies, each operating different but related types of transit service, in different geographies of the same region, and with very different constituencies.
The idea in theory was to have RTA coordinate among the three agencies, with power to approve budgets, but this has never actually been achieved. Instead, CTA and/or the suburban agencies retain effective veto power over any RTA action. What was intended to be a regional agency has evolved into a battleground between city and suburbs. The CTA views RTA as protecting the suburban service boards, and the suburban service boards see RTA as favoring CTA. According to most interviewees, RTA has been too weak to corral its service boards under a cohesive mission and has accomplished very little (EnoTrans 2015, p. 17)

What was intended as a way to build regional coordination and enhance the public role in transit planning and operations has effectively done the opposite, building up barriers to cooperation and integration that make the fights between Chicago’s railroads look petty in comparison. But the city-suburb fighting is not simply petty; the RTA’s current structure incentivizes turf warfare over funding issues:

It is no surprise that these agencies, given their very different missions, modes, and constituencies, face challenges working together. CTA, which dwarfs its fellow RTA agencies in size, is desperate for capital funding, believing it must find any scrap of funding available to keep up with demand. It has little use for RTA’s planning or coordination efforts, but it is dependent on RTA’s funds to survive. Meanwhile, RTA, despite holding the purse strings, has been unable, due to its governance structure, to force CTA to do anything (EnoTrans 2015, p. 18)

Improvements to a service operated by one agency or another are essentially a zero-sum game in terms of funding—so even if planners believe regional rail might be the best form of transit to build in a particular area, because it would likely be operated by Metra, CTA would likely end up opposing the proposal. And proposals to transfer a current Metra operation to CTA would meet with opposition from a suburban constituency somewhat reasonably concerned CTA is simply trying to vacuum up all available funding. In addition, the existence of the RTA has minimized the role of the region’s somewhat forward-thinking MPO, CMAP, in disbursing transit funding—eliminating one body from the process that might be able to exert some pressure to coordinate. As we will see, these competitive pressures are not abstract—and as the fate thus
far of various proposals to revive mainline rail rapid transit service in Chicago demonstrates, they have in fact had real ramifications for the South Side in particular.

The Gray and the Gold

In 1996, an article about the future of transit in Chicago called local activist Mike Payne’s “Gray Line” plan for rapid transit service on the Metra Electric District “so detailed it could fill a separate story all by itself.” (Jimenez 1996). Indeed, since then Payne and his Gray Line have been an on-and-off constant in the segment of Chicago media that pays attention to transit. Payne’s plan, summarized on his website http://www.grayline.20m.com/index.html, calls for transferring the Metra Electric lines on the South Side to CTA control, while bringing back the turnstile ticketing that was removed in 2001 and running trains much more frequently. Though not a professional in the transit field, Payne—a former South Sider who now lives in the western suburbs—is a dogged advocate with a nose for trenchant analysis; in a recent interview with Streetsblog Chicago, he put his finger precisely on the issue of fare differentials.

Figure 24: Mike Payne’s Gray Line, showing inclusion of the South Chicago and Blue Island branches and the main line as far as Kensington--115th St. (http://www.grayline.20m.com/index.html)
between CTA and Metra service as a motivator for ridership shifting from Metra Electric to bus and the Red Line, even though the latter is a longer trip (Vance 2016). He has also designed a 3D model modifying Metra’s new Highliner EMUs for rapid transit service—and while cardboard wrapped in tin foil may not match the quality of a professional rendering, it accurately and vividly identifies the shortcomings of the new cars based on the ancient gallery car design and intended for long-haul commuter service.

Although the details of Payne’s concept have shifted over time, the central tenets have remained relatively constant: a takeover of Metra Electric service on the South Side of Chicago proper by the CTA, lowering of fares, and more frequent service. From a governance perspective, Payne’s plan perhaps underestimates the difficulty of transferring control of the MED to the CTA, and overestimates the importance of that action. The suggestion, however, correctly identifies the unwillingness of either entity to consider saving the high-quality MED infrastructure from the operational decrepitude into which it has sunk.

Despite his lack of tangible success, Mike Payne has managed to keep the conversation about returning rapid transit service to the Metra Electric on the South Side going for twenty years, and his Gray Line plan has prompted, gradually, the coalescence of a more organized campaign for rapid transitization, generally under the banner of the “Gold Line.” The Gold Line concept has focused on reconverting the South Chicago branch to rapid transit operation, with less emphasis on the main line or the relatively insignificant Blue Island branch. The South Chicago branch has several advantages for rapid transit operation: it is furthest from the existing Red Line, runs in the middle of an arterial street with easy pedestrian access, has the most recently renovated stations on MED, and serves an area with relatively dense housing stock, albeit one that has suffered significant population loss since World War II. Historically, the
South Chicago branch had the most frequent all-day service of all Illinois Central lines, with service every ten minutes for a number of years. With service to the University of Chicago and several significant historically African-American neighborhoods, the Gold Line proposal has attracted a relatively broad base of support from community organizations. A cynical observer might well add that it proposes less competition with existing CTA services than Payne’s Gray Line plan; in particular, having no mainline service south of the split with the South Chicago branch at 67th Street would not threaten the CTA’s cherished Red Line expansion into Roseland.

The Gold Line concept—really more of a brand difference from Payne’s Gray Line than a substantive one—came to media attention in 2009 as the brainchild of an advocacy group known as Southsiders Organized for Unity and Liberation, or SOUL. SOUL describes itself as a social justice organization on the South Side and South Suburbs dedicated to the belief that all people ought to have decent, affordable housing, access to healthy, nutritious food in every neighborhood, a clean environment so our children will be able to breathe the air and drink the water, public transit that allows us to get to job opportunities, a full employment economy so everyone has the opportunity to work, and living wages so people who work full-time do not remain poor. Too many people are denied these basic rights because our communities don’t have enough power, and the people who have the power are not acting in our interests (http://www.soulinchicago.org/mission/).

As a general interest policy advocacy group with roots in the Metra Electric service area (its headquarters, in First Presbyterian Church at 6400 S. Kimbark, are just a few blocks from the 63rd St. MED stop), SOUL was able to bring attention to the decrepit state of MED operations as not just a transit but an equity issue. SOUL “lined up support from community organizations, several aldermen and state legislators” and convinced Rep. Danny Davis to seek federal money for a study (Wronski 2009). The group also cannily hitched the Gold Line plan to Chicago’s hopes for the 2016 Olympics—a stance that brought the concept to elite attention and garnered significant media coverage. The plan proposed integrated fares, ten-minute headways from 6 AM to midnight, with a total capital cost of $160 million, much of that tied up in the purchase of
additional rolling stock (Freemark 2009). Like Chicago’s Olympic bid, though, the 2009 Gold Line plan garnered considerable media attention and little in the way of results.

More recently, the Gold Line has been incorporated into the broader Transit Future campaign sponsored by the Center for Neighborhood Technology, Active Transportation Alliance, and several other advocacy groups. Initially identified as the “South Lakeshore Service,” the Transit Future version eventually adopted the Gold Line branding as well. Like the 2009 version, this Gold Line would focus on the segment of Metra Electric from Millennium Station to South Chicago, without promising frequent service on the main line south of 67th St. Transit Future’s Gold Line promises 164 trains per day on the South Chicago branch (roughly 10-15 minute headways at service times), compared to 38 presently, and a 17-minute time savings over CTA’s competing Jeffrey Jump semi-BRT service at rush hours (see Figure 25).

Figure 25: Transit Future Gold Line poster (www.transitfuture.org)
The Transit Future proposal limits frequent service to the South Chicago branch, and the overall plan supports an extension of the heavy rail Red Line through Roseland rather than enhancing Metra Electric service there, and fails to mention undoing the damage to the bus grid done by the 1969 reorganizing. As is typical of American transit coalitions, construction interests—both labor and corporate—play a large role in Transit Future, and it should be no surprise that the campaign’s organizers would favor a limited Gold Line rather than potentially eliminate a lucrative-for-all L extension.

As of January 2016, the Transit Future Gold Line proposal appears to be in the process of merging with the CrossRail Chicago plan proposed by the Midwest High Speed Rail Association, if a January letter to the editor in the Chicago Maroon co-signed by Transit Future organizers Center for Neighborhood Technology (CNT) and Active Transportation Alliance (ATA) is any evidence. The letter, titled “South Side Community Calls for More Efficient Metra System,” is also signed by a wide variety of South Side organizations with both equity and business orientations. The letter advocates for the normal measures—fare integration (which is underway using the new Ventra card and app), frequent service, and lower fares—but also mentions the possibility of extending Electric service to O’Hare Airport. The promise of a connection to O’Hare is likely intended to bring groups affiliated with the business community and the University of Chicago onboard. Business groups are already part of the Transit Future coalition; framing improvements to Metra Electric as part of global access may ensure their enthusiastic support. Indeed, the coalition’s letter promises that improvements will “provide better connections among the universities and cities in the Midwest, and would strengthen South Side and South Suburban access to worldwide markets.” (Letter to the Editor 2016). Hardly the grassroots rhetoric of Mike Payne or SOUL—but perhaps equally, or more,
effective. And, given that the Gold/Grey concept has attracted support from both grassroots leftist organizations and business elites, it seems that political momentum is building.

The Establishment’s Response: the South Lakefront Corridor Transit Study

Perhaps feeling some political pressure after the initial burst of Gold Line activism in 2009, or perhaps hoping to put a troublesome issue to bed once and for all, the city of Chicago DOT and Department of Housing and Economic Development initiated a study that came to be known as the South Lakefront Corridor Transit Study. Released in 2012, the RTA-funded study panned the idea of turning Metra Electric into a rapid transit corridor, despite acknowledging that “There is a great deal of community support for the proposed changes to the MED due to the organizing and awareness campaigns carried out by proponents of the Gold Line during the Olympic Bid period” (Chicago DOT 2012, p. 91). However, the study suffers from a number of weaknesses, and may have been set up, very much in Chicago style, to “sandbag” the possibility of increased MED service in order to allow continuation of the status quo. Given the state of cold war that exists between CTA and Metra, as explained above, this is hardly surprising—but still disturbing.

The Lakefront study certainly appears more interested in establishing barriers to improving MED service exist than in tearing them down or interrogating them. The study notes that “Metra has indicated that it needs all four tracks north of Kensington to operate both express and local service during peak periods and to accommodate NICTD [Northern Indiana Commuter Transportation District, or South Shore] service, which is expecting some increase in its operations.” (Chicago DOT 2012, p. 92). Metra’s assertion seems reasonable—and indeed, the Gold Line mainly proposes to increase service at off-peak periods—but it flatly contradicts former RTA employee John Allen’s assertion that capacity is available for up to seven more
trains per hour on the local tracks even at peak times (Allen 1998, p. 131). Notably, Metra’s attitude seems to assume that railroad would also continue operating local service north of 71st St., rather than ceding the territory to the new Gold Line operator (Transport Notes 2015). Rather than analyzing the discrepancy, the study accepts Metra’s stonewalling—an attitude typical of studies about improving commuter rail in the US, which tend to accept assertions from career railroaders without reference to international best practices.

The study also, bizarrely, uses CTA’s loading standards to measure the frequency at which service should be provided—a tool that measures existing ridership, while entirely ignoring the line’s history of ridership many times that which currently exists. It also estimates a capital cost of $350 million, about twice that estimated by Mike Payne or the Gold Line coalition—and a number that includes two station improvements, budgeted at $18 million each, that were already on Metra’s project list, and two others that would serve all trains, not just Gold Line trains (Chicago DOT 2012, p. 95). Subtracting the $72 million cost of the four station renovations immediately lowers the project cost estimate to $278 million—still high for a service that could more or less be implemented at a barebones level without any capital investment at all, but starting to look more reasonable. Where 1970s studies had advocated cutting IC service on the grounds that South Side populations were shrinking (see for example Chicago South Suburban Mass Transit District 1979), the Lakeshore Study dings the areas through which the Gold Line would run for not having enough developable lots. Annual operating cost is estimated at $56-$60 million, a substantial increase of $32-$36 million over existing MED South Chicago Branch service (Chicago DOT 2012, p. 95). The operating cost is strangely high, as the Transport Notes blog argues: “the Gold Line as proposed would operate around 50,000 service hours per year with 2-car trains. The ‘L’ operates 4 car trains at $325 per service hour, including
capital costs. In total, a bare bones Gold Line should cost around $16 to $20 million per year to operate” (Transport Notes 2015). The vast majority of rail operational costs are tied up in labor—and the Lakeshore study makes no mention of labor reform at all. In other words, the single most important factor in the efficiency of regional rail systems worldwide, their ability to run with fewer crew members than American commuter rail, bears no mention in a study that claims to measure the potential efficiency of a Metra Electric rapid transit operation.

In general, the Lakeshore study seems to be stuck in a self-reinforcing logic cycle that proceeds from the basic assumption that existing CTA and Metra services, aside from the South Chicago branch, will stay essentially unchanged if the Gold Line is implemented—and therefore assumes the Gold Line will not work, since many of the riders that could benefit from it would be drawn away by competing services. The study both assumes and serves to reinforce the CTA-Metra state of cold war—and riders are caught in the middle. This status quo bias shows in the study’s modeling as well, as Transport Notes reports: “The report uses two models to estimate ridership. One model, from CDOT, flatly assumed that few riders would transfer from buses. The other model, the ARRF II model, is not designed to model rapid transit in urban settings. The ARRF II model is designed to evaluate greenfield commuter rail and light rail routes, and specifically avoided modeling large urban areas.” (Transport Notes 2015). The Lakeshore survey is only a sketch, and not an in-depth examination of options for the future of MED, but it is notable for the political and institutional bias built into its technical assumptions. It is, then, “honest” in a peculiar, and surely unintended way: it is a poor evaluation of the potential for rapid transit service on Metra Electric—and a terrific demonstration of the political factors that explain why such service died and has never been revived.
CrossRail Chicago

At the moment of writing in March 2016, the regional rail proposal that has received far and away the most media attention in Chicago is the CrossRail Chicago concept, sponsored by the Midwest High Speed Rail Association, or MHSRA. Named after the London project that has garnered worldwide attention, the CrossRail Chicago concept hold significant appeal for several different constituencies. In its initial form, CrossRail called for several relatively lightweight infrastructure improvements that would speed trains across Chicago:

- Modernization of Metra Electric operations, with frequent service as far as Hyde Park
- Electrification of the full route
- A new connection from MED using the Saint Charles Air Line to Chicago Union Station
- Use of existing and new run-through tracks, and new platforms, at CUS, to link to the North Side
- Electrification of trackage currently hosting the Milwaukee District West and North Central Service trains to provide an express service to O’Hare Airport

MHSRA has estimated the cost of the McCormick Place-O’Hare segment—the only infrastructure-intensive one—at $2.1 billion. In this vision, CrossRail would provide the first regional rail service through, rather than to, downtown Chicago, and provide the central linkage for a larger multi-state high speed rail network—a topic of particular interest to MHSRA. In its early forms, CrossRail had distinct flaws, especially from a political and equity perspective; it was entirely focused on university and airport service, giving it a distinct “white people train” vibe, and gave scant consideration to improving the rest of Chicago’s regional rail network.
To MHSRA’s credit, however, the CrossRail concept has evolved to incorporate other potentially popular elements. The O’Hare express aspect maintains its popularity with the city’s elite, including the administration of Mayor Rahm Emanuel, despite the scorn of transportation advocates. The idea of combining the O’Hare express and CrossRail concepts to form a hybrid service useful to more people has been broached by several transit advocates, including this author, but whether it has any traction is unknown. The CrossRail plan has also grown to include the Gray/Gold Line, perhaps its most important evolution from a political perspective as it might help the plan gain South Side support. The CrossRail website now has a page dedicated to calling Metra Electric an “underutilized asset” and pitching full rapid transit use of MED as an alternative to the pricey Red Line extension. Another flyer shows CrossRail including not only all branches of Metra Electric, but also the Rock Island District, the South Side’s other forgotten rail transit asset—and one of the other lines fully under Metra control. CrossRail’s backers may be overpromising on the ability of a single project to unify a divided city—but the project might also represent the kind of grand bargain that sometimes survives to fruition.
CrossRail Chicago is important for the future of regional rail in Chicago for several reasons. First and foremost, it has the potential to gain a wide range of political backing by subsuming several more parochial interest groups into one infrastructure plan. Second, it explicitly links urban transit to intercity rail—an important consideration in planning the future of rail infrastructure—and takes the needs of freight rail into consideration in a way not all planners are capable of. Perhaps most importantly, though, it introduces to the Chicago discussion the possibility of creating cross-city run-through service from the South Side to the North—a staple of regional rail plans elsewhere that had until CrossRail been absent from debates understandably focused on reviving the past glory of the Illinois Central. Indeed, Yonah Freemark had called for “improved connections between the lines” in his 2009 response to the Gold Line plan; having incorporated the revitalization of Metra Electric, CrossRail now stands as perhaps the most realistic option for making such connections happen.
Chapter 5: An Agenda for Regional Rail in the United States

Chapter 3 concluded with several lessons garnered from the case studies of international urban-suburban rail, while Chapter 4 presented a case study of several aspects of the Chicago area’s commuter rail network. Perhaps the most prominent of the lessons from Chapter 3 was the willingness of systems and governing bodies to learn from the experiences of other metropolitan areas. In that spirit, this concluding chapter brings together recommendations and case studies to create a potential agenda for the future of mainline metropolitan passenger rail in the United States. This synthesis references lessons learned from analysis of both American and international experience, and uses a practical and familiar case study—Chicago’s complex commuter rail system—to illustrate the points made.

Governance and Centralized Planning

Several of the case studies in Chapter 3 demonstrate the desirability of integrating governance and planning of the mainline rail network both in and of itself and with other transit. Even in Japan, where the suburban railways are run by private operators, the government has stepped in to provide a guiding hand and fill key infrastructure gaps at times, while encouraging operational cooperation between suburban operators and Tokyo’s publicly owned subway system. The S-Bahn model, of course, has come to largely depend on the Verkehrsverbund as a regional coordinating entity that controls all modes of transit. Paris’ RER is the product of cooperation between the national railway operator and the Parisian metropolitan transit operator, and integrates with both systems. In London, Transport for London has taken on an ever-increasing role in mainline rail planning and governance over the past 15 years, a role that is only set to increase as more lines join the Overground brand and Crossrail opens. At the same time, operations of the network need not be centralized; they are not in Tokyo or Paris, while agencies like MBTA and SEPTA in the US centralize operations but have failed to modernize. As the
wide variety of governance structures presented in these case studies demonstrates, there is no one “correct” format for integrated transit governance—but there is a correct paradigm.

One potential example for American metropolitan areas lies just across the northern border, in Toronto. Although Toronto’s city-suburb government amalgamation has had its blips—including producing notorious mayor Rob Ford—it has also produced some of the best North American results for urbanism and transit. Addie (2013) positively contrasts Toronto’s paradigm of grudging regional cooperation with Chicago’s calcified city-suburb competition. A unified tax base has tended to smooth over the very real ongoing tensions, providing enough benefits to go around (Austen 2016). It is perhaps not coincidental that Toronto has produced North America’s most comprehensive plan for a regional rail network (see below). Indeed, regional transit overseeing organization Metrolinx and Toronto City Council have each produced a plan for better utilizing mainline rail, perhaps indicative of shared governance’s ability to produce results that can benefit city and suburbs alike.

**Governance in Chicago**

Sadly, integration of mainline rail into the broader transit network is virtually nonexistent in the US, a symptom both of “commuter” rail’s relatively recent heritage in the private sector and of the existing stakeholders’—private sector, labor, and governmental at all levels—desire to protect the mode’s special status. Chapter 4 demonstrated this kind of tendency, showing the tensions between CTA and Metra, and between city and suburban stakeholders. Despite the existence of the Regional Transit Authority (theoretically an organizing body), policymaking, infrastructure construction, fare structures (though as of recently, no longer fare media), and transit provision remain competitive rather than cooperative. Rather than coordinating service to the South Side, CTA and Metra have since the 1960s competed for riders, with disastrous results
for the once-vibrant Illinois Central/Metra Electric system. Because the two operators compete for money from the same purse-holder, they play a zero-sum game that pits leadership and riders against each other. There are numerous ways in which this situation can change—but change it must.

**Coordination of Rail Transit and Land Use**

One of the dominant aspects of mainline rail planning in this paper’s international case studies is the close—although again, varying in method—coordination of land use and rail transit in suburban areas. In Japan, private companies profit both off of the rail lines and the suburban development that has grown around them. Countries that have built S-Bahns have often succeeded in managing sprawl by concentrating development in small, sometimes far-flung clusters near stations. Paris’ RER has succeeded in its intention to create the groundwork for a whole new type of suburban development, while London’s still-developing regional rail network has had more of a reactive role, but has still conformed to land-use patterns.

In the US, though, commuter rail is often oriented around park-and-ride lots in suburban areas, with relatively few stations that place an emphasis on walkability and dense development. To a large extent, this is a political problem related to suburban and exurban expectations of low-density development, much of it in towns with no compact, rail-centered downtown. With strong traditions of local control of land use, higher levels of government find themselves legally unable, or politically unwilling to run the risk, to shape high-density development around transit. Although many planners and even many politicians now recognize the imperative to densify the suburbs, the ability to actually implement transit oriented development will probably be the most important determinant in the future of regional rail in the US. One possible path forward has been laid out by the administration of Governor Dannel Malloy of Connecticut, who in 2015
proposed the creation of a Transit Corridor Development Authority, or TCDA, which would centralize land-use powers within a certain radius around state-supported transit stations (Bates 2015). Being a strong challenge to local land-use control, the TCDA proposal has seemingly languished since then under intense political opposition from many suburban areas. But the importance of the proposal lies not so much in the particulars as in the political argument it makes. As this author argued in two blog posts at the time (Johnston 2015a and 2015b), Malloy’s TCDA proposal emphasized that state-supported transit represents both an infrastructural and operational investment by the state, an investment that needs to be usable by as many people as possible. Opponents of transit-oriented development, then, are not so much principled advocates of low-density development as misers who wish to hoard the benefits of lavish state investment for themselves. In other words, accepting transit provision but rejecting coordination of transit and land use is *rent-seeking behavior*. Although the Malloy TCDA proposal has not moved forward, perhaps it is that key insight—that an essential public interest exists not just in creating transportation options but in supporting them through land-use policies—that can guide policymakers into the suburbs of the future.

**Coordination of Land Use and Transit (or lack thereof) in Chicago**

Perhaps unsurprisingly in a region characterized by intense competition between transit operators, and between transit and highways, coordination between transit and land use in Chicagoland is mediocre. Chicago proper has only a weak Transit-Oriented Development ordinance, although it was strengthened in late 2015. Happily—and perhaps optimistically—the TOD ordinance does extend to Metra as well as CTA stations (Vance 2015). More pessimistically, the Center for Neighborhood Technology’s 2013 report “Transit-Oriented Development in the Chicago Region: Efficient and Resilient Communities for the 21st Century” concluded that Chicagoland was falling behind other American metropolitan regions in TOD
provision, despite the economic success of TOD communities already built under contemporary incentives and zoning.

Figure 28: Admittedly an extreme example, the "Transit-Oriented Solar Farm" next to Racine station on the Metra Electric Blue Island branch demonstrates the weakness of transit-land use coordination in Chicagoland (Imagery: Google Maps).

Chicago has an enormous legacy mainline rail system and significant opportunity for regional rail, and TOD around it. But the region will need to find a way to strengthen coordination between land use and transit to take full advantage of that opportunity.

Crew Reform

Chapter 2 documented in detail how American commuter rail’s overzealous system of ticket collection combines with the inherent inefficiency of peaky trains scheduling to produce a massively expensive enterprise where the marginal costs of adding service are a huge disincentive to more frequent operations. As noted in Chapter 2, this inefficiency is a product of classist and racist rider gatekeeping, labor relations, and stakeholder incentives to reduce conflict rather than manage for efficiency, as well as commuter rail’s exceptional legal status. Indeed, the
system is fragile as well as inefficient; Schwarcz and Bernstein (2013) estimate that a single missed assistant conductor assignment could cost Metro-North $1,500 in fare revenue.

Although Federal Railroad Administration (FRA) regulation has touched many aspects of the commuter rail experience (see below), it has not been a decisive shaper of crew sizes; indeed, no formal regulation of that element of operations exists. However, that may be about to change. On March 15th, 2016, the FRA released a Notice of Proposed Rulemaking, or NPRM, that would cement rules in place mandating at least a two-person crew on most American mainline trains. Although produced largely in response to incidents such as the wreck at Lac-Megantic, Quebec involving crude oil trains—indeed, most experimentation in the railroad industry with one-person crews has been in the freight sector—the NPRM would apparently apply to commuter rail as well. Indeed, the NPRM contains the singularly American-centric statement that “FRA expects that the two-person aspect of the crew size rule would also not have much of an impact on current passenger train operations. It is rare for passenger train operations to have less than a two-person crew, largely because emergency preparedness plans would be ineffectual without at least two persons to execute it” (Federal Railroad Administration 2016, p. 98). Ignoring decades of international experience, the NPRM codifies an approach to crewing that has evolved not so much out of intentional or rationalized policymaking but out of a series of anachronisms. Within a broader framework of semi-conscious American exceptionalism when it comes to transit, commuter rail’s crewing approach could perhaps itself be best framed as “commuter rail exceptionalism.”

Though the FRA NPRM is likely to see considerable modification before becoming a formal rule—the railroad industry is already lobbying hard against the hard two-man requirement—the crewing practices of commuter rail, whether formalized in regulations or not,
stand as perhaps the biggest obstacle to introducing regional rail-type operations to the US. In an important post, Alon Levy analyzed operational costs on New York-area commuter railroads, discovering that the effects of inefficient crewing practices on operating costs are large: “on the LIRR and Metro-North, nearly fivefold improvements in revenue train-hours per on-board employee (driver or conductor) are possible, which would halve the marginal operating cost per train-km” (Levy 2015a). As Levy notes, this is especially crucial in the context of attempts to grow off- and reverse-peak service, which is both the least-served and the fastest-growing market for Metro-North. The mechanics of how to implement reduced crewing and a better fare collection system are well-known: build as many high-level platforms as possible, introduce faregates at major stations or proof-of-payment inspections across the system, and provide ready-to-go “snap-back” crews at terminals when a train needs to make a quick turn to provide crew rest. As is true of most of the issues this paper has examined, it is the politics of such an effort that are difficult.

Although there is no such thing as a playbook for such reform efforts in the US, a review of the limited available literature suggests a certain consensus as to the mechanism that might allow reform. Allen (1998, pp. 132-133) suggests that
The ability to provide more service because of lower unit costs could stimulate ridership, thus leading to greater job security—and more jobs—for rail employees… Management must not “Give away the store,” but the new positions will need to be better paying than either the existing wage rates for conductors or engineers because the one-person operator will have more responsibilities.

Combining the engineer and conductor jobs could well appeal to many railroaders, but as Allen recognizes it is likely to lead to conflict between their unions, given the craft/trade organization of rail labor. Combining the conductor and engineer jobs would wipe out the conductors’ union, giving its leadership a natural incentive to oppose such reforms even if they are good for labor (never mind the public interest!) more generally. A similar potential model comes from the freight rail industry. In 2015, Burlington Northern Santa Fe (BNSF) and its engineers’ union, the United Transportation Union,

Developed the concept for a one-person operation, but the operation was voted down by UTU’s members. The concept contained several positive attributes such as (1) limiting the operations to defined territories, (2) providing one-person crewmembers with regular and predictable work schedules, and (3) designing the schedules so that one-person crews would not have to spend any time away from a home terminal, thus allowing the person to sleep at home when off duty (Federal Railroad Administration 2016, p. 173).

As with Allen’s proposed reform model, the BNSF/UTU proposal would have seen little or no negative impact to crew salaries, and would have provided crew members with stability in lifestyle and the workplace. The experience of the Philadelphia region with the US’ longest commuter rail strike in recent memory, documented in Chapter 2, reinforces at least some of the argument to rely on positive wage change and scheduling stability as levers to encourage crewing reform. SEPTA Regional Rail crews appear to have feared—with, apparently, some reason—that in addition to changing work rules, management sought to cut pay and benefits. The result was a prolonged, nasty strike and one of the nation’s more contentious labor-management relationships. If reform is to happen, management must take care not to be seen as cost-cutting
for the sake thereof, but to be taking steps to ensure higher *productivity*, in a way that benefits labor, riders, and potential new riders alike.

**Crew Reform in Chicago**

The issue of crew reform is a national one, and hardly unique to Chicago. Yet Metra’s labor relations would, perhaps, be more contentious than in other metropolitan areas in a reform scenario, because of the sheer complexity of the system. In addition to the usual complexity of different craft unions, Metra introduces intricacy related to different operators. Metra operates seven of its lines directly, but the former C&NW lines are operated under a purchase-of-service contract by C&NW successor Union Pacific, and the former CB&Q line is similarly run by BNSF (Metra n.d.). Although Metra retains ultimate control over staffing levels—and BNSF is obviously open to the possibility of one-person operations—it is not hard to envision a scenario in which attempts at reform could become bogged down in the complexity of dealing with union locals across several different railroads.

**Core Connections**

One of the hallmarks of regional rail is the connection across and through a city core. These connections serve a triple purpose. First, they bring suburban travelers directly into the city core, when as often as not they had been banished to the outskirts of the CBD by decisions made in the early years of railroading—a pattern that holds true in Tokyo, Paris, and London, as well as many American cities. Second, they enable transit managers to leverage a relatively small (though often very expensive) infrastructural investment into an expansive new system and open up new trip paths that had previously gone unexplored. Finally, running trains *through* an urban core instead of terminating them at a stub-end terminal is inherently more efficient from an operational perspective, in that it eliminates turning time at downtown terminals and the need to
store trainsets on valuable downtown land. It is no accident that all of the international examples featured in this paper include an element of connection through a CBD area.

And yet, the practice of through service is very unusual in the US. It is only physically possible in a few cities, but even in those institutional barriers abound. At Penn Station in New York City, both Long Island Railroad and New Jersey Transit trains technically “run through”—but only as far as a nearby yard. There is no joint through service to enable, say, commutes from Queens to Newark. In Philadelphia, SEPTA Regional Rail trains run through the Center City tunnel, but not at the frequency that rapid transit quality service would demand—and not for a lack of capacity. MARC and VRE trains do not through-route at Washington Union Station, despite physical possibility to do so. Los Angeles is building through tracks to reduce the need to turn trains at Union Station, though rapid transit levels of service are not planned (Los Angeles County Metropolitan Transportation Authority 2014). Given the inefficiency of stub-end terminals, and the capacity constraints that many, including Penn Station, South Station in Boston, and Chicago Union Station, are facing, it is time for American rail operators to again consider center city connections as a long-term solution.

Figure 30: Contemporary map of stub-end suburban rail terminals in downtown Chicago (www.metrarail.com)
Possibilities for Cross-CBD Connections in Chicago

Chicago is one of the world’s more notorious examples of a CBD ringed by stub-end passenger rail stations, as demonstrated thoroughly in Joseph Schwieterman’s 2014 *Terminal Town*. Through connections have historically been nonexistent, a particular pain for passengers in the era when the city was the country’s center for cross-country travel. As noted in Chapter 4, the Crossrail Chicago concept pushed by the Midwest High Speed Rail Association has revived discussion of a cross-CBD link. That concept would connect Metra Electric tracks south and east of the Loop to the Milwaukee District tracks on the north side of Union Station, using the underutilized St. Charles Air Line and Union Station’s two existing, barely-used run-through tracks. The concept is relatively lightweight in terms of infrastructure, and indeed unambitious in a good way; the possibility of running through Union Station, while unexplored up to now, provides Chicago with an opportunity to create a cross-CBD connection at relatively little cost, given that no tunneling would be involved.

![Figure 31: Downtown Chicago improvements proposed by CrossRail Chicago](http://www.midwesthsr.org/sites/default/files/images/map-crossrail-chi-phase-one.jpg)
In fact, the 2012 Chicago Union Station Master Plan Study analyzed precisely such a possibility. Although Metra argued that “commuter demand for through tracks is extremely limited” (CDOT 2012, p. 53), the study concluded that the out-of-service mail platform and a few nearby tracks could easily be re-purposed into run-through infrastructure intended for intercity or commuter service at relatively low capital or operational disruption cost. The first two through tracks—which would serve four platforms—were estimated to cost $100-$200 million, and another two would cost a further $50-$100 million (CDOT 2012, p. 58). The actual through connection, then, would provide fairly high capacity, but be a relatively small piece of the overall anticipated $2.6 billion price tag for Crossrail Chicago.

One of the weaknesses of the Crossrail plan is that it fails to provide direct service into the Loop—or to the Gold Coast, which is not served directly by mainline rail—for commuters.
That is something that cannot be rectified without expensive tunneling under the Loop’s unstable water table. The other weakness of the Crossrail run-through plan is that it offers a connection to only three of the six Metra lines operating on the North Side—the two Milwaukee District lines and the North Central Service.\textsuperscript{10} The three C&NW heritage lines radiate not out of Union Station but out of the Ogilvie Transportation Center a couple of blocks away, without a direct track connection. And of those three, two—North and Northwest—are among the Metra lines most amenable to a rapid transit conversion, boasting very little freight traffic and decent transit-oriented land used (See “Joint Operations with Freight” below). Fortunately for the purposes of this analysis, those two lines are also potentially easily connectable to the Union Station run-through tracks. Using a right-of-way that originally connected with a C&NW branch to Navy Pier, the throat tracks to Union Station could connect with the UP mainline while demolishing only one building, the warehouse belonging to Cassidy Tire and Service on Canal Street.\textsuperscript{11} The resulting connection would likely be slow due to the restricted right of way, but would provide through service for two lines with very high potential ridership. The concept is demonstrated in an illustration on the following page, and the network potentially created in the next section.

\begin{footnotes}
\item[10] It would, theoretically, be possible to connect from Milwaukee District trackage to the UP-West and UP-Northwest lines at outlying points.
\item[11] This author first explored this potential connection in a blog post: \url{https://itineranturbanist.wordpress.com/2014/10/29/envisioning-an-ambitious-future-metra/}
\end{footnotes}
Figure 33: Potential Chicago Union Station connecting track to UP-North and UP-Northwest (author)
Joint Operations with Freight

One of the major differences between the European and Japanese experiences with mainline rail and that of the US is the presence of a significantly higher concentration of freight traffic on the American rail network, especially in urban areas. Indeed, in the US the rail network generally serves the needs of private freight railroads—which usually own and maintain the tracks and infrastructure—more than those of passenger service providers. Ways to share infrastructure between freight and passenger trains have generated a significant literature over the past several decades, as planners and managers have sought to sort out differences between the public and private sectors. Ironically, since a bundle of “open access” reforms privatized operations on much of the European network in the 1990s, European regulators and planners have been dealing with some of the same tensions American stakeholders handle regularly, albeit in a different format. There still remain enormous technical differences between American and international experiences, however, as American freight trains are generally much longer and heavier, and consequently slower, than their counterparts abroad.

Morvant (2015) provides a fairly typical European approach, documenting the historic primacy of passenger service over freight on the French railway network, and the challenges that open access reforms have created by unbundling freight service provision from infrastructure management. Paradoxically, despite more competitors than ever and more public policy attention paid to freight rail, freight traffic on the network has continued to decline, leading to a variety of attempts to reschedule network access in ways more conducive to freight. Similarly, TCRP Research Results Digest 47, “Germany’s Track-Sharing Experience: Mixed Use of Rail Corridors” (2002) analyzes the German experiences with track sharing between different types of traffic, operators, and even modes from an American perspective. The report focuses heavily on the German practice of sharing mainline rail track between “heavy” conventional trains and
lightweight transit vehicles, which will be explored more in depth in the “Rolling Stock Reform” section below.

For an American context, the “textbook” on handling freight-passenger conflicts is National Cooperative Highway Research Program Report 657, “Guidebook for Implementing Passenger Rail Service on Shared Passenger and Freight Corridors” (2010). The report emphasizes that aside from Amtrak, passenger rail in the US has no “right of access” to freight infrastructure, and must thus negotiate with host railroads at something of a disadvantage. There is thus no “one size fits all” approach to introduction or management of passenger service in a jointly used corridor; approaches range from outright purchase of the infrastructure by the public to contracting with freight railroads to operate the service using publicly owned equipment. Like an earlier report, NCHRP RRD 313 (2007), the Guidebook emphasizes that one of the most contentious issues in negotiating joint operation of a corridor is the need to work out cost allocation. If freight and passenger trains both use a corridor, how should capital expenses and maintenance costs break down between them? As the experience of the C&NW commuter services’ “profitability” in the 1960s and ‘70s (see Chapter 4) demonstrates, there is significant room for subjective accounting and fudging of numbers when it comes to cost allocation. And the subjectivity of cost breakdowns leaves plenty of room for host railroads (primarily freight railroads, but also Amtrak on parts of the Northeast Corridor) to charge potential commuter or regional rail operations exorbitant rates for access—potentially a major expense. Thus, when money can be found, regional passenger rail operators have tended to bring the infrastructure under their own control as quickly as possible.
Freight and Passenger Rail Coexistence in Chicago

Although joint operation of freight and passenger service obviously poses difficult operational, fiscal, regulatory, and political challenges to regional rail operations in the US, its status as an enormous obstacle is perhaps overstated. Simply put, while implementation of regional rail would indeed conflict with freight rail priorities in some areas, the nation’s (relatively few) legacy systems generally have significant corridors with minimal or zero freight traffic. This is true even in Chicago, regarded by many as the freight rail capital of the country or even the world. While several of Metra’s busiest lines, especially the BNSF and UP-West, share trackage with huge numbers of freight trains, many others run on corridors with little or no freight traffic. The Chicago Metropolitan Agency for Planning (CMAP) maintains a highly useful set of GIS maps classifying the Chicago-area network by level of freight traffic; by combining this information with the Metra system map, it is possible to develop a map of lines suitable for regional rail usage in the Chicago region (see Figures 34 and 35). The intention of this exercise is to demonstrate the extent to which even one of the US’ most congested heritage rail networks provides significant opportunity to expand rapid transit access throughout the region.
Figure 34: Regional rail possibilities in the Chicagoland region (author).
Figure 35: Regional rail possibilities in the city of Chicago (author).
<table>
<thead>
<tr>
<th>Line</th>
<th>Length</th>
<th>Metra Trains per Day</th>
<th>Freight Trains per Day</th>
<th>Current Ridership</th>
<th>Track Ownership</th>
<th>Operator</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metra Electric</td>
<td>40.6</td>
<td>170</td>
<td>0</td>
<td>33,500</td>
<td>Metra</td>
<td>Metra</td>
<td>Line is fully separated from freight tracks</td>
</tr>
<tr>
<td>Rock Island District</td>
<td>46.6</td>
<td>69</td>
<td>1-3 (16 St. -- Blue Island); 0 (Suburban Branch); 7-12 (Blue Island - Joliet)</td>
<td>29,300</td>
<td>Metra</td>
<td>Metra</td>
<td></td>
</tr>
<tr>
<td>SouthWest Service</td>
<td>40.8</td>
<td>30</td>
<td>4-12 (CUS-75th St.); 60+ (75th St. Corridor); 1-3 (Wrightwood -- Manhattan)</td>
<td>9,900</td>
<td>Metra, leased from NS</td>
<td>Metra</td>
<td>Core of line has little freight activity, but no access to downtown terminals without traversing busy 75th St. corridor</td>
</tr>
<tr>
<td>Heritage Corridor</td>
<td>37.2</td>
<td>6</td>
<td>4-6 (CUS-Summit); 0 (Summit - Joliet)</td>
<td>2,400</td>
<td>CN/IC</td>
<td>Metra</td>
<td>CMAP assessment of 0 trains Summit - Joliet is incorrect.</td>
</tr>
<tr>
<td>BNSF</td>
<td>37.5</td>
<td>94</td>
<td>37-60</td>
<td>64,900</td>
<td>BNSF</td>
<td>BNSF</td>
<td></td>
</tr>
<tr>
<td>UP-N</td>
<td>51.6</td>
<td>70</td>
<td>0 (OTC-Lake Bluff); 4-6 (Lake Bluff - Kenosha)</td>
<td>34,200</td>
<td>UP</td>
<td>UP</td>
<td></td>
</tr>
<tr>
<td>UP-NW</td>
<td>70.5</td>
<td>65</td>
<td>1-3 (OTC-Mayfair); 4-6 (Mayfair -- Harvard); 1-3 (McHenry branch)</td>
<td>39,900</td>
<td>UP</td>
<td>UP</td>
<td></td>
</tr>
<tr>
<td>UP-W</td>
<td>43.6</td>
<td>59</td>
<td>0 (OTC-Western Ave.); 25-36 (Western Ave. -- Melrose Park); 37-60 (Proviso Yard--West Chicago); 60+ (West Chicago -- Elburn)</td>
<td>28,100</td>
<td>UP</td>
<td>UP</td>
<td></td>
</tr>
<tr>
<td>MD-N</td>
<td>49.5</td>
<td>60</td>
<td>0-3 (CUS-Bloomingdale); 4-6 (Bloomingdale - Techy); 13-24 (north of Techy)</td>
<td>23,100</td>
<td>Metra</td>
<td>Metra</td>
<td></td>
</tr>
<tr>
<td>MD-W</td>
<td>39.8</td>
<td>58</td>
<td>0-3 (CUS-Bloomingdale); 4-6 (west of Bloomingdale)</td>
<td>22,300</td>
<td>Metra</td>
<td>Metra</td>
<td>Dispatching by CP</td>
</tr>
<tr>
<td>NCS</td>
<td>52.8</td>
<td>22</td>
<td>0-3 (CUS-Bloomingdale); 4-6 (Bloomingdale--Franklin Park); 7-12 (Franklin Park--Vernon Hills)</td>
<td>5,800</td>
<td>Metra (Union Station--Franklin Park); CN (Franklin Park--Antioch)</td>
<td>Metra</td>
<td></td>
</tr>
</tbody>
</table>
Electrification

As noted in the conclusion to Chapter 3, the global standard for regional rail is to use electric, rather than diesel, propulsion. In the US, most “commuter” rail lines use diesel propulsion. The only operations using electric propulsion are Metro-North, LIRR, and NJT in the New York City Region; SEPTA in Philadelphia; MARC connecting Washington and Baltimore; and Metra Electric/South Shore. Even that roster is subject to change in the coming years; MARC is planning to replace its aging electric locomotives with diesels, claiming a fleet consistency benefit even though its Penn Line trains run under catenary on the Northeast Corridor, Denver’s new electrically powered regional rail lines will open in 2016, and Caltrain’s electrification project is on track to finish (perhaps) sometime in the 2020s. MARC may in fact be taking inspiration from Boston’s MBTA, which has followed similar logic in continuing to run aging (and slow) diesel equipment on its Providence Line despite the opening of Amtrak electrification from New Haven to Boston in 2000. Aside from Denver, none of the numerous new start commuter rail lines of the past 30 years have been electrified, mostly because of the expense involved and their relatively infrequent trains.

Despite the dearth of electrical power among US commuter rail systems, electrification remains an important part of the future of regional rail in the US. Allen and Aurelius (2002) note that the development of high-voltage A.C. power systems has made electrification easier, while onboard A.C. traction motors have lengthened the lifespan of aging D.C. systems such as Metra Electric/South Shore. Druce (2015) estimates that the break-even point for electrification rests between 21 and 29 roundtrips per day, when social and environmental considerations and cost savings (electric equipment is significantly cheaper to maintain, and often cheaper to procure) are taken into account. Ofsevit (2015) makes a strong case that MBTA’s now-discarded plan to introduce DMU service on the Fairmount Line was wasteful, and that the (very short) line should
simply be electrified and operated by modern rolling stock, along with much of the rest of the MBTA network—especially considering that the Providence Line already operates under catenary.

**Figure 14: Rolling Stock Operating Costs**

*Figure 36: Operational savings of electric rolling stock over diesel (Metrolinx 2016).*

**Electrification in Chicago**

The threshold that Druce lays out for electrification justifiability is right on the border of the frequency of most new start commuter rail operations. Without significant increases in ridership potential, many of them seem unlikely to justify the capital expense of electrification any time soon. The legacy systems like Chicago, however, are a different story. Many of Chicago’s lines feature high concentrations of traffic, with relatively closely spaced stops. Electrification is particularly helpful in such a scenario; diesels can achieve roughly the same top speeds, but that matters less when the distances between stations are so short that the trains never
reach that top speed. This describes several Metra lines well, including the Rock Island District (especially the Suburban/Beverly branch), BNSF, and UP-North. Though it would be expensive and potentially face resistance from hostile freight railroad hosts, electrification should be on the long-term agenda for some, if not all, of Metra’s lines.

**Rolling Stock Reform**

While not a core issue in the politics or planning of bringing regional rail to the United States, one issue researchers and especially advocates have frequently raised is the possibility of reforming the Federal Railroad Administration’s regulations about rail vehicle safety, which many regard as outdated. Edmondson (2013) lays out the history of these regulations, which ultimately date to Postal Service concerns over the safety of employees riding in Railway Post Office, or RPO, cars. FRA requires American trains to withstand 800,000 pounds of crush pressure in a crash without deformation—the “buff strength” requirement. In contrast,

European regulators take the opposite tack of the FRA. Rather than rigidly resist a crash, Europeans design trains to gracefully deform in a controlled manner under the UIC design standard EN 15227. Under this approach, known as crash-energy management (CEM), crumple zones are designed to absorb the energy of a crash. These zones are typically in spaces where people probably would not be during a crash, such as electrical closets and passageways between railcars (Edmondson 2013, p. 2).

European regulators do impose buff-strength and other requirements, but they are much less stringent than those used by the FRA. Japanese trains, meanwhile, have very little crash-proofing, but instead rely on exceptionally safe signaling and operational practices (Lemaire and Tordai 2016). The effect of the FRA’s rules has been to make off-the-shelf procurement of equipment essentially impossible for mainline American rail operators; while rail equipment orders typically require significant modification, most vehicles intended for an American operator must be designed virtually from scratch. Edmondson and others argue that this has made procurement significantly more expensive, without a proven safety benefit.
Indeed, FRA’s requirements have little data to support them. Caltrain, the commuter operator on the San Francisco Peninsula, has sought to replace its locomotive-hauled equipment with conventional European EMUs when the line is in the coming decade converted to electric operations as part of the “blended system” with California’s high-speed rail system. As part of its application for an FRA waiver, Caltrain conducted an analysis that indicated that “noncompliant” equipment would not be any less safe in the majority of crash scenarios—and was actually safer than “compliant” equipment in a grade-crossing crash, the single most common category of incidents on the American rail network (Bouchard and DiBrito 2008, pp. 6-7). In recent years, FRA has also awarded waivers to several transit operations that wanted to operate European DMUs on mainline track with the specification of a complete “temporal separation” from freight traffic. In the face of increasing momentum for reform, the impending mandate for Positive Train Control, and a dearth of evidence indicating that restrictive regulations were improving safety, FRA indicated to writer Stephen Smith in 2013 that the safety rules would soon be revised (Smith 2013). While the proposed reforms have not yet seen the light of day, analyst Marc Scribner of the Competitive Enterprise Institute—the project manager responsible for Edmondson’s paper—indicates that he expects the NPRM to be published in June (Scribner 2016).

While FRA safety reform is not a fundamental aspect of the regional rail agenda in the same way that crewing reform is, it is potentially important both for reducing procurement costs for larger agencies and particularly for getting smaller operations off the ground. Weigelt (1982) indicated the adaptability of the S-Bahn concept to smaller metropolitan areas; a key aspect of implementing rail transit in regions that may be less dense is the ability to do so affordably. The transit operations that have suffered the most from FRA requirements are those that have been

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forced to buy expensive locomotive-hauled equipment or custom-designed FRA-compliant DMUs, often at exorbitant cost, such as SMART in Marin County, California. Reforming FRA’s safety requirements offers the possibility of extending regional rail service into even rural areas.

Modern Rolling Stock Design in Chicago

Though Chicago has other barriers to implementation of regional rail that are significantly higher than FRA reform, rationalizing safety regulations could still hold significant benefit for the system. Ironically—and indicatively of the mindset of many American railroad operators—Metra has often opted not to modernize its fleet regardless of FRA regulations. In theory, Metra Electric would be a perfect candidate for receiving a waiver from FRA safety requirements; it runs on tracks fully separate from freight rail and shares trackage only with a few Amtrak and South Shore trains that would remain noncompliant. FRA has already awarded a waiver to the Denton County Transportation Authority to operate noncompliant Stadler DMUs together with legacy Budd RDCs under similar circumstances (LeBeau 2011). Rather than trying for a waiver, however, Metra chose to replace the aging Highliner EMUs with a new model unsuited to rapid-transit operation (see Chapter 4), and based on the aging gallery car model. Indeed, Metra’s entire passenger fleet is made up of cars derived from—and not very different from—the gallery cars first introduced by the CB&Q in 1950 (Vance 2016a). Perhaps FRA reform would nudge Metra in the direction of modernization, but ultimately, an agency that has chosen not to even adopt modern American coach designs is a victim more of bad governance than federal regulation. And with that insight, this chapter’s recommendations have come full circle.

Other North American Possibilities for Regional Rail

While the emphasis of this paper has been on using the Chicago commuter rail system to analyze the possibilities of bringing the regional rail paradigm to the United States, there are
other metropolitan areas that have either made progress with adoption of such a paradigm or have significant opportunity to do so. The paper thus concludes with a sketch of some of those systems, with an eye toward a more hopeful future.

New York/New Jersey/Connecticut
The nation’s largest metropolis is home to the largest transit system, as well as the largest commuter rail network. The region’s commuter rail network remains split among three operators (NJT, LIRR, and Metro-North), with little cooperation between them, even the two that fall under the same overall agency. A variety of schemes to turn parts of the system into rapid transit have been proposed over the years, and the idea seems to be gaining some momentum. Bloggers have been coming up with ideas for years, and recently a planning studio at the University of Pennsylvania proposed a “Crossrail NY/NJ” scheme that received some media attention, complete with a website (www.crossrailnynj.org). The venerable Regional Plan Association has also proposed making a transformed commuter rail network part of its upcoming Fourth Regional Plan, although details remain unpublished. All schemes for regional rail in the NYC area hinge in some part on running trains through Penn Station.

Boston
Of all American suburban rail systems, Boston’s perhaps stands to benefit the most from the kind of center-city connector common on more developed systems. The system’s two terminals are separated by only about a mile as the crow flies, but the disconnect forces the North Side and South Side systems to operate essentially separately. The Boston region already has a unified transit operator, reasonable density around many suburban stations, and at least one line—Fairmount—that runs through a dense, poor, rapid transit-starved area and has been repeatedly identified as a candidate for rapid transit service. The numerous collar cities form natural endpoints for regional rail lines. A coalition has recently been formed to advocate for the
long-envisioned North-South Rail Link, and has secured at least a fresh state study of the possibility. Previous NSRL studies have tended to use the tunnel as equivalent to the early version of Thameslink, more as a way to make existing commuter rail operations more efficient rather than electrifying and transforming the entire network. Additionally, taxpayer and voter confidence in the MBTA’s and state’s project management expertise has been shaken by the boondoggles of the Big Dig and the Green Line Extension. So while Boston may very well have the most to gain from a regional rail approach, it might have the furthest to go politically (on the other hand, the decrepit state of the current commuter rail network might well work in favor of comprehensive modernization with appropriate political leadership).

Philadelphia

This paper has used Philadelphia second only to Chicago as an American example of the difficulties of implementing regional rail, and for good reason. Much of the story has been laid out here already. At the time of writing, SEPTA has finally secured a dedicated budget line from the state for the first time, and is devoting some capital funds to raising platforms across the system. Much of the SEPTA system sees little or no freight, so the question of regional rail will surely come back to the forefront soon enough.

Denver

The first non-legacy system featured here is also perhaps the most hopeful story for the regional rail mode. Indeed, as this paper is being concluded he first of Denver’s initial three regional rail lines has opened, with two more in the process of final testing and slated to open this year. All three will operate with at least half-hourly headways at most times, and two—the A Line to Denver International Airport and the Gold Line to Wheat Ridge—will boast 15-minute headways during the day. The new system is a product of the Denver Regional Transit Authority’s successful 2004 sales tax campaign, known as FasTracks. The system lacks some
features of the best regional rail services—for example, all three lines terminate in a stub-end terminal at Denver Union Station—but as the first mainline rail system since Illinois Central’s Chicago suburban operation designed for rapid-transit-like service, Denver will be a test case for the mode’s promise in an American context.

**Toronto**

While it may be cheating to include a Canadian city in an analysis focused on the US, the political, technical, and regulatory issues facing mainline regional rail in Canada are very similar to those in the US. Facing a complex political environment that has held up construction of new rapid transit in the fast-growing Greater Toronto Area, Metrolinx has put on the table a scheme for transforming the GO commuter rail network into an electrified rapid-transit-like network with 15-minute headways at most times. Metrolinx has gradually bought up from the freight railroads most of the infrastructure that GO uses over the last two decades, paving the way for passenger priority and higher levels of service. While the final form of the system is still in flux, it is explicitly envisioned as a way to both take pressure off of the crowded subways (Nagorsky, Casello, and Shalaby 2015) and provide rapid transit style service to far-flung areas, thus validating the flexibility that the conclusion to Chapter 3 envisions as a key aspect of the regional rail mode. Publicity material has labeled the proposed network an “RER,” associating it with Paris’ highly successful system—and reinforcing that some North American transit planners are, in fact, willing to learn from other systems in positive ways.

**Conclusion: Politics and Planning of Regional Rail in the United States**

This concluding chapter has synthesized ideas presented and analyzed on their own in the other chapters of this paper, and hopefully presented the beginnings of an explicit technical and governance agenda for the adoption of regional rail in the United States. It is the hope of the author that this synthesis has begun to break down some of the siloes into which the facts,

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dynamics, and challenges presented in the previous chapters have fallen in the typical American style of planning. From a technical perspective, this process is important because ultimately, taking ideas out of their siloes and bringing them together is the highest ideal of planning.

Regional rail presented itself as an attractive opportunity for this research project not only for the need-based reasons laid out in Chapter 1 but because it represents a field where that coming-together, that breaking down of siloes, has not happened in the US—and where the reward for making that synthesis happen could be enormous. And, while this analysis has drawn from several disciplines, it is ultimately the work of a planner, and rests on the belief that the planning profession has a key role to play in shaping the future of regional rail—and that planners can indeed learn something from the dynamics around regional rail.

For planners as well as for policymakers, the process of creating regional rail begins with comprehending the politics of the mode. The central argument of this paper is that the barriers to implementation of urban-suburban mainline rail in the US are, at the core, political rather than technical; thus, a process of technical implementation must proceed from political groundwork laid in advance. As an inherently boundary-crossing endeavor, regional rail must proceed from a place of coalition-building; but the challenge it lays before activists, planners, policymakers, and transit agencies alike is to create a new kind of coalition suited to the needs of this paradigm at this time. American governance, and therefore activism, typically breaks down along jurisdictional lines; but regional rail, inherently a boundary-crossing endeavor, demands boundary-crossing coalitions. As such, the emerging regional rail coalition will most likely incorporate both continuing and different groups from the conventional US transit coalition. Some elements should certainly carry over easily; downtown business interests have been a strong part of the regional rail coalition in European and Japanese experience, and were also
crucial supporters of Philadelphia’s Center City commuter tunnel, the US’s best example of regional rail infrastructure. Many existing commuter rail riders will surely embrace the promise of more reliable and frequent service, although others might oppose reforms in the mode’s grand tradition of gatekeeping—especially if conversion involves service disruption of any serious length.

What is clear is that making regional rail happen will require some degree of urban-suburban cooperation—a challenge at which planners should, in theory, excel. As Weir, Wolman, and Swanstrom (2005) argue, the political dynamic of urban-suburban competition and coalition-building is at a point of inflection in the US. Though urban-suburban tensions still exist, there is an emerging promise of coalitions that reflect shared interests, rather than the zero-sum competition that has for decades characterized city-suburb relations (at least in the popular suburban mind). “Alternative voices” in newly diverse suburbs and a new, more open-minded generation of leadership in both the public and nonprofit sectors offer the potential for coalition-building based on quality-of-life and even inequality issues (Weir, Wolman, and Swanstrom 2005, pp. 754-755). One example of this approach is the 2014 handbook Quality of Life (e). Quality of Place released by the Center for Neighborhood Technology and Open Communities, a nonprofit that advocates for diversity and equitable outcomes on Chicagoland’s wealthy North Shore. As suburbs change, policymakers will need to pull different policy levers to adapt; regional rail is one such lever. But pulling it requires a new kind of coalition—one that may be particularly well-placed to put pressure on dysfunctional transit governance, in particular. Perhaps, as suburbs diversify, their new inhabitants will find the political will and leisure time to spend on the political organizing that could undergird such a coalition. If the “new suburbanites” are willing to build common cause with both urban residents and business interests, a possibility
emerges for a coalition strong enough to defeat the entrenched forces of suburban gatekeeping and commuter rail exceptionalism. Suburban planners have the opportunity to help this process along and decisively shape a more inclusive future for their communities by embracing that transit comes with responsibilities (such as increasing station area density) as well as entitlements, and by stressing the extent to which suburban fortunes are interdependent with those of cities.

On the urban end, too, building support for regional rail requires new political calculations. Urban transit coalitions are typically focused on transit services perceived as “urban”—a focus that often sorts by mode into a focus on conventional heavy and light rail and buses. This is not a phenomenon restricted to the US; in Paris, much of the original opposition to the RER came from urban stakeholders who sought both to funnel investment to the Metro, which was perceived as an “urban” system, and to restrict growth in Paris, period. Webster (1989) takes a skeptical approach to the construction of the RER from a leftist-academic perspective skeptical of growth, even though the RER was (and remains) explicitly targeted at development of housing for lower-income immigrants and new residents. This leftist approach sees metropolitan growth as beneficial to, above all, developers and capitalists, and presents an anti-growth attitude as the only genuine leftist option—a framework familiar to those who follow today’s gentrification debate in the US. Kobrick (2010) presents a similarly skeptical approach to Philadelphia’s Center City regional rail tunnel, arguing that the money could have been better spent on the existing urban transit system. In this view, resources for transit and infrastructure are limited, and should not flow to a system that could benefit the already-privileged suburbs even if that same system also benefits urban residents.
On the other hand, perhaps such a perspective fails to admit the possibility that the same system could benefit both urban and suburban residents. Regardless of its value in the past, this growth-skeptical, zero-sum leftist approach to transit investment certainly appears outmoded in 2016, when suburbs are more diverse than ever, and the difficulty—arguably, impossibility—of “managing” revived demand for urban living is ever more apparent. The question of urban growth is always a touchy one for planners, and perhaps the profession could stress the importance of regional rail for regional solutions to housing and growth challenges. If, as is becoming ever more apparent, the coastal urban housing crisis is a product of high demand for walkable neighborhoods combined with an acute shortage of such neighborhoods, planners could emphasize to urban residents the ability of regional rail to densify suburbs and revive collar cities, thus offering a broader range of “urban” options for living on the regional scale, and taking pressure off urban cores.

The typical contemporary urban transit coalition is also heavily dependent on the promise of spin-off effects for minority communities, especially construction jobs for new infrastructure and unionized jobs as bus and train crew. The latter is a special challenge for regional rail, given the importance of reforming crewing practices in a way that would certainly impact union growth and might result in an overall reduction in employment. Finding a solution to keep minority and labor communities on-board is key to the future of regional rail, both for moral equity and pragmatic political reasons. One of the keys to that solution is certainly to point out that many regional rail efforts—Metra Electric, the Fairmount Line in Boston, Metro-North’s Penn Station Access in the eastern Bronx—will serve underprivileged communities that currently lack sufficient direct access to rapid transit. The cost of bringing better transit access to these area might be relatively low in terms of infrastructure—but stakeholders must understand
that better service cannot happen without work-rule reform. The Fairmount Line, where promises of better service have been repeatedly delayed by the extreme expense of operating conventional regional rail despite significant investment in new stations, could be a strong case study for this kind of argument. Ultimately, the labor issue might be the toughest part of the fight for regional rail. As much as bringing new suburban stakeholders into the regional rail coalition might be a challenge, retaining some elements of the traditional coalition might be even more difficult.

This analysis began by claiming that regional rail both is needed as a mode and is experiencing a boost in political momentum in the second decade of the 21st century. It concludes by attempting to boost that momentum by offering both a technical and a political way forward. 2016 will see the opening of the nation’s first new-build mainline rapid transit rail since the opening of the Illinois Central suburban services well over a century ago, in Denver. Advocate momentum is coalescing behind bringing rapid transit back to the Metra Electric District. Metro-North’s New Haven Line now runs two trains per hour even at off-peak times, a strong step toward transit-quality service. The US is on the cusp of a cooperative, shared, more egalitarian urban-suburban rail system. Hopefully this paper has helped ground in historical, technical, and policy research the increasingly viable effort to make sure that not just the rich, indeed, can have their trains.
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Glossary

**Brownfield** Land previously occupied by another, typically industrial, use. Often requires remediation and may be expensive to build on.

**Diesel multiple unit (DMU)** Self-propelled railcars (without a locomotive hauling them) powered by diesel engines. Common in Europe and Japan but relatively rare in the United States.

**Electric multiple unit (EMU)** Self-propelled railcars powered by electrical propulsion, drawing power either from a 3rd rail or overhead catenary. In use on several legacy systems in the US and the predominant form of regional rail rolling stock in most industrialized countries.

**Faregates** Turnstiles opened with a fare card, token, etc through which passengers can gain admittance to a platform.

**Greenfield** Never-built-upon land.

**Iron triangle** A self-reinforcing three-way relationship between political actors that tends to strengthen their interests and freeze out others.

**Interurban** A historic form of rail transportation in the United States that relied on trolley-like electric cars to travel between cities and provide commuter service. Most interurbans were cheaply built and abandoned by the 1940s, but they had significant real estate impact. The South Shore/NICTD is the last remaining “interurban” operation, although it now resembles typical commuter rail service.

**“Peaky” service** Transit service provided predominantly at peak (rush) hours. There is no official definition or ratio.

**Mainline rail** Rail transportation using the national railroad network, rather than dedicated subway or light rail track.

**Proof of payment** A fare-collection system that uses random checks and the threat of legal action to enforce payment rather than seeking to collect all fares. In use on many light rail systems in the US and most regional rail systems abroad—though not most US commuter rail systems.

**Rent seeking** The use of political or regulatory mechanisms to derive personal or particularist communal benefit at the expense of normal or even-handed functioning of those mechanisms.

**Snap-back** The practice of having a train crew waiting for a train to arrive at a terminus so a train can be “turned” immediately regardless of crew rest requirements.

**Stub-end** A dead-end terminal at which all trains must stop and reverse direction.

**Transit-Oriented Development (TOD)** A notoriously vague term referring generally to dense, walkable development near rail or high-quality bus service. 