LIVABLE STREETS WHERE PEOPLE LIVE

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Livable Streets Where People Live
Policy Lessons on Broadening the Civic Role of Residential Streets from Munich, Rotterdam, Copenhagen, and Malmo

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1 Denver Ingarta is an urban planner with the City of Portland Bureau of Transportation. He completed the research that informed this paper in fall 2011 as an Urban and Regional Policy Fellow with the German Marshall Fund of the United States.
In November 2011, I spent four weeks in four countries as a German Marshall Fund Urban and Regional Policy Fellow. I met with European counterparts in the fields of city planning, academia, advocacy, urban design, and engineering. The four cities on my study tour — Munich (Germany), Rotterdam (Netherlands), Copenhagen (Denmark), and Malmo (Sweden) — have decades of experience strengthening the civic role of residential streets.

This research finds that livable streets in Europe are supported by policies that ensure residential streets are designed to give priority to people rather than automobile traffic, to fit the scale and pace of humans over cars, and to recognize the importance of “sojourning” — in other words, opportunities to interact or linger. The result is that residents value the social aspects of their streets as much as the safety and physical amenities. In order to translate these lessons to U.S. cities, planners, engineers, and citizens will need to shift their understanding of the function of streets.
2 BACKGROUND

Streets in U.S. cities are generally optimized for automobile use. This car-centric model has dominated the planning practice for decades, but can no longer be sustained in the face of rising fuel prices, diminishing oil supply, rising congestion levels, mounting roadway maintenance backlogs, and declining public revenues. In cities such as Portland, Oregon, these factors are causing urban leaders to revisit the purpose of streets. Urban streets are more than inter-joined connections that serve car mobility and access. Rather, streets are public spaces that can promote social interaction, active living, and community identity. Streets can make entire neighborhoods attractive or unattractive place to live. In Portland, streets form the majority of the city’s public realm (places accessible to the general public), but this space offers residents few benefits once they are outside their cars. Yet, since “local” streets comprise more than 60 percent of the streets that the City of Portland maintains, they have a high potential to contribute to the social and environmental capital of a neighborhood.

Many planners and policymakers have not envisioned streets as potential contributors to a better living environment, and the auto-centric engineering practices that dominated the second half of the 20th century led to the construction of many wide, “divisive” streets. Prior to the automobile era, streets often served as the lifeblood of neighborhoods, knitting together the urban fabric of people and places that make up a community. Today, streets are more commonly considered barriers between a neighborhood’s residents. Streets, for example, often confine people to their private space or to a narrow sidewalk along the fringe.

As a result, residential streets can be dangerous and uninviting places due to the threat of speeding traffic. In 2008, the City of Portland reported that 58 percent of residents limit walking, bicycling, or taking transit due to concerns about traffic safety.¹ This concern may lead parents to instill a “fear of the road” in their children early in life. The risks vary according to the speed of traffic. The chances of surviving after being struck by a car decrease rapidly with even slight increases in speed. Statistically, nine out of ten pedestrians survive if the car is traveling 20 mph; five survive at 35 mph, and only one survives at 40 mph.²

There is a strong correlation between increased vehicle speed and wider streets. A recent study found that a neighborhood street would need to be 26-28 feet wide to operate at 25 mph.³ More than 45 percent of the “local service” streets maintained by the City of Portland are 30 feet or wider, often resulting in excessive driving speeds. The national highway manual that guides street design (the AASHTO Green Book) declares that “design speed,” or the speed selected to determine

the geometric design features of a roadway, is “not a major factor for local streets.” This disconnect often leads planners to inappropriately apply highway dimensions to neighborhood streets.

Speeding is not the only consequence of wide streets. Oversized roadways are land-intensive, making them unsuitable for space-deficient urban areas. Although public space is limited, streets are commonly built to accommodate the highest potential demand for parking and are designed to be wide enough for the largest size vehicles such as fire trucks. In addition, excessively wide streets introduce more pavement that must be maintained and require more costly infrastructure to treat added stormwater runoff.

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The challenge for planners in the United States is to rediscover how to cultivate more livable streets that accommodate the diverse needs of the people who use them. In November 2011, I visited the European cities of Munich, Rotterdam, Copenhagen and Malmo to study how planners in each design residential streets. Each city has a lengthy track record of restricting motor vehicle speeds and through traffic on residential streets to improve neighborhood livability and create residential streets that invite people to walk, bicycle, or sojourn, transforming streets into distinct spaces that are safe, comfortable, and attractive for people of all ages.

Though these four European cities have successfully restored or preserved the civic role of many of their residential streets, each have also experienced pressure to facilitate mobility for motor vehicles, either as the result of a strong car culture, the presence of a major international port, or growing car ownership. Yet, these cities have fought for decades to mitigate nuisances and safety concerns from motor vehicle traffic in neighborhoods. Following the 1973 Oil Crisis, the four cities featured in this study, along with other European cities, intensified their efforts to reduce their reliance on the automobile through an evolving set of policy strategies.

The engineering measures used to calm traffic in these four cities vary considerably; however, the multi-objective approach of designing people-oriented streets is consistent. In essence, these cities have adopted policies that allow for adapting the physical design of streets to match local context, acknowledging that one size does not fit all. In practice, that often means dialing-down the volume and speed of motor vehicles, especially in residential areas, and as a result reducing noise, auto emissions, and roadway footprints.

**Munich: Mobility on a Local Scale**

Over the past several decades, the City of Munich, Germany, has aligned its policies to achieve a high living standard while enabling residents to have diverse travel options. At the same time, Munich is proud of its car culture. It is a major hub of the auto industry, most notably as the home of Bavarian Motor Works (BMW). Automakers also play a leading role in shaping the city’s urban transportation system. Since 1995, BMW and the City of Munich have convened regular stakeholder forums, called the “Inzell-Initiative,” with representatives from government, business, academia, and advocacy organizations. These forums are a collaborative platform to identify solutions to traffic problems that ensure sustainable mobility, economic prosperity, and quality of life. In September 1995, Inzell-Initiative participants agreed to 11 urban transport principles, including to concentrate traffic on the main arteries to calm residential streets and to keep through-traffic away from densely populated areas. Munich’s Traffic and Mobility Management Plan, a strategic plan guiding the city’s mobility management and traffic management efforts, arose from the direct recommendation of the Inzell Initiative.

Although the city’s historic development patterns generally preserved access for private automobiles, Munich has retained a high share of trips on public transit and by foot and bicycle. In 2008, the modal shares for walking, bicycling, and transit were 28 percent, 14 percent, and 21 percent, respectively. This modal balance can, in part, be attributed to longstanding policies that cultivate a compact urban form, a strategy most recently articulated in *Perspective Munich* (1998), the guiding framework for development in the city, and the companion *Transport Development Plan* (2006). These policy documents direct the city’s investments in transportation to be compatible with its “urban” setting. They have also set the stage for
“Nahmobilität,” or neighborhood accessibility projects, which aim to improve conditions for non-motorized transport modes. For example, in Ludwigsvorstadt-Isarvorstadt, a neighborhood just south of Munich’s historic center, an action plan recommended affordable transport improvements such as the opening of one-way streets for two-way bicycle travel. The strategy, adopted in 2007, took a number of years to develop, underscoring the importance of strong and continued political leadership throughout plan development.

In addition to strong planning policies, Munich has utilized two types of traffic measures since the 1980s to minimize the negative impacts of traffic on neighborhoods, namely the Verkehrsberuhigter Bereich (traffic calmed area) and the Tempo 30 Zone (30 km/h – under 20 mph – zone). The Verkehrsberuhigter Bereich is a walking pace (7 km per hour) street without curbs and sidewalks where pedestrians are allowed to use the entire roadway. Motorists must not impede or endanger pedestrians and give them street priority. This design has limited application, and is generally reserved for streets that are only a few blocks in length and that primarily serve local access for residents along the street.

In 1988, Munich began converting entire neighborhoods to Tempo 30 Zones, which required fewer modifications to the existing infrastructure compared to traffic calmed areas. As a result, 80 percent of Munich’s streets are currently designated as Tempo 30. Most are simply treated with a 30 km/h (19 mph) sign placed just as motorists enter a residential area from a main route. Speed limit compliance is essential to success. In Munich, if a motorist is caught traveling at 40 km/h (roughly 25 mph) on a Tempo 30 street, the individual’s driver’s license is suspended for a month.

Munich is also expanding its use of the Fahrradstrasse, or bicycle-street, which limits traffic to a bicycle-speed (Tempo 30), and gives bicyclists priority while permitting them to ride side-by-side in the roadway. In 2010, Munich shifted its focus to promoting bicycle use through its “Radhauptstadt,” or “Bicycle Capital” initiative. This marketing effort highlights bicycling as a practical means of transport but also as an essential part of the urban lifestyle. Owing to its success, city officials reached their five-year mode share target for bicycling (i.e. 17 percent) in less than two years.

Across Munich, these policies and initiatives guide the implementation of engineering measures that foster the design of a coherent street network. The order of Munich’s street patterns (and especially the minimal use of speed reduction measures) contrasts starkly with other European cities in which streets are structured as labyrinths to prevent any cut-through traffic. Now, more than 20 years after Munich’s first Tempo 30 zone was established, the quiet residential streets in the city’s neighborhoods are the foundation of how Munich residents get around by foot and bicycle.
Rotterdam: The Sheltered Neighborhood

Throughout its history, Rotterdam has continuously reinvented itself through construction of state-of-the-art buildings and infrastructure, and through the flexible application of engineering and design standards. The transformation of modern-day Rotterdam began with the near-complete destruction of its central core during World War II. It was subsequently rebuilt and modeled after a modern U.S. city complete with high-rise buildings and broad streets, earning it the nickname “Manhattan on the Maas.” Rotterdam’s unofficial motto throughout the second half of the 20th century — “Cars are Welcome” — aimed to attract residents, shoppers, and businesses to the city. As Martin Aarts, Head of Spatial Planning, described, “in the past (auto) accessibility was our pride,” a distinction from other cities in the Netherlands. The image of a “car-based” Dutch city endures today: multi-lane streets feed directly into the city center and ample parking garages make it relatively easy to move from one district of the city to the next with automobiles.

Although the city was rebuilt after World War II on the principle of facilitating auto access, city officials simultaneously designed new residential areas that were protected from the negative impacts of motorized traffic. Neighborhoods developed since the 1960s therefore tend to exhibit a variety of street patterns that aim to reduce the amount of cut through traffic. The city’s current strategy, Traffic and Transport Plan for Rotterdam 2003-2020, continues this configuration and states there should be “no through traffic” in urban habitats. An urban habitat is defined as a contiguous residential area and its everyday destinations, such as supermarkets and schools.

As a result of the Transport Plan, planners have concentrated through traffic on the main (arterial) traffic routes located on the edge of the urban habitat areas, thus minimizing the negative impacts of automobiles on residential environments. In order to ensure adequate traffic capacity on the main routes, urban habitats are centrally served by public transit. In addition, planners designated seven primary mobility corridors (referred to as “Bundels” routes) to link the suburbs to the central city through necessary capacity improvements. Recently, a team of urban designers, planners, and engineers in Rotterdam developed a concept called “functional ambience” to evaluate the spatial quality of streets that places “flow and place” on an equal footing. Thus, even on higher-order streets,

5 Interview with M.J. Aarts, Annemieke Fontein, Marc Verheijen, and Martin Guit, Gemeente Rotterdam (November 9, 2011).

6 Project Grant Application Functional Ambience. Hogeschool Rotterdam, De Urbanisten, Gemeente Rotterdam, Goudappel Coflang, October 7, 2011.
planners account for place-making functions such as access and sojourning.

Unlike Munich, traffic planners in Rotterdam have significant flexibility in designing street systems. As a result, road patterns often reflect the decade when the neighborhood was developed. Early on, planners made street systems circuitous or constructed traffic barriers to avoid connections that might attract cut-through trips. Today, road networks follow a clear hierarchy comprising a mix of street types that serve different roles within the system. Flexibility to tailor the infrastructure to its location is critical since new suburbs are often reclaimed from marshland, creating a series of both streets and canals. Traffic engineers and planners approach the construction of new areas with an understanding that improvisation is always necessary. As a result, the street system in Rotterdam is a patchwork of distinct neighborhood networks (each offering different advantages and disadvantages in terms of improving the quality of life) rather than a coherent citywide pattern.

Recently, Rotterdam began placing greater emphasis on the needs of its youngest residents by endeavoring to become a “child-friendly” city. In 2007, the city launched a new program, Child-Friendly Rotterdam, to keep families in the city by improving the quality of children’s lives and enhancing residential areas. The program is supported in policy by the 2030 Rotterdam Urban Vision and a practical roadmap prepared in 2010 titled Rotterdam, a City with a Future. The roadmap outlines essential features of a child-friendly city, including gearing public spaces to the specific needs of children and creating safe traffic routes that encourage children to explore the city and to independently engage with city life.

One of the most useful insights I gained during my trip was the principle, shared by Professor Ineke Spapé of NHTV Breda University, that when residents are asked to sacrifice something, such as auto access, it must be clear and tangible what is being gained in return. Professor Spapé developed one model to achieve this called the “Kid Grid,” in which street space is given over as territory for neighborhood children to travel, play, or stay in a safe environment completely independent from their parents. Kid Grids, which have been developed in Amsterdam, Delft, and other Dutch cities, connect places that are identified by neighborhood children as important, such as schools, ball fields, community centers or playgrounds. They are routes with few cars, safe crossings, and high visibility. Neighborhoods that are designed to first meet the needs of children also means a constant eye is kept on the city’s future, and more practically, that automobile access is given secondary consideration.

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7 Interview with Professor Ineke Spapé at NHTV Breda University, Breda, NL (November 11, 2011).

8 Kidlint® (Kid Grid) is a tool developed and trademarked by Ms. Ineke Spapé and her firm SOAB. Breda, Netherlands.
Copenhagen: Streets to Foster Urban Life

Copenhagen's reputation as one of the world's most livable cities has reached near mythical status. The municipality has achieved a unique traffic mix that is the envy of countless other urban areas. For more than 50 years, Copenhagen has worked to reverse the negative effects of increased motor vehicle traffic through transportation policies that emphasize people over cars. This includes strategies such as the reduction of parking for private automobiles, introduction of car-free areas in the city center, investment in bicycle infrastructure, and expansion of public transit. In 2010, 87 percent of Copenhagen residents used a non-vehicular travel mode, i.e. bicycle (50 percent), transit (24 percent), or walking (13 percent), to reach their work. More Copenhageners commute by bicycle than any other travel mode. When asked why they bicycle, the most common response from Copenhageners is simply because it is faster (55 percent). Several recent projects implemented by Copenhagen's Traffic Department have required significant tradeoffs for automobiles to improve conditions for other modes. This most notable is a five-year project that moved 40 percent of the cars off of Norrebrogade, a major commercial corridor. The implementation process involved two pilot phases that officials credit with allowing them to engage the broader community and make necessary refinements to the street's final design.

Nonetheless, the number of daily car trips across the municipal border rose from 392,000 to 535,700 between 1970 and 2010. Copenhagen's approach to increased traffic, including the strategies mentioned earlier, has remained consistent over the decades. Since the time of the oil crisis, the principle philosophy has been to foster forms of mobility that are most suitable for urban life through strategies such as signal operations that favor transit and bicycle traffic and strict control of auto parking in the central city.

In particular, the theme of “urban life,” a metropolis that offers a high quality of living, is the centerpiece of the city's vision and goals for 2015, outlined in the 2009 guiding document *A Metropolis for People*. This vision states simply that “urban life is people” and is “what happens when we walk and hang out in public spaces.” Achieving the quality of urban life envisioned in Copenhagen requires urban spaces that are not only inviting to move through but also welcoming for people to stop and linger (sojourn).

Copenhagen's planners use a number of creative approaches to strengthening the placemaking features of streets, such as providing “talk-scapes” (where street furnishings are arranged in a manner

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9 *Copenhagen City of Cyclists: Bicycle Account 2010*, City of Copenhagen.
10 Ibid.
11 *Copenhagen: Solutions For Sustainable Cities*, October 2011, CITY OF COPENHAGEN.
that fosters social interaction) and “edge zones”\(^{13}\) (semi-private transition areas where the public and private realms meet) that invite people to stay as part of a citywide goal to have Copenhageners spend 20 percent more time in urban space by 2015.\(^{14}\)

The community-building benefits of public spaces that foster social interaction are magnified near people’s homes. One of Copenhagen’s main strategies for taming automobile traffic in residential areas is to establish 40 km/h (25 mph) speed zones in all residential areas by 2015. In one neighborhood, planners reduced speed limits from 50 to 40 km/h (31 to 20 mph) and traffic accidents dropped from 36 to 21 over a three-year period.\(^{15}\)

Despite these positive effects, the implementation of these speed zones has stalled in recent years. One of the major hurdles to reducing speed limits is that the Copenhagen police department, rather than the municipal traffic authority, has the final word in modifications to speed limits. It is less expensive to place speed limit signs throughout an entire district, as done in Munich and Rotterdam, than install costly traffic calming measures on every street. However, the police department has resisted this approach due to concerns over additional speed enforcement needs. In order for Copenhagen to reach its residential traffic calming goals by 2015, supporters of these goals must therefore achieve buy-in from the police department that safer, more livable streets are worth the tradeoff of increased enforcement.

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\(^{13}\) Århusgadekvarteret i Nordhavn, draft local plan. Municipality of Copenhagen. Review draft Aug-Sept 2011.


\(^{15}\) Traffic and Environmental Action Plan, 2009 Update, City of Copenhagen.

Malmo: Protecting Vulnerable Roadway Users

Malmo, Sweden, has experienced a complete transformation over the past few decades. In the mid-1980s, Malmo experienced an economic and identity crisis after one of its major employers, a shipbuilder, left the city and released its 6,000 employees. Over the next decade, Malmo lost another 27,000 jobs, propelling a shift from an industrial center to a knowledge and communications hub. Emblematic of this shift is that at the former shipyards today, the Western Harbor has reemerged as a model urban community with 4,000 residents and 300 companies that employ 7,000 people. This economic, environmental, and social shift in policy — coupled with strengthened linkages to Copenhagen following the construction of the Oresund Bridge (2000) and City Tunnel (2010) — has placed Sweden’s third largest city in the international spotlight.

Malmo is in the process of updating two key policy documents that guide improvements to its traffic environment: the 2012 Comprehensive Plan and the Traffic Environment Programme 2012-2017. The city has long been recognized as the bicycle capital of Sweden, and both plans continue to prioritize non-vehicular travel modes (walking, Södervärn bus station, Malmo (Source: Igarta)
bicycling, and public transport) as the foundation of the traffic system. During the height of the motor age (1960s), Malmo planners began investing in a system of physically segregated “cycle tracks” on major roadways. Today, Malmo has 260 miles of bikeways, and about 40 percent of all journeys to and from work are made by bicycle.

Between 2005 and 2009, the City of Malmo served as one of two lead demonstration cities for the European Commission-financed CIVITAS SMILE project. The project aimed to create a more sustainable, clean, and energy efficient urban transportation system by reducing traffic-related emissions and noise. The city had a budget of 300 million Swedish Krona (roughly $45 million) to implement more than 50 SMILE projects during that time period, including the introduction of low emission vehicles, demonstration bicycle infrastructure, and marketing campaigns. As a consequence of this campaign, officials were able to integrate the city’s transit system with its extensive bicycle network. This has led residents to take fewer trips by car in support of the city’s mission to eliminate what it defines as “ridiculous car trips” — those less than three miles.16 Between 2003 and 2008, for example, the percentage of car trips in Malmo dropped from 52 to 42 percent.16

Malmo’s road safety efforts stem from the national “Vision Zero” policy to eliminate traffic deaths and serious injuries, ratified by the Swedish Parliament in 1997. A blanket speed limit of 50 km/h applies to all Malmo streets within the urban area, including streets with the most modest traffic levels. In recent years, Malmo has considered converting entire districts to 40 km/h (25 mph) speed limits. To date, however, lower speed limits are primarily reserved for areas requiring the most heightened awareness by motorists, such as school zones or commercial streets in the historic center.

The city’s traffic safety strategy aims to reduce the number of those seriously injured or killed by 5 percent each year.17 The focus of new safety measures is to protect vulnerable roadway users (people walking or bicycling, or as the Head of Malmo’s Traffic Division put it, the “soft ones”) on busy four-lane arterial streets. These streets compromise only 10 percent of streets in the city but account for 40 percent of those injured in traffic accidents.18 The primary tool for improving the safety of these 50 km/h arterials is a raised speed table at zebra crosswalks, which forces motorists to slow down to 30 km/h at the points where the most significant conflicts with people crossing on foot or bicycle exist.

While the bulk of municipal efforts focus on improving safety along busy streets, some advances have also been made on quieter residential streets. A demonstration project in the Södervärn neighborhood, situated adjacent to a major bus station, is the most notable example. In 2000, Malmo’s trafiksäkerhetsprogram (traffic safety program) introduced a unique mix of traffic calming measures in Södervärn, including raised intersections, entry treatments and roadway narrowing on neighborhood streets. Still, the neighborhood-based safety project in Södervärn remains the exception. Malmo’s data-driven approach to eliminate the most severe accidents has shifted the priority for investments to main routes rather than local neighborhood streets. While this may be an effective approach to reduce severe traffic accidents on the busier streets, the city’s challenge is to ensure that it does not neglect the harmful impacts of automobiles on residential streets.


18 Interview with Per Wisenborn, Malmö Stad (November 22, 2011).
The livable residential streets in each of these four cities did not result from efforts to turn them into a public yard or play area. Rather, they were created as these cities gave priority to human-powered means of travel and the needs of people rather than automobiles. Since the initial adoption of traffic calming measures to combat the harmful impacts of cars on residential areas back in the 1960s and 1970s, these cities have gained decades of experience while refining their practices. The key lessons for creating livable streets that I brought back following my time in Germany, the Netherlands, Denmark, and Sweden can be condensed down to three basic principles: to emphasize sojourning, to prioritize active transportation, and to ensure a human scale and pace.

Sojourning: The Lost Third Function of Streets

The conventional view of the purpose of streets is to facilitate the efficient flow of traffic from origin to destination. National manuals that guide street design in the United States consider only traffic functions in designing streets; specifically, the “mobility” function that addresses travel needs enroute and the “access” function addressing where the trip ends. From this perspective, the traffic function can be equated to the human circulatory system, which distributes blood carrying essential nutrients and oxygen throughout our body. Nevertheless, it is necessary to recognize that blood is carried through our bodies primarily to sustain our vital organs. Similarly, streets are essential to convey traffic through our cities, but this function should not impair the places they connect.

One of the common threads of the livable streets I discovered is that they emphasize the “sojourn” (staying) function over the traffic functions by giving precedence to features that make them attractive place to dwell. The concepts of functional ambience, Verkehrsberuhigter Bereiche, talk-scapes, and edge zones are a few innovations highlighted earlier in the case studies.

In Germany, the national manual guiding the construction of streets recognizes that the sojourn (or Aufenthalt) function is of greater significance than traffic functions on quiet residential streets. In fact, the initial consideration in street design is whether emphasis should be given to demands for pedestrian traffic, bicycle traffic, sojourning, or on-street parking. Only after this determination is made are the transit function, traffic volumes, and the width of right-of-way considered, in that specific order.

This process stands in stark contrast to the auto-centric guidelines followed in most U.S. cities. While the AASHTO Green Book fails to articulate how the sojourn function should help define the geometric design of streets, it does recognize that “some streets serve primarily to provide access to adjacent residential development areas. In such

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20 "Richtlinien für die Anlage von Stadstraßen" (RASt 06). Forschungsgesellschaft für Straßen- und Verkehrswesen (FGSV). 2006.
cases, the overriding consideration is to foster a safe and pleasant environment whereas the convenience of the motorist is secondary. 21 This provision provides a strong basis for engineers in U.S. cities to emphasize sojournning on residential streets.

Making Active Transportation the Smarter Choice

The mix of traffic — the distribution of trips made by car, transit, bicycle, or foot — in the cities I visited is remarkably balanced. In fact, the share for active transportation (walking and bicycling combined) trips is above 40 percent in all four cities. This can be largely attributed to the cities’ compact urban form and past investments to create safe and comfortable conditions for people on foot or bicycle. As a result, these cities have a smaller share of trips made by private vehicle, and more space on streets that can be devoted to other purposes. Portland is renowned among U.S. cities as a place where both bicycling and walking are genuine options for getting around. Still, these two modes account for only 12 percent of commuter trips made by Portlanders.

The four European cities have managed to make active transportation the “smarter” choice by employing both “push” and “pull” measures to reduce car trips. Push factors are measures that make driving less attractive, such as traffic diverters for motorists, low emissions zones, and auto parking restrictions or fees.

In some instances, the pedestrian, bicycle, and transit networks have more effective connectivity than that offered to private vehicles. Pedestrian and bicycle pathways or automobile traffic diverters are strategically placed to offer greater permeability and give priority to sustainable travel modes. Interestingly, while none of the four European cities has the benefits of a rigid grid street system as in Portland, each still makes use of varying forms of diversions to restrict motor vehicles on important pedestrian and bicycle routes and residential streets.

Both Munich and Malmo have low emissions zones around their city centers. In 2008, Munich established “Umweltzone” to require all vehicles entering the center of town to display a sticker certifying compliance with low emissions levels. Since 2007, heavy goods vehicles have been required to register to enter Malmo’s “miljözon,” the environmental zone established within the city’s inner ring road.

Although these types of disincentives are an essential part of the strategy to reduce unnecessary motor vehicle traffic, I consistently heard from the experts I interviewed that “push factors” are only effective if complemented by “pull factors” to make sustainable travel options more attractive. During my tour, I was introduced to several imaginative and successful mobility management and marketing initiatives, notably Munich’s “Radlauptstadt” initiative and Malmo’s “No ridiculous car trips” campaign.

Humane Streets: A Human Scale and Pace

As renowned Danish architect and author Jan Gehl points out, we humans naturally experience our environment at a walking pace and at eye-level. By designing our cities to ease automobile movement, our streets are built at an imposing scale that is unwelcoming, even hostile, to people. In Copenhagen, I had the opportunity to visit Gehl’s urban design firm, Jan Gehl Architects, which recently assisted the municipality in developing its vision of A Metropolis for People. The plan calls for urban spaces, including streets, that are inviting to people and designed on “a human scale with good opportunities for standing up, walking around, and sitting down.”

On a typical residential street in the United States, two-thirds of the space is devoted exclusively to automobiles with enough space for two cars to pass without slowing and parking on both sides of the road. This leaves only one-third of the remaining public right-of-way to be shared by people and landscaping. In Europe, I discovered streets that were built with a better balance between the needs of cars and people. In particular, engineering standards allow cities to establish walking- and bicycle-speed streets in Germany, the Netherlands, Denmark, and Sweden.

Soon after the 1973 Oil Crisis, the “woonerf,” a pedestrian-speed residential street where people can walk or play in the middle of the roadway, was introduced in the Netherlands. Other countries followed the Dutch example by adopting walking-pace (5-15 km/h) streets of their own, including the Verkehrsberuhigter Bereich in Germany (1980), the gångfartsområde in Sweden (1994), or the lege- og opholdsgade in Denmark (1978). In the cities I visited, walking-pace streets are limited to isolated segments rather than serving as major elements of the street system. The most successful approach to speed management on residential streets that I observed in Europe is to establish streets that operate at 30 km/h (about 20 mph), which amounts roughly to a bicycle-pace.

In each of the four cities, I selected a model street, which exhibited qualities of being “livable,” in

order to conduct fieldwork and a short survey of residents who live there. More than 20 residents of the four cities responded. Some features that these “livable” streets had in common were street trees, homes oriented to the street, narrow roadways that require passing cars to queue and limited on-street parking. The most ubiquitous signs of livability I encountered were places to play or relax, with chalk drawings made by children on the roadway. Along with the “quiet” conditions on their street, the other frequent response residents gave to the question of what they like best about their street was their “neighbors.” And, nearly 70 percent of respondents indicated that they talk with their neighbors either daily or weekly. I believe this expression of social interaction is a direct result of conditions where all users, including car drivers, travel at a more human pace.
Overbuilt roadways not only generate unsafe travel speeds, consume more space, and produce more storm water runoff, but they are often more expensive to build and to maintain. During difficult economic times, it is natural for cities to reevaluate the policies that are essential to support a higher quality of life for their residents. Now is the right time for U.S. cities to start ensuring their streets are more-suitably sized to the neighborhood scale. Some planners and engineers in U.S. cities might be surprised to discover that the AASHTO Green Book calls for conditions fostering a safe and pleasant environment to be the "overriding consideration," above convenience for motorists on residential streets used primarily to provide local access. While Portland is in many ways decades behind in meeting the transportation targets of the four cities I visited, it has already taken steps to follow their lead. Portland’s City Council recently adopted two ambitious plans, namely the Climate Action Plan and the Portland Bicycle Plan, which recommend transformative policies central to creating a more livable streets. The climate plan aims to prioritize low-carbon modes and reduce auto dependency to reach new emissions targets. The bicycle plan establishes the goal of making “bicycling more attractive than driving” for short trips — a reflection of the “smarter choice” lesson from the European cities. At the same time, a new state law gives local jurisdictions the legal authority to introduce a 20 mph (“bicycle-speed”) speed limit on streets in “residential districts” with fewer than 2,000 vehicles per day if they are designated pedestrian or bicycle routes.

My research builds upon decades of good thinking and action, both in Portland and in Europe, to broaden the role that residential streets play within our communities. The time I spent in Munich, Rotterdam, Copenhagen, and Malmo enabled me to learn from local officials and experts about policies and practices that have proven essential to ongoing efforts in their cities. My research looks beyond physical engineering measures to understand the values, goals, and political realities that led to their implementation. In each city, strong and consistent political leadership and a policy framework supporting tradeoffs for auto-access were necessary for success throughout implementation. If U.S. cities decide to create more “livable” residential streets such as those I discovered in Europe, local leaders and officials will need to:

- Emphasize the sojourning function of streets
- Make walking and bicycling the smart choice for short trips
- Right-size streets so traffic moves at a more human-pace

Cities across the nation are beginning to shift their transportation priorities to reduce their reliance on automobiles. By emphasizing people on quiet neighborhood streets, which typically serve a low traffic function, cities can remove barriers to walking and bicycling and create safe spaces nearby people’s homes. Livable streets open the door for residents to leave their car behind for short trips and to begin viewing their street as a place not only for travel but as an integral part of the public realm.
