Designing Cities for the Elderly

By

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Abstract

This thesis seeks to answer how urban design in an established town can be adapted to accommodate an aging population. It uses the town of Brookline, Massachusetts, as an example of a community making active efforts to improve its design and services to meet the needs of its elderly citizens. Among the many challenges seniors face in Brookline are barriers to mobility, need for activity and company, threats to physical safety, and limited range of travel. Through careful planning and design, local governments can make physical improvements to the public environment to allow seniors easy access to all parts of the town or city, and these improvements benefit people of all ages as well. However, institutions like the Senior Center in Brookline are essential for providing a high quality of life, by hosting recreational and educational activities, organizing services and outreach to isolated seniors, lobbying for appropriate representation in local policymaking, and increasing awareness of elderly issues. A combination of infrastructure improvements, services, and long-range planning can overcome the obstacles of cost, ignorance, and poor design to make the public environment accessible to all ages and abilities.

Thesis supervisor: Sam Bass Warner
Title: Visiting Professor of Urban History
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Introduction

How can an established town adapt its urban design to accommodate its elderly population?

In July of 2006, I had the opportunity to visit the city of Seoul and meet much of my extended family. One night, I traveled to the outskirts of the city to see a great-aunt and uncle whom I had never met before. I was shocked to find them extremely frail, physically and mentally, and living alone in a tiny basement apartment. They struggled to climb down the stairs to enter their own apartment, and I wondered how they might navigate the automobile-dominated streetscape of their neighborhood. In cities where pedestrians are denied at-grade street crossings, wide sidewalks, elevator access to subway stations, and other amenities, the elderly are essentially trapped by their surroundings. The public realm, if not equally accessible to all, cannot truly be public.

Many are aware of the fact that the United States faces a population wave of older, retirement-age adults in the coming decades. A quick literature search brings up books and articles that focus on designing adequate housing to accommodate older people who are limited by infirmities, either mental or physical. Much of this literature is concerned with interior design and configuration, though a few publications deal with landscape design and the outside environment. Other areas of study investigate developing technologies that can help care for the elderly at home, while giving them the means to communicate with the outside world through telematics. The conclusion one might draw from these articles is that the best way to deal with the elderly is to sequester them in cleverly designed residential
complexes and shelter them from the dangers of the outside world, with the added bonus of keeping them out of the way of younger generations!

I believe that this is neither an optimal nor sustainable solution. Many senior citizens cannot afford to buy such homes, nor would they necessarily want to. Quality of life cannot be judged solely on access to basic food, housing, and medical needs; for many it also includes meaningful interactions with a broader community, civic engagement, the opportunity to attend entertainment and cultural activities, and/or proximity to family or friends. Do the elderly simply want peace and quiet? Or do they want the activity and noise of the neighborhood street or city park? This is difficult to answer because it asks the fundamental question of what makes people happy.

Assuming that I am right, however, and that older people do desire more than nursing homes and assisted living, then we must look beyond the scale of a single residence and design neighborhoods and cities for older people as well. The elderly must remain a fixture of urban life, instead of being exiled to the outskirts of cities and towns. They must be made welcome to live in mixed-generation neighborhoods. To do so, adjustments will be required: considerations for mobility (gentle slopes, handicap access, wider sidewalks, ground-level street crossings), for access (streets and storefronts oriented to pedestrians, parking placed at the rear, plenty of open space), and for readability (easily navigable cityscapes, good signage, audio and visual cues). Some of these adjustments are simply standards for building-level improvements that must be scaled up to the level of urban design, others are unique to the problems presented by various degrees of dementia.
What is striking is that many of these urban design improvements that are meant for older people would also be considered good urban design in and of themselves. The need for readable streetscapes, good pedestrian environments, safety and amenities, etc., all bring to mind the ideals of Kevin Lynch, Jane Jacobs, and other experts in the field. In the struggle to improve the design of our cities, could the rise of an elderly class provide the political will to implement many of these long-standing ideals? Could these changes improve the urban environment for everyone?
The other questions that this thesis seeks to answer are:

- What specific elements would improve access for seniors with a range of mobility constraints in urban areas? What elements would ensure safety from accidents, crime, and health hazards? How can urban design assist those with mental disabilities?

- How would these design principles affect other people? Is good design for the elderly also good urban design in general?

- How can these principles be applied to less dense, suburban communities? What are the less obvious obstacles to providing amenities to elderly residents?

- How important are these principles to quality of life, relative to other services and programs that a community could provide?
Literature review

There is a great deal of literature on housing design for the elderly, but not as much attention to the public realm. Housing design tends to focus inward on making interior spaces and private outdoor spaces safe and usable, but does not look beyond to the street, public open space, or interior of non-residential buildings. However, there are some useful housing design principles that can apply to the public realm.

Beginning most literature is a frank discussion about the aging process, and the most common physical and mental changes to expect. Vision suffers as the eye gradually loses the ability to distinguish color, depth, low light, or peripheral cues. Hearing may diminish at all frequencies, or only at higher pitches. Muscle strength declines as well, making older people less agile and sometimes forcing a “shuffling” gait with shorter steps that barely reach off the ground. Skeletal weakness is also a major concern, as bones break more easily and do not heal as well with age.

All of these changes affect one’s ability to safely navigate a hazardous environment alone, making driving particularly dangerous but also necessitating more cautious pedestrian behavior.

The onset of disease may further exacerbate these changes. Arthritis mainly affects older people, and makes certain kinds of movement painful. This may severely slow a person’s walking speed, or make their gait unstable and susceptible to falling. Rheumatism, heart disease, high blood pressure, and the aftermath of a heart attack or stroke may similarly

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affect flexibility and range of movement. Kidney disease may result in incontinence, limiting an elderly resident’s range of travel if there are few accessible restrooms outside their home.\(^2\)

Dementia is a major problem that forces many older people to depend entirely on outside care. Dementia is a set of symptoms that include loss of memory, language, perception, and ability to perform complex tasks; Alzheimer’s disease is its most famous form. Within the home, this presents practical safety problems: stoves may be left turned on, cleaning and cooking tasks repeated needlessly or forgotten, etc. Fear of getting lost may force some to stay at home, while others may disregard the danger and wind up disoriented in places once familiar to them. While the effects of dementia can be devastating, they also occur gradually and to varying degrees. By adapting the environment, communities can extend the time in which dementia-afflicted seniors can live independently, and delay the transition to complete care as much as possible.\(^3\)

Calkins (1988) presents design guidelines for home environments that also apply to the public realm. Housing designers can combat disorientation caused by memory or language loss by improving the wayfinding cues in the environment, such as distinct color schemes in hallways, clear signage, variation in décor between similar rooms, and landmarks.\(^4\) Likewise, urban design must seek variation between public spaces, generally easier in outdoor spaces that include natural features and topography. However, even in outdoor spaces there is regularity and repetitiveness; consider how easy it is for newcomers to become lost in cul-de-sac-riddled suburban neighborhoods or to confuse similar tracts of row-houses!

\(^3\) Caso, O. *The City, the Elderly, and Telematics*. Delft University Press, The Netherlands, 1999. pp 139-140.
Like hallways, streets should be visually distinct. Latent cues like plantings, furniture, lighting, and storefront appearance are all possible points of focus that set one street apart from another. People in the mild stage of dementia often deliberately use such cues to navigate their neighborhoods, by recognizing details like the number of streetlamps on a street or color of roof tiles on a friend’s house. Landmarks are also vital cues for wayfinding, and in the public realm usually take the form of unique buildings or monuments. Lynch showed that landmarks are one of five major elements in one’s mental image of the city, and are more useful to long-time residents than knowledge of paths and street patterns. Because of this, some continuity of environment is essential for the elderly to maintain these mental and emotional links over time; rapid business turnover (especially restaurants), demolition of historical buildings, and constantly shifting transit stops are not only inconvenient, but also very disorienting.

Access is a fundamental requirement of outdoor design, both in the transition from inside to outside, and in between outside areas. Ramps, handrails, and shallow steps all make it easier to traverse between areas of different height; public buildings, storefronts, and curb corners must be designed with this in mind. Textured paving can provide a tactile signal that a ramp or step is approaching, especially useful for the visually impaired.

Meanwhile, even level ground presents obstacles to wheelchair users and others with mobility constraints, in the form of cracks, holes, and loose footing. Uneven or loose paving like gravel is clearly risky, as are potentially slick or sticky surfaces like stone or asphalt. All

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materials have advantages and disadvantages in cost, appearance, and maintenance, but planners should choose the material that maximizes firmness, grip, flatness, and ease of maintenance.\textsuperscript{8}

On a wider scale, accessibility may be hampered by the layout of streets and buildings. Suburban neighborhoods composed primarily of curving roads with many dead-ends force pedestrians to walk longer distances to get between two points, and are all the more confusing to navigate when each area looks identical.\textsuperscript{9} This may prevent people from reaching the services they need, even if their destinations are within a reasonable distance from their homes. One way of remedying this problem in an already-developed neighborhood is to extend the range of travel by strategically providing amenities like restrooms and seating areas along common paths.

For seating areas to be useful, they must be inviting and thoughtfully placed. To an extent, privacy is important for making a seating area appear safe; a bench with its back against a wall or planting is more appealing than a backless bench out in the open. Too much privacy may also thwart a seat’s usefulness, since people-watching is a common activity from public benches, and being able to monitor surroundings also adds to the sense of security. Benches need to feel comfortable, be high and wide enough to easily seat less-flexible users, and have armrests to support weight when standing or sitting.\textsuperscript{10}

The Universal Design movement offers the most comprehensive approach to making products and environments as broadly accessible as possible. Universal Design


counts the elderly and people with disabilities among its target users, and seeks design solutions that are equitable and do not stigmatize or sequester those with disabilities. The existence of barriers, both physical and psychological, to public areas is not just an inconvenience, but an encroachment upon the right of disabled people to equally participate in civic life. There are seven Principles of Universal Design, which Manley (2000) applied to the scale of city and street.\(^\text{11}\)

<table>
<thead>
<tr>
<th>Principle</th>
<th>Implication for planning city and street</th>
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<tbody>
<tr>
<td>1. Equitable use</td>
<td>Facilitate equal access to streets, living areas, non-motorized transport, and neighborhood facilities.</td>
</tr>
<tr>
<td>2. Flexibility in use</td>
<td>Development process allows for adaptive change; provide choice of path on multiple streets.</td>
</tr>
<tr>
<td>3. Simple and intuitive use</td>
<td>Make areas easy to navigate through legible design and provide direct routes for pedestrians, not cars.</td>
</tr>
<tr>
<td>4. Perceptible information</td>
<td>Convey information about the environment to people of all sensory abilities (variety of audio/visual/tactile cues).</td>
</tr>
<tr>
<td>5. Tolerance for error</td>
<td>Place high priority on safety from accidents, crime, health problems, etc.</td>
</tr>
<tr>
<td>6. Low physical effort</td>
<td>Prioritize pedestrians and cyclists in neighborhood and street designs; make the road network permeable.</td>
</tr>
<tr>
<td>7. Size and space for approach and use</td>
<td>Pay attention to minimum space needs for all humans.</td>
</tr>
<tr>
<td>8. Adding to human delight (added by Manley)</td>
<td>Recognize urban design as central to planning process.</td>
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Methodology

I focused my research on neighborhoods around Coolidge Corner in Brookline, MA. It is a site with a high concentration of older residents, both in affordable apartment units and in single and multi-family houses. It also contains the town’s Senior Center, which serves older residents from all over town. However, the area is not exclusively older generation; many families and college students live nearby, and the street presence is largely diverse in age, ethnicity, and income. The area has a diverse mix of land use, services, and transportation options, and is generally regarded as a very good place for older people to live. Part of this thesis is to determine how urban design contributes to this fact and reputation.

The town of Brookline also has a very active planning department, as well as a Council on Aging that deals specifically with elderly services and quality of life in Brookline. Each of these departments has played a role in addressing elderly needs through services and the design of the neighborhoods around Coolidge Corner, and each continues to advocate improvements. This planning experience may prove applicable to other similar-sized, long-established towns, and this thesis also uses Brookline as a case study on how town governments can successfully address similar needs.

Senior interviews

I conducted a series of interviews at the Brookline Senior Center with elderly residents of Brookline. With the help of the Senior Center staff, I was introduced to many of the Center's regular visitors, and gave a brief description of the purpose of my research. I invited them to speak with me individually, for up to half an hour, on the state of
Brookline’s outdoor environments, and how urban design affects their lives. Usually, I followed this up by approaching seniors directly and asking for an interview, though in a few cases interested seniors came to me and volunteered themselves.

Each interview took place in a public setting, often inside the coffee lounge of the Senior Center itself. I asked a pre-written set of questions (see Appendix A), not strictly adhering to any specific order, but trying to cover all the important points within the span of the interview. Sometimes the conversation would flow in unexpected directions, and participants offered many opinions without originally being prompted. Because of this, the list of questions grew throughout the study period, as participants brought up issues I had not previously considered but felt were quite important to explore.

Altogether, I conducted 18 complete interviews with volunteers, who covered a wide range of age, mobility, and length of residency in Brookline. Participants were very forthcoming with opinions, though it was sometimes difficult to communicate due to hearing, speech, and cognitive problems.

Additional interviews

At the same time, I requested interviews with officials and staff in the Council on Aging and Brookline town government. The focus of these interviews was the role of the Town in meeting the needs of its senior citizens. I was able to speak with the following people:

• Ruthann Dobek, Director, Brookline Council on Aging

12 Their profiles are presented in aggregate in Appendix B. This is to prevent potential identification and maintain privacy of the participants.
Personal observation

I supplemented these interviews with personal observation visits to public places in Brookline. Primarily, these were the streets and parks around Coolidge Corner, but also institutions like the Public Library and Senior Center. These visits took place on foot, with camera and notebook to record street conditions and behavior of older pedestrians. In total, I made ten walking trips through various areas of Coolidge Corner, observing the same places at different times of day. All of these trips took place in January through April 2007, and are thus skewed towards conditions under the New England winter climate.

Problems with methodology

The population sample of interviewees may not be representative of the entire elder population of the United States, or even the Commonwealth of Massachusetts. Brookline is, on average, a wealthier community than most towns of comparable size, and benefits from proximity to Boston and MBTA (Massachusetts Bay Transit Authority) service. The town
enjoys a good reputation for its education system and low crime rate, and has a history of elderly activism that has resulted in services like the Senior Center. Furthermore, the fact that I met each participant through the Senior Center implies that the sample is biased towards healthier, more active seniors; there are many who do not frequent the Senior Center, or indeed, leave their own homes on a regular basis. That some participants volunteered for the interview also implies that they might have stronger opinions on the topic than the average senior.

Another point of concern is the small size of the sample population (18 participants) relative to the large number of seniors living in the town. As this experience has demonstrated, the elderly vary greatly in age, physical ability, ailments, personal history, and outlook on urban design; a larger pool of interviewees might have captured a wider range of opinions, or shown a greater convergence on any one viewpoint.
Access to the outdoors

Why should designers and planners pay attention to the outdoor environment? With door-to-door food services (Meals on Wheels), at-home health care, telecommunication, and online shopping, it seems that now, more than ever, the elderly have the tools to stay at home. With advancing technology, seniors can remain indoors, out of harm’s way in the urban environment. Furthermore, popular culture often depicts the elderly as predisposed to becoming shut-ins, out of introversion or fear.

The Universal Design movement, however, counts equal access to outdoor environments as a fundamental right. In this view, everyone is entitled to move freely out of their home, regardless of physical or mental disability. Barriers, both actual and perceived, infringe on these rights, and a just society must make efforts not only to remove a minimum of barriers to accommodate most citizens, but to create public spaces that are equally accessible and enjoyable to all citizens.¹³

In reality, do the elderly demand access to the outdoors as a right? Almost every participant expressed that getting outside on a regular basis was essential to their physical and emotional well-being. To them, it was especially important for older people to leave their home once in a while; a few even expressed sympathy for those who had become "stuck" in their own homes. One participant described herself as "not the type of person

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who can sit in the apartment and stare at four walls all day." Another warned, "If I can't get out, I get very cranky."

One of the main attractions of leaving the house is the chance to see other people. For some retirees, socializing with others becomes the primary activity of their days. Half of the participants described meeting friends at least once a week, either in public places or in each other's homes. It is important that they have access to and from residential areas, as well as places to sit freely and socialize throughout the day. Towns can supply these places through institutions like the Senior Center and Public Library, or through open spaces with benches and tables. Cafes and restaurants provide much the same service and are often conveniently located.

Another common reason for leaving the house is health; one in three participants went on outdoor walks at least every other day, simply for the sake of exercise and fresh air. The range and nature of these walks varied greatly with the physical capabilities of each person. Some were able to walk miles across town, while others were restricted to a block or two from their home, even with the assistance of an aide. Having pleasant and safe paths to take these walks is important, while parks and commercial areas offer sights and incidental experiences that vary across the seasons.

Summer months present a more serious threat to the homebound: heat stroke. Many seniors live in apartments or older homes that lack air conditioning, and in some cities the high temperatures brought on by heat waves can be life-threatening to people within their own homes. Without a daytime occupation (which could provide a climate-controlled
work environment) or the disposable income to pay for air conditioners and energy costs, they must find shelter from the heat within their own communities. Fortunately, many local governments are designating or directly providing "cool-off spots" for the public to use in the daytime; the Senior Center is one such designated spot in Brookline. Ensuring easy access to and widespread knowledge of these sites is yet another service essential to seniors in cities.

Several noteworthy destinations came up during the interviews multiple times, and illustrate the above points well:

*The Senior Center*

For some, visiting the Senior Center is a daily ritual, while others choose to take advantage of its services on a weekly basis. It is a convenient place to meet other seniors and engage in social activities. Its first floor reception and coffee lounges offer a comfortable place to sit, order cheap coffee, read the paper, and converse or host bridge games. More structured activities like classes and concerts provide regular entertainment, exercise, and education. For those who require personal aides, a trained staff runs an adult day program that helps visitors live an active life outside the house.

For its proponents, the Senior Center is an irreplaceable and essential building. It brings together the multitude of services that the Council on Aging provides to the community into a single, accessible space; many of these services were once scattered across the town at the cost of efficiency, visibility, and continuity. The ability to enjoy a full day of activities within one elderly-friendly building is especially valuable to those with limited mobility. The arrangement also allows for chance encounters with peers and new classes or
activities that might otherwise go unpublicized. Furthermore, the Senior Center creates a convenient forum for interaction with the local government, whether as a sounding board for complaints or as a staging point for services, such as an MBTA subway pass registration drive.

The Senior Center is also taking the place of services that the private sector is increasingly less able to provide. For example, the loss of McDonalds at Coolidge Corner has left many local seniors without a convenient place to meet for cheap coffee and to sit for extended periods of time (this McDonalds was particularly accommodating to older customers). The Council on Aging actively publicizes the fact that seniors can enjoy the same environment in the Senior Center coffee lounge. Other services specifically catered to seniors that the Council provides for free include health education classes, art classes, computer training, and concerts.

Coolidge Corner

Coolidge Corner is the main commercial district in Brookline, the converging point of several important transportation routes through the city, and roughly at the center of Brookline's high density housing. As such, it is the locus of much elderly activity during the daytime, a fact plainly visible by their dominance of its sidewalks during the morning and early afternoon. As one participant described it, Coolidge Corner is "to me, the center of the world." Most of the following destinations are part of or near Coolidge Corner.

Favorite restaurants

Most participants mentioned a favorite restaurant when prompted for a common destination. There was no strong opinion towards independent restaurants versus chain
franchises; location and cost seemed to be as important as local flavor and history. Aside from food and a place to sit, restaurants provide a stable meeting point for groups of friends, a converging point for common experiences. Maintaining the small restaurant mix in Brookline preserves a sense of continuity important to the lives of many of its long-time residents. Some examples include:

- **McDonalds in Coolidge Corner** - Now defunct, this McDonalds location was known for serving relatively cheap coffee and allowing customers to lounge inside the restaurant for the better part of the day. Several participants noted its generally elderly-friendly environment, and were disappointed that it was being replaced by a bank.

- **Coffee shops** - Participants had mixed feelings for the increasingly ubiquitous Starbucks and Peet's Coffee and Tea; they are conveniently located and offer places to sit and converse, but are more expensive and less flexible than the much larger McDonalds dining area.

### Favorite stores

- **Trader Joe's** is a common favorite for shopping and strolling. Participants enjoyed its convenient location in Coolidge Corner, food selection, affordable prices, and friendly staff. They also enjoyed that during the day, most customers were in the same, older age group. Similarly to the Senior Center, Trader Joe's is a prime location for incidental encounters and new friends.

- **Further down Harvard Ave from Coolidge Corner, Stop and Shop offers many of the same benefits:** convenient location, helpful staff, and similar age group. One participant liked the scale of the grocery store (it is more compact than most...
supermarkets, with brick architecture that matches surrounding older buildings), and that there was plenty of well-placed handicap parking.

- Brookline Booksmith is a beloved local bookstore among many Brookline residents, one of the few independently owned and operated bookstores in the vicinity. The history and community involvement tied to this store is enough to maintain the loyalty of many older customers, even those who have access to cheaper prices through online bookstores.

- Coolidge Corner Theatre also commands a loyal customer base due to its long history and senior-targeted events. It offers reduced matinee prices for seniors (recently extended to all disabled persons) and is a popular place to spend daytime hours, especially in the summer. In addition, the theatre is fully handicap accessible and equipped with assisted listening devices.

Institutions

- Churches, temples, and other places of worship are centers of community for many seniors, and are important destinations at least once a week. They also serve as local landmarks in Brookline, acting as waypoints for navigating through residential neighborhoods.

- Brookline Public Library is located centrally in the town, next to the high school and town hall, while its branches serve Coolidge Corner in the north and Chestnut Hill in the south. The library runs book groups, ESL programs, art exhibits, and free movie screenings, all geared towards adults and seniors (there are many separate programs for teens and children).
Medical facilities are certainly an important destination for seniors, who may require regular trips for therapy or preventive care. The Longwood Medical campus is adjacent to Brookline and is a common stop on the Brookline Elderbus, a shuttle for seniors that serves all major Brookline senior housing complexes. However, Jeff Levine, director of Brookline’s Planning Department, notes that there is a general lack of doctor’s offices in the Coolidge Corner area, which means most seniors must rely on public transportation to reach medical care.

- Parks offer places to relax, socialize, and enjoy views of nature. Participants cited areas like Chestnut Hill and Jamaica Plain Reservoir as lovely places to walk. More important, however, was proximity; participants appreciated having some green space, however small, close enough to walk easily to from their home. A couple also enjoyed gardening and went out daily to maintain a plot in a public gardening space.

**Perceived barriers to the outside**

One common thread in Universal Design is the idea that people are not inherently disabled. The view that certain people are deficient, and that accessibility is much more their problem than that of society, leads to us approach design for their needs as an afterthought, an attachment to an already complete scheme for access. For instance, legal codes for building access and anti-discriminatory legislation, while helpful, are often insufficient because they focus only on the technical aspects of providing access. The results are spaces with the bare minimum amenities to accommodate wheelchairs.

Instead, Universal Design declares that the environment disables people, through barriers both physical and psychological. Since we are responsible for the design of our own
environment, allowing these barriers to persist is tantamount to denying disabled people equal rights to access. As Goldman (1983) notes:

Accessiblity permeates all aspects of a disabled person's civil rights. Without access, rights to be abroad in the land and the full panoply of protections and duties can be rendered meaningless. To a disabled person a six-inch curb may look as large as the Berlin Wall. 14

Thus, providing destinations for seniors to visit regularly is half the problem. The other half consists of barriers, both real and perceived, that prevent older people from venturing outside. Such barriers do not have to persist over years to bring on shut-in behavior; even a stretch of a week trapped in one's house can make it difficult to return to a normal outdoor routine. As one participant put it, "If you don't go out, it gets harder to go out."

What keeps seniors from getting outside? Almost everyone surveyed brought up inclement weather, either as a minor inconvenience or a life-threatening danger. Certainly, it is dangerous for anyone to brave a New England snowstorm, but the piles of snow ice and puddles that follow in its aftermath are what really constitute a barrier to mobility. Prompt snow clearing is essential to maintaining an accessible public realm, and the responsibility falls on the community to clear sidewalks, street crossings, and public spaces of weather-related barriers. Transportation options near the home, during extremes of cold, heat, rain, and snow, are also essential for getting seniors to their routine destinations.

Every participant felt safe enough to walk anywhere alone in Brookline in the daytime without fear of crime. Much of this owes to Brookline's favorable reputation and residential character; there are few areas in the town out of sight from a neighborhood or well-traveled pedestrian street. “Eyes on the street” are everywhere in the daytime, and none of the participants could think of a place they would be afraid to walk alone.

In contrast, more than half the participants were apprehensive about walking outside alone at night. Part of this stems from the loss of visual acuity in darkness that comes naturally with aging; those seniors who still drove cited this as a reason for not driving at night. Darkness affects other drivers as well, increasing the danger to pedestrians, especially those who are less agile. More importantly, however, participants feared the higher incidence of crime at nighttime. A lack of lighting was enough for one to avoid certain areas at night. For example, one senior felt that Centre Street was unsafe because it lacked streetlights, even though it was in the middle of a residential block with plenty of other elderly residents. Because this street is adjacent to the block around the Senior Center, its perceived danger affects access to an important public resource.15

15 The Senior Center does not usually run activities at night, but during the summer it stays open late for seniors without climate controlled homes.
The importance of a sense of security for older people cannot be overstated. Almost every town official and staff member I spoke with highlighted this as central to the town’s high quality of life. How a community can achieve this goes beyond the scope of this analysis; the issues go much deeper and farther back in history to be resolved through urban design.

Something that can be improved through urban design, however, is physical safety. The ability for seniors to walk unimpeded through the urban environment, without fear of tripping, slipping, or collisions, surely affects their willingness to venture outside alone. Pedestrian safety is about perception as well as actually preventing injuries: fear for physical safety in the face of fast automobile traffic and an unpredictable environment presents a psychological barrier for many seniors.
Pedestrian safety

Pedestrian safety promises to be a major factor in quality of life for urban residents as more and more seniors, voluntarily or not, give up the ability to drive. Despite this, street design and traffic engineering continue to be dominated by concern for the automobile at the expense of other forms of locomotion. Automobile-centered street design has resulted in wide, multi-lane roads, narrow sidewalks, dangerous street crossings, and a sprawling pattern of development that further marginalizes those who cannot drive.

Safety, and the consequences of a fall or collision, weighed heavily in the minds of the seniors I interviewed. "A fall means a lot more," explained one participant; older people are more susceptible to serious injury from even a simple trip on the sidewalk. Many seniors mentioned past falls, which resulted in injuries that continue to affect them months or years later. A broken hip or muscle trauma can further restrict one's mobility, forcing the use of canes or walkers.

Participants were also aware that with old age, they are less agile and have greater balance problems. Freedom of motion may be compromised by a shorter gait, arthritis, or some other ailment. This not only increases their likelihood for a damaging fall, but makes it harder to maneuver out of the way of an oncoming vehicle. A few participants, without being prompted, took the time to point out stories in the newspaper of older people getting hit by cars or bicycles; again, seniors are very conscious of dangers on the street, and this affects their path choice and outlook on street design.
Crosswalks

All but one of the participants claimed to always use crosswalks at street crossings. Some hinted that this was a change from when they were younger, when they were more willing to cross streets away from a crosswalk. One said, "I used to be entirely fearless about the crosswalks," but now feels that more are needed for safety. Building and maintaining safe crosswalks are necessary for making every city block accessible for the elderly; the more crosswalks available, the more choices of path seniors have to their destination.

Raised crosswalks are a more recent invention that can potentially make road crossings safer. They are easier to see, act as speed bumps to force traffic to slow down, and require less steep of a step down from the sidewalk.

Figure 3: Raised crosswalk on Winchester St. Rather than a curb-cut, the sidewalk is level with the crosswalk. Cars must slow down on approach as well.
Curb cuts

These crosswalks must be accessible too, so curb cuts are essential at every street corner and mid-street crossing. Curb cuts provide a smooth ramp from the sidewalk to the street, allowing people using wheeled devices to easily cross from one to the other. For the wheelchair-bound, the absence of a curb cut is indeed an insurmountable barrier without assistance. Even for those who can make the step up from street to sidewalk, the ramp allows them to bring along walkers, shopping carts, and strollers, which may be just as essential for the rest of the walking trip. Curb cuts are also easier to scale for seniors whose gait is limited to a shuffle rather than a full stride.

Figure 4: Curb cuts make it possible to use wheeled devices, like this combined walker/shopping cart.

Curb cuts do present some unique design challenges. It may be hard for a visually impaired pedestrian to tell the difference between a normal dip in the sidewalk and a curb cut that is leading them into the street. This confusion can be remedied by a textured tile
that provides a tactile signal that the street is coming up soon (as long as it does not present an additional danger of tripping). These methods have been implemented in several places in Brookline and other cities, and should be extended to any curb cut near a busy street crossing.

Figure 5: Example of textured tile signaling a curb-cut and drop in pavement height for the visually impaired.

Because streets are often paved sloping down away from the central axis, the ground where a curb cut meets the street is lower than the surrounding area, and so easily collects water and snow. The resulting puddles and snow piles can be quite daunting, much too large for any senior to jump over, let alone the average non-athlete. As one woman exclaimed while boarding the Brookline Elderbus from Coolidge Corner, "Worst part of walking here,
these puddles!” While most pedestrians can walk around the puddles to reach the crosswalk, those who are reliant on curb cuts face an insurmountable barrier.

_Light signal timing_

Two out of every three participants could list places where traffic moved too fast, or light signals were too short, for them to feel safe crossing the street. Harvard Street and Beacon Street, the two major roads meeting at Coolidge Corner, figured prominently in our discussions. Both streets carry heavy vehicle and foot traffic near Coolidge Corner, accompanied by bus routes along Harvard Street and a rapid transit trolley line (the MBTA Green Line C train) down the middle of Beacon Street. Their intersection is managed by light signals with a countdown timer. The timing on this signal has been a subject of debate for many years, and the Council on Aging counts extending the length of the walk signal among its recent victories.

However, some older pedestrians still need two full light cycles to get across Beacon Street, and they are sometimes threatened by cars turning right at the first sight of a green light. One participant warned, “Don’t trust the traffic. Don’t walk right when it says go.” Delaying the green light until a few seconds after its corresponding walk signal has started helps pedestrians who need the full amount of time to begin to cross. Further lengthening the walk signals, though, is a tricky problem; the intersection already experiences major congestion that pushes traffic back further along both streets, making neighboring street crossings more dangerous as well. Balancing the need for longer walk times with free traffic flow takes continuous tweaking, and constant pressure from advocates from both sides is important to maintain a middle ground.

Other areas where participants felt walk signals were too short included:
- Brookline Avenue
- Cleveland Circle
- Intersection of Commonwealth Avenue and Harvard Street
- Intersection of Harvard Street and Fuller Street
- Intersection of Lancaster and Beacon Street
- Intersection of Aspenwall and Harvard Street

Sidewalks

Sidewalks are the most-traveled part of the urban pedestrian environment, and the way they are paved matters greatly. Seniors need a flat, solid surface to walk (or roll) on, without large cracks, bumps, sharp edges, loose footing, or slickness. Any irregularities in the surface, though seemingly minor to younger pedestrians, pose the great risk of tripping an older, more fragile person. This forces older pedestrians to constantly watch the ground on which they walk, at the expense of other important visual cues in the area (traffic, signs, buildings), and moving at a slower pace. They can also make use of canes, strollers, walkers, and wheelchairs uncomfortable and possibly dangerous, as such devices can get caught on large holes and cracks.
Figure 6: Though seemingly minor, cracks in the sidewalk and grooves for train tracks present genuine hazards for seniors with short strides or walkers.

Because of this need for smooth continuous surfaces, brick paving is a major divisive issue, one that even Brookline revisits periodically when redesigning urban areas. Many find brick-paved sidewalks to be more attractive than concrete, and an appropriate design element in a historic district or small town. However, brick paving breaks down quickly (especially in snowy New England climate), and creates many sharp bumps that are harder to see than cracks in concrete. It does not take long for a patch of brick paving to present a major obstacle along a sidewalk path. Seven of the eighteen participants described some trouble with brick sidewalks, and could name places where brick took up the whole width of the sidewalk.
"Safety comes first," said one participant, and that summarizes the "function-over-form" mentality of participants in the study. Most were neutral on the appearance of brick, though one felt that it was inappropriate in the context of places like Coolidge Corner, stating, "Brookline is not a small town. It is hypocritical to try to capture the small town feel."

Only three felt that brick was especially attractive; however, even they suggested that the town should limit its use to accenting a mostly concrete sidewalk. There are examples of this already in the town, where brick takes up a narrow space between the concrete sidewalk and the curb edge.

Seniors also benefit from wider sidewalks. Given more space on the sidewalk, older pedestrians have freedom to walk at the pace they choose, rather than that of younger people around them. Wider sidewalks accommodate strollers, walkers, and other wheeled devices, and give space to avoid colliding with another person. Landscaping and benches
could possibly fill in extra surface area between the street and main walking corridor, creating places of shelter and/or providing a buffer from noise and dust from moving cars.

Transferring width from automobile lanes to sidewalk also shortens the distance seniors must walk to cross the street, though at cost to lane and parking capacity. One useful form is the bump-out, where the sidewalk is only widened at corners or mid-street crossings, so as to minimize time spent walking in traffic lanes and provide an unobstructed view of car traffic from the edge of the sidewalk.

Bump-outs, curb cuts, and raised sidewalks have been implemented together on Winchester Street, to great effect. Each can be found elsewhere in the town as well, but coverage is far from ubiquitous.

Figure 8: Bump-outs with curb cuts make it easier to cross Harvard Street, despite heavy traffic.
Range of travel

Quality of life is not only determined by the availability of certain services and amenities within one's immediate neighborhood, but also the ability to travel freely beyond the home area. Despite the relative density of housing in north Brookline, many seniors seek to travel beyond to the greater metropolitan area to see friends and family. Coolidge Corner, while offering a diverse selection of shopping needs, cannot provide for every need; one participant described how her friend dreaded the day when she could no longer drive, because she would have nowhere to buy a spool of thread. Boston holds many cultural institutions and fine public spaces, and participants enjoyed having easy access to these by MBTA bus and train.

Being denied the ability to drive safely creates obvious obstacles to getting out of one's normal walking radius from home. The alternative is to expand this radius and provide elderly pedestrians with greater choice of paths and destinations. Though this initial radius is heavily dependent on the movement capabilities of each individual, there are several common improvements that can help seniors walk further distances on a single trip. They include improvements both to streetscapes and to public transportation infrastructure.

Streetscape amenities

Benches

Past injuries, unsteadiness, and use of walkers or wheelchairs are some of the myriad reasons seniors might walk more slowly and with greater difficulty than a younger pedestrian. Without places to stop, sit, and rest along the way, it becomes exhausting for
some to walk further than one or two blocks from their homes. Outdoor benches are a necessity in an area with many senior residents; when carefully designed and placed at frequent intervals, they expand the walking radius of elderly pedestrians by allowing frequent rest stops without having to step indoors (though during extremes of heat and cold, these indoor stops become essential as well). One-third of the participants felt that Brookline did not have enough outdoor benches, especially in residential areas.

Figure 9: Benches recently added to a residential neighborhood on Babcock Street. A traffic triangle was carefully landscaped and furnished to provide a peaceful rest area for pedestrians and residents.

For a bench to be useful, it must be comfortable and feel safe. A little over half of the participants stated a preference for benches with backs over benches without. Backed benches provide more support for a resting senior, and feel safer than having one's backside exposed to the sidewalk or street. After backs, participants did not care much about the details of design, though a few preferred wood seating over metal (wood does not fluctuate in temperature as much as metal, and is less slick when wet).
Burton and Mitchell (2006) make further recommendations on the design of benches. Armrests are an important feature of benches for older people who need something to hold onto when sitting down or pushing off when standing up. Low seats or narrow seats are uncomfortable, and metal and concrete surfaces appear less comfortable than wood. For all their artistic merit, modern and abstract bench designs carry the risk of being perceived not to be for seating at all! Traditional wooden benches benefit from familiarity and comfort, and are more likely to be used.¹⁶

![Figure 10: Wooden benches with backs and armrests are more comfortable and are more likely to be used than those without.](image)

Benches serve an additional purpose: they are places to watch street life in the daytime, enjoy good weather, and meet friends or strangers. Benches around playgrounds and parks allow seniors to bring young relatives out to play while monitoring them from

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nearby. They become additional "eyes on the street," making the environment safer for people of all ages. In some places, the sight of older people relaxing on benches is common enough to be an urban fixture, and can make those places distinctive. An example of this is the Devotion Elementary School playground, which is always bustling with playing children and their watchful grandparents.

Restrooms

Another factor that limits the time seniors can spend in transit is the availability of restrooms. Incontinence becomes a more common problem for the very old, and forces frequent bathroom visits throughout the day. When outside the home, public restrooms may be hard to find, while handicap-accessible bathrooms may be harder still. This can discourage seniors from venturing too far from home. One participant was comfortable taking long walks down Harvard Street because she knew the locations of many public bathrooms (usually in stores) along the way.

Public transportation

Transportation options are essential for seniors who live far from their destinations or are severely limited in walking range. Because cost is a significant factor for retired seniors, the more options they have to choose among, the more flexibly they can approach their planning. Having many choices gives seniors the degree of freedom to go where they choose, explore, and expand their known travel range.
The MBTA

Several MBTA bus lines and the Green Line C train (a rapid transit line connected to the subway system) run through Brookline. The town benefits from these transit links, which allow trips within the town and out to the rest of Boston. They are heavily used and greatly expand the travel range of elderly pedestrians. However, some residential areas are too far from any transit stops to be accessible for a senior with limited mobility, especially the less dense neighborhoods in the south. The following map illustrates the area of Brookline within a half-kilometer along streets from a transit stop, a reasonable distance to walk without stopping for a senior or young child. It demonstrates the density of network coverage around Coolidge Corner and along major roads, and lack of service in southwest Brookline.

In general, east-to-west access is efficient, but connections between the north and south of Brookline are weak. Since commercial activity and town services are concentrated in the north and central areas of Brookline, seniors in the south are underserved and need transportation options.
Walking distance from transit stops in Brookline, MA

Figure 11: The shaded region shows the area accessible by walking up to 1/2 kilometer along roads from the nearest MBTA transit stop.
Senior Center transportation services

Three transportation services provided by the Council on Aging help fill in some of these gaps:

The Brookline Elderbus runs a fixed route around the northern half of Brookline. It stops at every large senior housing building in the town, as well as neighborhoods with concentrations of seniors in apartments. Primarily it serves as a shuttle to the Senior Center, but also stops at Coolidge Corner, Stop and Shop, and Longwood Medical Center, frequent destinations for most of its users. Bus drivers are also willing to make slight adjustments to the route upon request to get riders closer to home; one participant was thankful to be dropped off on her side of a busy street, so that she would not have to cross it.

Figure 12: Brookline Elderbus Route

The Senior Center Van only makes trips directly between the Senior Center and private homes upon appointment. This allows it to serve homes in the south and anywhere else not already covered by public transportation or the Elderbus. It is more flexible than the bus in that it operates on longer hours each day, and can reach people just outside their homes; conversely, it must return to the Senior Center and is less useful for reaching any other destination.

The Brookline Elder Taxi System provides discount taxi coupons for senior residents. It is perhaps the most flexible transportation option, useful in an emergency or at odd hours of the night, though still more expensive than any other option. It is funded through a Community Development Block Grant (CDBG), a type of state/federal grant designated for low-income quality of life. Because of this, it is possible that this amenity could be expanded beyond seniors to other low-income age groups with emergency needs (for example, a working parent who needs to see their children at school or a child who needs to reach a doctor).
Enacting change

Barriers to change

For all its advantages, Brookline still has many areas for improvement. It is fortunate enough to have an active, engaged citizen body, and the organizations dedicated to advocating elderly issues are well-established and enjoy the support of the town’s policy makers. What barriers still exist to hinder constructive change?

Cost

Brookline planners and officials were unanimous on the most significant barrier to change: cost. For all the good that long-range planning and street redesigning can do, nothing can improve if the town lacks funds to build the physical improvements. Even sidewalk maintenance, essential for elderly pedestrian safety, requires a significant budget if it is to be timely and efficient. Compared to Boston, Brookline has a more responsive local government and simpler planning problems, but also has a smaller tax base and less flexibility in tackling those problems. Because it is a primarily residential community with a growing retired population, the onus is on local business taxes to maintain services and a high quality of life.

Local politics

Jeff Levine also pointed out that because the town government empowers everyone and operates by consensus, it is easy for groups to block change.\(^\text{18}\) Even 95% agreement

\(^{18}\) Interview with Jeff Levine, 3/23/07.
may not be enough in the face of dedicated opposition. Where might such opposition come from?

Surprisingly, some of the most vocal opposition comes from the baby boomer generation, now in their 50's and 60's, who are rapidly approaching retirement age.19 Evelyn Roll, a director of the Brookline Multi Service Senior Center Corporation, surmised that those against such policies are either unaware of the great physical changes that come with old age, or unwilling to admit that they are approaching old age as well. For example, men from this age group were adamantly against the construction of the Senior Center. According to Evelyn, some of those men have since changed their minds as they have found the Senior Center to be a useful resource.

Thus, educating the public is important for building support for elderly causes. Part of this occurs in the Senior Center, through formal classes on adjusting to older life and by mixing of generations as younger residents volunteer to help out and interact with their elders. Outreach to those who are not yet acquainted with the Senior Center and the other services offered by the Council on Aging is important not only politically, but also in getting these services to the people who need them, either now or in the future. Special care must be taken for non-English speaking seniors; there are sizeable Asian and Russian immigrant populations in Brookline who are harder to reach but would benefit greatly from the town’s services.

Physical constraints

Perhaps most frustrating, however, are the physical constraints on the streetscape. On most streets, there simply is not enough room for all the amenities we would like to see.

19 Interview with Evelyn Roll, 3/14/07.
for elderly pedestrians. On Harvard Street, for example, there is barely enough room to accommodate car traffic, street parking, and sidewalks wide enough for wheelchairs, curb cuts, street trees, and benches. Wider streets might allow greater space for these elements, but invite greater traffic and counteract the charm of Coolidge Corner’s compact design. Beacon Street is even more complicated, as it must balance the timing and traffic flow of cars, streetcars, and pedestrians. As seniors rely on all three of these modes of transportation, there is no obvious way to prioritize one at the expense of the other.

Tools for improving the urban environment

Design review

How can town governments ensure that there are enough benches and accessible public restrooms for pedestrians? An inventory of existing conditions is essential, and may reveal important gaps or missed opportunities. In commercial areas, businesses carry the burden of providing public bathrooms, and the town can incorporate these requirements into its own zoning or design review process. Brookline already has a thorough design review process for new developments or large renovations, and can phase in requirements for free (and ADA-compliant) restrooms. In most cases, review is limited to the appearance of the storefront, but in the case of large developments that affect the streetscape dramatically, the town review board can also influence design decisions.

For example, the Courtyard hotel on 40 Webster Street underwent a fairly long design review process, in order to ensure that the final product would fit in the context of Coolidge Corner. The review process took into account sidewalk renovations, benches and other nearby stonework, and open space provisions. However, the resulting development is not well suited for senior use; the benches are made of slick stone and lack backs or
armrests, brick takes up the entire sidewalk surface, and green open space is tucked away behind the building, negating its usefulness as an easily monitored play/rest area. Better awareness of elderly design considerations could have resulted in a much more inviting, safe development.

Figure 13: Uninviting design for seniors: stone benches and brick paving on 40 Webster Street. Note that over half the sidewalk width is obstructed, leaving less room for walkers and wheelchairs.

Maintenance

Constant surveillance of street conditions might not be practical for a local agency, but rapid response to repair requests is perhaps the next best alternative. Being a small sized town with a relatively uncomplicated bureaucratic structure helps; Brookline's Department of Public Works is able to fix broken sidewalks within two hours of reporting.²⁰ Having

²⁰ Interview with Rob, 2/16/07
multiple, easily accessible ways to request action on broken sidewalks, streetlights, curb cuts, and snowpiles ensures that all problems can be addressed; this means creating and publicizing lines of communication for the whole range of technological literacy (e-mail requests, telephone hotlines, in-person representatives, etc.).

Devoting money and attention to physical maintenance also creates opportunities for larger renovations that can incorporate new, useful design elements. In the process of wide-scale repairs to Winchester Street (where the Senior Center is located), the planning department was able to add sidewalk bump-outs, raised crosswalks, and better signage to make the pedestrian environment safer. The need for repairs may sometimes be the only way to justify the high cost of completely renovating a street. Close coordination between planning and maintenance can gradually improve the entire pedestrian network, piece by piece.

Fundraising

Some help exists in the form of federal and state funding:

- The Older Americans Act, enacted in 1965, created grants for local community planning and service programs, and later expanded them to a variety of services (including nutrition programs, health promotion, and rights protection). The Council on Aging uses these grants for Meals on Wheels, the lunch program in the Senior Center, outreach to Asian and Russian minorities, and respite care.

- Community Development Block Grants, administered by the state and federal agencies, can be used to provide decent housing and a suitable living environment

for persons of low to moderate income. Because seniors often make up the low income population, the CDBG can be used on physical improvements to neighborhoods with high senior concentration. The Council on Aging uses the grants to maintain sidewalks in qualified neighborhoods and fund the Brookline Elder Taxi System program.

- State Formula Grants are designated for immigrant language education, and help fund those outreach efforts.

Federal and state sources comprise about 12% of the Council on Aging 2007 operating budget; the Council raises additional funds through a non-profit organization that make up another 13.5%. Active fundraising is an extremely important task for the Council, as it raises awareness of the services available (or which could be available, given the money) to Brookline seniors, and provides resources that are more flexible in purpose than other sources.

Private contributions also make up a small portion of the operating budget; the Council is sometimes approached with offers that border on soliciting, and refuses these “hard sells.” Rather, they try to find softer ways for local businesses to contribute to the Senior Center’s activities. One successful collaboration involves the local Trader Joe’s market in Coolidge Corner: the store donates flowers to the Center, where they are arranged or delivered to seniors on special occasions in a program called the “Sunshine Club.” Other useful but soft contributions are seminars on topics like financial planning or healthy living. The Council’s monthly newsletter is made possible through sponsorship and advertising, but

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most of these advertisers offer elder-specific services and are relevant to the purpose of the newsletter.

Ultimately, local government funding still makes up the bulk of the operating budget, and elderly causes need a broad base of political support to maintain it. As an originally grassroots movement, the Council on Aging enjoys a long history of activism and continues to grow in influence as the elderly population of Brookline increases. As a result, it has “6th floor” support from the top policymakers in Brookline, important for initiating major projects like the Senior Center.

Collaboration with other institutions

As mentioned above, many opportunities exist for partnerships with private firms that serve elderly needs. The Council on Aging also looks for ways to collaborate with other public institutions in the town. Many children from Brookline’s public schools come to the Senior Center to volunteer and interact with older residents. The Brookline Public Library runs reading programs and computer skills training for seniors. The Council also encourages seniors to take part in civic activities, such as fundraising events for local schools and election-day polling.

“It’s good to have many age groups rubbing shoulders,” remarked Rob, the Senior Center Van driver. People from every age group are moving into Brookline: families with children seek its highly regarded public schools, college students move in for convenience (and sometimes stay), and seniors return to their old communities. Encouraging these groups to mix and interact is important for promoting understanding of elderly issues, combating loneliness and isolation, and creating connections between different generations.
Ruthann Dobek believes that pride in the schools, libraries, and Senior Center all feed into pride in the town itself, which in turn supports their individual missions.

Long-range planning and citizen involvement

As far back as 1959, the town of Brookline has been producing comprehensive plans to guide the development of the town towards its long-term goals. Today, the town’s Planning Department is responsible for producing these plans, but under the close supervision of committees representing the range of stakeholders and citizen groups in Brookline. Public feedback is central to the process, and while town meetings draw the attention of the entire population, opinions are best represented and synthesized into policy through the planning committees.

In Brookline, seniors raise issues important to them by sitting directly on these committees. The Council on Aging tries to have a representative present in every planning discussion, as it did this past year on the Coolidge Corner District Planning Council, convened to develop a vision and plan for future development of Coolidge Corner. Nearly half of the Coolidge Corner District Planning Council was elderly as well. Thus, their concerns about pedestrian safety, transportation, and housing density figured prominently in discussions, ensuring focus on issues that affected their quality of life.

In this area, the town of Brookline benefits from its culture of active citizen participation; people are confident in the system and understand the need to get directly involved in committee governance. Because seniors have more leisure time and interact with public institutions more frequently, it is easier for them to volunteer their time to help run the town. As a result, people involved in town government in Brookline tend to be older. However, outreach is still critical to raise awareness of elderly issues, and the Planning
Department does its part to explain the planning process to uninformed seniors through lunchtime meetings at the Senior Center. These efforts pay off when citizens need to mobilize to support certain initiatives: the Council on Aging was recently able to secure longer hours for the Senior Center by convincing many seniors to come to the public hearing in support of the change.

24 Interview with Jeff Levine, 3/23/07.
Conclusion

The common good

Perhaps the most powerful argument in designing the public realm for the elderly is that these improvements benefit people of all ages. A pedestrian environment safe from crime, pollution, and other environmental hazards is just as important for children to freely explore their neighborhoods. Ramps and curb-cuts benefit anyone who wishes to use a stroller, shopping cart, or skateboard, let alone the many non-seniors who use wheelchairs, crutches, or leg braces as well. A street network that is easy to navigate for someone with memory loss is also easy to navigate for first-time visitors, and even long-time residents find local landmarks useful for giving directions or orienting themselves.

The work of influential planners resonates with the design principles for the elderly. Kevin Lynch advocated for planners to create distinct streets, memorable public spaces, and logical patterns of development to strengthen the image of the city for all who experience it. Jane Jacobs argued that residential units and vibrant street life would make city streets safer, because the “eyes on the street” would act as surveillance and guide activities. There is potential for positive feedback; convince people to enjoy and inhabit the public realm, and their presence in turn will make the public realm safer and more enjoyable.

One of the initial assertions of this thesis was that getting the elderly outside of their homes, into the public realm, is important to their health and well-being. I believe that this is also important to the health of the community. The successful collaboration between the Brookline Senior Center and nearby public schools demonstrated the benefits of mixing generations in a formal setting. The informal interaction between old and young in parks, restaurants, and sidewalks should also be an essential part of the urban experience, and a
source of civic pride. Coolidge Corner is the only place where I have ever been asked to help an elderly woman cross the street; what better way exists to build community across multiple generations?

Approaching other cities

The understanding that the elderly need and want access to the outdoor environment is fundamental to improving their quality of life, whether in a rural town or at the center of a metropolis. The mobility constraints of an arthritic senior make climbing the stairs to a subway just as hard as hiking miles to the nearest shopping center. Each community must accept that self-contained institutions and isolated housing complexes cannot meet the needs of their aging populations. We have not only an obligation, but significant motivation, to provide the means and environments for seniors to live among us and remain active in our communities.

Improvements to street design like ample curb-cuts, benches, lighting, etc. will benefit any city or town, and, as demonstrated, help pedestrians of all ages to navigate their environments. However, in sprawling suburbs or large metropolitan areas with limited resources, where should efforts be concentrated? Is it proper to invest money in city centers where the benefits may be felt by many, or on the outskirts where a senior might have few options to travel more than a couple blocks from their home? As in Brookline, cost, politics, and physical constraints are significant barriers to change everywhere. However, the sources of funding and techniques for outreach used in Brookline are available to other American towns and cities as well.

Organization is the key. Local governments must pay attention to elderly issues and seek both physical and institutional changes to improve their quality of life. An organization
devoted to this task is essential for marshalling funds, operating daily services, partnering with other institutions, and gathering support for projects like the Senior Center or streetscape improvements. Depending on the history of a community, this organization could begin as an independent advocacy group or a mayor-appointed committee, but to be effective in the long run it should ultimately become a permanent department of the town or city government. Its activities should also run parallel to those of the planning agency, so that design principles are incorporated into long-term planning.

Public transportation also deserves particular attention, if only because it has been neglected in American cities for decades in favor of automobile infrastructure. In the broader context of reducing energy use and air pollution, cities have an obligation to boost public transit use and improve on service and accessibility. Transit vehicles must be accessible for wheelchair users, and provide priority seating for older passengers. Areas with high senior concentration require service by public transit routes, or even better, cheap alternatives like the Brookline Elderbus or the MBTA-operated “The Ride.”

**Beyond the United States**

Are these design principles and tools still valid when considering cities outside the United States? The physical realities of the aging process are universal, as are the problems pedestrians face in cities worldwide as a result of automobile-centered urban planning. Design solutions that improve accessibility and range of travel would be helpful for any community that is developed enough to implement them.

However, the major difference between American cities and those in other countries might be cultural. The extent to which a community values universal access, the rights of elderly citizens, and the responsibility of the government to provide these things depends
greatly on differing political and social cultures. This is most obvious in questions of cost: who should pay for capital improvements and services, and if public funding is available, how should local governments prioritize the needs of the elderly? Funding mechanisms like Community Development Block Grants and State Formula Grants might not have any parallel in other countries. The idea that government is obligated to provide infrastructure and services for the elderly may not be universally accepted. Yet, with many developed countries facing or already experiencing a population wave of retiring citizens, the welfare of seniors may become inseparable from the general welfare.

The role of family is an important cultural issue. In countries where family units tend to extend beyond the traditional US nuclear family and include three or more generations, younger family members support their elders and may directly assist them past barriers in the public realm. They also provide a dynamic living experience and varying activities at home, making a sedentary lifestyle more appealing. For the elderly in other countries, proximity to living family members may be more important in choosing where to live than having access to healthcare, transportation, and other services nearby. They may also choose to age in place out of attachment to a neighborhood based on tradition, religious affiliation, or personal history.

Likewise, younger generations may hold different views on how best to take care of the elderly. For some, minimal government intervention might be acceptable, while others may feel that the elderly deserve more attention and respect. Keeping seniors active in a community and mixing with younger people might be a high priority in places where that is the tradition. In Spain, the sight of older people on park benches heckling rowdy youth is as much an urban fixture as the parks themselves. Traditional Confucian ideals in Korean culture demand respect for the elderly, manifesting in greater political support for
pedestrian-friendly environments. In a similar vein, the high regard for military veterans in some countries (for example, Israel) may also spark concern for physical barriers to access, as injured veterans also face a variety of mobility constraints.

I plan to continue my research with a Fulbright grant in the city of Seoul, South Korea, through 2008. There, I will explore these differences in culture, political and social norms, and challenges to design and institutional support. What can we learn from the example of Seoul, which is a sprawling metropolis despite its very dense population distribution? How are they treating their automobile infrastructure, which has expanded in width and coverage for decades at the expense of the pedestrian environment? Do they approach elderly support from the direction of services, capital improvements, or both? In a country with extremely high Internet usage, awareness, and infrastructure, how have they applied information technology to the needs of the elderly? How does respect for the elderly affect policymaking? These are the questions I hope to answer in the coming year.
Appendix A: Survey questions

Personal information (kept confidential)
Name, Age, Address
How long have you lived in Brookline?

- Do you have any medical conditions that make it hard to get around town?
  - Do you find it easy to trip?
  - Do you find it hard to walk long distances?
  - Do you experience any sight or hearing problems?
  - Do you ever experience memory lapses?

Going outside
- Do you go outside your home regularly? Where do you usually go?
- Is it important to you to go outside regularly? Why? (e.g. meeting friends, family, shopping, sightseeing, eating, exercise, civic activity, etc.)
- What are your favorite places? Why?
- What do you like to do when out on a walk? Is this easy to do in Brookline?
- Are there any places you try to avoid when out walking?
  - What makes a place feel safe or unsafe?
  - What could improve such places?
- If possible, schedule a time to accompany them on a walk, or ask to describe a typical walk. (This idea was abandoned due to lack of interest.)

Pedestrian safety
- Pavement features
  - What kind of pavement do you prefer? (brick, concrete, granite)
  - Which is more safe?
  - How should brick be used, as an accent or as a complete surface?
- Street crossings
  - When you cross the street, do you use a crosswalk?
  - Do you use a light signal?
  - Is there usually enough time to cross?
  - Can you read the signals alright?
- Wheeled assistance
  - Do you use any kind of wheeled apparatus? (walker, shopping cart, stroller)
  - How important are ramps to your ability to get around, and are there enough in Brookline?
  - Where in particular is the town lacking? (This question was eventually dropped, as no one had a real answer to it.)
  - Do steep slopes make it hard to use your wheeled apparatus? Are there any particular tough spots?
- Benches
  - How far can you walk before needing to take a break? (time or distance)
  (Ultimately, this question was dropped, as answers referring to time or distance could not be consistently compared with each other.)
- Do you think there are enough benches in the places you walk in Brookline?
- Do you prefer benches with backs to those without? Why?

- Accompaniment
  - Do you go out alone often?
  - If not, who do you go outside with?
  - Do you have family in the area? (This question was eventually dropped, as it seemed to be a sensitive subject for some participants.)
  - (If they have young relatives, such as grandchildren, ask:) Do you like to spend time with the kids at playgrounds and parks?

Perception, memory
- Are you familiar with a large area around where you live?
  - What makes an area more memorable?
  - Do you have a good sense of the street network around Brookline?
  - What kinds of streets do you prefer? (show grid patterns, irregular grids, cul-de-sacs) Why?
- How helpful are signs for navigating around Brookline?
  - Do you find signs generally helpful or distracting?
  - Which signs are most useful to you when out on walks?
  - What makes a sign confusing or hard to read? (ask about colors, typeface, size, too much information, unclear symbols, too high to read; show pictures of signs to help)
- How helpful are landmarks for navigating around Brookline?
  - What are some landmarks that you personally use to navigate?
- Do you use maps or directions to navigate around Brookline? Are you familiar with Internet maps?

Questions added to list after first few interviews
What is the one thing you would change about Brookline, if given the chance?
How does the weather affect your ability to get outside?
Appendix B: Participant overview

In total, 18 people volunteered to participate in interviews. Not all of them responded to questions about age, length of time living in Brookline, or health issues. Those who did are presented in aggregate to prevent possible identification and protect privacy.

The reported age of participants ranged from 53 to 85. Their median age was 78.5, and the mean was 74. More than half of the participants were over the age of 75, well past retirement age.

Participants reported a wide range of years spent living in Brookline: a few had been residents for only two to five years, while others had lived their entire lives in Brookline, the longest of which was 79 years. A few participants had grown up in Brookline, and had returned after living away for a period of time. The median and mean residency was 30 years, with a standard deviation of 23 years. While this shows that residency periods are widely scattered, the majority of participants have been living in Brookline for decades and could be considered long-term residents.

Participants reported a wide variety of health problems that limited their ability to move around outside the home. These included:

- Knee surgery, unsteadiness on feet
- Heart condition, resulting in limited mobility
- Leg prosthesis requiring use of crutches or wheelchair
- Hip replacements requiring use of cane
- Weak vision
- Weak hearing
- Parkinson's disease
- Use of scooter
- Arthritis
- Limping
- High blood pressure, asthma
While most participants admitted to occasional memory lapses, none of them felt that this severely hampered their ability to navigate public environments. This may be due to any number of reasons: the memory lapses may have been minor or inconsequential, the places where they were walking were legible enough to navigate without aid of memory, or the participants may have preferred not to report having such trouble. In general, only a couple participants showed signs of dementia during the interviews, though my observations are not a reliable indicator of their actual state.
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Town plans


Internet sources


