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Home Zone Concepts and New Jersey

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Abstract

This report probes the potential for the application of the Dutch concept of *woonerf*, or Home Zone, for the United States, and particularly New Jersey. In order to start a discussion about the feasibility of developing Home Zones in New Jersey, a historic overview of Home Zone development and an explanation of the concept's design principles are presented first. *Woonerf* is a very adaptable concept, and approaches to utilizing it vary from one country to another. This is illustrated in case studies from the Netherlands, Germany, and the United Kingdom. However, they all highlight the fact that when Home Zones are used as part of a broader urban strategy to calm traffic, they result in increased livability and safety.

In the United States, there are no Home Zones equal to the European model; but, there are domestic examples with goals and objectives in keeping with the Home Zone concept. This paper describes chronologically organized case studies from Asheville, North Carolina; Boulder, Colorado; West Palm Beach, Florida; and Kalamazoo, Michigan. They exemplify the fact that *woonerf*-like design in the United States has worked well and is becoming accepted. These successful applications illustrate the benefits of a Home Zone:

- Reduced driving speeds and traffic volume
- Increased safety, public health, neighborhood aesthetics, and social activity
- Increased property desirability
- Encouragement for nonmotorized traffic as a transportation mode
- Enhanced mobility for vulnerable groups.

The report concludes that New Jersey can successfully establish *woonerfs* by continuing and expanding its existing initiatives for smart growth and incorporating best practices from present Home Zone applications both here in the United States and abroad.

Contents

Introduction

Section 1 *Woonerfs*, residential yards, and Home Zones: a first glimpse

Section 2 Home Zones: an adaptable concept

2.1 Country-specific characteristics: case studies from the Netherlands, Germany, and the United Kingdom

2.1.1 The Netherlands: invention, first changes, and objectives

2.1.2 Germany: Home Zones and areawide traffic-calming schemes

2.1.3 The United Kingdom: reinventing its own ideas

2.2 Common characteristics: lessons that can benefit the United States

2.3 The United States: examples — investigating the possibilities

2.3.1 Wall Street in Asheville: an alley turned “gold”

2.3.2 Boulder’s Cottages and Bridgewalk

2.3.3 West Palm Beach: areawide approach to traffic calming

2.3.4 Kalamazoo: former pedestrian mall turned into a *woonerf*

2.3.5 Other community streets akin to *woonerf*: Missoula, Portland, and Brookline

Section 3 How to accommodate Home Zones in New Jersey

3.1 A commitment to enhance walking, cycling, and smart growth

3.2 How to make it happen: best practices

Conclusion

References

Introduction

Traveling less than two miles to shop, go to school or visit friends are activities well suited to walking or biking. Yet the US Department of Transportation found in its 2001 travel behavior survey that Americans take their cars nearly 90 percent of the time to make such trips.¹ Even when the trip is under a mile, Americans choose to drive two-thirds of the time.

These trends are due not merely to individual preferences, but a lack of coordination between land use and transportation planning that has promoted auto dependency for virtually every trip. Shopping malls, schools, convenience stores, and jobs are commonly situated in isolated locations, far away from residential neighborhoods and accessible only by automobile. Additionally, urban areas often lack safe and convenient facilities for pedestrians and bicyclists. The design and planning for many urban areas create impediments to walking and bicycling and eliminates these physical activities as viable options for running daily errands or recreation.

Throughout the United States, there are signs that architects, planners, transportation engineers, and public health professionals have recognized these trends and considered what they can do to counter them. Groups such as the Congress for New Urbanism are pushing for compact mixed-use development that adds new homes and creates new jobs while preserving open space, farmland and environmental resources. Town planners, architects, and developers increasingly embrace mixed-use development, walkable town centers and neighborhoods, accessible public transit, sustainable economic and social development, and preserved green space. Public demand is growing to incorporate alternative transportation modes in governmental planning.

Home Zones can be a useful tool in the quest to reduce sprawl development, car dependency and their negative impacts. A Home Zone is a street that integrates car traffic, pedestrians, cyclists, and children at play within a commonly shared residential

¹ Pucher and Renne 2003.

street space. Cars travel at walking speed through a purposefully designed area that “meets the interests of pedestrians and cyclists, rather than motorists,” and “opens up the street for social use.”²

Home Zones have proven to be successful in Europe but have yet to be widely recognized in the United States. However, many programs and concepts now in place nationally — such as traffic calming — share similarities with Home Zones and would allow for a fairly simple transition. In section 2.3, a number of examples of Home Zone–like applications in the US are described.

In New Jersey, there are various programs that address the problems of sprawl, car dependency, and pedestrian safety from different angles. Smart Growth, Context Sensitive Design, Safe Routes to School, and the Bicycle and Pedestrian Master Plan are just a few examples of these efforts. The goals and approaches chosen for these initiatives are in line with Home Zones. They encourage walking and cycling, reduce congestion, and enhance the quality of life and feelings of safety. They can remove the threat of fast-moving traffic, decrease traffic volumes in residential areas, encourage the conversion of car trips to walking or bike trips, and cater to the mobility and safety needs of children and the elderly. Home Zones are livable neighborhoods with higher densities built to encourage walking, cycling, social interaction and active recreation close to home, school, and work.

Section 1 of this paper first describes the nature of a Home Zone. Section 2 illustrates European and American examples, and section 3 offers recommendations on how Home Zones might be established in New Jersey.

² Children’s Play Council 2002.

Section 1 **Woonerfs, residential yards, and Home Zones: a first glimpse**

The idea for *woonerfs*, or “Home Zones,” was developed in the Netherlands during the 1960s. The idea behind *woonerfs* was to develop a street design integrating car traffic, pedestrians, cyclists, as well as children at play, within a commonly shared residential

A Home Zone is a street or group of streets designed primarily to meet the interests of pedestrians and cyclists rather than motorists, opening up the street for social use.

National Children’s Bureau, UK (2002)

street space. The goal is to achieve a peaceful coexistence among all user types of urban residential streets. This objective is reached by getting away with the traditional separation of streets from

sidewalks. Integrating all vehicular and pedestrian traffic into one living space simultaneously enhances safety and quality of life.³

While the most common translation for *woonerf* into English is “Home Zone,” the literal translation most likely would be “Residential Yard.”⁴ Indeed, many Home Zone streets evoke the impression of a residential yard with trees, flowerbeds, benches, play areas, front gardens and other traffic-calming measures. Home Zones make neighborhoods safer by allowing residents to reclaim their streets. They also create valuable living space and enhance the quality of life for everybody within the community.⁵ On the one hand, Home Zones allow residents to walk around freely and safely, socialize and pursue active lifestyles; on the other, they promote the idea of shared space and call for motor vehicle traffic to enter neighborhood streets as guests rather than as dominators of the space.⁶

In a Home Zone car speeds are very slow, often 10 mph or even “walking speed” (about 3 mph). Walking and cycling, as well as children playing outdoors, are integrated into one area similar to a big residential yard. Overall, Home Zones are used in an attempt to restore safety and a sense of “place” in neighborhoods that have become overwhelmed

³ International Home Zones 2004; WalkingInfo 2004; Biddulph 2001.

⁴ Hass-Klau 1990.

⁵ International Home Zones 2004; Biddulph 2001.

⁶ International Home Zones 2004.

with automobile traffic.⁷ The Home Zone concept can be applied not only when new neighborhoods are built, but also to retrofit existing roads into Home Zone streets.⁸ Due to the aesthetically enhanced environment and the resulting higher quality of life in Home Zone areas, the Dutch government has found that housing prices there are about 10 to 15 percent higher than on ordinary streets.⁹

The potential benefits of Home Zones are manifold and can be summarized as follows:

- improved safety
- higher property values
- increased and wider ranging social activities and civic interaction
- higher levels of accessibility for non-motorized modes of transport
- less air and noise pollution
- more efficient use of the street and urban living space.



A cyclist on a woonerf in the Netherlands
Photo: Burden, <http://www.pedbikeimages.org>

In a Home Zone, the formerly car-dominated street scene becomes a more attractive, diverse, and livable environment.¹⁰

There is also a range of negative opinions against the Home Zone concept. Some have merit and some are not supported by empirical evidence. These varied arguments include:

- loss of parking
- fear of accidents due to the mix of transportation modes
- a potential for increased noise and air pollution (such as noise caused by driving over vertical traffic-calming devices or cobblestones)
- air pollution resulting from frequent stopping and re-acceleration through traffic-calming devices.

⁷ Hass-Klau 1990; International Home Zones 2004.

⁸ Children's Play Council 2002.

⁹ Pharaoh and Russell 1991; International Home Zones 2004.

¹⁰ Hass-Klau 1990; Children's Play Council 2004.

After its development in the Netherlands, the Home Zone concept spread quickly across Europe, tailored to address conditions peculiar to each nation. In the next section case studies from the Netherlands, Germany, and the United Kingdom are presented. And, while the United States has been much slower in moving toward Home Zones, the idea is beginning to take root. Some remarkable American adaptations of the *woonerf* follow the European examples.

Section 2 Home Zones: an adaptable concept

2.1 Country-specific characteristics: case studies from the Netherlands, Germany, and the United Kingdom

Home Zones have existed in Europe for over 25 years. Many European countries, in fact, have established laws and regulations supporting Home Zone schemes. These laws have speed restrictions within Home Zones ranging from 20 to 10 mph and less. Many countries support the idea of assigning legal priority to pedestrians and cyclists, and within the Home Zone, motorists are presumptively responsible for accidents involving pedestrians and cyclists.¹¹

In most European countries, Home Zones are used as part of a broader urban strategy to calm traffic and increase safety and livability (e.g., traffic calming schemes or safer routes to school programs.)¹² Indeed, it is important not to treat Home Zones as a single measure, but rather as part of a broader concept to reduce car traffic and enhance walking and cycling.¹³ The design of Home Zones all over Europe varies, but every country implementing Home Zone schemes has taken the core concepts and adapted them to its own environment. By doing so, each nation has broadly achieved the same results: safer and more livable streets.

¹¹ European Commission 2004.

¹² Hass-Klau 1990; Biddulph 2001; Hamilton-Baillie 2001.

¹³ Biddulph 2001; Hamilton-Baillie 2001.

2.1.1 The Netherlands: invention, first changes, and objectives

In the late 1960s, the Netherlands became the first country to introduce Home Zones. Since then, this country has applied the concept to more than 7,000 streets and residential areas.¹⁴ The two most famous early demonstration schemes in Holland can be found in Delft and in Rijswijk near The Hague. In both cases, the road was altered considerably to enhance livability and social interaction in public space.¹⁵ During the 1970s, the idea of Home Zones spread throughout many Dutch municipalities. In 1976, after the completion of a government study, Home Zones obtained legal status, and the new Home Zone traffic sign was introduced with symbols of a house, playing child, pedestrian, and car.

In designing Home Zones, urban design, traffic calming and highway engineering techniques are commonly used. The resulting impression created by a Home Zone is described by Hamilton-Baillie (2001, 6):

One leaves the busy main through fare in Rijswijk to find oneself in a set of tranquil streets paved with Dutch bricks, cobbles and pavers. Cars are parked in offset groups shielded by trees, which themselves become the dominant feature of the street. Speed cushions are discrete, and carefully planned into the overall street design, which in turn takes into account a multiplicity of uses. There is beautifully planned seating on corners, play areas separated from the carriageway only by sets of bollards, and a blessed absence of signs and road markings. Street paving patterns have been designed to emphasize the “place” nature of junctions, and deliberately eschew any reference to the “carriageway.”



Woonerf, cul-de-sac in The Netherlands.

Photo: Dijkstra, VTC

The original Home Zones implemented in Holland were accompanied by expensive alterations to the existing street layout or integrated into the construction of new neighborhoods. Early Home Zones provided traffic-calming measures on cul-de-sacs shared by pedestrians, cyclists, and motorists,

¹⁴ Hamilton-Baillie 2001.

¹⁵ Hass-Klau: 1990; Hamilton-Baillie 2001.

as described by Hamilton-Baillie above. These measures were supplemented by the provision of additional throughways for pedestrians and cyclists. In later Home Zones, traffic-calming measures, such as speed bumps, raised junctions and bottlenecks were used on a “street layout that was largely kept intact,”¹⁶ resulting in big cost reductions. The Delft demonstration project showed that the creation of Home Zones often relies upon and proves to be most successful when local citizens give input in the redesign of “their” neighborhood street.¹⁷

2.1.2 Germany: Home Zones and areawide traffic-calming schemes

The mainly single-street Dutch Home Zone concept evolved in Germany to fit whole areas, mainly within traffic-calmed residential parts of cities. After word of the success of the Home Zone prototype in Delft had spread, German planners visited the Netherlands to learn firsthand about the concept. In the late 1970s, the first study projects were launched in Germany, based on models developed in the Netherlands:

streets without a division of street and sidewalk, bottlenecks, road humps, changed street surfaces, and new parking layouts. The success of these pilot studies made Home Zones and traffic calming acceptable in Germany.



“Walking Speed” sign in Berlin, Germany

Photo: VTC



Signage for a Home Zone / Wohnstrasse in Germany

Photo: Burden <http://www.pedbikeimages.org>

During the early 1980s, Home Zone–type streets (known as *Wohnstrasse*) and whole areas were implemented throughout the country. In many cases, before and after studies were carried out, showing that traffic calming reduced the number of accidents and their severity, the average speed driven, noise and pollution, parking problems and that

¹⁶ Hass-Klau 1990.

¹⁷ Hass-Klau 1990; Biddulph 2001.

community interaction increased.¹⁸ These programs were accompanied by the Children and Traffic initiative introduced by the government in 1980, including a law requiring that drivers be particularly attentive to children.

In some cities, the alterations to the street surface and layout for Home Zones were considered too expensive to be applied to larger areas. As a less expensive solution, slow speed signs (30 kilometers per hour, or kph, roughly equivalent to 20 mph) were placed in residential areas that became known as “Tempo 30 Zones” with relatively few alterations to the street design. In 1989, the German federal government elevated local practice into permanent law. Many German cities and towns have now incorporated “Tempo 30 Zones” throughout most or all of their jurisdictions as part of safety programs. For example, about 80 percent of the city of Bonn, with a population of 310,000, is now within 30 km/h zones.¹⁹

Nongovernmental organizations, such as the Verkehrs Club Deutschland (VCD), an alternative transportation advocacy group, and the Deutsche Staedtetag (Union of German Cities) are important lobbyists and promoters of traffic calming.²⁰



*“Home Zone” sign,
Germany Photo: VTC*

The VCD has fostered large-scale public awareness campaigns called “More Tempo 30” or “Vision Zero Fatalities” to reduce speeds.²¹ As a result, speeds of 50 kph (30 mph) are widely regarded as inappropriate for urban residential areas, and speed reducing programs and measures are in effect almost everywhere.²²

2.1.3 The United Kingdom: reinventing its own ideas

The United Kingdom’s urban transportation and planning history took an interesting turn with the introduction of Home Zones. As early as 1966, a predecessor of the Dutch Home Zone concept could be found in the United Kingdom, called the “shared space”

¹⁸ Hass-Klau 1990.

¹⁹ Hass-Klau 1990.

²⁰ Hass-Klau 1990.

²¹ VCD 2004.

²² VCD 2004.

layout. Like its Dutch counterpart, shared space was based on a cul-de-sac street layout.²³ Many ideas for creating pedestrian-friendly zones and traffic calming existed in the United Kingdom during the 1960s, but they did not begin to attract attention until the late 1980s. A very important role in bringing Home Zones to the political agenda was played by civic organizations, most prominently the National Children’s Play Council, which has joined with other organizations in actively promoting a British “Safe Routes to School” program.²⁴ Continued active lobbying by interest groups and growing public awareness of Home Zones has pushed the topic to the national stage.

As a result, the UK government has been showing increasing commitment to Home Zones. The concept now appears in relevant policy documents, including its 10-year transport plan developed in 1999. Home Zones have also been the subject of a pilot project initiative and have been accorded a legal basis under Section 286 of Transportation Act 2000 and Section 74 of the Transport Scotland Act. Local traffic authorities in England, Wales, and Scotland now have specific power to designate Home Zones. The Secretary of State (England) and the National Assembly (Wales) are also

able to issue regulations allowing local authorities to enforce speed limits more strictly. In Scotland, local officials are permitted to designate any road in their jurisdiction as a Home Zone.²⁵

The UK government committed £30 million (\$53 million) to a Home Zone Challenge Fund to support 61 Home Zone schemes in England. And in Scotland, the Scottish Executive has committed £11 million (\$19.5 million) to Home Zone–



Pilot Home Zone in Leeds, UK
Photo: Methleys Community Action Group

²³ Hass-Klau 1990.

²⁴ Hamilton-Baillie 2001.

²⁵ Children’s Play Council 2002.

related projects.²⁶ Home Zones in the United Kingdom are estimated to cost around £1,000 (\$1,770) per meter of street; assuming an average length of 200 to 300 meters, the cost will vary between £200,000 to £300,000 (\$354,000 to \$531,000) per street.²⁷

Local authorities are using a wide range of approaches to implement Home Zones. The UK Department for Transport is monitoring the pilot projects, just described, which are focused mainly on alterations to existing streets. The monitoring process will measure how well the pilot projects are meeting Home Zone objectives within the existing legislation. Elements that are being measured include traffic volume and speed, street activity, the living environment and changes in attitudes. In addition to the “official” pilot projects, local authorities, developers, and housing associations have set up a growing number of Home Zones independently across the United Kingdom. Many local authorities now include the scheme in their Local Transport Plans as well.²⁸ Private homebuilders are increasingly aware of the Home Zone concept and are trying to incorporate Home Zone features into their developments. Builders recognize that in certain situations, Home Zones might allow for higher densities and are finding that the concept can be readily marketed as “family friendly.” Furthermore, developers realize that when compared to traditional streets, homebuyers may well be prepared to pay more to live in a Home Zone.²⁹ It is important to note that as with the Dutch experience, all successful UK Home Zone pilot projects include citizens in the planning and design process of their streets.³⁰

2.2 Common characteristics: lessons that can benefit the United States

Besides the obvious differences between the approaches chosen throughout Europe, some common objectives and characteristics, as well as caveats, of Home Zones can be identified.

²⁶ Biddulph 2001; Children’s Play Council 2002.

²⁷ Biddulph 2001.

²⁸ Biddulph 2001; Hamilton-Baillie 2001.

²⁹ Biddulph 2001.

³⁰ Biddulph 2001.

The main underlying concept for Home Zones in all applications is the sharing of road space among all street user groups and creating a sense of place. The tools to integrate all transportation modes are drawn from street design, landscaping and highway engineering. The overall purposes of these measures are to control motor vehicle speeds and to increase social activity in public spaces.³¹

There is also no general blueprint for success. Home Zones are mainly designed with input from the residents living in the area. Therefore, the measures for redesigning the road space and integrating all street users in a common space are diverse and adapted to local needs through public outreach.³²

All home zones... share(d)... common characteristics. Typically these include lack of separate raised pavement, a variety of surface treatments..., the use of trees, planting and street furniture to define and screen parking, the use of bollards and street lighting to define space, and the use of simple "gateways" at the entry points. But...the striking quality of Woonerf streets is their individuality. There is no common template, every street is treated differently. This of course stems from the simple fact that every successful home zone is designed and adapted according to local preferences and circumstances, with residents and users involved at the outset. Hamilton-Baille (2001, 17)

Several studies³³ found that Home Zones have the potential to reduce driving speeds and traffic volume, increase safety, improve neighborhood aesthetics and social activity, increase the value of property, enhance mobility for vulnerable groups and improve public health, and encourage nonmotorized traffic as a transportation mode.

- **Reduce driving speeds and traffic volume**

This goal is achieved in two different ways. One way is to design or redesign the road with physical traffic-calming elements, such as bottlenecks, textured surface material or speed bumps to reduce vehicle speeds. These treatments are commonly supplemented by landscaping and street furniture. The other main technique to reduce vehicle speeds is



"Zone 30,"
Germany
Photo: VTC

³¹ Biddulph 2001.

³² Biddulph 2001; Hamilton-Baille 2001.

³³ See Biddulph 2001; Hass-Klau 1990; and Children's Play Council 2002.

through strict enforcement of speed limits. Proper use of techniques to lower speeds can discourage through traffic. Preliminary findings from Denmark and Holland suggest that traffic-calming measures should not be applied, as commonly believed, in a consistent manner throughout a designated zone. Rather, it is claimed, inconsistency and uncertainty in design keeps drivers more alert and therefore better reduces speed.³⁴ These traffic-calming techniques are also often accompanied by restricting access to local residents only, further reducing vehicle volumes.

- **Increase safety**

Safety is understood in two ways. The first is that lower car speeds reduce the likelihood of being killed or injured in an accident. The most important safety impact of reducing driving speeds is probably the increased chance of survival when pedestrians or cyclists are struck by a slower moving motor vehicle. German and Dutch experiences³⁵ have shown that areawide traffic calming has reduced traffic injuries by 20 percent to 70 percent, and serious traffic injuries by 35 percent to 56 percent.³⁶ Another international comparative study found that traffic injuries were reduced by 53 percent in traffic-calmed



"Home Zone" sign in the UK
Photo: Hull City Council

areas.³⁷ A study carried out by Britain's Department for Transport confirms these findings; investigators quantified that the risk of a pedestrian being killed in an accident rises from 15 percent at 20 mph, to 45 percent at 30 mph, and 85 percent at 40 mph.³⁸ Another important aspect, which was studied empirically by comparing countries in Europe, is that higher volumes of pedestrian and bicycle traffic

decrease the likelihood of being involved in an accident with a car. Higher levels of walking and cycling seem to increase safety as drivers are more aware of non-motorized traffic and, therefore, become more attentive and cautious.³⁹

³⁴ Hamilton-Baillie 2001.

³⁵ The numbers given here are not specific for Home Zones, but for traffic calming in general.

³⁶ VCD 2004. In one German city, the figure was 72 percent.

³⁷ Pucher and Dijkstra 2000.

³⁸ Durkin and Pheby 1992.

³⁹ Jacobsen 2003.

The second safety aspect is that the increased presence of pedestrians and cyclists decreases the probability of crime as there are “more eyes on the street.”⁴⁰

- **Improve neighborhood aesthetics and social activity**

One of the main benefits from Home Zones is that streets can better be used as living space, prompting residents, in most cases, to collaborate in improving their neighborhoods, thereby increasing social interaction.

Retrofitting streets with new pavement, benches, bottlenecks, trees, and lampposts invariably makes them more attractive and creates a visually more diverse and interesting street scene.⁴¹ Reduced traffic traveling at lower speeds makes the environment more



Cul-de-sac Home Zone in Germany
Photo: Burden, <http://www.pedbikeimages.org>

pedestrian friendly and secure. In short, this environment encourages residents to walk, cycle and to be out and about. The presence of people walking and inhabiting the street, gardens, benches and public space of a Home Zone creates an increased sense of community and social interaction. Correspondingly, as mentioned before, successful Home Zone projects that translate citizen and community desires during the design process result in designs that increase social interaction and a sense of community.⁴²

- **Increase the value of property**

Studies from the Netherlands referenced earlier found that house prices are higher in Home Zones than on other streets. As Pharaoh (1991) notes, the Dutch government has found that housing prices are about 10 to 15 percent higher in these areas than in ordinary streets. Additionally, Biddulph (2001) found in the UK that more and more developers were incorporating Home Zone characteristics into their new projects as an attraction for families. In addition, people who are willing to pay higher prices to live in pedestrian-

⁴⁰ Jacobs 1993; Jacobsen 2003.

⁴¹ Biddulph 2001; Hamilton-Baillie 2001.

⁴² Children’s Play Council 2002; Biddulph 2001.

oriented areas can often afford to do so *because* their transportation expenses are lower. Land use patterns cannot be separated from transportation choices people make and, consequently, housing prices from transportation-related expenses. That's why *combining* housing *and* transportation costs results in a more accurate picture of the cost of living in a given area. The perceived expensive housing markets, such as the ones in New York City or Washington are prime examples of trading high housing costs for affordable transportation, moving those areas from the high housing cost category to the middle-cost markets for combined housing/transportation costs. Last, it should be noted homeowners in these higher priced housing markets have the advantage of building wealth through home equity, rather than buying cars, which only depreciate in value over time.⁴³

- **Enhance mobility for vulnerable groups and improve public health**

Home Zones can provide a more pleasant and safe environment for at-risk populations.

Creating a safe space for walking, cycling and playing provides increased mobility for population groups that do not have easy access to a car or to public parks. Since studies have shown that elderly persons who walk on a regular basis have better posture control, especially in their static balance, than those who do not,⁴⁴ walking by the elderly should be encouraged and Home Zones can help. Elderly



Wheelchair on a Woonerf

Photo: Burden, <http://www.pedbikeimages.org/>

people living in Home Zones are able to go for outdoor walks, engage actively in their neighborhood and more easily reach certain destinations and activities without depending on a car.

Home Zones also provide a substantial benefit to children. In a Home Zone, parents are encouraged to let their children play outside as their fear of traffic accidents is reduced.

⁴³ Dunphy 2003.

⁴⁴ Melzer, Benjuya, and Kaplanski 2003.

Children have the opportunity to play outside on their own since the safe and sociable environment enables them to explore their community on their own (by walking or by bike). The improved environment can result in children being more physically active which results in an improvement in health.⁴⁵

- **Encourage non-motorized traffic as a transportation mode**

Overall, Home Zones address today's concern for healthier lifestyles by increasing opportunities for physical activity in everyday life. Current transportation and land-use planning in the United States encourages car dependency and poses mobility limitations for all elements of society, not just for children and the elderly. The adverse effects of car dependency on public health, meanwhile, become more apparent.⁴⁶ Home Zones can contribute to the opportunity for increased physical activity in everyday life. This is especially true when Home Zones are introduced in areas directly connected by paths or cycle routes to shops and other destinations.

Caveats to Keep in Mind

Home Zones are not a panacea for solving all traffic problems. In fact, Home Zones have difficulties associated with their implementation as well. As noted above, Home Zones cannot be implemented successfully as isolated measures, but rather must complement a wider policy to manage vehicular traffic. When applied in isolation, Home Zones simply create traffic displacements in neighboring residential areas. Typically, motorists react to the reduced speeds and limited access of the Home Zone streets or areas by searching for alternative routes in adjacent residential areas, unless they, too, are part of a traffic-calmed area. An important lesson is to account for how treated streets or areas will affect neighboring areas.⁴⁷

Another important factor to consider is driving behavior. For many motorists, low speed areas represent a nuisance to be ignored, especially if the area does not present traffic calming measures, such as speed bumps or street realignment (bottlenecks, etc.). But

⁴⁵ Hamilton-Baillie 2001; Children's Play Council 2003.

⁴⁶ Jackson and Kochtitzky 2001; Ewing 1994; Frumkin 2002.

⁴⁷ Tolley 1990.

even with traffic calming measures in place, some motorists try to see how fast they can maneuver the physical changes to the roadway meant to slow them down. Therefore, traffic rules need to be enforced in these areas in order for Home Zones to be effective.⁴⁸ An added concern posed by Home Zones is that slower driving speeds and some elements of traffic calming can contribute to air and noise pollution. Some commonly used traffic calming measures — such as cobblestones or speed bumps — can cause noise pollution as vehicle cross over textured surfaces or physical barriers. Furthermore, frequent stopping and reaccelerating to navigate traffic-calming measures can increase noise and air pollution.

There is also a perceived fear of accidents, especially for children at play or the elderly, as traffic is mixed and sidewalks and streets are integrated into one space.⁴⁹ Although no empirical evidence is found for this fear, the perception exists and has to be addressed.



Home Zone in Hull, UK
Photo: Hull City Council

A final and important issue that has to be considered involves parking. There is usually a limited supply of parking in a neighborhood, and changes to a neighborhood that reduce available spots are often unpopular. If parking is reduced through a Home Zone design, a typical concern of residents is where to find convenient parking spots close to their homes. To mitigate these concerns, parking regulations have to be enforced and, if feasible, sufficient parking spaces should be made available a convenient distance from houses.

2.3 The United States: examples — investigating the possibilities

⁴⁸ VCD 2004.

⁴⁹ Hamilton-Baillie 2001.

Only since 2002 has the US Federal Highway Administration identified Home Zones as a potential design tool for pedestrian facilities. Not surprisingly, few places in the United States have incorporated Home Zone concepts. Prototypes are mainly related to traffic-calming efforts, but often exceed the scope of traffic calming. Examples of implementation of the *woonerf* concept can be found in a variety of communities and settings: Asheville, North Carolina; West Palm Beach, Florida, Boulder, Colorado; and Kalamazoo, Michigan. While three of these domestic examples are not called Home Zones, their goals and objectives are comparable and blend with the Home Zone concept. A chronological look at these representative cases will demonstrate the feasibility of such efforts in the United States.

2.3.1 Wall Street in Asheville: an alley turned “gold”

One of the earliest examples of incorporating *woonerf*-like design principles in the United



Asheville's Wall Street
Photo: Dan Burden

States can be found in Asheville. The redevelopment and redesign of Wall Street in Asheville comes very close to the Home Zone ideal. Originally an access alley running behind downtown's businesses, it was redeveloped in the 1970s to allow slow vehicular traffic mixed with pedestrians.

Evaluation

Today, the street is a top destination for locals and tourists alike and has mixed uses including a variety of businesses, a climbing wall, restaurants and a church. The very design of the area encourages traffic to move slowly. The roadway is narrow, has a curve, and has been resurfaced with pavers similar to cobblestone — all of these factors contribute to reduce vehicle speeds. Similar to Home Zone streets in Europe, there are no defined sidewalks,



Mixed pedestrian/vehicle traffic on Asheville's Wall St.
Photo: Dan Burden

everything is at-grade and only lampposts and bollards are used for roadway definition and separation. Most pedestrians walk in the street along with very slow moving one-way traffic.⁵⁰

Lessons from Asheville

Asheville's *woonerf*-like design has proven to be successful and spearheaded the revitalization of the city's downtown core area. It highlighted the fact that mixed pedestrian/vehicle traffic-calmed streets, such as Wall Street, are a viable alternative to both "deserted" pedestrian malls as well as wide arteries cutting through American downtowns.

2.3.2 Boulder's Cottages and Bridgewalk

In the mid-1980s, in another mountain community, Boulder, Wonderland Hill Development Company built the Cottages and Bridgewalk, two moderate-income housing developments based upon the Dutch *woonerf* concept.⁵¹ According to Jim Leach, an engineer and president of Wonderland Hills Development Corporation, the principle that guided him when designing those projects was ensuring that "the car doesn't have a negative impact on the neighborhood."⁵² He incorporated the *woonerf*



The Cottages: its narrow street and landscaping. Notice the bollards and level sidewalks. Photo: UNCHSRC

characteristics within the design of these two housing projects. The lanes through each of these housing developments are fairly narrow concrete surfaces bordered by landscaping and bollards to provide an edge, and they meander back and forth to encourage slow speeds, making conditions safer for

⁵⁰ FHWA 2002.

⁵¹ FHWA 2002.

⁵² Actman, McMahon, and Renski 2004.

pedestrians. In each case the housing is at moderate densities (seven units per acre in the Cottages).

The Cottages was built in 1983 and consists of a single lane that loops in a half circle from Utica Avenue. It is located within three blocks of Boulder's Foothills Park and includes 40 units of owner-occupied, moderate-income housing. The sidewalk along Utica remains level across both branches of Cottage Lane. This is intended to give the driver a perception of entering a traffic-calmed "Home Zone" environment.

Slow vehicle speeds are encouraged because the street is fairly short, narrow, and has a slight curve.⁵³



Bridgewalk: Walden Circle's curves were designed to slow vehicles down. Photo: UNCHSRC

Bridgewalk was built in 1986 and is significantly larger than the Cottages, with 123 rental units. Its street, Walden Circle, creates a loop attached to Tantra Drive with a short extension. The design prevents cut-through traffic. While the project was not a mixed-use development, the proximity of employment and recreational opportunities was taken into account when designing it. Due to the project's proximity to large parks and a planned office building, it was intended to be pedestrian-oriented residential neighborhood with a sense of community.⁵⁴

Evaluation

According to the case study conducted by the University of North Carolina Highway Safety Research Center (UNCHSRC), Bridgewalk has experienced some difficulties over the last dozen years. For one, the concrete bollards were built in such a way that when vehicles (particularly moving vans) hit and crack them, the concrete surface of the

⁵³ Actman, McMahon, and Renski 2004.

roadway also cracks. In addition, unlike European *woonerfs*, where the shared pedestrian/vehicle space becomes the primary area for residents to play and relax, Bridgewalk includes backyards, a pond, porches, and other areas for people to congregate. As a result, the shared pedestrian/vehicle space tends to be used almost exclusively by cars and not many pedestrians use the streets. Finally, despite the curves, Walden Circle has some portions that are relatively straight and free of obstructions. In these areas drivers tend to accelerate and the managers of Bridgewalk are considering the installation of speed bumps to deal with excessive speeds in the neighborhood.

In terms of safety, however, *woonerf* design in Boulder has proven to be successful. In the past 10 years, there was only one reported crash on Cottage Lane and one reported crash on Walden Circle, neither of which involved pedestrians. And, despite some challenges, the developments in Boulder do create the feeling of a tightly knit community and definitely provide some guidance for future *woonerf*-style projects in the United States.⁵⁵

Lessons from Boulder

According to Marty Frick, who was the project director of the Boulder Housing Authority during the construction of Bridgewalk, the use of *woonerfs* in developments needs to be very well thought out. She perceives the provision of sufficient parking space as essential, along with constructing walking areas distinguished by the pavement color or texture.

Roger Lewis, of Diversified Properties, which manages Bridgewalk, said that the



Bridgewalk: dense housing and narrow streets are intended to encourage pedestrian activity and create

landscaping improvements over the past decade have shown that creating an edge is essential in a project without curb and gutter. Finally, Jim Leach said that for these types of projects to work, it is essential that cities have flexible standards to allow site-specific variation

⁵⁴ Actman, McMahon, and Renski 2004.

⁵⁵ Actman, McMahon, and Renski 2004.

and innovations.⁵⁶

2.3.3 West Palm Beach: areawide approach to traffic calming

Automobile-dominated West Palm Beach was essentially *forced* to implement traffic-calming design in the early 1990s. Although the city started out with traditional traffic-calming measures, it subsequently enlarged them to accommodate characteristics akin to

Compared to typical North American programs that narrowly focus on driver behavior, speeding and collision reduction, the program in West Palm Beach can be considered a second generation in traffic calming.

Stillings and Lockwood (1999)

those in Home Zones. Although the city does not refer to any of its streets as Home Zones, *Woonerfs* or “living streets,” the result is that West Palm Beach is at the forefront of what has been called “the second generation of traffic calming”⁵⁷

which embraces many of the Home Zone principles.



West Palm Beach: traffic-calmed Clematis St. Notice the restaurant menu sign on the street. Photo: <http://www.firstboat.schoolreference.com>

The original goals of traffic calming measures in West Palm Beach were to reduce motor vehicle speeds, collisions and cut-through traffic in sensitive neighborhoods.⁵⁸ The approach then changed in several ways as the focus shifted towards a holistic city-wide approach to traffic calming, influenced by the arrival of Ian Lockwood, a traffic-calming proponent from

Toronto. The idea of traffic calming was expanded to incorporate street design as a means to reduce the negative social and environmental effects of motor vehicles. The goal of

⁵⁶ Actman, McMahon, and Renski 2004.

⁵⁷ Stillings and Lockwood 1999.

the “second generation” traffic calming in West Palm Beach was to enlarge the scope of calming measures to include aesthetics, to positively affect people’s perceptions of places, as well as modify driving behavior. This approach has helped to stabilize and revive the downtown area and “challenged neighborhoods.”⁵⁹

The makeover of West Palm Beach began with redesign of Clematis and Narcissus



West Palm Beach: a “living street.”

Photo: <http://www.firstboat.schoolreference.com>

streets. Similar to the Home Zone experience in Europe, citizen input has been encouraged and included into the creation of traffic-calmed areas. After incorporating public comments, the streets were permanently altered, mostly through narrowing. In addition, islands, humps and circles forcing drivers to go slow were installed and intersections were raised. Sidewalks were leveled with the streets and turn

lanes along with traffic signals were removed. As a result, both streets started to resemble *woonerf*-like design qualities.⁶⁰

Evaluation

Although retail businesses were skeptical about Lockwood’s traffic-calming schemes at first, they approved traffic-calming techniques once their sales started escalating due to increased pedestrian traffic. Where vacancy rates once reached 50 percent in the area, developers are constructing new buildings. Clematis Street regained its position as the heart of the downtown and property values along the street have more than doubled. A public amphitheater serves as a hub for city celebrations, including Thursday night block

⁵⁸ Stillings and Lockwood 1999.

⁵⁹ Stillings and Lockwood 1999.

⁶⁰ PTI 2004.

parties and Clematis Street now terminates at a public square with an array of fountains. What rented for \$5 a square foot a few years ago now goes for \$25, according to Lockwood. "People are starting to move downtown again," he says. "We did everything contrary to what traditional planning would do." The city building department "can hardly keep up with the renovation permits, all because we traffic-calmed a street."⁶¹

Overall, according to Stillings and Lockwood (1999), citizen involvement in traffic calming has instilled civic pride, beautified public spaces, improved safety, contributed to a sense of place and community and stimulated significant private investment.

Lessons from West Palm Beach

The West Palm Beach example has proven to be successful on many levels. Safety-wise, "second generation" traffic calming in West Palm Beach, similarly to Boulder's examples, has been extremely successful. Streets that have been traffic-calmed have 50 percent fewer collisions than conventionally designed streets and 80 percent fewer fatalities. The city has not had a single collision on a traffic-calmed street!⁶²

The transportation enhancements projects also have social implications. Lockwood states: "I get calls from commuters who say, 'Your job is to move cars as fast as possible,'" Lockwood says. "I say, my job is to make the city livable and sustainable. I don't think we should sacrifice quality of life in the inner city for people in the suburbs."⁶³



West Palm Beach: street life on traffic-calmed Clematis St.

Photo: <http://www.firstboat.schoolreference.com>

⁶¹ PTI 2004.

⁶² Nozzi 2000.

⁶³ Nozzi 2000.

2.3.4 Kalamazoo: former pedestrian mall turned into a *woonerf*

In yet another similar-sized city in Michigan, the pedestrian-only mall on Burdick Street



Kalamazoo: downtown woonerf.

Photo: Kalamazoo County USGenWeb,
<http://www.rootsweb.com/~mikalama/kalviews/mall2000.gif>

was recently turned into a quality downtown *woonerf*. The mall in question was the first pedestrianized downtown area in the United States, originally built in 1958. Due to lack of pedestrian activity, the vehicle traffic was finally reintroduced in the mall's 3-block area in October 1998, ironically, to reclaim downtown for pedestrians as

well as to bolster retail activity. According to *Planning* magazine, Kalamazoo planners have employed *woonerf* design guidelines in their new treatment of Burdick Street. Still more a pedestrian space than a conduit for traffic, the newly reclaimed thoroughfare does



Kalamazoo: attractive woonerf design.

Photo: Kalamazoo County

retain many of the pedestrian appointments of the original mall, but also features a central alley and parking bays to accommodate the formerly forbidden automobiles.⁶⁴

The design of the *woonerf* is of remarkably high quality. The actual street is one way and only 14 feet wide, and naturally slows the traffic down. Similar to European *woonerfs*, a consistent paving treatment, and shallow rollover curbs help to blur the distinction between pedestrian and vehicle

⁶⁴ Flisram 2000.

spaces. Even the design of traffic bollards is attractive: twin pairs of 12-foot-tall “traffic bollard” monuments mark each end of the mall, and discourage most through traffic.⁶⁵

Evaluation

The purpose of allowing vehicle traffic on Kalamazoo’s pedestrianized Burdick Street was to increase the activity in the mostly deserted downtown area. *Woonerf* design made the street a destination for pedestrians, tourists, and shoppers, rather than a thoroughfare for speeding motor vehicles. As Flisram points out, “the reintroduction of vehicle traffic is more a matter of perception than of function, and clearly this was the intent.”⁶⁶ The traffic on the Burdick Street *woonerf* moves slowly and automobiles are treated as “guests” there rather than primary users.

Lessons from Kalamazoo

It remains to be seen how successful this shared downtown street in Michigan is going to be in attracting activity in downtown Kalamazoo. According to some evidence, pedestrian activity on Burdick Street has picked up slightly since its reopening, but recent closures of several large retail businesses along the *woonerf* might prompt a contrary evaluation.⁶⁷ As of today, the main significance of the *woonerf* in Kalamazoo might be that as a pilot downtown *woonerf* in the United States — it has the potential to showcase how attractive *woonerf* design can be and offer future guidance to similar projects in the United States.

2.3.5 Other Community streets akin to *woonerf*: Missoula, Portland, and Brookline

While the above examples showcased successful examples of projects resembling Dutch *woonerf* design-wise, probably none of them fully incorporated and have been very successful in adhering to the Dutch concept of shared community street, where children, the elderly, and other pedestrians feel safe. However, a few residential neighborhood

⁶⁵ Flisram 2000.

⁶⁶ Flisram 2000.

⁶⁷ Flisram 2000.

developments constructed in recent years have successfully attempted to create this comfort level.

- **Missoula: Home Zone, *functioning like one***



Missoula: safe residential Home Zone.

Photo: <http://www.homeword.org>

In 1998, in Missoula, homeWORD, a nonprofit development organization, designed and built Fireweed Court, 12 units of affordable two- and three-bedroom townhomes.⁶⁸ This development successfully incorporated Home Zone principles. A real “life test” of a woonerf design is how safe it is perceived by

its primary users, the pedestrians and residents living in the area. The Home Zone in Missoula truly has passed the “test” since children perceive the *woonerf* to be safe enough to play right on the street.

- **Portland: semi-private Home Zone**

In Portland, Robert S. Leeb Architects designed a mixed-use housing development called Knott Street Townhomes that utilizes a



Missoula: Neighborhood designed for people. Notice level sidewalks and toys left on the street.

Photo: <http://www.homeword.org>

⁶⁸ homeWORD 2004.

woonerf. According to the designers, the reason for incorporating the Home Zone design guidelines in their project was to create a sense of community.⁶⁹ The 42 row houses situated between NE Martin Luther King Jr. Blvd and NE 7th Avenue are located along a serpentine-like neighborhood road has all the design qualities of a European *woonerf*.



Portland: pedestrian-friendly *woonerf*.

Photo: RSLARC
<http://www.rslarc.com/Knott.ht>

- **Brookline: Webster community street — the beginning of a trend?**

According to the Town of Brookline, recent redesign of Webster Street is “the first true



Brookline: community street/plaza: one of many to follow?

Photo: <http://www.brooklinecourtyard.com/>

community street in the region, and perhaps the nation.”⁷⁰ Webster Street, and the area adjacent to the newly built Marriott hotel there, was turned into a plaza-like area where pedestrians, bicyclists, and others can share the space safely with cars and other motor vehicles. The physical layout of Brookline’s *woonerf* requires drivers to proceed slower and more carefully than on other streets in the area. Webster Street circa 2004 fully resembles Dutch *woonerf* in its design; the conventional street disappears in a patchwork of different brick pavings in front of the Marriott hotel; there are no big curbs, and sidewalk and street are at the same level. Landscaped "bump-outs" extend out into the street periodically, encouraging reductions in speed.⁷¹ While Webster Street redesign is the first attempt to incorporate the Home Zone principles and goals in the

⁶⁹ RSLARC 2004.

⁷⁰ Town of Brookline 2004.

⁷¹ Flint 2004.

Boston area, other *woonerfs* have already been proposed in the area. Upcoming *woonerf* developments in Boston may spearhead a trend.

Section 3 How to accommodate Home Zones in New Jersey

3.1 A commitment to enhance walking, cycling, and smart growth

The Home Zone concept captures the spirit of a number of policies in New Jersey aimed at countering the negative effects of sprawl and car dependency. For example, the New Jersey State Development and Redevelopment Plan, adopted in 2001, calls for a policy objective that “Promotes design that enhances public safety, encourages pedestrian activity and reduces dependency on the automobile.”⁷²

Home Zones fit perfectly into these goals since they prompt communities to build spaces that encourage walking, cycling and active

recreation close to home, school and work. The use of Home Zones could be an important tool in New Jersey’s efforts for smart growth development — creating livable neighborhoods, higher densities, and improved quality of life, as well as encouraging multimodal forms of transportation. Home Zones also support the goals of New Jersey’s Bicycle and Pedestrian Master Plan: encourage walking and cycling, reduce vehicle speeds, and enhance the quality of life and feelings of safety.



*A walking and biking trail in Johnson Park
Highland Park, NJ*

Photo: VTC

Another link to existing programs and initiatives can be found with Context Sensitive Design (CSD), which was formally incorporated into the New Jersey Department of Transportation’s procedures in 1999. This new approach to transportation planning recognizes that transportation has wider societal impacts. Similar to Home Zones, it is “a

⁷² New Jersey State Development and Redevelopment Plan 2001, 192.

collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting, and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility.”⁷³ CSD encourages transportation planners to collaborate with citizens and stakeholders to design projects reflective of local input and specifics.

Home Zones in the UK, it was noted above, were part of a “Safe Routes to School” program” for children. Similarly, New Jersey’s Safe Routes to School Program could lead to implementing Home Zones. The goals of both Home Zones and the Safe Routes to School program enhance the possibility for children to be physically active in public space and to increase their mobility. Home Zones would allow children to be out on their own in a safe and pleasant environment with fewer cars traveling at slower speeds and more people about to watch them.

In sum, Home Zones should be recognized as an extremely useful tool in New Jersey’s toolkit for achieving a better-quality built environment. Furthermore, the utilization of the Home Zone model through programs such as these is important — Home Zones are found to be successful mainly when they are part of a larger strategy to reduce or slow automobile traffic.

3.2 How to make it happen: best practices

The most comprehensive and recent empirical comparative study concerning best practices in constructing Home Zones exists for the United Kingdom (see Biddulph: 2001). The findings below rely mainly on that study, but refer also to examples cited earlier in this paper.

Ingredients for Success

- Broad public input and endorsement
- Located in areas where green space and public gathering space are in short supply

⁷³ Project for Public Spaces 2004.

- Interaction among existing residents is already high
- Traffic safety is perceived as a problem by local residents
- Traffic volume, particularly unavoidable through traffic, is not too high⁷⁴
- Home Zone designations are not too lengthy⁷⁵ and are part of a larger traffic calming initiative
- Parking is in sufficient supply close to the neighborhood

Design Elements

From a design perspective, it has been found that it is crucial to

- Make no distinction between sidewalks and the road. It is important to mix all types of traffic to create a sense of common space that is not designed for auto dominance. Features that distinguish between space for cars and spaces for other users defeat the purpose of the Home Zone.
- Use signage and street furniture to convey that the Home Zone is a living area and not a through way for vehicles.
- Make certain that traffic calming elements are illuminated at night to increase their visibility and provide their desired effect all day.
- Ensure that the design allows areas for children to play and that social interaction does not unduly disturb individual homes (e.g., noise).

Planning Process Elements

In setting up Home Zones and related initiatives, given that public input has proven the best indicator of success, the following actions are recommended in the planning process:

- Include all affected stakeholders in the planning and design decisions. This encompasses local politicians, housing professionals and developers, as well as citizens from the area. Consulting residents before Home Zone construction

⁷⁴ Home Zones in Europe tend to be developed in mainly residential streets that do not need to carry large volumes of through traffic. Some research suggests that Home Zones are most appropriate in streets that are used by fewer than 100 vehicles per hour at peak times, and that continuous treatment should be less than 600 meters in length (400 meters for a cul-de-sac). It is important to note that these are guidelines. There is no research to suggest that the concept could not work in areas where traffic volume exceeds these levels (Biddulph, 2001).

begins helps to sharpen mutual understanding of the problems and goals and thereby overcome potential misunderstandings.

- Devote sufficient time to allow all stakeholders to express their points of view and suggestions. It is especially important to include typically underrepresented groups, such as the elderly and children, since they are major user groups who will inhabit the public space and contribute to its liveliness.
- Use independent facilitators to coordinate different stakeholder groups. Studies have shown that public acceptance of independent mediators is much higher than that for government officials, government planners, or planners working for developers.
- Designate a leader to run the project to assure continuity. Projects with assigned lead persons and that avoided changing roles throughout the establishment of a Home Zone tended to be more successful.
- The parking should not be too close to homes, to allow for social interaction. An ample supply of nearby, convenient parking is one of the main concerns of residents. Yet it is important to note that many residents say they are willing to bear some inconvenience with parking to enjoy the higher quality of life and social interaction that Home Zones provide.

Home Zones are not the single solution to the traffic and environmental problems that communities are facing today. Yet, the Home Zone concept does offer a valuable and more inclusive approach to the use of public space and allows communities to reclaim some of the space that had been the exclusive province for vehicular movement.

Summary of Benefits

As outlined in this paper the benefits of a “Home Zone” concept are desirable for a variety of reasons:

- More “eyes on the streets” and knowing your neighbors can reduce [perceived] safety and security concerns

⁷⁵ It is suggested in Biddulph (2001) that 600 meters in length for normal streets, and 400 meters for cul-de-sacs are appropriate limitations.

- More outdoor play can increase children’s independence and individualism and enable them to learn essential skills
- Walkable and bikeable environments that can significantly enhance mobility and health, especially for children and the elderly as both groups often depend on others to get around
- Transferring certain local auto trips to alternative modes such as walking and biking can help reduce congestion, safety hazards and pollution, and improve residents’ well being.

Conclusion

This paper is not a comprehensive guide to Home Zone planning and design; rather, its intent is to raise awareness of a concept that could make our New Jersey communities more livable. The concept has worked successfully in Europe and its potential for the United States should be explored in more depth. The benefits highlighted here call for closer research into the feasibility of creating Home Zones in New Jersey. Professionals and public officials in New Jersey are currently using traffic calming concepts. With some vision, and with proper coordination and planning, the Home Zone concept could become a reality in many communities across the state.

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