USING SPATIAL MODELING TO DESIGN ELDER-FRIENDLY URBAN ENVIRONMENTS

applied collaborative research in west philadelphia

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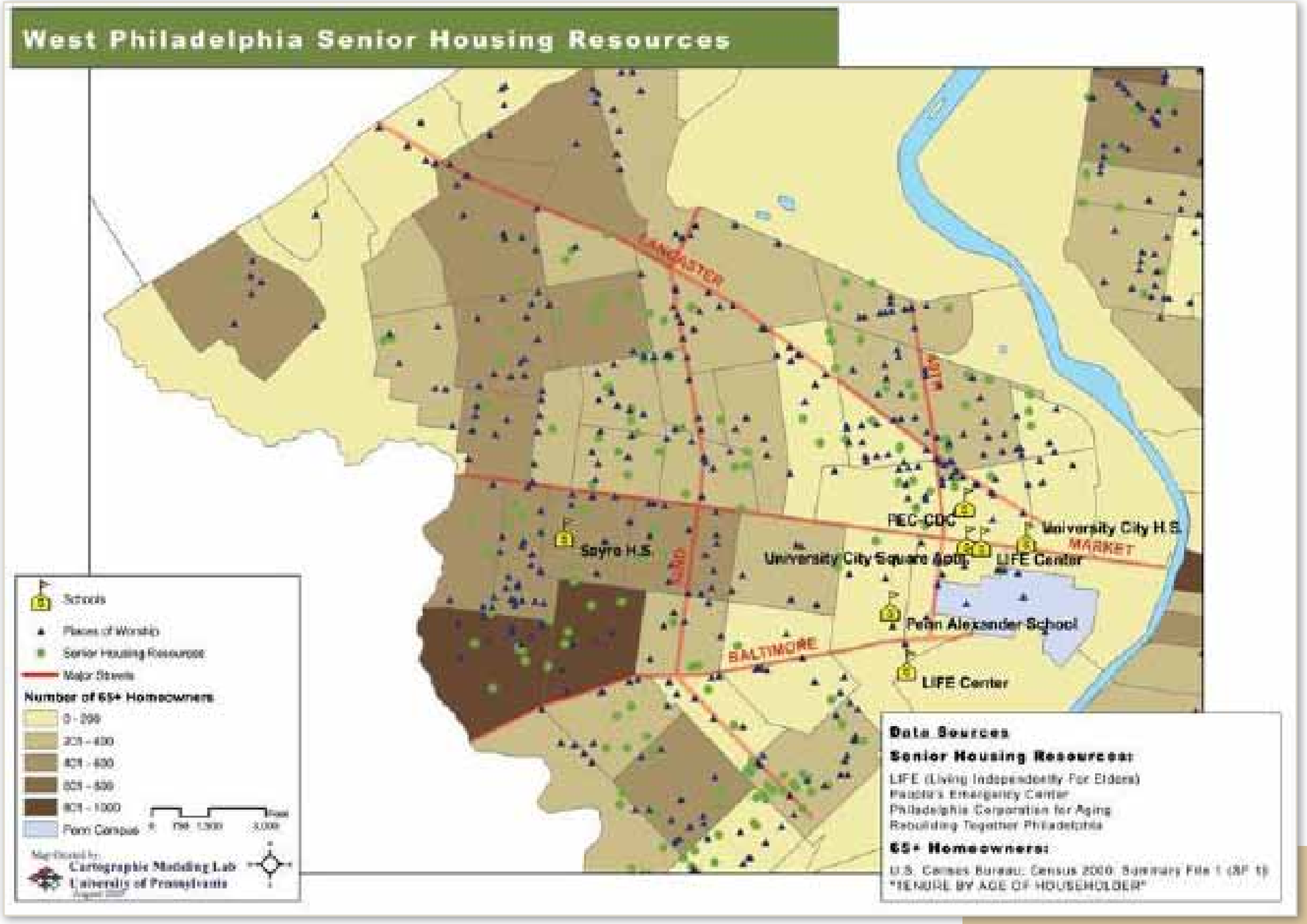
CHAPTER TWO

In her inaugural address,

University of Pennsylvania President Amy Gutmann proposed the "Penn Compact" to encourage collaborative engagement with the University's local and global communities. Her remarks called for strengthening Penn ties with West Philadelphia and other urban neighborhoods to share "integrated knowledge wherever there is opportunity for our students, faculty, and alumni to serve and to learn" (Gutmann, 2004). One response to this was the creation of a forum of faculty, students, and administrators from the disciplines of nursing, social work, design, urban planning, law, and government supported by the Penn Institute for Urban Research. The forum initiated a collaborative effort to address two particular questions facing older adults in the neighborhoods surrounding the Penn campus:

What are the needs of the West Philadelphia Aging Community?

What is the relationship of the UniversitytoitsAgingCommunity?



ABOVE Map 1 - Map of West Philadelphia senior housing resources

This initiative, entitled Redefining the Interdisciplinary: Toward Elder-Friendly Urban Environments, had three major objectives to:

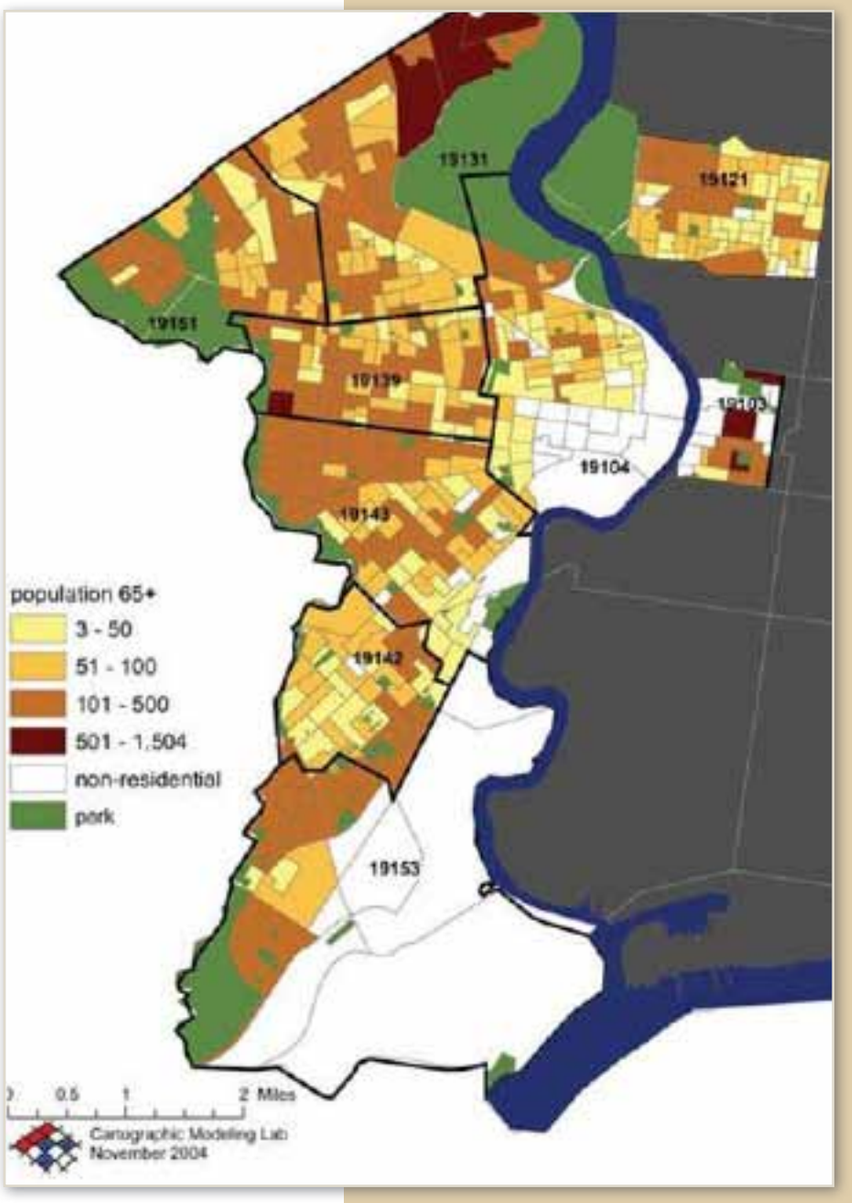
- Improve and sustain quality of life for older adults in West Philadelphia;
- Integrate knowledge related to aging needs from different disciplines and perspectives through research, teaching, and praxis; and
- Support communities and neighborhoods in West Philadelphia.

Older adults in West Philadelphia are confronted daily with health risks greater than those of the general population. This can be attributed to a number of factors including disparities in access to care, physical disabilities, need for functional home adjustments, and financial vulnerabilities. Older adults are also impacted by crime and exposure to violence, an aging and diminishing civic organization leadership, lack of available community amenities (shopping, banking, transportation), and the challenges faced by relatives to support older family members. Older adults who own homes or rent in West Philadelphia often must choose between staying in their own homes or leaving the neighborhood to gain access to necessary care.

Recognized as a leader in aging research and practice, the University of Pennsylvania has the opportunity to address these needs by integrating knowledge from various disciplines and engaging with the community. Since 1994, Penn has had a strategic focus on supporting the revitalization of its surrounding neighborhoods through a comprehensive effort with the community and city (www.upenn.edu/campus/westphilly/casestudy). The University's commitment to serving the elderly and their families in West Philadelphia is illustrated by the Penn School of Nursing's Living Independently For Elders Program (LIFE), which has provided comprehensive nursing, medical, rehabilitation, and social services as well as an array of recreational activities to more than 500 older adults since 1998. Through capitated Medicare and Medicaid funding, this program enables low-income older adults who are otherwise eligible for care in a nursing home to remain with family and friends in their West Philadelphia homes and neighborhoods. This program receives support from the Commonwealth of Pennsylvania's Department of Public Welfare, which grants the LIFE Program sole "franchise" rights to eight zip code catchment areas in West and Southwest Philadelphia.

Penn community partnerships with older adults in West Philadelphia have also redesigned elder-friendly living along the western campus boundary. In 2004, the School of Design's Penn Praxis Program partnered with a senior-living high rise residential complex to form the Friends of 40th Street. This community partnership was created soon after the University had remodeled retail space, housing, and both pedestrian and transportation access along 40th Street. Its purpose was to advocate for equitable development along the 40th Street commercial corridor in response to concerns about the impact of increases in both residential and commercial real estate values on vulnerable residents.

The multidisciplinary collaborative consists of representatives from: the Philadelphia Corporation on Aging (PCA), the Community Design Collaborative of the Philadelphia Chapter of the American Institute of



ABOVE Map 2 - Distribution of West Philadelphia residents aged 65 and older

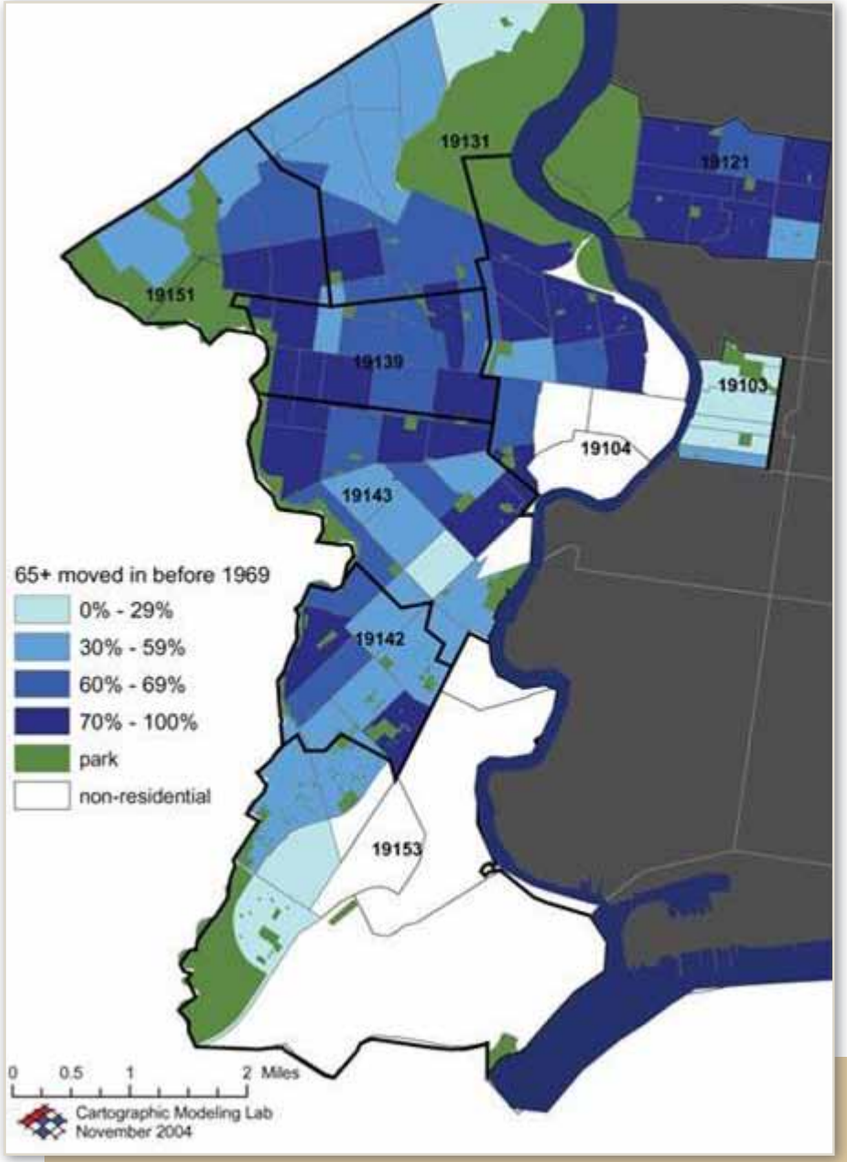
Architects, the Senior LAW Center, the City of Philadelphia Department of Health, the Commonwealth of Pennsylvania Departments of Aging and Pubic Welfare, the People's Emergency Center Community Development Corporation, the Homeownership Counseling Association of Delaware Valley, and Rebuilding Together Philadelphia, among others. Its mission is to address the role of the University and how it relates to the adjacent aging community, and to identify the needs of older adults in the West Philadelphia community. We ultimately focused on the same geographic area in West Philadelphia served by the LIFE Program and Friends of 40th Street.

PHASE I: DEFINING THE PROBLEM

Philadelphia has an unusually large senior population. It ranks second only to Miami among 23 U.S. cities studied by the Brookings Institution in the proportion of residents age 65 years and older (Brookings Institution, 2003). Homeownership rates among older adults in Philadelphia are also considerably higher; 78% of seniors over the age of 60 are homeowners, and seniors make up one-third of all homeowners. Most live in houses built prior to 1940 that are in need of repair or adaptation to accommodate the changing needs of their aging residents. A large percentage of seniors in West Philadelphia (including both homeowners and renters) are poor, with approximately 20% of seniors throughout the city living in poverty (Philadelphia Corporation for Aging, 2006).

As a major academic and research based university located squarely within this urban environment, the University of Pennsylvania enjoys a distinct perspective. Not always viewed as a good neighbor to the West Philadelphia community, Penn has worked hard over the past several decades to become an active partner in the development and delivery of resources and services for the West Philadelphia community.

Penn's commitment to West Philadelphia has had a dramatic influence on the real estate market in the neighborhoods closest to the University. Due in part to University initiatives that encourage Penn faculty and staff to purchase homes in West Philadelphia, real estate in certain parts of the area has skyrocketed in price and estimated value. These changes can have both positive and negative consequences for residents. Though increasing property values can be a boon to homeowners by increasing equity in their homes, improved neighborhood conditions can also lead to increased rental rates and property taxes, which can force older adults relying on fixed incomes to leave their neighborhoods in search of more affordable accommodations.



ABOVE Map 3 - Age 65 and older residents that moved into West Philadelphia before 1969

PHASE II:

BUILDING THE COLLABORATION INFORMED BY SPATIAL MODELING

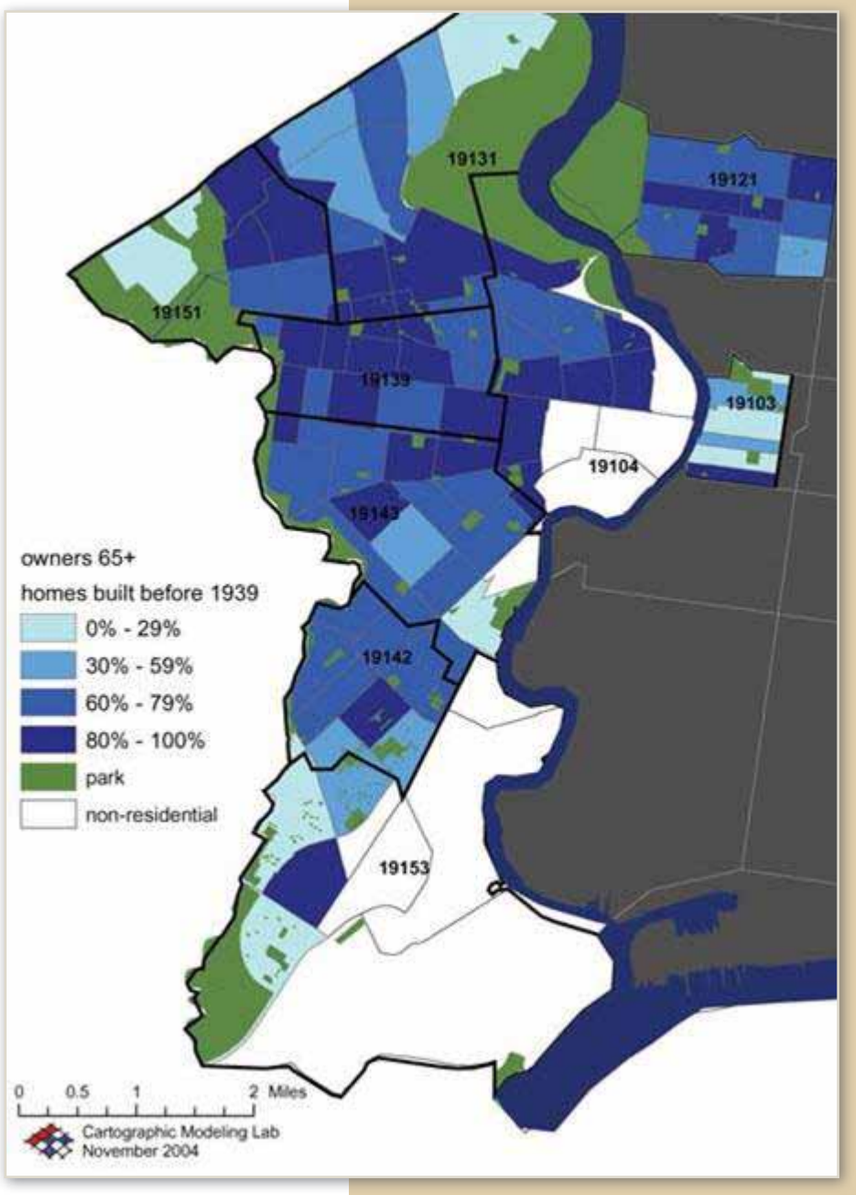
To address these issues, we first identified existing information and possible data sources. The PCA reports of 2004 and 2006 provided valuable demographic information and analysis about the current and projected profiles of Philadelphia's older residents. According to PCA, the proportion of older Philadelphians over the age of 85 in the year 2010 is expected to grow by 20.5%. Of those who are now over the age of 85, 47% have Alzheimer's Disease. Nearly 35% of older Philadelphians live alone, yet few of their homes meet disability access standards. Most homes have entry steps, no accessible powder room on the first floor, and/or lack the wide doors and hallways necessary to accommodate a wheelchair. Finally, survey results indicate that a consistent predictor of satisfaction with health conditions and services delivered is a feeling of belonging to the neighborhood.

We needed more detailed information, however, to know more about the specific details of West Philadelphia in relation to the concerns of older adults living there. Using spatial modeling techniques, we were able to dramatically enhance our understanding of the needs of older adults residing in West Philadelphia. Spatial modeling is particularly helpful in drawing environmental inferences from socio-economic data. It helps to integrate different types of data in order to emphasize the role of place and its impact on the quality of older adults' lives, an important component of this project. Through spatial modeling, we have a more specific understanding not only of older adult homeowners but also of the neighborhoods that are served by multiple agencies. This information will enable us to effectively match those agencies' services with the needs of a clustered group of individuals.

Utilizing the expertise of Penn's Cartographic Modeling Lab (CML), maps were created that depict the demographic characteristics for West Philadelphia. The maps more clearly convey the complexity of issues that result from an aging population living in aging housing within the broader context of an aging community. These maps establish a basis for further analysis of the needs of older homeowners in specific neighborhoods. We distributed them to community representatives in focus groups intended to identify strengths and needs of the community. As seen in Map 1, resources for seniors such as places of worship, and senior housing and centers are scattered throughout the geographic area and key University partnerships such as the LIFE Center, University City Housing, and Sayre High School outreach programs for older adults are located adjacent to neighborhoods and the University.

As Maps 2, 3, and 4 indicate, West Philadelphia overall is an "aging" neighborhood. The proportion of residents over age 65 is 30% or greater in many areas (Map 2). There are also areas with concentrations of 60% or more. As Map 3 illustrates, a large majority of these older citizens are long time residents who have lived there since at least 1969. Combined with the information in Map 4, which shows the large percentage of older homeowners living in homes built prior to 1939, this clearly suggests that there are many long-term homeowners living in older homes that were not designed for older residents.

BELOW Map 4 - Distribution of homes in West Philadelphia built before 1939



The maps also reveal specific critical demographic characteristics that suggest other potential needs in this locality. For example, there are areas of concentration of homeowners at age 85 or older, a population of particular concern (Map 5). Furthermore, many older homeowners (70%) in West Philadelphia have high mortgage burdens, paying 35% or more of their income for home mortgages (Map 6). Many older adults have at least one disability and, as shown in Map 7, there are high concentrations of disabled older adults throughout the area.

The use of spatial modeling also provided useful information to LIFE and Friends of 40th Street. Information regarding the number of older adult homeowners who owned homes built before 1939 enabled the LIFE Program to garner public and private funds to offer support for home repairs. Prior to the spatial modeling assessment, such information was known only on an anecdotal basis. Spatial modeling provided information on the breadth of the issue for all older adults who could use the LIFE Program service, allowing LIFE to initiate strategies that not only support the goals of the program but can ultimately improve quality of life for the broader community.

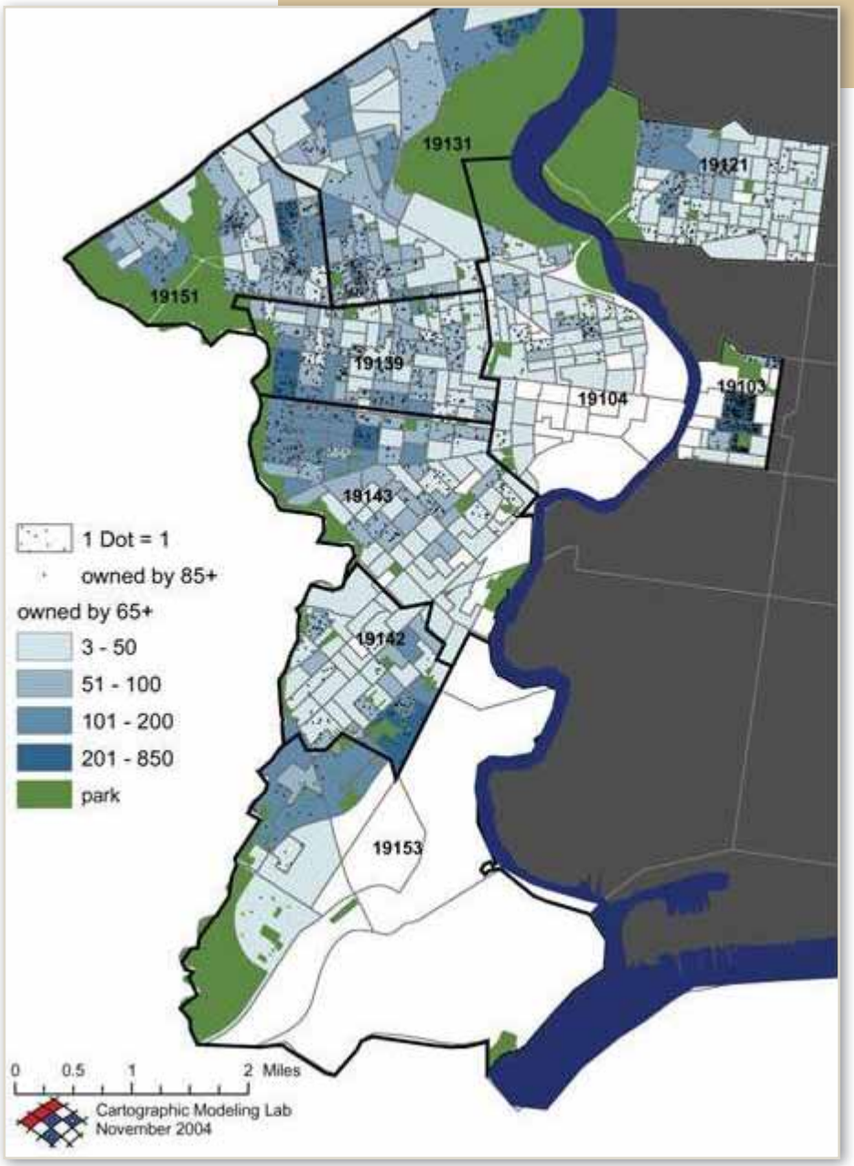
It became clear after reviewing the maps and other data sources that the next step for the collaborative is to develop a prioritized list of needs. Spatial modeling provided the essential foundation from which to formulate issues for further analysis.

PHASE III:

UNDERSTANDING STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

Next, an analysis of Strengths, Weaknesses, Opportunities, and Threats (SWOT) was conducted through a series of brainstorming meetings between faculty, students, and local community stakeholders. Two major concerns were identified: the implications of increasing home property values and gentrification for older residents who wish to remain in their homes; and the home adaptation and maintenance required in order for elders be able to continue living in their neighborhoods. Of particular concern were increased property taxes, predatory lending practices targeted at older homeowners, and problems with unscrupulous contractors.

BELOW Map 5 - Distribution of houses in West Philadelphia owned by a resident 65 and 85



PHASE IV:

THE VOICE OF THE COMMUNITY

Once we identified potential areas for concern, we decided to solicit direct input from the elderly community in West Philadelphia. In February 2006, we conducted the first in a series of focus groups. Thirteen participants provided information via group discussion and a written survey on living situations, health conditions, neighborhood concerns, legal matters, transportation, home repairs, and affordable housing alternatives.

The majority of participants were female, between the ages of 70 and 78, and unmarried. Almost all were African American. They resided in several different neighborhoods, and most owned their homes. A majority indicated a need to make home repairs and a lack of knowledge about how to do so. Most were still physically able to leave their homes in order to conduct daily business by driving or using public transportation for errands or social activities. Most indicated an interest in obtaining information about assistance with home repairs or modifications. Participants were most interested in various legal aspects of home ownership (e.g. transferring a deed), the benefits of a reverse mortgage, and how to modify their homes to make them safer. Community leaders and advocates in attendance were able to provide participants with resources and information at the end of the discussion.

PHASE V:

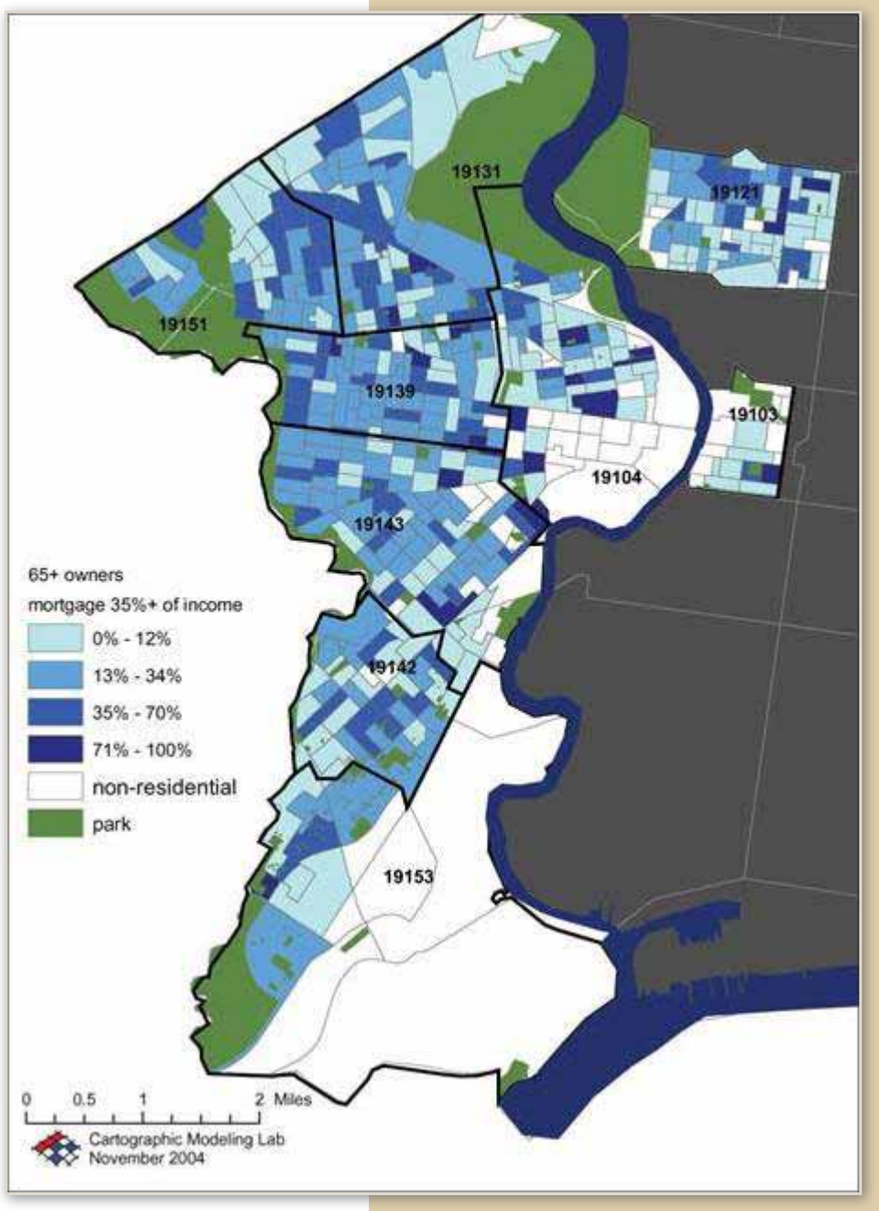
PULLING IT ALL TOGETHER - THE FACULTY FORUM

To maintain, develop, and implement education programs for homeowners, the collaborative applied for and received University support through the Penn Institute for Urban Research. Both the initial spatial modeling assessment and discussion that was informed by the spatial modeling enabled us to establish an interdisciplinary forum bringing together a wide variety of Penn faculty in conjunction with community based groups to pursue our goals to:

1. Develop new interdisciplinary research collaborations to examine challenges of older adults in urban environments;
2. Explore rigorous community-based participatory research methodologies to address issues that older adults living in urban environments face; and
3. Develop and implement civic engagement in West Philadelphia to foster community-based participatory action research that educates policy makers and sustains elder-friendly urban communities.

A community-based arm of this project called the Senior Collaborative is now coordinating the efforts of its community and University members to address the direct needs and concerns of homeowners in West Philadelphia. This project will build upon the critical knowledge of West

BELOW Map 6 - Distribution of West Philadelphia homeowners whose mortgage is 35% of their income or greater



Philadelphia generated from spatial modeling exploration, our partners' extensive engagement with the West Philadelphia community, and faculty research from across the University.

Spatial modeling provided a key element to this knowledge base, enabling the collaborative to develop an initial understanding of the community and to seek additional information from community providers, leaders, and residents. We anticipate continuing to use spatial modeling throughout the project to supplement other data collection techniques and enhance our response to this community's specific needs. For example, we hope to begin mapping resources (e.g. health care sites, shopping, etc.) in order to focus and prioritize our intervention efforts. In addition, this initial phase of the project will conclude with a national conference. The conference will explore best practices in urban design, housing, health care, social services delivery, and governmental support to holistically address the needs of the elderly in an urban environment and to demonstrate how specific techniques may be used in other cities to understand and respond to the needs of that locale.

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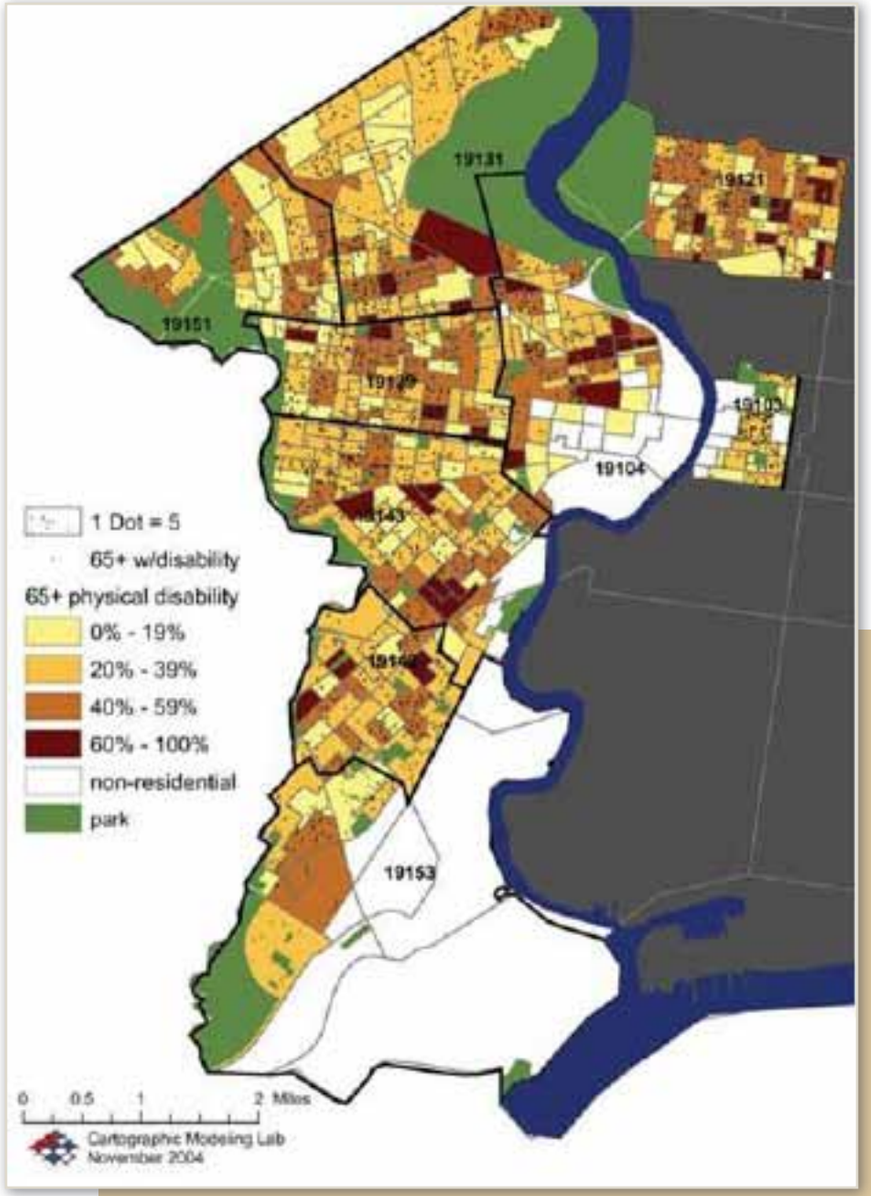

ABOVE Map 7 - Distribution of West Philadelphia residents with a physical disability