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A *Needs Assessment for Repairs to Low-Income Owner-Occupied Housing in Delaware*

Prepared for

The Tri-County Habitat for Humanity Organizations in Delaware

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November 2022

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List of Acronyms

World Health Organization (WHO)

American Public Health Association (APHA)

National Center for Healthy Housing (NCHH)

U.S. Department of Housing and Urban Development (HUD)

American Housing Survey (AHS)

Metropolitan Statistical Areas (MSA)

Poor Quality Index (PQI)

HUD Area Median Family Income (HAMFI)

American Community Survey (ACS)

New Castle County (NCC)

Delaware State Housing Authority (DSHA)

Livable But Poor Condition (LBPC)

Community Development Block Grant (CDBG)

Milford Housing Development Corporation (MHDC)

Section 1

An Introduction to Substandard Housing and Health Impacts

INTRODUCTION

In a joint study, the Philadelphia Federal Reserve Bank and Policy Map estimated that, in 2018, one-third of owner-occupied housing nationwide needed some sort of repairs. This comes out to 26 million units needing repairs, with a corresponding aggregate price tag of $81.8 billion. The estimated average repair cost per unit in need was $3,142, and about a fifth of these units would need over $5,000 to make those repairs.[i]

While these numbers are large, in many instances the homeowners will take care of needed repairs on their own over the course of the year. As any homeowner quickly realizes, home repairs are part of homeownership. Things break, wear out, and need to be replaced. Many households have resources set aside for this, or can come up with resources to make these repairs. As the aforementioned study notes, many of the yearly repair needs get made, and new repairs in different homes will make up most of the repair need in subsequent years.

However, not all households can keep up with timely maintenance and repairs. Financial means is often a determining factor in the ability to do so. While homeownership becomes less common as household income drops, those who do own homes face heightened challenges with upkeep. Compared to medium and high-income income homeowner households, low-income homeowners (i.e., living at or below 80 percent of area median household income) typically face higher repair costs (average cost $3,842) than higher income homeowners, and have less means to pay for these repairs. This creates conditions where, when needed repairs and maintenance are not made, physical and structural problems in the home accumulate to the point where the home is considered "substandard," in that it "poses a risk to the health, safety or physical well-being of occupants, neighbors, or visitors."[ii] Substandard housing, insofar as it leads to and exacerbates health problems, can incur health costs in addition to home repair costs, impair employment and increase risk for mortgage default, foreclosure and abandonment.[iii, iv]

The problem of unmet home repair needs among low-income homeowners goes beyond the individual households. Deteriorating housing systematically impacts health, on a population level, on a scale to where housing is considered to be a key social determinant of health.[v,vi] Social determinants of health are "environmental and societal factors that affect how healthy a person is."[vii] Deteriorating housing also negatively impacts the surrounding neighborhood, while attention to attention to a neighborhood's physical surroundings, including home repairs, contributes to decreased levels of crime and increased social connectivity.[viii] Finally, when

housing for low-income households deteriorates to the point where dwellings become uninhabitable, it decreases the stock of affordable housing, which is already at critically low levels in Delaware and nationwide.[ix]

This report presents an assessment of the need for assistance with housing repairs for low-income homeowners in Delaware. We do this in four sections. In the remainder of this section, we provide a brief primer for better understanding home repairs and substandard housing on a broad scale. To do this, we:

- introduce and explain four principal dynamics that facilitate the formation of substandard housing;
- examine what substandard housing most commonly looks like, in terms of the conditions that render housing substandard and the repairs most often associated with remediating substandard housing; and
- show how substandard housing represents a crucial health issue by reviewing how unaddressed repairs and substandard housing conditions lead to a range of negative health outcomes.

Taken together, the review in this section introduces key factors that we use throughout the remainder of this needs assessment. Then, in Section 2, we use available quantitative data and findings from other studies of housing repair need to, first, present profiles of areas in each of the three Delaware counties that likely contain substantial amounts of housing repair need, and then generate estimates of the number of low-income, owner-occupied homes that need repairs and are substandard and of costs associated with addressing these repairs. In Section 3, we present findings from interviews that we conducted with key stakeholders involved with providing home repair assistance in Delaware, and use their experience-based assessments to augment the more quantitative findings from Section 2. Finally, in Section 4 we summarize the key findings presented in this study and provide recommendations based upon our findings.

GENERAL CONDITIONS THAT LEAD TO SUBSTANDARD HOUSING

Four conditions often are present when there is substandard housing. Substandard housing is likely to be *aged housing*. *Low-income homeowners* are more likely to own older housing that needs repair. *Elderly homeowners* often have older housing, fixed incomes, and health conditions that require home accommodations. *Minority homeowners*, especially when they are low-income, have less access to credit and other resources to make repairs.[x] Each of these four factors: low-income homeowners, aged housing, presence of elderly or disabled in the household, and discriminatory treatment faced by minority homeowners, are associated with substandard housing.

Low Income

The link between low-income homeowners and substandard housing is simple in that limited financial means make it more challenging for homeowners to make needed home repairs. Limited means also means that low-income households often can only afford to purchase homes that are older or of lower quality, and thereby are more prone to needing repairs and maintenance. They are also more likely to have been first-time homebuyers that are less versed in what it takes to maintain a home, and with a more limited social network that can provide support and education for doing so. Low-income homeowners are frequently resourceful in coming up with ways to make needed repairs, but can also be likely to face conditions where housing problems are left unattended and as a result housing conditions deteriorate. This juxtaposition, where low-income homeowners face housing problems at more than twice the rate of higher-income homeowners, while repairing their homes less often and spending less on repairs, represents the crux of the link between low-income and substandard housing.[xi, xii, xiii, xiv]

The individual hardships among low-income homeowners tend to be concentrated geographically in declining or distressed areas.[xv] This means that low-income residential areas with high levels of homeownership are likely to contain many households that would benefit from assistance with home repairs, and that the provision of assistance with home repairs would benefit not only individual households, but also uplift the quality of entire neighborhoods and communities.

Housing Type - Aged Housing and Manufactured Homes

High proportions of housing owned by low-income households are either aged or manufactured or both. Each of these will be briefly reviewed, with a focus on how each of these have implications for substandard and unhealthy housing conditions.

Age of a structure is one of the most direct indicators of its need for physical improvements and repairs.[xvi] As homes age, they become more prone to depreciation in value as they physically deteriorate or are in locations that become less desirable. This is reflected in a process called "filtering," in which once-higher priced homes over time become more available to lower-income households. Filtering "enables lower-income households to move up as well, and to occupy units that at one time had been the preserve of middle- or even upper-income households."[xvii] Put simply, erstwhile owners leave older homes in pursuit of more desirable housing, and the homes they left behind are priced to where they are more affordable to lower-income homebuyers.

In this way, the US housing market allows aging housing to be a primary means of creating low-income housing.[xviii] While this filtering of older housing makes them affordable to an expanded number of homebuyers, these lower income households may have less means and ability to properly maintain this housing at the same time that aging housing requires more upkeep.[xix] As a result, older housing that has filtered down to low-income households, especially if they are located in areas marked by more general economic decline, are at higher risk for deteriorating to where they are more prone to becoming substandard. This can lead to a cycle where substandard housing can contribute to poor health outcomes, which in turn can exacerbate poor economic outcomes.[xx]

In Delaware, about 8.5 percent of owner-occupied housing—20,000 units—are manufactured homes.[xxi] "Manufactured housing [are] homes that are built to a federal standard in factories and typically placed on land that the homeowner owns or on rented lots in communities of manufactured homes ... In many parts of the U.S., homes like these are the least expensive kind of housing available without a government subsidy."[xxii] Especially in rural areas, manufactured homes account for a significant portion of rural homeownership growth, particularly among low-income households.[xxiii] As such, in Delaware as well as in the rest of the U.S., manufactured housing is frequently cited as a key component of more general solutions to shortages in affordable housing.[xxiv, xxv]

While low-income manufactured homeowners face repair needs that are similar to those who own "stick-built" homes, there is more of a reluctance to provide repair assistance for older manufactured housing units. There are two primary reasons for this. First, the durability and quality of manufactured housing has improved considerably since 1976, when the US Department of Housing and Urban Development enacted nationwide building codes. However, like with other housing, manufactured homes require more repairs as they age, especially if there has been a lack of routine maintenance and upkeep. This is particularly the case for those homes constructed prior to 1976 when building quality was more variable. This leads to a greater concern about the cost effectiveness of repairs to older manufactured housing, and has led to some organizations advocating for replacing older manufactured units rather than repairing them.[xxvi] Second, manufactured homeowners frequently pay rent for the property on which their home is situated. This lines up poorly with homeownership categories that are typically used by assistance organizations to determine repair eligibility. This ambivalence creates situations where manufactured homeowners face similar repair and upkeep needs but have fewer assistance resources available.[xxvii]

Taken together, in Delaware aged housing is much more present in the northern part of the state, which has been more densely settled for a longer period of time,[xxviii] while over three-quarters of the state's manufactured housing is located in the southern part (i.e., south of the Chesapeake &

Delaware Canal) of the state. The supply of manufactured housing has also declined to approximately half the number of units there were in 2007.[xxix]

Racial Segregation and Discrimination

Homeowners who are of racial and ethnic minority groups, and particularly of Black race, have persistently occupied lower quality homes, a result of historic and ongoing discrimination.[xxx] Discrimination and segregation are well-known and historically pervasive features related to housing in the U.S.[xxxi] These dynamics manifest themselves in unequal access to credit, exclusion from housing markets, and geographic separation from areas of predominantly White homeownership, where homes are often newer and of better quality, and credit is more accessible. According to 2017 data for Delaware from the US Census Bureau, Black and Latino levels of homeownership, at 47 percent and 49 percent respectively, were substantially lower than the 81 percent level among Whites.[xxxii]

In the wake of persistent and ongoing racial discrimination and segregation, homes owned by Black households tend to be "older, more crowded, and structurally inadequate" and of lesser value when compared to White-owned homes, and Black households are most-likely to own housing in economically depressed, inner city areas.[xxxiii] Black households are also more likely to own housing in racially segregated neighborhoods that differ substantially on a variety of indicators from segregated, predominantly White neighborhoods. The poorer physical condition of built environments in Black neighborhoods, for example, acts as a pathway through which segregation contributes to housing-related health disparities.[xxxiv] Segregated Black neighborhoods are characterized by less adequate municipal services and amenities, which limits these neighborhoods' ability to contact services that can deal with the problems of the built environment.[xxxv]

Kuebler, in a review of racial and ethnic disparities in homeownership, also finds that Latino homeowners face discrimination, higher costs and more difficulty related to securing credit, gain less equity in their homes, and other "challenges to healthy, sustained homeownership" comparable to White (non-Latino) homeowners, with disparities that are less pronounced than are present in Black-White homeowner comparisons.

Elderly Homeowners

Homeownership can be an important source of financial security and housing stability among older adults (a cohort defined as people ages 65 and older). Older adults tend to live in adequate housing compared to younger people, as only 3% of older adults live in structurally inadequate housing. However, homeownership comes with the responsibility for maintaining the home,

which can become increasingly more challenging as people age and confront physical and financial limitations, the latter of which includes living on fixed, retirement incomes.[xxxvi]

Older homeowners with financial limitations have "notably acute repair needs."[xxxvii] Analysts of the American Housing Survey noted that homeowners older than the age of 75 spend less on home improvement and maintenance[xxxviii]. As maintenance efforts decline and homeowners age, older adults may experience more hazards in their house that can negatively affect their health. At the same time that maintenance efforts decline as homeowners age, physical and mental limitations often lead to greater needs for modifications to the home so that these homeowners can maintain a healthy living environment. This understates the need for repairs to housing, as such adaptations may not be recognized in assessments of physical housing condition.

SPECIFIC CONDITIONS RELATED TO SUBSTANDARD HOUSING

In the introduction to this section, we provided a general definition of substandard housing as housing that poses risks to a person's health, safety or physical well-being. In the previous subsection, we reviewed key social and structural correlates of substandard housing. In this subsection, we provide a brief overview of common physical conditions that render housing substandard and unhealthy. In other words, what specific types of physical characteristics and deficiencies present in substandard housing that need to be addressed with home repairs?

Instead of providing an exhaustive list of specific physical housing conditions, we present three widely used frameworks that catalogue physical conditions related to substandard housing. Two of these frameworks, one issued by the World Health Organization (WHO) and the second issued jointly by the American Public Health Association (APHA) and the National Center for Healthy Housing (NCHH), link physical housing conditions to health benchmarks. The third, issued by the U.S. Department of Housing and Urban Development (HUD), offers a set of criteria by which to quantify housing and physical housing characteristics that can act as a basis for assessing housing quality and healthy housing, both in individual units and more generally among housing stock.

WHO's Housing and Health Guidelines

The first framework, put out by the WHO,[xxxix] organizes specific housing conditions into five general topics related to specific domains of healthy housing (Table 1). The report draws upon research findings to explain each of these five topics in detail. In doing so, it lays out guidelines which, when implemented, "can save lives, prevent disease, increase quality of life, reduce poverty, and help mitigate climate change." These guidelines are a means for "informing housing policies and regulations at the national, regional and local level" and "are further relevant in the

daily activities of implementing actors who are directly involved in the construction, maintenance and demolition of housing in ways that influence human health and safety."[xl]

Table 1 – Recommendations of the WHO Housing and Health Guidelines[xli]

Topic	Recommendation	Strength of recommendation
Crowding 	Strategies should be developed and implemented to prevent and reduce household crowding.	Strong
Indoor cold and insulation 	Indoor housing temperatures should be high enough to protect residents from the harmful health effects of cold. For countries with temperate or colder climates, 18 °C has been proposed as a safe and well-balanced indoor temperature to protect the health of general populations during cold seasons.	Strong
	In climate zones with a cold season, efficient and safe thermal insulation should be installed in new housing and retrofitted in existing housing.	Conditional
Indoor heat 	In populations exposed to high ambient temperatures, strategies to protect populations from excess indoor heat should be developed and implemented.	Conditional
Home safety and injuries 	Housing should be equipped with safety devices (such as smoke and carbon monoxide alarms, stair gates and window guards) and measures should be taken to reduce hazards that lead to unintentional injuries.	Strong
Accessibility 	Based on the current and projected national prevalence of populations with functional impairments and taking into account trends of ageing, an adequate proportion of the housing stock should be accessible to people with functional impairments.	Strong

The WHO framework provides neither a catalogue of specific physical deficiencies nor a list of specific remedies. Instead, each of the topic sections contains guidelines that provide broad benchmarks around which to address specific physical deficiencies and thereby avoid a range of

negative health outcomes. By presenting general guidelines, this WHO report is adaptable to the broad range of housing structures that are present globally. This allows for coordinating repairs of multiple substandard conditions in manners specific to the housing at hand around topics, such as improved home safety or greater accessibility, that are in the report. In addition, the guidelines go over a set of conditions not included in the five topics—water quality, air quality, neighborhood noise, asbestos, lead, tobacco smoke and radon—and similarly outline the need for mitigating these conditions.

APHA and NCHH's National Healthy Housing Standard

The *National Healthy Housing Standard*, issued jointly by APHA and NCHH, links physical elements of housing to health outcomes in a US context. Given the importance of housing to health and the failure to reduce levels of substandard housing in recent decades, the *National Healthy Housing Standard* is meant to both call attention to this problem and, based upon empirical evidence, present a set of specific standards for various aspects of housing. Similar to the WHO's *Housing and Health Guidelines*, it aims to bridge the fields of public health and housing by "putting modern public health information into housing code parlance" and presenting "minimum performance standards for a safe and healthy home" (both p. 4).

Table 2 provides the framework that organizes the standards contained in the report. The six components each focus on a key domain of a housing unit, and several of the domains correspond with the topics in the WHO's *Housing and Health Guidelines*. The "Home Safety and Injuries" topic (see Table 1), for example, overlaps with the "Safety and Personal Security" domain (Table 2) with respect to the presence of alarms and safety devices. However, what the topic and the domain respectively cover diverges in places, as the former is inclusive of housing deficiencies that increase the risk of injury, while the latter addresses such deficiencies in other categories according to, for example, where in the house they present (bathroom, kitchen, etc.) or as a component of electrical or plumbing systems. Items listed in this report, insofar as it is written in the style of housing code, can be used as a basis for evaluating housing conditions and then as a benchmark for the corresponding repairs in substandard housing. As such, the *National Healthy Housing Standard* offers more practical guidance than the *Housing and Health Guidelines*, which is more extensive in how it connects housing conditions to health outcomes. The standards are also more specific to housing in the U.S., which is considerably more homogenous than housing globally, and incorporates conditions such as lead, asbestos and radon, which receive more attention in a US context than globally, into its domains rather than setting them apart as "other" key housing risk factors.

Table 2 – Outline of Domains and Subdomains for the *National Healthy Housing Standard**

1. **Structures, Facilities, Plumbing, and Space Requirements**
   - Structure
   - Facilities
   - Plumbing System
   - Kitchen
   - Bathroom
   - Minimum Space
   - Floors and Floor Coverings
   - Noise
2. **Safety and Personal Security**
   - Egress
   - Locks/Security
   - Smoke Alarm
   - Fire Extinguisher
   - Carbon Monoxide Alarm
   - Walking Surfaces
   - Guards
   - Chemical Storage
   - Pools, Hot Tubs, and Other Water Features
3. **Lighting and Electrical Systems**
   - Electrical System
   - Outlets
   - Natural Lighting
   - Artificial Lighting
4. **Thermal Comfort, Ventilation, and Energy Efficiency**
   - Heating, Ventilation, and Air Conditioning Systems
   - Heating System
   - Ventilation
   - Air Sealing
5. **Moisture Control, Solid Waste, and Pest Management**
   - Moisture Prevention and Control
   - Solid Waste
   - Pest Management
6. **Chemical and Radiological Agents**
   - General Requirements
   - Lead-Based Paint
   - Asbestos
   - Toxic Substances in Manufactured Building Materials
   - Radon
   - Pesticides
   - Methamphetamine
   - Smoke in Multifamily Housing

*Adapted from the table of contents in the *National Healthy Housing Standard*

HUD's American Housing Survey (AHS)

The AHS is a nationwide survey of US housing conducted biennially in odd-numbered years, sponsored by HUD and conducted by the U.S. Census Bureau. It contains information on the number and characteristics of housing and the occupying households, nationwide and broken down by metropolitan statistical areas (MSA). Northern Delaware is included in the Philadelphia MSA, but data covering northern Delaware cannot be analyzed separately, nor can analyses be done with the AHS data that focus solely on Delaware.

Among the data that is collected by the AHS, there are 35 indicators that measure various aspects of housing deficiency (Table 3). These indicators are used by Eggers and Moumen to create the Poor Quality Index (PQI), which "measures the level of physical deficiencies in AHS sample housing units" (p. v).[xlii]. In applying the PQI to AHS data, they find that roughly half of all housing scores zero (i.e., none of these deficiencies listed), and that roughly 40 percent scored between 1 and 10. As these still reflect relatively low scores, Eggers and Moumen see this as a testament "to the high quality of the American housing stock" (p. 7).

The NCHH (one of the coauthors of the *National Healthy Housing Standard*) uses many of the indicators on Table 3 as the 20 factors which they use to define a "healthy home."[xliii] Based on AHS data and the healthy housing definition, the NCHH has created a "Healthy Homes Profile" for the US as a whole, the U.S. split into four regions, and for 47 MSAs. These Healthy Homes Profiles "help communities better understand how their rates of healthy housing problems compare to national averages and how units compare in central city versus non-central city areas within their MSA." NCHH profiles go up to 2011, and they provide instructions on how to extract data directly from the AHS website for conducting analyses using more recent AHS data.[xliv]

Finally, in 2019 the Federal Reserve Bank of Philadelphia and PolicyMap jointly produced the report *Measuring and Understanding Home Repair Costs*, described as "a cost-based index of home repair needs based on housing problems reported in the AHS" (p. 3).[xlv] This study uses the AHS quality indicators (Table 1) and worked with a firm specializing in estimating construction costs to estimate a cost value for each component.[xlvi] This provides a dollar value for repairs needed for each housing unit surveyed, and as the AHS is structured to be statistically representative both nationwide and for select MSAs, these estimates can be aggregated, and used to estimate repair needs for housing in specific areas. The cost estimates for repairs needed among low-income owner-occupied housing in this report will be used as a basis for determining the corresponding cost of repairs among low-income owner-occupied housing in Delaware.

Table 3 – Components and Weights for the PQI Score[xlvii]

Item	PQI Component	AHS Variable	Score (Weight)
	Electricity problems (15 points maximum)		
1	Unit does not have electricity	BUYE	10
2	Unit has exposed wiring	NOWIRE	4
3	Unit does not have electric plugs in every room	PLUGS	3
4	Each occurrence of a blown fuse or thrown circuit breaker[a]	NUMBLOW	1
	Heating problems (32 points maximum)		
5	Unit was uncomfortably cold for 24+ hours	FREEZE	4
6	Each heating equipment breakdown[b]	NUMCOLD	2
7	Unit cold due to utility interruption	WHYCD1	2
8	Unit cold due to inadequate heating capacity	WHYCD2	2
9	Unit cold due to inadequate insulation	WHYCD3	2
10	Unit cold due to other reason	WHYCD5	2
11	Main heating equipment is unvented kerosene heater(s)	HEQUIP	4
	Inside structural or other problems (22 points maximum)		
12	Water leak in roof	RLEAK	2
13	Water leak in wall or closed door/window	WLEAK	2
14	Water leak in basement	BLEAK	2
15	Water leak from other source	OTLEAK	2
16	Inside leak from leaking pipes	PILEAK	2
17	Inside leak from plumbing fixtures	PLEAK	2
18	Inside leak from other or unknown source	NLEAK (NLEAK1, NLEAK2)	2
19	Holes in the floor	HOLES	2
20	Open cracks wider than a dime	CRACKS	2
21	Peeling paint larger than 8 by 11 inches	BIGP	2
22	Evidence of rodents	EVROD (RATS)	2
	Bathroom problems (16 points maximum)		
23	Unit does not have hot and cold running water OR Unit does not have a bathtub or shower OR Unit does not have a flush toilet	HOTPIP, TUB, TOILET	10
24	Each breakdown leaving unit without a toilet for 6+ hours[c]	NUMTLT	2
	Kitchen problems (10 points maximum)		
25	Unit does not have a refrigerator OR Unit does not have a kitchen sink OR Unit does not have a cook stove or range	REFR, SINK, COOK	10
	Outside structural problems (35 points maximum)[d]		
26	Windows broken	EBROKE	5
27	Holes/cracks or crumbling in foundation	ECRUMB	5
28	Roof has holes	EHOLER	5
29	Roof missing shingles/other roofing materials	EMISSR	5
30	Outside walls missing siding/bricks/and so on	EMISSW	5
31	Roof's surface sags or is uneven	ESAGR	5
32	Outside walls slope/lean/slant/buckle	ESLOPR	5
	Water and sewer problems (32 points maximum)		
33	Each time unit is completely without water[e]	NUMDRY	2
34	Each sewage disposal breakdown[f]	NUMSEW	2
	Elevator problems (4 points maximum)		
35	No working elevator in building of four or more stories	EVEL, CLIMB	4

Cost estimates provided in this report present the need for home repairs in a metric that is intuitive to understand. This includes the finding that, as reported in the introductory section to this review, in a single year the average low-income home that needed repair faced average repair costs of $3,842 (one-third of homeowners had repair costs). Twenty-five percent of all owner-occupied housing is owned by low-income households (6.6 million out of 26.1 million total), while these households bear 31 percent of the total repair costs ($25.3 billion of $81.8

billion total). We will conduct a more detailed examination of cost estimates from this report in the next section, and they will be a basis for our own estimates of the costs of home repairs in Delaware.

Other findings of note include:

- "Low-income, older homeowners had notably acute repair needs."
- "Recent homebuyers accounted for roughly one-fifth of low-income homeowners with repair needs [and] children were present in nearly half of [these] households."
- "Roughly one-sixth of low-income homeowners with repair needs lived in manufactured housing, a unit type that accounts for only 6.4 percent of the total owner-occupied stock."
- "Structural housing problems accounted for the majority of aggregate repair costs, particularly in older units. … The structural problems reported in the AHS range in severity from peeling paint to sagging walls or roofs. Many of these can present significant health risks to vulnerable residents."
- "Although our results suggest that the typical low-income homeowner's repair needs are relatively modest, the associated costs may still exceed what many households are able to pay for out of pocket."[xlviii]

HEALTH OUTCOMES RELATED TO SUBSTANDARD HOUSING

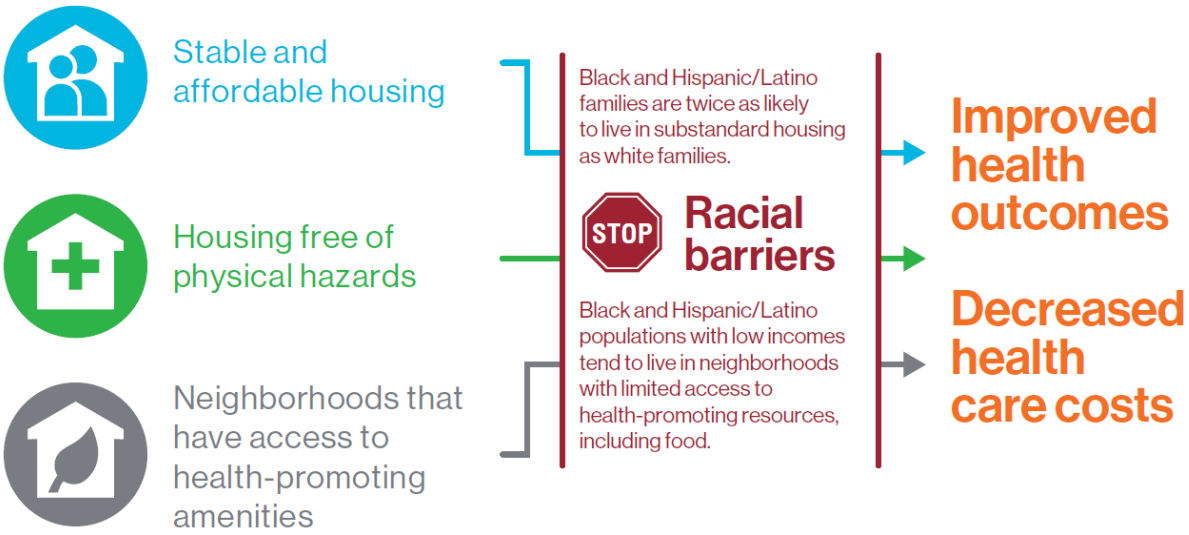
In recent years much attention has been paid to "healthy homes," the idea that safe, decent, and sanitary housing is a means to prevent disease and injury, both on individual and population levels.[xlix] The number of reviews of how the extent to which housing influences various health outcomes, both good and bad, is more than can be covered the scope of this review. A few have been cited, and reading over the references in the *Housing and Health Guidelines* and the *National Health Housing Standards* provide additional sources for other studies. Together, they provide the clear and intuitive message that improved housing quality also improves health, while substandard housing causes or contributes to negative health outcomes.

A study by Swope and Hernández[l] is an example of such a review, where they draw on published research examining housing and health to build a conceptual model that places physical housing conditions into a constellation that also includes affordability, residential stability, and neighborhood characteristics as a way to explain how each of these four elements affects health both independently and collectively. They describe a series of direct links between physical conditions and health outcomes which offers a set of examples of some of the primary ways in which housing conditions are related to health outcomes:

- Problems with a home's physical conditions can lead to a host of injuries, and is a leading site for unintentional, fatal injuries.

- Inability to maintain thermal comfort, either by proper insulation, functioning climate control mechanisms, or access to affordable energy, impacts the body's ability to thermoregulate, is associated with depression, and "a range of physical health outcomes including high blood pressure, respiratory conditions, and general self-rated health."
- Pests can lead to and exacerbate allergies and asthma.
- Dampness and mold impact respiratory health (including allergic rhinitis, persistent colds, asthma, sneezing, and chronic bronchitis), and possibly mental health.
- "Lead is highly toxic and exposure to it has well-documented, significant, irreversible adverse health effects, even at low levels."
- Housing risk factors for falls include inadequate lighting, lack of window guards, and structural deficiencies (e.g., uneven floors).
- The absence of "functioning smoke alarms, carbon monoxide detectors, sprinklers, and other fire suppression requirements can lead to injury and death."
- Proper building design and accommodations are critical to the ability of people who are elderly and/or who have physical disabilities to access important home amenities and impede their ability to live independently.

Figure 1 – Habitat for Humanity Model of Healthy Housing[li]



In response to this connection between housing conditions and health, Habitat for Humanity's evidence brief *How Does Housing Impact Health?*[lii] provides a similar but simpler model of how physical housing conditions impact health, as well as examples of direct links between physical housing conditions and health outcomes. With regard to physical housing conditions, the brief boils down the essence of HUD's eight Healthy Homes principles into a directive to "keep it dry, clean, safe, well-ventilated, pest- and contaminant-free, well-maintained, and thermally

controlled" (page 1). It is a simple directive, but one which, the brief explains, is complicated by systemic inequities that disproportionately impact low-income and minority households and mute the potential for housing to facilitate better health. Figure 1 illustrates this process whereby these affected populations are more vulnerable to living in substandard housing and having greater difficulty in obtaining the benefits of healthy homes.

CONCLUSION

This brief review of physical housing conditions and health outcomes lays the groundwork for assessing the need for repairs to housing owned and occupied by low-income households in Delaware. Previous parts of this section have covered socioeconomic conditions that facilitate elevated levels of substandard housing, the specific physical housing conditions that constitute substandard housing and how to quantify these conditions, and how physical housing conditions are connected to health.

Little information on these topics is available specifically for Delaware. The Delaware State Housing Authority last put out a statewide Housing Needs Assessment in 2014, and has a section on substandard housing that provides some data that will be used later in this study as part of estimating statewide costs of housing repairs.[liii] In 2020 NCHH put out a one-page fact sheet on housing-related health outcomes in Delaware which provides some basic information on topics such as lead, radon, injuries and falls, and asthma.[liv] Beyond that, we could find no literature in the past decade that expounds upon either physical housing conditions or housing-related health outcomes in Delaware.

In the absence of Delaware-specific information, there are guidelines that can be taken from the more general literature on physical housing conditions and health outcomes that are useful for housing repair efforts in Delaware. Healthy housing should be predicated upon a structurally sound dwelling that facilitates comfortable temperatures, provides adequate sanitation, illumination, electricity, and protection from pollutants, injury hazards, mold, and pests. Housing programs should be designed to reduce the risk of poor health, unintentional injury and death in residential buildings and simultaneously target families that cannot afford rehabilitative efforts on their own. Improved living conditions can transform a house from merely a shelter to a space that supports a state of complete physical, mental, and social well-being.[lv]

Contrary to public perceptions of rehabilitative efforts, federal projections indicate that interventions to improve residential health are cost-effective. For example, research has shown that each dollar invested in healthy housing would result in a return of: $2.03 when it reduces asthma triggers at home; $1.39 when it goes toward lead paint hazard control, and $1.33 when it is used to remove lead service lines.[lvi] Other research shows evidence for benefit-cost ratios that

can be as high as sixfold.[lvii] Building a properly ventilated and thermally insulated house is more technically advanced and expensive than building a non-insulated home, but is also likely to lead to better health that will cut costs in the long run.

In one of the earlier reviews on housing and public health, Shaw points out that:

> "investment in housing can be more than an investment in bricks and mortar: It can also form a foundation for the future health and well-being of the population" (p. 414).[lviii]

However, before investments into home repair in Delaware are in a position to maximize their impact on health and well-being, it is necessary to better understand both the extent and the nature of repairs needed to housing owned by low-income households. This report presents analyses of quantitative data and interviews with key home repair assistance stakeholders, and integrates these diverse perspectives as a means to gain such an understanding.

Section 2

Correlates and Costs Related to Home Repairs in Delaware

INTRODUCTION

According to the best, most current data available, there are 74,410 housing units that are owned by low-income households. This low-income, owner-occupied housing is distributed across Delaware's three counties in rough proportion to the distribution of owner-occupied housing more generally, and accounts for between 27 percent and 30 percent of each county's total owner-occupied housing. "Low income" here means that household income is at or under 80 percent of the HUD area median family income (HAMFI). (Table 2-1). This income amount is substantially higher than what is typically considered "poor," as 30% of HAMFI roughly corresponds to the federal poverty income guidelines. It does, however, include all poor homeowner households along with others who often earn too much to qualify for many assistance programs while they still have difficulty in paying their monthly expenses.[lix] Eighty percent of HAMFI is also the income limit under which households are eligible for the home repairs programs in two of the three Delaware Habitat for Humanity organizations.

Table 2-1 – Low-income, Owner-occupied Housing in Delaware

	New Castle	Kent	Sussex	Total
Total Housing Units (owner-occupied & rental)	203,845	64,555	89,380	357,780
Owner-Occupied (O-O) Housing Units				
Total (n)	138,655	44,570	71,090	254,315
Total (percent of all housing units)	68%	69%	80%	71%
O-O Units - Household Income <= 80% HAMFI				
Number	41,226	11,940	21,244	74,410
Percent (of O-O housing units countywide)	30%	27%	30%	29%
80% HAMFI (4-person household)	$84,300	$61,750	$67,200	N/A

Data Source – HUD CHAS data, 2014-2018
HAMFI – Department of Housing & Urban Development (HUD) Area Median Family Income for 2022[lx]

Among these 74,410 low-income, owner-occupied homes, a certain number will need assistance with home repairs. As mentioned in the previous section, not only do these households have low incomes but their homes also, on average, have elevated levels of repair need. Thus, they will have, as a group, the most difficulty in making needed home repairs and are in greatest danger of deferring these repairs and thereby making them worse. Failure to make these repairs will lead to the loss of housing stock, the displacement of households from their homes, and worsening health conditions and risks for those who occupy homes in need of repair. As such, it is the pool from which the demand for home repair assistance comes from.

In this section, we examine dynamics related to low-income, owner-occupied housing and the aggregate need for repairs among such housing, both statewide and for each of Delaware's three

counties. This includes, in the first part of this section, identifying and profiling areas in each county with the highest levels of owner-occupied, low-income homes. This process will help to better understand and target areas in Delaware in which there will be the greatest need for assistance with home repairs. The second part of this section then estimates, again on statewide and countywide levels, both the number of low-income, owner-occupied housing units that need repairs and the corresponding aggregate costs for making such repairs. These estimates represent two basic benchmarks for assessing the level of need for repairs to owner-occupied, low-income homes.

THE GEOGRAPHY OF LOW-INCOME, OWNER-OCCUPIED HOUSING IN DELAWARE

Low-income, owner-occupied housing is not evenly distributed in any of Delaware's three counties. Certain communities in each county have higher levels of such housing, and have specific demographic, economic and housing characteristics that provide context for where such housing is more likely to be found. These contextual features are different in each county. To get a better idea of what parts of Delaware are likely to have the highest need for assistance with home repair, we turn to data from the US Census Bureau. Specifically, data from the Census Bureau's American Community Survey (ACS) and from its comprehensive counts in 2010 and 2020 are the basis for this examination. We first identify specific census tracts in each of Delaware's three counties have the highest levels of low-income, owner-occupied housing. Then we construct aggregate profiles of these communities based on factors that we identified in the last section as being relevant and salient to the need for home repairs: poverty, racial and ethnic segregation, manufactured housing, older housing, and concentrations of elderly.

To identify areas with high levels of such housing, in each county we selected the ten percent (i.e., decile) of census tracts that had either the highest numbers of homes owned by low-income households or the highest proportions of all owner-occupied homes that contain low-income households. The former group of tracts contain a disproportionate number of a county's total low-income, owner-occupied homes. As these tracts reflect those with higher numbers of such homes, we call them *abundant tracts.* The latter group of tracts, with contain high proportions of low-income, owner-occupied housing units, may or may not contain many owner-occupied homes, but contains high percentages of owner-occupied homes that are owned by low-income households. Thus such tracts have high *concentrations* of such housing. A tract could conceivably have a high abundance and a high concentration of such housing, but more often the *abundant* tracts will be different from the *concentrated* tracts.

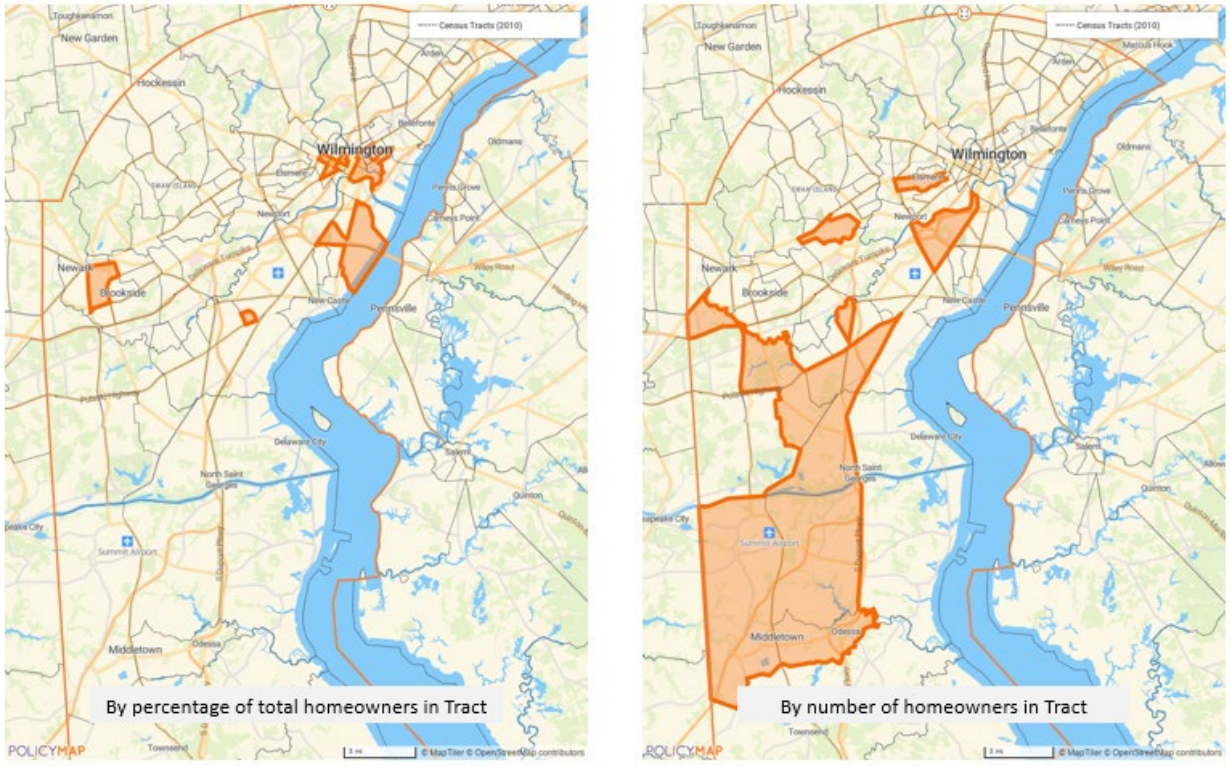
In the rest of this subsection, we take a closer look at the abundant tract groups and the concentrated tract groups in each county, both in where they are located and thumbnail profiles based on ACS data that is aggregated for each group. As the number of census tracts in each county varies, the number of tracts that make up the top decile (10 percent) of the abundant and concentrated groups in each county will also vary. Thus, for New Castle County, Delaware's largest and most populous county, a decile of tract groups will each contain 13 (i.e., 10 percent) of the county's 129 census tracts. In Kent County, by contrast, which is the smallest and least populous county, a decile will only contain three of the county's 32 census tracts. Finally, Sussex

County contains 53 tracts, and deciles will consist of five tracts. The individual tracts that are included in the abundant and concentrated tract groups for each county are listed in this section's appendix.

Low-income, Owner-occupied Housing in New Castle County

The maps on Figure 2-1 show fundamental geographic differences between New Castle County's (NCC) abundant census tract group and its concentrated census tract group. The abundant group consists of census tracts that are located mostly in the southern and western parts of the county, in areas with more rural and suburban characteristics, while the concentrated group contains census tracts in mostly urban areas. To underscore this, eight of the 13 tracts in the concentrated group are in Wilmington, Delaware's largest city. Combined, these eight tracts take up less area than some of the individual census tracts in the southern part of the county that are in the abundant group. There is no overlap between the two sets of tracts. Also noteworthy is that none of the tracts in either group is in the northern part of the county, which is primarily suburban and more affluent than the rest of the county.

Figure 2-1 – Census Tracts with High Proportions (left) and High Numbers (right) of Low-Income, Owner-Occupied Homes in New Castle County



The differences between NCC's abundant tract group and its concentrated tract group extend beyond what can be seen on a map. Table 2.2 shows that, in the concentrated tract group, over two-thirds (68 percent) of the owner-occupied homes contain low-income households. Along

with this, these tracts collectively feature a high level of poverty (28 percent), disproportionate Black and Latino representation (56 percent and 19 percent, respectively) in the populations when compared to NCC overall (26 percent and 11 percent, respectively), and a homeownership rate that is substantially lower than NCC's overall rate. The housing stock, when looked at as a proportion of total households, shows that virtually all of the housing stock (rental and owner-occupied) was built before 1980. Population growth from 2010 to 2020 was almost non-existent, as a decline in White population offset increases among Black and Latino populations.

Table 2-2 – Comparative Socio-Demographic Characteristics Related to High Levels of Low-income, Owner-occupied Housing: New Castle County

	High % Area (concentrated)	High # Area (abundant)	NCC	State
Overall				
Household Count	12,984	34,629	209,431	370,953
2020 Population Total	40,832	99,190	570,719	989,948
(Change 2010 to 2020)	(0.2%)	(17%)	(6%)	(10%)
Population in Poverty	28%	7%	11%	11%
Race & Ethnicity (% Total Pop)				
White	25%	53%	55%	60%
Change 2010 to 2020	(-28%)	(-6%)	(-11%)	(-3%)
Black	56%	27%	26%	22%
Change 2010 to 2020	(4%)	(39%)	(15%)	(14%)
Latino	19%	12%	11%	11%
Change 2010 to 2020	(10%)	(52%)	(35%)	(42%)
Adult population age 65 and over	10%	15%	16%	19%
Housing				
Owner-occupied homes	4,850	25,525	138,655	254,315
Homeownership rate	(39%)	(80%)	(68%)	(71%)
Number of LIOO homes	3,065	8,570	41,226	74,410
Proportion of all OO homes	(63%)	(34%)	(30%)	(29%)
Manufactured Housing Units	48	2,691	4,280	34,126
Housing Units built before 1980	11,907	9,649	130,776	193,571

Data Sources – HUD CHAS data, 2014-2018 and (for population numbers) 2020 US Census count
LI – low-income, owner-occupied; OO – owner-occupied

These tracts, while small, are densely populated, and their characteristics reflect the overrepresentation of minority homeowners among those in need of assistance for home repairs. Indeed, eight of the 15 census tracts that Habitat for Humanity of New Castle County targets for home repairs are among the thirteen tracts in the concentrated group. These eight concentrated tracts in Wilmington are located in two geographically contiguous clusters (see Figure 2-1) that, if combined into two "mega-tracts," would remain highly concentrated areas while then also

having sufficient numbers of low-income, owner-occupied homes to put them among the tracts in the most abundant group.

The abundant tract group collectively presents a much different profile. The group's poverty rate, at 7 percent, is lower than the overall county rate of 11 percent. The group's population composition of White and Black races and Latino ethnicity mirrors that of the more general county. The population increased by 17 percent from 2010 to 2020, compared to six percent population growth for the county. And the homeownership rate, at eighty percent, is higher than the county's 68 percent and twice that of the concentrated census tract group. While the housing stock (rental and owner-occupied) is much newer than that of the overall county (when adjusted by total number of households), these tracts collectively contain over half of NCC's manufactured housing units.

This is but a thumbnail profile, but, by these indicators, this group of census tracts appears to be doing well, with the low-income, owner-occupied homes embedded in diverse population growth and a high degree of homeownership, which often signals a broader community stability. This decile of census tracts collectively contains 21 percent of all low-income, owner-occupied housing in NCC, and more than twice the number of low-income, owner-occupied homes than there are in the concentrated tract group. Given this, there is likely to be at least comparable need for assistance with home repairs in the former group than in the concentrated group, although homes with such repair needs are going to be more spread out among a much greater number of homes and a larger land area.

We could not detect, in this analysis, any sign that elderly homeowners, a group identified as in particular need of assistance with housing repairs, were overrepresented in either of these tract groups. The proportion of elderly in the concentrated tract group population, at 10 percent, was lower than both the 15 percent proportion in the abundant tract group and the 16 percent proportion in all of NCC. Caution must be taken with this finding, however, as the only measure available, number of overall elderly people, is an indirect measure for elderly, low-income homeowners.

Low-income, Owner-occupied Housing in Kent County

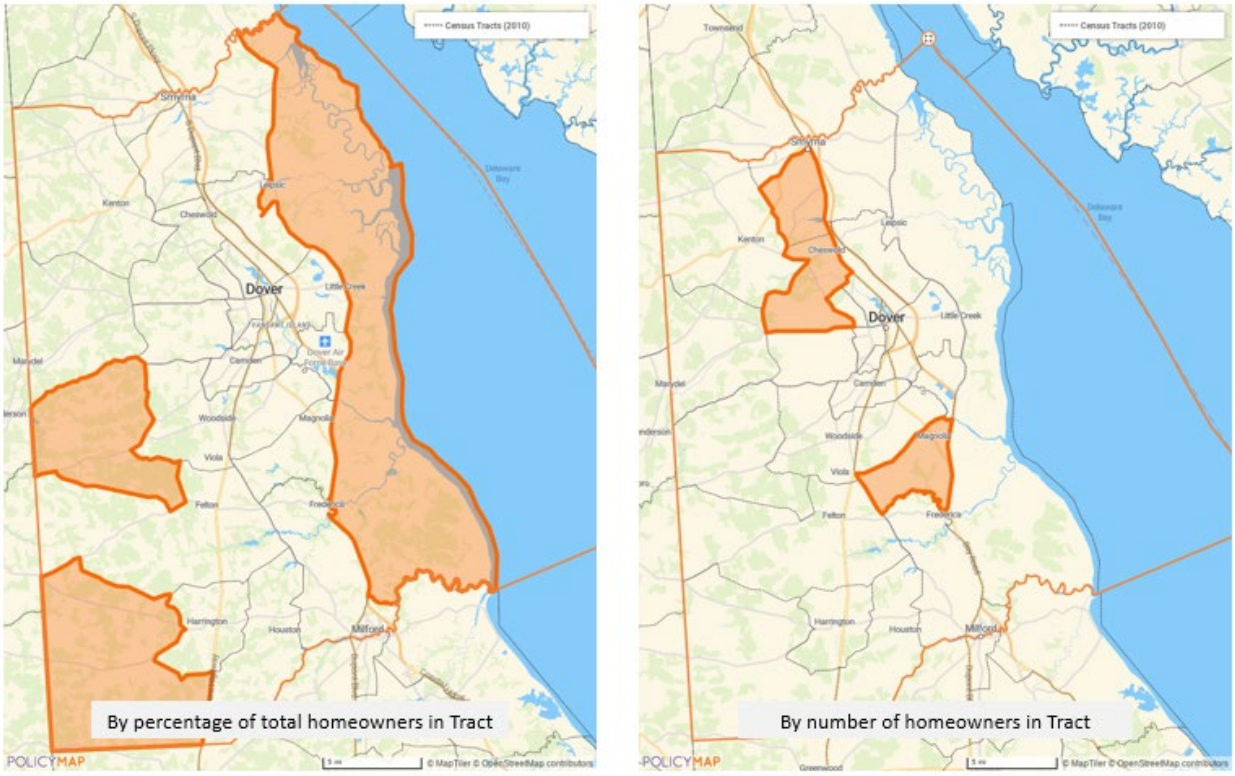
In Kent County, the smallest and least populated of Delaware's three counties, the census tracts in the concentrated and the abundant tract groups are all in either rural or suburban areas. As is the case with NCC, none of the three census tracts in the decile with the greatest abundance of low-income, owner-occupied housing is also in the decile with the greatest concentration of such housing. Counterintuitively, the three tracts in the concentrated tract group are larger in land mass than the three tracts that make up the abundant tract group, despite their having less population. This suggests that the tracts with the highest concentration of low-income housing are also the most sparsely populated. Also noteworthy is that none of the census tracts in either group included parts of Dover, which is Kent County's largest city.

Table 2-3 shows that both the concentrated and the abundant tract groups have poverty rates (11 percent and 9 percent) that are lower than the overall poverty rate of Kent County (13 percent). Similarly, homeownership rates (80 percent and 84 percent, respectively) are substantially higher

than Kent County overall (69 percent). These indicators suggest that both tract groups are economically stable.

Despite this, there are stark demographic differences between the two tract groups. The concentrated group, with a combined population of 3,907, is less than one-third as populous as the abundant group, with a population of 13,402. Moreover, between 2010 and 2020, the concentrated group lost 2 percent of its population while combined population in the abundant group rose by 23 percent.

Figure 2-2 – Census Tracts with High Proportions (left) and High Numbers (right) of Low-Income, Owner-Occupied Homes in Kent County



This difference gets more pronounced when looking at population dynamics related to race and ethnicity. The population decline in the concentrated tract group came from losses among non-Latino Whites—as the number of Whites (of all ethnicities) dropped by 9 percent, that of Blacks (of all ethnicities) increased by 4 percent, and that of Latinos (of all races) increased by 30 percent. Even with this loss, Whites remained the predominant population in this tract group with an 83 percent population share, while the shares of Blacks and Latinos both remained substantially lower than their shares in the overall Kent County population.

Among the abundant tract group, the 23 percent population increase reflected growth among Black, White and Latino populations, with particularly strong growth among Blacks and Latinos. Shares of each of these three demographic groups roughly mirrored that of Kent County. As with

NCC, the low-income, owner-occupied homes in this tract group appear in a context of lower poverty and more diversity, at least on this tract-wide level, when compared to the concentrated group.

Finally, other noteworthy findings among the indicators in Table 2-3 include both tract groups having a substantial presence of manufactured and pre-1980 housing. Adjusting for population and housing differences, the proportions of both manufactured housing and housing that was built before 1980 are higher among the concentrated tract group. Levels of elderly (ages 65 and over) in the population were consistent with the county rates.

Table 2-3 – Comparative Socio-Demographic Characteristics Related to High Levels of Low-income, Owner-occupied Housing: Kent County

	High % Area (concentrated)	High # Area (abundant)	Kent County	State
Overall				
Household Count	3,907	13,402	67,299	370,953
2020 Population Total	9,359	38,571	181,851	989,948
(Change 2010 to 2020)	(-2%)	(23%)	(12%)	(10%)
Population in Poverty	11%	9%	13%	11%
Race & Ethnicity (% Total Pop)				
White	83%	59%	59%	60%
Change 2010 to 2020 (%)	(-9%)	(4%)	(-2%)	(-3%)
Black	6%	27%	26%	22%
Change 2010 to 2020 (%)	(4%)	(51%)	(21%)	(14%)
Latino	5%	7%	8%	11%
Change 2010 to 2020 (%)	(30%)	(87%)	(50%)	(42%)
Adult population age 65 and over	16%	18%	17%	19%
Housing				
Owner-occupied homes	2,925	10,390	44,570	254,315
Homeownership rate	(80%)	(84%)	(69%)	(71%)
Number of LIOO homes	1,125	2,925	11,940	74,410
Proportion of all OO homes	(39%)	(28%)	(27%)	(29%)
Manufactured Housing Units	1,041	1,938	8,803	34,126
Housing Units built before 1980	1,663	3,192	25,572	193,571

Data Sources – HUD CHAS data, 2014-2018 and (for population numbers) 2020 US Census count
LI – low-income, owner-occupied; OO – owner-occupied

In summary, while the abundant and concentrated tract groups in Kent County are very different demographically, they are both collections of tracts from the more sparsely populated parts of the county. As such, both of these tract groups may have home repair needs that are hidden by the rural nature of these tracts. On the other hand, not having a tract from Dover represented here should not be taken to mean there is a small presence of low-income, owner-occupied housing in this city. One of Dover's census tracts with the highest levels of low-income, owner-occupied housing is tract 433, with 195 such homes that comprises 31 percent of the tract's owner-

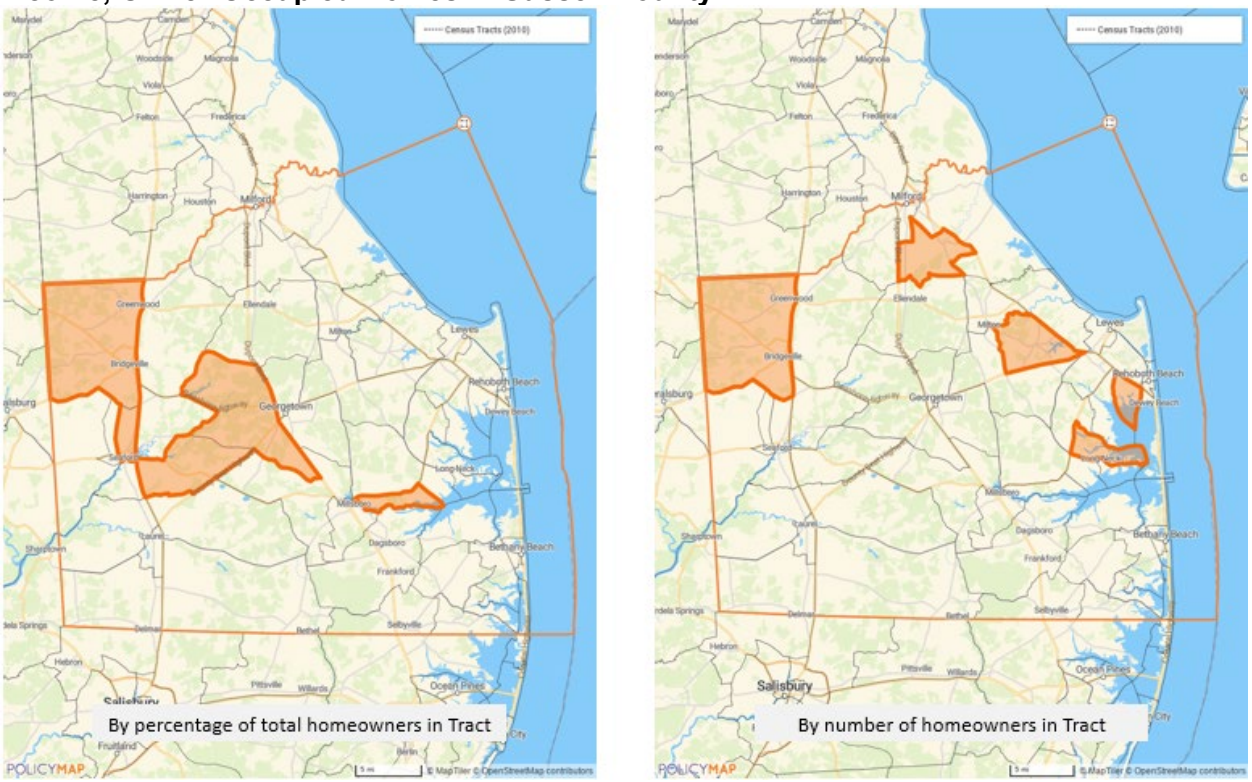
occupied housing. These numbers are not nearly high enough for Tract 433 to be in either the abundant or concentrated tract groups. Nonetheless, this tract is included in Dover's Opportunity Zone, its Downtown Development District, and its Restoring Central Dover plan.[lxi] Targeting home repair assistance to this tract would provide an opportunity to work in conjunction with these initiatives and potentially amplify the impact of the repair assistance.

Low-income, Owner-occupied Housing in Sussex County

Sussex County is the most sparsely populated county in Delaware, and is known for the economic divide between the relatively prosperous east side of the county, known for its beach resorts, and the more economically depressed western side, known for its poultry production. A recent migration of retirees into Sussex County has increased the county's number of residents aged 65 and over. Almost two-thirds of Delaware's stock of manufactured housing is in Sussex County and, unlike Delaware's other two counties, Sussex County lacks a central city.

There are nine Sussex County census tracts that are either in the top decile of the county's 53 census tracts for the highest concentrations or the highest numbers of low-income, owner-occupied housing. One tract (the only tract in the state) ranks in the top decile in both categories. Figure 2-3 maps these nine tracts over two maps, and tracts in both groups are mainly located across the northern half of Sussex County, and in both the western and eastern parts of the county.

Figure 2-3 – Census Tracts with High Proportions (left) and High Numbers (right) of Low-Income, Owner-Occupied Homes in Sussex County



The presence of one census tract (tract #504.06, covering Seaford) in both the concentrated and the abundant tract groups will narrow the differences between these two tract groups for the indicators on Table 5-4. And indeed, Sussex is the only one of the three counties in which the total population for the abundant group is not at least twice that of the concentrated group. Sussex County also had the largest population growth (20 percent) among these counties between 2010 and 2020. As with the other two counties, this growth was exceeded in the abundant group (27 percent), while the growth in the concentrated group (9 percent) was considerably less than that of the overall county. Poverty rates and homeownership rates for the abundant group (12 percent and 82 percent, respectively) were consistent with the corresponding county state rates, while these rates were worse (14 percent and 68%, respectively) for the concentrated group. These indicators generally suggest stable economic conditions in both tract groups, though these indicators are clearly better in the abundant group.

Table 2-4 – Comparative Socio-Demographic Characteristics Related to High Levels of Low-income, Owner-occupied Housing: Sussex County

	High % Area (concentrated)	High # Area (abundant)	Sussex County	State
Overall				
Household Count	9,817	14,679	94,223	370,953
2020 Population Total	23,914	34,932	237,378	989,948
(Change 2010 to 2020)	(9%)	(27%)	(20%)	(10%)
Population in Poverty	14%	12%	12%	11%
Race & Ethnicity (% Total Pop)				
White	63%	77%	74%	60%
Change 2010 to 2020 (%)	(-1%)	(20%)	(13%)	(-3%)
Black	19%	10%	11%	22%
Change 2010 to 2020 (%)	(-3%)	(-1%)	(1%)	(14%)
Latino	14%	10%	11%	11%
Change 2010 to 2020 (%)	(66%)	(73%)	(58%)	(42%)
Adult population age 65 and over	22%	32%	28%	19%
Housing				
Owner-occupied homes	6,600	11,690	71,090	254,315
Homeownership rate	(68%)	(82%)	(81%)	(71%)
Number of LIOO homes	2,715	4,005	21,244	74,410
Proportion of all OO homes	(41%)	(34%)	(30%)	(29%)
Manufactured Housing Units	1,575	5,522	21,043	34,126
Housing Units built before 1980	3,737	4,193	37,223	193,571

Data Sources – HUD CHAS data, 2014-2018 and (for population numbers) 2020 US Census count
LI – low-income, owner-occupied; OO – owner-occupied

Among other findings taken from Table 2-4, the population in the abundant tract group has a markedly higher proportion of its population aged 65 and over. The ten percent of tracts that comprise the abundant group contain 19 percent of the county's total low-income, owner-

occupied housing and 26 percent of the county's manufactured housing. Levels of housing units that were built before 1980, when seen as a proportion of total households, are considerably lower across Sussex County than they are statewide.

The Geography of Low-Income, Owner-Occupied Housing

This subsection has offered brief profiles of all three Delaware counties that focus on the location and dynamics related to their low-income, owner-occupied housing. As there is no direct inventory of housing that is in need of repairs and eligible for repair assistance, this is a means to locate the areas where need is likely to be high and understand some of the characteristics of these areas. In doing this, we provide information about some areas where the need for home repair assistance may have been previously overlooked. These findings also offer a counterpoint to the perspectives offered by key stakeholders, presented in the next section of this report. When the findings here, based largely on data from the US Census Bureau, are consistent with accounts from key stakeholders, this provides a strong indicator of need.

Several themes that we found across counties during the course of this analysis bear reiterating.

First, with the exception of the concentration of low-income, owner-occupied housing found in the most impoverished Wilmington neighborhoods, we found high levels of low-income, owner-occupied housing to occur mostly in census tracts that appear rural. As such, need for home repairs may be hidden and overlooked in these areas.

Second, in many tracts with high numbers of low-income, owner-occupied housing, this housing is embedded in areas that experienced apparent population growth, comparative racial and ethnic diversity, low levels of poverty, and high rates of homeownership. More details on the dynamics behind this pattern cannot be discerned from these data, but bear looking into further to gain an understanding what is going on and how assisting with home repairs can further support such areas. A positive scenario here would be that low-income, owner-occupied housing in these areas is better economically and socially integrated into the larger communities, while a potential area of concern would be if population growth is in the process of supplanting low-income, owner-occupied housing. One of the most salient examples of this, which should be watched, is if the sale and redevelopment of manufactured housing parks were to contribute to these dynamics.

Third, these findings are not informative in locating concentrations of elderly, low-income homeowners, a subgroup identified as being at high risk of needing assistance with home repairs. This is a limitation of the data, but can also indicate that such homeowners can be less-concentrated geographically than low-income homeowners more generally.

These findings present two options to organizations providing home repairs on the areas to target. On one hand, organizations can target economically depressed areas where home repair needs are one facet of a daunting level of more general socioeconomic need. The inner city Wilmington census tracts that we profiled are the most salient example of such an area. Alternately, targeting home repair assistance to the many areas, present in all Delaware counties, in which we found disproportionate numbers of low-income, owner-occupied housing among

population growth, high homeownership, relatively low poverty, and growing racial and ethnic diversity may be a means for home repair assistance to contribute to these trends. Of course, these targeting approaches are not mutually exclusive, depend on the goals and resources of the organizations as much as they depend on data, and require further inquiry to supplement those findings.

We caution that census tracts, the smallest geographic units for which we could readily get the data that we report, still encompass areas that are large enough hide smaller areas in which low-income, owner-occupied housing can be clustered. This means that tract wide indicators of population growth and economic stability that we report may mask more micro-level variations in which low-income, owner-occupied housing face greater disadvantage. Also, smaller pockets of low-income, owner-occupied housing, or even individual low-income, owner-occupied housing in need of repair in tracts with otherwise low levels of such housing will not appear in our analysis.

Thus, we underscore that this analysis is designed for better understanding the locations where overall need for home repairs may be highest, based upon the prevalence of low-income, owner-occupied housing. This can identify areas that can otherwise get overlooked, but is not meant to recommend against assisting with home repair in places that were not featured in these analyses, as the need for homeowner repair can occur anywhere.

ESTIMATED NUMBER AND COST OF SUBSTANDARD OWNER-OCCUPIED HOMES AND HOMES IN NEED OF REPAIR IN DELAWARE

There are an estimated 74,410 homes owned by low-income households in Delaware, and these homes tended to have more repair needs and costs than homes owned by higher income households. But while greater numbers of such homes indicate the likely presence of a greater demand for home repair assistance, it does not directly provide estimates on the numbers of low-income, owner-occupied homes that are in need of repair, nor the costs associated with making needed repairs to housing that is in substandard condition. In this subsection, we address this more directly by collecting and reviewing data and estimates made elsewhere, and making our own estimates based upon these findings. Our estimates are based on the best available data, and we will be transparent in how come up with our estimates.

Estimates of the Number of Substandard Owner-occupied Homes and Homes in Need of Repair in Delaware

There is no catalog listing the number or locations of homes in Delaware that are considered to be in substandard condition, nor is there a consistent measure by which a home is labeled as being substandard. The term “substandard” has been generally applied to housing that is in need of substantial physical repairs, to an extent that, implicitly, the failure to make remedial repairs will create or exacerbate tangible health risks. Estimates on how many homes are substandard are usually based upon field surveys, which are expensive and can usually detect only external signs of home disrepair, and from federal housing surveys, such as the American Housing Survey (AHS), American Community Survey (ACS), or the decennial census count. Here we

draw upon data already collected to produce an updated estimate of substandard low-income, owner-occupied homes in Delaware.

The last field study of housing in Delaware was conducted in 2003 by the Delaware State Housing Authority (DSHA). Substandard housing was determined through visual inspection of housing exteriors. DSHA then updated this study in 2008 by making adjustments with more recent US Census data. The update resulted in a 2008 estimate that there were 8,135 substandard, owner-occupied units in Delaware (a reduction of about 100 homes from the 2003 estimate). [lxii] The study did not report how many of these substandard homes were owned by low-income households.

In 2014, GCR Incorporated produced an updated, alternative estimate of substandard housing in Delaware as part of a statewide housing needs assessment commissioned by DSHA.[lxiii] There are three components to the GCR Inc. estimate, all derived from various federal data sources and limited field verification. In the first component, GCR Inc. estimated the number of vacant, abandoned homes in Delaware. As these were not owner occupied, and thus are not typically considered for home repair assistance, we did not investigate this component further.

The second component consisted of the estimated number of homes with unlivable conditions. The comes from the US Department of Housing and Urban Development (HUD), which regularly estimates the number of homes that have "housing challenges," operationalized as homes in which the occupants either are paying over 30 percent of their income in housing costs, living in overcrowded conditions, or lack a functioning kitchen or bathroom. The presence of this latter challenge is an extreme case of substandard housing, reflecting unlivable conditions. In Table 2-5, we update this component of GCR Inc.'s substandard estimate with 2014-2018 ACS data (they used 2006-2010 data). We also report how many of these homes were occupied by low-income households, something GCR Inc. did not do. The resulting estimates show a total of 928 owner-occupied homes statewide that meet HUD's unlivable criteria, of which 443 (48 percent) were occupied by low-income households. This number and proportion are also broken down by county. These findings will inform, in different ways, both components of our updated estimate.

Table 2-5 – Owner-Occupied Homes in Delaware Deemed Unlivable

	New Castle	Kent	Sussex	Total
Total homes	592	131	205	928
Low-income homes (<= 80% HAMFI)	262	91	90	443
Percent total homes are low-income	44%	70%	44%	48%

Source: Source: HUD Comprehensive Housing Affordability Strategy, 2006-2010

The third and primary component of GCR Inc.'s substandard housing estimate is an estimate that they put together on what they called "homes in livable but poor condition." This:

> describes homes that do not lack kitchen or plumbing facilities, but show obvious signs of repair needs. This includes broken windows, damaged roofs,

> compromised foundations, and excessively deteriorated paint and/or mortar issues seen on the façade of homes.[lxiv]

According to this estimate, 9,730 owner-occupied homes in Delaware were in livable but poor condition (Table 2-6), based upon data from the 2010 decennial census count. It is an estimate that is still used in current descriptions of Delaware housing, as it is the most current assessment of substandard yet inhabiTable housing in Delaware. The report notes that while this estimate is higher than the 2003/2008 DSHA estimate, this is almost certainly due to its covering more housing deficiencies, and not to any increase in substandard housing over time. We do not see that substandard housing levels would have fluctuated substantially since then so we will use it as a basis for our estimate as well.

But before we use this estimate of LBPC homes, we reduce the estimated 9,730 LBPC homes to include only such housing owned and occupied by low-income households. Twenty-nine percent of Delaware's housing is occupied by low-income households (Table 2-1), and only 48 percent of Delaware's unlivable owner-occupied housing is occupied by low-income households (Table 2-5). Given this, we anticipate that most of the LBPC homes will be owned and occupied by households who are over the low-income (80% HAMFI) guidelines and would not be targeted for housing assistance. To adjust for this, we apply the proportions of low-income household ownership that we found for each county among the unlivable housing (Table 2-5) to refine the LBPC estimate to only include those owned and occupied by low-income households. This gives us an estimate, statewide, of 4,645 low-income, owner-occupied LBPC households in Delaware.

Table 2-6 – Owner-Occupied Homes in Delaware Deemed in Livable but Poor Condition (LBPC)

	New Castle	Kent	Sussex	Total
Total LBPC homes	6,618	1,212	1,899	9,730
Low-income adjustment (from Table 3-5)	44%	70%	44%	48%
Low-income, owner-occupied LBPC homes	2,929	841	833	4,645

Data from American Community Survey (2014-2018) and 2010 decennial census count

Adding 443 low-income, owner-occupied homes deemed unlivable (Table 2-5) to the 4,645 low-income, owner-occupied LBPC households (Table 2-6) lets us estimate that there are 5,088 substandard, owner-occupied, low-income housing units in Delaware (Table 2-7). This estimate is also broken down by county.

Table 2-7 – Substandard, Low-income, Owner-Occupied Homes in Delaware

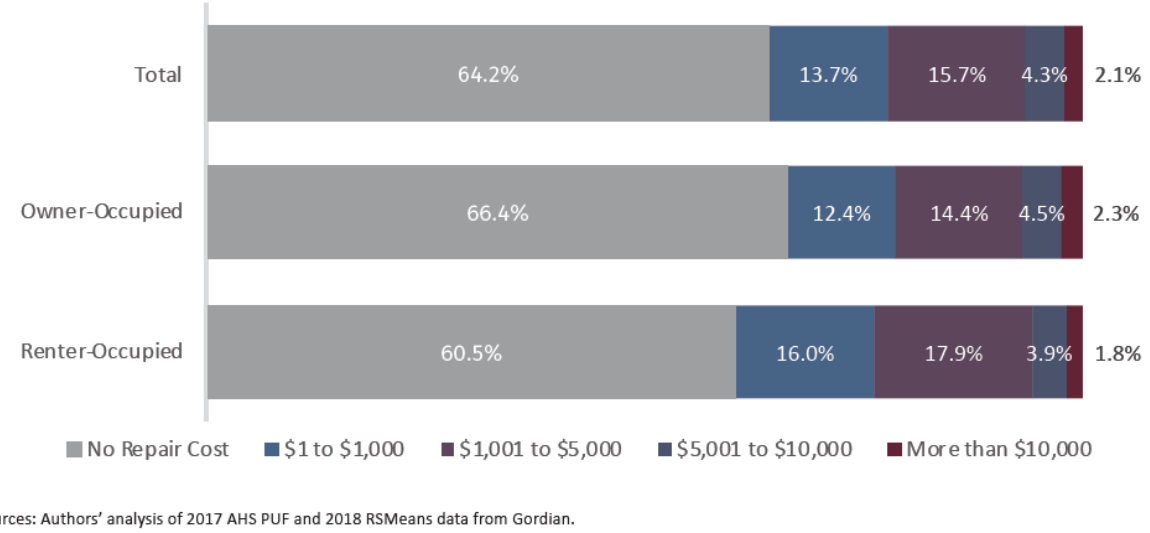
	New Castle	Kent	Sussex	Total
Low-income homes deemed unlivable (Table 2-5)	262	91	90	443
Low-income LBPC homes (Table 2-6)	2,929	841	833	4,645
Total low-income, owner-occupied substandard homes	3,191	932	923	5,088

In addition, we produced an alternative estimate of the number of substandard, owner-occupied, low-income housing units in Delaware to compare with the one we just presented. This second

estimate is more straightforward and the procedure and data are different than those we used in the first estimate.

To come up with this estimate, we go back to the FRB/PolicyMap report, *Measuring and Understanding Home Repair Costs*, that we first described in Section 1. In this study, the authors took data on 35 indicators of physical housing conditions collected in the AHS and enlisted an outside consultant to attach a cost estimate associated with the repair needs corresponding to each indicator. Then, applying these costs to the nationally representative AHS survey data, they came up with aggregated total costs of housing repairs for the entire US and for selected metropolitan statistical areas (MSA). Unfortunately, the AHS's scope of data collection is such that it is not possible to directly estimate substandard housing in Delaware. Instead, we use their findings on frequency and cost of repair needs and apply them to the number of homes owned by low-income homeowners as the basis for a second estimate of the number of substandard, low-income, owner-occupied homes in Delaware that will hopefully be consistent with the estimate in Table 2-7.[lxv]

Figure 1 – Distribution of Occupied Housing Units by Estimated Repair Cost and Tenure



Sources: Authors' analysis of 2017 AHS PUF and 2018 RSMeans data from Gordian.

Figure reproduced from FRBP/Policy Map report[lxvi]

Before we make these calculations, we review some pertinent findings from the report. The first finding is that the large majority of homes, even among low-income homeowners, are not in need of repair. Among all owner-occupied housing, about two-thirds (66.4 percent) needed no repairs, and another 12.4 percent had repairs needs whose costs totaled less than $1,000. On the extreme, only 6.8 percent of all owner-occupied housing had repair needs in excess of $5,000, which is the level that we use to approximate LBPC circumstances.

In Table 2-8, we apply the 6.8 percent rate of owner-occupied homes with repair needs totaling over $5,000, from the FRPB/PolicyMap report and shown on figure 2-4, to the number of low-income, owner-occupied housing, on Table 3-1, and estimate that, statewide, there are 5,060 substandard, low-income, owner-occupied homes. This is remarkably close to the 5,088

substandard homes from the prior estimate, although there is more variation shown among the county comparisons.

We also apply the finding from this report that 33.6 percent of owner-occupied homes need any type of repair to come up with an estimate for the number of low-income, owner-occupied homes that need any repair. This number, 25,002 homes, is substantially higher but the majority of these homes would have repairs that would not be considered substandard by most measures. They may, however, still present circumstances that would make them eligible for home repair assistance programs.

Table 2-8 – Estimated Owner-Occupied Homes in Delaware in Need of Repair Assistance

	New Castle	Kent	Sussex	Total
Low-income, owner-occupied housing (Table 2-1)	41,226	11,940	21,244	74,410
Low-income, owner-occupied housing in substandard condition (need over $5,000 in repairs) (figure 2-4)	2,803	812	1,445	5,060
Low-income, owner-occupied housing w any repair needs (figure 2-4)	13,852	4,012	7,138	25,002

Data from American Community Survey (2014-2018) and American Housing Survey

In summary, our final estimates are that, among owner-occupied, low-income homes in Delaware, 25,002 of them have repair needs. This estimate includes 5,088 whose repair needs are substantial enough to where they are in substandard condition (Table 2-7). In other words, 20 percent of the homes estimated to have repair needs are considered in substandard condition. We laid out the steps we take and the data sources we draw upon take to extrapolate these estimates. While we consider these estimates plausible, they should be considered inexact enough to where they are more indicative of the scale of repair need than as representing a precise number of homes with repair needs.

Estimated Costs Related to Substandard Owner-occupied Homes and Homes in Need of Repair in Delaware

The estimates we just presented of the number of low-income, owner-occupied homes that are in repair need can also be expressed in terms of cost to repair them. Assigning a dollar value to the needed home repairs provides another means by which to demonstrate the magnitude of need for home repair assistance and to provide a comparison point for the funds actually allocated toward such assistance.

The FRBP/PolicyMap report found that, for a low-income, owner-occupied house in need of repairs, the average cost of repairs is $3,842. There are some fluctuations in this estimated average cost around factors such as age of housing and whether or not the housing was located in a metropolitan area. However, these fluctuations appear small enough that we simply apply the overall average repair cost ($3,842) to the 25,002 homes estimated to have repair needs (Table 2-8) for an estimate that reflects the magnitude of the costs associated with all needed repairs among low-income owner-occupied housing.

There are no estimates for average repair costs for the 5,088 homes we estimate to be substandard beyond that the minimum repair cost is $5,000 and the maximum repair cost would not exceed the total value of the home in good condition. Most of the needed repairs would cluster in the lower end of this range, with the upper-end outliers having a disproportionate impact upon the average repair cost. The stakeholder interviews in the next section frequently included mentions of homes with need for extensive repairs, but these are homes were not indicative of a typical home in need of repair assistance. Due to this lack of information, we put the average repair cost for one of these substandard homes at $15,000, a value that is almost certainly overly conservative.

Table 2-9 – Process for Calculating Cost Estimate for Needed Housing Repairs

	New Castle	Kent	Sussex	Total
Number of low-income, owner-occupied homes considered substandard	3,191	932	923	5,088
Estimated repair cost for all substandard homes (@ $15,000 per unit)	$47,865,000	$13,980,000	$13,845,000	$76,320,000
Number of low-income, owner-occupied homes in need of any repair	13,852	4,012	7,138	25,002
Estimated repair cost for all substandard homes (@$3,842 per unit)	$53,219,384	$15,414,104	$27,424,196	$96,057,684

Table 2-9 provides the actual estimates for the cost of all repair needs among low-income, owner-occupied housing ($96 million) and for that portion of the housing that is substandard ($76 million). In describing these results, we round the estimates in the table to the nearest million so as to remove the semblance of precision that an estimate to the nearest dollar would imply and which is not present here. Also, incidentally, the estimated $76 million repair cost for the 20 percent of the homes that are substandard represents 79 percent of the total $96 million estimated repair cost. This would make these estimates consistent with a more general pattern known as Pareto Principle (the "80-20 rule") which states that, across a range of phenomena, roughly 20 percent of causes are often responsible for 80 percent of effects or, in this case, costs.[lxvii] This pattern was popularized by Malcolm Gladwell in *The Tipping Point*. In this present context, that our housing and cost estimates conform to the Pareto Principle does not by itself validate the estimate.[lxviii] However, the dynamics among the repair needs we look at here are almost certainly a case in which a relatively small proportion of the housing is responsible for a much higher degree of repair needs.

CONCLUSION

There are an estimated 74,410 low-income, owner-occupied homes in Delaware. The geography of where these homes are located is unique to each of Delaware's three counties. Furthermore, about one-third of all of these homes (an estimated 25,000) are in need of some kind of repair, and 7 percent (an estimated 5,000) need repairs extensive enough to be considered in substandard condition. We estimate that the cost associated with these repairs is $96 million,

with $76 million of this cost associated with the five thousand homes that are in substandard condition.

This need dwarfs the combined capacity of the handful of organizations that provide home repair assistance and related services in Delaware. As examples:

- Milford Housing Corporation reported providing emergency housing repairs to 221 homes;[lxix]
- Habitat for Humanity of New Castle County, served approximately 150 homes in an undetermined time period straddling 2021 and 2022;[lxx]
- Sussex County Habitat for Humanity provided repair assistance to 110 homes from 2020 through the summer of 2022;[lxxi]
- Good Neighbors Home Repair "now touches 150–160 families (about 400 individuals) annually" with both minor and major home repairs in New Castle County and in southern Chester County PA;[lxxii] and
- New Castle County administers an emergency repair program is targeting 65 households for loan assistance with $404,000 in federal Community Development Block Grant funds.[lxxiii]
- Sussex County spends nearly $2 million in federal monies and another $300,000 in county funding yearly for housing repairs and rehabilitation to roughly 150 homes.[lxxiv]

This is not a comprehensive list of repair assistance providers, but shows some of a loose network of providers who provide assistance to tens and hundreds of homes while homes in need number in the thousands (major repairs) and ten thousands (any repairs) as per the estimates reported in this section.

Section 3

Key Stakeholder Assessments of Owner-Occupied Home Repair Need in Delaware

INTRODUCTION

In order to better inform our report from a "boots on the ground" perspective, we performed sixteen interviews with key stakeholders from various nonprofit and government organizations that are involved with repair activities for owner-occupied housing in Delaware. Collectively, these interviews captured a variety of perspectives on what is being done to assist low-income homeowners with needed repairs, as well as what needs to be done. These interviews, when combined with findings from the quantitative data analyses in the previous section, can present a more detailed and nuanced picture of needs and gaps related to these home repairs.

The goal for each interview was to get a detailed, subjective description of how the stakeholders saw the delivery of repair assistance to low-income homeowners and how they met the needs that were presented. The interview was structured according to a series of open-ended questions from an interview guide (see Appendix 3-A) and were designed to elicit detailed responses by the stakeholders. Often the stakeholder responses led to follow up questions and other responses meant to encourage or extend discussion, a process that differed depending on the stakeholder. Follow up questions are not noted in Appendix 3-A.

Each of the sixteen interviews lasted approximately one hour and was conducted remotely via phone or Zoom by two project staff. Most often the interview was with one stakeholder, but in several instances more than one person from that organization participated in the interview. Both interviewers took detailed notes on the interview, and following each interview they used these notes as a basis for summaries of the interviews. The interviews were not recorded. The notes were read over and common themes that recurred across multiple interviews were identified.

Appendix 3-B presents a table of the stakeholders, affiliated organizations, and area coverage for each interview. This is a sample of all the organizations—government, nonprofit, and faith-based—that are involved with home repairs in some respect. In deciding which organizations to interview, the objective was to achieve representation from a diversity of perspectives, activities, and geographies.

THEMES FROM THE INTERVIEWS

1) The demand for home repairs far exceeds the available resources. Many low-income homeowners lack sufficient resources to make major repairs on their homes, a situation often accompanied by serious threats to both the structural integrity of the home and household health. This theme was unanimous across interviews, as every organization we spoke to or heard about

reports being over capacity and underfunded to meet the needs for assistance (if they provide repairs directly) or facing challenges in helping households find such assistance. Waitlists and turning eligible households away were also mentioned. As a result there are often urgent situations requiring extensive repairs are left unaddressed and likely to deteriorate further.

2) The organizations interviewed incorporate "healthy housing" in their housing work to differing degrees. All organizations interviewed were able to explain how health issues fit with housing repairs, with the most common definition being some version of how health entailed keeping homes "safe, warm and dry." Of the stakeholders interviewed, New Castle County Habitat for Humanity and the four health-oriented organizations (Beebe Healthcare, TidalHealth, ChristianaCare, and Delaware's Division of Public Health) all demonstrated sophisticated views of "healthy housing" that informed their work related to home repairs. Several referred to humane housing conditions and being able to live in safe places and be treated with dignity in their working definitions. The four local government stakeholders interviewed oriented their work more upon getting structures up to code and other building standards, where health appeared a secondary basis for their work. Faith-based orientations and preserving homeownership were two other orientations that were bases for involvement in repair work. Neither of these alternative approaches to home repair precluded a healthy homes approach, but did lead to decreased emphasis on the health implications underlying home repairs.

3) There is a disproportionate need for home repairs among elderly homeowners. The elderly seem to be impacted more significantly than any other group based on our interviews. Most interviewees mentioned that many if not a majority of their clients were elderly. In New Castle County, for instance, an estimated 87% of repair services go to seniors. Each of the healthcare organizations raised this, as well. More than one person mentioned that many clients are elderly widows living alone. Repair need comes both from their homes being aged with substantial deferred repairs, and the need for physical modifications that enable them to 'age in place'- to continue to live in the house despite disabilities and infirmities. Most of these elderly residents are physically incapable of making necessary home repairs themselves and do not have the financial means to pay someone out of pocket to make the repairs for them. As a result, many elderly individuals can be taken advantage of by contractors, which came up as a frequent concern in Sussex County specifically, including from healthcare organizations.

4) Requests for home repairs often involve manufactured housing (i.e., mobile homes). Manufactured homes were a common concern among interviewees, especially in Kent and Sussex Counties. Many manufactured homes were described as falling apart around the homeowners in our interviews, with issues like walls detaching from ceilings and floors collapsing relatively common. In Kent County manufactured housing was identified as the primary affordable housing stock in the county; the bulk of the houses that Sussex County assists outside of towns are manufactured homes. Most of the interviewees we spoke to who work in Sussex County referenced that a majority of the clients that they serve live in manufactured homes. There frequently seems to be a perception by owners that they have equity in the home, despite the fact that manufactured homeowners typically do not own the land and the homes themselves have a limited lifespan before they need to be replaced.

5) Latino homeowners have unique difficulties in accessing home repairs. We interviewed a few groups who specifically work with the Latino community. Other interviewees stated that not everyone can work with these communities due to not having bilingual staff or trusted sources, and Latinos not always seeking out their services directly. Serving the Latino community also becomes more difficult due to immigration issues, which can inhibit or prevent their seeking assistance. In some cases Latino homeowners may provide the only options for others within the community to live. If these homes are not in good condition, addressing poor living standards could leave individuals or families homeless due to having nowhere else to live at an affordable rate without fear of their legal status being questioned. This leaves many individuals and families potentially living in unsafe and unhealthy conditions where they can be taken advantage of in various ways. On the individual side, issues with clear title (which affects many households, including Latino homeowners), cultural and language issues, and immigration status can be impediments to assistance. Interviewees reported that many Latinos in need of housing support rely on their church and faith-based networks to manage repairs internally or to help them source groups who can make the repairs. Much of this work seems to be done under the table due to the concerns mentioned above.

6) Local governments can be challenging to work with in the context of home repairs. According to our interviewees, the capacity or willingness of local governments throughout the state to address substandard housing concerns varies greatly from place to place. Some local governments are willing partners who are happy to help facilitate home repair needs taken on by non-profits and other groups. Other local governments are more inflexible and apparently reluctant to work with home repair programs. Other issues related to local governments include difficulties working through historic preservation regulations on lower income homes in need of repairs, a lack of workforce capacity for code enforcement officials to effectively apply local building code standards, and a lack of focus by local and state officials toward residents in the greatest need of support. Another barrier for local governments is that public funding such as CDBG dollars come with many constraints that are often not flexible enough to meet the needs of residents.

7) A number of cross-sector collaborations are underway to address 'healthy housing' needs. These include healthcare systems' engagement with repair organizations to work to improve the housing that their patients are coming home to support their recovery, reduce recurring hospitalizations, and improve their health. Several were identified including Sussex County Habitat for Humanity's working relationships with Tidal Health, Beebe Healthcare, Bayhealth, and ChristianaCare; Beebe's ongoing relationship with MHDC identifying and addressing in-home mobility issues and other patient needs; and Good Neighbors Homes Repair's work with ChristianaCare HomeHealth and with Westside Family Health. New funding opportunities are supporting collaborative work between healthcare providers and repair organizations. One is a new Highmark-funded Healthy Homes Initiative where Good Neighbors Home Repair, in partnership with ChristianaCare, will perform a 25-30 home study focused on elderly homeowners and people with mobility issues. Another is Energize Delaware's Empowerment Grant program, with applications recently submitted by a partnership between Beebe and MHDC, and by Tidal Health in partnership with Sussex County Habitat for Humanity.

8) A number of issues that were not directly related to homeowner occupied repairs were raised in the interviews. These included:

- A clear need to address rental housing from a 'healthy homes' perspective, as well.
- A lack of affordable housing options throughout the state, primarily caused by a lack of the total number of housing units available in the open market, which limits options available to low-income homeowners.
- A lack of transportation options for those who struggle to find affordable housing.
- A lack of healthy food options for those in need who can't drive.
- The impact of crime on the health of neighborhoods and individuals.

PLACES, REPAIR TYPES, AND COSTS

Specific Locations

The following locations were consistently identified in interviews as areas in need of homeowner repair assistance:

- New Castle County – Wilmington (including areas with higher lead poisoning levels), Route 9 corridor (with many seniors and high homeownership rates), Route 40 corridor (including the Rt. 40 Boys & Girls Club area), Dobbinsville in Old New Castle, and Claymont

- Kent County – Dover out to Harrington, Felton, and western areas; Smyrna, and Milford; small towns including Kenton and Clayton; and mobile home parks including Twin Maple, Kent Estates, Dover Estates, and Oak Grove mobile home parks

- Sussex County - Georgetown, Seaford, Laurel, Millsboro, and many rural communities that do not show up clearly in census tract data (generally center and west Sussex County).

Common Repairs

- Common repairs needed fairly consistently across the three counties are for roofs, windows, doors, heaters and plumbing. Wheelchair ramps and safety and internal access features are also a common upgrade to homes for elderly individuals.

- From the County perspectives:
    - New Castle County notes critical home repairs include roofs, electrical upgrades, heaters, and sewer laterals.
    - Kent County identifies plumbing, heating, HVAC, windows, bathrooms, roofs (especially manufactured housing), basic systems, and sometimes termites as common needs.
    - Sussex County tries to work 'from the outside in', with roofs, windows and doors, and siding first. Energy efficiency and plumbing are other big issues.

- Water leaks and structural issues in homes are a common problem. Many, particularly with manufactured housing, are as significant as walls separating from roofs and floors collapsing. Water-related repair needs were raised as a frequent issue in Sussex County. Almost all of the issues with manufactured homes are related to water damage from plumbing leaks, which can cause the homes to deteriorate rapidly and floors to collapse.

- Septic system failures were another repair/replacement need identified in Sussex County.

- The vast majority of lead-based paint and other interior exposure issues are found in the Wilmington area where there are a higher proportion of homes built prior to 1978. However, many other parts of the state are impacted, with Sussex County noting the need to test any home built prior to 1978 for lead-based paint prior to repair work on a home.

Costs

The following are an indication of repair costs related to healthy housing for some specific issues and in different parts of the state:

- Most organizations spend between $3,000-$20,000/home on repairs, but the costs range dramatically depending on what is needed and what resources can be allocated. For instance, New Castle County's non-emergency repair program can fund up to $20,000/home. Kent County's repairs of stick-built housing are typically $20,000-35,000/house while manufactured housing repairs are generally in the $12,000 range. Sussex County's repair costs are similar, with manufactured housing costs around $20,000 or less and stick-built homes ranging from $15,000-$40,000. Good Neighbors' out-of-pocket costs (it relies heavily on volunteer labor for some types of repairs) are in the range of $3,500-4,500 to make a home 'safe'. MHDC's repair costs average $4500-4800/home.

- Roof replacements can range from $5,000-$30,000 for roofs, depending on square footage and type of roof and the amount of volunteer labor used. Additional repairs can range anywhere from a few hundred dollars to over $50,000.

- Requirements to test for lead-based paint in homes built prior to 1978 can raise the cost of home repairs. Sussex County's lead remediation can cost anywhere from $5,000-$40,000 but is generally in the $5,000-$10,000 range on top of the base repair costs. Lead-based paint remediation across the state may run $2,000-$3,000/home, depending on the extent and type of repair.

- Septic system repair and replacement can be another significant cost. Septic mound systems can cost up to $40,000.

CONCLUSION

In summary, the stakeholder interviews provided on-the-ground confirmation of a number of the issues raised in the review of literature on substandard housing and health impacts presented in the initial section of this report, and provide some Delaware-specific context for the quantitative research component of the study. The organizations interviewed generally focus on assisting lower-income households in their work related to 'healthy homes'. Many of those who they assist are elderly and with limited resources and yet needing assistance to secure and maintain a healthy living environment and 'age in place'. Manufactured housing is a primary source of affordable housing in Kent and Sussex Counties. However, deterioration of manufactured housing is a significant issue, and can be particularly challenging in terms of the extent of their deterioration from a multitude of issues such as plumbing leaks, leaky roofs, or structurally unsound flooring and walls. Aging stick-built homes can be challenging to repair because of aging systems and construction quality. Lead-based paint and septic system failures are other complicating and expensive challenges in the work to fund and attain healthier housing for low-income homeowners in Delaware. However, the largest challenges are a lack of funding for necessary and urgent repairs, and the scarcity of affordable and accessible housing statewide that could provide options to escape poor living conditions.

On the other hand, working relationships are developing between healthcare systems, nonprofits, and other repair organizations that focus on quality housing's relationship to health. Healthcare systems have been involved on their own in trying to improve housing to support patients being discharged and are now starting to work collaboratively with home repair organizations to expand that work. It appears that there might be an opportunity to build and strengthen collaborative relationships between healthcare systems and repair organizations to further this work.

Section 4

Summary of Key Findings and Recommendations

In this report, information from documents, quantitative data sources, and key informants has provided the basis for assessing and estimating the need for home repair assistance among low-income, owner-occupied households in Delaware. Here we highlight eight key findings that we presented in the previous sections.

We estimate there to be 5,000 homes owned by low-income households that are in substandard condition. We loosely define such housing as needing either major or multiple repairs, or repairs that would cost upwards of $5,000. These repairs, if unaddressed, would present substantial health risks to the occupants, either imminently or over time. Such housing represents a relatively small proportion, 7 percent, of the estimated 74,410 low-income, owner-occupied homes in Delaware. However, this number, as key informants pointed out, also overwhelms the capacity of organizations currently providing home repair assistance in Delaware.

We estimate that there are 25,000 homes owned by low-income households that need any repair. These homes, substantially more common than the estimated 5,000 homes in substandard condition (included in the 25,000 estimate), cost less to repair (under $5,000) but often represent needs that are less urgent and more likely to be resolved by the homeowner without assistance. Key informants assess amounts spent on repair assistance to span a broad range, between $3,000 and $20,000 per home. This is a range that would cover both homes that are in substandard condition and those that need less extensive repairs.

We estimate a $96 million total cost associated with the 25,000 homes in need of repair. About eighty percent of this estimated cost ($76 million) comes from the twenty percent (5,000) of these homes that are in substandard condition. In short, the repair needs of a minority of homes represent a disproportionate amount of the total repair costs. Targeting repairs for these "worst cases" would be more likely to preserve homes that would otherwise become permanently uninhabitable and mitigate those homes that present the greatest health risks. However, the higher repair costs presented by such worst case homes would limit the number of homes that are able to be assisted.

Areas in Delaware with high numbers of low-income, owner-occupied homes often have growing, non-White populations and indicators of economic stability. While this pattern occurred in all three Delaware counties, further research is required to gain a better understanding of the dynamics related to these characteristics. Insofar as increased numbers of such homes indicate higher levels of repair need, targeting home repair assistance to such areas could contribute to supporting ongoing economic stability and minority homeownership. While housing discrimination faced by Black homeowners is well-documented, key informants also mentioned the presence of unique housing challenges to Latino homeowners.

Two inner-city Wilmington areas, each made up of four contiguous census tracts, have the state's highest concentrations of low-income, owner-occupied housing. These were the only urban areas in the state to indicate high levels of such housing. Alternately, these areas also showed high levels of poverty, Black and Latino population, and older housing, all of which are factors correlated with the presence of substandard housing.

All three Delaware counties had high levels of low-income, owner-occupied housing in sparsely populated areas with rural characteristics. Census tracts in rural areas tend to be large, and this may mask more concentrated areas of poverty and substandard housing. The remote nature of rural areas may also obscure the presence of substandard housing. Stakeholders mentioned, when they were interviewed, that many rural communities do not show up clearly in census tract data.

Areas identified as having high-numbers of low-income, owner-occupied housing also had disproportionate levels of manufactured housing. This pattern was present it all three counties. It was particularly pronounced in New Castle County, the county with the fewest number of manufactured homes, but where 63 percent of the county's manufactured housing (2,691 of 4,280 homes) was located in the 10 percent of NCC census tracts with the highest numbers of low-income, owner-occupied housing. Older manufactured housing is at particular risk for taking on substandard conditions, and manufactured home parks with high rates of low-income households in rural, unincorporated areas are examples of smaller, hidden concentrations of substandard housing. The disproportionate demand for home repairs made by owners of manufactured homes was recurring theme in the key provider interviews.

Elderly, low-income homeowners were noted as a priority area for home repair assistance. Most interviewees mentioned that many if not a majority of their clients were elderly. Most elderly homeowners are unable to make or afford necessary home repairs on their own, and many present repair needs that directly pertain to being able to avoid adverse health outcomes and continue to live independently. Elderly homeowners seem to be more integrated into the general population than other targeted homeowner groups, as our data found little evidence that higher levels of low-income, owner-occupied housing was associated with higher numbers of elderly population.

RECOMMENDATIONS

Based upon the findings presented throughout this report and highlighted in the previous subsection, we also present a set of recommendations that are supported by these findings that we believe are necessary to better address the need for home repairs presented by low-income homeowners in Delaware.

Increase funds available for providing repair assistance to low income homeowners. The estimated cost of repair need for homes owned by low-income households is in the tens of millions, vastly greater than the amount currently available to Delaware organizations providing home repair assistance. While the funding need is high, providing home repair assistance

promises cost savings through both facilitating improved health outcomes and preservation of housing stock that is affordable to low-income households.

Increase collaboration and coordination between providers of home repair assistance and providers of health-related services. Emphasis on home repairs as a means to improve health outcomes links home repair assistance efforts to a broader range of community health initiatives that are being administered through healthcare systems and other providers. Partnering with such organizations to bundle home repair assistance with other types of assistance and care can increase the effectiveness of home repair assistance as it targets high priority populations such as elderly homeowner households. As noted earlier, some such partnerships have been or are being developed. Expanding these partnerships and developing a network (regional or statewide) of such partnerships may open up other funding avenues for home repair programs, particularly with health systems that consider themselves to be 'anchor institutions' in their communities and service areas.

Target home repair assistance to communities with high levels of low-income Black and Latino homeowners. Such communities have been historically underserved due to discriminatory practices, and many areas with high numbers of low-income, owner-occupied housing also have high growth rates among Black and Latino populations. As part of this effort, organizations providing home repair assistance can partner with churches and community-based organizations, and should have greater multi-lingual capability.

Develop county-specific approaches for providing home repair assistance. As this study's findings have shown, each of Delaware's three counties has different dynamics related to where its supply of low-income, owner-occupied housing is located. While New Castle County, for example, has much larger numbers of older homes than the other two counties, the two southern counties have higher numbers of manufactured housing in more rural areas. Each of these housing types have particular repair needs, and demand different approaches.

Develop home repair approaches and resource networks specific to housing types. Interviews pointed to supply-chain issues related to specific manufactured housing repairs, including windows. Consider exploring options for developing supplier relationships across the Habitat organizations for needed supplies by housing type. Section 1 of this report also provided resources for taxonomies of specific repairs (and related health outcomes) that could potentially assist with a response to this recommendation.

Develop community-wide approaches for addressing home repair needs. Currently, organizations providing home repair assistance appear to target households for assistance based upon case by case criteria, often without much attention given to how such assistance can be used to improve entire neighborhoods or communities. Such organizations can, for example, partner with organizations that seek to address rental housing or pursue broader economic development strategies in a particular geographic area.

Frame home repairs as preservation of affordable housing stock. Delaware, like most states, is experiencing a severe shortage of housing that is affordable to low-income households. Just as Delaware's three Habitat for Humanity organizations' homebuilding efforts adds to the state's

affordable housing stock, its repair assistance efforts retain the viability of distressed existing homes. Such efforts can potentially keep up to 5,000 substandard homes from becoming uninhabitable, and up to an additional 20,000 homes from falling into more serious disrepair. Given this, expanding home repair assistance should be highlighted as part of the solution to this aforementioned crisis in affordable housing.

Conduct more research and systematic data collection. "Boots on the ground" research initiatives can build on the findings provided in this study to directly inventory housing quality and identify more specific micro-areas (blocks, neighborhoods, manufactured housing parks, unincorporated areas, etc.) where there are high levels of home repair need, and can further assess and build upon the census tract-level analyses upon which we built our county profiles in Section 2. Data collected on home repair assistance provision is also currently maintained only on an organization level and in a way that renders it difficult to analyze. A database of assistance provided across home repair assistance providers, funders, government organizations and other groups, along with mapping of that assistance, can give a better portrayal of how repair assistance is provided across the state. It would provide a powerful tool for coordinating services and documenting assistance provided, as well as further identifying need for significant increases in public, private, and philanthropic funding to address these significant repair needs affecting Delaware's low-income homeowners, communities, and affordable housing stock.

Appendices

Section 2 Appendix

Table 2A-1 – Individual Census Tracts with High Levels of Low-Income, Owner-Occupied (LIOO) Housing: New Castle County, Delaware

Tract	Location	Number of LIOO Homes	Percent of LIOO Homes	Abundant	Concentrated
6.02	Wilmington – Brandywine Village	320	67.4%		X
9.00	Wilmington – Upper East Side	175	67.3%		X
16.00	Wilmington – Trinity Vicinity	145	64.4%		X
22.00	Wilmington – Hilltop	295	81.9%		X
23.00	Wilmington – Hilltop	210	67.7%		X
26.00	Wilmington - Hedgeville	275	59.8%		X
29.00	Wilmington – Compton Village	170	66.7%		X
30.02	Landlith	125	56.8%		X
124.00	Elsmere	645	52.7%	X	
136.15	Newark – Murray Manor	725	51.2%	X	
145.02	Newark	85	54.8%		X
148.03	Newark – Summit View	610	46.9%	X	
148.08	Newark – Belltown Woods	605	37.1%	X	
148.09	Williamsburg	600	28.0%	X	
149.07	Newark - Christiana Green	565	41.4%	X	
149.08	State Road	215	57.3%		X
152.00	Wilmington Manor	580	46.4%	X	
155.02	Hazeldell/Hamilton Park	330	58.4%		X
156.00	Minquadale	430	64.7%		X
158.02	Collins Park	290	55.2%		X
163.01	Bear & Red Lion	615	43.6%	X	
163.02	Tybouts Corner	850	37.6%	X	
164.01	St. Georges	600	29.6%	X	
166.01	Middletown	855	25.7%	X	
166.02	Jamisons Corner	580	19.9%	X	
166.04	Odessa	740	22.8%	X	

Table 2A-2 – Census Tracts with High Levels of Low-Income, Owner-Occupied (LIOO) Housing: Kent County, Delaware

Tract	Location	Number	Percent	Abundant	Concentrated
402.02	Smyrna	1,245	26.7%	X	
418.01	Cheswold Area	995	32.6%	X	

420.00	Mahan (central-west Kent Co.)	375	38.3%		X
422.02	Magnolia	685	25.7%	X	
431.00	Southwest Kent Co.	305	39.6%		X
432.02	Delaware Bay Corridor	445	37.9%		X

Table 2A-4 – Census Tracts with High Levels of Low-Income, Owner-Occupied (LIOO) Housing: Sussex County, Delaware

Tract	Location	Number	Percent	Diffusion	Concentration
501.05	Anderson Crossroads (S. of Milford)	640	33.1%	X	
503.01	Northwest Sussex Co. (Greenwood & Bridgeville)	915	40.8%	X	X
504.06	Seaford	445	39.4%		X
504.08	Lakewood	580	42.5%		X
505.01	Piney Grove Manor (W. of Georgetown)	475	42.4%		X
507.03	Ferry Landing (E. of Millsboro)	300	40.3%		X
507.05	Lingo Landing (Rehoboth Bay)	675	38.5%	X	
508.03	Belltown/Pinetown (W. of Lewes)	1,155	33.2%	X	
510.07	Rehoboth Bay (W. of Dewey Beach)	620	27.2%	X	

Appendix 3-A: Interview Guide Questions used with Key Stakeholder

1. Can you describe your role at your organization related to home repair and healthy housing in detail?
2. What is your organization's working definition of healthy housing?
3. What efforts have you been involved with relating to improving substandard housing?
4. How have you funded this work?
5. What issues have you encountered in pursuing these efforts focused on improving substandard housing?
6. Have you encountered any issues relating to local or state governments in your efforts?
7. What are some of the common improvements that are needed for improving substandard housing in your experience?
8. What are some of the common costs associated with these improvements?
9. What are some of the common issues that property owners face when trying to make needed improvements to their homes?
10. What locations and neighborhoods are most in need of improving their standard of housing?
11. What other organizations are involved in improving substandard housing both in your area and others in Delaware that you are aware of?
12. What other issues related to improving substandard housing should we be aware of that have not been mentioned already?
13. What data and other resources identifying and quantifying the need to address substandard housing in DE should we investigate?
14. Who else should we be talking with about this?

Appendix 3-B: List of Key Stakeholders Interviewed for this Project

Stakeholder	Organization	Geographical Focus	Activity
Bruce Wright (Community Development Program Manager)	First State Community Action Agency	Statewide	Offers a diverse array of programs that target the root causes of poverty.
Russ Huxtable (Vice President and Chief Operating Officer)	Milford Housing Development Corporation (MHDC)	Statewide	Provides decent, safe, and affordable housing solutions to people of modest means.
Bill Leitzinger (Administrator- retired)	Delaware Dept. of Health and Social Services - Division of Public Health: Office of Healthy Environments	Statewide	Helps Delaware prepare for and respond to urgent public health hazards
Brandy Nauman (Director) Brandon Hamilton Mike Jones Taisha Dupont-Palmer	Sussex County - Community Development & Housing Dept.	Countywide (Sussex)	Provides decent, safe, and affordable housing opportunities to people of low and moderate incomes in Sussex County.
Sarah Keifer (Director)	Kent County - Department of Planning Services: Division of Planning	Countywide (Kent)	Reviews and processes a variety of land use applications
Carrie Casey (General Manager)	New Castle County – Division of Community Development & Housing	Countywide (New Castle)	Administers housing and community development programs for residents of New Castle County
Jennifer Fuqua (Executive Director)	La Esperanza	Local/regional (Sussex County)	Multiservice nonprofit organization focused on building family empowerment among Latinos
Bob Weir (Director)	City of Wilmington – Dept. of Real Estate and Housing	Local/regional (Wilmington)	Plans, allocates and administers federal, state and local resources related to housing and real estate.

Harold Naylor (Executive Director)	Good Neighbor Home Repair	Local/regional (New Castle Co. outside Wilmington)	Help needy homeowners with few or no resources to fix their leaking roof, broken windows or their worn out furnace.
Laura Adarve (Director of Prevention & Advocacy) Ana Figueras (Healthy Programs Coordinator)	Latin American Community Center	Local/regional (Wilmington and New Castle Co.)	Empowers the Latino Community through education, advocacy, partnerships and services provision.
Timothy Bailey (Executive Director) Jocelyn Tice Caitlyn Creasy	Central Delaware Habitat for Humanity	Local/regional (Kent County)	Kent County affiliate of Habitat for Humanity International, a non-profit, ecumenical housing ministry that seeks to eliminate poverty housing.
Kevin Smith (Chief Executive Officer) Kathi Barber Beverly Ward	Habitat for Humanity of New Castle County	Local/regional (New Castle County)	New Castle County affiliate of Habitat for Humanity International, a non-profit, ecumenical housing ministry that seeks to eliminate poverty housing.
Kevin Gilmore (Chief Executive Officer) Heather Barony	Sussex County Habitat For Humanity	Local/regional (Sussex County)	Sussex County affiliate of Habitat for Humanity International, a non-profit, ecumenical housing ministry that seeks to eliminate poverty housing.
Ann Painter (Senior Vice President)	ChristianaCare - HomeHealth	Health care services with 'healthy homes' engagement	Provides home health care services.
Kim Blanch (Director of Community Outreach, Population Health)	Beebe Healthcare - Population Health Department	Health care services with 'healthy homes' engagement	Provides community-based preventative health care services.
Katherine Rodgers (Director of Community Health Initiatives)	TidalHealth - Population Health Management	Health care services with	Provides community-integrated health care initiatives including

		‘healthy homes’ engagement	community wellness and nutrition/diabetes education services

Appendix 3-C – Available housing repair and related assistance providers in Delaware as mentioned in the course of stakeholder interviews.

During the interviews the stakeholders were asked to identify other organizations in their service area that engage in work related to improving the health of houses and neighborhoods in Delaware. The stakeholders identified the following organizations (organized by the primary types of services they offer related to homeowner repairs):

HOUSING OR UTILITY REPAIR

ORGANIZATION	SERVICES OFFERED:
Catholic Charities	Shelter services, energy assistance, rental housing for low-income seniors, Catholic Charities Energy Assistance Program
Central Delaware Habitat for Humanity	CDHFH has built and renovated more than 75 homes, housing more than 300 adults and children. Through this homeowner partnership, families are able to achieve their dreams of homeownership and break the cycle of poverty.
Chesapeake Housing Mission	Offers a wide variety of basic construction and home repair services that complement the skill sets of our volunteers and operations team. In addition to building wheelchair ramps, we also perform the critical home repairs to help our clients be Warmer, Safer, Drier, and Healthier.
City of Newark	Home repair program, Resident assistance programs
Contractors for a Cause	Home construction, maintenance, and repair
Cornerstone West CDC	Aging and Staging Homeownership Repair Program, otherwise primarily focuses on housing development for low- to moderate-income families, serves as a proactive catalyst for community revitalization in Wilmington's West Side.
Delaware 2-1-1	Housing assistance, utility payment, utility repair, emergency shelter
Energy Coordinating Agency	Energy conservation, utility repair
First State Community Action Agency	State rental and utility assistance, heater repair and replacement
Fuller Center for Housing of Delaware	Collaborate in Delaware for new construction (missing middle, tiny house communities, small scale development), home repairs, and rehabs.

Good Neighbors Home Repair	Expertise in roof replacement, big system repairs; also do1-day ‘quick fixes’ like replacing broken toilets and water heaters Works with residents in Chester County, PA and New Castle County.
HELP Initiative	Focuses on energy consumption, improving residential energy efficiency with lighting, heating, and weatherization programs. and conducts healthy homes assessments.
Ingleside Homes	Social services organization providing affordable housing and supportive social services to low- to moderate- income seniors, focusing on improvements that assist seniors in aging in place
Milford Housing Development Corporation	Housing services such as transitional housing, rental housing, self-help housing, statewide home repairs and rehabilitation, home buyers club, property management, preservation, single-family new construction, and engineering and site design.
Habitat for Humanity of New Castle County	Affordable housing developer, critical home repairs, partner with community groups, help develop community and revitalize neighborhoods
Sussex County Department of Community Development & Housing	Home repair, resource center, promoter of fair and affordable housing
Sussex County Habitat for Humanity	More than 150 families and residents have purchased affordable Habitat homes across Sussex County. Hundreds more have accessed healthy home repairs, accessibility modifications, energy efficiency upgrades, and financial literacy coaching through Sussex County Habitat programs.

COMMUNITY DEVELOPMENT & ADVOCACY

ORGANIZATION	**SERVICES OFFERED:**
Children and Families First	Programs supporting family stability.
Community Resource Center	Day Center (supports homeless population).
Delaware Manufactured Home Owners Association	Promotes, represents, preserves, and enhances the rights and interests of manufactured home-owners living on leased land throughout the State of Delaware.

Good Ole Boys Network	Emergency relief, community development.
Greater Harrington CDC	Initiatives include reducing homelessness, increasing housing availability and affordability, and creating employment opportunities through the support of residential and commercial property development within the City of Harrington.
Latin American Community Center	Offers 50 programs for the Latin community in Wilmington ranging from financial education to a workforce development program; dedicated healthy homes program that performs health risk assessments and provides lead-based pain testing kits and connects people to resources (only nonprofit in DE known to have a healthy homes program).
Pathways to Success	Fair Housing training and education.
USDA Rural Development	Assist Rural communities to recover economically from the impacts of the COVID-19 pandemic, particularly disadvantaged communities.
West River Community Land Trust	Affordable housing protection and preservation, community development.

FINANCING

ORGANIZATION	**SERVICES OFFERED:**
Delaware Community Reinvestment Action Council	Providing free education on matters related to money, credit, homeownership, foreclosure prevention, taxes and more.
Delaware State Housing Authority	Make loans and grants to both for-profit and non-profit housing sponsors; makes loans to mortgage lenders and require that they use the proceeds to make new residential mortgage loans; receives subsidies from the federal government and other sources, and issues its own bonds and notes, receives funding from HUD to build, own and operate public housing in Kent and Sussex counties, two of Delaware's three counties.
DNREC	The Department regulates onsite wastewater systems and asbestos provides grants and homeowner assistance and offers guidance on a wide variety of subjects of interest to homeowners.

Family Promise of Southern Delaware	Rental assistance, landlord mediation, emergency shelter
Lutheran Community Services	Financial assistance for rent, mortgage, utilities, and security deposits
National Council on Agricultural Life & Labor Research Fund (NCALL)	Homeownership education, foreclosure prevention, rental application assistance, financial education, real estate development, leads Restoring Central Dover Comprehensive Neighborhood Revitalization Plan.
Stand by Me	Homeowner education program focused on improving credit score, reducing debt, and mortgage qualification

HEALTH RELATED

ORGANIZATION	**SERVICES OFFERED:**
Bayhealth	Central and southern Delaware healthcare system with hospitals in Dover and Milford.
Beebe Healthcare	Beebe Healthcare is a healthcare system serving Sussex County in southern Delaware in the United States. Its primary facility is Beebe Medical Center, a hospital in Lewes
ChristianaCare HomeHealth	In-home healthcare division of ChristianaCare, a network of hospitals and satellite facilities covering DE and surrounding cos.
Delaware Division of Public Health	Healthy homes program, lead abatement program
New Castle Lead Abatement Program	Lead hazard remediation in homes within 5 zip codes: 19703, 19720, 19801,19802, 19805 & 19806 where there are children under the age of 6, pregnant women, or pre 1978 housing.
Office of Healthy Environments in DE Division of Public Health	Healthy Home Program, Lead Poisoning Prevention Program, Occupational Health Program, Worker Right-to-Know Program, Radon Program and Prescription Drug Take- Back Event.
Tidal Health	Medical services provider based in Maryland and Southern Delaware

Westside Family Healthcare	Patient-centered healthcare services (may have information/data on how health hazards in housing have led to a higher number of patients)

GOVERNMENT RELATED

ORGANIZATION	SERVICES OFFERED:
City of Wilmington	Vacant property management, building codes, inspections
Kent County	Homeless resources, building inspections & code enforcements, manufactured housing program, rehab program
New Castle County	Hope Center, property assessment program, lead abatement program, rehab programs
Sussex County	Owner-occupied rehab program, Housing Trust Fund, Sussex Co. Rental Program

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