



## Housing Needs Assessment After a Local Disaster

### A Final Report on Housing Recovery Research Conducted in Waverly Two Years Following the Iowa Floods of 2008



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# Housing Needs Assessment After a Local Disaster

## Waverly

### Executive Summary

This report is an abbreviated, Waverly-specific version of a larger study titled *Housing Needs Assessment After a Local Disaster: A Final Report on Housing Recovery Research Conducted in Eight Iowa Cities Two Years Following the Iowa Floods of 2008*. The full report was commissioned by the Iowa Department of Economic Development (IDED), the Rebuild Iowa Office (RIO) and the Iowa Finance Authority (IFA) and was published in October 2011 by Iowa State University Extension and Outreach. The full report contains aggregated data assessing the regional economic and housing impacts for eight communities located in the Cedar and Iowa River watersheds which, from north to south, include Mason City, Charles City, Waverly, Waterloo, Cedar Rapids, Coralville, Iowa City and Columbus Junction.

Several questions led to the commissioning of this study:

- What were the short- and long-term negative economic impacts on these communities and which were attributable to the floods versus the overall stagnate national economy?
- Would the flood-impacted communities lose population and jobs?
- What types of housing were lost and what are best practices for determining the number and type of replacement housing needed now, while also determining a long-term housing strategy to accommodate future population growth and special needs populations?
- Did long-range community plans help in the recovery process and how can they be modified to reduce risk to life and property?
- What would we do differently next time?

### Methodology

This study was structured as a mixed-methods research project. Some of the data used for the study came from available secondary sources such as public documents,

program reports, plans, maps, budgets, websites and other previously published materials. A variety of economic statistics was available, including data from the US Census, the Bureau of Labor Statistics, retail trade reports and tax receipts. Other statistical data were created by developing an input-output model to analyze data and estimate impacts based on formulae that aid in predicting how an economic change will affect a specific geographic area over a particular period of time. Data on the number of housing units lost were generated using GIS mapping. The study also used primary source data gathered from focus groups, interviews with key stakeholders who had specific knowledge of housing issues in their communities, and an online survey.<sup>1</sup> Both the data from secondary sources and the new data generated were subjected to a variety of analyses by a team of researchers using techniques that would be commonly available or replicable by city planners, council of government staff, nonprofit agencies, economic development agencies or other professionals called upon to assess post-disaster impacts and reassess community housing needs. A larger description of the methodology and analysis techniques can be found on pages 3–5 of the full report.

The information about Waverly provided in this report includes:

- The economic impact analysis of the flood versus the national recession on Waverly's economy.
- A review of Waverly's demographics and population trends.
- Waverly's housing characteristics.
- An assessment of Waverly's pre-2008 flood risk exposure.
- An assessment of Waverly's post-flood economic performance related to population change, school enrollment change, area commuting patterns, retail trade and unemployment/employment change.

<sup>1</sup>The online survey was distributed to a regional cohort and therefore is not included in the city-specific reports. A summary of the survey results is included in the full report.

- An analysis of pre-flood comprehensive plans, housing needs assessments, hazard mitigation plans, municipal codes, flood risk management plans and post-flood revitalization plans.
- A geospatial analysis of lost housing and changes in overall community housing values.
- Waverly focus group and key informant interview participants' responses to qualitative questions regarding (1) the flood's impact on housing, special populations and neighborhoods; (2) the effectiveness of federal, state and local flood recovery programs; (3) the effectiveness of pre-flood planning; (4) the effectiveness of local leadership; (5) public involvement in post-flood planning; and (6) identification of post-flood recovery best practices.

## Waverly Study Highlights

The analysis of all available Waverly data using the methods identified above provided the following answers to the primary questions posed by the study.

### Question 1: What were the short- and long-term negative economic impacts on Waverly that were attributable to the floods versus the overall stagnate national economy?

**Answer:** There are no indications that the 2008 floods had a lasting negative economic impact on the community economic base as a whole. Part of the explanation for this observed effect is that Waverly is a retail trade center that draws economic activity from a regional population that is almost 20% larger than its own municipal population size. Part of the explanation for this observed effect is that Waverly has a pull factor of 1.19; that is, it draws economic activity from a regional population that is almost 20% larger than its own municipal population size. Much of the geographic region served by Waverly was not directly impacted by the floods. One result of the floods of 2008 was a temporary "flood bump" to the Waverly economy. Retail sales in the quarter in which the flood occurred were 14% higher than the same quarter in 2007. By the third quarter of 2009, retail sales had fallen by 10%. Two years after the flood, Waverly's retail sales had stabilized to pre-flood levels. This leads to the conclusion that overall, Waverly's economy was impacted more by the effects of the nationwide recession than by the floods of 2008. Similarly, the unemployment rate in Waverly did not change post-flood. When compared to a group of peer cities not impacted by the floods of 2008, Waverly's unemployment rate was slightly lower. In terms of total employment, Waverly's employment base experienced year-over-year gains between 2004 and 2008. There was

no change in employment levels during the floods. The overall rate of employment began to decrease in 2009 at the same time and rate as the other cities in the peer group, again likely due to the effects of the nationwide recession.

### Question 2: Did Waverly lose population and jobs?

**Answer:** While there were households that were displaced temporarily, there are no indications of a permanent flood-related decline in population. Waverly's population grew by 10% between 2000 and 2010 compared to a statewide average of 8.4%. The rate of population increase started to slow in 2007. In examining school enrollment data, it was found that enrollments have been stable with slight growth between 2008 and 2010. The growth in school enrollments in Waverly has exceeded statewide averages since 2006. Surrounding districts saw no real change in their enrollment patterns post-flood. As noted above, unemployment in Waverly has not changed and the unemployment rate in Waverly compared to a grouping of similarly sized peer cities is slightly lower.

A shift-share analysis was conducted to see if the unemployment rate was consistent with Waverly's exact industrial mix compared to national trends within the primary industries most prevalent in the community. The shift-share analysis showed that Waverly has a competitive local economy when compared to other communities with a similar industrial mix. If Waverly had been following the national trend for the specific mix of industries present in the community, there should have been a loss of 323 jobs. In reality, there was a loss of 245 jobs, meaning that Waverly's competitive economy was able to save 59 jobs it could have been expected to lose based on national industry trends. Two other factors may have helped lessen the impact of the flood on local employment. Data show that 73% of workers in do not live there but commute from other communities.

There is one cause for concern in the event of future natural disasters and the likelihood of negative economic impacts: the study found that 10% of Waverly's jobs are located in flood-prone areas.

### Question 3: What types of housing were lost and what are best practices for determining the number and type of replacement housing needed now, while also determining a long-term housing strategy to accommodate future population growth and special needs populations?

**Answer:** A review of existing documents identified 151 homes that were flood-impacted. Sixty-nine of the damaged properties have been bought out. A GIS analysis of Waverly's housing compared housing units lost with

Table 1. An estimate of housing impacts from the 2008 flood on Waverly\*

Units lost (2008 flood)	Permits for new units	Net difference	Economic housing demand (2008–2010)	Net difference (total housing demand)
44	47	-3	0	-3

\*Waverly data were generated through geospatial analysis of 2008 and 2010 county assessor's data.

the number of new building permits taken out since the floods. A permanent loss of 44 units of housing was identified and 47 building permits have been issued. Of note is the large difference between the assessed values of the properties that were lost compared to the assessed value of the replacement housing. The average value of lost housing units was \$64,533 compared to an average value of \$182,436 for new housing permits. This difference in value of \$117,903 is a cause for concern that the market has fewer affordable home ownership options available. Of all the cities in the study, Waverly had the highest gap in value between lost housing and replacement housing.

In assessing Waverly's future housing needs, the ISU research team used a physical count of the housing units lost in the 2008 floods and subtracted that number from the number of new housing permits requested to identify the initial numerical housing gap. An economic model was constructed to account for Waverly's projected future housing growth based on population growth and the projected increase in jobs and employment that can be expected based on Waverly's industrial mix and economic performance trends. The model also used current vacancy rates to adjust for housing units that for whatever reason are not in service as occupied housing. Total housing demand, then, becomes the total units available subtracted from the total number necessary to accommodate population and employment. A positive number indicates a need to construct additional units to meet market demand. A negative number indicates the housing market has enough capacity to meet projected demand.

What this indicates is that, purely numerically, there are enough units in Waverly to satisfy market demand. What this does *not* indicate is the quality or affordability of the available housing, or whether or not it is a direct match for the needs of individual households. .

Waverly was the city in this study with the lowest vacancy rate. Census data indicated a vacancy rate of 5% compared to a statewide average of 8.6%. Another matter for concern is the cost burdening of both homeowners and renters who are paying in excess of 35% of their adjusted gross income for housing costs. Eight to 17% of homeowners are cost burdened and 35 to 62% of renters are cost burdened. Table 1 shows the total housing demand for Waverly using the formulae outlined above.

#### Question 4: Did long-range community plans help in the recovery process and how can they be modified to reduce risk to life and property?

**Answer:** For the most part, Waverly has made tremendous progress in regard to flood mitigation plans. Of particular importance is the ongoing planning effort that is part of a smart-growth project. Additionally, the community is investing in an inflatable dam system to protect the remaining 1,169 properties that are still located within the floodplain. Of the structures remaining in the floodplain, 786 are residential units. One plan that is missing is a communitywide housing needs assessment. A plan, particularly for rental housing given the needs of college students, is especially encouraged because rental housing that is appropriate to this special population takes time and does not often respond to market-based incentives due to the limited incomes of the tenants and the shorter than average tenancy tenure. Focus group participants expressed needs for disaster response training and plans to create a permanent emergency response team.

#### Question 5: What would we do differently next time?

**Answer:** Participants in the focus groups and key informant interviews spoke about a variety of concerns and issues, including the shortage of rental housing, how the tight housing market made it difficult to find temporary rental units post-flood, the loss of starter homes, the availability and affordability of housing, the special needs of finding housing appropriate to a student population, and the lack of affordable lots available for development. Participants pointed out that the cost of flood insurance is prohibitive for many homeowners and also noted that many people made inadequate repairs to their homes because they needed to move back into their housing quickly. As a smaller city, Waverly faced a shortage of contractors and home inspectors. The lack of a housing inspection program operated at the municipal level also slowed the process of getting people back into their homes. Key information interviewees expressed frustration at the overall slowness of the buyout and recovery process. They were also concerned that the inflatable dam will not provide enough protection for all parts of the city prone to flooding. Participants expressed their admiration for how local leaders responded to the

disaster and noted the many opportunities that were available to them to participate in planning for the future.

### Economic Impact Analysis

The city of Waverly, Iowa, had 9,874 residents in 2010. The city's population grew by 10.1% from 2000 to 2010, more than twice the statewide average growth rate of 4.1%. The number of housing units in Waverly increased by 10.0% from 2000 to 2010, reaching 3,732 total units in 2010. Housing unit growth for the state of Iowa averaged 8.4% for the decade.

Waverly is located in Bremer County, which is located within the three-county Waterloo-Cedar Falls metropolitan statistical area (MSA) that also includes the counties of Black Hawk and Grundy. Bremer County had 24,276 residents in 2010, while the entire Waterloo-Cedar Falls MSA had 167,819 residents. Bremer County experienced population growth of 4.1% and housing unit growth of 6.2% from 2000 to 2010.

### Economic Characteristics

Professional and other high-value services such as finance, insurance, real estate, health and education constitute nearly a third of gross product in the county. Public administration and other services each contribute another 12%. The manufacturing sector contributes 19% of the county's gross regional product.

Commuting flow data for Waverly attest to the city's importance as a regional employment center. Nearly 73% of jobs in the city are filled by residents from other communities. The city of Waterloo supplies 7.6% of workers in Waverly, followed by Cedar Falls (5.2%) and Tripoli (2.2%). Figure 2 shows the total inflow and outflow job counts for Waverly in 2009.

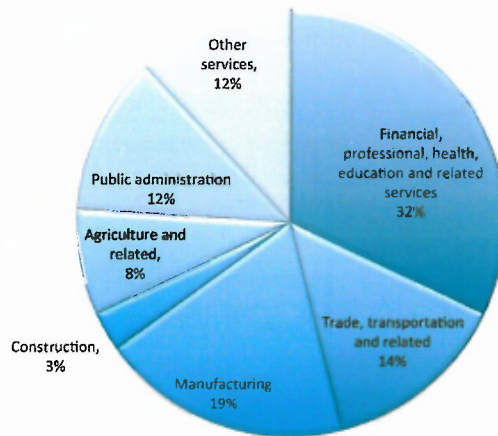
Waverly also serves as a regional center for retail and service activity. Taxable retail sales data from the Iowa Department of Revenue show that Waverly averaged \$13,130 in taxable, per capita sales in fiscal year 2009, compared to an average of \$11,200 for the state of Iowa. After adjusting for local income differentials, the ratio of city and state per capita sales yields a pull-factor ratio of 1.19, suggesting that Waverly serves a retail customer base that is 19% larger than its own population size.

### Housing Characteristics

Table 2 summarizes key housing characteristics for Waverly. Except where noted, the data were obtained from 2005–2009 American Community Survey (ACS) estimates produced by the US Census Bureau.<sup>2</sup> The ACS values

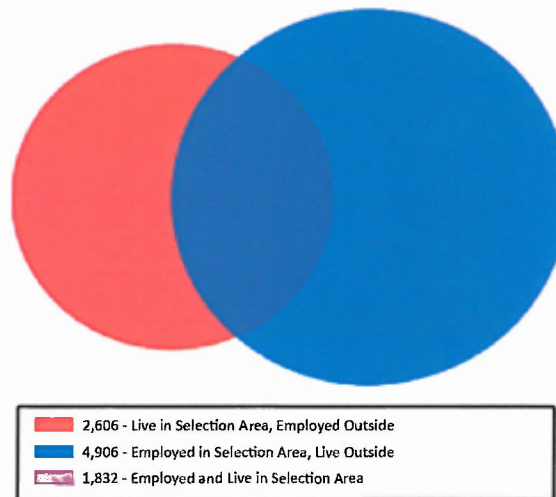
<sup>2</sup>ACS estimates are presented with 90% confidence intervals, meaning there is a 90% likelihood that the true value for the population falls within the range of values shown.

Figure 1. Gross regional product for Bremer County



Source: IMPLAN model of the Bremer County economy, Iowa State University

Figure 2. Inflow/outflow job counts for 2009



Source: Local Employment Dynamics, US Census Bureau

reflect average characteristics during the entire 2005–2009 period; thus, they include both pre-flood and post-flood housing conditions.

ACS data suggest that the median value of homes in Waverly ranges from about \$124,500 to \$138,000. Between 8 and 17% of owner-households with a mortgage have monthly housing costs exceeding 35% of their household income. Anywhere from 35 to 62% of renter-households have monthly housing costs that exceed 35% of their incomes. The city's housing unit vacancy rate of 5.0% was lower than the statewide average of 8.6%, according to 2010 Census data.



Table 1. Key housing characteristics for Waverly compared to the state of Iowa

Measure	Waverly	State of Iowa
Total population (2010 Census)	9,874	3,046,355
Race other than white alone (%)	4.7	8.7
Hispanic origin of any race (%)	1.3	5.0
Total housing units (2010 Census)	3,732	1,336,417
Vacant units (%)	5.0	8.6
Owner-occupied units (%)	69.1	65.9
Renter-occupied units (%)	25.9	25.5
<b>Housing units by type of structure (%)</b>		
1 unit, detached	74.1–81.3	73.6–74.0
1 unit, attached	0.8–3.8	3.1–3.3
2 units	2.1–7.1	2.6–2.8
3 or 4 units	2.0–6.4	3.6–3.8
5 to 9 units	0.6–3.8	3.6–3.8
10 to 19 units	0.0–1.3	3.7–3.9
20 or more units	4.8–8.0	4.7–4.9
Mobile home	0.6–3.4	4.1–4.3
Boat, RV, van, etc.	0.0–0.6	0.0–0.1
Housing units built before 1940 (%)	21.0–28.8	28.7–29.1
<b>Value of owner-occupied units (%)</b>		
Less than \$50,000	1.9–6.5	12.1–12.5
\$50,000 to \$99,999	15.3–22.5	28.8–29.4
\$100,000 to \$149,999	34.5–45.1	24.4–24.8
\$150,000 to \$199,999	12.3–19.7	15.2–15.6
\$200,000 to \$299,999	10.4–18.4	11.6–12.0
\$300,000 to \$499,999	3.3–8.3	5.0–5.2
\$500,000 to \$999,999	0.0–1.8	1.3–1.5
\$1,000,000 or more	0.0–0.8	0.2–0.4
Median value of owner-occupied units (\$)	124,466–138,334	115,292–116,308
Median gross rent (\$)	505–751	603–611
<b>Monthly housing costs exceeding 35% of income</b>		
Owners with a mortgage (%)	7.8–16.6	16.6–17.2
Owners with no mortgage (%)	4.1–14.7	9.0–9.4
Renters (%)	35.3–61.9	35.1–36.3

Sources: 2010 Census and 2005–2009 American Community Survey, US Census Bureau

## Flood Risk Exposure (Prior to 2008)

Figure 3 shows the relative exposure to flood risk in Bremer County by population group and housing type prior to the 2008 floods. The chart compares the percentage of county population, housing and jobs that were located in high-risk census blocks. For this analysis, census blocks having more than 75% of their total land area located within a 500-year floodplain were designated as high-risk blocks. Block-level population and housing data were obtained from the 2000 Census. Job counts for 2007 were obtained from Local Employment Dynamics data from the US Census Bureau.

Overall, about 10% of Bremer County residents lived in census blocks with high exposure to flood risk. Residents in nonfamily households with more than one resident had a higher exposure to flood risk compared to other households. A higher fraction of the county's vacant housing units and renter-occupied units were located within at-risk blocks compared to other types of housing. About 10% of Bremer County jobs were located within the flood risk areas in 2007, similar to the percentage for county residents.

## Indicators of Post-flood Economic Performance

The following sections compare indicators of local economic performance before and after the 2008 floods. Trends in population, enrollment and commuting patterns are examined for evidence of changes in residential location preferences in the region. Retail sales trends are investigated to detect changes in area household spending and the ability of local firms to capture that spending. Unemployment and employment trends are analyzed to gauge the region's general economic performance.