

## I. HEALTH ASSESSMENT

### C. HEALTH STATUS

#### 7. ENVIRONMENT

#### 1. WHAT IS THE HEALTH STATUS OF DELAWARE WITH RESPECT TO THE ENVIRONMENT?

Delaware meets minimum federal government standards for air and water quality, but it experiences some problems with surface water quality. Delaware's housing stock is comparable to state and national housing, and a lower proportion is classified as substandard relative to most benchmarks.

- **Air quality in Delaware meets Federal requirements.**
  - The number of unhealthy **air quality** days in Delaware decreased since 1988.
  - In 1997, Delaware did not exceed Environmental Protection Agency (EPA) limits for five **major air pollutants**, including nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter (PM<sub>10</sub>) and sulfur dioxide (SO<sub>2</sub>).
    - 1988 to 1997 trend data indicate Delaware experienced a reduction in the concentrations of ozone and sulfur dioxide.
- **Available data suggest that Delaware's drinking water supply meets minimum EPA standards.**
  - The EPA outlined two sets of drinking water supply indicators, **maximum contaminant levels** (MCLs) and secondary drinking water maximum contaminant levels.
    - Primary MCLs include microbiological contaminants, pesticides/herbicides, inorganic contaminants, volatile organic chemicals and other organic chemicals. These contaminants, in high concentrations, may pose health risks.
    - Secondary MCLs are standards that evaluate the aesthetic quality of the water (such as color, odor, taste, pH), however these standards do not have any health-related consequences.
  - In 1999, **drinking water** in Delaware tested within acceptable ranges for all primary and secondary MCLs.

- **Data suggest that Delaware’s surface water supply suffers from quality problems.**
  - The EPA measures both current status and future vulnerability of watersheds using an **Index of Watershed Quality**. Four of Delaware’s 10 watersheds are reported to have serious water quality problems. An additional four have less serious problems but are highly vulnerable.
    - The EPA Index of Watershed Quality assesses 15 indicators, including the percentage of water supply acceptable for human use, safety of consumption of fish in the water supply, need for treatment of the water supply before use as drinking water, level of toxins, level of pollutant discharged into the water supply and local population growth.
  - As of 1999, Delaware contained 39 identified **Superfund sites**, 17 of which are on the National Priorities list.
- **Housing stock in Delaware is comparable to benchmark states and national housing. Delaware has slightly fewer houses built before 1980 than comparison states and the nation and a lower proportion of Delaware’s housing is classified as substandard.**
  - In 1990, 75.7 percent of Delaware’s houses were built before 1980, compared to 78.4 percent of Maryland, 85.2 percent of New Jersey and 79.3 percent of U.S. **housing stock**.
    - Older housing stock presents an increased risk for lead poisoning, especially among children. Prior to paint regulations implemented in 1972, house paint often contained lead. Children may inhale or ingest paint particles, resulting in elevated lead levels or possibly lead poisoning. Lead poisoning can lead to severe nervous system impairments or cause behavioral and/or learning disorders as well as mental retardation.
  - In 1990, a lower proportion of Delaware **housing** was classified as **substandard**<sup>1</sup> (2.5 percent) than in Maryland (2.8 percent) and New Jersey (4.1 percent) as well as the U.S. (5.3 percent).

## 2. HOW DOES HEALTH STATUS WITH RESPECT TO THE ENVIRONMENT DIFFER BY COUNTY IN DELAWARE?

- **Compared to houses in other Delaware counties, a higher proportion of New Castle County houses (15.1 percent) were built before 1939. The City of Wilmington accounted for most of these pre-1939 houses.**
- **Sussex County possessed the highest proportion of substandard housing (3.5 percent) in 1990. The City of Wilmington, however, had an even higher proportion of substandard housing (4.2 percent).**

---

<sup>1</sup> Defined as overcrowded housing or lack of plumbing facilities, relative to all state and national comparisons and the majority of comparison communities.

**Exhibit I-C-87:** Environmental indicators for Delaware are mixed. Notably, the state performs less favorably with regard to surface water quality.

**Health Status Indicators**

Environment	
Air Quality	⇔
Drinking Water	⇔
Surface Water Quality	—
Housing	+

Performance Relative to Benchmarks:    **+** More Favorable    ⇔ Comparable    — Less Favorable

HEALTH	RESOURCE	VALUE
Demographic	Socioeconomic	Health Status

**Exhibit I-C-88:**

Since 1988, the number of unhealthy air quality days in Wilmington has decreased.

**Number of Days Rated as Unhealthy<sup>(a)</sup> in Wilmington  
1988 to 1997**

Pollutant	Trend	Number of Days with PSI Values Greater than 100									
		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
All Pollutants	Down	28	12	9	12	7	10	5	12	3	6
Ozone Only	Down	28	12	9	12	7	10	5	12	3	6

Sources: 1988 - 1997 data, U.S. Environmental Protection Agency, National Air Quality and Emissions Trend Report, 1997.

Notes: (a) Classified as a day when the Pollutant Standard Index (PSI) value is greater than 100.

<b>HEALTH</b>	<b>RESOURCE</b>	<b>VALUE</b>
Demographic	Socioeconomic	Health Status

**Exhibit I-C-89:**

Air quality in Wilmington meets all EPA standards except ozone, which is slightly high.

**Maximum Air Quality Concentrations<sup>(a)</sup> in Wilmington 1997**

<b>Pollutant</b>	<b>Period*</b>	<b>EPA Limit</b>	<b>Highest 1996 Reading</b>
NO <sub>2</sub>	Annual (ppm)	.053 ppm	.018 ppm
Ozone	2 <sup>nd</sup> 1 hour (ppm)	.12 ppm	.15 ppm
PM10	2 <sup>nd</sup> 24 hour (µg /m <sup>3</sup> )	150 µg /m <sup>3</sup>	68 µg /m <sup>3</sup>
	Annual (µg /m <sup>3</sup> )	50 µg /m <sup>3</sup>	32 µg /m <sup>3</sup>
SO <sub>2</sub>	2 <sup>nd</sup> 24 hour (ppm)	.140 ppm	.057 ppm
	Annual (ppm)	.030 ppm	.01 ppm
CO	2 <sup>nd</sup> 8 hour (ppm)	9 ppm	5 ppm

Source: 1997 data, U.S. Environmental Protection Agency, National Air Quality and Emissions Trend Report, 1997.

Note: (a) The EPA determined that some pollutant limits could be violated once a year; therefore, the second highest reading is recorded for some indicators.

<b>HEALTH</b>	<b>RESOURCE</b>	<b>VALUE</b>
Demographic	Socioeconomic	Health Status

**Exhibit I-C-90:**

From 1988 to 1997, Wilmington's air quality experienced a downward trend in ozone and sulfur dioxide pollutants.

**Maximum Air Quality Concentrations<sup>(a)</sup> in Wilmington  
1988 to 1997**

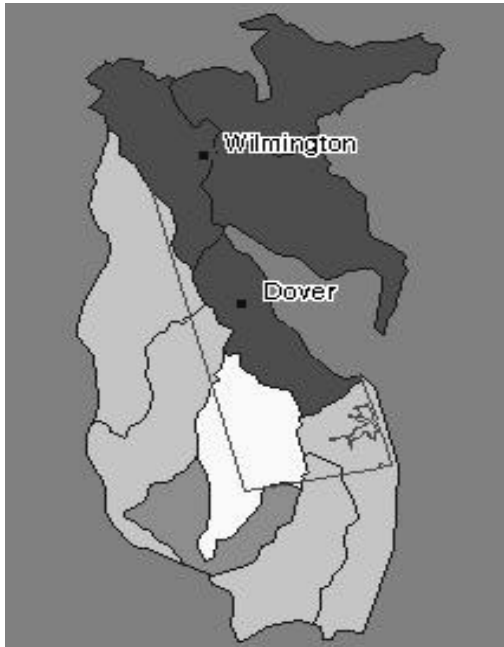
Pollutant	Trend	EPA Limit	Maximum Concentrations Among Sites Reporting for All Years 1988-1997 <sup>(a)</sup>									
			1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
<b>Ozone</b> (Highest 2 <sup>nd</sup> 1 hour)	Down	.12 ppm	.19	.12	.14	.14	.12	.14	.12	.14	.11	.12
<b>PM10</b> (Weighted annual mean)	No significant change	50 µg/m <sup>3</sup>	32	42	37	33	28	29	38	37	32	32
<b>SO<sub>2</sub></b> (Highest 2 <sup>nd</sup> 24 hour)	Down	.140 ppm	.054	.048	.043	.033	.046	.041	.044	.036	.035	.034
<b>CO</b> (Highest 2 <sup>nd</sup> 8 Hour)	No significant change	9 ppm	5.3	4.5	5.4	4.0	4.1	3.8	4.3	4.6	3.6	4.5

HEALTH	RESOURCE	VALUE
Demographic	Socioeconomic	Health Status

**Exhibit I-C-91:**

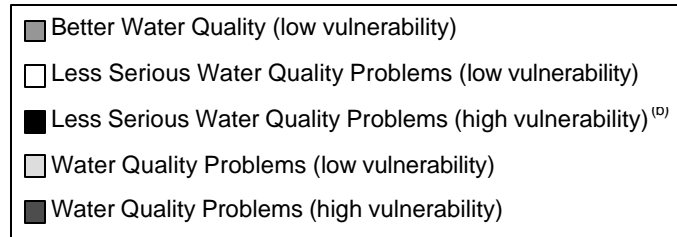
Several watersheds in Delaware have serious water quality problems. The watersheds with the most serious problems are located in New Castle and Kent Counties.

**Watershed Quality in Delaware<sup>(a)</sup>  
1995**



Number of Watersheds in Delaware (by rating):

- Better water quality-low vulnerability: 1
- Better water quality-high vulnerability: 0
- Less serious water quality problems-low vulnerability: 1
- Less serious water quality problems-high vulnerability: 4
- More serious water quality problems-low vulnerability: 1
- More serious water quality problems-high vulnerability: 3



Source: 1) 1999 data, Environmental Protection Agency, Index of Watershed Quality website at <http://www.epa.gov/iwi/states/DE/>; (2) 1998 Watershed Assessment Report (305(b)), Department of Natural Resources and Environment Control, April 1, 1998.

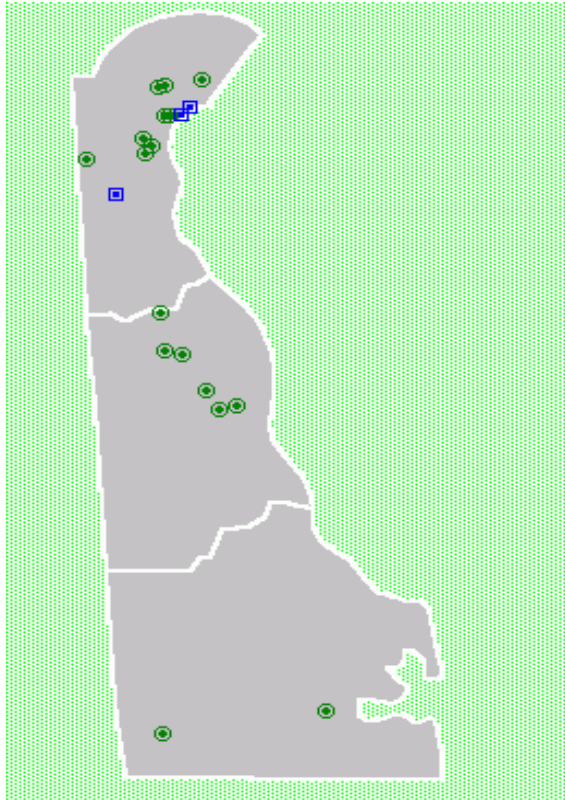
Note: (a) Index of watershed quality is measured by the current status and future vulnerability of surface water supply. The index is comprised of 15 different indicators of water quality such as the percentage of water supply that is acceptable for human use, whether fish in the water supply are safe to consume, whether the water supply needs to be treated before use as drinking water, level of pollutant discharged into the water, and local population growth.  
 (b) This designation is for Delaware Bay (not pictured).  
 (c) Delaware has five water basins that include 41 watersheds. Basins that contain watershed with serious water quality problems are Piedmont Delaware Estuary and Delaware Bay. Chesapeake Bay and Inland Bay do not seem to contain watersheds with serious problems.

HEALTH	RESOURCE	VALUE
Demographic	Socioeconomic	Health Status

**Exhibit I-C-92:**

Delaware has approximately 39 Superfund sites, 17 of which are on the National Priorities List. The EPA reports that 94 percent of the Superfund sites on the National Priorities List have either undergone or are undergoing

**Superfund Sites in Delaware<sup>(a)</sup> 1999**



Number of NPL Superfund Sites in Delaware (by county)

New Castle County: 12  
 Kent County: 6  
 Sussex County: 2

National Priorities List (NPL) Superfund Sites in Delaware:

▲ Proposed: 0  
 ● Final: 17  
 ■ Deleted: 3

Source: 1) 1999 data, Environmental Protection Agency, Superfund website at <http://www.epa.gov/superfund/>.

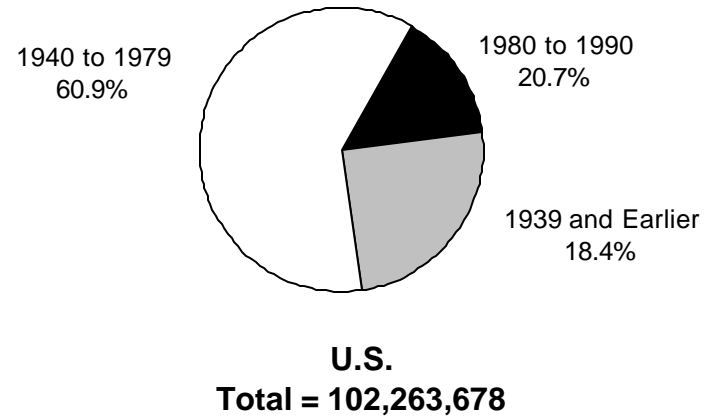
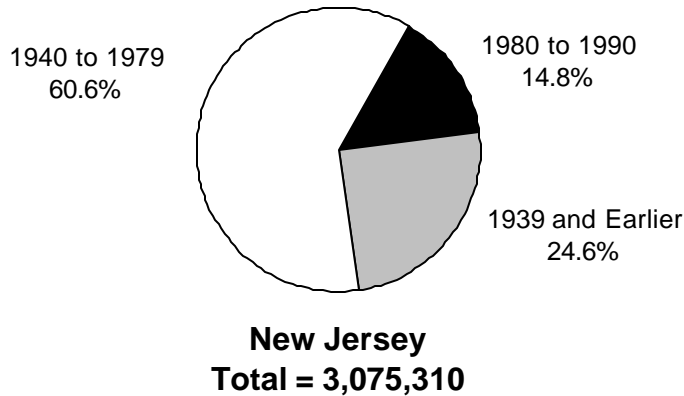
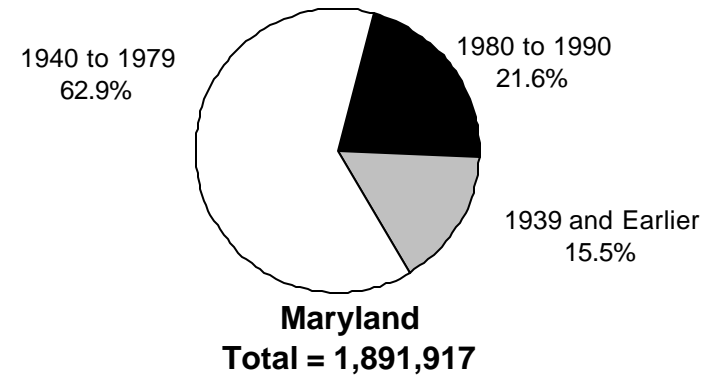
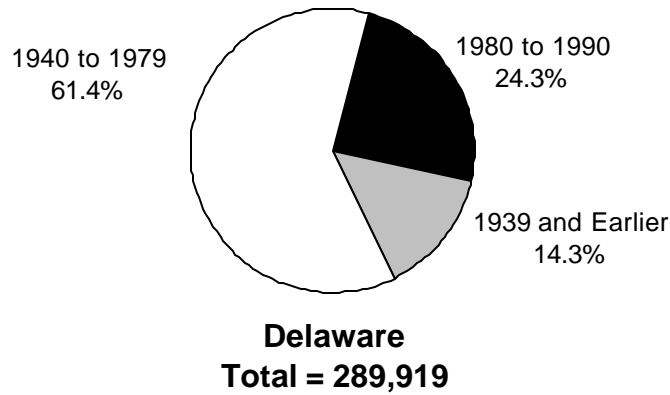
Note: (a) Superfund sites are areas that contain uncontrolled or abandoned hazardous waste. Some common hazardous waste sites include abandoned warehouses, manufacturing facilities, processing plants and landfills.

HEALTH	RESOURCE	VALUE
Demographic	Socioeconomic	Health Status



**Exhibit I-C-93:** The age of housing stock in Delaware was comparable to state and national benchmarks.

**Proportion of Housing Units Built (by year)  
1990**



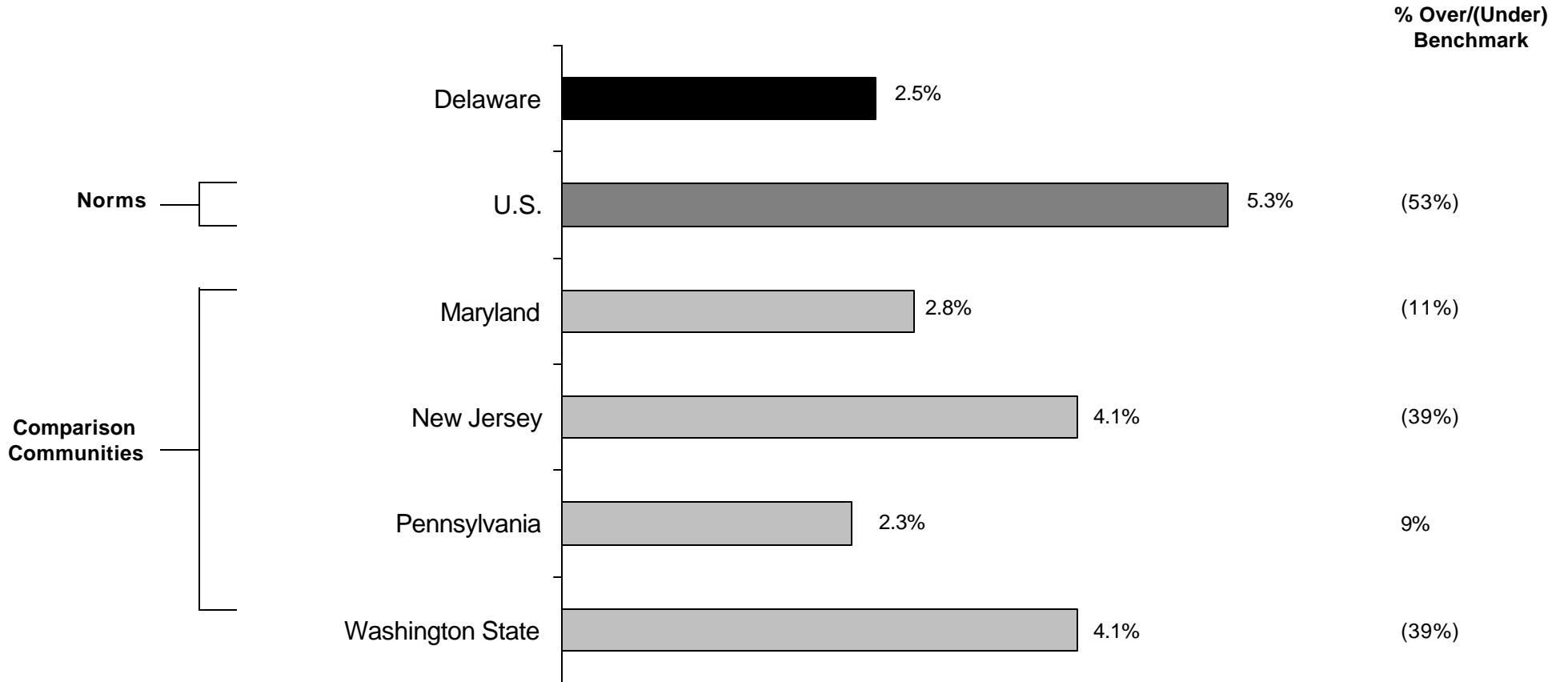
Sources: 1990 data, U.S. Bureau of the Census.

HEALTH	RESOURCE	VALUE
Demographic	Socioeconomic	Health Status

**Exhibit I-C-94:**

Delaware's proportion of substandard housing was comparable to two states, lower than two others and was half the proportion of the nation.

**Proportion of Substandard Housing<sup>(a)</sup> 1990**



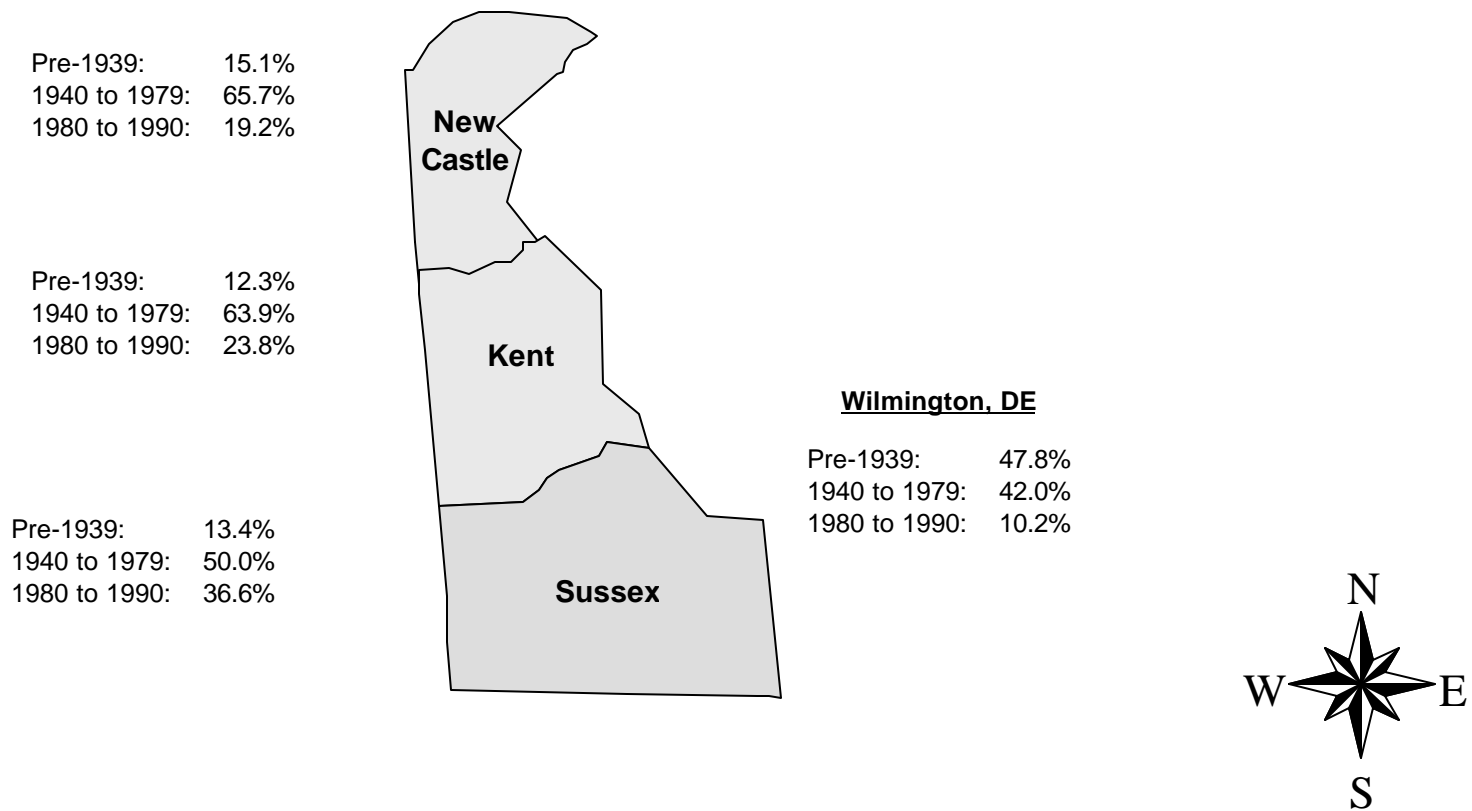
Sources: 1990 data, U.S. Bureau of the Census.

Note: (a) Substandard housing is defined as being overcrowded and/or lacking functioning plumbing facilities.

HEALTH	RESOURCE	VALUE
Demographic	Socioeconomic	Health Status

**Exhibit I-C-95:** The City of Wilmington has the highest proportion of pre-1939 housing. Sussex County had the highest proportion of housing built after 1980.

**Proportion of Housing Units (by year built) 1990**



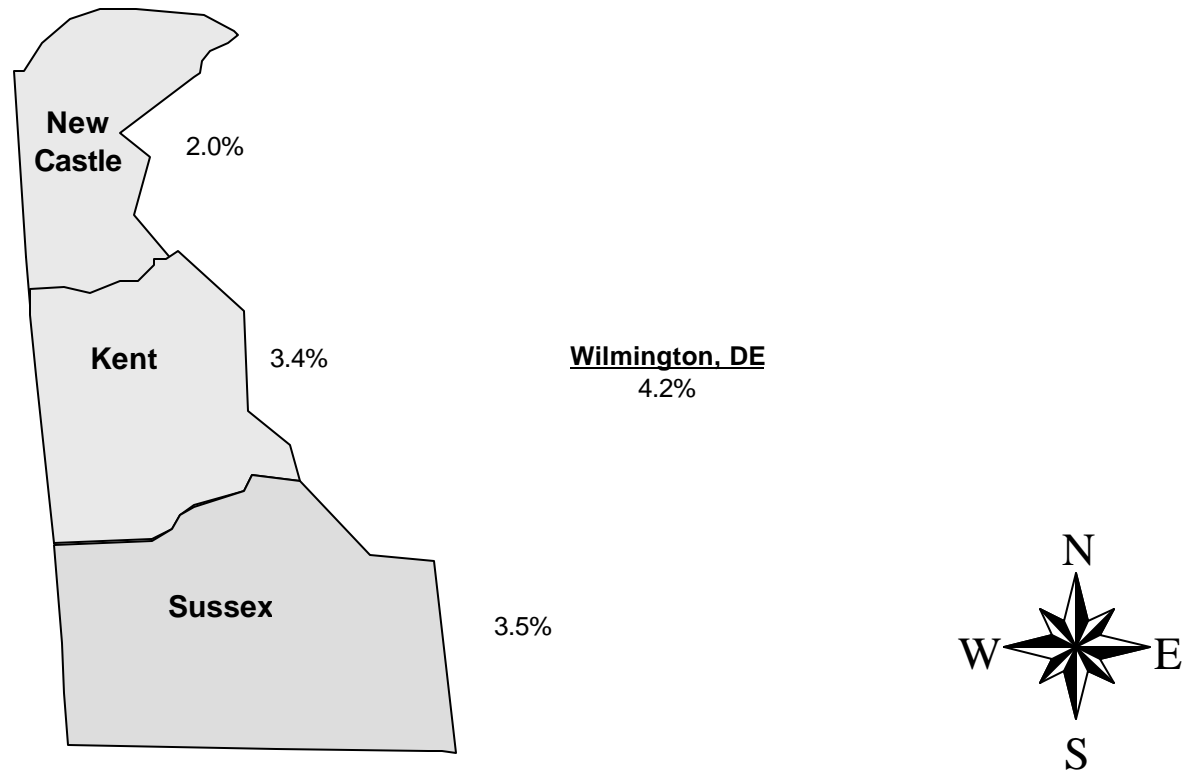
Sources: 1997 data, Delaware Vital Statistics Annual Report

HEALTH	RESOURCE	VALUE
Demographic	Socioeconomic	Health Status

**Exhibit I-C-96:**

The City of Wilmington also had the highest proportion of substandard housing.

**Proportion of Substandard Housing 1990**



Sources: 1997 data, Delaware Vital Statistics Annual Report

HEALTH	RESOURCE	VALUE
Demographic	Socioeconomic	Health Status