

Aquidneck Island Today: Summary Data on Existing Conditions

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Editors' Note

All references to the town of Portsmouth in the Land Use, Natural Resources, and Recreation chapter include Prudence Island.

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Preface

As Aquidneck Island grows more developed, each municipality is working strenuously to plan for future generations and ensure the preservation of essential, quality public services. While Newport, Middletown, and Portsmouth are separate communities with distinct differences and needs, they also are neighbors sharing the same island with all its benefits and constrictions. Increasingly, island municipalities recognize this sharing as an opportunity to explore joint solutions to regional issues regarding transportation, public safety, water supplies, and wastewater treatment. Not all municipal issues or experiences lend themselves to islandwide or regional collaboration, but some do, and are already the subject of cooperative efforts. Islandwide conservation projects led by organizations such as the Aquidneck Island Land Trust are creating momentum for regional partnership.

The Rhode Island Sea Grant/URI Coastal Resources Center has prepared this report to provide data about each municipality to assist Newport, Middletown, and Portsmouth as they update comprehensive plans and start to resolve regional issues. Background data about population, land use, economy, public services, and water facilities is summarized, along with key facts about historic elements and transportation projects in each community.

Other efforts are helping municipalities update their comprehensive plans and engage in regional discussions to enhance the planning process. With CRC assistance, comprehensive plan committees have been formed in each municipality and workshops are underway for municipal planners and community decision-makers to discuss new ways to address issues. Working together, communities have a greater chance to save money, pool resources, promote community quality and make the whole island a better place to live.

Population

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A community is shaped by many forces, including the number of residents and the range of characteristics they display: their ages, education levels, cultural backgrounds, skills, and incomes. These characteristics determine housing demands, market demands, business opportunities, health care needs, service needs, and infrastructure. This section provides information about Aquidneck Island's population, how the population has changed over the past 30 years, factors impacting population characteristics, and which communities can expect to see residential growth in the upcoming years.

Trends

Aquidneck Island's resident population peaked in 1970 with more than 76,800 people.

In 1973, reorganization by the U.S. Navy reduced the number of employees at Newport Naval Base by more than 14,000. This Navy reorganization led to a 21 percent decline in the island's population by 1980—a loss of more than 16,000 people. Aquidneck Island's population loss was 10 times larger than the statewide population loss during that decade.

Aquidneck Island's population slowly increased during the 1980s for a growth rate of 6.1 percent for the decade. Population growth on the island between 1980 and 1990 was significantly higher than the statewide growth rate of 5.9 percent (Figures 1 and 2).

In the early 1990s, a regional and state recession was accompanied by job and population losses on Aquidneck Island. A slow economic rebound, beginning in 1993, was accompanied by renewed population growth. Overall, there was a 2.2 percent population increase during the decade to an estimated population of 65,980 in 2000. Although the island's population growth was slow during the 1990s, it was significantly higher than the estimated statewide growth rate of 0.8 percent between 1990 and 2000. In 2000, resident population was still 14 percent below the island's peak resident population in 1970 (Figures 1 and 2).

Newport

Newport lost 15.3 percent of its population during the Navy reorganization in the early 1970s. After 1980, Newport's population continued to decline slowly with a 3.5 percent loss during the 1980s and 1990s. U.S. Census Bureau projections for 2000 suggest a continued significant population decline in Newport while state planning projections suggest that the population decline had slowed or had stopped by 2000 (Figure 3).

Middletown

Among the three Aquidneck Island municipalities, the 1973 Navy reorganization had the largest impact on Middletown, which lost more than 12,500 people or 42.1 percent of its population between 1970 and 1980. The town's population grew 12.8 percent during the 1980s and more slowly at 4.5 percent in the 1990s. In 2000, Middletown's population was still more than 30 percent below its peak population in 1970 (Figure 4).

Portsmouth

Portsmouth is the only island community that did not lose population when the Navy reorganized. The town actually grew by 14.2 percent in the 1970s and continued to grow with an increase of 17.9 percent in the 1980s and 3.6 percent in the 1990s. School enrollment data and building permits suggest that the population may have increased more quickly toward the end of the 1990s (Figure 5).

Distribution of Residents on Aquidneck Island

Newport's relative portion of the island's population increased between 1970 and 1980 from 45 percent to 48 percent and then decreased after 1980. Newport was estimated to have 43 percent of the island's population in 2000.

Middletown's relative portion of the island's population decreased from 39 percent in 1970 to 28 percent in 1980 and then increased to an estimated 31 percent in 2000.

Portsmouth's portion of the island's population has increased steadily. It grew from 16 percent in 1970 to 26 percent in 1990 and 2000 (Figure 6).

Population Turnover

The population on Aquidneck Island is very dynamic and the ratio of newer residents to longer term residents is increasing. Presently, there is a 20 percent annual student turnover in island public schools due to moving families. Part of this annual turnover is due to a large turnover of Navy personnel (Figure 7).

Over the past 30 years, the total number of newer residents increased, while the percentage of new community residents attributable to the Navy has decreased. In 1970, nearly 14 percent of Newport residents, 36 percent of Middletown residents, and 4.6 percent of Portsmouth residents had moved from outside Newport County to the island in the previous five years. In 1980, the percentage of new area residents—people who had moved into the county during the previous five years – had increased, comprising 30 percent of Newport, 32 percent of Middletown, and 21 percent of Portsmouth residents. In 1990, more than one-third of Newport's and Middletown's residents had moved to the county within the previous five years (Figure 8).

In 1970, relocated military personnel were the majority of new area residents and comprised approximately three-quarters of those in Newport (77 percent), and nearly all of those in Middletown (97 percent) and Portsmouth (73 percent). By 1980, the portion of new residents in the area related to the military relocations was 66 percent less than in 1970. In 1980, only 30 percent of Newport's recent residents, 38 percent of Middletown's recent residents and 21 percent of Portsmouth recent residents were military relocations. In 1990, the U.S. Census Bureau did not evaluate military relocations, although it is likely that the 1980 trends have continued (Figures 9 and 10).

Newport Naval Complex Personnel

The Naval Station's influence on the island's population includes a constantly changing population of students who attend various training programs ranging from one to nine months in length. Average daily student population has ranged from 1,400 to more than 2,000 people with an annual graduation rate of 16,000 to 17,000 students. Students who attend courses longer than two months are frequently accompanied by their families. Thus, within a year, thousands of students live for a short time on Aquidneck Island. Total personnel at the Naval complex has decreased from 11,985 in 1989 to 7,855 in 1999 (Figure 11).

Seasonal Population Changes

Aquidneck Island has a significant transient population consisting of tourists, vacationers, boaters, and people on business. Accurate data on seasonal population changes do not exist. However, the number of hotel, time-share, bed and breakfasts, and other short-term housing rentals on the island has increased. Additional summertime visitors arrive on boats where they live while moored or docked in various harbors. Newport is a destination for several day business conventions and conferences for smaller organizations. Although some base level of the visiting population is present through much of the year, the number grows significantly during the summer (Figure 12).

Table 1. Number of rooms available, 1998.

Municipality	Total	Hotels	Motels	Timeshare	Inns/B&Bs
Newport	2430	1211	171	374	674
Middletown	846	526	267	0	53
Portsmouth	140	85	32	0	23

Source: Newport County Convention and Visitors Bureau.

Seasonal population growth is most significant in Newport (Table 1). In 1998, 2,430 rooms were available on a daily or weekly rental basis. Middletown had 846 rooms and Portsmouth had 140 rooms. The Navy has more than 650 transient housing units in Newport and a Suisse Chalet hotel with an additional 150 rooms with a guaranteed occupancy of 80 percent. If all rooms are filled with only one person, additional population staying overnight in Newport ranges from 1,510 people at winter occupancy rates of 30 percent to 3,038 people at peak summer occupancy. Thus, the city's resident population conservatively increases by 5.4 percent in winter and by more than 10.8 percent in the summer just through short-term room rentals. Summer homes rented on a monthly basis temporarily house additional visitors. Real estate agents estimate there are at least 3,000 summer rentals on Aquidneck Island with about 2,500 in Newport alone. Real estate agents believe that Newport's population swells to more than 100,000 people in the summer.

Salve-Regina University: Attending students from off Aquidneck Island add to the population. Between 1996 and 2000, Salve Regina University's enrollment increased from approximately 1,900 to 2,100 (Figure 13).

Population Characteristics

Median Age

Aquidneck Island's population is younger than the state population. The median age of Aquidneck Island residents is increasing along with the state's and nation's population. In recent years, the difference between the median age of island residents and the state's population has narrowed. Much of the island's younger population can probably be attributed to the Navy presence. Salve Regina University students also skew Newport's population toward a younger age. The median age of Portsmouth's population has typically been older than the population in Middletown and Newport (Figure 14).

Age Distribution

Of island municipalities, Newport has the highest ratio of senior citizens. However, the Newport senior population has not increased from 1980 whereas the senior population in Middletown and Portsmouth is increasing (Figure 15).

Children comprise a higher portion of Portsmouth's and Middletown's populations than the state population. In Newport, the ratio of children in the population mirrored the state until 1990 when the relative number of children in the city dropped below the state ratio.

The portion of the island's population in the 25-44 age category is higher than statewide ratios (Figures 16-24).

Education Attainment

Aquidneck Island residents are generally well-educated in comparison to the total state population. In 1990, approximately 85 percent of all adults living on the island had completed high school compared to 72 percent statewide. In addition, college degrees (bachelor and advanced degrees) were held by 32 percent of Newport residents, 27 percent of Middletown residents, and 34 percent of Portsmouth residents in comparison to 23 percent of residents statewide (Figure 25).

Wealth/Income

Incomes on Aquidneck Island are increasing relative to statewide incomes on a per capita, median family income basis (Figure 26). By 1990, the average per capita income of residents in all three municipalities exceeded statewide average personal incomes. In 1990, the income of a typical family in Newport remained somewhat below that of typical families statewide and the income of a typical family in Middletown dropped below average statewide income levels (Figure 27).

Income figures are influenced by the Navy population, which has historically had relatively low-income (salary) levels. The figures in Newport also include the large number of public housing residents who qualify for subsidized units and have lower incomes.

Government Subsidies: As of 1990, 25 percent of Newport households, 22.3 percent of Middletown households and 23.4 percent of Portsmouth households were receiving

government income subsidies in the form of Social Security benefits. In comparison, 29.7 percent of Rhode Island households were receiving Social Security benefits.

As of 1990, 9.1 percent of Newport households, 4.3 percent of Middletown households and 2.1 percent of Portsmouth households were receiving government income subsidies in the form of public assistance. In comparison, 7.84 percent of Rhode Island households were receiving public assistance.

Nearly one-fourth of all households on Aquidneck Island receive Social Security benefits. This ratio is somewhat lower than the statewide average and may reflect the lower median age of the island population.

A higher percentage of Newport residents receive public assistance than the state average. This contrasts with a lower percentage of residents in Middletown and Portsmouth who receive public assistance. The public assistance distribution corresponds to the relatively high percentage of low-income housing units in Newport.

Poverty: The number of families living below poverty level decreased in all three Aquidneck Island municipalities between 1980 and 1990. The percentage of families living in poverty on the island declined at a faster rate than occurred statewide. On the island, Newport has consistently had the highest percentage of families living below poverty level. In fact, Newport has a higher percentage of families living in poverty than the statewide average. This parallels the high percentage of public housing units in Newport. In 1990, the percentage of population living below poverty level was below four percent in both Middletown and Portsmouth and above 10 percent in Newport (Figure 28).

Subsidized School Lunches: While family income and poverty data are based on 1990 U.S. Census Bureau information, school lunch program data from 2000 are more current indicators of low income and poverty trends. Students with family incomes of up to 185 percent of poverty level are eligible for reduced-price or free school lunches. Newport and Middletown have a much higher percentage of school children that are eligible for reduced-price or free lunches (45 percent of Newport students and 23 percent of Middletown students) than the statewide average (11 percent of students). Portsmouth has fewer students eligible for subsidized school lunches than the state average. The number of students eligible for subsidized school lunches dropped in Middletown and Portsmouth between the 1996-97 school year and the 1999-2000 school year (Figure 29).

Diversity: Rhode Island's population has a very low level of racial diversity in comparison to the rest of the United States (Figure 30). Aquidneck Island municipalities also have a low level of racial diversity, though somewhat higher than that of the state population. Newport has traditionally had the highest racial diversity of the three island municipalities. Racial diversity increased slowly between 1970 and 1990 in Middletown while other communities remained unchanged.

Household Size: In the twenty years from 1970 to 1990, the average number of people per housing unit has decreased in all three Aquidneck Island municipalities: 23 percent in Newport, 22 percent in Middletown and 19 percent in Portsmouth. Shrinking household size on Aquidneck Island has paralleled similar national and state trends (Rhode Island has experienced an 18 percent decline). Recent projections anticipate that this trend of shrinking household sizes will continue. Thus, even with a stable population, municipalities must have

more housing units to accommodate the same number of residents. Newport has historically had an average household size below statewide averages and neighboring municipalities (10 percent lower in 1970 and nearly 15 percent lower in 1990). In contrast, household size in Middletown and Portsmouth has historically been above statewide and Newport averages (Figure 31).

Population Projections

Projecting population trends for Aquidneck Island is difficult and highly speculative because:

- Navy staff and contract decisions have a dramatic affect on local populations.
- Local land use decisions to change zoning and residential capacity are not predictable.

Looking forward, it is anticipated that:

- Navy staff at Naval Station Newport will remain stable.
- Employment growth by the island’s Navy contractors and other businesses will continue.
- Household size—the average number of people in each house—will continue to decline in Middletown and Portsmouth. Household size may continue to decline in Newport or may stabilize near the 1990 U.S. Census Bureau level of 2.31 people per house.
- Demand for new housing will continue and new housing will continue to be constructed at a rate similar to the five-year average from 1994 to 1998 (Table 2).

Table 2. Aquidneck Island, 5-year trends, number of housing units, 1994-1998.

Municipality	Single Family Bldg. Permits # of Houses Constructed		Multi-Family Bldg. Permits 5 Year Ave.	Ave. Annual Increase # Assessed Housing Units	
	5 Year Range	5 Year Ave.		Single Family	Multi-Family
Middletown	29 - 83	51.6	4.8	31.4	3.4
Newport	16 - 22	18.4	0.6	-19.4	-14.2
Portsmouth	58 - 97	71.8	8.8	74.6	4.4

In general, the primary forces affecting population on Aquidneck Island include:

- Employment trends of large employers that cyclically build and reduce workforces.
- Business growth and recruitment of employees (especially seasonal hospitality workers).
- Growing number of resident retirees.
- Growing number of seasonal residents, workers, renters, and students.
- Easy, improved access to Boston, Providence, metropolitan areas, and employment centers.
- Telecommuting.
- Aging baby-boom generation.
- Decreasing household size (same number of houses for fewer people).
- Increased municipal needs for infrastructure and development.
- Decreased land availability for development.

The Rhode Island Statewide Planning Program projects population change for Aquidneck Island municipalities based on U.S. Census Bureau data and trends. Projections estimate continued moderate growth of 9.1 percent (about 185 people/year) in Middletown and 7.1 percent (125 people/year) in Portsmouth over the next 10 years. Newport is projected to lose 115 people (11 people/year) during the same period and to continue a very slow population decline (Figure 32).

Newport

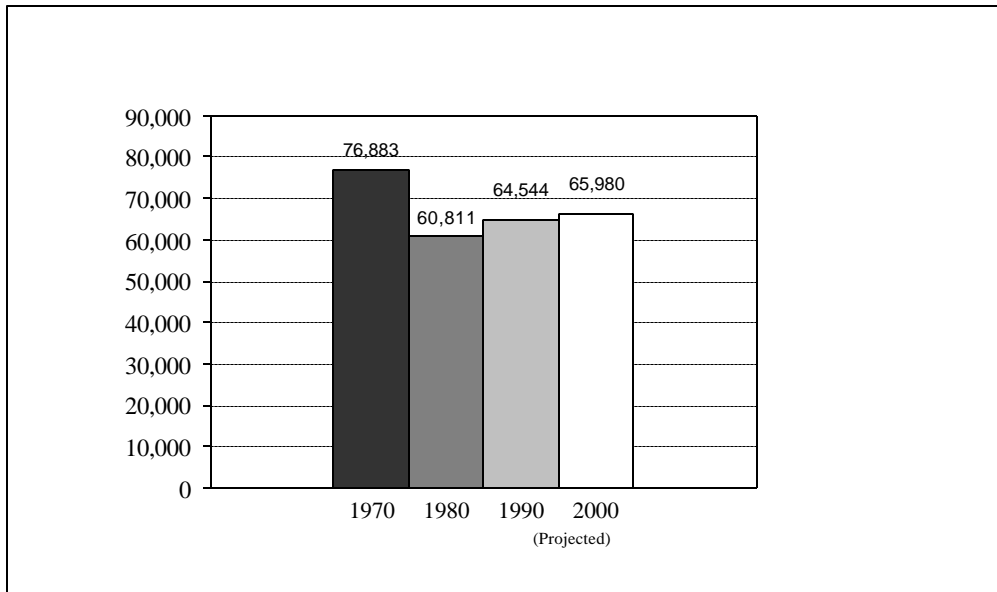
The city is generally built-out and has limited opportunities for additional housing. Thus, population is constrained. Demand for housing, as indicated by sale prices and rental rates, is high and exceeds capacity. Recent trends of decreasing population are due to decreasing average household size (people per dwelling), conversion of residential housing to bed and breakfast facilities and other visitor housing, and conversion of housing to commercial uses and other non-residential uses. It is likely that Newport's population will continue to decline (Figure 33).

The total available housing and resident population in Newport will likely be reduced by the North End Plan to redevelop Tonomy Hill (498 housing units in 1999). In addition, Newport's redevelopment of Navy property—formerly the Connell Manor Housing Area (110 housing units in 1990)—for the Community College of Rhode Island will reduce residential population and capacity from the 1990 U.S. Census Bureau. Connell Manor housing has been vacant since 1994 when the last ships based at Newport were reassigned. If these projects reduce the number of housing units available, they will affect the city's population. Finally, Navy housing renovation has tended to combine some units to increase the size of existing housing. This process results in a slight reduction in the total number of Navy housing units available.

Middletown and Portsmouth

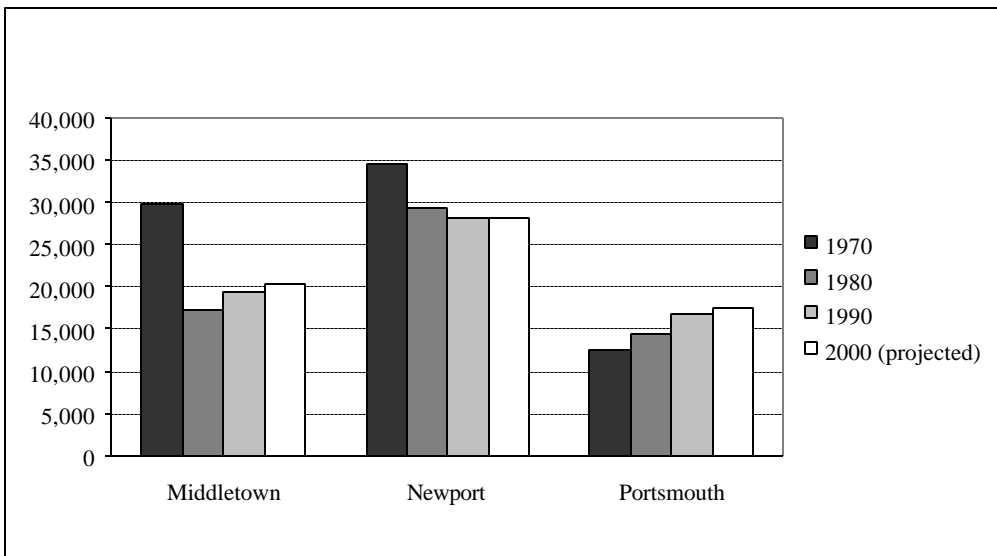
Population will continue to grow at the rate that can be absorbed by new housing construction. The anticipated Massachusetts commuter rail extension from Boston to Fall River will increase demand for housing on Aquidneck Island. Renovation of Navy housing will result in a reduced number of units.

Figure 1. Aquidneck Island population, 1970-2000.



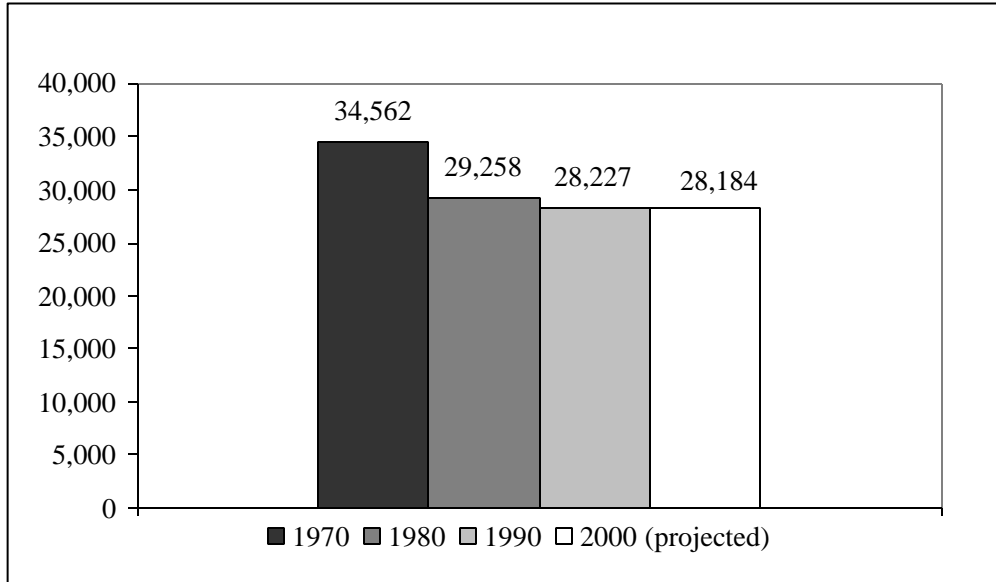
Source: U.S. Census Bureau.

Figure 2. Aquidneck Island municipal populations, 1970-2000.



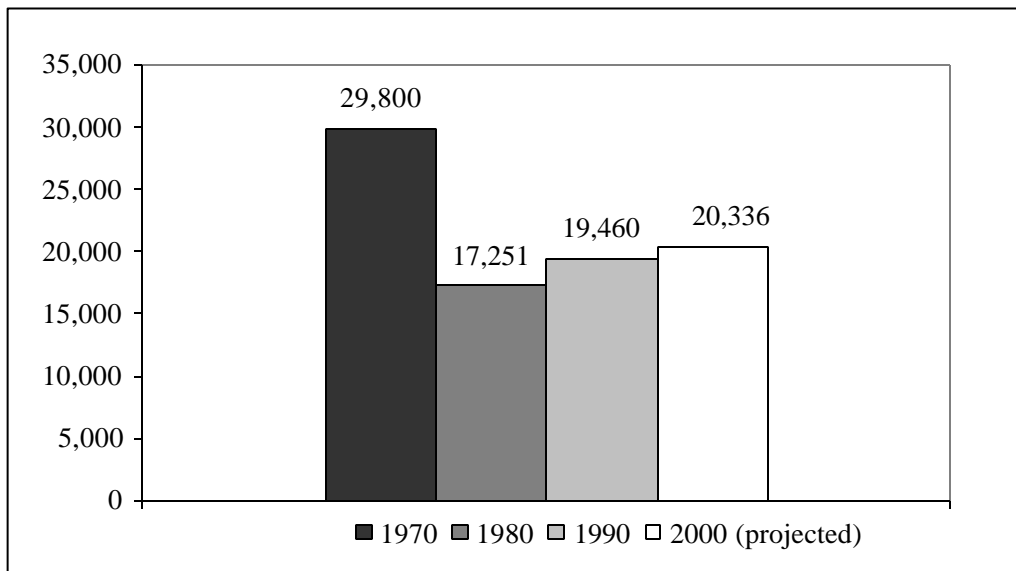
Source: U.S. Census Bureau.

Figure 3. Newport population, 1970-2000.



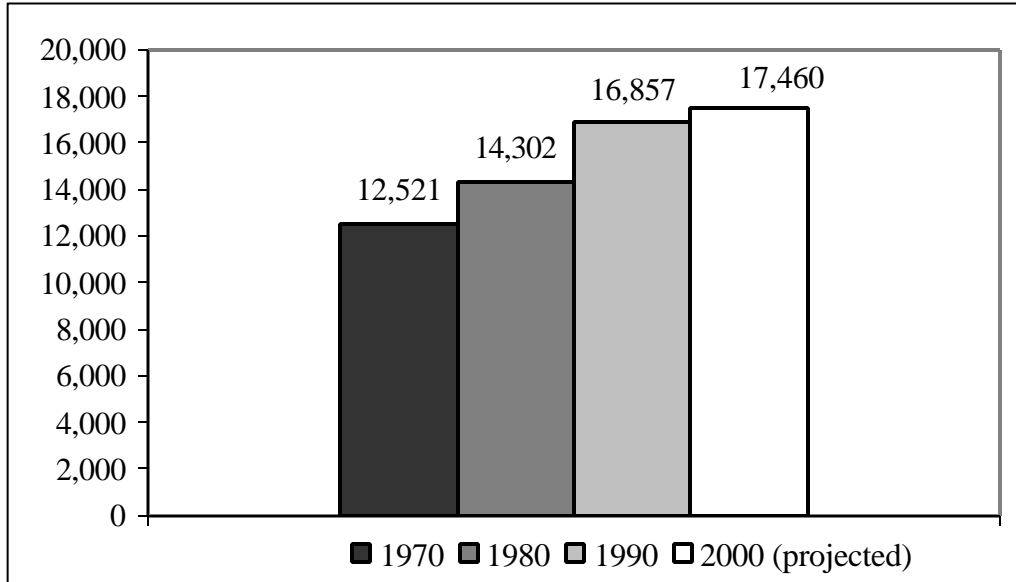
Source: U.S. Census Bureau & Rhode Island Statewide Planning Program.

Figure 4. Middletown population, 1970 – 2000.



Source: U.S. Census Bureau & Rhode Island Statewide Planning Program.

Figure 5. Portsmouth population, 1970 – 2000.



Source: U.S. Census Bureau & Rhode Island Statewide Planning Program.

Figure 6. Aquidneck Island population distribution, 1970-2000.

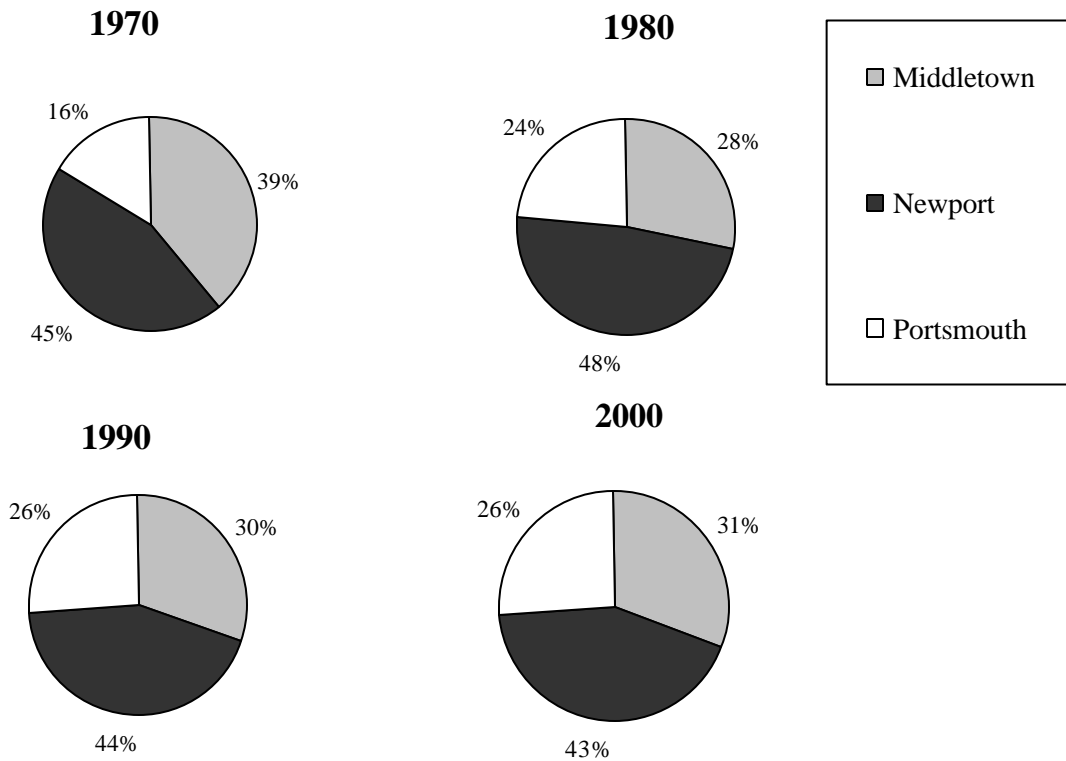
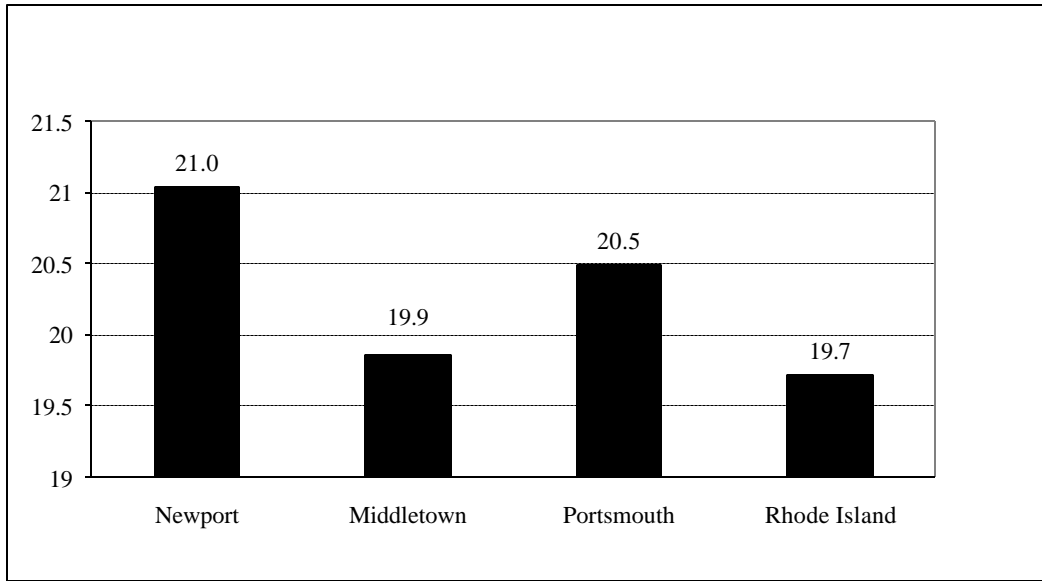


Figure 7. Student turnover in public schools, 1997-1998 school year.



Source: Department of Education, Information Works 1999.

Figure 8. Number of residents who relocated from outside Newport County during the previous five years.

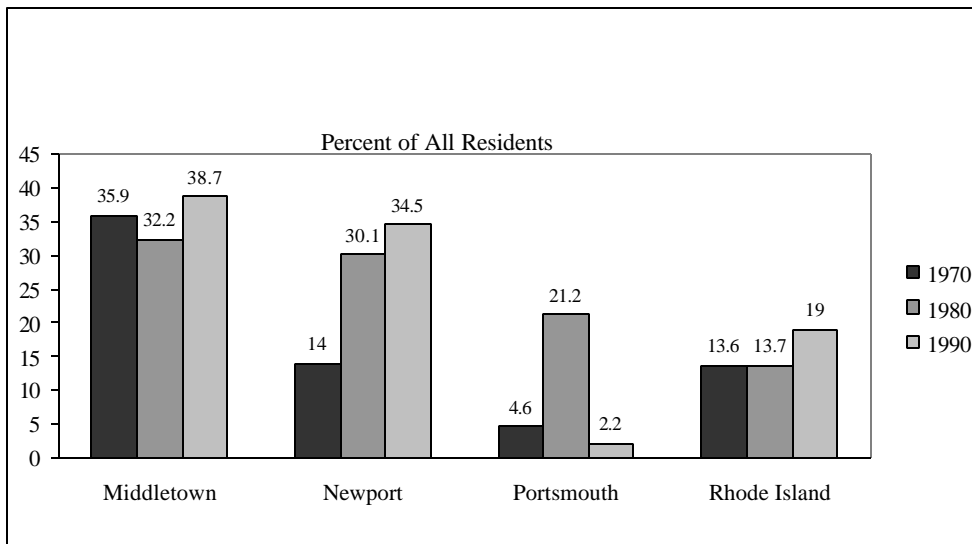
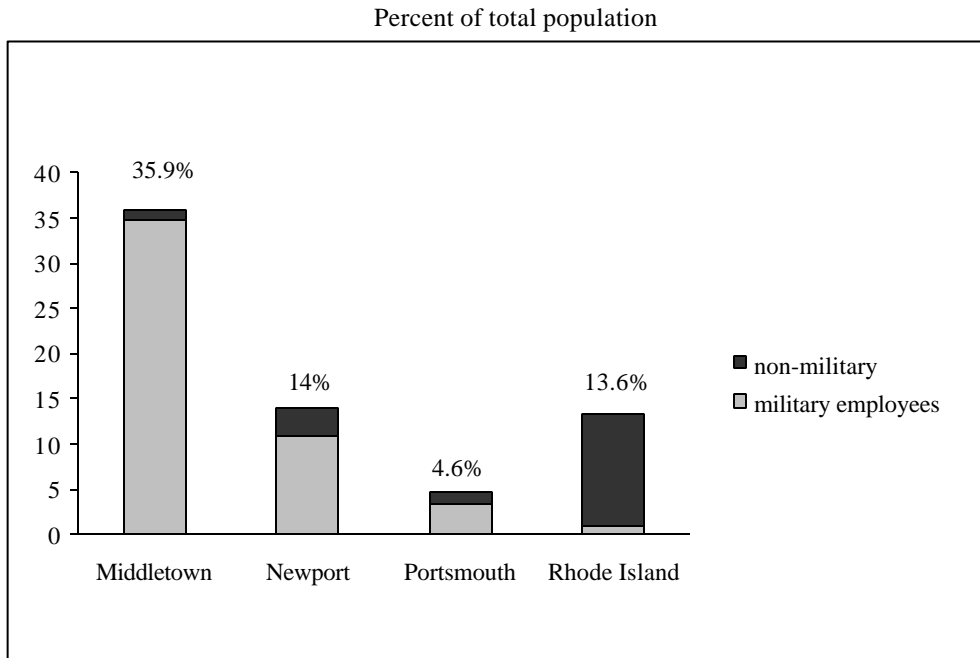
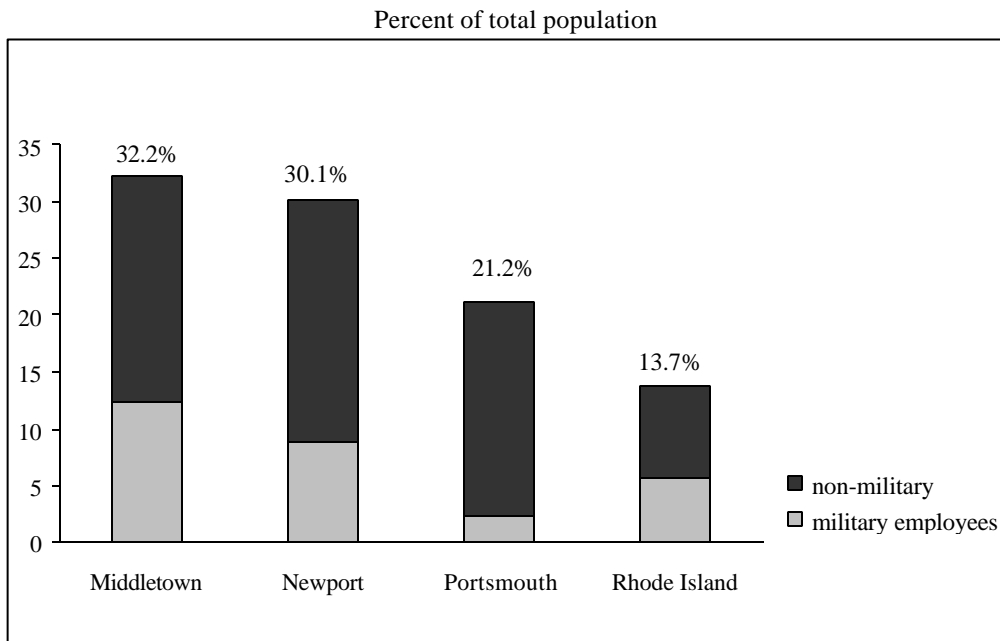


Figure 9. In-migration of new residents, 1965-1970.



Source: U.S. Census Bureau, 1970.

Figure 10. In-migration of new residents, 1975-1980.



Source: U.S. Census Bureau, 1980.

Figure 11. Total personnel for the Newport Naval Complex, 1989-1999.

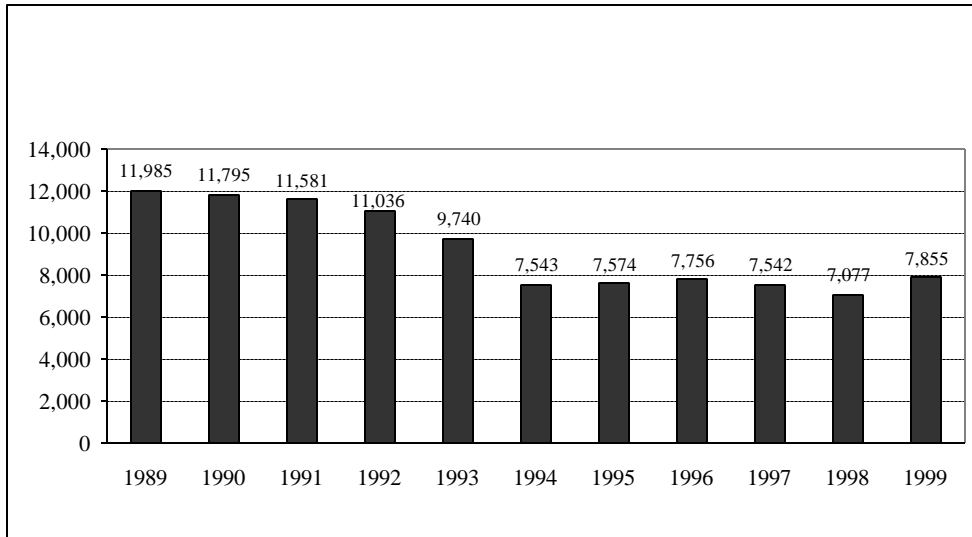
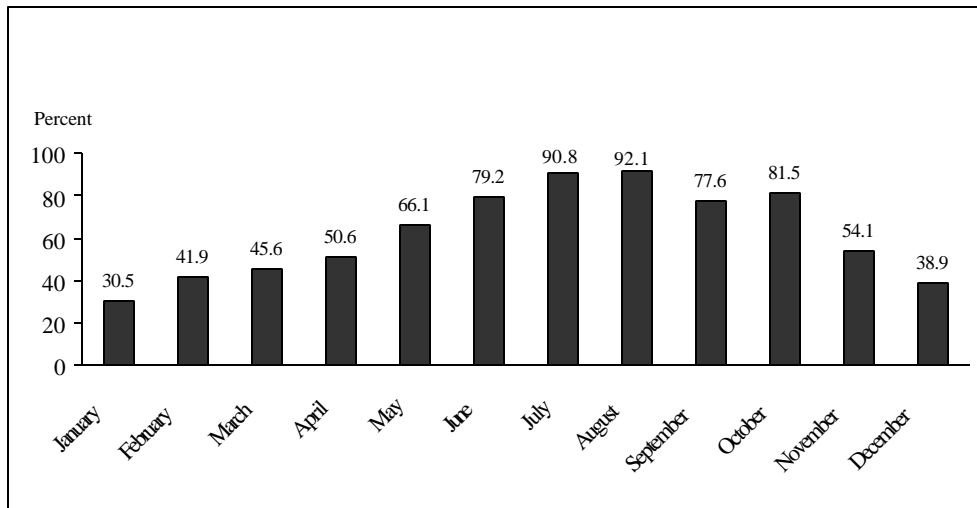
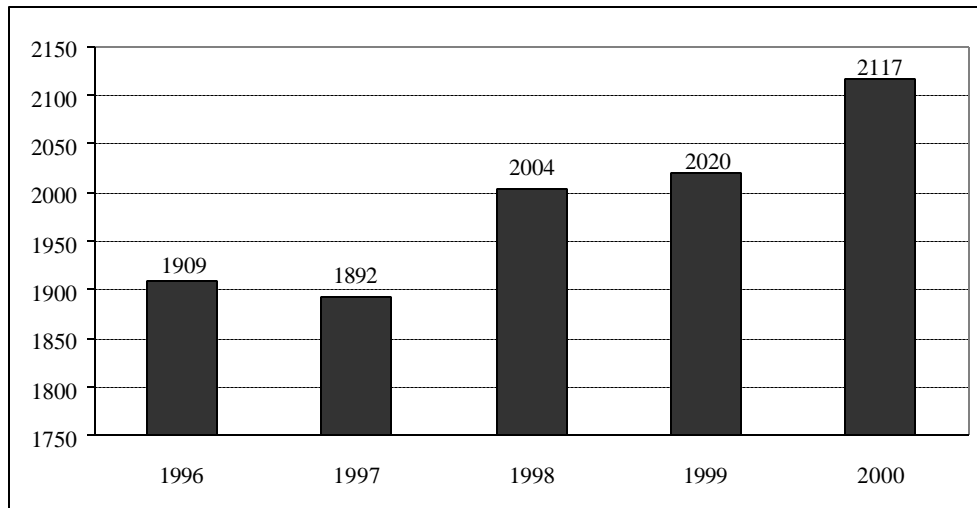


Figure 12. Percent occupancy of lodging establishments in Newport County, 1998.



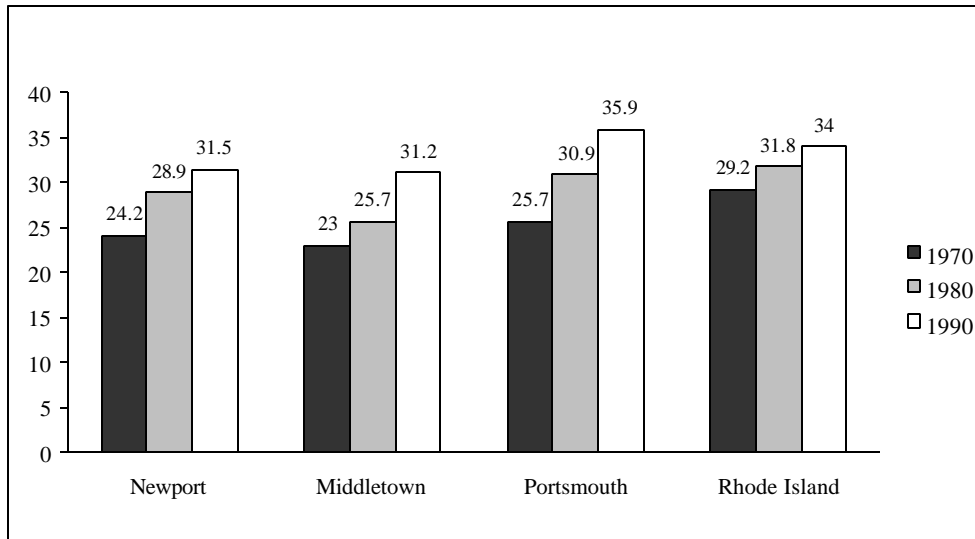
Source: Newport County Convention and Visitor's Bureau.

Figure 13. Salve Regina University enrollment, 1996-2000.



Source: Registrar, Salve Regina, 2000.

Figure 14. Median age of Aquidneck Islanders by community, 1970-1990.



Source: U.S. Census Bureau.

Figure 15. Percent of population age 65 and older, 1970-1990.

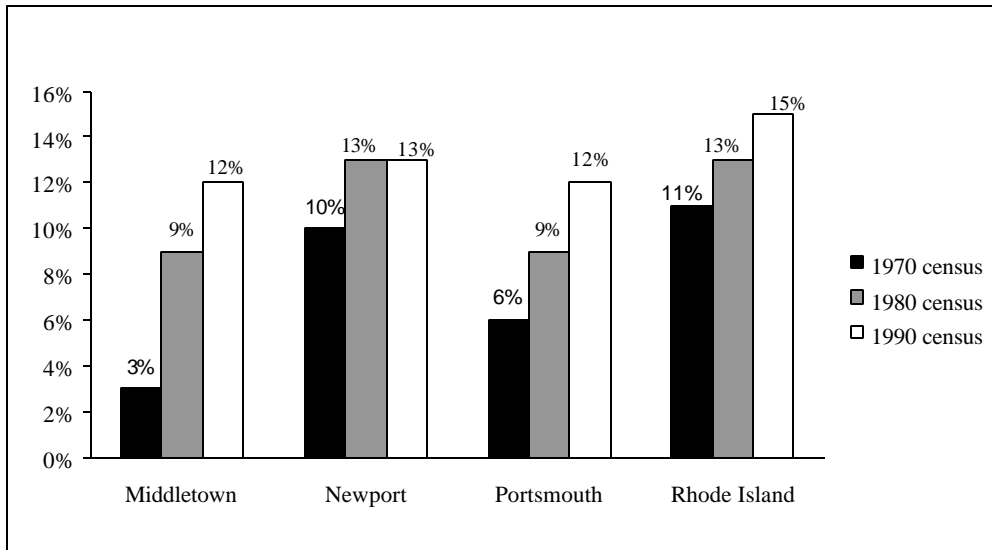
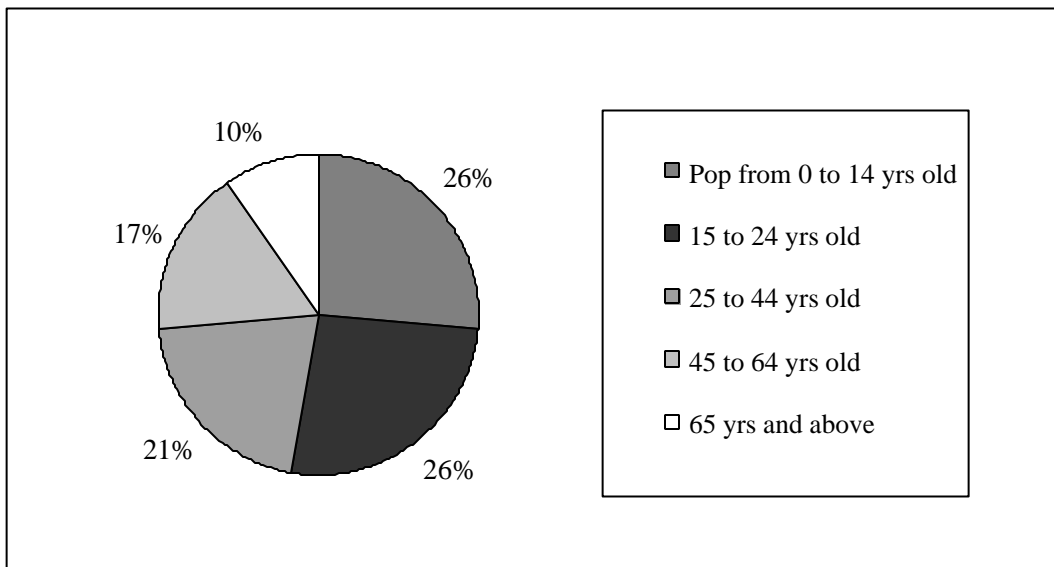
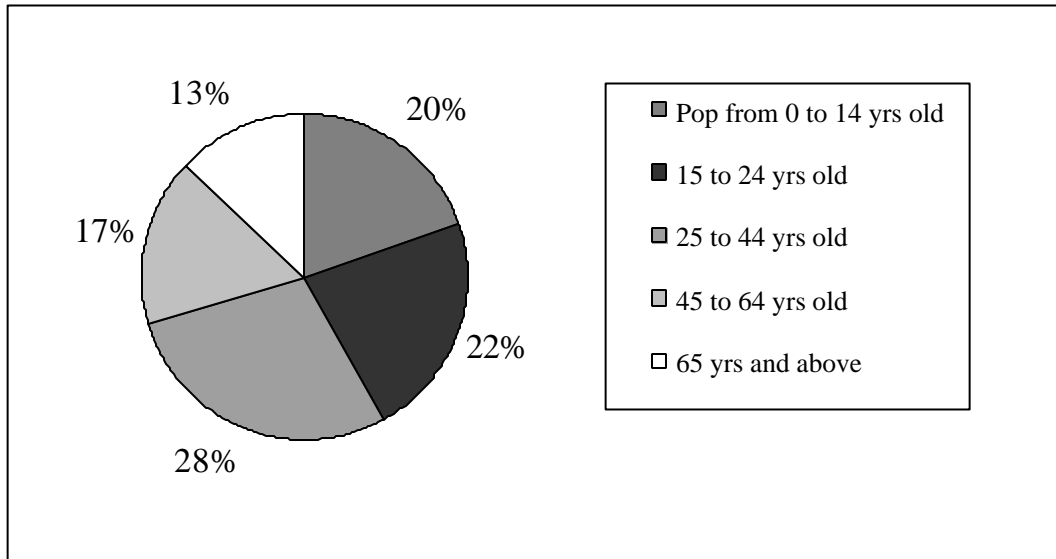


Figure 16. Newport population by age, 1970.



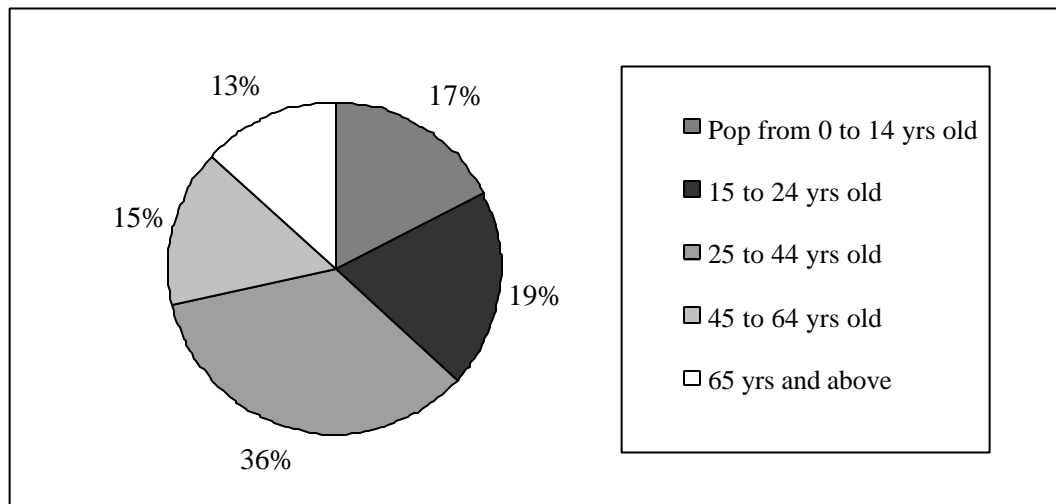
Source: U.S. Census Bureau, 1990.

Figure 17. Newport population by age, 1980.



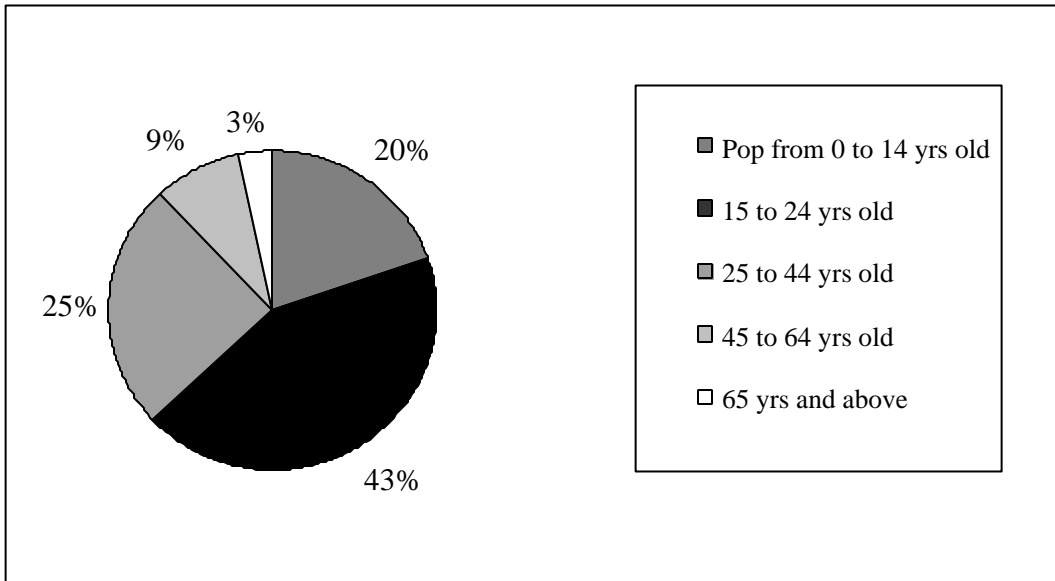
Source: U.S. Census Bureau, 1990.

Figure 18. Newport population by age, 1990.



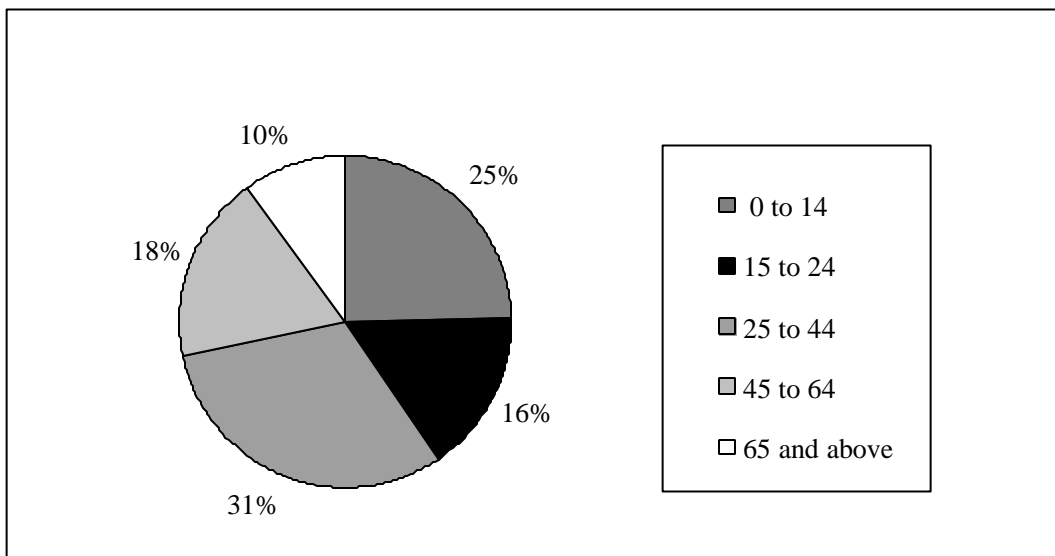
Source: U.S. Census Bureau, 1990.

Figure 19. Middletown population by age, 1970.



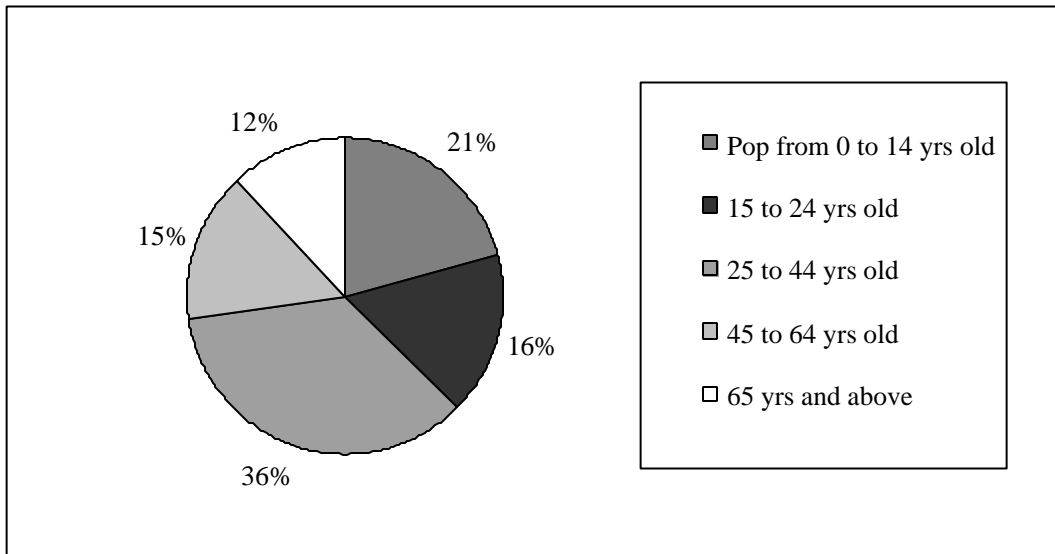
Source: U.S. Census Bureau, 1990.

Figure 20. Middletown population by age, 1980.



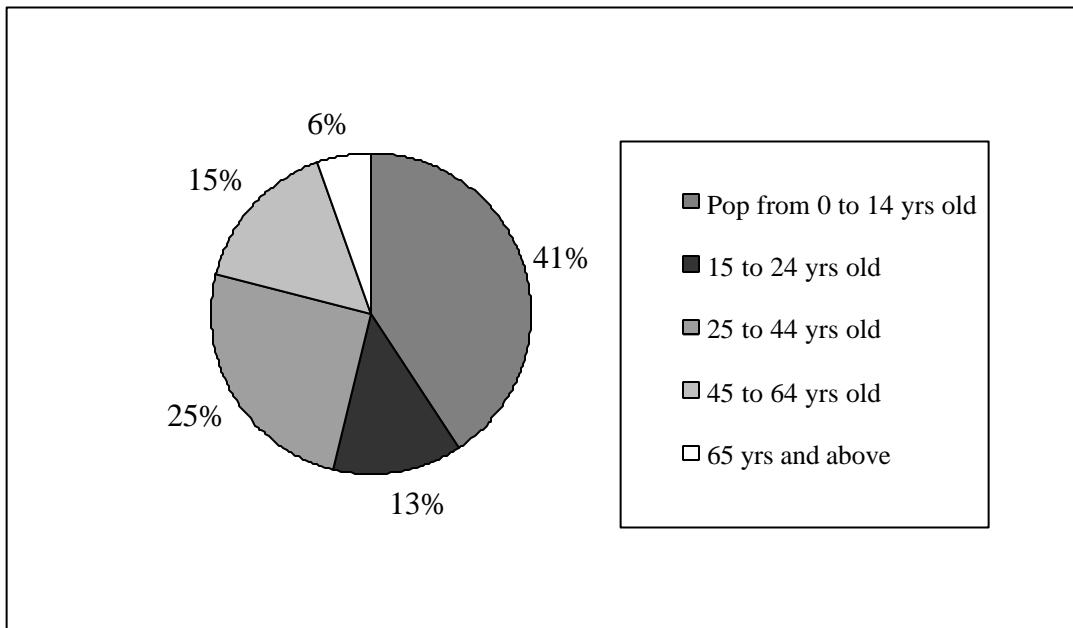
Source: U.S. Census Bureau, 1990.

Figure 21. Middletown population by age, 1990.



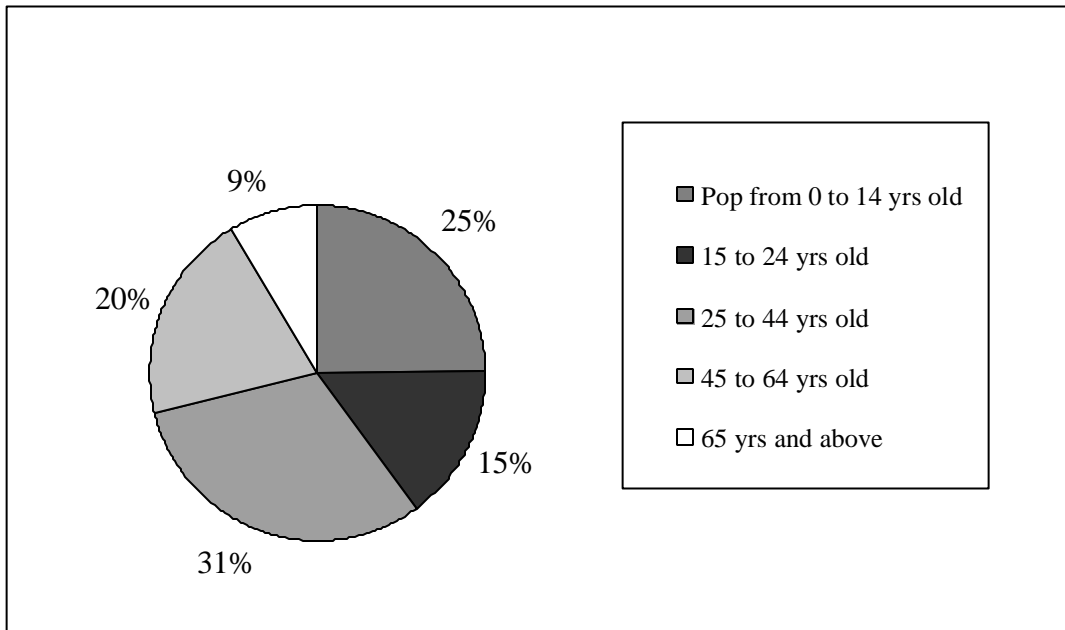
Source: U.S. Census Bureau, 1990.

Figure 22. Portsmouth population by age, 1970.



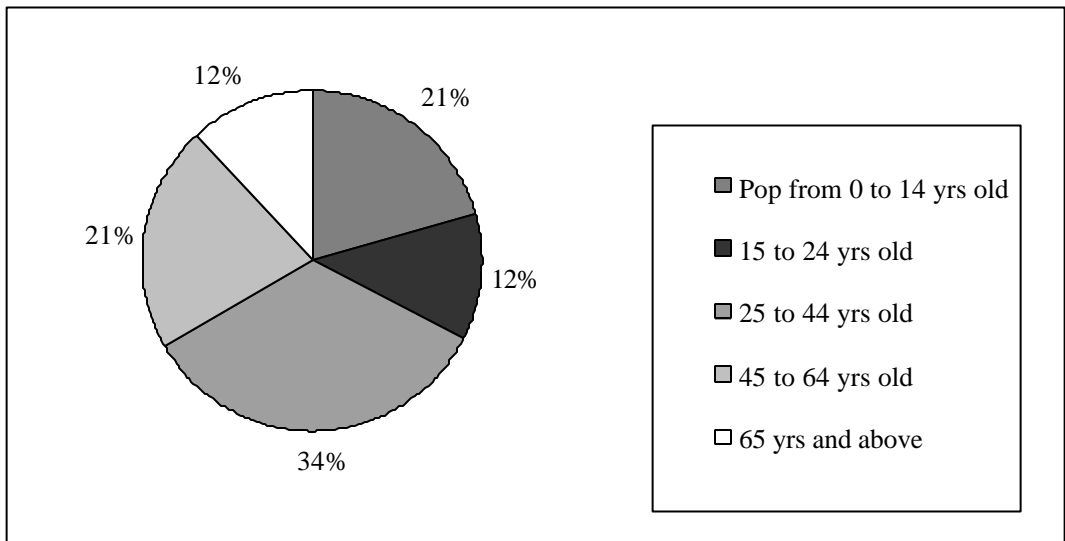
Source: U.S. Census Bureau, 1990.

Figure 23. Portsmouth population by age, 1980.



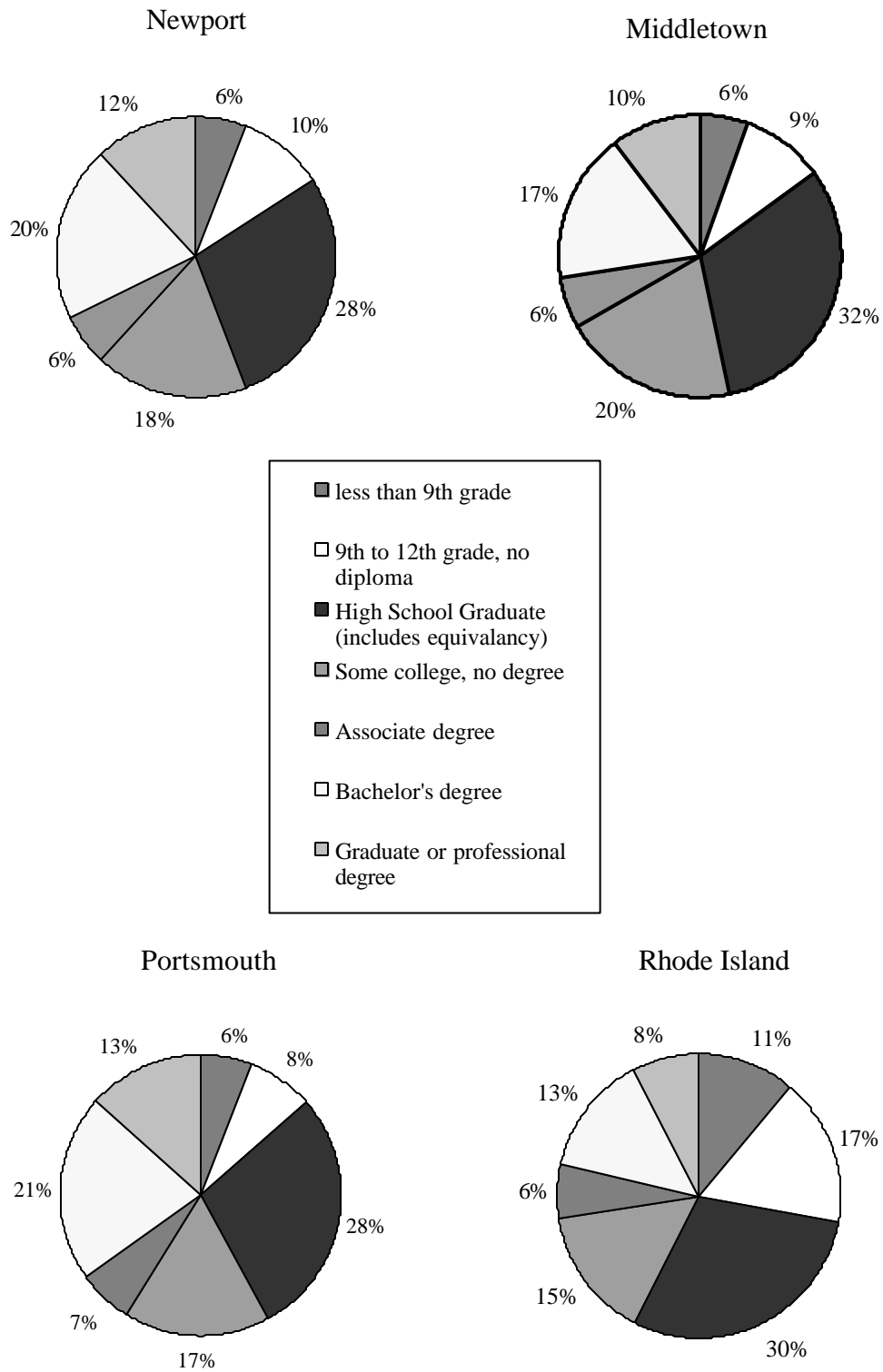
Source: U.S. Census Bureau, 1990.

Figure 24. Portsmouth population by age, 1990.



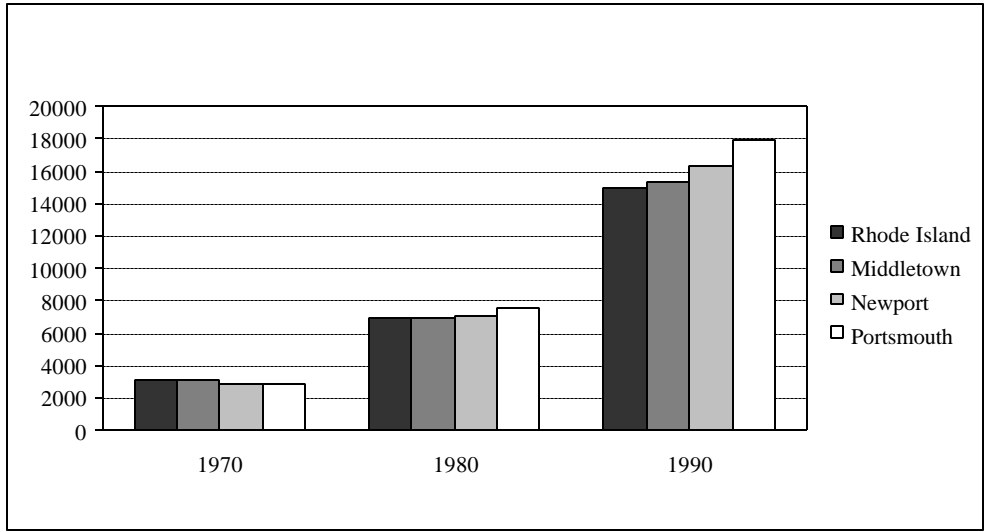
Source: U.S. Census Bureau, 1990.

Figure 25. Education attainment - Aquidneck Island municipalities, 1990.



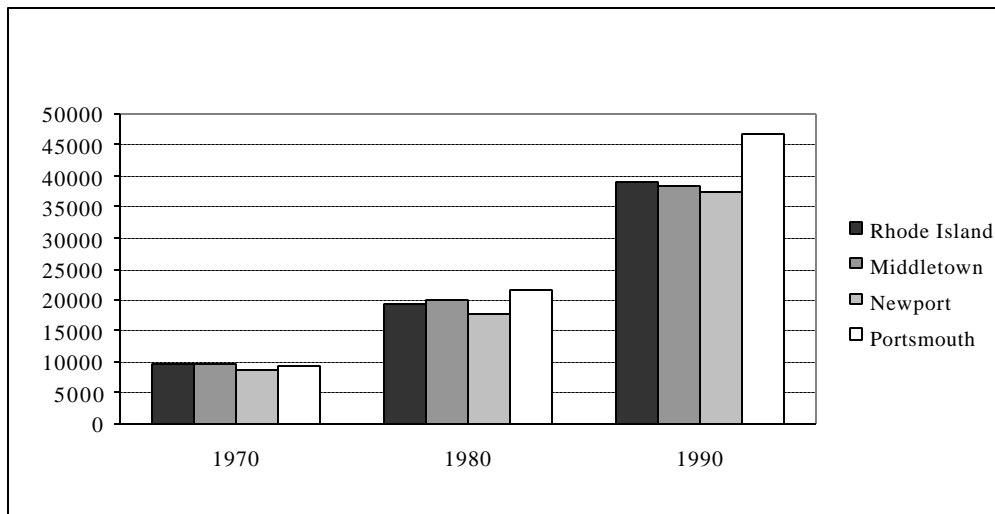
Source: U.S. Census Bureau.

Figure 26. Per capita income, 1970-1990.



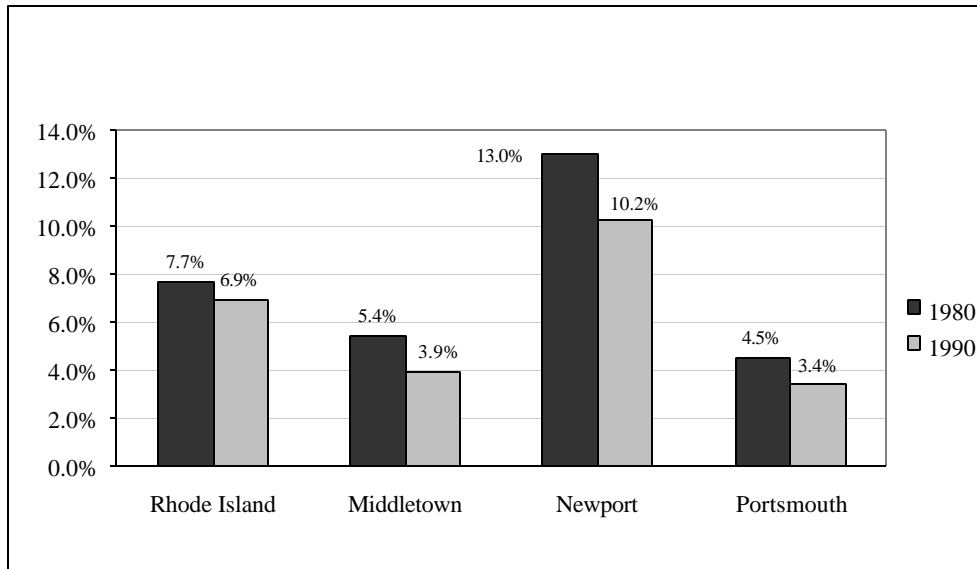
Source: U.S. Census Bureau.

Figure 27. Median family income, 1970-1990.



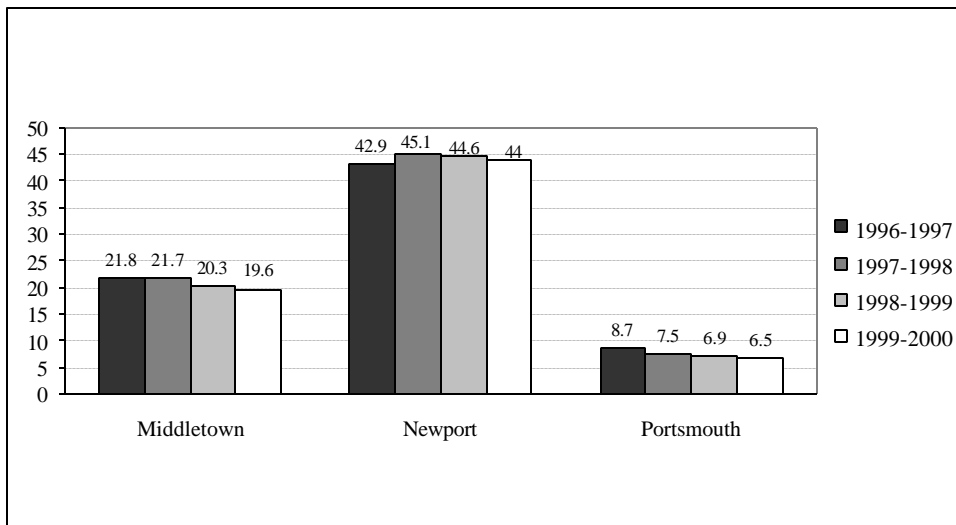
Source: U.S. Census Bureau.

Figure 28. Families below poverty level, 1980 and 1990.



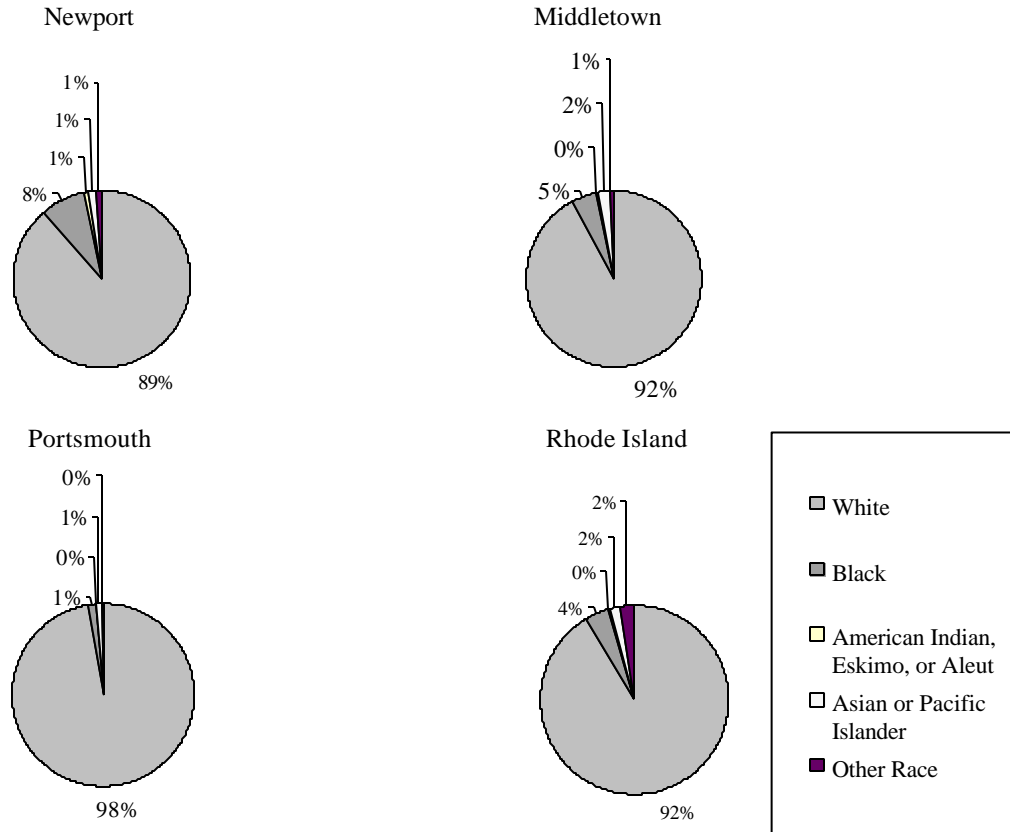
Source: U.S. Census Bureau, 1980 and 1990.

Figure 29. Percent of students eligible for subsidized lunch, 1996-2000.



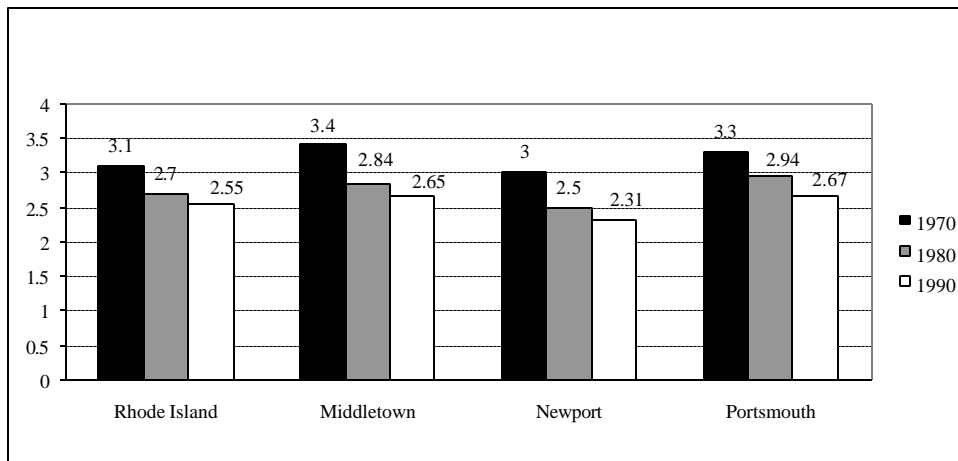
Source: R. I. Department of Education, Office of Finance, July 2000.

Figure 30. Population diversity, Aquidneck Island and Rhode Island, 1990.



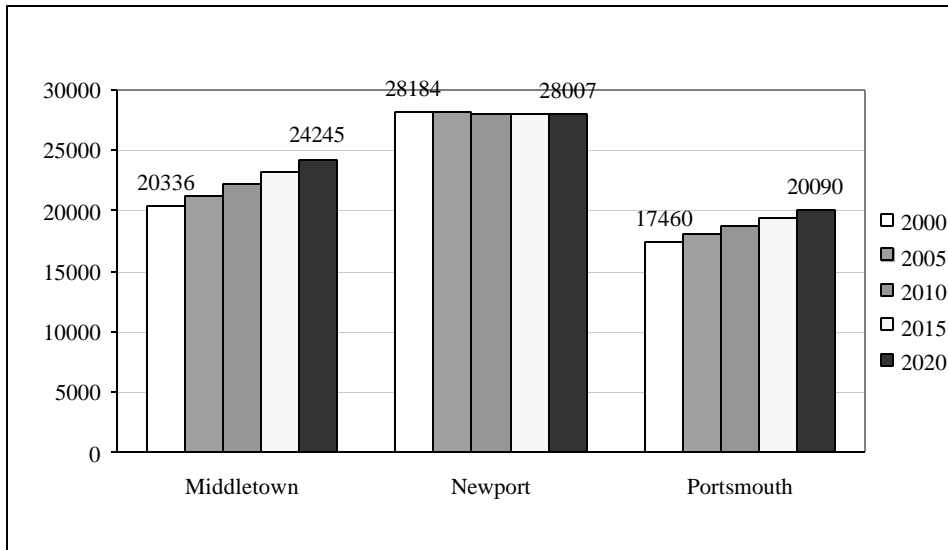
Source: U.S. Census Bureau, 1990.

Figure 31. Persons per occupied housing unit, 1970-1990.



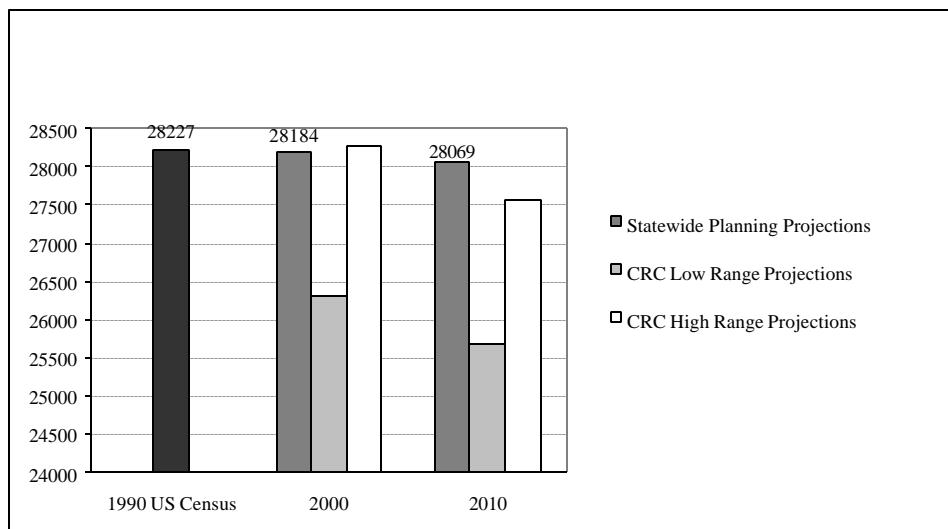
Source: U.S. Census Bureau.

Figure 32. Statewide planning population projections, 2000-2020.



Source: Statewide Planning Program, 2000.

Figure 33. Newport population project projections, 1990, 2000, 2010.



Source: U.S. Census Bureau.

Land Use, Natural Resources, and Recreation

Alan Desbonnet, Kevin Fitzgerald

This chapter will summarize pertinent information for land use on Aquidneck Island. The bulk of the data presented was taken from the Rhode Island Geographic Information System (RIGIS). Important natural and recreational resources are highlighted as a part of this review.

In south central Narragansett Bay lies an archipelago. Of the group of islands—Aquidneck, Prudence, Jamestown, Dutch, Hope, Hog and other small isles—Aquidneck is the largest. Aquidneck Island is shared by three municipalities: Newport, Middletown and Portsmouth. The following discussion is inclusive of all three towns that make up Aquidneck Island, offshore islands included.¹

Over the 10-year span between 1985 and 1997, 2,263 building permits for single family houses were issued,² converting 1,400 acres of the Aquidneck Island landscape to residential use. According to Hutchinson's analysis of land use change between 1988 and 1997, the entirety of Aquidneck Island can be expected to be built out³ by 2020 if the rate of subdivision development measured in 1997 proceeds into the future. Even at more typical rates of development, averaged over that 10-year span, all of Aquidneck Island would be built out before 2060 according to Hutchinson's report.

Land Use

*Total Area*⁴

(Map 1)

Aquidneck Island is 28,605 acres (~ 45 mi²), which is four percent of the total area of the state of Rhode Island.

Newport contains 18 percent (5,095 acres or \sim eight mi²) of Aquidneck Island area.

Middletown contains 29 percent (8,427 acres or ~ 13 mi²) of Aquidneck Island area.

Portsmouth contains the largest extent of acreage at 15,083 acres (~ 24 mi²) or 53 percent of the total area of Aquidneck Island.

*Area of Surface Waters*⁵

Of the entire Aquidneck Island area, only 561 acres, or two percent, is surface water in the form of lakes, ponds, and reservoirs. Portsmouth has 331 acres or 59 percent of Aquidneck

¹ The islands included in the discussion and analysis are: Portsmouth: Dyer, Gould, Hog, Prudence, Patience and Hope; Middletown: none; Newport: Coaster's Harbor, Goat and Rose.

² Hutchinson, M.F. 1998. *Aquidneck Island: A Decade of Change*. Aquidneck Island Partnership Coastal Management Report #3302. R.I. Sea Grant Program, University of Rhode Island, Narragansett, R.I. 02882.

³ Attaining build out means that all parcels of land are fully developed according to the zoning in existence at the time the build out analysis was conducted. Build out provides a picture of what the town will look like when completely developed according to its zoning scheme.

⁴ Data taken from RIGIS 1995 Land Use/Land Cover data set.

⁵ Data taken from RIGIS 1995 Land Use/Land Cover data set.

Island surface water area (two percent of total town area). Middletown has 193 acres or 34 percent of Aquidneck Island surface water area (two percent of total town area). Newport has 37 acres or seven percent of Aquidneck Island surface water area (less than one percent of total town area).

Developed & Undeveloped Area

(Figure 34 and Maps 2 and 3)

The following analysis is primarily based on 1995 Rhode Island Geographical Information System (RIGIS) data.⁶ Forty-six percent of the total area of Aquidneck Island, 13,041 acres, could be considered already developed (residential, commercial, industrial, infrastructure, cemeteries, or institutional uses). This left 54 percent of the total island area, or 15,564 acres, in an undeveloped state. Of the undeveloped landscape, 33 percent (5,073 acres; 18 percent of total island area) was in agricultural usage and 32 percent (5,022 acres; 18 percent of total island area) was in a wooded state. Of the undeveloped lands, 4,179 acres (27 percent of the undeveloped acres;⁷ 15 percent of total acres) could be considered to be constrained to further development due to the presence of surface water, wetlands, rocky areas, beaches, or sandy areas. As a further constraint to future development, 3,613 acres (23 percent of undeveloped area; 14.7 percent of total area) was under some form of protection (e.g., held in federal, state, municipal or private conservation easement or trust) for conservation purposes in perpetuity.

Newport had 3,690 acres, or 72 percent of its total area, in some form of development. This made up 28 percent of the total developed area of Aquidneck Island. This left 28 percent of town area, or 1,405 acres, in an undeveloped state. Of the undeveloped landscape, 32 percent (143 acres; three percent of total town area) was in agricultural usage and 32 percent (443 acres; nine percent of total town area) was in a wooded state. Of the undeveloped lands, 458 acres (33 percent of the undeveloped acres; nine percent of total town area) could be considered to be constrained to further development (e.g., water, wetlands, rocky area, etc.). As a further constraint to future development, 711 acres (32 percent of the undeveloped area; 14 percent of total town area) were under some form of protection (e.g., held in federal, state, municipal, or private conservation easement or trust) for conservation purposes in perpetuity.

Middletown had 4,124 acres, or 49 percent of its total area, in some form of development. This accounted for 32 percent of the total developed area of Aquidneck Island. Of the remaining 4303 undeveloped acres, 47 percent (2,023 acres; 24 percent of total town area) was in agricultural usage and 18 percent (760 acres; nine percent of total town area) was in a wooded state. Of the undeveloped lands, 1,167 acres (27 percent of the undeveloped acres; 14 percent of total town area) could be considered to be constrained to further development (e.g., water, wetlands, rocky areas, etc.). As a further constraint to development, 1,646 acres (38 percent of the undeveloped area; 20 percent of total town area) was under some form of

⁶ Data taken from RIGIS 1995 Land Use/Land Cover data set. Developed lands are codes: 111-115, 120, 130, 141-145, 150, 161-163, 170. Undeveloped area codes are all those not listed above, including surface water area. Constrained lands are those that possess wetlands, beaches, sandy area, rocky outcrops, and are codes: 600, 710-730. Preserved/protected lands are those that can be considered to be preserved for conservation purposes in perpetuity. These data are taken from 1) RIGIS 1990 Open Space from which federal and state wildlife refuge boundaries were taken; 2) RIGIS 1995 Wildlife Management Area; 3) RIGIS 1998 Private Land Trust; 4) RIGIS 1995 Publicly Owned Land; 5) RIGIS 1995 Audubon Lands; and 6) Hutchinson 1999 Conserved Lands/Open Space data set for Aquidneck Island.

⁷ There is overlap between undeveloped land categories. For example, farmland protected by conservation easements is counted in both the agricultural usage category and the protected lands category.

protection (e.g., held in federal, state, municipal, or private conservation easement or trust) for conservation purposes in perpetuity.

Portsmouth had 5,227 acres, or 35 percent of its total area, in some form of development. This made up 40 percent of the total developed area of Aquidneck Island. This left 65 percent of town area, or 9,856 acres, in an undeveloped state. Of the undeveloped landscape, 29 percent (2,907 acres; 19 percent of total town area) was in agricultural usage and 39 percent (3,819 acres; 25 percent of total town area) was in a wooded state. Of the undeveloped lands, 2,554 acres (26 percent of the undeveloped acres; 17 percent of total town area) could be considered to be constrained to further development (e.g., water, wetlands, rocky areas, etc.). As a further constraint to future development, 1,256 acres (13 percent of the undeveloped area; eight percent of total town area) were under some form of protection (e.g., held in federal, state, municipal, or private conservation easement or trust) for conservation purposes in perpetuity.

Residential Area⁸

(Figure 35 and Map 4)

Overall, 32 percent of Aquidneck Island was developed for residential uses. Of the 9,253 acres of residential lands on Aquidneck Island, 69 percent were ? - to one-acre lot sizes, 17 percent were less than ? -acre lot sizes and 14 percent were greater than one-acre lot sizes. Over the time span 1988 to 1997, residential land use area increased by 11.3 percent.⁹

Newport was 49 percent developed for residential uses. Of the 2,472 acres of residential lands in Newport, 39 percent were ? -to one-acre lot sizes, 36 percent were less than ? -acre lot sizes and 25 percent were greater than one-acre lot sizes.

Middletown was 34 percent developed for residential uses. Of the 2,883 acres of residential lands in Middletown, 79 percent were ? - to one-acre lot sizes, 15 percent were less than ? - acre lot sizes and six percent were greater than one-acre lot sizes.

Portsmouth was 26 percent developed for residential uses. Of the 3,898 acres of residential lands in Portsmouth, 81 percent were ? to one-acre lot sizes, six percent were less than ? - acre lot sizes and 13 percent were greater than one-acre lot sizes.

Commercial Area¹⁰

(Map 5)

Aquidneck Island was three percent commercially developed (887 acres). From 1988 to 1997, commercial land use area increased by 1.5 percent.¹¹

Newport had five percent (242 acres) commercial development, which made up 27 percent of all commercial development on Aquidneck Island.

⁸ Data taken from RIGIS 1995 Land Use/Land Cover data set. Code = 111, 112, 113, 114, 115.

⁹ Hutchinson, M.F. 1998. *Aquidneck Island: A Decade of Change*. Aquidneck Island Partnership Coastal Management Report #3302. R.I. Sea Grant Program, University of Rhode Island, Narragansett, R.I. 02882.

¹⁰ Data taken from RIGIS 1995 Land Use/Land Cover data set. Code = 115.

¹¹ Hutchinson, M.F. 1998. *Aquidneck Island: A Decade of Change*. Aquidneck Island Partnership Coastal Management Report #3302. R.I. Sea Grant Program, University of Rhode Island, Narragansett, R.I. 02882.

Middletown had five percent (436 acres) commercial development, which made up 49 percent of all commercial development on Aquidneck Island.

Portsmouth had one percent (209 acres) commercial development, which made up 24 percent of all commercial development on Aquidneck Island.

Industrial Area¹²

(Map 5)

Aquidneck Island was two percent industrially developed (469 acres). Over the time span 1988 to 1997, industrial land use area increased by 8.5 percent.¹³

Newport had five percent (73 acres) industrial development, which made up 16 percent of all industrial development on Aquidneck Island. Newport also contained 22 acres of mixed commercial/industrial land use, which was 100 percent of this mixed use on Aquidneck Island.

Middletown had two percent (174 acres) industrial development, which made up 37 percent of all industrial development on Aquidneck Island.

Portsmouth had one percent (222 acres) industrial development, which made up 47 percent of all industrial development on Aquidneck Island.

Agricultural Area¹⁴

(Map 6)

Agricultural lands made up 18 percent of total Aquidneck Island area (5,073 acres). Over the time span 1988 to 1997, agricultural land use area decreased by 11.4 percent, about the same amount that residential land area increased during the same time span.¹⁵

Newport had three percent (143 acres) agricultural land use, which made up three percent of all agricultural land on Aquidneck Island.

Middletown had 24 percent (2,023 acres) agricultural land use, which made up 40 percent of all agricultural land on Aquidneck Island.

Portsmouth had 19 percent (2,907 acres) agricultural land use, which made up 57 percent of all agricultural land on Aquidneck Island.

¹² Data taken from RIGIS 1995 Land Use/land Cover data set. Code = 120, 150.

¹³ Hutchinson, M.F. 1998. *Aquidneck Island: A Decade of Change*. Aquidneck Island Partnership Coastal Management Report #3302. R.I. Sea Grant Program, University of Rhode Island, Narragansett, R.I. 02882.

¹⁴ Data taken from RIGIS 1995 Land Use/Land Cover data set. Code = 210-250.

¹⁵ Hutchinson, M.F. 1998. *Aquidneck Island: A Decade of Change*. Aquidneck Island Partnership Coastal Management Report #3302. R.I. Sea Grant Program, University of Rhode Island, Narragansett, R.I. 02882.

Wooded Area¹⁶

(Map 7)

Woodlands made up 18 percent of total Aquidneck Island area (5,022 acres). From 1988 to 1997, woodland area decreased by 4.6 percent.¹⁷

Newport had nine percent (443 acres) wooded area, which made up nine percent of all wooded area on Aquidneck Island.

Middletown had nine percent (760 acres) wooded area, which made up 15 percent of all wooded area on Aquidneck Island.

Portsmouth had 25 percent (3,819 acres) wooded area, which made up 76 percent of all wooded area on Aquidneck Island.

Lands Protected For Conservation¹⁸

(Figure 36 and Map 8)

According to Hutchinson (1998) there were 3,613 acres of land on Aquidneck Island that could be considered as committed open space, meaning they are protected from development into the future. This represented 14.7 percent of total Aquidneck Island area.

Federal entities managed/owned 236 acres (seven percent) of committed lands, all of them located in Middletown (Sachuest Point National Wildlife Refuge).

State entities managed/owned 593 acres (16 percent) of committed lands:

- 226 acres (38 percent) in Newport
- 131 acres (22 percent) in Middletown
- 236 acres (40 percent) in Portsmouth

Municipal entities managed/owned 1,957 acres (54 percent) of committed lands:

- 454 acres (23 percent) in Newport
- 601 acres (31 percent) in Middletown
- 902 acres (46 percent) in Portsmouth

Private entities managed/owned 827 acres (23 percent) of committed lands:

- 31 acres (four percent) in Newport
- 678 acres (82 percent) in Middletown
- 118 acres (14 percent) in Portsmouth

Overall:

- 14.7 percent of Aquidneck Island was considered committed open space in 1998
- 13.9 percent of Newport was considered committed open space in 1998
- 19.5 percent of Middletown was considered committed open space in 1998

¹⁶ Data taken from RIGIS 1995 Land Use/Land Cover data set. Code = 310-400.

¹⁷ Hutchinson, M.F. 1998. *Aquidneck Island: A Decade of Change*. Aquidneck Island Partnership Coastal Management Report #3302. R.I. Sea Grant Program, University of Rhode Island, Narragansett, R.I. 02882.

¹⁸ Data from Hutchinson, M.F. 1998. *Aquidneck Island: A Decade of Change*. Aquidneck Island Partnership Coastal Management Report #3302. R.I. Sea Grant Program (Table 6).

- 11.4 percent of Portsmouth was considered committed open space in 1998

Hutchinson identified 1,825 acres of land on Aquidneck Island as being used as open space in 1998, but which had inadequate protection to be considered preserved into the future. These areas were private golf courses and private educational institutions.

Natural Habitat Resources

***Wetlands Habitat*¹⁹**

(Map 9)

Wetlands made up 11 percent of total Aquidneck Island area (3,118 acres).

Seven percent (338 acres) of Newport is wetlands, which made up 11 percent of all wetlands area on Aquidneck Island.

Eleven percent (901 acres) of Middletown is wetlands, which made up 29 percent of all wetlands area on Aquidneck Island.

Twelve percent (1,879 acres) of Portsmouth is wetlands, which made up 60 percent of all wetlands area on Aquidneck Island.

***Critical Habitat*²⁰**

(Map 10)

Map 10 shows the distribution of areas considered by the R.I. Natural History Survey as containing habitat critical to the maintenance of endangered, rare, or threatened species. Development within these areas may be limited, and special limitations may be applied as part of the site review process to minimize impacts to these critical habitat areas.

Shown on Map 11 is the distribution of sites in Narragansett Bay where eelgrass has been found to be present. While the presence of eelgrass does not yet limit land-side development, it may limit in-water uses. Eelgrass is a critical habitat area for many marine species, particularly juvenile fishes and bay scallops, and there is a bay-wide restoration program to increase its distribution.

***Fish Habitat*²¹**

(Map 12)

Finfish provide for a significant recreational fishery, which is often an important part of local economies. Species such as squid, striped bass, bluefish, mackerel, tautog, and summer and winter flounder are the major species targeted by recreational anglers, generally on a seasonal basis from May through October. Map 12 shows the distribution of winter flounder, a commercially important species to Rhode Island and the entire New England region. This

¹⁹ Data taken from RIGIS 1995 Land Use/Land Cover data set.

²⁰ Data taken from RIGIS 1995 Rare Species Habitat data set and from RIGIS 1995/RIRPP 1995 Eelgrass Sites data sets.

²¹ Data taken from RIGIS 1995 Winter Flounder Habitat and Migration Route data sets.

species is currently undergoing intensive restoration and management in an attempt to revive dwindling populations throughout its entire range.

Shellfish Habitat²² (Map 13)

Shellfish have been an important natural resource throughout Rhode Island's history. While many areas of Narragansett Bay are closed to recreational shellfishing, existing shellfish populations provide an important source for the continuation of these species in the bay. Water quality in the bay continues to improve. Map 13 shows the distribution of shellfish populations in the Aquidneck Island region.

Recreational Resources

According to a 1999 Newport County Convention and Visitors Bureau survey, 60 percent of visitors said one of their primary reasons for coming to the Newport area was for recreational purposes.²³ A lesser, though significant, number of visitors (23 percent), said they visited the Newport region to see and experience its unique historic architecture.

Newport

Newport is the only municipality on Aquidneck Island with a recreation center. Since its comprehensive plan was written 10 years ago, nearly all playgrounds have been updated to meet current safety standards. All tennis courts have been resurfaced and are on a 5-year schedule for resurfacing. New tennis courts have also been constructed, as have a soccer field and skateboard park.

Middletown

Since the comprehensive plan was developed in 1989/1990, the town has received 14 acres of land near the center of town for recreational uses. The town is pursuing the acquisition of six acres on Green End Avenue, and there is a new soccer field on Wyatt Road.

The town does not have a recreation center, and therefore the Newport YMCA, located in Middletown, handles indoor recreation. The only outdoor recreational facility with lights in Middletown is an adult softball field.

The Middletown Recreation Department manages the town beach, which generates approximately \$750,000 annually from parking fees, concession stand leases, and campground and mooring site fees.²⁴

Middletown offers over-age 35 basketball, softball, little league baseball, youth soccer, and youth wrestling, among other programs.

²² Data taken from RIGIS 1995 Shellfish Distribution data set.

²³ Spot survey conducted at 23 Americas Cup Avenue. Administered by the Newport County Convention and Visitor's Bureau.

²⁴ Personal communication with Robert Helmbrecht.

The fastest growing sport is youth soccer, which increased in participation from 30 to 400 children in the past six years.

Portsmouth

Most of the recreational needs of the town are handled by a non-profit organization called Portsmouth Action for Youth (PAY), which receives the majority of its funding from the town of Portsmouth. PAY offers a wide variety of non-league programs, such as swimming, gymnastics, football, softball, and soccer, as well as drama and foreign language classes. PAY does not own any facilities of its own, and mostly uses school facilities for its programs.

The number of children participating in PAY activities has increased every year, as has the number of activities the organization offers.

Indoor Recreational Sites on Aquidneck Island

- International Tennis Hall of Fame
- Newport Grand Jai Alai
- Newport Aquarium
- Newport YMCA
- Newport Art Museum
- Newport Mansions
- Nightlife – Night clubs attract younger crowds after the beaches close, and they offer music, dancing and entertainment.
- There are at least three bowling alleys on the island including Ryan Family Amusements in Newport, and Hi-Way Bowl & Mini Golf and Aquidneck Lanes, both in Middletown.

Outdoor Recreational Sites on Aquidneck Island

- Beaches and coastline are the major recreational areas on Aquidneck Island. Public salt water beaches are: Newport: Easton's Beach (First Beach), Fort Adams State Park, Gooseberry Beach, King's Park Beach. Middletown: Atlantic Beach, Sachuest Town Beach (Second Beach), Third Beach. Portsmouth: Island Park Beach, Sandy Point Beach, Teddy's Beach.
- Traditional sports such as fishing and tennis are popular in many locations throughout Aquidneck Island. All three municipalities have many companies that provide fishing charters for individuals and groups.
- Polo has long been a tradition on the island and it is still played today. Polo matches take place primarily at the Glen in Portsmouth.
- As of July 2000, there were three public golf courses on Aquidneck Island, all in Portsmouth: Montaup Country Club, Pocasset Country Club, Green Valley County Club.
- Adventure sports such as sea kayaking, skydiving, SCUBA diving, and sail boarding are popular and readily available through numerous outfitters on the island.
- Newport Cliff Walk, a 3.6 mile path and national recreation trail, goes from Easton's Beach to Bailey's Beach and provides magnificent views of the ocean.
- Norman Bird Sanctuary.

- Sachuest Point U.S. Fish and Wildlife Preserve in Middletown.
- Newport Vineyards in Middletown and Greenvale Vineyards in Portsmouth are available for touring as well as for wine tasting.
- Fort Adams State Park (the Newport Folk and Jazz Festivals are held here).
- Green Animals Topiary Gardens in Portsmouth.

Figure 34. Undeveloped land on Aquidneck Island.

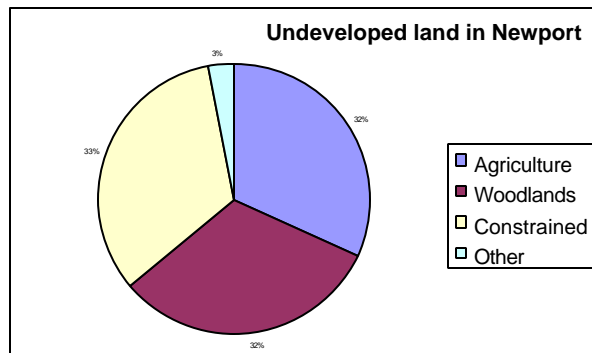
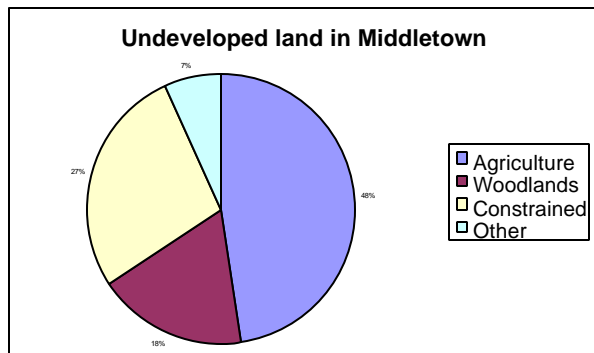
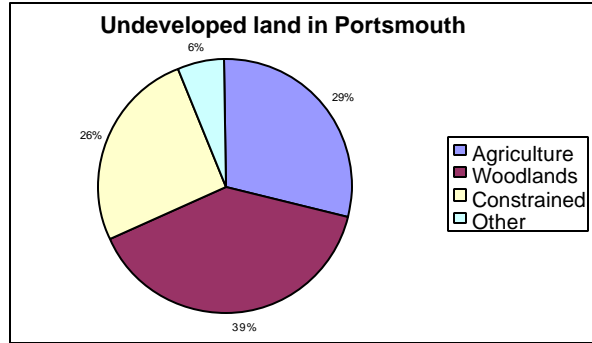
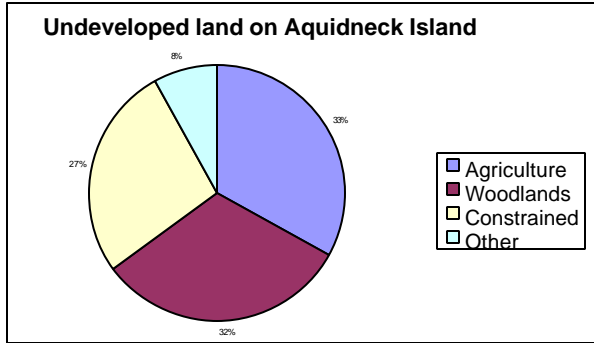


Figure 35. Residential land use on Aquidneck Island and its member towns.

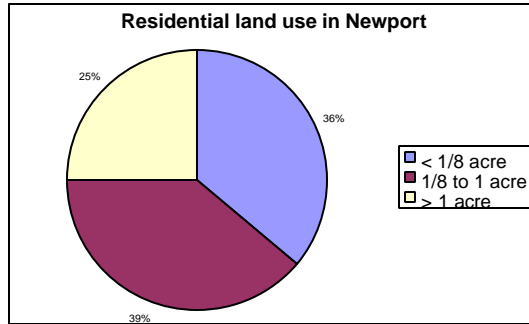
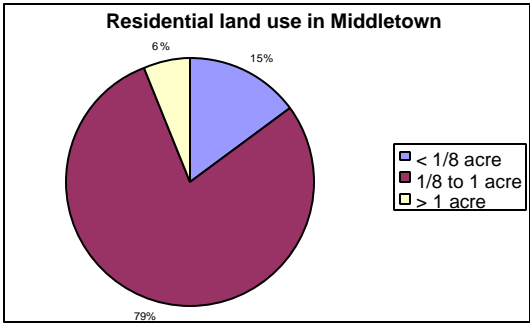
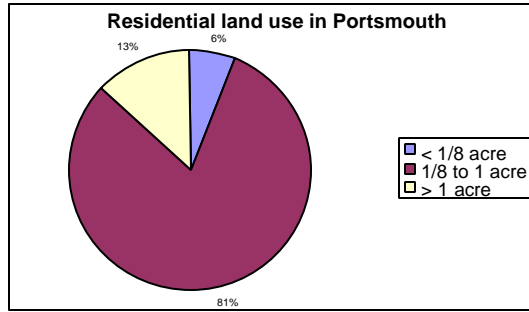
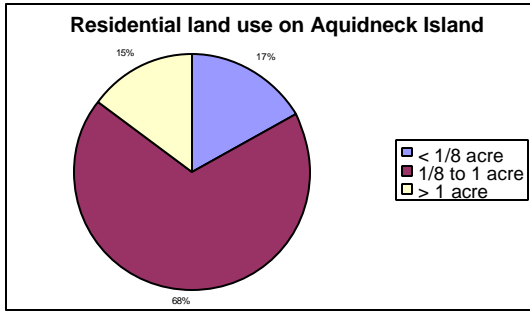
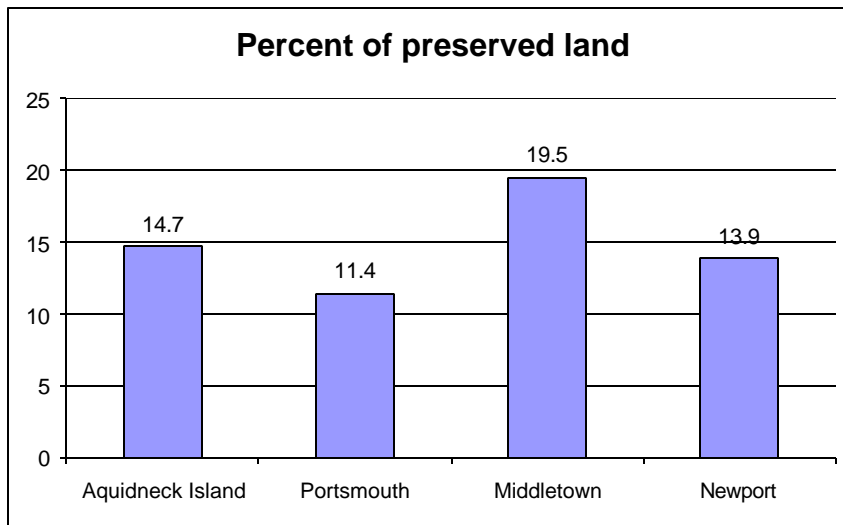
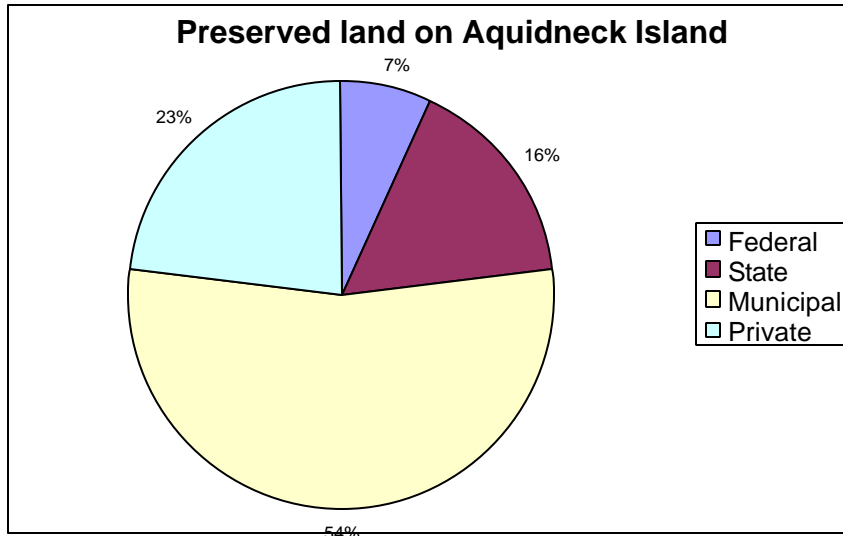
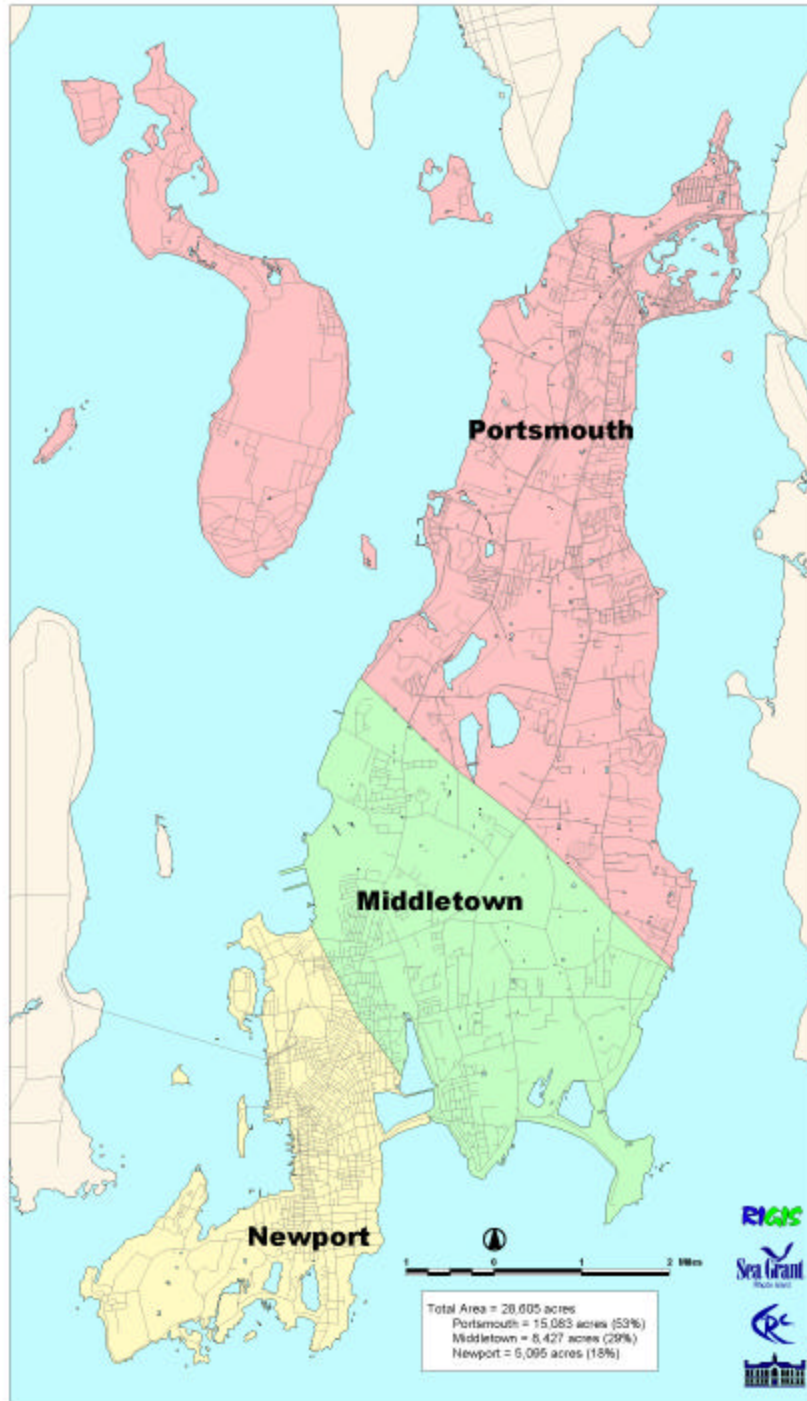


Figure 36. Land preserved for conservation on Aquidneck Island.



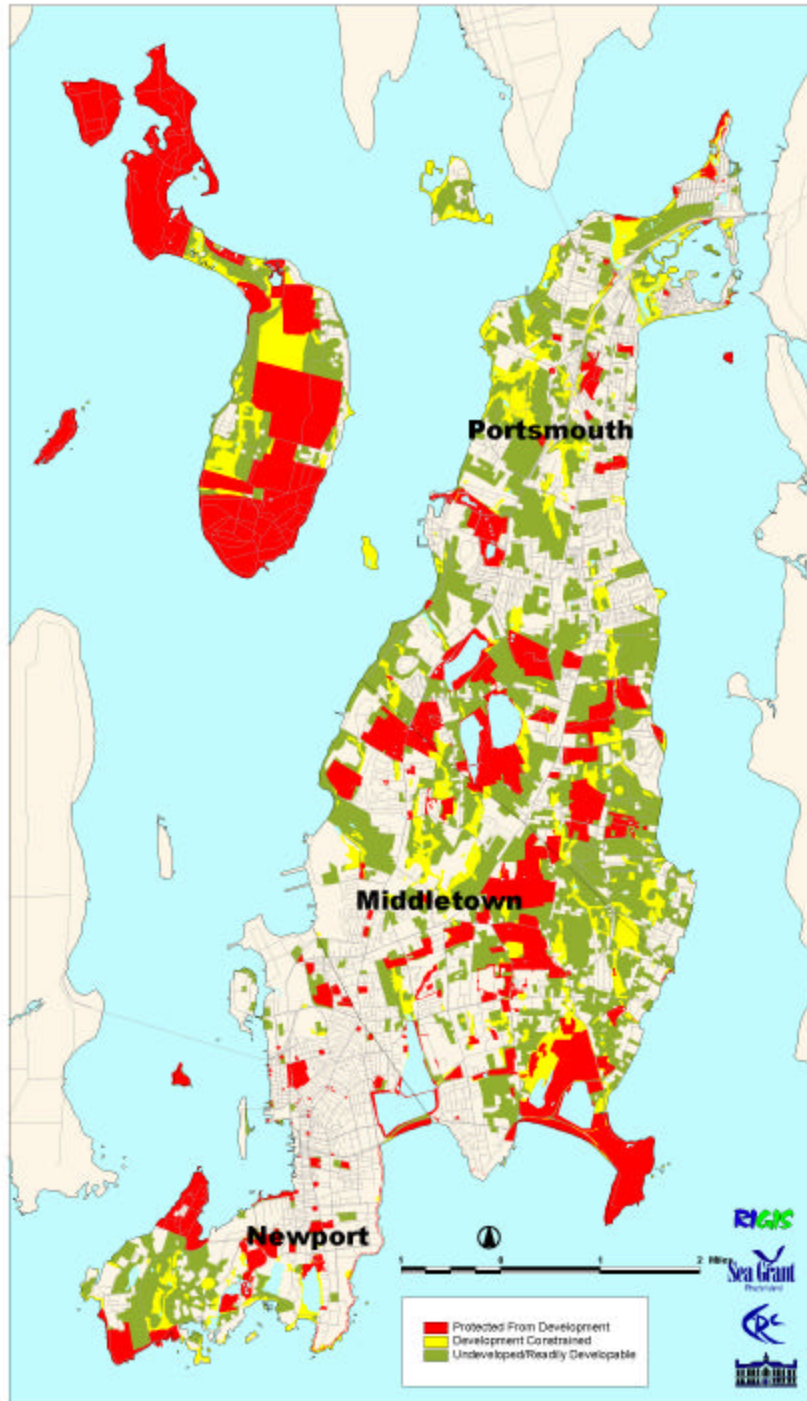
Map 1. Aquidneck Island.



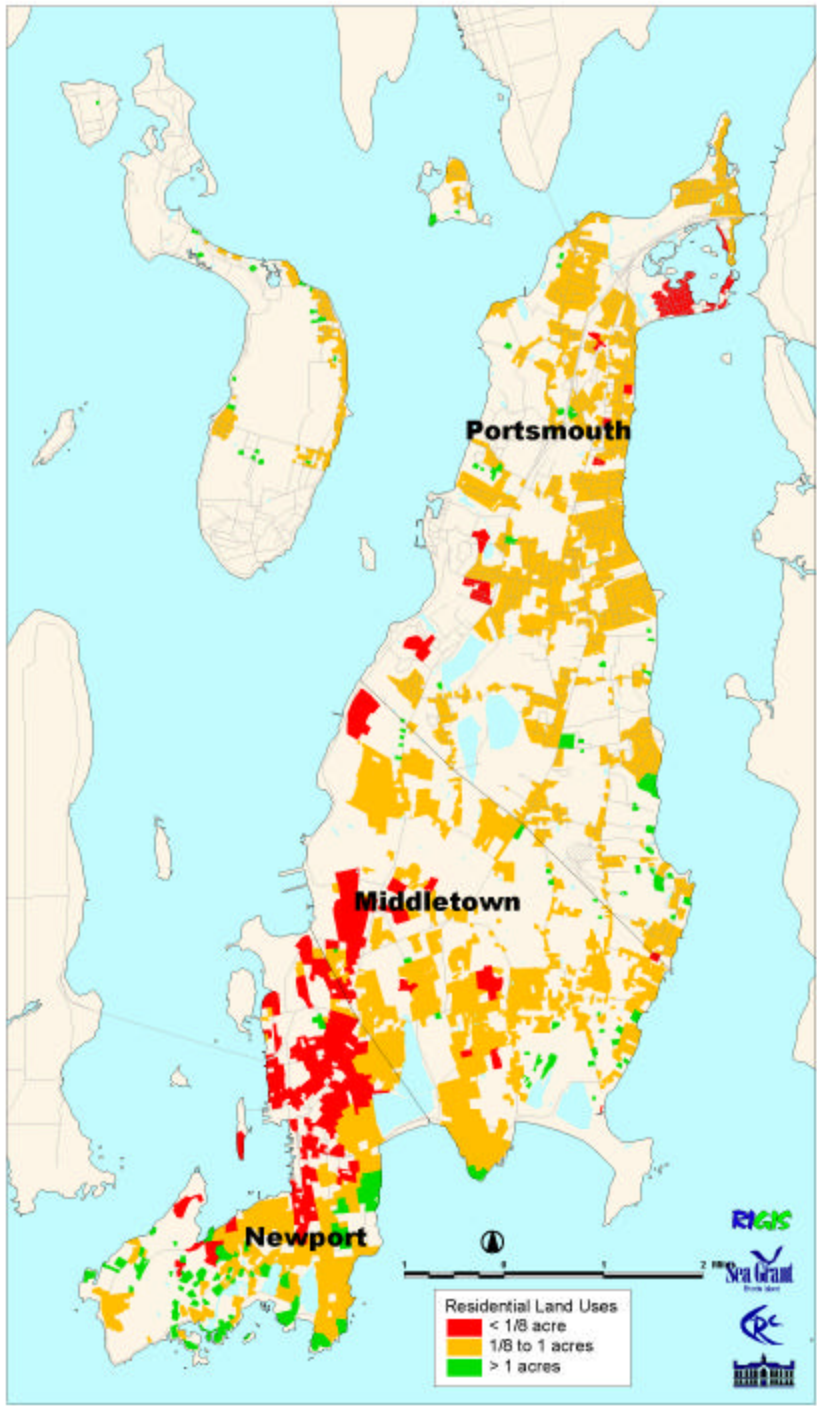
Map 2. Aquidneck Island developed land area.



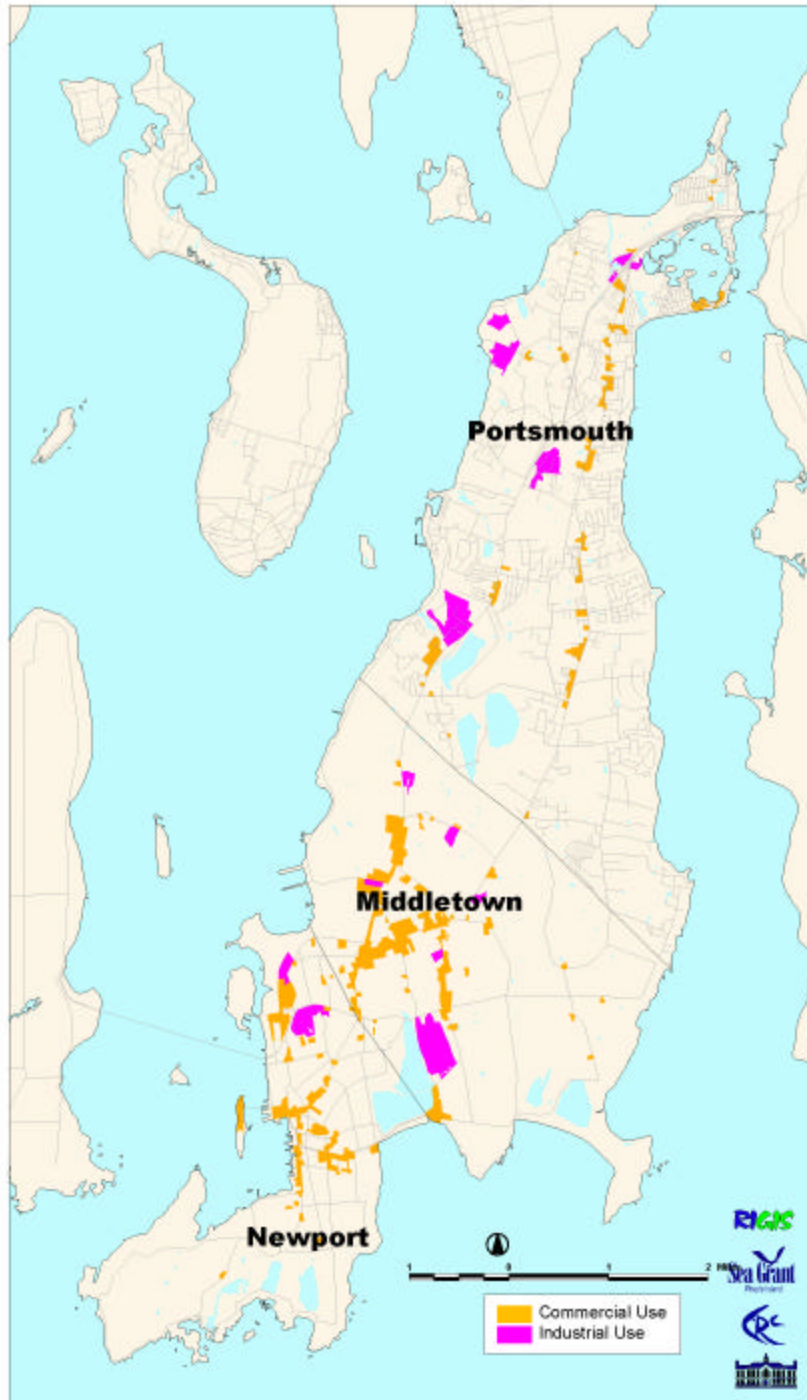
Map 3. Aquidneck Island undeveloped, constrained and conservation lands.



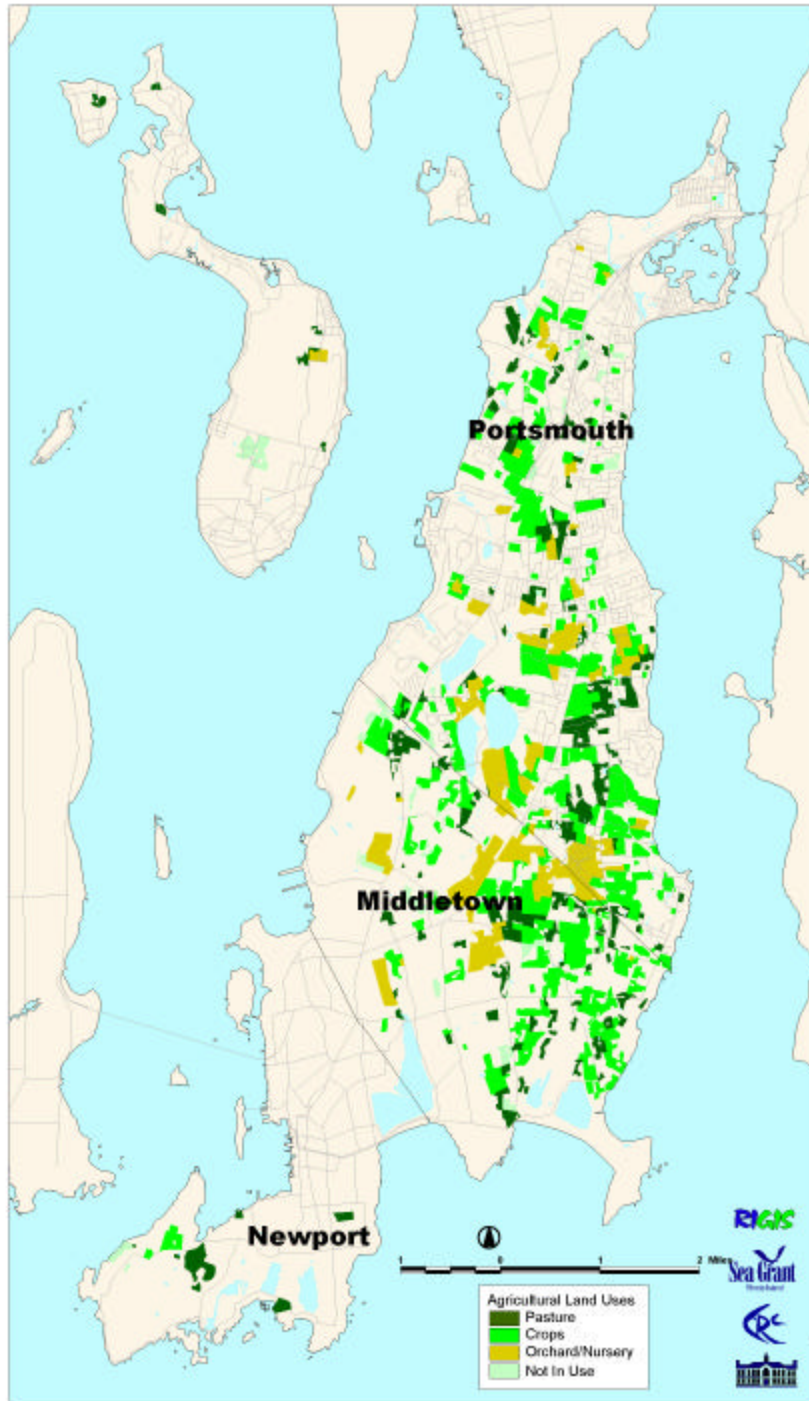
Map 4. Aquidneck Island residential land area.



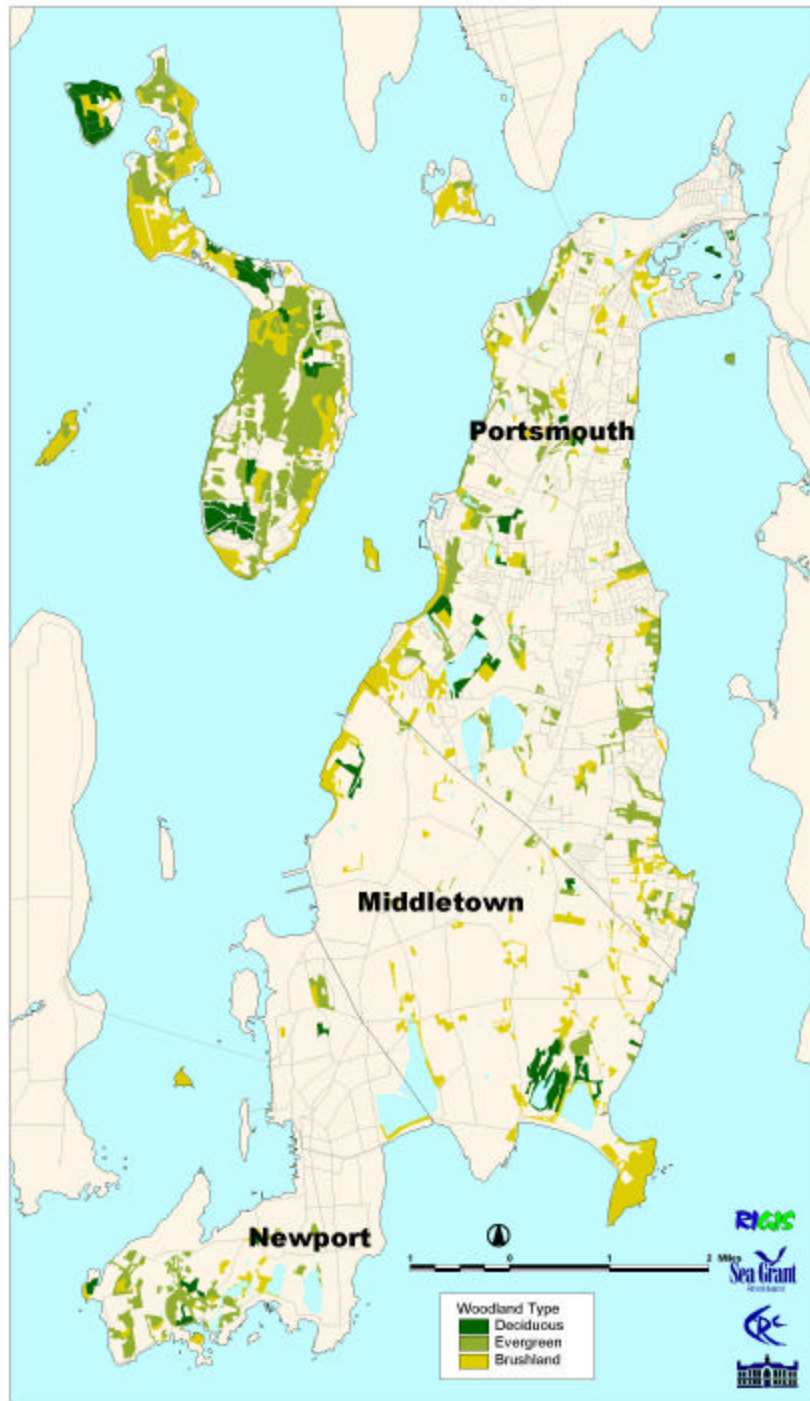
Map 5. Aquidneck Island commercial and industrial land area.



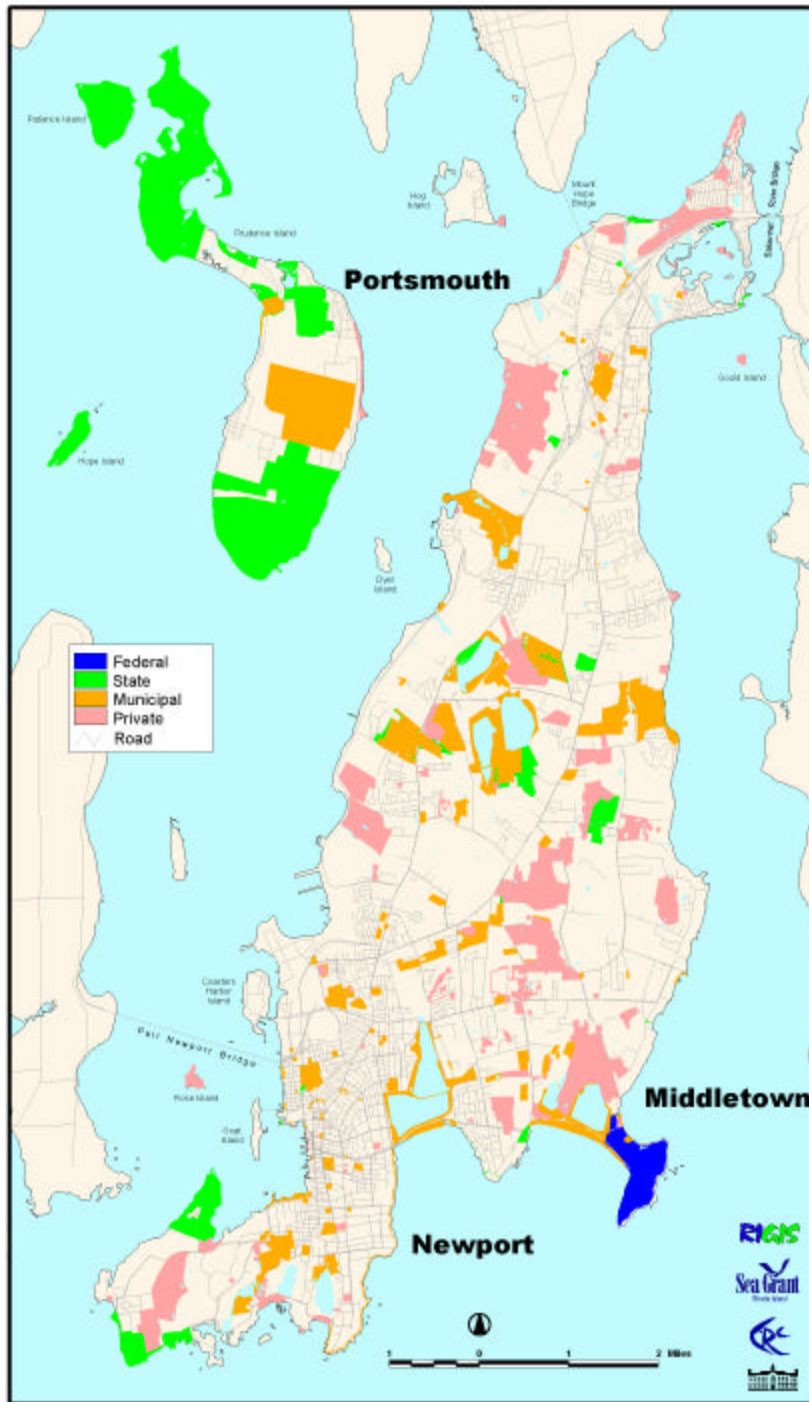
Map 6. Aquidneck Island agricultural land area.



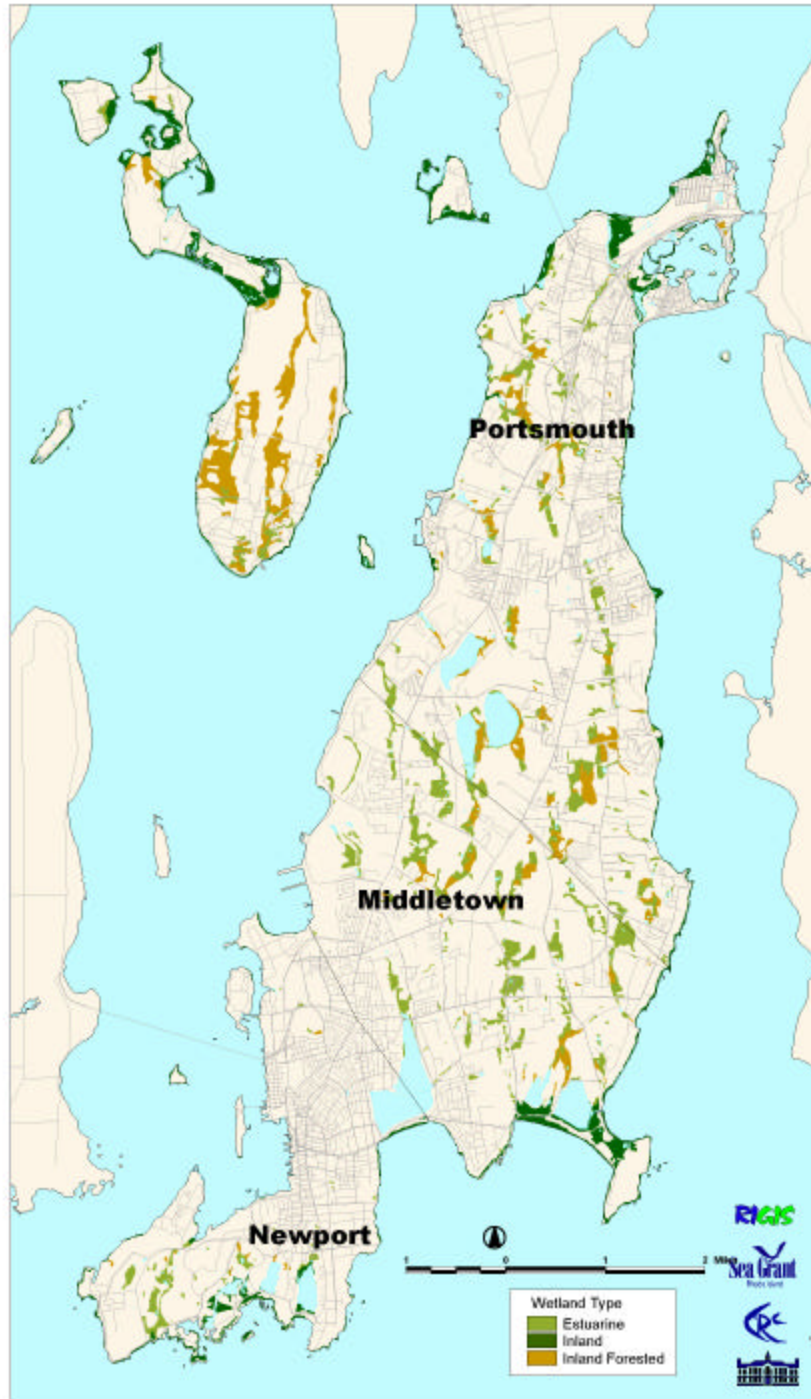
Map 7. Aquidneck Island woodland area.



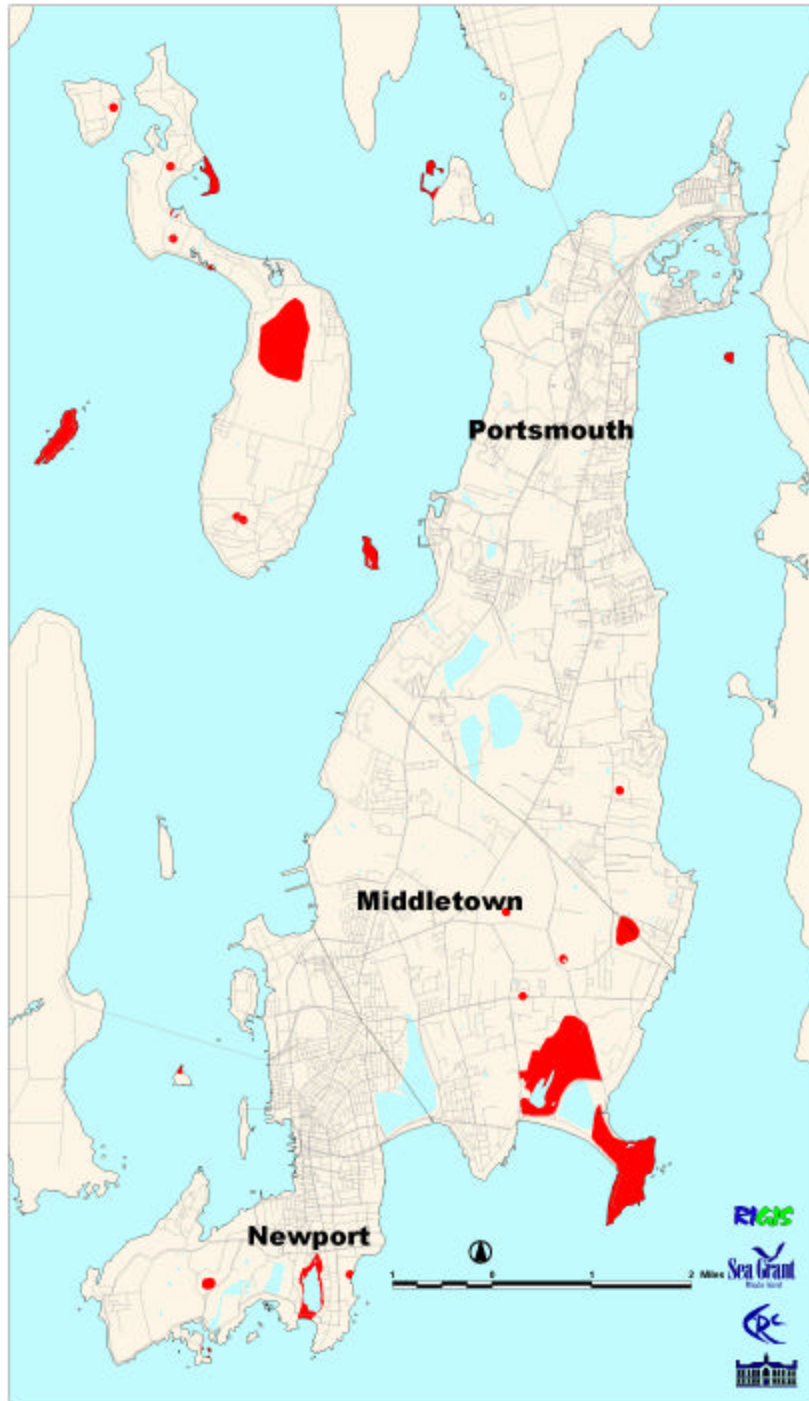
Map 8. Land protected for conservation and open space on Aquidneck Island.



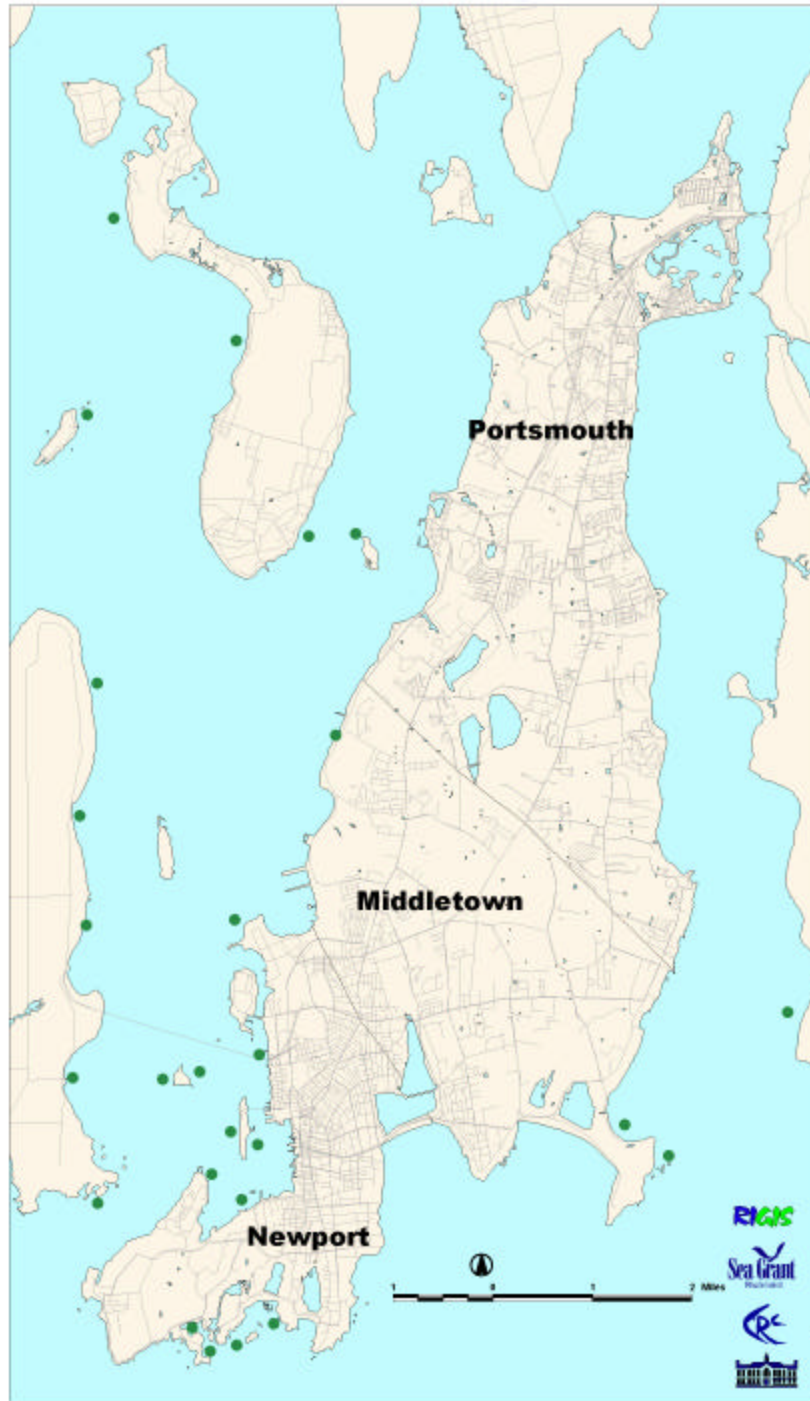
Map 9. Aquidneck Island wetland areas.



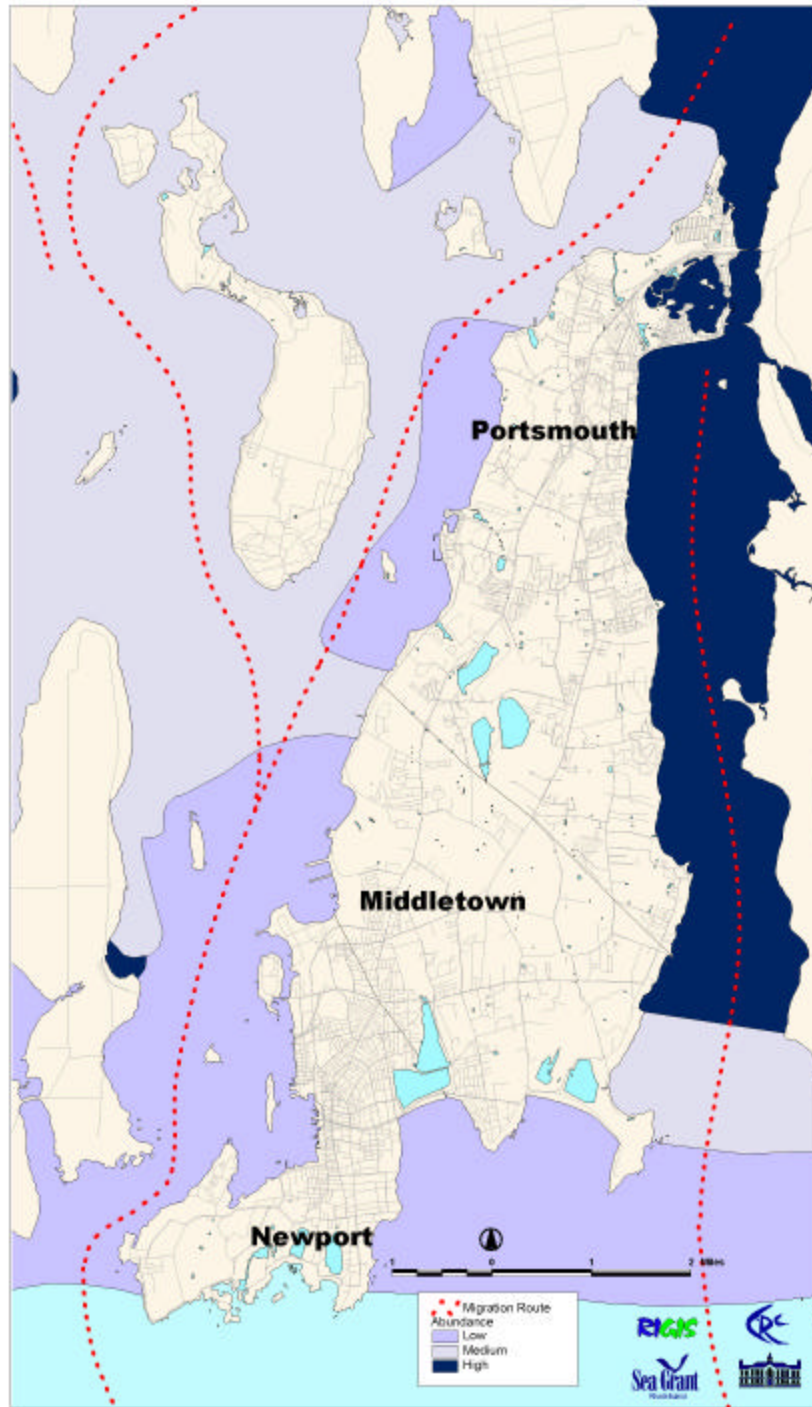
Map 10. Aquidneck Island critical habitat areas for rare and endangered species.



Map 11. Aquidneck Island eelgrass habitat areas.



Map 12. Aquidneck Island winter flounder areas and migration routes.



Map 13. Aquidneck Island shellfish beds.



Economy

Rupert Friday, Kevin Fitzgerald, Kelly Woodward

Communities depend on economic development and growth to create jobs for residents and generate tax revenues for public services, facilities, and infrastructure. Economic activity and opportunities attract businesses and employees to a community. Responsibly balanced economic development provides quality employment opportunities, thriving business environments, and financial support for public services and structures. Economic development also feeds community pride and sense of place.

Employment

In 1998, there were 37,174 people working on Aquidneck Island including Navy personnel. This is a 9.6 percent decline from 1990, when the U.S. Census Bureau reported more than 41,120 people working in island municipalities. The number of people working on the island peaked in 1988 and declined during the regional recession in the early 1990s. Employment growth during the end of the 1990s had not yet returned the number of employees to 1988 pre-recession levels by 2000.

Newport

In 1998, there were 11,975 private sector jobs in Newport. Peak employment in 1988 was reduced 15 percent by 1995. Newport's recovery from the early 1990s recession lagged behind the region and state. By 1998, Newport still had 12.5 percent fewer jobs than it had during its peak in 1988 (Figure 37).

Middletown

In 1998, there were 7,791 private sector jobs in Middletown. Employment in Middletown peaked in 1988. Between 1988 and 1990, Middletown lost more than 22 percent of its private sector jobs. By 1998, most of those jobs had been replaced so that employment was only 1.9 percent below the 1988 peak (Figure 37).

Portsmouth

There were 4,108 private sector jobs in Portsmouth in 1998. Portsmouth lost more than 40 percent of its private-sector jobs between 1988 and 1995. This decrease was due almost entirely to cutbacks at Raytheon. Although the number of private sector jobs has increased since 1995, the 1998 employment levels were still 32 percent below peak employment in 1988 (Figure 37).

Between 1980 and 1998, Newport and Middletown experienced higher rates of private sector job growth than Rhode Island did. The total number of private sector jobs in Portsmouth declined during this period (Figure 38).

Newport Naval Complex

The Navy is the largest employer on Aquidneck Island with 7,855 employees in 1999. Approximately 60 percent of the employees are civilian staff, and nearly 20 percent are enrolled in various education and training programs. In 1973, a national reorganization of Navy operations led to a reduction of more than 14,000 employees at the Newport Naval Complex. In the early 1990s, there was another reduction of more than 4,000 employees at the Naval Complex. Staff levels have been fairly stable since 1994, increasing slightly from 1998 to 1999 (Figure 39).

Sectors

In 1998, the largest employer on Aquidneck Island was the U.S. Navy with 19 percent of all jobs (Figure 40). Only the cumulative employment of one economic sector, the service industry, with 31 percent of all jobs, employs more people on the island than the Navy. Retail trade and government each support 17 percent of all island jobs.

Aquidneck Island Private Sector Employment by Industry

Since 1975, several major shifts have occurred in this sector. Employment in the service sector has increased from 29 percent to 48 percent, while manufacturing has decreased from 26 percent to 11 percent (Figure 41). Services, retail trade, and manufacturing dominate private sector employment on Aquidneck Island. Other industries have less than 1,000 jobs islandwide.

The service sector (Figure 42), including health services, business services, and educational services, has grown steadily, although it experienced a slight decline in the early 1990s. The number of people working in the service industry increased faster than those employed within other industries. This trend reflects the growth and increasing importance of tourism to the local economy. Between 1975 and 1998, the service sector grew islandwide more than more than any other sector, increasing from 29 percent to 48 percent. The sector grew one-and-a-half fold in Newport, nine-fold in Middletown, and almost four-fold in Portsmouth. Newport has the largest portion of the island's service industry jobs.

Retail trade (Figure 43) accounted for 26 percent of the private sector employment on Aquidneck Island in 1998. The number of people employed in retail trade has grown at about the same rate as the island's population and economy, with retail consistently supporting between 25 and 27 percent of island jobs between 1975 and 1989. Newport hosts most of the island's retail trade employment.

The total number of manufacturing employees working on Aquidneck Island (Figure 44) was much the same in the 1990s (2,639 in 1998) as it was in the 1970s (2,692 employees in 1975). However, these numbers do not illustrate growth of manufacturing employment on Aquidneck Island to more than 6,500 people during the 1980s and its subsequent decline by the mid 1990s. Further, as the rest of the island's economy and employment have grown, the relative portion of total employment involved in manufacturing has declined from 26 percent of the workforce in 1975 to 20 percent in 1989 to only 11 percent in 1998.

Employment Trends in Smaller Industries

Construction employment has followed swings in the regional economy. Construction employment peaked in 1988 and dropped by more than 50 percent during the recession in the early 1990s. Construction employment on the island grew after 1992 and approached 1,000 people in 1998 (Figure 45).

Finance, insurance and real estate employment peaked on Aquidneck Island in 1986 at approximately 1,100 people. There was a slow decline until 1996, when these jobs gradually increased again, employing 882 people by 1998. Island employment in these industries has gradually shifted from Newport to Middletown (Figure 46).

Transportation, communication, and public utilities employment peaked in 1988 with approximately 800 people and declined in the early 1990s. In 1998, there were approximately 600 employees in this sector with the majority of employment remaining in Newport (Figure 48).

Wholesale trade employment on Aquidneck Island peaked in 1989 with nearly 500 people. Employment in this sector declined until 1996 and has since increased slowly. In general, wholesale trade employment has declined in Newport and grown in Middletown (Figure 48).

Agriculture, forestry, and fisheries employment on Aquidneck Island peaked during the period from 1985 to 1987 with nearly 500 people. Employment dropped early in the recession and then grew gradually from 1991 to 1998 when employment neared 400 people. In 1998, employment in these combined sectors was nearly even in Middletown and Newport with approximately 150 workers (Figure 49).

Unemployment

In 1990 and 1991, unemployment in all three Aquidneck Island municipalities was significantly below the state average. With the recession in the early 1990s, unemployment levels rose in all three municipalities along with unemployment levels across the state and region. Unemployment peaked in Newport in 1993 and in Middletown and Portsmouth in 1992. Newport and Middletown unemployment rose above state averages in 1992 and 1993 respectively. As of 1999, Middletown and Portsmouth unemployment levels were significantly below state levels. Newport had an unemployment level of 4.3 percent, remaining slightly above the state average (Figures 50, 51, and 52).

Resident Work Force & Commuting Patterns

In 1990, island jobs outnumbered employees by 7,300. In addition, some residents worked off-island. The result was a net in-commuting of workers from off the island to meet staff needs of the island's employers.

The 1990 Census found the following labor force characteristics

Labor force living on Aquidneck Island
33,771 people

Labor force working on Aquidneck Island
41,120 people

Number of non-island residents who commuted to the island to work
12,000 + people

Number of residents who commuted to jobs off the island
< 5000 people

While the numbers may have shifted after the 1990 U.S. Census Bureau data, these commuter trends in the 2000 U.S Census Bureau data are likely to be within 10 percent of the 1990 patterns.

Aquidneck Island communities are very interdependent. Many people who live in one island municipality commute to work in another (Table 3 and Figures 53 and 54).

Table 3. Origins and destinations for commuting between towns on Aquidneck Island

Municipality	Destination of Out-Commuters	Origin of In-Commuters
Middletown	Newport (72 percent), Portsmouth (9 percent)	Newport (30 percent), Portsmouth (24 percent) Massachusetts (15 percent)
Newport	Middletown (50 percent), Portsmouth (12 percent)	Middletown (37 percent), Portsmouth (21 percent) Massachusetts (11 percent)
Portsmouth	Newport (40 percent), Middletown (32 percent) Massachusetts (11 percent)	Massachusetts (24 percent) Bristol (14 percent), Newport (13 percent)

Also, see Maps 14-20 for labor force commuting patterns.

Seasonal Effects on Economy

The importance of tourism and summer recreation on Aquidneck Island’s economy is reflected in strong seasonal employment trends. In 1999, between the first quarter (January-March) and the third quarter (July-September), employment increased more than 21 percent (>3200 employees) in Newport, eight percent (>760 employees) in Middletown, and 13 percent (>630 employees) in Portsmouth (Figure 55).

Seasonal employment trends vary widely among different sectors of the economy. However, the large number of employees in retail trade and service sectors drive seasonal employment trends (Figures 56 and 57). *Note: Portsmouth employment follows the same trends, but the much smaller number of employees is lost on graphs that compare with Newport and Middletown employment.*

Educational Status of Labor Force

Aquidneck Island residents are very well educated in comparison to the statewide population. In 1990, approximately 85 percent of all adults living on the island had completed high school compared to 72 percent statewide. College degrees (bachelor and advanced degrees) were held by 32 percent of Newport, 27 percent of Middletown, and 34 percent of Portsmouth residents in comparison to 23 percent of residents statewide (Figure 58).

Revenue Streams

Money flows into the Aquidneck Island economy through:

- Navy payroll
- Navy contracts
- Tourists
- Visitors such as convention and workshop participants
- Retirees
- Social Security payments
- Foundation grants and funding
- State and federal projects and grants
- Boat purchases and repairs at local manufacturers
- Island businesses with off-island contracts
- Island residents who work off-island

Money flows out of the island economy through:

- Non-island residents who commute to their jobs on the island
- National and regional retail chains with stores on the island
- Non-island businesses with major contracts and extensive business on the island
- State and federal taxes

Navy Contracts and Payroll: Navy revenue flows are significant to the island economy. Since 1990, Navy contracts funded from Aquidneck Island have ranged from just less than \$300 million to more than \$450 million (Figure 59). Naval Station Newport payroll also effects the local economy, with 1998 figures showing:

- \$228 million for civilian personnel
- \$71.6 million for permanent active duty military personnel
- \$91.2 million for students.
- Total payroll was \$390.7 million

Tourist and Visitor Expenditures: In 1999, 66 percent of the visitors to the Newport County Convention and Visitor’s Bureau did not anticipate spending money on accommodations during their visit. Aquidneck Island visitors spent money on:

- Restaurant meals 90 percent
- Attractions and tours 63 percent
- Souvenirs and gifts 52 percent
- Accommodations 34 percent
- Bars and entertainment 23 percent

Note: Data may not statistically represent all Aquidneck Island tourists and visitors, many of whom may not stop at the visitor center.

Overnight Stays: Hotel taxes are paid by visitors who rent a room overnight. Average daily hotel/motel rates are shown in Figure 60. A portion of these tax revenues are used to fund the Newport County Convention and Visitor’s Bureau. The tax revenues, based on five percent of the lodging rate, show how much money is roughly spent on visitor accommodations. Occupancy data indicate that the majority of this business is seasonal (Figure 61).

Revenues from the five percent Newport County hotel tax represent millions of dollars of revenue flowing into Aquidneck Island communities from visitors. In 1999, more than \$36 million was spent for lodging in Newport County. The majority of hotel tax revenue is spent on Aquidneck Island (Figure 63).

Major Employers on Aquidneck Island

1000 + Employees

Raytheon Electronics Systems Portsmouth

200 – 999 Employees

Newport Hospital Newport
 The Newport Creamery Middletown
 James L Maher Center Middletown
 Salve Regina University Newport
 Preservation Society of Newport County Newport
 IBM CorePoint Middletown
 Analysis and Technology Inc. Middletown
 The Hyatt Newport
 Newport Marriott Hotel Newport
 Aquidneck Management Associates Middletown
 Advanced Financial Services Middletown
 Child and Family Services Newport
 The Stop and Shop Co. Middletown
 The Stop and Shop Co. Newport
 McLaughlin Research Middletown

100 – 199 Employees

Newport Grand Jai Alai Newport
 Bank of Newport Newport
 Shaw's Super Market Middletown
 Shaw's Super Market Newport
 Grand Islander Health Care Ctr. Middletown
 KVH Industries, Inc. Middletown
 Raytheon Service Company Portsmouth
 St. George's School Newport
 Newport County Regional YMCA Middletown
 Visiting Nurse Services of
 Newport and Bristol Counties Portsmouth
 Oceancliff I & II Newport
 Clarke-Cooke House Newport
 Peoples Credit Union Middletown
 SEA Corp. Middletown
 Newport Auto Center Newport
 Heatherwood Nursing & Rehabilitation Ctr., Inc. Newport
 Seaward Services Inc. Newport
 Analysis & Tech. Inc. Integrated Performance Middletown
 Christie's of Newport Newport
 Ames Department Store Middletown
 Hodges Badge Co./Image Award Ribbons Portsmouth
 KPMG Peat Marwick LLP Middletown
 Logicon a Northrop Grumman Company Middletown
 Newport County Community Mental Health, Inc. Middletown
 Newport Harbor Corporation Newport
 Newport Harbor Hotel and Marina Newport
 Pier Restaurant Newport
 Portsmouth Abbey School Portsmouth
 Science Applications International Corporation Newport
 The Hotel Viking Newport

Retail Sales: Sales tax reports are used to estimate dollars spent on visitor gifts, souvenirs and restaurant tabs.²⁵ In 1998, Rhode Island's seven percent sales tax revenues represent sales of nearly 300 million in Newport, 114 million in Middletown, and 57 million in Portsmouth.

Historic and Cultural Tourism: The Preservation Society of Newport County (PSNC) reported in 1994 that:

- One-third of visitors to the Newport mansions stopped at the Gateway Center prior to visiting the mansions.
- The average Newport stay for mansion visitors was 2.3 days.
- Eighteen percent of visitors took part in group tours.
- One-third of visitors were repeat visitors.
- Fifty percent of tourists visited between June and August, 26 percent between September and October, 15 percent between April and May, and nine percent between November and March.
- Visitors came from Massachusetts (16 percent), New York (15 percent), foreign countries (nine percent) and Rhode Island (two percent).

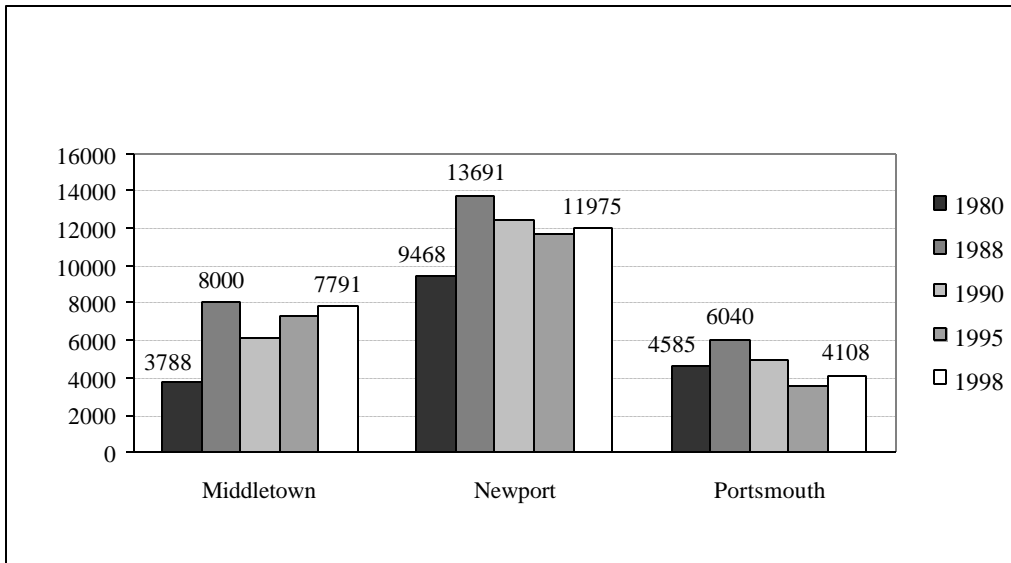
The PSNC hosts approximately 580,000 people per year. The estimated economic impact of the visits in Newport is \$34 million (without considering ripple effect of dollars spent in the local economy).

Social Security, Retirement Incomes, Government Payments: The 1990 U.S. Census Bureau reported that 12 percent of Middletown and Portsmouth residents were more than 65 years old and 13 percent of Newport residents were of retirement age. These residents and others are bringing Social Security income into the island communities. In 1990, 25 percent of Newport residents, 22 percent of Middletown residents and 23 percent of Portsmouth residents received Social Security payments. Many Navy and other military personnel retire on Aquidneck Island because of the proximity to support services for military personnel. In 2000, there were 6,600 Navy retirees within a 50-mile radius of Newport.

Large Employers: The box on the preceding page lists the largest employers on Aquidneck Island included in the Rhode Island Economic Development Corporation's "Selected Company Listing." This database contains nearly 50 island employers with more than 100 employees, including 16 with more than 200 employees. Of the 16 largest employers, four are non-profit organizations, five are high technology firms (computers, systems, telecommunications), three are health care companies, two are hotels, and two are retail stores. These industries reflect the island's most important economic segments.

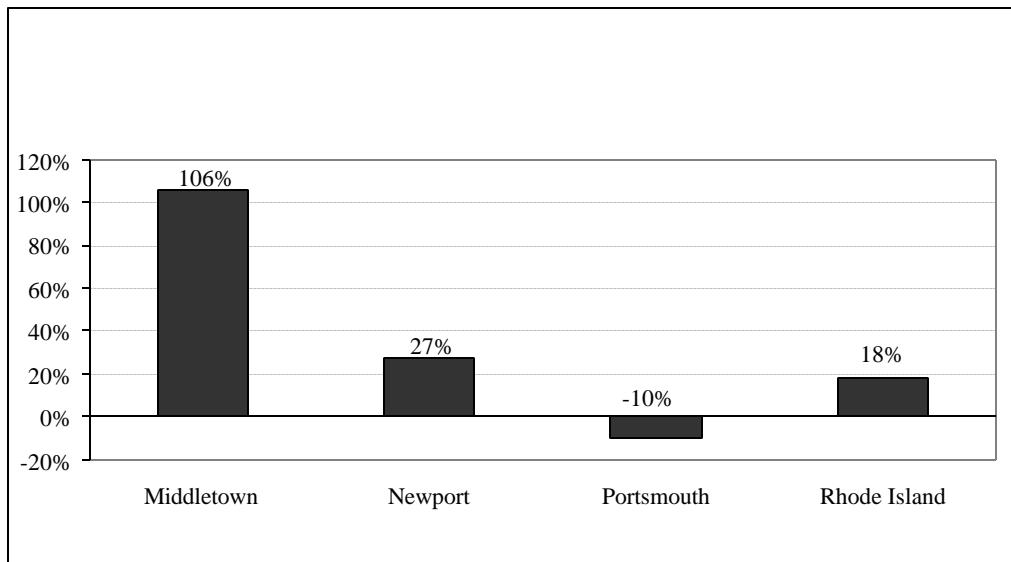
²⁵ Retail sales are reported from the municipality where the sale occurred if the business is a local business without multiple stores in other municipalities or when a chain sells alcohol. Retail sales from chain stores that do not sell alcohol report from the municipality where their main Rhode Island office is located. Thus, retail sales are likely to be under-reported in municipalities with national or regional chain stores.

Figure 37. Number of private sector jobs on Aquidneck Island, 1980-1998.



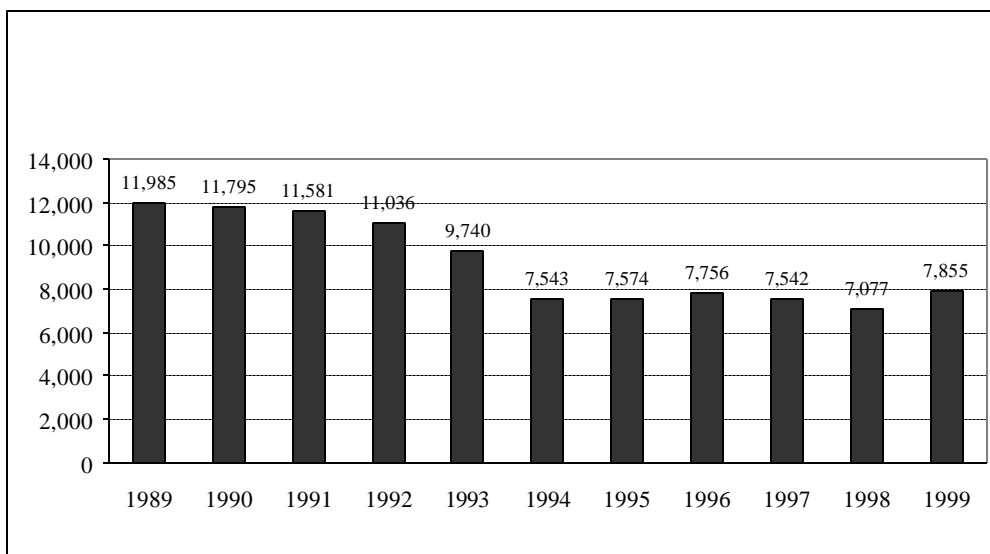
Source: R.I. Department of Labor and Training, Labor Market Information.

Figure 38. Percent change in number of private sector jobs 1980-1998, Aquidneck Island municipalities and statewide.



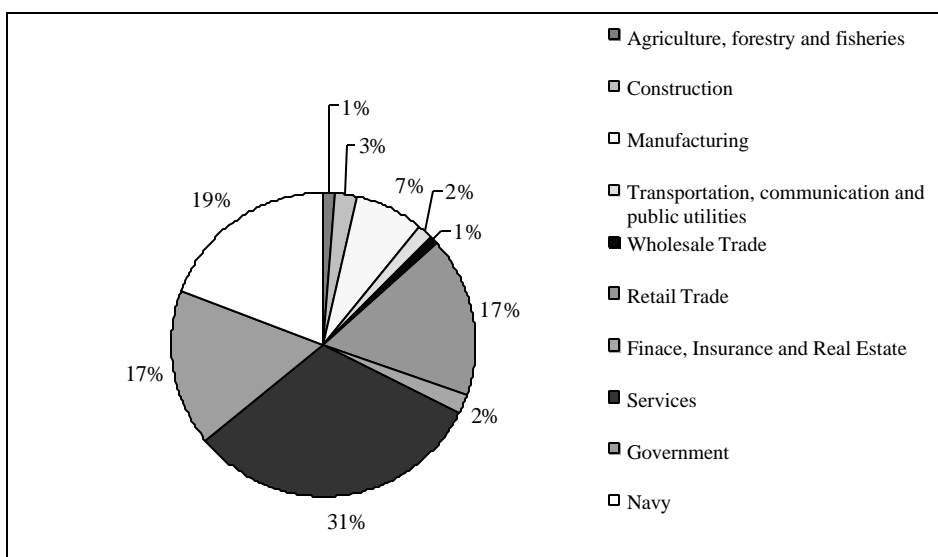
Source: R.I. Department of Labor and Training, Labor Market Information.

Figure 39. Total personnel for the Newport Naval Complex, 1989-1999.



Source: Public Information Office, Naval Station Newport, 2000.

Figure 40. Aquidneck Island employment, 1998.



Sources: R.I. Department of Labor and Training.

Rhode Island Area Annual Report, Department of the Navy, 1998.

Figure 41. Aquidneck Island private sector employment by industry, 1975 and 1998.

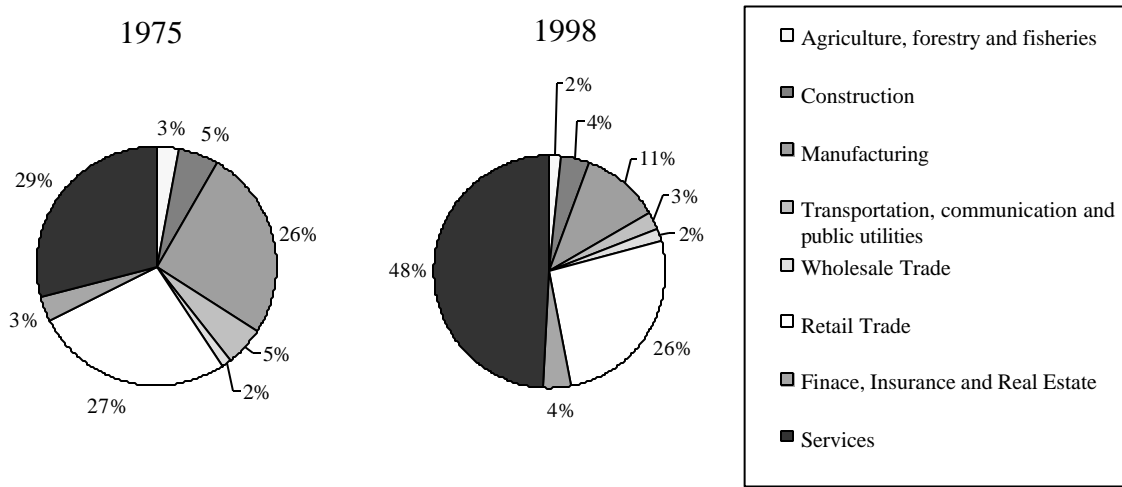
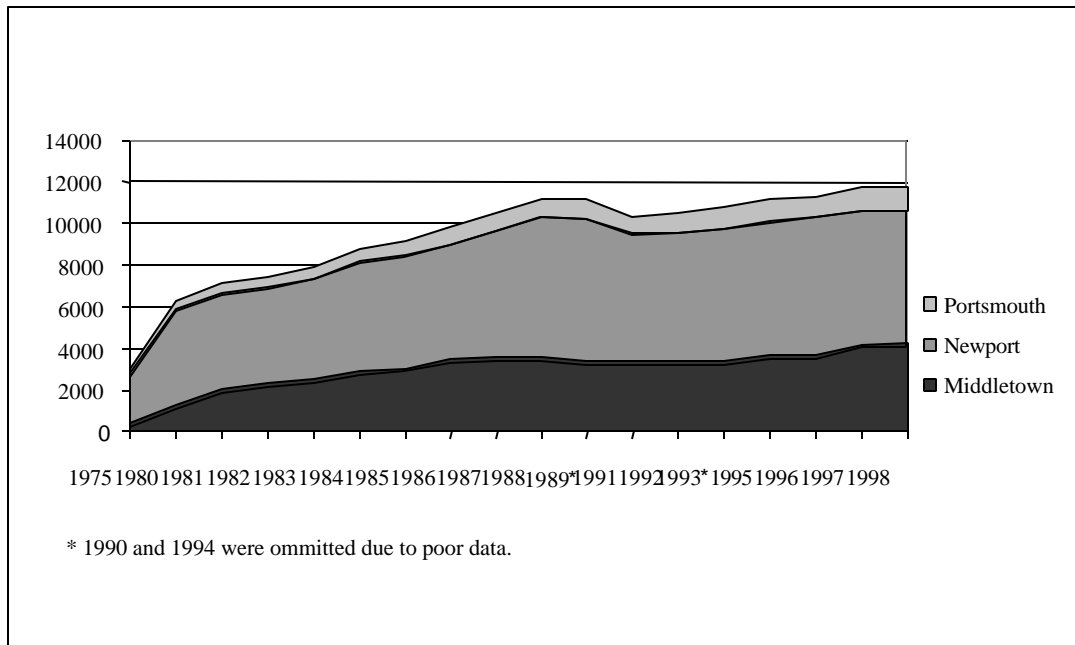
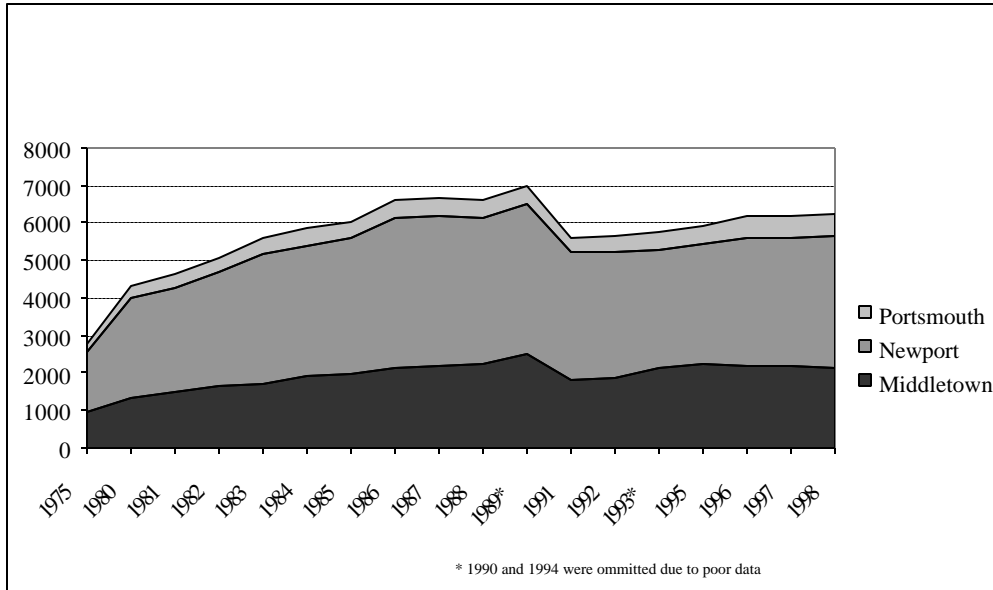


Figure 42. Services industry employment, Aquidneck Island, 1975-1998.



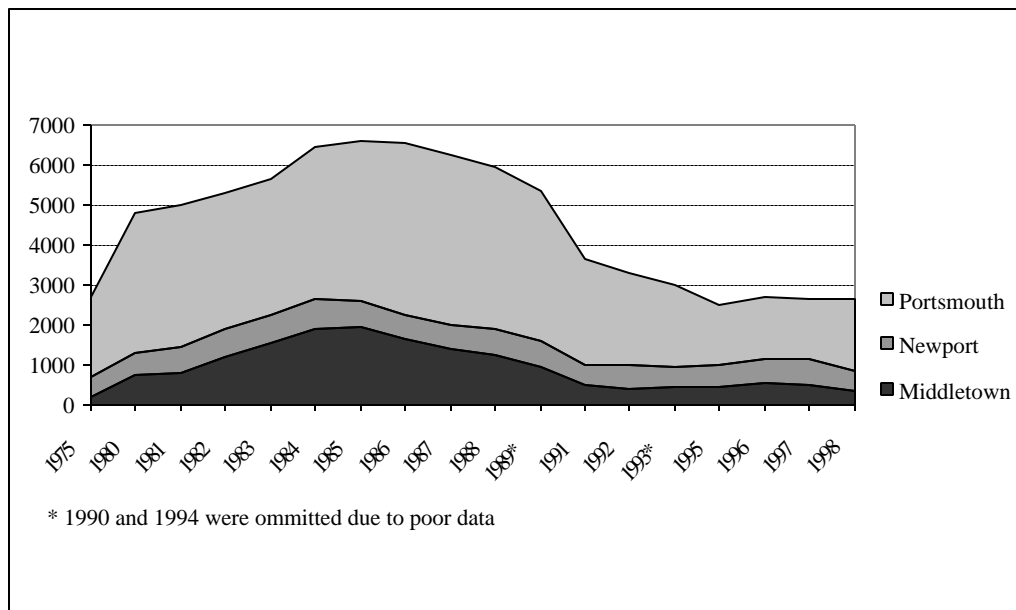
Source: R.I. Department of Labor and Training.

Figure 43. Retail trade employment, Aquidneck Island, 1975-1998.



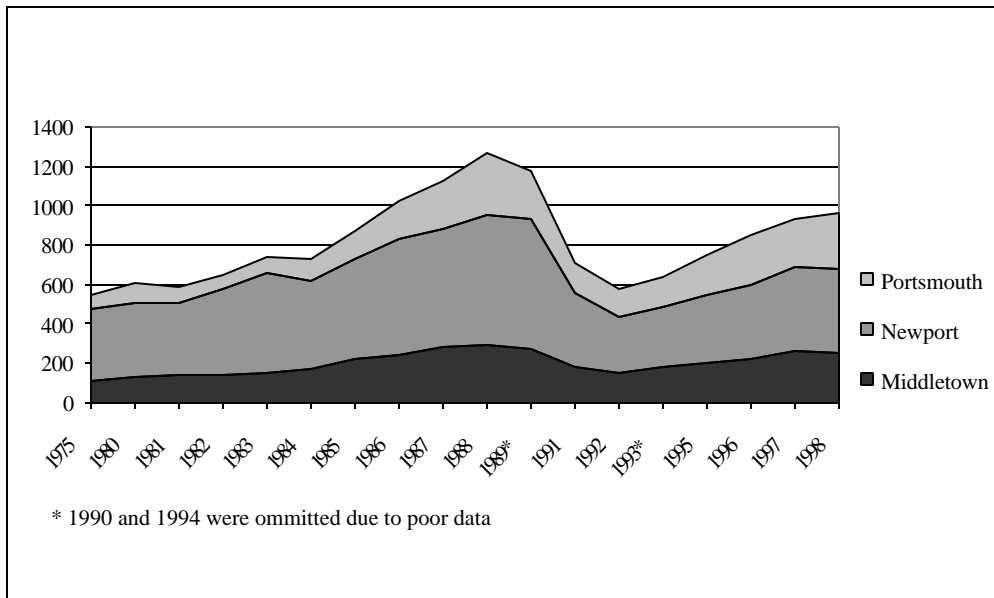
Source: R.I. Department of Labor and Training.

Figure 44. Manufacturing employment, Aquidneck Island, 1975-1998.



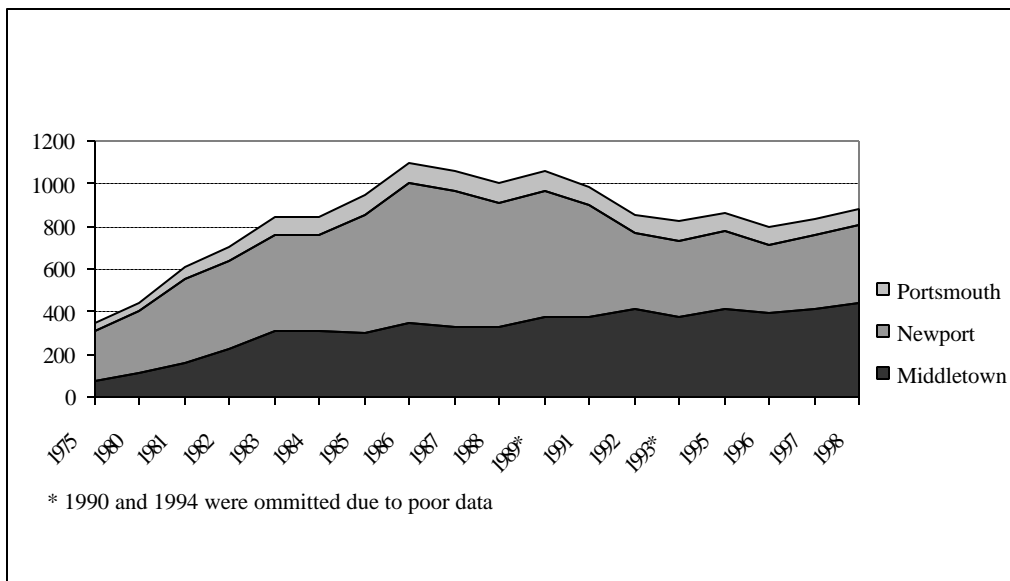
Source: R.I. Department of Labor and Training.

Figure 45. Construction employment, Aquidneck Island, 1975-1998.



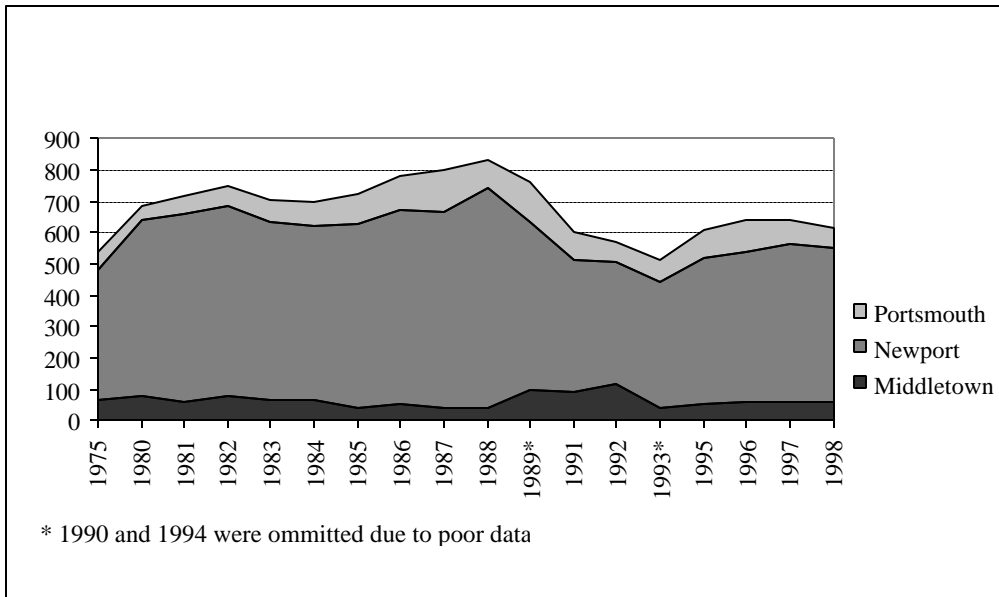
Source: R.I. Department of Labor and Training.

Figure 46. Finance, insurance, and real estate employment, Aquidneck Island, 1975-1998.



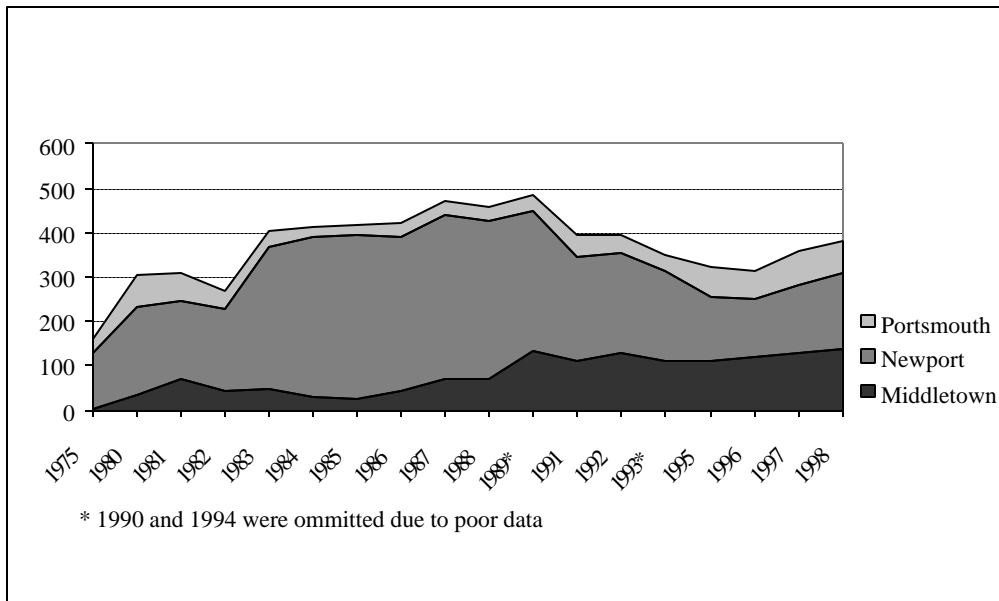
Source: R.I. Department of Labor and Training.

Figure 47. Transportation, communication, and public utilities employment, Aquidneck Island, 1975-1998.



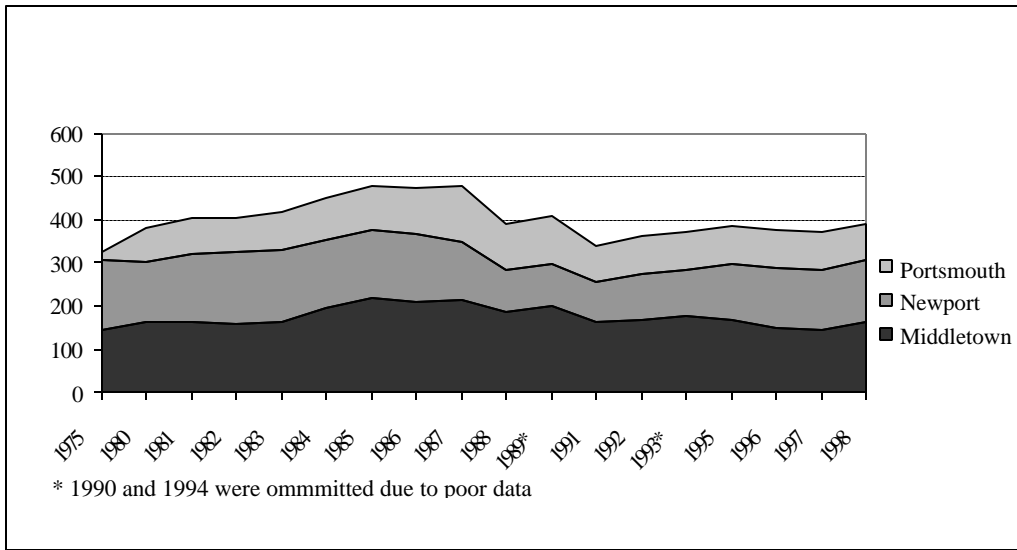
Source: R.I. Department of Labor and Training.

Figure 48. Wholesale trade average employment, Aquidneck Island, 1975-1998.



Source: R.I. Department of Labor and Training

Figure 49. Agriculture, forestry, and fisheries employment, Aquidneck Island, 1975-1998.



Source: R.I. Department of Labor and Training.

Figure 50. Newport unemployment rate, 1990-1999.

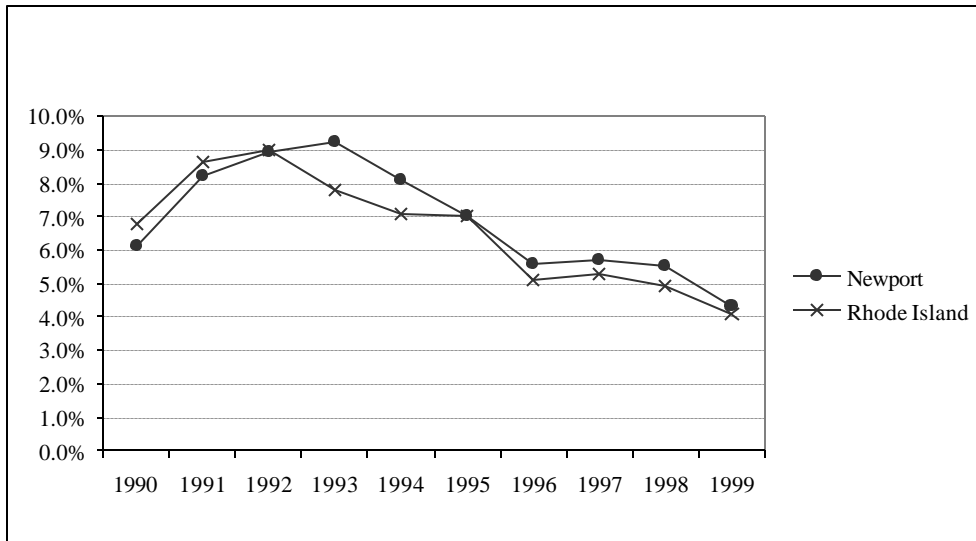


Figure 51. Middletown unemployment rate, 1990-1999.

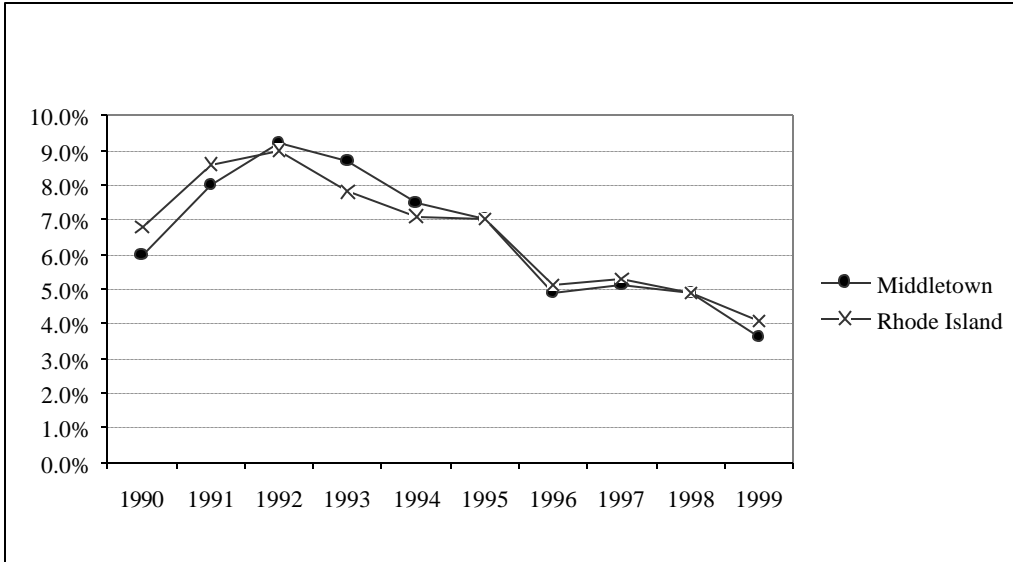


Figure 52. Portsmouth unemployment rate, 1990-1999.

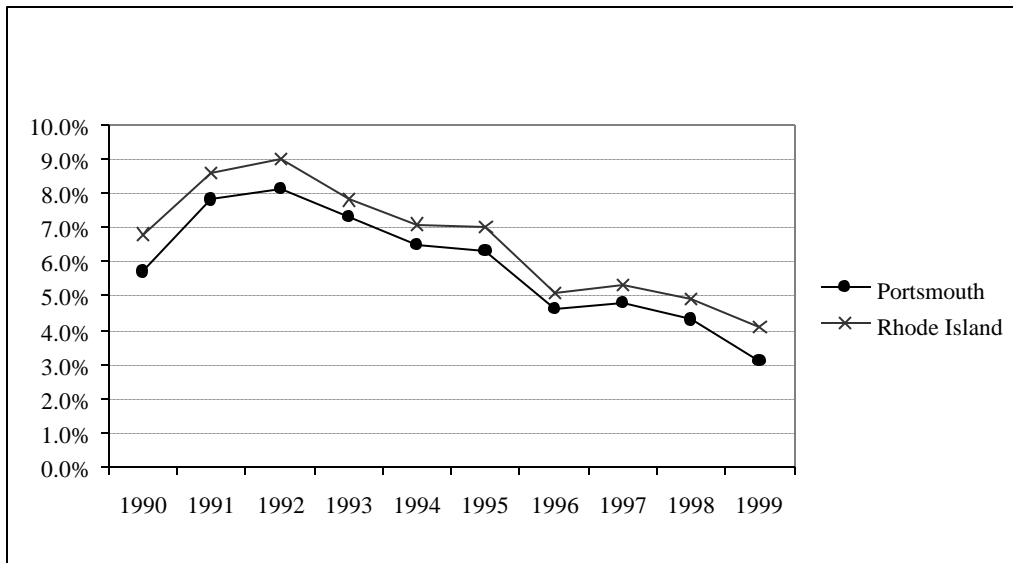


Figure 53. Labor force living on Aquidneck Island, 1990.

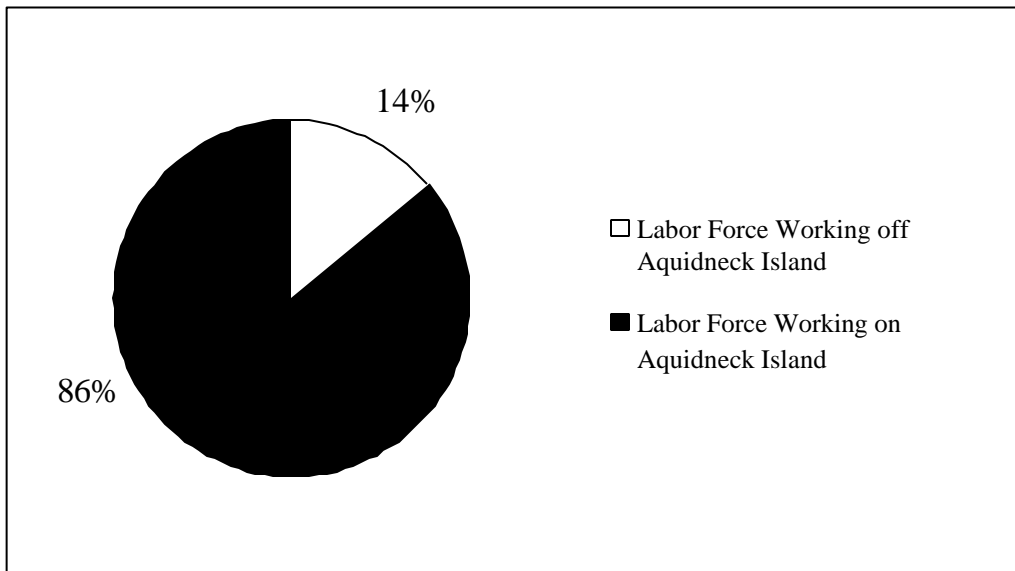


Figure 54. Labor force working on Aquidneck Island, 1990.

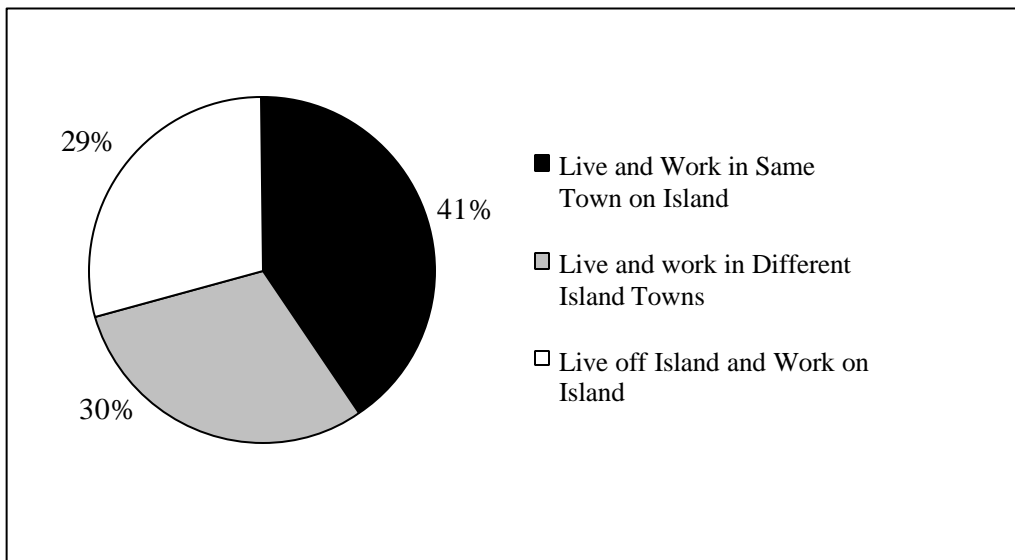
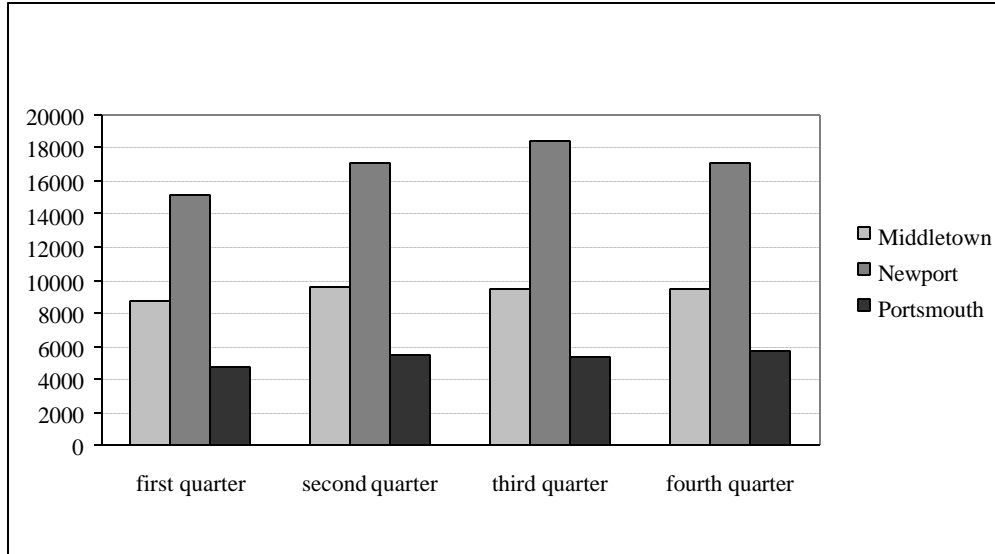


Figure 55. Average quarterly employment, 1999.



Source: Department of Labor and Training.

Figure 56. Retail trade average quarterly employment, 1998.

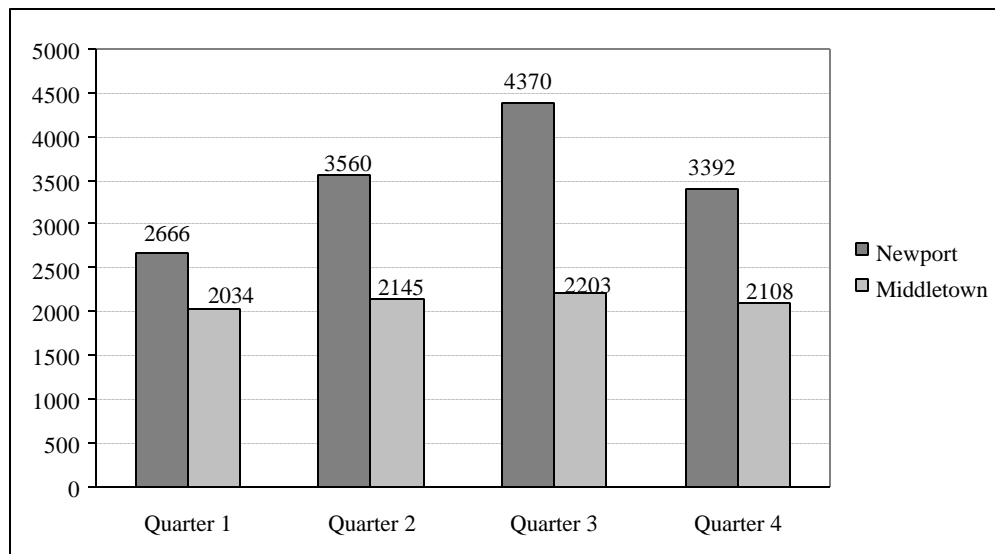


Figure 57. Services industry average quarterly employment, 1998.

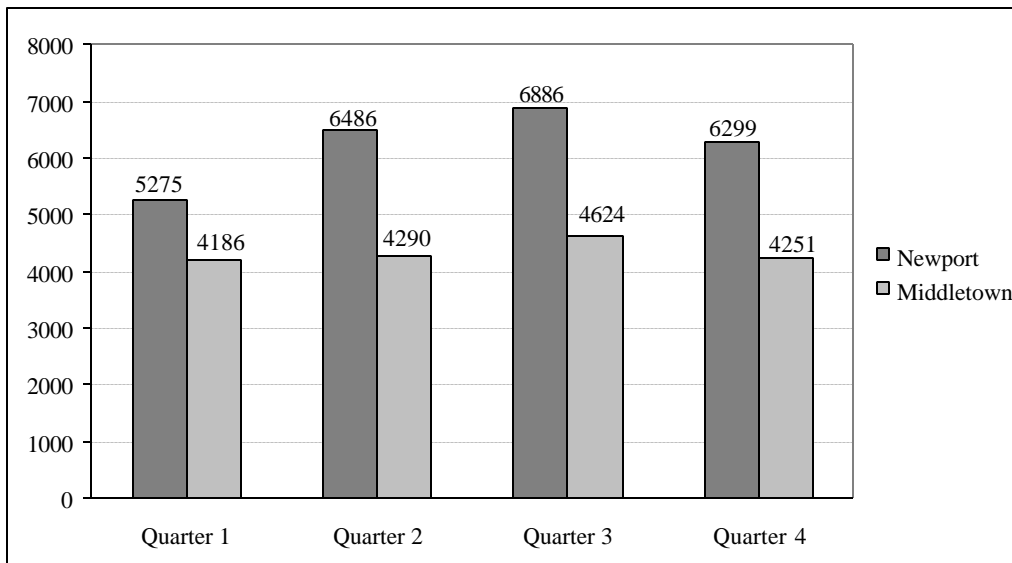


Figure 58. Educational attainment, Aquidneck Island municipalities, 1990.

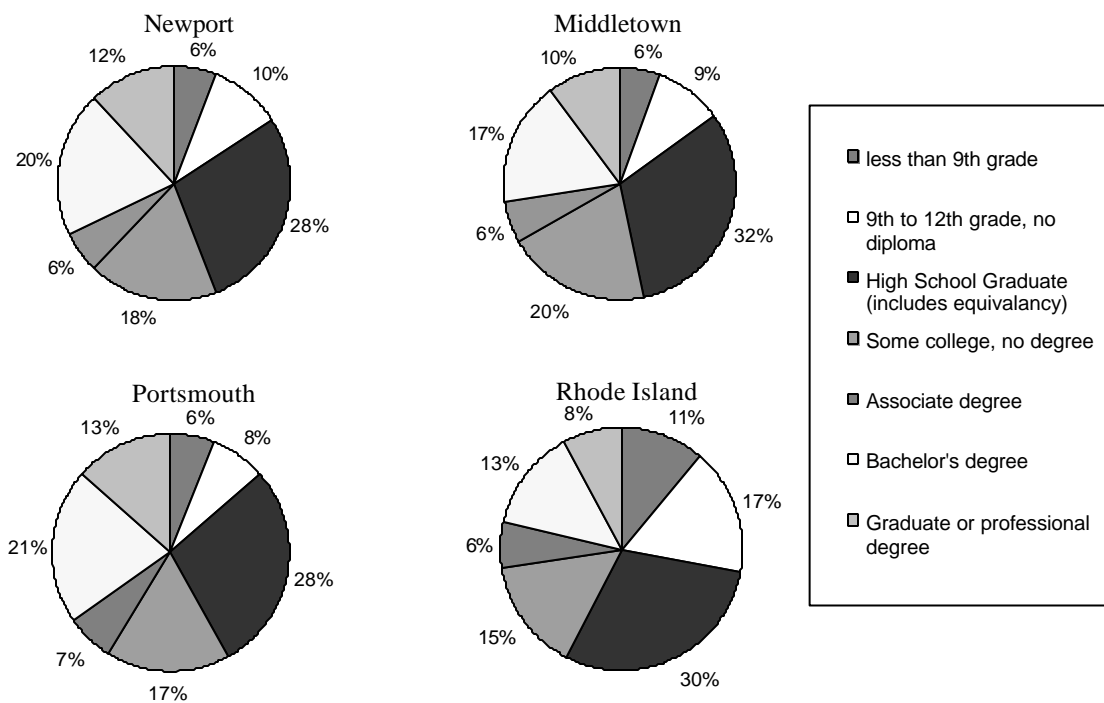


Figure 59. Aquidneck Island Navy contracts ,1989-1999.

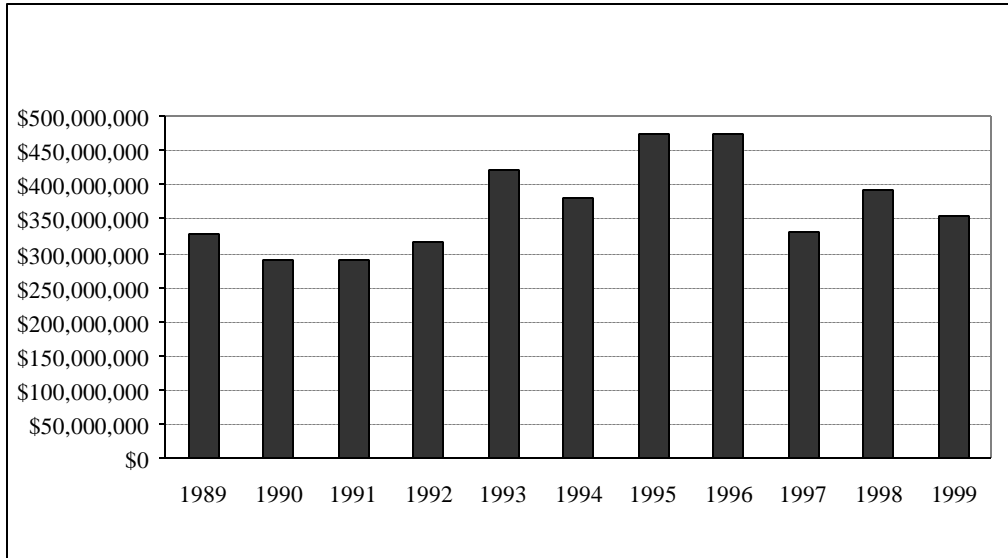
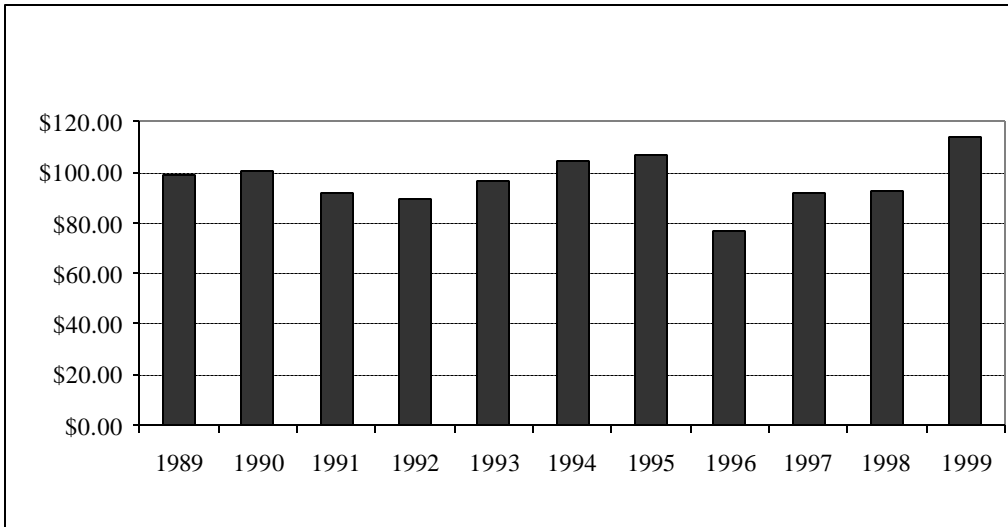


Figure 60. Newport County hotel/motel average daily rate, 1989-1999.



Source: Newport County Convention and Visitor's Bureau.

Figure 61. 1998 Percent occupancy of lodging establishments in Newport County.

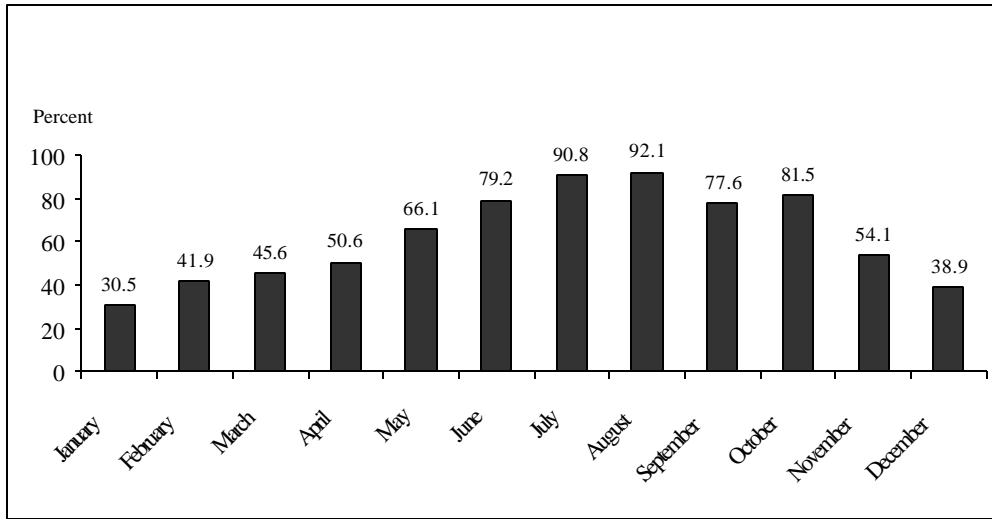
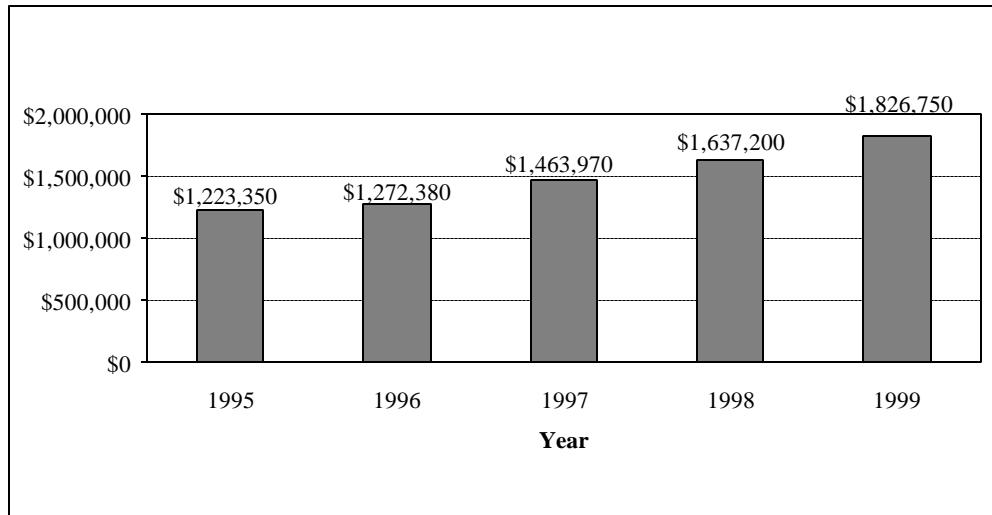
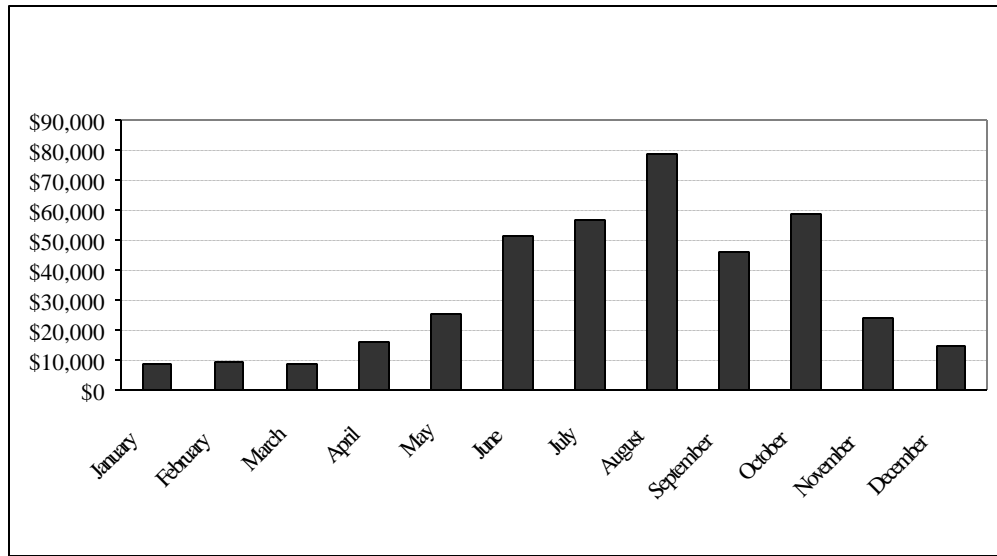


Figure 62. Newport County hotel tax revenues, 1995-1999.

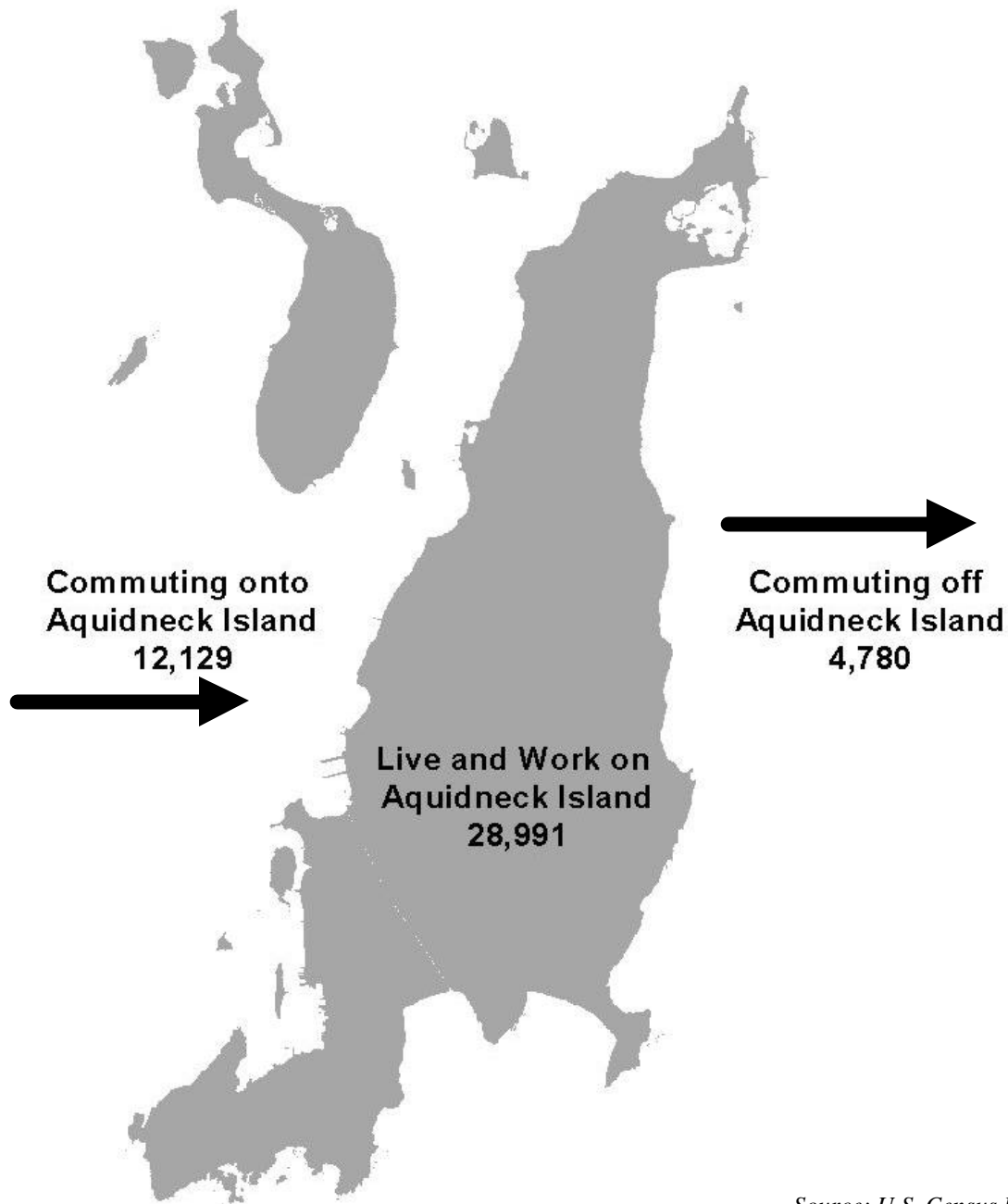


Source: Newport County Convention and Visitor's Bureau.

Figure 63. Newport County regional hotel tax revenues, 1999.



Source: Newport County Convention and Visitor's Bureau.

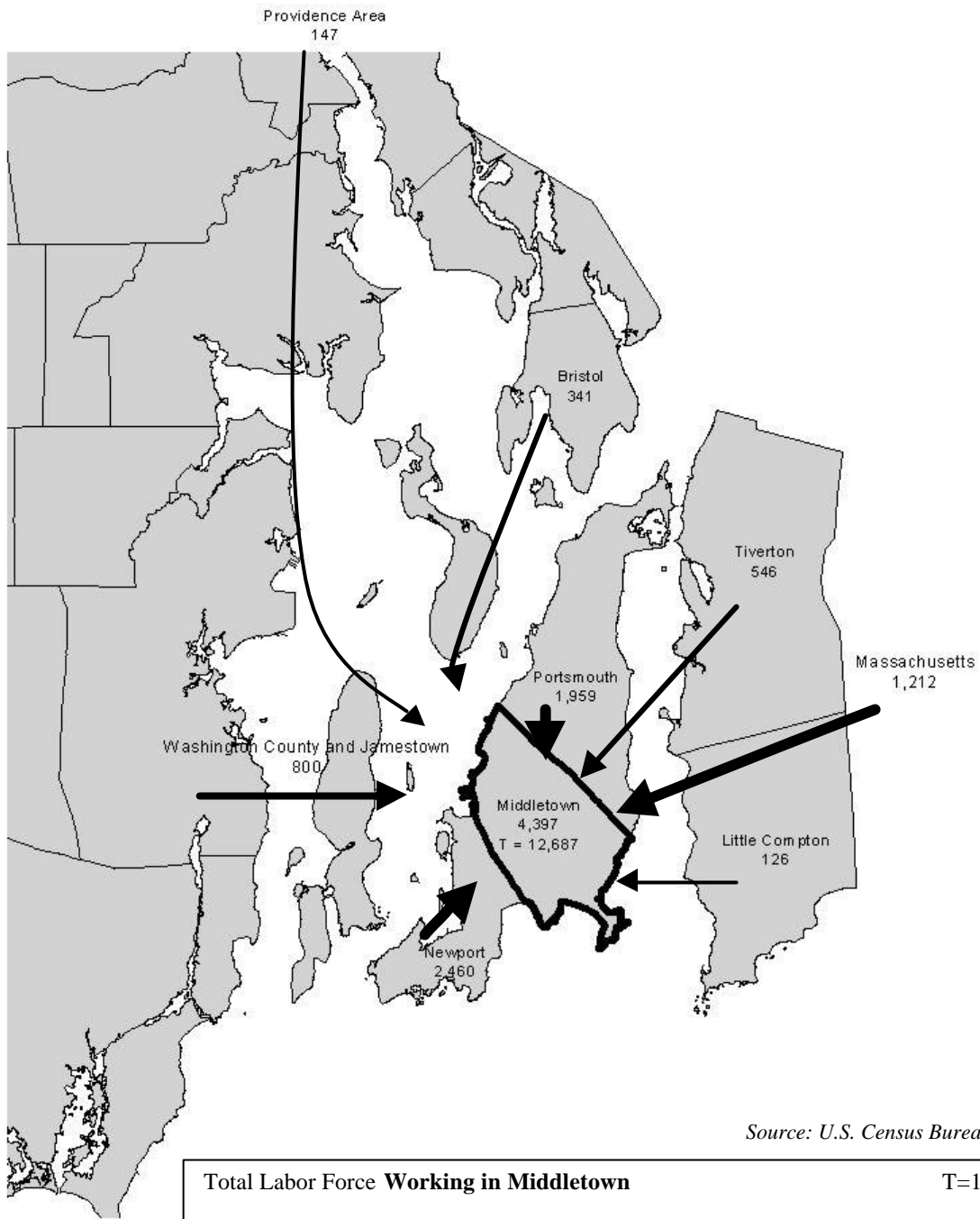


Source: U.S. Census Bureau, 1990.

Labor Force Commuting	
Onto Aquidneck Island.....	12,129
Labor Force Live and Work	
On Aquidneck Island	28,991
Total Labor Force Working	
On Aquidneck Island	41,120

Labor Force Commuting	
Off Aquidneck Island.....	4,780
Labor Force Live and Work	
On Aquidneck Island	28,991
Total Labor Force Living	
On Aquidneck Island	33,771

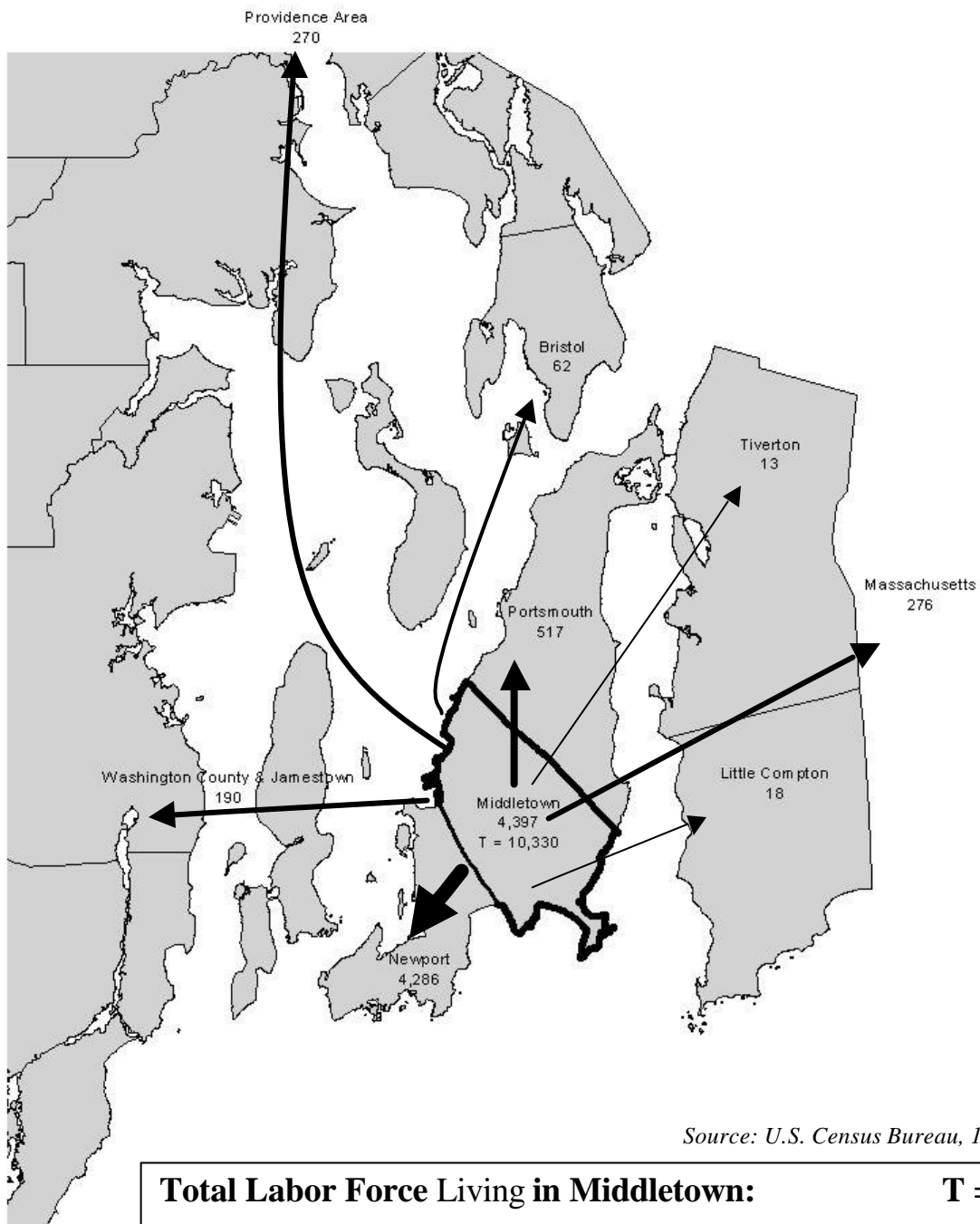
Map 14. Commuting patterns of Aquidneck Island's labor force.



Source: U.S. Census Bureau, 1990.

Total Labor Force Working in Middletown	T=12,687
Labor Force Living and Working in Middletown	4,397
Labor Force Commuting to Work in Middletown	8,290

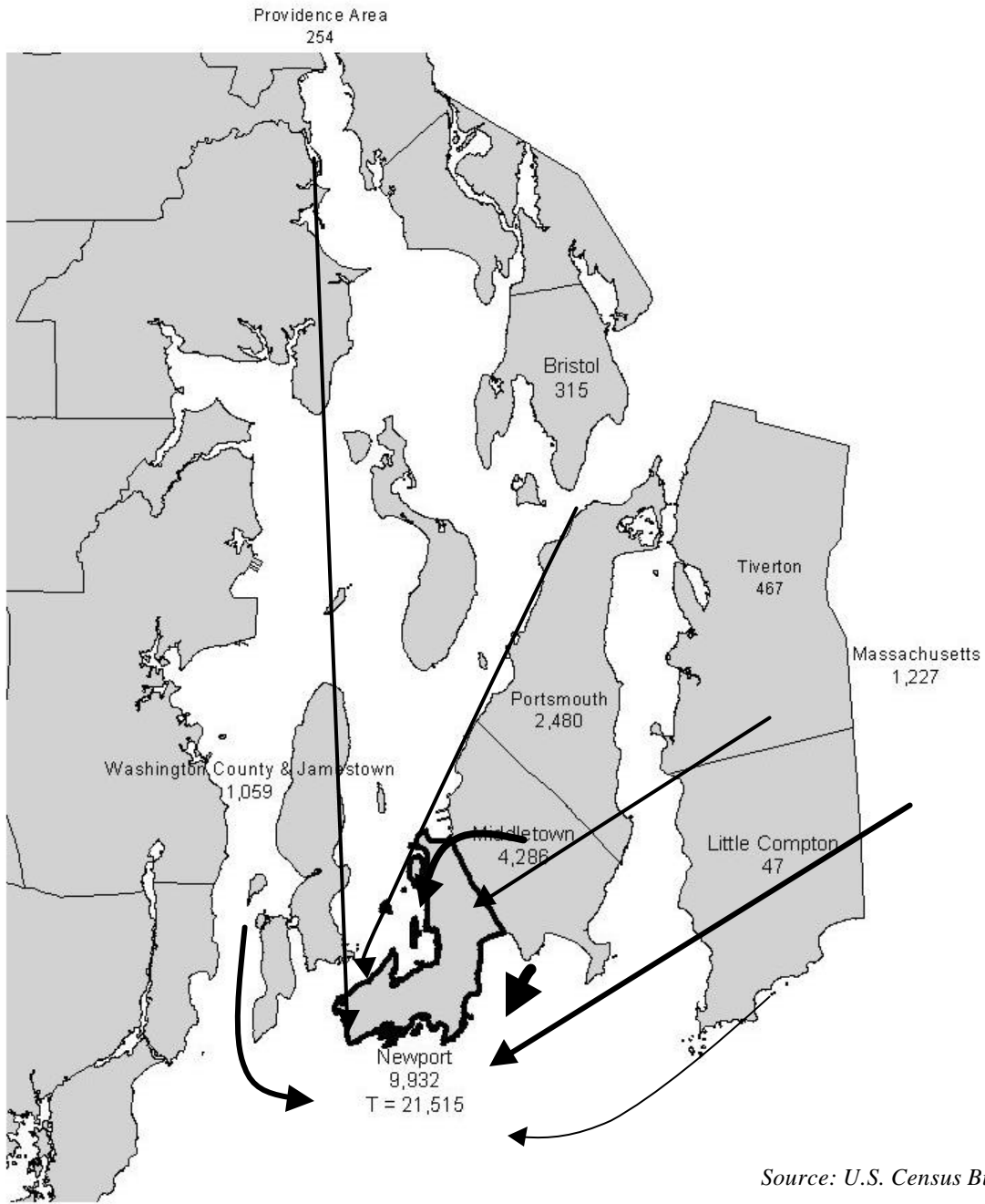
Map 15. In-commuting workers for Middletown's labor force.



Source: U.S. Census Bureau, 1990, RIGIS.

Total Labor Force Living in Middletown:	T = 10,330
Labor Force Living and Working in Middletown:	4,397
Labor Force Commuting Out of Middletown:	5,933

Map 16. Middletown's resident labor force work locations and out-commuting patterns.



Source: U.S. Census Bureau, 1990.

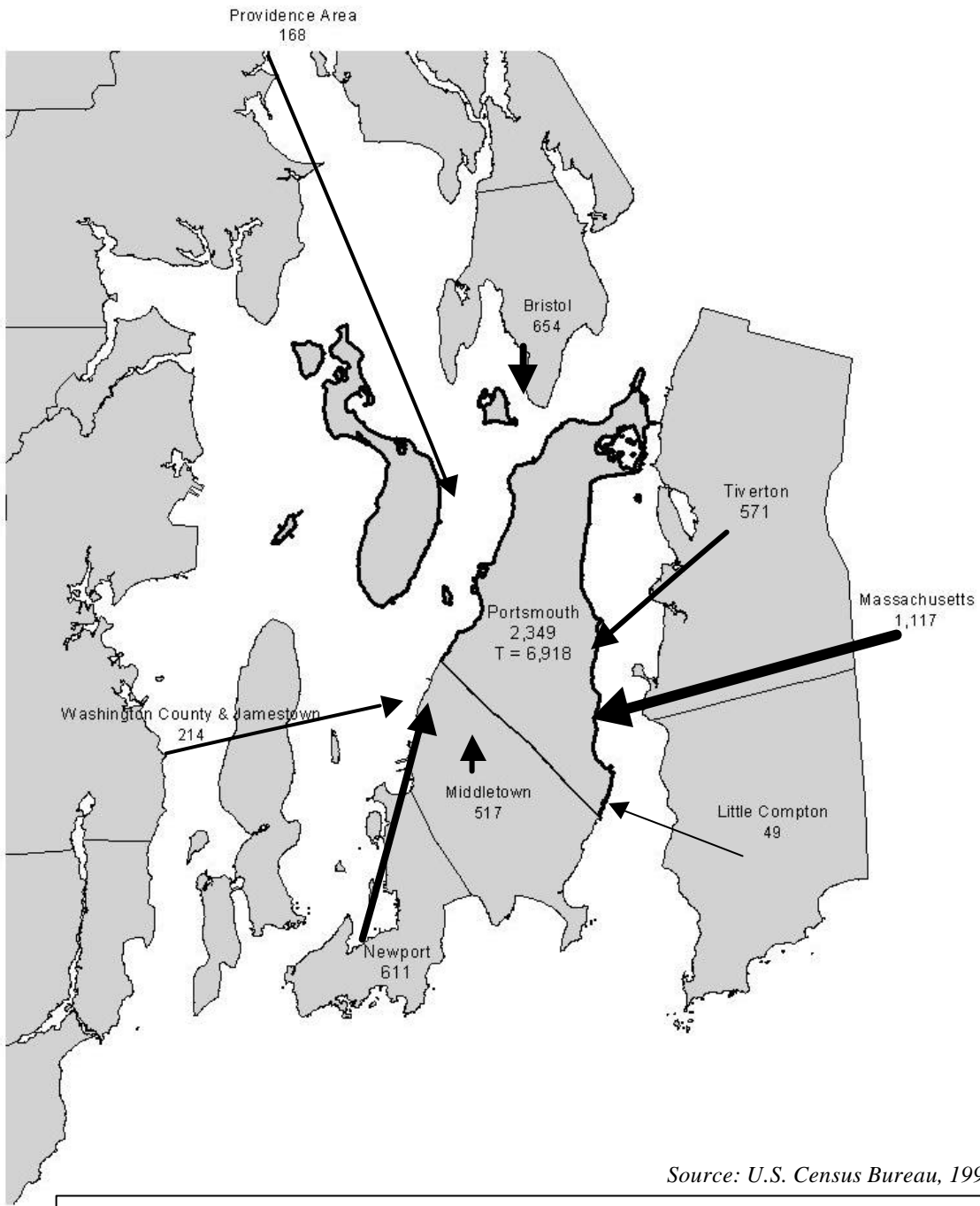
Total Labor Force Working in Newport	T = 21,515
Labor Force Living and Working in Newport	9,932
Labor Force Commuting to Work in Newport	11,583

Map 17. In-commuting workers for Newport's labor force.



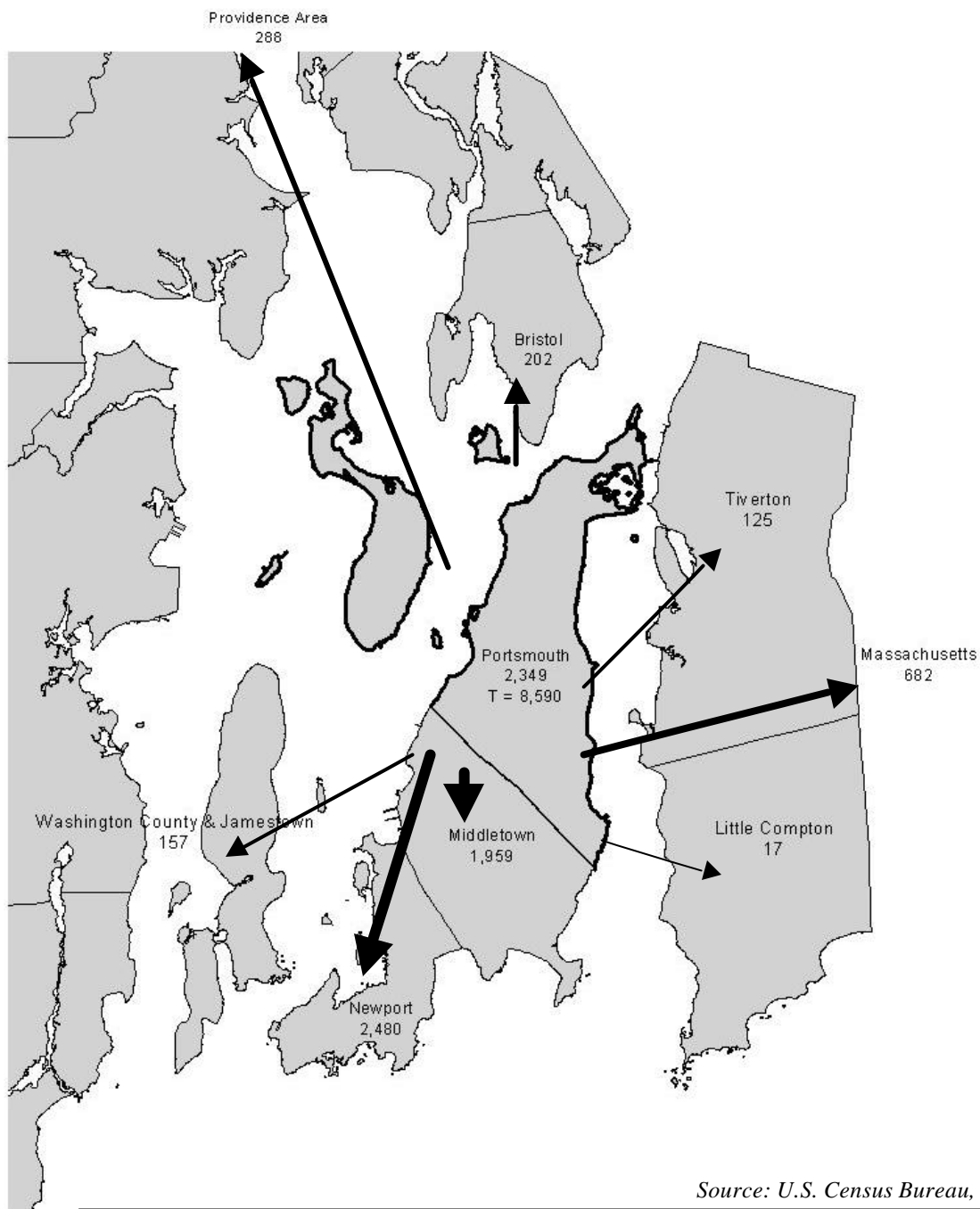
Total Labor Force Living in Newport:	T = 14,851
Labor Force Living & Working in Newport:	9,932
Resident Labor Force Commuting Out of Newport:	4,919

Map 18. Newport's resident labor force work locations and out-commuting patterns.



Total Labor Force Working in Portsmouth:	T = 6,918
Labor Force Living & Working in Portsmouth:	2,349
Labor Force Commuting to Work in Portsmouth:	4,569

Map 19. In-commuting workers for Portsmouth's labor force.



Total Labor Force Living in Portsmouth:	T = 8,590
<i>Labor Force Living & Working in Portsmouth:</i>	2,349
Resident Labor Force Commuting Out of Portsmouth:	6,241

Map 20. Portsmouth's resident labor force work locations and out-commuting patterns.

Public Facilities and Services

Kevin Fitzgerald, Kelly Woodward, Rupert Friday, Jennifer McCann

Increasingly, municipal officials are concerned that public services and facilities are strained by greater numbers of users (residents, businesses, and tourists) occupying spreading areas of residential and commercial development. While many municipal departments attempt to decrease burdens by sharing work and resources with departments in neighboring communities, such partnering does not alleviate growing needs for more staff, updated and larger facilities, technologically advanced equipment and the funds to support these items. Municipalities are looking for ways to improve current service and plan for future needs, as increases both in population and development are projected (Map 21).

Police Protection

Newport

Facilities: The Newport Police Department is located at 120 Broadway Street. The station was constructed in 1985 with no renovations since.

Personnel: The department employs 86 full-time staff members. About 22 percent live in Newport. Rising insurance costs prompted the city to terminate a program of hiring auxiliary officers for seasonal work. The department is concerned with increasing numbers of tourists, especially during summer months.

Equipment: Department-owned vehicles are maintained by the city yard. The city funds replacement vehicles through a capital improvement program every one to two years. In terms of investment, vehicles were recently upgraded with each car receiving a technologically advanced computer system.

Mutual Assistance: The department has mutual aid agreements with the other island towns and the Navy.

Number of Calls: In fiscal year 1998, Newport logged 39,891 calls for service, down from the 1997 count of 43,175 calls. To compare, 49,689 calls were counted in 1990.

Middletown

Facilities: The Middletown Police Department is located at 9 Berkeley Avenue adjacent to the town's fire department and public works department. Not easily accessible by main roads, the station is often considered hard to find. Among recent renovations, the dispatch center has been overhauled, and a new security facility was built in 1999. Cellblocks do not meet federal guidelines, for they are not suicide-proof and are located close to offices and locker rooms. The station cannot expand in any direction due to physical constraints of nearby structures and roads, and parking is limited. A new station may eventually be needed to address the growing community's public safety needs.

Personnel: The department employs 38 full-time police officers, one animal control officer, two civilian clerks and one part-time maintenance person. Eighty-four percent of the staff members live on Aquidneck Island. A minimum of five officers work at one time, with generally four on the road and one working dispatch.

Equipment: The department maintains a fleet of 20 vehicles, including 11 marked cars, six unmarked cars, two motorcycles and an all-terrain vehicle for summer use. About one-third of the vehicles are replaced every year. In addition to the regular fleet, the chief is assigned a car and there are four detective cars. The department owns a 20-foot boat that is used from Labor Day to Memorial Day. As of spring 2000, the department had nine vehicles that were more than three years old. The department is attempting to secure grant funds to place mobile data units in all police cars. These units will enable officers to remain in patrol cars while accessing data.

Mutual Assistance: The department has mutual aid agreements with the other island towns.

Number of Calls: In 1999, the total number of calls was 21,315. Of these calls, 19,680, or 92 percent, regarded incidents and 1,635, or eight percent, regarded accidents. The number of calls varies monthly, with a busy season from Memorial Day to Labor Day. The town receives some spillover from Newport that leads to increased calls. There is also an increase from Thanksgiving to Christmas.

Portsmouth

Facilities: The Portsmouth Police Department is located at 2270 East Main Road adjacent to the town fire station and down the road from the town hall. The department owns the land the building is on and a parcel of land south of the station that could be used for future expansion. The most recent renovation in 1995 was in response to the hiring of the first full-time female police officer and the need for improved building security.

Personnel: As of spring 2000, the department employed 32 full-time police officers, including five special reserve officers. The department also employs one animal control officer who is not a police officer, but is supervised by officers. In 2000, the department increased staff for the first time in 10 years, adding four officers for a total of 32. About 72 percent of the staff lives on Aquidneck Island.

Equipment: The department has 17 motor vehicles, one motorcycle and one patrol boat. The department generally replaces three vehicles every year. The old vehicles are filtered out to the fire department and other departments. The department received approval for fiscal year 2000 to buy new bulletproof vests, a new boat (hull only) and a used vehicle for Prudence Island.

Mutual Assistance: The department coordinates with the State Police Barracks on East Main Road and has mutual aid agreements with Newport and Middletown and some off-island towns.

Number of Calls: In 1999, there were 23,362 calls for service, including 746 accident-related calls. There were no seasonal or monthly variations in the numbers of calls, although increased traffic during summer months led to longer response times.

Fire Protection

Newport

Facilities: The Newport Fire Department is located at 21 West Marlborough Street. It has another two stations: one on Old Fort Road (#2) and another on Touro Street (#5). Station #2 is the only facility that has not been renovated.

Personnel: The department employs 98 full-time members, with a minimum of 20 line members on-duty at a time. The department has the choice to reduce the force by one officer from November 1 to March 31. About 50 percent of the staff live on Aquidneck Island, with about 30 percent residing in Newport.

Equipment: The department has two pump trucks, one aerial ladder truck and one rescue vehicle at headquarters. Station #2 houses two pump trucks, one aerial ladder truck, one rescue vehicle and a reserve rescue vehicle. Station #5 houses two pump trucks. The department adheres to a schedule for replacing vehicles. The department owns one Zodiac boat, so its capacity to fight fires on the water is limited. The department is working with other communities such as East Providence and Providence, as well as the U.S. Coast Guard, to coordinate a regional response.

Mutual Assistance: The department has mutual aid agreements with the other island towns and coordinates fire, rescue and hazardous material cleanups with the Naval Base. Over the past 10 years, the Navy has been working with the Aquidneck Island municipalities on hazardous materials cleanups. The Navy serves as a mitigation team for this purpose.

Middletown

Facilities: The Middletown Fire Department is located at 239 Wyatt Road, adjacent to the town's police department and public works department. The station was built in 1955 and renovated in 1965 and 1989. No renovations have taken place since the completion of the 1991 comprehensive plan. An additional fire substation may eventually be needed to address new development in town, especially on the West Side. The station would ideally be located close to West Main Road.

Personnel: The department employs 31 full-time staff members. One-half of the firefighters are cardiac-certified. Almost the entire staff, 96 percent, lives on Aquidneck Island, and about half of the staff lives in Middletown.

Equipment: The department has three pumpers, one ladder, two rescues, one special hazards vehicle, one tanker, one brush truck, one rescue boat, two command vehicles and one utility vehicle.

Mutual Assistance: The department has mutual aid agreements with the other Aquidneck Island municipalities and the Navy. It reports productive relationships.

New Development: Newer developments are spread out and lengthen response times for trucks to reach scenes. Many of these subdivisions lack fire hydrants and proximity to the fire station. Response times are also lengthened by traffic on main streets such as East and West Main Roads.

Portsmouth

Facilities: The department is located at 2300 East Main Road, adjacent to the town police station and down the road from town hall. This station was built in 1970 and has not been renovated. The department anticipates that the station will need to be enlarged. Another location may be necessary in the future.

Personnel: The department employs 31 full-time staff members. Of the 31 staff members, approximately 50 percent live on Aquidneck Island.

Equipment: The department has a 100-foot aerial ladder truck, three fire engines and two advanced life support rescues. Equipment is outdated, and includes a 1963 truck unable to handle large house fires. The department makes use of second-hand police cars. In 2000, it received a new four-wheel-drive vehicle and a new car for the chief.

Mutual Assistance: The department has mutual aid agreements with the other island towns and off-island towns.

Number of Calls: In 1999, the department responded to 3,345 calls, including 1,691 ambulance calls and 1,654 fire calls. These numbers are up very slightly from the previous year, with an average of about nine calls per day. Assisted living centers generate a greater number of ambulance calls and may increase need for additional staff.

Public Works

Middletown

Facilities: The Middletown Public Works Department is located on Berkley Avenue adjacent to the town's police and fire stations. The building was built in 1955 and renovated in 1966.

Responsibilities: The department repairs and maintains roads and sewer systems, sands and plows roadways, and manages stormwater runoff. The Newport Water Department (NWD) is responsible for maintaining the water lines.

Roads: The department sands and plows about 130 miles of town road. The town council budgets about \$130,000 annually for road repairs. A 1995 inventory is used to prioritize road conditions and has guided repair work on 33 roads.

Sewers: A moratorium on new sewer connections has been implemented to slow the rate of development, with exceptions made only for existing homes with failing septic systems. The public works department makes efforts to coordinate sewer and road projects, and is responsible for maintaining a system that is starting to fail in some older communities. Deterioration has led to a significant amount of groundwater infiltration and is a key reason why groundwater makes up half the sewage that is delivered to Newport for treatment. There are numerous small pumping stations and two major stations in Middletown that pump sewage to Newport. The major ones are the Coddington Avenue and Wave Avenue stations, and both are being replaced. By replacing sewer pipes, Middletown has dramatically reduced the amount of infiltration and in-flow that is sent to Newport for treatment (Table 4).

Table 4. February sewage flow from Middletown pumping stations to Newport.

Pumping Station	1998 (in gallons)	1999 (in gallons)	2000 (in gallons)	% reduction 1998 - 2000
Coddington	12,262,000	9,283,000	7,735,000	37%
Wave Avenue	100,295,600	81,826,400	64,406,500	36%

Stormwater Drainage: Many points along town roads lack proper drainage.

Mosquito Control: The department participates in two state programs to control mosquitos. One program focuses on the placement of larvicide in storm drains, while the other concentrates on salt marsh restoration to reduce mosquito populations on beaches.

Mutual Assistance: The department reports good coordination with a state maintenance facility on Aquidneck Avenue. Middletown does not coordinate with the Navy on road or sewer maintenance projects.

Portsmouth

Personnel: The director of public works oversees the day-to-day operation of the department and reports to the town administrator. The director prepares the department’s budget, attends meetings, and coordinates the department’s activities with other town departments, the state, neighboring communities, and a wide range of civic groups. The director also takes an active role in town and regional special projects, such as the development of a detailed and accurate inventory of the town’s drainage system. The department is comprised of two foremen, two mechanics and 10 operators and utilitymen. Two of these workers are permanently assigned to Prudence Island.

Facilities: The Department of Public Works was created in 1972 following the enactment of the Home Rule Charter that transformed the Highway Department into a modern organization overseeing street lighting, public parking lots, waste disposal, sewers, water supply, parks, public buildings, and other public works. The department is located on Hedley Street and is near the town hall. The building houses department equipment, offices, a workshop, and a vehicle repair facility. The surrounding yard area stores gravel, construction materials and other items. The department maintains a smaller facility on Prudence Island and operates the Prudence Island Transfer Station. The location includes a solid waste compactor and a recycling drop-off site.

Responsibilities: The department is responsible for more than 127 miles of roadway made up of 463 separate roads. It manages town road repairs, oversees the transfer station, and handles some maintenance work at Glen Park. It attends to stormwater drainage and mosquito control activities.

Mutual Assistance: The department coordinates with a state highway maintenance facility on Aquidneck Island and with the Rhode Island Department of Environmental Management (RI DEM) regarding mosquito control.

Library Services

Newport

Facilities: The Newport Public Library has served the city of Newport since 1869 from various locations. The library is now located in a 27,400-square-foot building at 300 Spring Street, which opened in 1968. A renovation project will increase its size to 47,459 square feet.

Personnel: There are 17 full-time staff members and 22 part-time staff members.

Trustees: The Newport Public Library has an 18-member board of trustees.

Collection: In 1998, the library contained 123,295 books, 8,635 non-print materials and 12 computers with public access to the Internet.

Registered Borrowers: There are 16,791 registered borrowers. During summer lunch hours, many seasonal workers use library computers to access e-mail and the Internet.

Circulation: The total annual circulation was 252,416 in 1999.

Programs: In 1998, the library held 226 total programs with an attendance of 3,546. Of these programs, 94 served 765 adult attendees.

Middletown

Facilities: The Middletown Free Library is located at 700 West Main Road. The building opened in 1979 with no major renovations since.

Personnel: There are six full-time staff members and 13 part-time staff members.

Trustees: The library has a seven-member board of trustees.

Collection and Resources: The library contained 52,153 books, 2,491 non-print materials and six computers with public Internet access in 1999. A larger meeting room and more space for books and storage are needed.

Registered Borrowers: The library served 9,923 registered borrowers in 1999, including 3,026 children (under age 18).

Circulation: The total 1999 annual circulation was 160,626.

Hours: The library is open 60 hours per week year round.

Programs: In 1998, the library provided 767 programs with a total attendance of 1,955. Thirty-five of the programs served preschoolers and 32 of the programs served school-age children. In 1999, the library started adult programming with a goal of 12 programs per year.

Portsmouth

Facilities: The Portsmouth Free Public Library is located at 2658 East Main Road. The building opened in 1897 and has been enlarged since. The most recent addition in 1991 added 4,800 square feet, more than doubling the size of the library to 9,515 square feet.

Personnel: The library employs three full-time professional librarians, five full-time library assistants, one secretary/bookkeeper and three part-time library assistants. Special staff is hired to work Sunday hours, which run from September to June. There are four professional librarians who work one Sunday each month and four library assistants who work every other Sunday.

Trustees: The library has a 15-member board of trustees.

Collection and Resources: The library contained 47,508 books, 2,165 non-print materials and 11 computers with public access to the Internet in 1999.

Registered Borrowers: There were 7,824 registered borrowers in 1999, including 2,680 children under the age of 18.

Circulation: The total 1999 annual circulation was 106,668. The busiest months are generally March and September.

Hours: The library is open 64 hours per week; 50 hours per week in the summer.

Programs: In 1999, the library provided 64 programs with a total attendance of 3,850. Most programs served children, although 11 programs were attended by 241 adults.

Schools

Newport

Facilities: The Newport School System consists of seven elementary schools, one middle school and one high school. Carey, Coggeshall, Cranston-Calvert, Dr. M.H. Sullivan, Sheffield, and William J. Underwood are elementary schools serving children kindergarten through fifth grade. George H. Triplett School is an elementary school serving children from kindergarten through second grade. Frank E. Thompson School is a middle school serving sixth through eighth grades. Rogers High School serves ninth through twelfth grades.

Enrollment: The district had 2,967 students and 220 teachers, according to the 1999 information works report. The Newport County Career Technical Center in Newport provides career courses such as automobile technology and marine technology. A program drawback is its location, as students from other municipalities are sometimes reluctant to leave their home districts. Table 5 compares the performance of the Newport school district to the performance average of school districts statewide. Newport school district expenditures compared to state averages is show in Figure 64.

Table 5. Comparison of Newport school district performance to state averages.

	Student Attendance (%)	Average Class Size (Elementary)	Drop-out Rate (%)	Graduation Rate (%)
Newport	91.08	19	13.6	86.4
Rhode Island	92.74	21	17.95	82.05

Middletown

Facilities: The Middletown School System includes four elementary schools, a middle school and a high school. Of the elementary schools, Aquidneck, Forest Avenue, and John F. Kennedy schools serve children from kindergarten through fourth grade. Another elementary school, Linden School, serves children from pre-kindergarten through kindergarten. The Joseph H. Gaudet (Middle) School serves fifth through eighth grades and Middletown High School serves ninth through twelfth grades.

Enrollment: The district had 2,856 students and 220 teachers in 1999. Figure 65 shows district enrollment 1989 through 1999. Figure 66 shows district expenditures per pupil in the 1997-1998 school year compared to the Rhode Island state average. Table 6 compares the performance of the Middletown school district to the performance average of school districts statewide.

Table 6. Comparison of Middletown school district performance to state averages.

	Student Attendance (%)	Average Class Size (Elementary)	Drop-out Rate (%)	Graduation Rate (%)
Middletown	94.7	18	5.11	94.89
Rhode Island	92.74	21	17.95	82.05

Navy Impacts on Middletown Schools

Mobility in Middletown schools is 20 percent due to Navy housing. Students of military families are divided between Kennedy and Forest Avenue Schools to lessen the impact of turnover in the district. Navy student population is fairly constant.

The Navy pays impact fees to the district for some students. A fee of about \$2,000 per student is paid for students whose parents live and work on base, and a fee of \$500 per student is paid for students whose parents work on base but live in the community. Additional fees are paid for special education students.

Middletown provides an “English as a Second Language” (ESL) program for students of parents in the Naval War College and Foreign Officer School. The school district also serves

ESL students from Portsmouth. ESL students in this program come almost exclusively from Navy families.

Additional Information about Middletown Schools

A school breakfast program is offered in every Middletown school. Many of the students eligible for school breakfast and lunches are from military families.

Middletown maintains profiles of its graduates and conducts five-year follow-up surveys of graduates. Fifty eight percent of Middletown High School graduates attend four-year colleges (Figure 67).

Middletown schools weave career activities throughout the K-12 curriculum and coordinate with state school-to-career programs and local businesses to develop skill sets for students. Teachers have opportunities to take part in an externship program so they learn first hand about career skills for students.

In response to a 1995 survey that identified childcare as a key need before and after school hours, Middletown implemented programs at each elementary school. The programs are staffed under contract by the Newport YMCA – a state-licensed care provider. Another initiative developed in response to the survey is the Child Opportunity Zone program that connects families with education, health and social services, community activities, and other support services. The program develops state and local partnerships to coordinate resources provided by various community service providers.

Parent education programs are available in schools to help families understand the school system, participate in the school community, advocate for children, and help children at home. For example, “Parents as Teachers” is a program specifically for parents of three- to five-year-olds.

Schools are used as community centers, with school family centers providing services and resources to families and opportunities for children, caregivers, and community members to participate in formal and informal activities.

Portsmouth

Facilities: The Portsmouth school system consists of four elementary schools, one middle school, and one secondary school. Elmhurst, Howard Hathaway, and Melville are three of the elementary schools serving children from kindergarten through fourth grade. The other elementary facility is the Prudence Island School located on Prudence Island. Portsmouth Middle School serves students from fifth through eighth grades and Portsmouth High School serves students from ninth through twelfth grades. The Portsmouth middle school site has a wastewater treatment plant and is located on 40 acres, ensuring the school district has room for expansion. Portsmouth approved a bond in 1997 for school renovations, especially at the high school, but recent growth in student population has created additional capacity demands.

Enrollment: In 1999, the district had 2,733 students and 184 teachers, so enrollment has increased from a 1989 count of 2,614 students (Figure 68). A demographic shift is taking place that is increasing school enrollment. Older houses are being purchased by families with children as aging residents move out. For years, Portsmouth could plan for school capacity

needs by assuming population growth and enrollment would stay at a consistent one percent and projecting these figures from the number of completed houses and statistics on live births. Now, this shift in household demographics is dramatically changing the enrollment landscape. In terms of Navy housing in Portsmouth, these units are generally affordable and thus attract younger families with young children.

Table 7 compares the performance of the Portsmouth school district to the performance average of school districts statewide. Figure 69 shows post secondary placement of Portsmouth High School graduates in 1999. Figure 70 shows Portsmouth district expenditures per pupil in the 1997-1998 school year and Figure 71 shows Portsmouth students' mean SAT scores compared to state and national averages.

Table 7. Comparison of Portsmouth school district performance to state averages.

	Student Attendance (%)	Average Class Size (Elementary)	Drop-out Rate (%)	Graduation Rate (%)
Portsmouth	94.66	21	9.84	90.16
Rhode Island	92.74	21	17.95	82.05

Special Programs

Portsmouth does not provide a school breakfast program.

Special education is offered on a regional basis with Middletown, Tiverton, and Little Compton. A regional school site for severely disabled students enables schools to pool resources. However, students with learning disabilities remain in each district.

Bradley Hospital operates a school site in Portsmouth. The hospital provides education services to students with psychiatric problems and behavior disorders.

Portsmouth provides half-day kindergarten; Middletown and Newport offer all-day kindergarten.

Late buses serve Portsmouth's middle school four days each week as one-quarter of students are involved in after-school activities. Fifty percent of the students stay after school at least once a month.

Island school districts participate in the East Bay Education Collaborative. This is a state-structured program that helps municipalities pool resources for staff development (science, math), joint purchasing, joint lunch service, and other contracts.

Portsmouth Action for Youth uses school facilities for community recreation programs. Such use requires the principal to be present during program hours.

Portsmouth parent-teacher organizations are active and sponsor monthly family recreation events.

Figure 64. Newport district expenditures per pupil 1997-1998 school year.

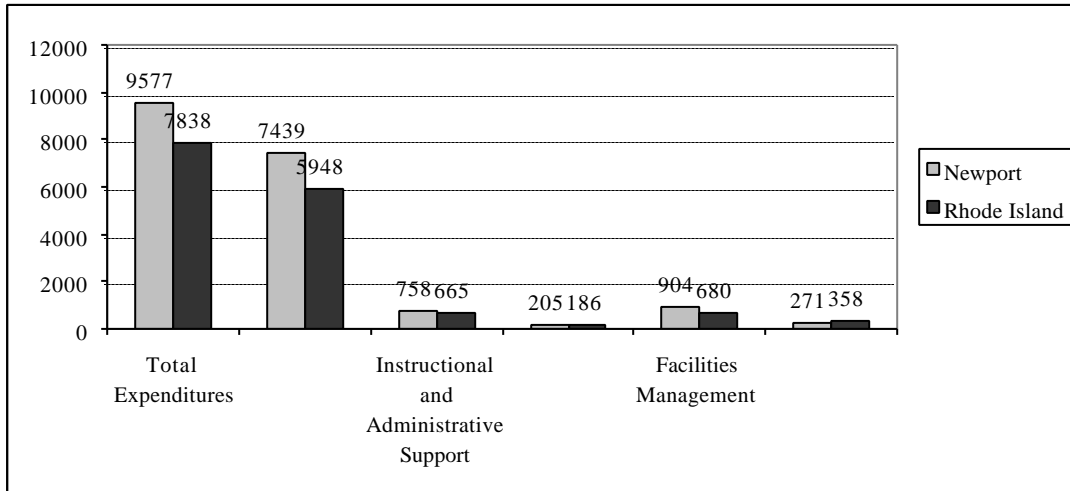


Figure 65. Middletown school enrollment, 1989-1999.

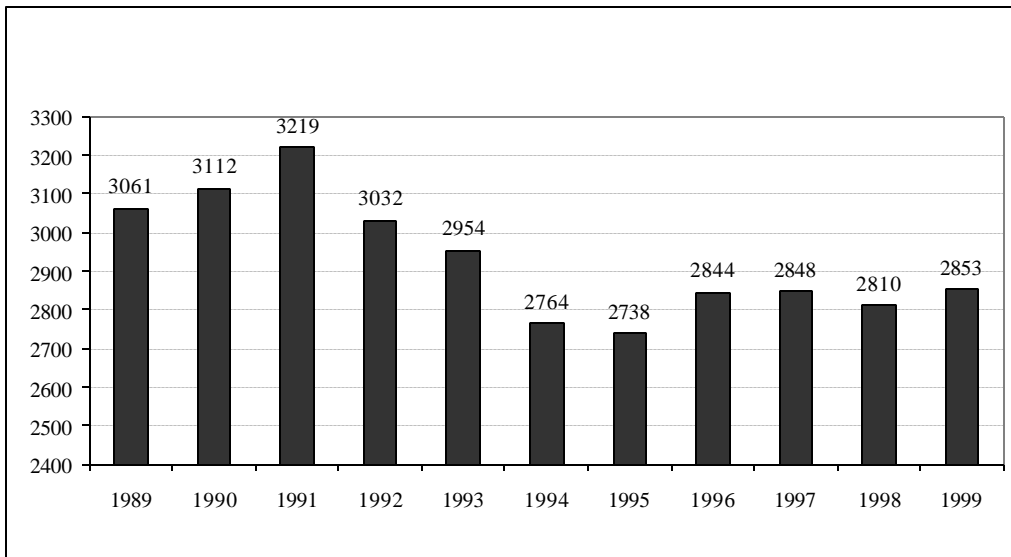


Figure 66. Middletown district expenditures per pupil 1997-1998 school year.

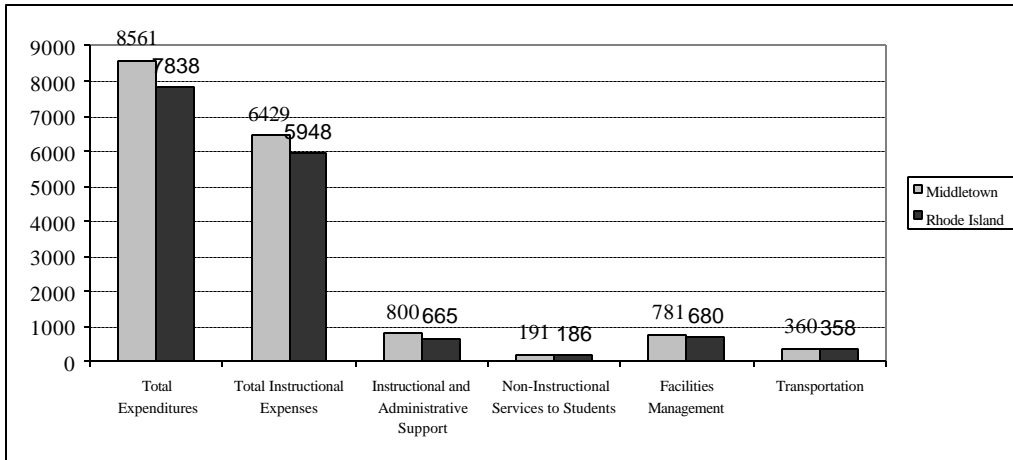


Figure 67. 1999-2000 Middletown High School post secondary placement.

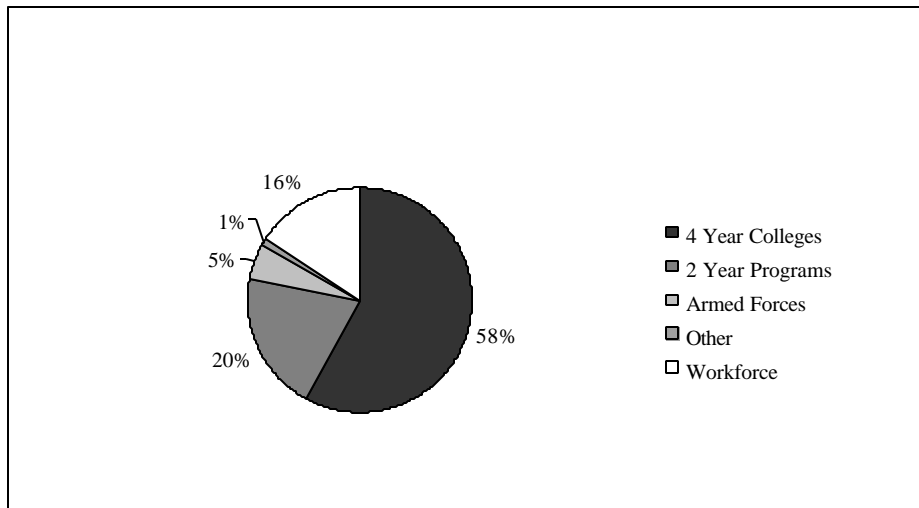


Figure 68. Portsmouth 1998-1999 school enrollment compared to capacity.

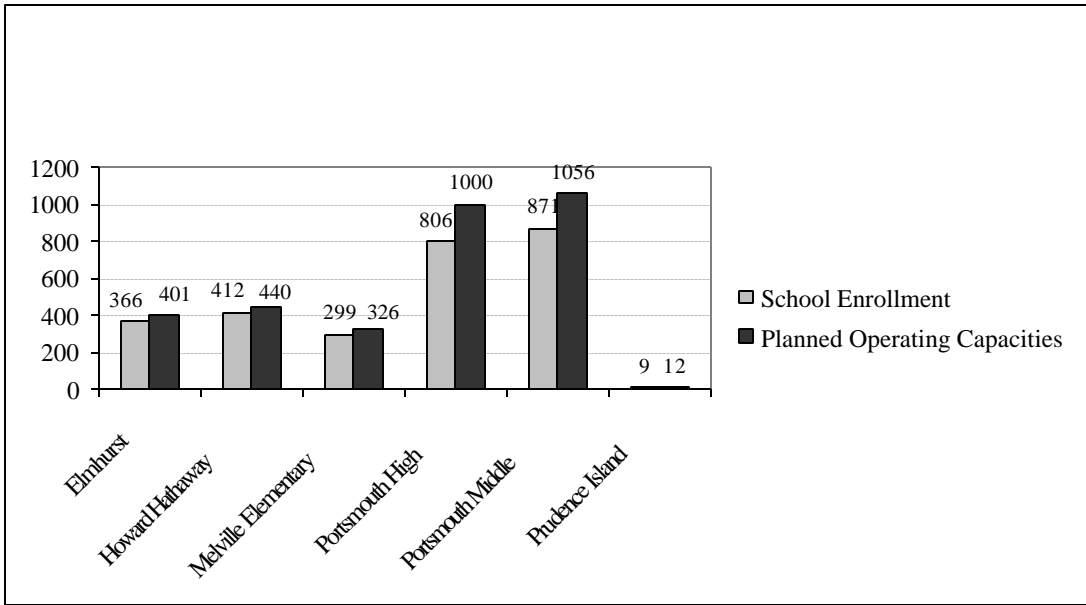


Figure 69. Portsmouth High School 1999, post secondary placement.

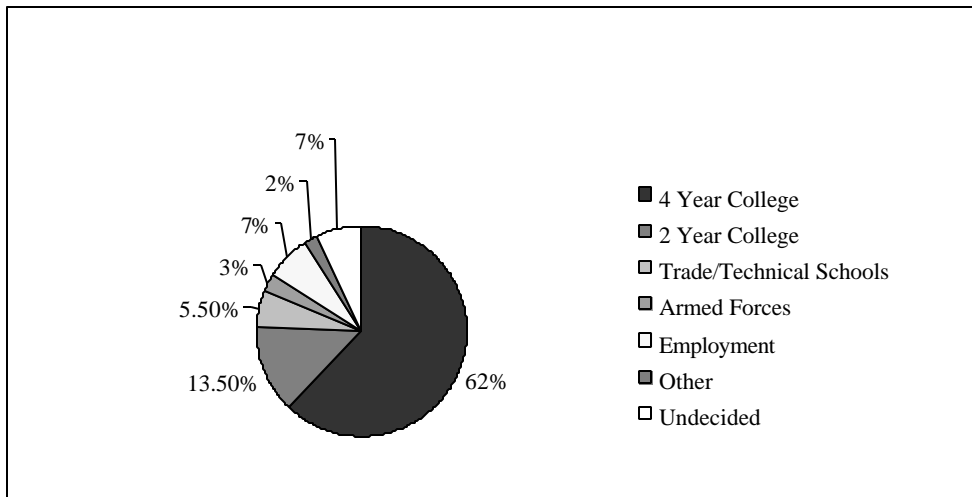


Figure 70. Portsmouth district expenditures per pupil 1997-1998 school year.

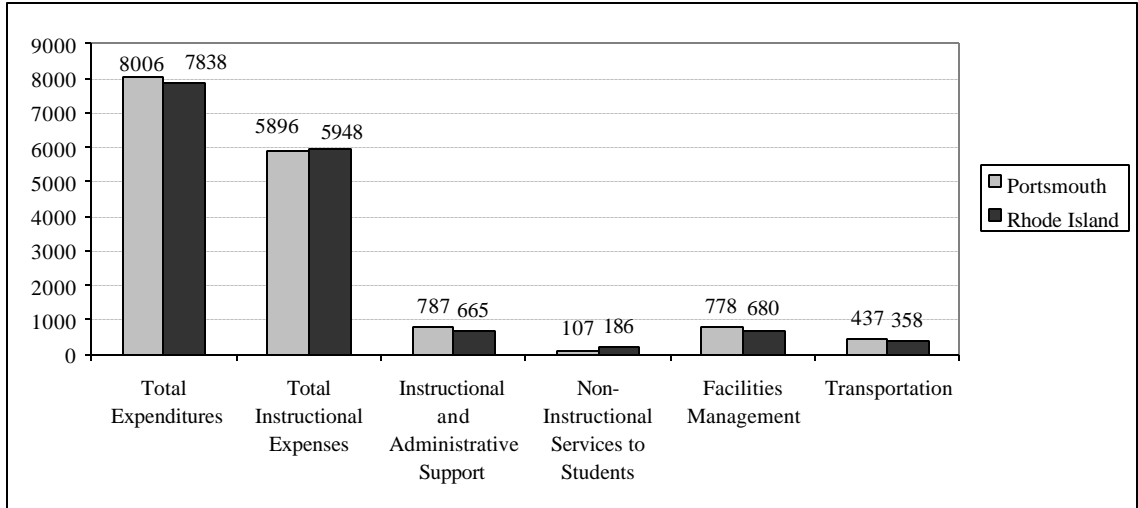
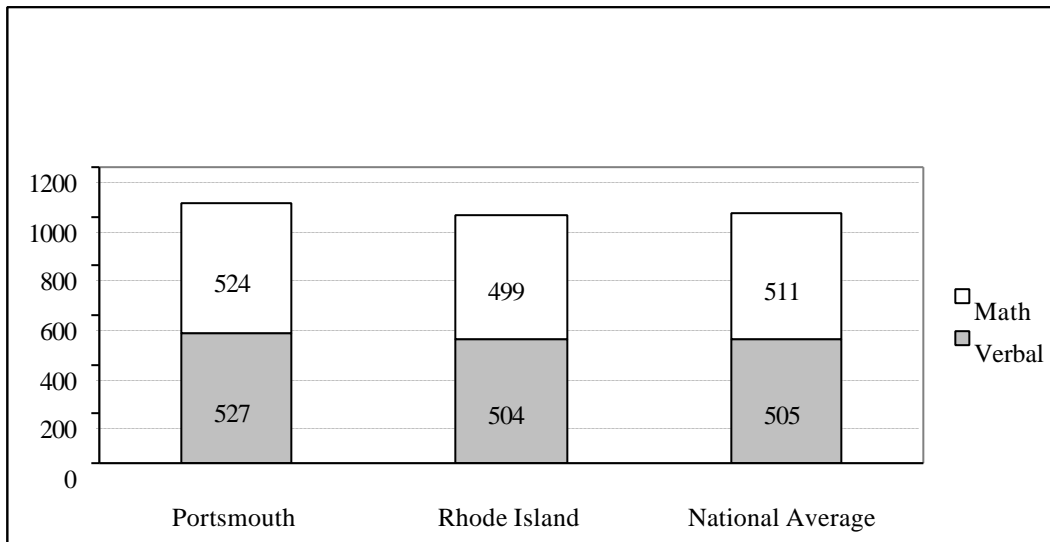
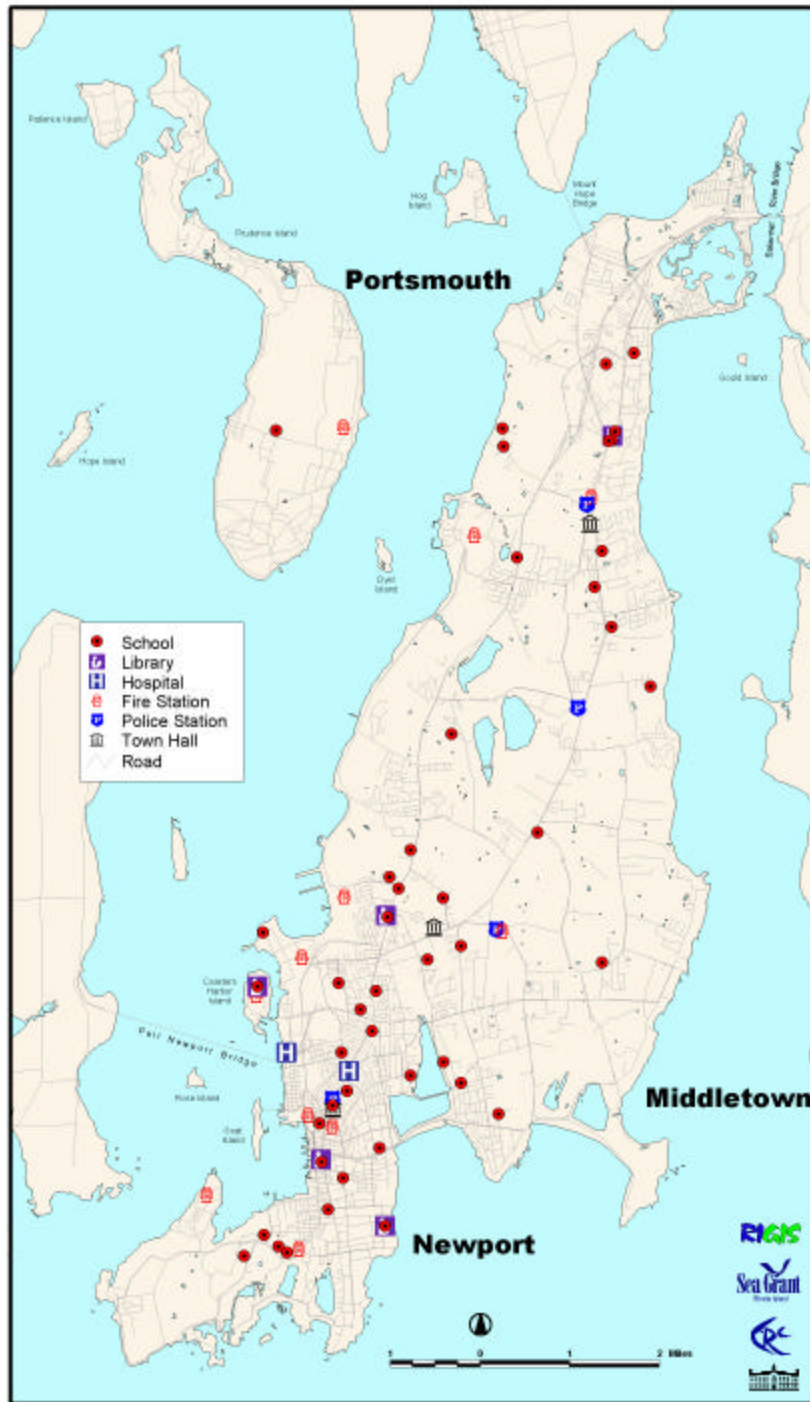


Figure 71. 1998 – 1999 Portsmouth mean SAT scores compared to state and national scores.



Map 21. Facilities siting on Aquidneck Island.



Water Facilities and Services

Jessica Hock, Rupert Friday, Meg Kerr

The Aquidneck Island drinking water system includes nine surface water reservoirs that are maintained by the Newport Water Department (NWD) (Map 22). The NWD treats water from these reservoirs and distributes it to most Newport businesses and residents, the Naval Station Newport, the Portsmouth Water and Fire District, as well as residents and businesses in many areas of Middletown and the southwest area of Portsmouth. Other water suppliers are located on Aquidneck Island, including four that serve at least 25 year-round facilities (i.e., Prudence Island Utility Corporation, U.S. Navy, and Portsmouth Water and Fire District), several mobile home parks and other suppliers of transient water users (i.e., Paradise Park, Peabody's Beach, and Pickles Deli).

Fresh water for residential and commercial use on Aquidneck Island is supplied primarily by an islandwide system of reservoirs and a treatment plant and distribution system maintained by the NWD. To a much lesser extent, private wells provide water to individual owners. Water is also provided by a separate Portsmouth water district (Figures 72 and 73 and Map 23).

Water Supply Reservoir System

Public water is supplied islandwide by the NWD from nine surface water reservoirs located in Little Compton, Tiverton, and in all three municipalities on Aquidneck Island. Newport has only one percent of the total watershed area within its boundaries, Middletown has 37 percent, and Portsmouth has 62 percent. Table 8 describes the area and useable storage of the reservoir system.

Table 8. Characteristics of local reservoirs.

Reservoir	Location	Watershed Area (sq.miles)	Reservoir Surface Area (acres)	Usable Storage (million gallons)
Easton Ponds (combined)	Middletown & Newport	4.35	257.4	495
Nelson Pond	Middletown	.63	29.7	70
Gardiner Pond	Middletown	2.25	101.8	355
Lawton Valley	Portsmouth	1.10	84.0	315
St. Mary's Pond	Portsmouth	.80	116	240
Sisson Pond	Portsmouth	.40	90	60
Nonquit Pond	Tiverton	6.00	178.3	400
Watson Reservoir	Little Compton	3.70	375	1300
Total		19.23	1,232.2	3,235

Source: Metcalf & Eddy 1989.

Table 9. Land use* of Lawton Valley Reservoir area.

Land Use (1997)	Percent of Watershed Area
Residential	31.00
Commercial/Industrial	0.24
Agricultural	23.90
Wetlands	6.00

Lawton Valley Reservoir receives water from its own drainage area as well as from an inlet at the southern edge leading from Sisson Pond. Water from the reservoir directly enters the Lawton Valley Water Treatment Plant. The watershed is primarily residential and agricultural (Table 9).

Table 10. Land use of St. Mary's Pond area.

Land Use (1997)	Percent of Watershed Area
Residential	18.00
Commercial/Industrial	0.00
Agricultural	32.70
Wetlands	12.70

St. Mary's Pond receives flow from its drainage area and from the two reservoirs across the Sakonnet River. There are two pipes that run under the Sakonnet River (one installed in 1944, the other in 1994), carrying water from Nonquit Pond and Watson Reservoir to the Aquidneck Island. There is gravity flow from the pond through a 20-inch main directly to the Lawton Valley Water Treatment Plant. Sometimes there is reservoir spillage into Sisson Pond. St. Mary's Pond is regularly stocked with trout and shore fishing is allowed. Table 10 shows land use within the St. Mary's Pond watershed.

Table 11. Land use of Sisson Pond area.

Land Use (1997)	Percent of Watershed Area
Residential	10.00
Commercial/Industrial	0.15
Agricultural	42.70
Wetlands	21.50

Sisson Pond collects any spillover from St. Mary's Pond as well as water from its own drainage area. The pond is discharged through an outlet pipe to Lawton Valley Reservoir. Land use within the Sisson Pond watershed is primarily agriculture (Table 11).

* All land use data from Land Use, Aquidneck Island Geographic Information Systems, 1997.

Table 12. Land use of Paradise Pond area.

Land Use (1997)	Percent of Watershed Area
Residential	20.60
Commercial/Industrial	0.69
Agricultural	26.00
Wetlands	14.10

Paradise Pond, or Nelson Pond, receives water from Paradise Brook. The pond also receives water from its drainage area and from a diversion structure on the Maidford River. The Paradise Pump Station transfers outflow to the Newport Water Treatment Plant (NWTP). Land use is primarily agricultural and residential (Table 12).

Table 13. Land use of Gardiner Pond area.

Land Use (1997)	Percent of Watershed Area
Residential	6.60
Commercial/Industrial	15.80
Agricultural	29.70
Wetlands	11.70

Gardiner Pond is considered a well-protected water source because of the various protected lands surrounding the pond, including the Norman Bird Sanctuary and 22 acres of land that the NWD owns. The pond receives water from a diversion structure on the Maidford River as well as from its own drainage area. The Paradise Pump Station transfers outflow to the NWTP. Land use in the Gardiner Pond watershed is primarily agricultural (Table 13).

Table 14. Land use of Easton Ponds area.

Land Use (1997)	Percent of Watershed Area
Residential	36.90
Commercial/Industrial	17.40
Agricultural	13.50
Wetlands	15.40

Easton Ponds are made up of North Easton Pond, also known as Green End Pond, and South Easton Pond. They are operated as a single reservoir. Water from Bailey's Brook watershed, including discharge from St. Mary's Pond, collects in Easton Ponds. Light industrial and commercial areas abut the eastern shoreline of North Easton Pond and a high-density residential neighborhood lies on the western shoreline of the pond. Very little land within this watershed area is undeveloped (Table 14). No direct runoff enters South Easton Pond because it is fed only from North Easton Pond. Water directly enters the NWTP.

Table 15. Land use of Nonquit Pond area.

Land Use (1997)	Percent of Watershed Area
Residential	8.50
Commercial/Industrial	3.80
Agricultural	15.50
Wetlands	27.90

Nonquit Pond is serviced by the Nonquit Pump Station so water can be pumped across the Sakonnet River. Outflow is transferred by the Nonquit and Sakonnet Pumping Stations to St. Mary's Pond and into the Lawton Valley Water Treatment Plant. Table 15 shows land use within the Nonquit Pond watershed.

Table 16. Land use of Watson Reservoir area.

Land Use (1997)	Percent of Watershed Area
Residential	9.90
Commercial/Industrial	0.90
Agricultural	26.60
Wetlands	26.20

Watson Reservoir is fed by four major tributaries. Outflow is transferred by the Nonquit and Sakonnet Pumping Stations to St Mary's Pond and into the Lawton Valley Water Treatment Plant. Table 16 shows land use within the Watson Reservoir watershed.

Newport

The NWD supplies water to almost all of Newport's population, including businesses.

Middletown

Seventy-five percent of the town's population receives water from the NWD. The remaining 25 percent relies on private or community wells for its supply.

Portsmouth

Three percent of Portsmouth receives water directly from the NWD. This area includes the Redwood Farms Subdivision, Bayview Apartments and Condominiums, Raytheon, and other water users on the west side of West Main Road from the Middletown line to Raytheon. Portsmouth Water and Fire District have contracts with NWD and Stone Bridge Fire District (SBFD), Tiverton. The contract with SBFD will expire in 2007; however as of May 1, 1999, Portsmouth Water and Fire District stopped purchasing from it. The contract with NWD provides water to about 90 percent of the residents of mainland Portsmouth. The contract with NWD expired in 1995 and the two parties have been negotiating since. The contract allows Portsmouth Water and Fire District to purchase a maximum of 2.2 million gallons per day (mgd) with a maximum annual purchase of 450 million gallons. Portsmouth is now

buying water entirely from NWD. The remainder (seven percent) of Portsmouth's population receives its water supply from private wells.

Navy

Development along Burma Road up to and including Melville is serviced by Navy infrastructure. The Navy's allocation from the NWD is 2.5 mgd through 2020. The current usage for the Navy is approximately 1.5 mgd.

Islandwide Consumption: (Figures 74-79) In 1990, 82 percent (approximately 53,000 people) of the overall Aquidneck Island population (64,330) was relying on the NWD and the Portsmouth Water and Fire District for its water supply. In 1990, the NWD serviced 13,670 water customer accounts consisting of 13,570 residential, commercial, and industrial connections, 50 Navy connections, and 50 public connections, and one wholesale customer – Portsmouth Water and Fire District. Based on 1992 sales, there are approximately 40 major users (use more than three million gallons of water per year) in the NWD's system. The type of major users include:

- Hotel/Motel 7
- Navy Education Training Center 7
- Manufacturing/Industry 5
- Newport Housing Authority 3
- Health Care Facilities 5
- School/College 2
- Other (malls, carwash, etc.) 13

NWD's average daily water demand in 1988 was 7.63 mgd. Approximately 16.8 percent of the total water produced is lost within the distribution system and is not accounted for in sales records. In 1992, the average daily water demand fell to 6.95 mgd. In 1994, the average daily water demand was 6.8 mgd and unaccounted-for water fell to 13.7 percent. Over the period of 1984 to 1992, the average daily demand based on annual use was 7.19 mgd with a minimum of 6.187 mgd in 1983 and a maximum of 8.14 mgd in 1990. Last year, the average distribution was eight mgd with a safe yield of 10.5 mgd. On average, two percent of unaccounted water is attributed to fire fighting and maintenance flushing of the lines.

Seasonal Demand

Water demand peaks during the summer and early fall as shown by monthly water consumption in 1999 (Figure 80).

Facility Inventory

The NWD's system includes 10 pumping stations. Six of these facilities are for raw water pumping between reservoirs and the water treatment plants (WTPs). The remaining four pumping facilities are for pumping treated water to the distribution system storage facilities. The system consists of 162 miles of mains, 3,300 valves, and 900 hydrants. The NWD flushes these lines a minimum of twice per year.

There are two water treatment plants on the island. The filtration plant located west of North Easton Reservoir in Newport is known as Station 1: Newport Treatment Plant. This plant

was placed in service in 1991. Its filtration capacity is approximately nine mgd. It has a conventional (pulsator clarifier) treatment process. There is also the Lawton Valley Water Treatment Plant. The treatment plant was constructed in 1942. Its filtration capacity is approximately seven mgd and it also uses conventional treatment processes.

Groundwater Supply

Eighteen percent of the island's population relies on groundwater for water supply. Movement of groundwater generally runs from mid island eastward to the Sakonnet River and westward to Narragansett Bay. The depth of the water table ranges from one to about 30 feet below the surface depending on time of year and topography. Yields of wells vary considerably from one to 20 gallons per minute. Groundwater aquifers are used for domestic purposes and by the Crystal Springs Company, which bottles water for sale.

The Rhode Island Department of Environmental Management (RI DEM) classifies the state's groundwater resources using four major categories:

Table 17. Rhode Island groundwater classifications.

Classification	Definition
GAA	Suitable for drinking water use without treatment. These waters are usually located within a WPA or in an area that is dependent on groundwater
GA	Suitable for drinking water use without treatment. This classification does not fall within areas mentioned above.
GB	May not be suitable for drinking water use without treatment due to known or presumed degradation. Areas are served by public water systems.
GC	Not suitable for drinking water use.

Source: R.I. Department of Environmental Management.

Most of the island's groundwater falls into the GA classification. A small portion of the island, within southern Middletown, has been classified GAA. The area in Portsmouth near Melville as well as the U.S. Naval Station in Middletown and Newport has been classified GB groundwater.

In 1992, U.S. Geological Survey added a well in Portsmouth to its list of monitored wells throughout the state. Portsmouth Well #551 is 53 feet deep and is monitored for water levels at the end of each month. During the period from 1992-1999, the natural flux in levels ranged from a high of 24.66 feet to a low of 53.00 feet (dry). There is also a seasonal shift in

which the highest water levels are found in April and May. Levels usually continue to drop until October and begin to recover in November.

Wellhead Protection Areas (WPAs)

The Wellhead Protection Program was developed by RI DEM in 1990. It is designed to protect groundwater used for drinking water by preventing contamination of well recharge areas. The program first sets out to delineate recharge areas using hydrogeologic environmental information, as well as pumping rates of the wells. The program then takes inventory of potential sources of contamination within the wellhead area. Municipalities with WPAs are required to develop and implement a plan to protect groundwater. Groundwater education and best management practices must be included in this plan.

Wellhead Protection Programs are a municipal responsibility, but since Aquidneck Island is mostly on surface water, and groundwater is not a major source, it is a low priority. Community systems (i.e., Meadowlark Mobile Home Park and Prudence Island Water) often have their own plans in effect. The towns are also required to have plans but currently do not.

Newport

Newport has no WPAs.

Middletown

About 13.6 percent, or 1,152 acres, of Middletown is located in a WPA. There are eight wells that make up this system including those located at Pickles Deli, Meadowlark Mobile Home Park, Paradise Motel, Peabody's Beach Middletown FOP Lodge and Silveira's Kindergarten.

Portsmouth

7.2 percent, or 1,093 acres, of Portsmouth is located within a WPA. There are eight wells that make up this system including two areas on Prudence Island (Prudence Island Water Corporation and Prudence Park Water Coop) and one area on Hog Island (Hog Island Water Association North & South).

Buildout Scenarios

An analysis done in 1991 by IEP, Inc. estimates that the population of the island could reach 103,225 people under 1991 zoning conditions.²⁶ This would mean a population increase of 60 percent since 1990. Of all residential development likely to occur on Aquidneck Island, 18 percent is projected to occur within the seven watersheds of the NWD.

²⁶ IEP, Inc., *Aquidneck Island Buildout Analysis*, Final draft, August 1991.

Table 18. Buildout analysis of certain Aquidneck Island watersheds under 1991 zoning.

Watershed	1991 Existing Units	Potential Increase	Potential Units
North & South Easton Reservoir	4,062	1,016	5,078
Nelson Pond	212	23	235
Gardiner Pond	13	3	16
Lawton Valley	259	493	752
St. Mary's Pond	79	321	400
Sisson Pond	12	129	141

Source: IEP, Inc. 1991.

Continued growth in Portsmouth and Middletown poses the greatest risk to the quality of water in the watersheds. Newport's growth trends have little or no direct impact on the quality of the water supply because no drainage from the city enters the ponds.

Total reservoir safe yield (quantity of water that can be supplied at a constant rate during a 20-year drought period) is 11.4 mgd. Improvements may increase the yield of the supply system to 12 mgd. The maximum population that could be supported by a yield of 12 mgd is 84,745 people or between 10,328 and 10,392 additional households (depending on the proportion of the population served in each municipality). This maximum supported population is about 18,000 fewer people than the projected population.

Watershed Protection Overlay Districts

Middletown (in 1985) and Portsmouth (in 1997) have designated watershed protection districts. The requirements posed in these districts are in addition to any regular zoning and take precedent whenever they are stricter than the underlying zoning requirements. These districts were based on the Scituate Watershed Reservoir Project. The collective purpose of these districts is:

- To protect drinking water supply quality and quantity by regulating the use and development of land adjoining water courses and/or primary water recharge areas.
- To protect the health, safety, and general welfare of the public.

Middletown

Middletown's watershed protection overlay district is divided into two zones: Zone 1 and Zone 2. Zone 1 consists of the ponds, a 200-foot buffer around the ponds, and areas with wetland soils, specifically, Stissing silt loam or Mansfield mucky silt loam. Zone 2 includes the rest of the watershed.

The permitted uses in Zone 1 are: 1) conservation; 2) Water supply facilities/structures; 3) pipelines; 4) streets/highways; 5) public/private parks; 6) normal uses of residential use; and 7) stormwater detention/retention systems.

The prohibited uses in Zone 2 are: 1) junk/salvage yards; 2) outdoor storage of fuel and hazardous waste; 3) sewage treatment plant; 4) incinerator; 5) sanitary landfill; 6) vehicle wash; 7) solid waste transfer station; 8) any manufacturing that discharges wastewater; 9)

road salt or deicing storage; and 10) individual sewage disposal systems (ISDS) within 150 feet of a wetland.

Special Use Permits: Special use permits can be granted by the zoning board with the planning board and conservation committee's comment. The permit can be granted as long as the proposed use will not be in conflict with the purpose of the watershed protection district.

Enforcement: Enforcement of this ordinance is done in the development plan review process. Under the watershed protection overlay district, the building inspector and the zoning board conduct a development plan review, with assistance from the planning board and the conservation commission. All of the applications for development within the district have been for Zone 1. Inspection of existing conditions and uses within the watershed protection district is problematic and beyond the scope of the ordinance.

Portsmouth

Portsmouth's watershed protection overlay district is defined as the watershed areas of Lawton Valley Reservoir, St. Mary's and Sisson ponds, and Bailey's Brook. This area is broken down into two separate zones: Zone A and Zone UD. Zone A consists of the ponds, a 500-foot buffer around the ponds, any wetlands, areas with wetland type soils, and any tributaries to the water supply reservoirs. Zone UD (upland development) consists of everything else in the watershed.

The permitted uses in Zone A are: 1) conservation; 2) public water lines and other related facilities; 3) public/private parks; 4) historic monuments; 5) agriculture and outdoor recreation not including structures or impermeable surfaces unless a buffer is present; and 6) single family housing as long as 50 percent of each parcel is undisturbed within 300 feet of the reservoir and septic systems are at least 300 feet from the water body.

The prohibited uses in Zone UD are: 1) junk/salvage yards; 2) outdoor storage of hazardous waste; 3) sewage treatment facilities; 4) incinerators; 5) sanitary landfill; 6) solid waste transfer station; 7) vehicle washes; and 8) any other uses that discharge wastewater other than domestic sewage.

Classes: The ordinance sets up five classes (Class 1/no risk to Class 5/severe threat) of land use to guide town officials and developers on risks to water quality as well as how strict their protection measures should be.

Mandatory development restrictions:

- Maximum 15 percent impervious surface on one parcel.
- Best management practices should be used (vegetative buffers, minimal tree removal).
- In terms of new subdivisions, septic systems should be 300 feet away from any water body; existing systems should be at least 150 feet from the water body, and there should be a buffer of at least 75 feet between new advanced systems and the water body.

Enforcement: Enforcement of this ordinance is done in the development plan review process. Under the watershed protection overlay district, the planning board should conduct a

development plan review, with assistance from the zoning board. Inspection of existing conditions and uses within the watershed protection district is problematic.

Water Quality

Drinking Water Supply: Newport's finished water quality did not exceed state or federal drinking water standards in 1998 according to the city's 1998 consumer confidence Water Quality Report.²⁷

Surface Waters: The RI DEM assesses the water quality of Rhode Island's surface waters. In accordance with Section 303(d) of the Federal Clean Water Act, a list of waterbodies within the state that do not currently meet water quality standards is published every other year. The 2000 303(d) list of impaired waters (draft, August 4, 2000) lists several Aquidneck Island drinking water reservoirs and their tributary streams (Table 19).

Table 19. Impaired Aquidneck Island surface waters.

Waterbody	Group²⁸	Cause for listing
Gardiner Pond	Group 4	Biodiversity impacts
Nelson Paradise Pond	Group 4	Biodiversity impacts
Bailey Brook	Group 2	Biodiversity impacts, Pb
Maidford River	Group 2	Biodiversity impacts
North Easton Pond (Green End Pond)	Group 4	Biodiversity impacts, excess algal growth
Lawton Brook	Group 2	Biodiversity impacts
St. Mary's Pond	Group 4	Biodiversity impacts
Lawton Valley Reservoir	Group 4	Biodiversity impacts
Sisson Pond	Group 4	Biodiversity impacts

Source: R.I. Department of Environmental Management 2000 303(d) list, draft August 4, 2000.

The NWD maintains a water quality pond behind the Shaw's shopping complex in Middletown. This pond treats parking lot and highway runoff before it can flow into Bailey's Brook. The NWD is considering adding a similar collection pond near Oakland Farms in Portsmouth.

Coastal Waters: Most of the coastal waters directly surrounding the island are designated Type 1 uses—conservation areas—by the Rhode Island Coastal Resources Management Program. However, there are several areas that deviate from this designation. The waters within Newport Harbor are designated Type 2, 3, and 5 (low-intensity use, high intensity boating, and commercial and recreational harbors). The waters surrounding the neck of Portsmouth (the Cove and Common Fence Point areas) are designated Type 2 and 3 (low-intensity use, high intensity boating). The waters off the west side of the island are Type 1, 3,

²⁷ City of Newport Water Division, "Newport Water is as Good as it Gets..." 1998.

²⁸ Group 2 - TMDL study is planned for the future. Group 4 - Assessments were made based on insufficient and/or old data. Therefore, these waters need further monitoring to determine if there are water quality standards violations.

4, and 6 waters (conservation areas, high-intensity boating, multipurpose waters, and industrial waterfronts). The industrial waterfronts are found in the Coddington Cove and Melville areas.

Table 20. Impaired Aquidneck Island coastal waters.

Waterbody	Cause for listing
East Passage Narragansett Bay - Area around McAllister Landfill	Unknown toxicity
Newport Harbor/Coddington Cove	Biodiversity impacts
Newport Harbor/Coaster's Harbor	Biodiversity impacts
Mount Hope Bay	Biodiversity impacts, pathogens, hypoxia, nutrients
Sakonnet River (Portsmouth Park)	Pathogens
The Cove/Island Park	Pathogens

Source: R.I. Department of Environmental Management 2000 303(d) list.

Table 20 lists the impaired Aquidneck Island coastal waters. Permanent shellfish closure areas currently exist around the tip of Portsmouth, Melville area, and on the west side of the island from the Middletown/Portsmouth municipal line south to Fort Adams in Newport. These closings are effective until May 2001.

Wastewater Treatment Systems

Sewer System Characteristics: In 1955, Newport built its first primary treatment facility. This system remained unchanged until 1991 when the city built a new secondary level facility with a treatment capacity of 10.7 mgd. The average discharge flow in 1999 was 7.9 mgd (according to RI DEM Office of Water Resources, *Survey of Wastewater Treatment Facilities (WWTF) in Rhode Island for 1998 and 1999*, April 2000).

The facility is located on the J.T. Connell Highway in Newport and services approximately 90 percent of Newport, 75 percent of Middletown, and the U.S. Navy (Map 23). Areas of eastern Middletown and Ocean Avenue as well as the town of Portsmouth do not have access to the Newport sewer system (Figure 81). Sludge generated by the facility is transported in liquid form to the New England Treatment Company-operated incinerator in Woonsocket for disposal. Treated wastewater is pumped into the Narragansett Bay through an outfall pipe north of the Newport Bridge. The department is currently dechlorinating wastewater prior to discharging it into the Bay.

There are two major pumping stations (Coddington Avenue and Wave Avenue) in Middletown to pump sewage to Newport. There are 14 sewage pumping stations throughout the city.

There are also two major combined sewer/stormwater overflows within the system. The Wellington Avenue Facility was designed in 1978. In 1990, the system was modified to treat 25 mgd with the extracted solids being pumped to the Connell Highway Sewage Treatment Plant and the effluent being discharged near King's Park Beach. The Washington Street Facility was originally designed in 1971 and updated in 1985. The system is designed for a

three-month storm* and can handle 43 mgd. This facility is a holding tank/chlorinator that fills with the combined sewer/stormwater from the downtown, Newport Harbor, and Tonomy Hill areas. Effluent is pumped to the Connell Highway Sewage Treatment Plant.

The Newport WWTF was given an overall treatment rating of “poor” in RI DEM’s *Survey of WWTFs in Rhode Island for 1998 and 1999*, April 2000. This rating is a result of a flow violation in March 1998, violations for biochemical oxygen demand in October 1998 and August and September of 1999, as well as violations for total suspended solids from July through September of 1999 and fecal coliform violations in August and September 1999. Most of the violations resulted from a two- to three-month period of biological process upsets. The report noted, however, that outside of this period, the overall treatment was good to excellent.

Sewage Volume: The Connell Highway Sewage Treatment Plant provides treatment to an estimated 9.2 million gallons of raw sewage a day (Figure 82).

Table 21. Major Middletown pump station sewage volume (gallons).

Pump Station	Feb 1998	Feb 1999	Feb 2000
Coddington	12,262,000	9,283,000	7,735,000
Wave Avenue	100,295,600	81,826,400	64,406,500
Total	112,257,600	91,109,400	72,141,500

Source: R.I. Department of Environmental Management, “Survey of Wastewater Treatment Facilities in R.I.,” 2000.

Treatment Capacity: The Connell Highway Sewage Treatment Plant was designed against a 1982 population projection to treat 10.7 mgd by 2005. The facility's current capacity is 10.7 mgd with a peak capacity of 30 mgd. The peak capacity of 30 mgd can be treated for about three days. In 1998, the facility produced 1,821 dry tons of sludge and 1,992 dry tons in 1999 to be incinerated in Woonsocket.

Maintenance Program: The Newport Public Works Department is responsible for the maintenance of the NWTP on the island. The department is also responsible for the sewage mains and pump stations within Newport, with the exception of the U.S. Navy lands. Middletown Public Works Department is responsible for the maintenance of the sewage mains and pump stations within Middletown. The RI DEM’s “Survey of WWTFs in Rhode Island,” released April 2000, also rated the overall operation and maintenance of the NWTP. The report gave Newport a rating of “fair” because of legal action that was taken by RI DEM against Newport regarding ongoing maintenance problems resulting in bypasses of raw sewage at city pump stations. There were three pump station bypasses reported in 1999 and there were several pump station upgrades in 1998 and 1999.

* A storm that has a probability of occurring once every three months.

Sewage Treatment Allocations: Sewage charges to Newport customers are based on water meter readings. The Navy and town of Middletown are billed quarterly based on metered usage.

About 98 percent of Newport is serviced by the Connell Highway Sewage Treatment Plant. Areas around Ocean Drive do not have access to this sewer system.

The Connell Highway Sewage Treatment Plant services approximately 78 percent of Middletown's households. Areas in eastern Middletown do not have access to this sewer system. Middletown has been allocated a maximum of 2.1 mgd of sewage to enter the treatment plant. However, recent levels show that Middletown has consistently been near or over its allocated amount. Levels are reported as high as 2.5mgd.

The majority of Portsmouth is not sewered. In the fall of 2000, Portsmouth will be conducting a sewer feasibility study for the Island Park and Portsmouth Park areas. Raytheon Industries, located in Portsmouth, is currently trucking sewage down to the Newport plant. It is estimated that 3,000 to 9,000 gallons per day are received.

All of the U.S. Navy is serviced by the Connell Highway Sewage Treatment Plant, excluding the Fort Adams areas which has its own treatment plant. The Navy has been allocated 2.9 mgd. The Navy is below their allocated amount with current usage at 1.6 mgd.

Policies for Sewer Extensions: A moratorium on new sewer extensions was put into place in Middletown in June 1998. The moratorium was originally supposed to run through December 31, 1999 but was extended to December 31, 2000. Middletown already sends more sewage to the treatment plant than is allowed by contract. Only properties that front an existing sewer line, or have a failing septic system, would be able to tie into the line.

Privatization of the WWTF: The operation and maintenance of the sewer system is now under private management. This privatization is an attempt to eliminate costs to the Newport Public Works Department. It encourages system improvement including installation of odor controls, plant repairs, and possible separation of stormwater and wastewater flow.

Boat Pumpout Facilities: There are 12 boat pumpout facilities surrounding the island. Three facilities are located in the Sakonnet River area, two in the East Passage area, and seven within the Newport Harbor area. The three pumpout facilities in the Sakonnet River area hold waste in holding tanks. The remaining nine pumpout facilities pump waste into the Newport sewer system. The charge for boat pumpouts ranges from no cost to about \$5 per pump. Only two of the facilities are "member only;" the rest have daily hours for pumpout. All but one of the facilities are fixed in place.

Waste flow from boat pumpouts in the harbor are small (approximately 30,000 gallons per day) and do not cause problems for the WWTF.

Septic System Characteristics

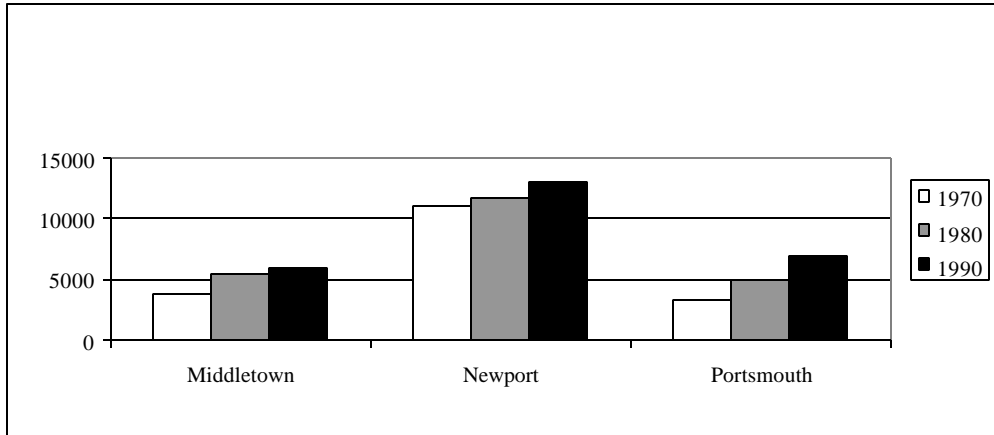
Approximately two percent of Newport, 22 percent of Middletown, and almost all of Portsmouth rely on septic systems to dispose of sewage. The municipalities primarily rely on RI DEM Office of Water Resources ISDS Program and its guidelines to manage the septic systems on the island.

In Newport, the number of septic systems has slowly increased since 1970 (Figure 84).

In Middletown, the number of septic systems in the town decreased from 1,735 households in 1970 to 857 in 1990. The placement of an ISDS within 200 feet of a freshwater wetland or within Zone 1 of the town's Watershed Protection District is prohibited (Figure 85).

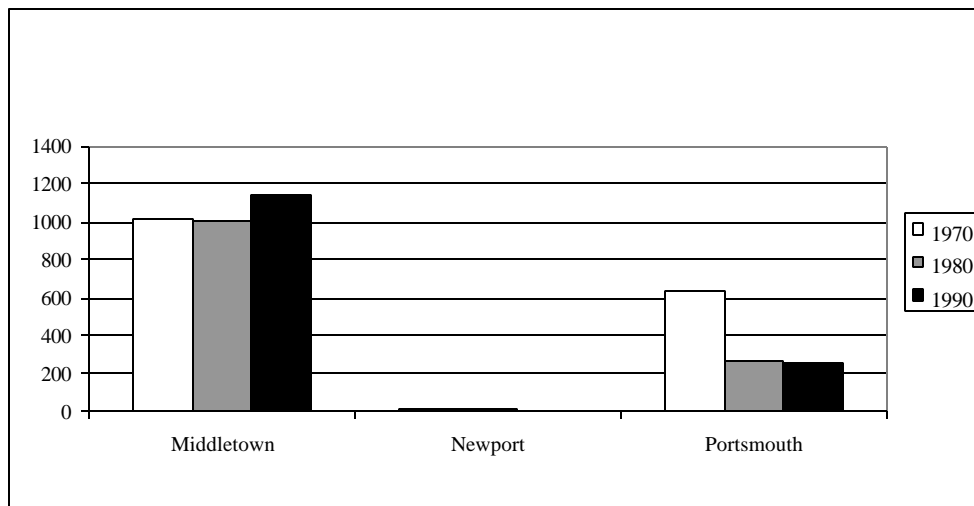
In Portsmouth, the number of septic systems in the town has doubled since 1970. The town has a wastewater management district in place (Figure 86).

Figure 72. Aquidneck Island public system or private company water source, 1970-1990.



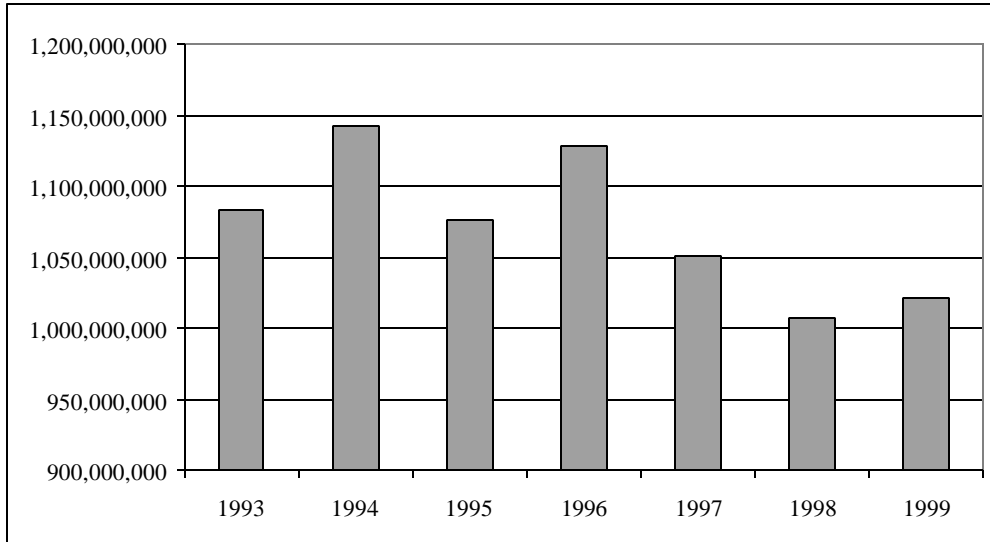
Source: U.S. Census Bureau, 1990.

Figure 73. Aquidneck Island individual wells as source of water, 1970-1990.



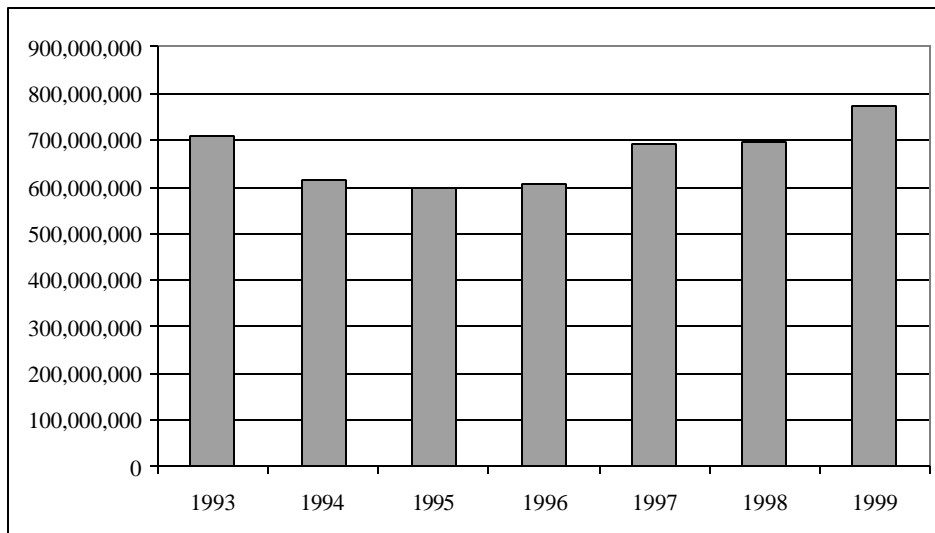
Source: U.S. Census Bureau, 1990.

Figure 74. Newport consumption (gallons per year), 1993-1999.



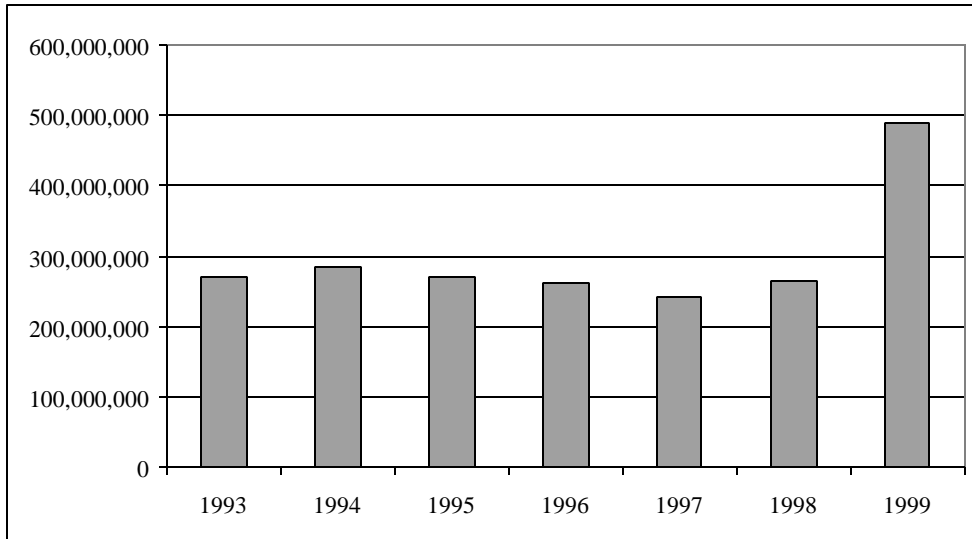
Source: Newport Water Department.

Figure 75. Middletown consumption (gallons per year), 1993-1999.



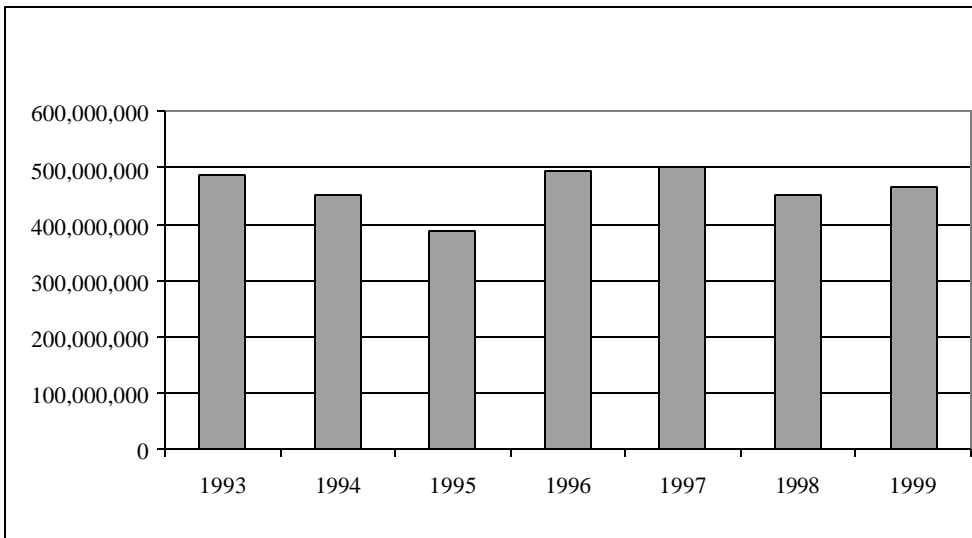
Source: Newport Water Department.

Figure 76. Portsmouth consumption (gallons per year), 1993-1999.



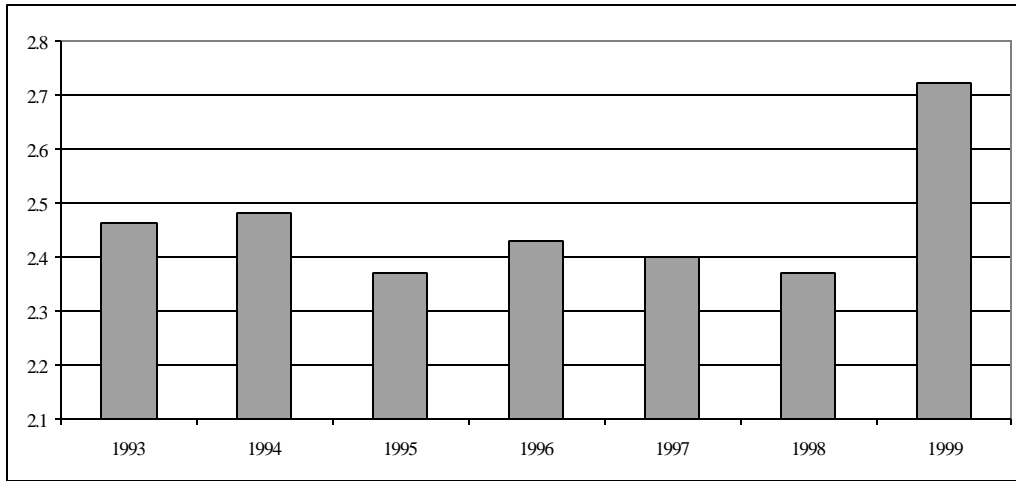
Source: Portsmouth Water and Fire District.

Figure 77. U.S. Navy consumption (gallons per year), 1993-1999.



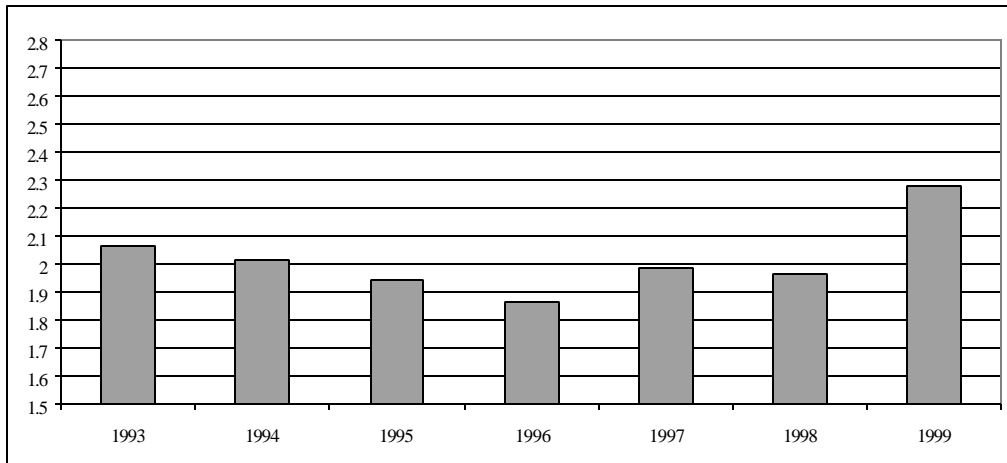
Source: Newport Water Department.

Figure 78. Newport Water Department production (billion gallons), 1993-1999.



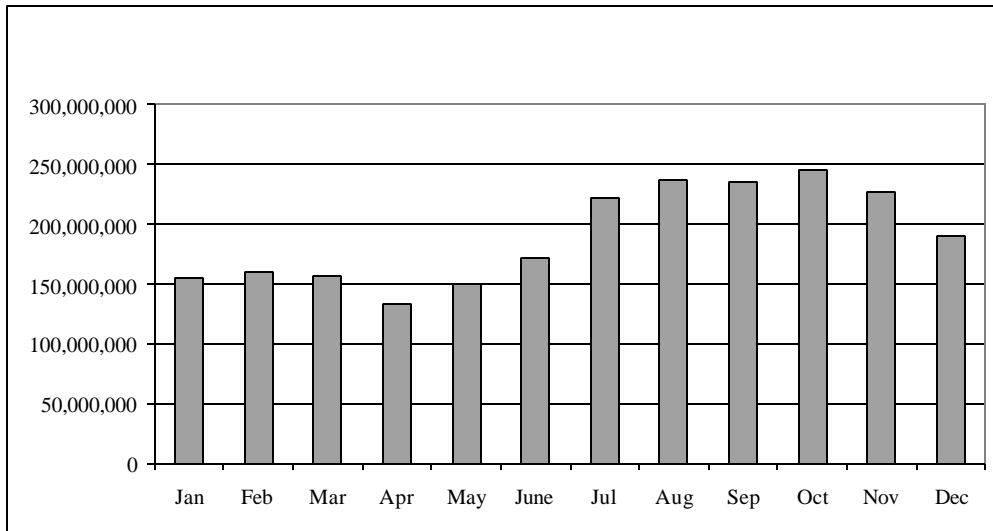
Source: Newport Water Department.

Figure 79. Islandwide consumption (billion gallons), 1993-1999.



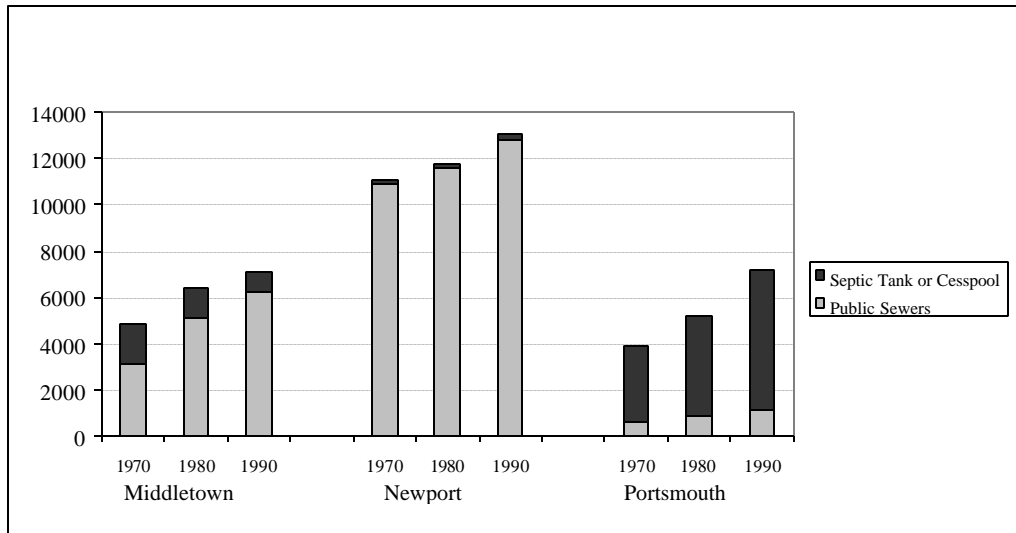
Source: Newport Water Department.

Figure 80. Islandwide consumption (gallons), 1999.



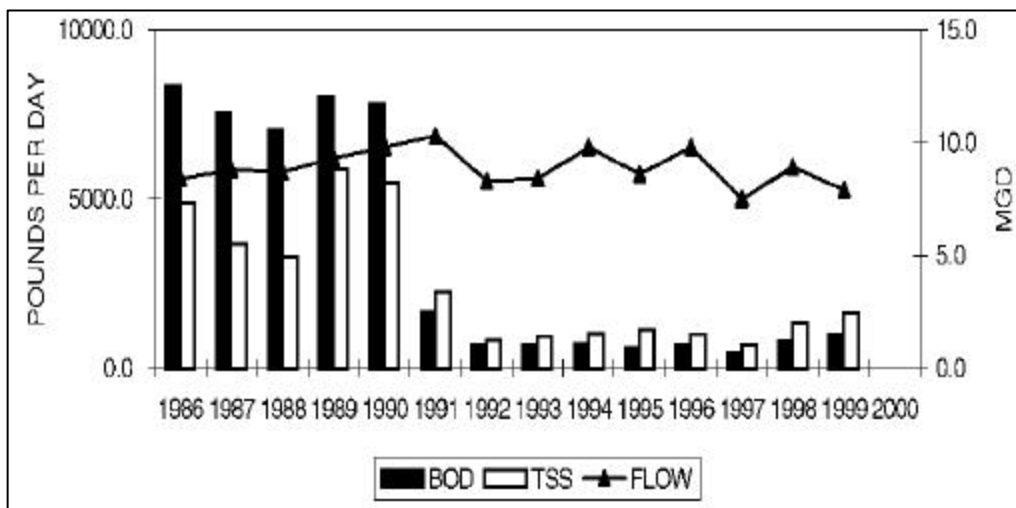
Source: Newport Water Department.

Figure 81. Sewage disposal (public sewer vs. septic tanks or cesspools), 1970-1990.



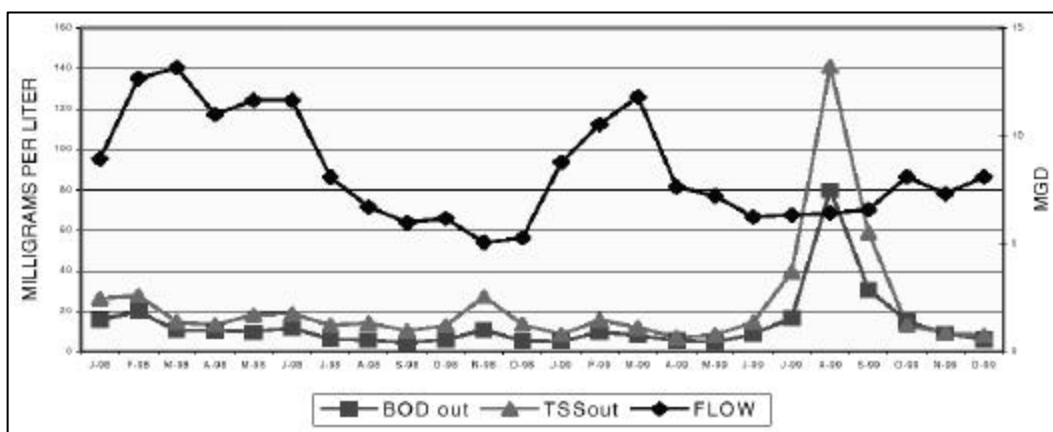
Source: U.S. Census, 1990.

Figure 82. Newport sewage volume, 1986-1999.



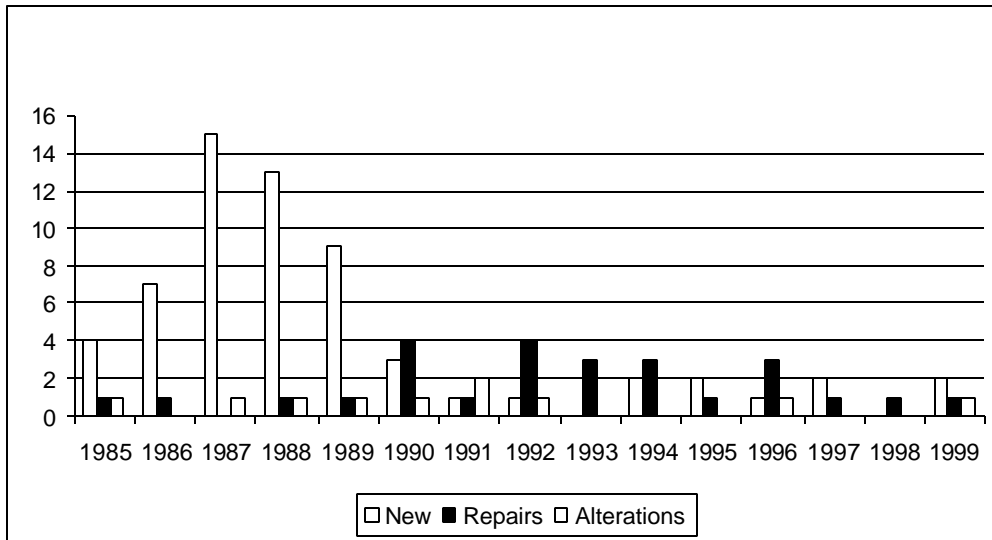
Source: R.I. Department of Environmental Management, "Survey of Wastewater Treatment Facilities in R.I.," 2000.

Figure 83. Newport effluent data, 1998/1999.



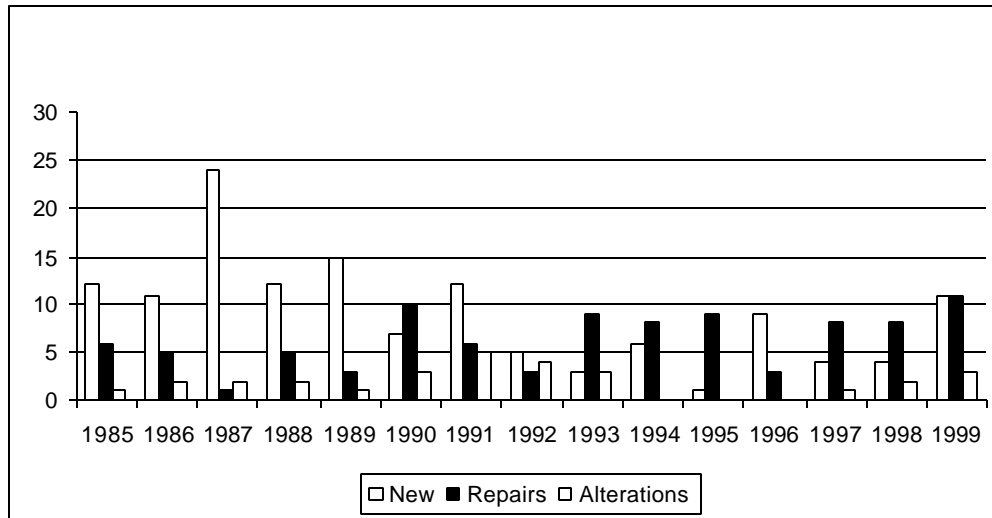
Source: R.I. Department of Environmental Management, "Survey of Wastewater Treatment Facilities in R.I.," 2000

Figure 84. Newport, number of septic system applications, 1985-1999.



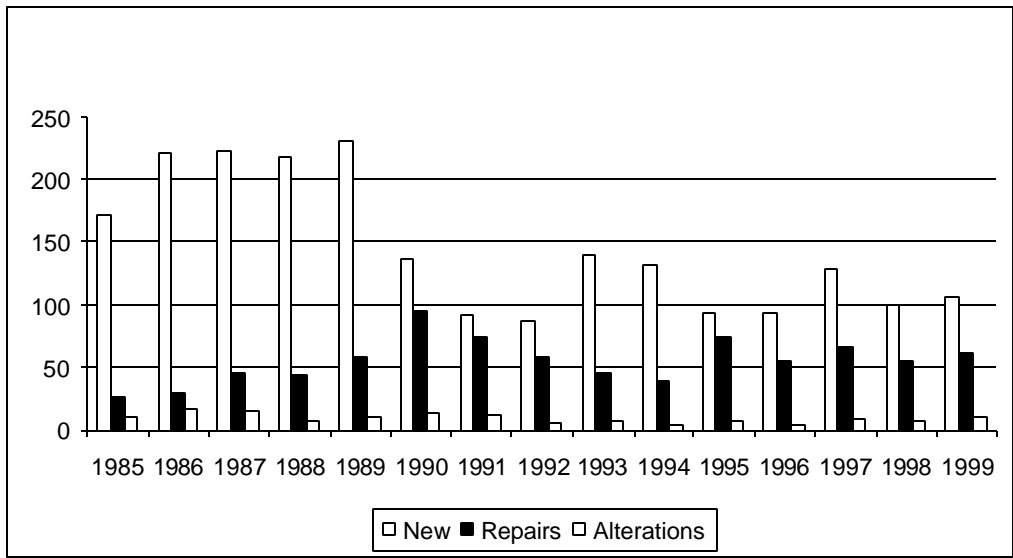
Source: R.I. Department of Environmental Management, ISDS program.

Figure 85. Middletown number of septic system applications, 1985-1999.



Source: R.I. Department of Environmental Management, ISDS program, 2000.

Figure 86. Portsmouth, number of septic system applications, 1985-1999.

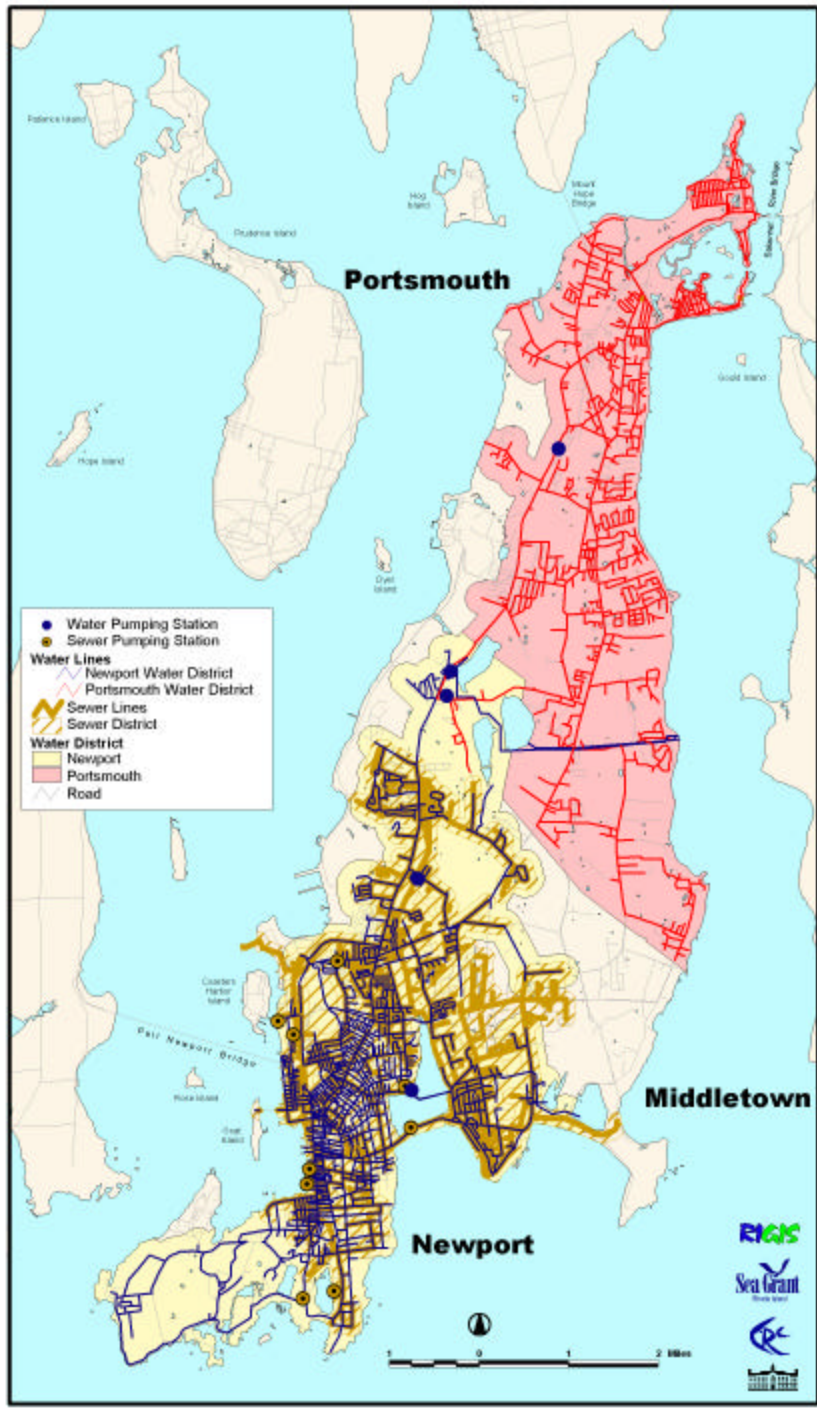


Source: R.I. Department of Environmental Management, ISDS program.

Map 22. Aquidneck Island surface waters.



Map 23. Distribution of sewer and water infrastructure on Aquidneck Island.



Historic and Cultural Resources

Bonnie Nickerson, Lori Watson, Rupert Friday

Rich in unique historic and cultural resources, the communities of Aquidneck Island are nonetheless in danger of losing some historic buildings, locations, and open space due to encroaching development, extended periods of poor physical upkeep, and a lack of funds to implement maintenance and protection programs. As communities age, the connections between populations and treasured places weaken further: older generations of native residents who knew of, and thus were more inclined to value, these resources are being replaced by new community members, who often come from other states and are thus unaware of island history and culture. In addition, the island is often the short-term home of Navy personnel who share this unfamiliarity.

Aquidneck Island's historic and cultural resources reflect the island's military, maritime, agricultural and architectural heritage as well as its appeal to colonial and religious pioneers who settled an island that had been inhabited and cultivated for centuries by Native Americans.

Roger Williams came to the island in 1636 and was a key figure in negotiations that ultimately resulted in Native Americans deeding the island to several exiles from Massachusetts in 1638. The colonists first settled in Portsmouth, with some settlers shortly moving to the island's southern end—Newport. Middletown was initially part of Newport, so the two municipalities share historical roots.

Newport stands out for its role as a prominent colonial port city, and subsequent growth as an urban center and internationally significant seaport. Middletown and Portsmouth are regarded more for their contributions as agricultural communities.

The historic and cultural resources forged within the three communities are a cornerstone of island identity and sense of place. Cultural and historic resources have traditionally provided the framework for a high quality of life on Aquidneck Island, often anchoring critical aspects of the economy, such as tourism.

Forces Impacting Cultural and Historic Resources

Real Estate Development: The high demand for housing is impacting the rate and style of development on the island, as well as the appearance and character of scenic landscapes. New subdivisions and commercial buildings often fail to reflect the community's traditional landscapes or evoke the character of historic island neighborhoods.

- More than 1,400 island acres—an area about the size of a quarter of Newport – were lost to major residential subdivisions from 1985-1997.
- More than 200 acres of open space were lost to major housing subdivisions in 1997, with the rate of increase for single-family building permits in Middletown outpacing all other Rhode Island municipalities in 1997.²⁹

²⁹ Data from Hutchinson, M.F. 1998. *Aquidneck Island: A Decade of Change*. Aquidneck Island Partnership Coastal Management Report #3302. R.I. Sea Grant Program.

Island neighborhoods are changing because of high housing demands and changing values. Many houses in the island's traditional neighborhoods are being bought as second homes for weekend and seasonal use. Other houses are being bought for use as bed and breakfasts. In most cases, the physical character of these traditional neighborhoods is either intact or restored. Cultural historic and natural amenities attracted 3.7 million tourists in 2000.

National Register of Historic Places and Districts, Landmark Districts, and Local Historic Districts

Designations do not offer regulatory protection except during the design and construction of federally funded projects. Local historic districts can be designated and formally adopted by municipalities. These areas can be regulated by historic area zoning and managed by local historic district commissions. When established and enforced, local historic districts offer protection to cultural and historic resources. Of the three island municipalities, only Newport has a locally designated historic district, which covers the point areas, Historic Hill, Bellevue Avenue, the mansions, and Ocean Drive (Map 24).

Newport

- 12 National Historic Landmarks
- 39 National Register of Historic Places sites
- 13 historic houses managed by the Preservation Society of Newport County
- Four houses managed by the Newport Historical Society
- 55 historic structures managed by the Newport Restoration Foundation
- 53 sites or structures listed on the National Register of Historic Places:
 - Edward King House
 - Redwood Library
 - The Art Association of Newport
 - Newport Casino, Val Alen Casino Theatre, Newport Performing Arts Center
 - Kingscote
 - Charles H. Baldwin House
 - The Elms
 - Chateau-sur-Mer/Wetmore House
 - Rosecliff/Herman Oelrichs House
 - Marble House
 - Wanton-Lyman Hazard House
 - The Bird's Nest
 - Castle Hill Lighthouse
 - Clarke Street Meeting House
 - Henderson House
 - Armory of the Newport Artillery Company
 - Vernon House
 - U.S. Naval War College
 - Luce Hall
 - President's House
 - Dr. Charles Cotton House
 - Emmanuel Church
 - Lucas-Johnston House
 - Common Burying Ground and Island Cemetery

- Fort Adams State Park/Fort Adams
- Newport Harbor Lighthouse
- Commandant's Residence
- Miantonomi Memorial Park and WWI Memorial Tower
- Ida Lewis Rock Lighthouse
- Malbone
- Seamen's Church Institute
- The White Horse Tavern
- John Tillinghas House
- The Breakers
- Isaac Bell House/Edna Villa
- Rose Island Lighthouse
- Shiloh Church/Trinity School House
- William Watts Sherman House
- United Congregational Church
- Trinity Church
- Bull-Mawdsley House
- The Brick Market
- Perry Mill
- Francis Malbone House
- Samuel Whitehorne House
- Newport Steam Factory
- Joseph Rogers House/Preservation Society of Newport County Headquarters
- Touro Synagogue
- Levi H. Gale House/Jewish Community Center
- The Old Colony House/The Old State House
- Army and Navy YMCA
- Hunter House
- William King Covell III House

Newport National Historic Landmark Districts

- Bellevue Avenue National Historic Landmark District: Both sides of Bellevue Avenue from Memorial Boulevard to the Atlantic Ocean at Land's End, bounded on the east by Easton Bay and on the west by properties on the west side of Bellevue Avenue.
- Fort Adams National Historic Landmark District: Ford Adams Road at Harrison Avenue.
- Newport National Historic Landmark District: Bounded to the north by Van Zandt Avenue; east and north by Farewell Street, Warner, Spruce and Oak Streets; east by Broadway, Bull Street, Whitfield Place and Touro Street; south on William and Golden Hill Streets; east on Spring Street; south on Pope Street, west on Thames Street and, in the Point Section, on Narragansett Bay.
- Ocean Drive National Historic Landmark District: Includes all of Ocean Drive, from Almy Pond around and back to Wellington Avenue and Newport Harbor.

Newport National Register Districts

- Bellevue Avenue/Casino Historic District
- Kay Street/Catherine Street/Old Beach Road Historic District
- Ochre Point/Cliffs Historic District

Middletown

The Rhode Island Historical Preservation and Heritage Commission (RI HPHC) has identified 105 structures and sites of historic interest and seven districts of historic interest (1979), several of which were recommended for inclusion in the National Register of Historic Places. The Middletown comprehensive plan notes that these seven could be designated as local historic districts, though, as of July 2000, no local historical zoning district had been adopted.

Recommended Historic Districts

- Indian Avenue Historic District: Located in the eastern part of Middletown along the Sakonnet River. One quarter-mile section of winding, tree-lined road between Green End Avenue on the north and Third Beach Road on the south. Contains several noteworthy late Victorian and early 20th century summer houses and an 1884 stone chapel.
- Mitchell Lane Rural Historic District: About 125 acres of farmland, with a late Victorian farmhouse and several large, wood-shingle outbuildings. Farmed in the late 18th century.
- Paradise Avenue Historic District: Contains several structures along the southern part of Paradise Avenue, with most dating from the mid-19th century.
- Paradise Rocks Historic District: Located in the south-central part of Middletown, with rock ridges, including Paradise Rock and Hanging Rock.
- Prescott Farm Historic District: Located along West Main Road, both in Portsmouth and Middletown, and consists of a reconstructed colonial farm. The Overing House was the headquarters for the commander of British forces in Rhode Island during the Revolution.
- West Main Road Historic District: Located in the northwest part of Middletown, along West Main Road and Greene Lane in a rural tract with several old farms.
- Whitehall Historic District: A tract of open land north of Green End Avenue and along both sides of Berkeley Avenue. Whitehall, built about 1729, was the residence of Bishop George Berkeley, philosopher.

The 1991 Middletown comprehensive plan also includes inventories of the structures identified by RI HPHC and proposes five historic areas:

- Green End/Card's Redoubt: Remains of an earthwork in a pine grove at the rear of 218 Boulevard marks the site of Mackenzie's Green End or Card's Redoubt, once part of defenses built by the British in 1778.
- Sachuest: Slightly elevated, rocky peninsula located in the southeast corner of Middletown is federal property.
- Purgatory Chasm: Natural chasm in the cliffs along Sachuest Bay.
- Redoubt St. Onge: Sinuous mound of earth and a grassy, open area with a steep slope to the east marking site of Redoubt St. Onge, a Revolutionary War defense work.
- Naval Underwater Systems Center at Coddington Cove (buildings 103, 105, 107, 111, and 131): Includes several structures built during and after WWII, including the former Newport Airport Hangar.

Middletown Sites and Structures on National Register of Historic Places:

- Whitehall/Bishop George Berkeley House
- Witherbee School
- Taylor-Chase-Smythe House, Coaster's Harbor Island
- Hamilton Hoppin House
- Paradise School
- Gardiner Pond Shell Midden
- Clambake Club of Newport
- Lyman C. Josephs House
- Bailey Farm

Portsmouth

The RI HPHC identified 167 structures and sites of historic interest located outside of an historic district. The 1991 comprehensive plan also includes inventories of these structures. RI HPHC identified six significant historic districts (1979), including several recommended for inclusion in the National Register of Historic Places.

Recommended Historic Districts

- The Battle of Rhode Island Historic District: Although the battle took place on the entire island, there are two designated National Register of Historic District areas in the north-central part of Portsmouth that mark the site of the only major Revolutionary War engagement in Rhode Island. A monument was also erected in Portsmouth.
- Bristol Ferry Road Historic District: A small concentration of late 19th and early 20th century summer houses immediately south of the Mount Hope Bridge along Bristol Ferry Road.
- Glen Road Historic District: Off East Main Road in the southeast part of Portsmouth, is a scenic side road, lined with dry-laid stone walls and mature shade trees. There are noteworthy structures that range in age from the late 18th to mid-20th century.
- Portsmouth-Newton Historic District: Located along East Main Road and includes a church, church buildings, a cemetery, a library, and early to mid-19th century structures.
- Prescott Farm Historic District: see Middletown Recommended Historic Districts.
- Southeast Portsmouth Rural Estate Historic District: Along the Sakonnet River, this large district is an area of open fields, stone walls and several late 19th to early 20th century rural estates.

Portsmouth Sites and Structures on National Register of Historic Places

- Union Church
- Hog Island Shoal Lighthouse
- Portsmouth Friends Meeting House, Cemetery, and Parsonage
- Pine Hill Archaeological Site
- Mount Hope Bridge
- Prudence Island Lighthouse
- Lawtown-Almy-Hall Farm
- Oak Glen/Julia Ward Howe House

- Greenvale Farm
- Wreck sites of the *H.M.S. Cerberus* and *H.M.S. Lark*

Comprehensive Plans

The coverage of cultural and historic resources in community comprehensive plans is shown in Table 22.

Tidal Rights of Way

Aquidneck Island public rights of way to the tidal areas of the state are listed in Table 23 and on Map 25.

Table 22. Summary of Topics Covered in Municipal Comprehensive Plans

Topics covered	Middletown	Newport	Portsmouth
Historic buildings	X	X	X
Historic districts/potential districts	X	X	X
Contemporary buildings	X		
Traditional land uses Historic landscapes	X	X	
Institutions	X		
Cemeteries	X		
Stone walls	X		
Rights of way/access (Table 23)	X	X	
Archeological sites	X	X	
Scenic drives	X		
Unique features	X		
Military fortifications Revolutionary war era	X		
Underwater historic resources	X		
Cultural organizations and events		X	
Maritime resources/ Working waterfront		X	
Neighborhood identity		X	
Preservation of historic character through site design guidelines		X	X
Public awareness/ education/outreach		X	X

Table 23. CRMC public rights-of-way to the tidal areas on Aquidneck Island.³⁰

<i>Newport</i>	
Street Designation	R-O-W Designation No.
Webster Street	Z-1
Narragansett Avenue	Z-2
Ledge Road	Z-3
Ruggles Avenue	Z-4
Seaview Avenue	Z-5
Shepard Avenue	Unresolved
Bellevue Avenue	Not Public
Ocean Drive	Not Public
Cypress Street	Z-6
VanZandt Street	Z-7
Battery Street	Z-8
Pine Street	Z-9
Cherry Street	Z-10
Chestnut Street	Z-11
Walnut Street	Z-12
Willow Street	Z-13
Poplar Street	Z-14
Elm Street	Z-15
Goat Island Connector (28-B)	Z-16
Goat Island Connector (28-A)	Z-17
Brown & Howard Wharf	Z-18
Lee's Wharf	Z-19
Howard's Wharf	Z-20
Sisson's Wharf	Z-21*
Waites Wharf	Z-22*
Spring Wharf	Z-23
Cottrell's Wharf	Not Public
Hammetts Wharf	Not Public
N. Commercial Wharf	Unresolved
S. Commercial Wharf	Unresolved
Scotts Wharf	Unresolved
Perry Mill Wharf	Unresolved
Ann Street Pier	Unresolved
Long Wharf	Unresolved

* *On appeal*

Continued on next page.

³⁰ The RI CRMC Subcommittee on Rights-of-Way. June 1999. *Designation of Public Rights-of-Way to the Tidal Ares of the State.*

Table 23. CRMC public rights-of-way to the tidal areas on Aquidneck Island.

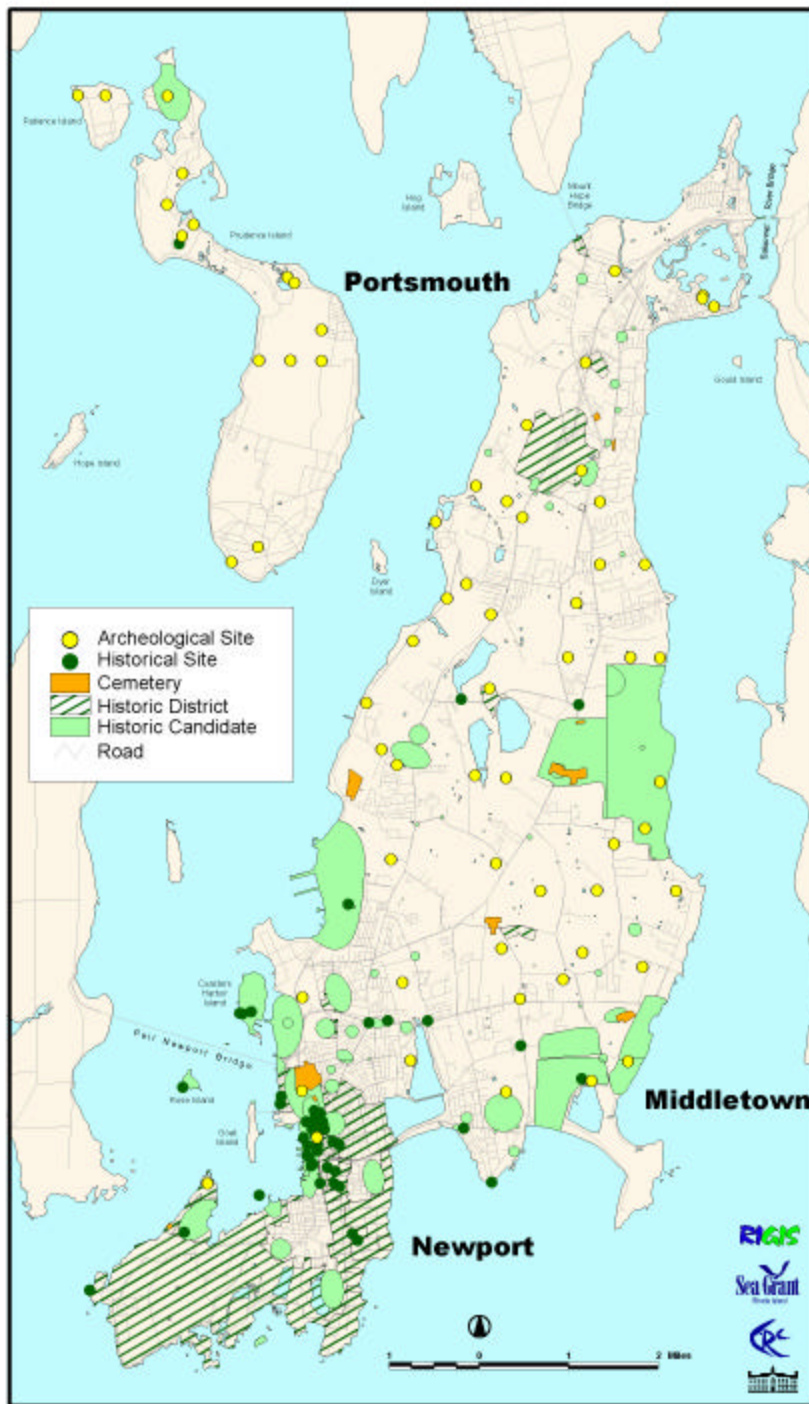
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<i>Middletown</i>	
Street Designation	R-O-W Designation No.
Tuckerman Avenue, btwn Lots 104/105	Y-1*
Tuckerman Terrace	Not Public
Shore Drive	Y-3
Third Beach Road	Y-4
Southeast end of Esplanade & Shore Drive	Y-5
Taggerts Ferry Road	Y-6
Kingfisher Avenue	Y-7
Northwest end of Esplanade	Y-8*
Western end of Purgatory Road	Y-9
Shore Drive, opp Lot 107	Y-10*
Tuckerman Ave, opp Wolcott Avenue	Y-11*

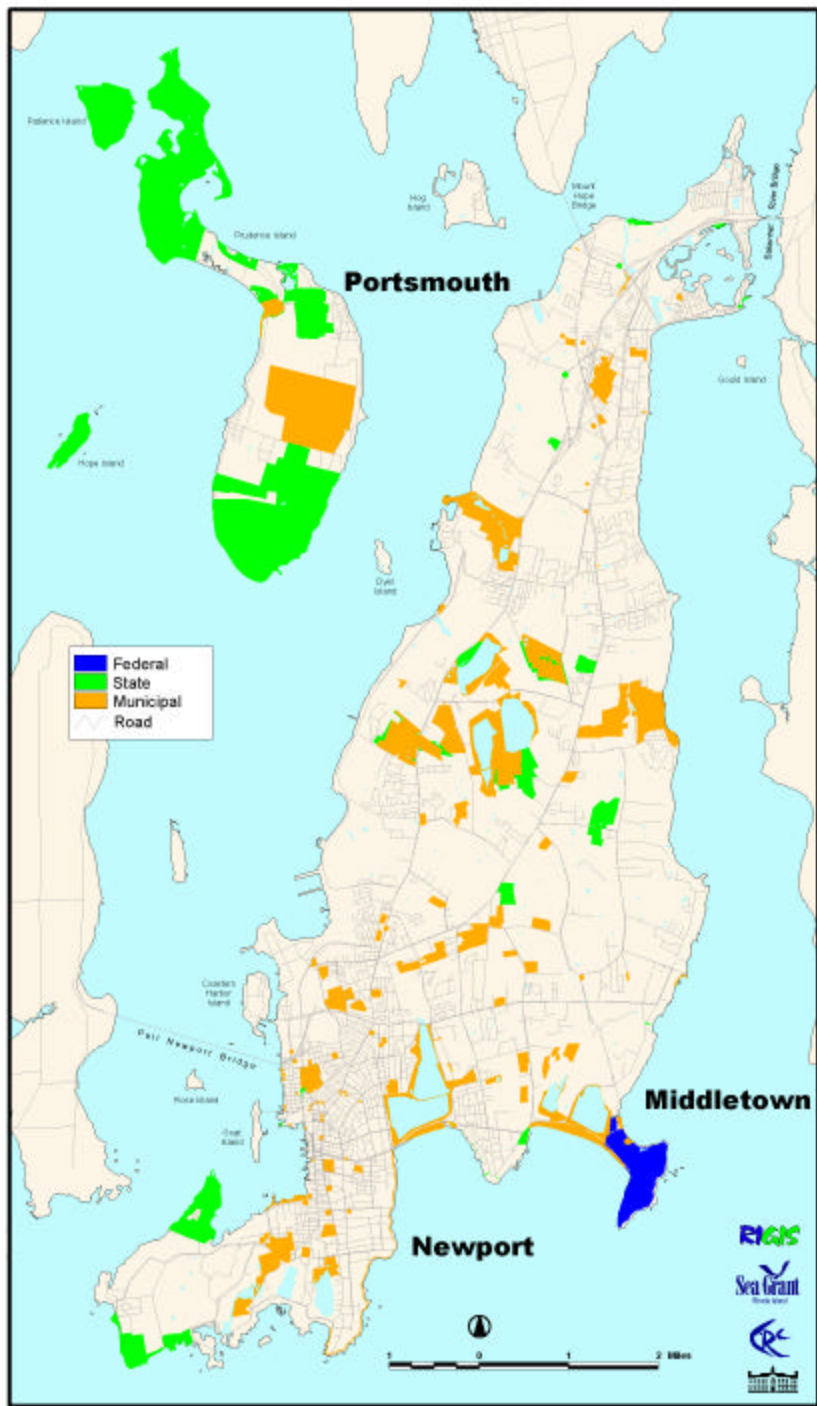
<i>Portsmouth</i>	
Street Designation	R-O-W Designation No.
Mt. View Road	V-1
Anthony Road	V-2
Narragansett Road	V-3
Cedar Avenue	V-4
Point Street	V-5
Green Street	V-6
Seaconnet Boulevard (northeasterly corner of land of Wm. Herbert)	V-7
Seaconnet Boulevard	V-8*
Seaconnet Boulevard (northeasterly corner of land of Virginia Arruda)	V-9
Seaconnet Boulevard (northeasterly corner of land of Virginia Arruda)	V10
Ruth Avenue	V-11
Fountain Street	V-12
Aquidneck Avenue	V-13
Atlantic Avenue (easterly end of East Corys land)	V-14
Atlantic Avenue (easterly end of Tallman Avenue)	V-15
Child Street	V-16
Morningside Lane	V-17
Bristol Ferry Town Common	Under Review
Cove Bridge	Under Review
Common Fence Point Marina – North	Under Review
Common Fence Point Marina – South	Under Review
Black Point Farm	Under Review
Willow Lane	Under Review
Sunset Lane	Under Review
Old Stone Bridge (by Teddy’s Beach)	Under Review
Porter’s Lane	Under Review
Public Boat Ramp – Tax Map 6	Under Review
East Power Street	Under Review

* *On Appeal.*

Map 24. Historical and archeological resources on Aquidneck Island.



Map 25. Publicly accessible lands on Aquidneck Island.



Housing

Rupert Friday, Kevin Fitzgerald, Bonnie Nickerson, Kelly Woodward

Housing on Aquidneck Island is required to meet the needs of residents, visitors, students, employees, and military staff. Within each group there are populations with special housing considerations: senior citizens, low- and moderate-income residents, and people with special needs. Depending on where and how they are placed and outfitted, housing stocks can effect the levels to which residents can benefit from public services, such as 911 emergency care. Equally important, housing stocks help influence whether the people and businesses within a municipality consider themselves a connected group—members of a community.

Number of Housing Units

Between 1970 and 1980, the number of housing units on Aquidneck Island increased by 352 yearly for a total increase of 17 percent during the decade. During the decade from 1980 to 1990, the number of housing units increased by 329 units per year for an increase of nearly 14 percent during the decade (Figure 87).

Building Permit Records: There were an average of 245 units permitted annually during the 1970s and an average of 277 units per year during the 1980s. Building permits are not issued for federal government construction or mobile homes. Thus, the increase in housing units is higher than the number of building permits issued (Figure 88).

Building permits show that since 1970, Portsmouth had the highest rate of single family housing construction on Aquidneck Island in all but four of the 29 years. Middletown had more single family housing constructed than Portsmouth in 1985, 1991, 1992, and 1997.

Annual rates of new development fluctuate widely in all three municipalities, which all experienced their highest rates of new construction between 1985 and 1989. Newport, a densely developed urban area with little land available for new subdivisions and residential construction, has consistently had a much lower rate of new housing development than Middletown and Portsmouth. The number of family housing units at Naval Station Newport has decreased by more than 25 percent since 1990 due to renovation and modernization programs.

Tax rolls in Middletown and Portsmouth document growth in single-family residences that parallels the number of building permits issued.

Housing Types

Single-family housing comprises the majority of housing in all three municipalities: 41 percent Newport, 65 percent Middletown, and 79 percent Portsmouth. Multi-family housing, most prevalent in Newport and the urban portions of Middletown, is limited in Portsmouth due to the absence of sewage facilities. Also, there is a relatively high percentage of mobile homes in Portsmouth and Middletown compared to state averages (Figure 89).

Conversion of Housing in Newport: Assessment data in Newport reveals a trend of residential property conversion to other uses. There was a loss of 179 single-family residences from the tax rolls in Newport between 1991 and 1995 during a period when the city issued 84 building

permits for new single-family dwellings. During the same time, the number of residential condominiums on the tax rolls also dropped by 60 units. Assessment records document a loss of 31 multi-family residential facilities from the tax rolls between 1995 and 1998. Some of this housing is now being used for bed and breakfast operation and other short-term lodging (Figure 90).

Age of Housing

The age of housing on Aquidneck Island reflects the island's development and settlement patterns and the population expansion from Newport to Middletown and Portsmouth. Seventy percent of Newport's housing was built before 1949 while only 26 percent of Middletown and 21 percent of Portsmouth housing stock is that old. The largest portion of Middletown and Portsmouth housing stock was built during the suburban boom between 1950 and 1979 (approximately 56 percent). As of 1990, approximately 20 percent of all housing in Middletown and Portsmouth had been built in the past 10 years compared to less than ten percent of Newport's housing (Figure 91).

Many older houses in Newport and on the island contain lead paint, with children being especially susceptible to inhaling and digesting contaminated debris. In fact, 14 percent of new kindergartners in Newport recently tested positive for high levels of lead (Rhode Island, 13 percent; Middletown, six percent; Portsmouth, four percent). Landlords who accept Section 8 housing vouchers are required to have lead paint inspections.

Aquidneck Island has a much smaller percentage of owner-occupied housing than the state does. In 1990, a slight majority of the housing on Aquidneck Island, 52 percent, was owner occupied. This ratio has not changed since 1980. The ratio of owner-occupied to rental units varies among the island's different municipalities. In 1990, renters occupied 58 percent of housing in Newport, 50 percent of housing in Middletown, and about 25 percent of housing in Portsmouth. Portsmouth is the only municipality on Aquidneck Island with a majority of owner-occupied housing (Figure 92).

Newport, which has nearly twice as many dwellings as the other island municipalities, has the highest ratio of rental housing to owner-occupied housing, and the majority of the rental housing on the island. In 1990, only 15 percent of all rental housing on Aquidneck Island was located in Portsmouth (Figure 93).

Seasonal Housing

Some housing on Aquidneck Island is owned and used for second homes that are occupied by their owners seasonally and on occasional weekends. Other housing is rented seasonally. Although there is not strong data on seasonal housing use, real estate agents report that the majority of housing available for seasonal rentals is in Newport with less available in Middletown and Portsmouth. Most seasonal housing is rented for nine months to students at Salve Regina University and Roger Williams University and then rented at high rates for summer use. Many of the seasonal rentals are apartments in multi-family (two to three) units. Real estate agents report there are at least 3,000 summer rentals on the island with approximately 2,500 in Newport alone.

Rental Housing

The total number of rental housing units in each municipality increased during the decades from 1970 to 1980 and from 1980 to 1990. There was also a general increase in the number of owner-occupied housing units in each municipality during these periods (Figure 94).

The number of rental housing units in Middletown increased (48 percent and 1,090 additional units) more than the number of owner-occupied houses (35 percent and 854 additional units) between 1970 and 1990.

Newport had an eight percent increase in both rental housing and owner-occupied housing between 1970 and 1990. Between 1970 and 1980, there was actually a decrease in the number of rental housing units as they were converted to owner-occupied housing and other uses.

Portsmouth's average annual increase of owner-occupied housing was more than four percent during the 1970s and more than three percent during the 1980s. Thus, between 1970 and 1990, there was an 89 percent increase (2,147 houses) in owner-occupied housing. By 1990, Portsmouth had nearly as much owner-occupied housing as Newport. Portsmouth had a much smaller increase in rental housing (37 percent) during the same period.

Visitor Housing: Aquidneck Island has more than 3,400 rooms available for rent by tourists and other short-term visitors (Table 24). The number of rooms available for rent has been increasing yearly as illustrated by the rooms registered for rent in Newport houses (Figure 95).

Table 24. Aquidneck Island room availability, 1998.

Municipality	Total	Hotels	Motels	Timeshare	Inns/B&Bs
Newport	2430	1211	171	374	674
Middletown	846	526	267	0	53
Portsmouth	140	85	32	0	23

Navy Housing

The Navy provides some housing for non-civilian personnel assigned to the Newport Naval Station in a variety of locations and styles. Civilian employees live in the community and have relatively low turnover.

Since 1992, renovation of Navy housing has reduced the total number of family housing units (Table 25). Furthermore, Connell Manor was transferred to Newport for a Community College of Rhode Island campus, and housing in North Kingstown is no longer assigned to personnel at the Newport Naval Complex. The Navy's family housing facilities at the Newport Naval Complex have decreased nearly 30 percent from 1,927 units in 1992 to 1,365 units in 2000.

The 1,365 family housing units available in 2000 were not enough for the 1,500 families assigned to the Naval Station. About one half of the housing is for families of students and one half is for enlisted staff and officers. Some housing is always off-line between classes. Enlisted staff and officers typically have a two- to three-year tour at the Naval Station. Family housing is not available for individuals.

“Bachelor Quarters,” or “BQs,” are also housing units. In 2000, three categories of BQs provided 1,593 housing units for 2,318 people in Newport. Housing includes student housing (741 rooms, 1,444 beds); transient hotel-like housing, (651 rooms); permanent (201 rooms, 223 beds).

The Navy used to provide separate BQs for enlisted personnel and officers, but removed the distinction to meet housing needs and reduce housing shortages. In 2000, housing shortages in BQs occurred most frequently when large Naval Station events were held during the summer.

Navy housing includes a 150-room Suisse Chalet and a lodge with about 50 rooms.

Table 25. Navy housing

Newport	# Units	
	1992	2000
Fort Adams	125	125
Naval Hospital	10	4
Cloyne Court	10	7
Farragut Field	40	24
Coddington Park	12	12
Hart Field	30	16
Connell Manor	110	0
Coasters Harbor Is.	11	11
Totals	348	199

Middletown	# Units	
	1992	2000
Capehart Cove	264	232
Anchorage	406	308
Greene Lane	588	411
Totals	1258	951

Portsmouth	# Units	
	1992	2000
Capehart Melville	239	236
Rainbow Heights	20	21
Mobile Home Park	52	52 (pads)
Totals	311	309

If Navy personnel are unable to find housing or choose not to live on-base, they get a housing allowance to assist with off-base housing costs. The Navy housing office maintains a referral list of available housing in the community, but the list is shorter during the summer when tourists, who pay higher rents, occupy most units. Navy students attending summer courses often have difficulty finding accommodations on Aquidneck Island.

Community Stability

The number of years that residents live in the same house is one indicator of community stability. Relative to state averages, there is a very high level of residential turnover on Aquidneck Island. In 1990, only 55 percent of Portsmouth residents and fewer than 44 percent of Middletown and Newport residents had lived in the same housing for the past five years. Fewer than 20 percent of all island residents had lived in the same house for 20 or more years. In 1990, Portsmouth had the highest rate of residents remaining in the same housing for an extended period of years. Residents who have more recently moved into their housing are more likely to be renters. Conversely, longer-term residents are more likely to be homeowners. There is a high percentage (12 percent) of Newport residents who have lived in the same housing for more than 30 years (Figures 96, 97, 98).

Cost of Housing

Median Sale Price: The median sale price of single-family homes on Aquidneck Island is consistently higher than the median sales prices statewide (Figure 99). The prices are also increasing at a faster rate than statewide prices.

In 1999, the median sale price of single-family houses exceeded state median sale prices by 13 percent in Newport, 25 percent in Middletown, and 27 percent in Portsmouth.

Between 1995 and 1999, the median sale price of single-family houses increased 15 percent in Newport, 19 percent in Middletown and 27 percent in Portsmouth while the statewide price increased 10 percent.

Median sale price of single-family houses in Newport mirrored the gradual four- to five-percent Rhode Island annual increases. However, Middletown and Portsmouth have experienced dramatic annual increases—15 percent in a one-year period—in median sale prices of homes.

Median Contract Rent: The median contract rent of housing on Aquidneck Island, like median sale price, has been consistently higher than the statewide median (Figure 100). However, the gap between the rental rates on the island and throughout the rest of the state decreased between the 1970 and 1990 U.S. Census Bureau data. Rhode Island rent surveys indicate that this trend has continued for Middletown which now has rental rates below the state average. However, recent rent surveys suggest that the trend has reversed in Newport and Portsmouth, where 1998 rental rates had increased relative to statewide rental rates since 1990.

In 1970, median rents in island communities exceeded statewide median rents by 34 percent in Newport, 50 percent in Middletown, and 51 percent in Portsmouth.

In 1990, median rents in island communities exceeded statewide median rents by 21 percent in Newport, 32 percent in Middletown, and 31 percent in Portsmouth.

A 1998 survey found that median rent in Newport and Portsmouth exceeded statewide median rent by 24 percent and 38 percent respectively. Middletown fell 15 percent below median statewide rental rates.

The gap between housing prices on the island and statewide averages is generally higher for renters than for home buyers. However, in 1998, rental rates in Middletown were below statewide median rental rates (Figures 101 and 102).

Housing Affordability

Housing is considered affordable if the rental or mortgage cost is at or below 30 percent of monthly income. Housing affordability information, such as family incomes and typical cost of housing, is gathered by U.S. Census Bureau and effects Federal Housing and Urban Development Program determinations. It is difficult to determine trends in housing affordability between U.S. Census Bureau years.

One indicator for the relative affordability of housing in a community is the percentage of average wage necessary to pay the average monthly rent or monthly mortgage for a house at the median sale price. Based on this indicator, housing has become relatively more affordable in recent years for those who live and work on Aquidneck Island.

The percent of the average wage that people working on Aquidneck Island would need to pay for their monthly mortgage on a median priced house dropped in all three municipalities from 1990 to 1995. By this measure, between 1995 and 1998, the cost of housing relative to incomes continued to drop in Newport and Middletown but increased in Portsmouth (Figure 103).

Using 30 percent of income as a benchmark, the mortgage for a median-priced house is not affordable for families with a single wage earner who earns an average wage. For these families, owning a median-priced house requires a high percentage of income.

As a percentage of average wages for people working on Aquidneck Island, rental housing became more affordable between 1994 and 1998 in Middletown and Newport. By this measure, rental housing became less affordable in Portsmouth.

Using 30 percent of income for housing as a benchmark, rental housing on Aquidneck Island was affordable in 1998 to those earning an average wage. However, there are many people and families with below average wages and incomes for whom rental housing is not affordable (Figure 104).

Subsidized Housing

Public Housing: Individuals and families must be low-income, defined as incomes below 80 percent of median income, to qualify.

Section 8 Vouchers: Individuals and families must have an income below 30 percent of median income to qualify.

Table 26. Newport County income limits for public and Section 8 housing, 2000.

Household Size	Public Housing	Section 8
Single person	\$27,050	\$10,900
Household of 2 people	\$30,900	\$12,450
Household of 3 people	\$34,800	\$14,000
Household of 4 people	\$38,650	\$15,550

Portsmouth and Newport have housing authorities that manage subsidized housing units for families and elderly persons. Rhode Island Mortgage and Finance Company (RIHMFC), the statewide housing agency, operates additional subsidized units. Although Middletown does not have a housing authority, RIMFC operates subsidized units in the town.

In addition to subsidized units, federally subsidized Section 8 vouchers are available to qualified residents. With the voucher program, families and individuals pay 30 percent of their monthly income towards rent, and the subsidy picks up the remaining cost for rent. In order for the Section 8 program to be effective, landlords must be willing to rent apartments to voucher holders, and there must be apartments available for reasonable rents. Each housing authority establishes a rent range for appropriate apartments. There are currently waiting lists for Section 8 vouchers in all three municipalities. Section 8 holders must find an apartment within 60 days (with an opportunity for a 60 day extension) or the voucher must be returned to the housing authority. Individuals who are unable to find a suitable apartment within the time limit lose their voucher and are put back on the waiting list.

Table 27. Subsidized housing on Aquidneck Island

Town	Assisted Living Beds	Total # of Housing Units	Low/Moderate Income Housing Units	Public Housing Units and vouchers	RI Mortgage and Finance Company Units
Newport		13,094	2,097 Family: 1,529 Elderly: 568	Family: 828 Elderly: 268 Vouchers: 100	Family: 12 Elderly: 56
Middletown	103	5,846	698 Family: 419 Elderly: 279	No housing authority	Family: 12 Elderly: 50 Vouchers: 95*
Portsmouth	98	7,235	135 Family: 25 Elderly: 110	Family: 0 Elderly: 40 Vouchers: 100	Family: 0 Elderly: 70

Source: Rhode Island Consolidated Plan 2000-2005.

* of the statewide Section 8 vouchers offered by RIHMFC, 95 families currently live in Middletown

The majority of public housing units in Newport are clustered in two major developments: Tonomy Hill with 45 percent of all units (498) and Park Home with 24 percent of all units (262).

Newport's waiting lists for public and Section 8 housing reveal:

- That 145 families were on the waiting list for public housing as of February 2000. Of this group, 77 percent were extremely low-income (\leq 30 percent of average monthly income) and 18 percent were very low-income (30-50 percent average monthly income). In addition, 47 percent of those on the waiting list were families with children.
- That 254 families were on the Section 8 waiting list as of February 2000. Of this 67 percent were extremely low-income and 26 percent were very low-income. In addition, 81 percent of the families on the waiting list were families with children.
- That between September 1999 and July 2000, 40 percent (146 out of 372) of Section 8 vouchers were returned because the recipient could not find an apartment.

Special Needs Housing

A variety of facilities and organizations provide special needs housing, such as senior housing, emergency shelters, and transitional housing. An informal survey of senior housing facilities managers indicates that 90 percent of residents and staff are from the island.

Emergency Shelters/Homeless Shelters/Transitional Housing

- Lucy's Hearth, 30 beds (Middletown)
- Newport County Women's Resource Center, 10 beds (Newport)
- McKinney Cooperative Shelter, 25 shelter beds, two transitional family units, 10 transitional individual units (Newport)
- Child and Family Services of Newport County, eight transitional family units (Middletown)
- Fifty Washington Square, 108 single-room transitional occupancy units, 18-bed emergency shelter (Newport)

Nursing Homes

- Carriage House Nursing Home (Middletown)
- Forest Farms Assisted Living, 50 units (Middletown)
- Heatherwood Nursing and Sub-acute Center (new) (Newport)
- St. Charles Home for the Aged, 49 units (Newport)
- Village House Convalescent Home, nine hospice and comfort care, 31 Alzheimer, (new) (Newport)
- St. Clare Home, 47 beds (Newport)
- Grand Islander Center (new), 148 beds (Newport)
- Henderson Home (Newport)
- Nina Lynette Home (Newport)

Retirement Communities & Senior Housing

- John Clarke Retirement Center, 50 units independent living, 60 beds nursing (Middletown)
- Blenheim-Newport Residential Retirement Community, 59 independent units, 41 assisted units (Newport)
- Anthony House, 74 senior units subsidized, Church Community Housing Corporation (CCHC) (Portsmouth)
- West House, 50 senior units subsidized, CCHC (Middletown)
- Mumford, 34 senior units subsidized, CCHC (Newport)
- Star of the Sea, 37 senior units (Newport)

Group Homes Operated by CCHC

- Newport - 2
- Middletown - 1
- Portsmouth - 1

Physical Disability Housing

- Villa Nia, 15 subsidized units, CCHC (Middletown)

Church Community Housing Corporation: The corporation addresses community housing issues in Newport County. Under contracts, CCHC administers housing funding from federal Community Development Block Grants Programs. There are 34 family rental units in Newport and three in Middletown. CCHC programs include:

Down Payment Assistance Program: Initiated in 1992, the organization provides loans to low and moderate income homebuyers to assist with closing costs. The zero interest loans are repaid when the house is resold. Funds are maintained in a revolving fund. In the early 1990s, 30 to 40 loans were issued. In 2000, about 60 loans were made. Currently, income qualification for this loan is \$41,500 for a family of four. With good credit and low debt, families with this income could qualify for mortgages to buy \$125,000 homes.

Home Rehabilitation: This program, started in 1975, provides loans to residents for housing rehabilitation projects such as window and roof replacements. As of 1999, 891 loans had been issued. Up to \$3,500 of each loan is deferred until the house is sold. Loans of up to \$10,000 have a three percent interest over 15 years. The deferred loans primarily benefit individuals of more than 60 years of age. In 2000, the revolving loan fund contained \$3 million to \$4 million. Loans average about \$8,000 and are often spent on multi-family housing.

Landtrust HOME: Under this program, which was launched in 1992, homes are sold while the CCHC retains ownership of the land upon which the house is located. Since the land values are separated from the house values, house values and costs remain lower, enabling the program to reduce purchase costs and keep housing affordable over time. Between 1992 and 2000, 22 houses ranging from \$12,000 to \$145,000 were acquired for the Landtrust program.

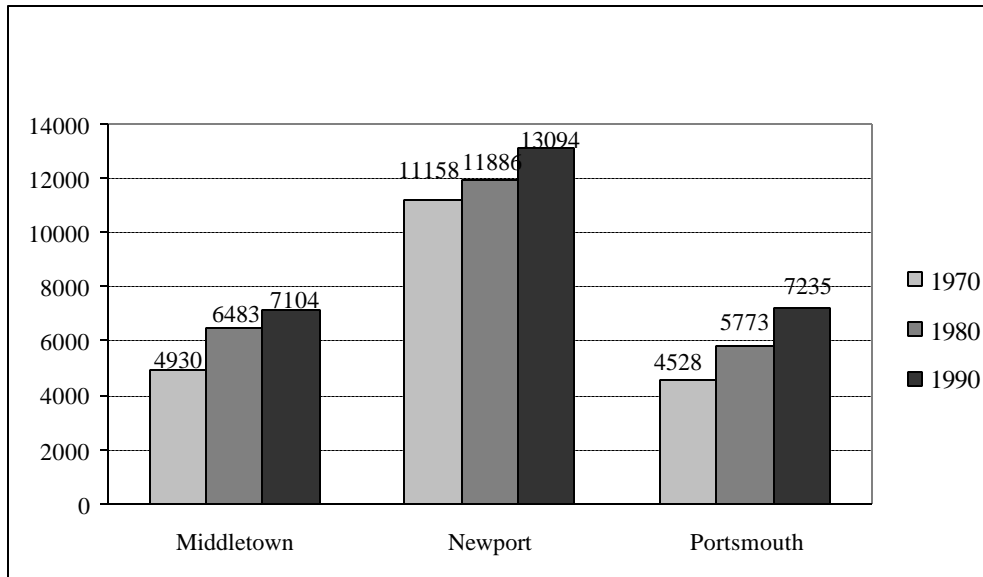
Home Buyer Education: The state-approved program teaches homeowners how to budget and establish savings accounts and ultimately qualify for mortgages. Two

education programs are underway at any time throughout the year. Between 1994 and 2000, 180 homeowners “graduated” from the program. Most graduates take a year or more after the class to qualify for a mortgage.

Table 28. Church Community Housing Corporation, home ownership support programs, 1990-2000.

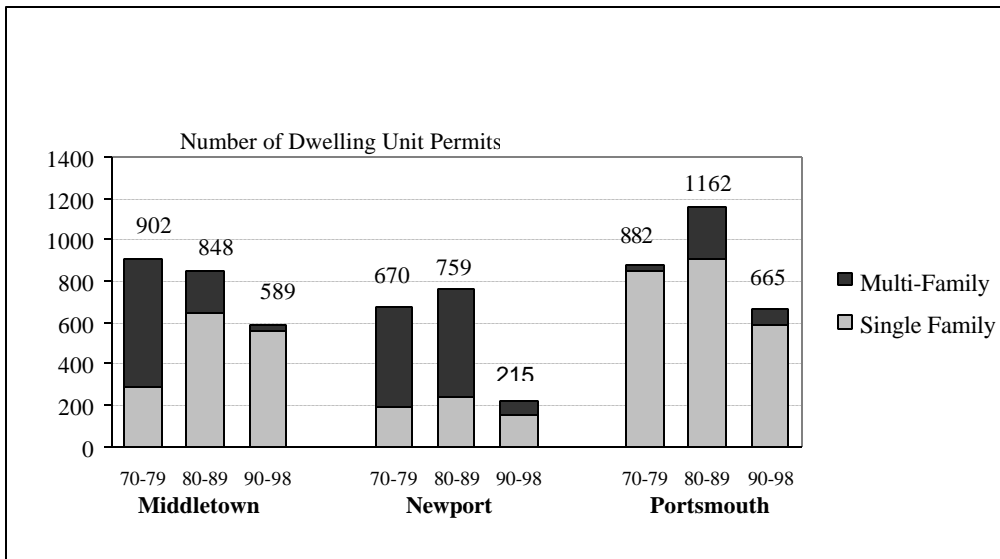
Community	Down-Payment Assistance	Landtrust HOME	Rehabilitation Loans
Newport	29	22	153
Middletown	23	14	55
Portsmouth	8	9	57
Totals	60	45	265

Figure 87. Number of housing units, 1970-1990.



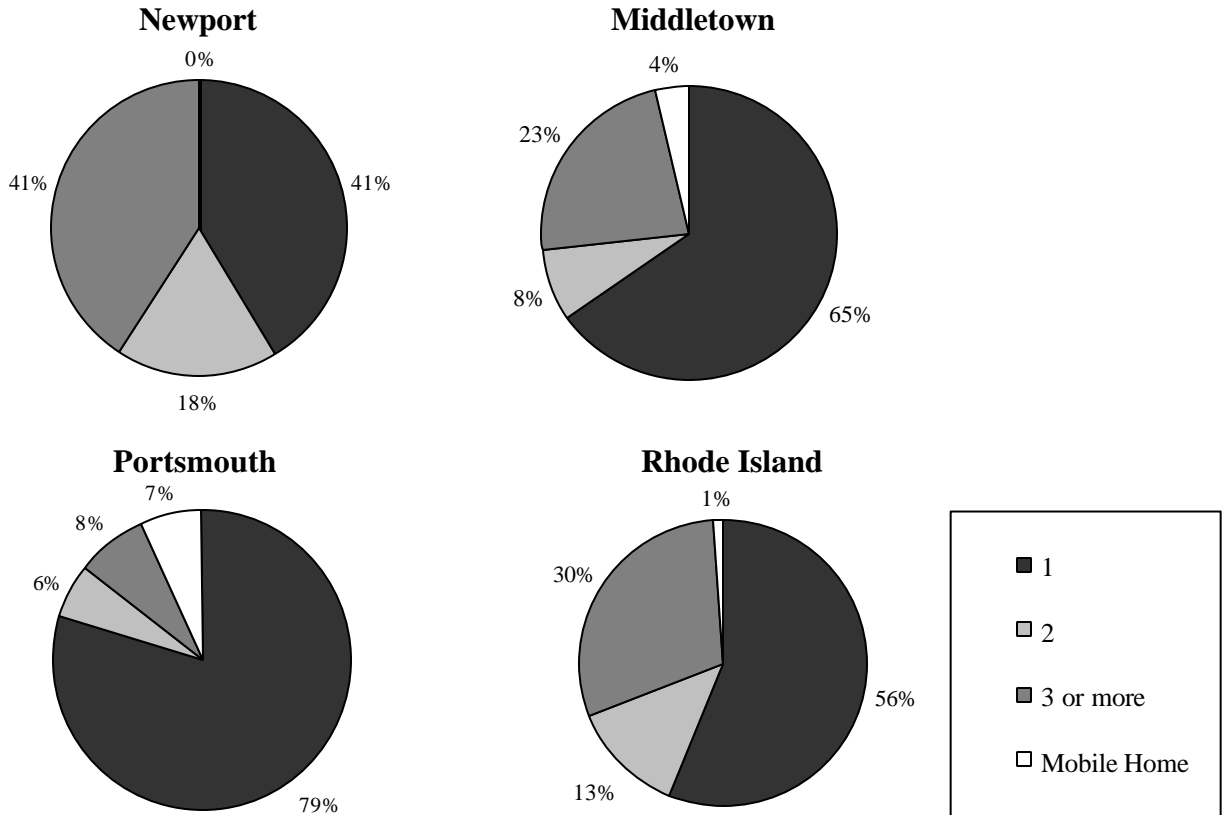
Source: U.S. Census Bureau.

Figure 88. Aquidneck Island building permits, 1970-1998.



Source: U.S. Census Bureau and Rhode Island Statewide Planning.

Figure 89. Housing units in structure, 1990.



Source: U.S. Census Bureau.

Figure 90. Number of houses newly registered for visitor rentals, 1997-1999.

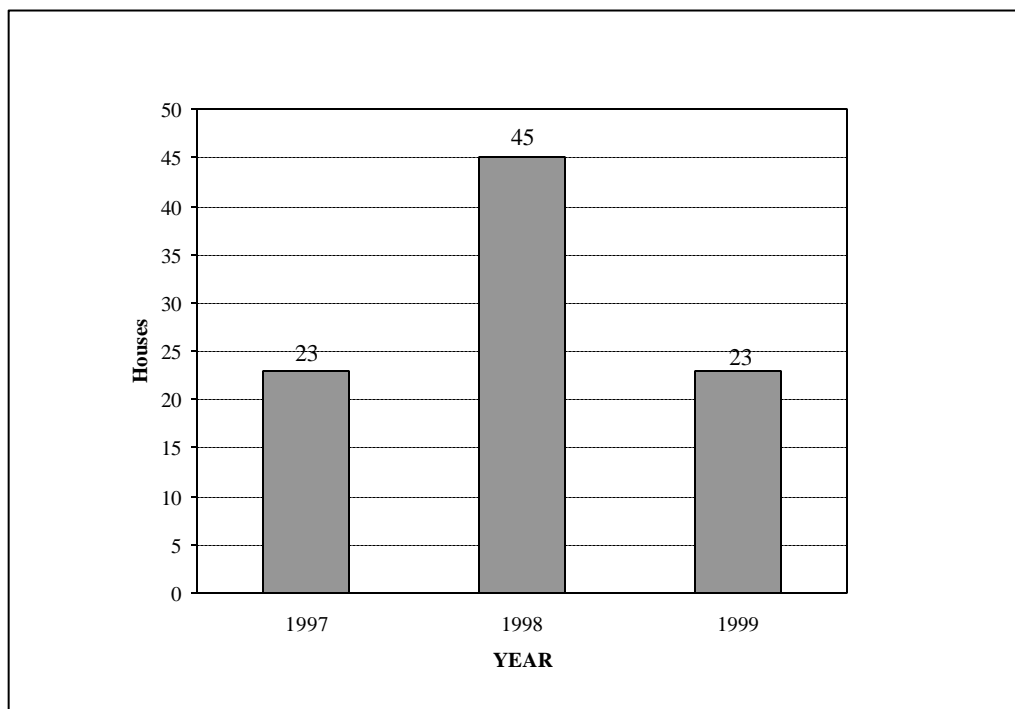
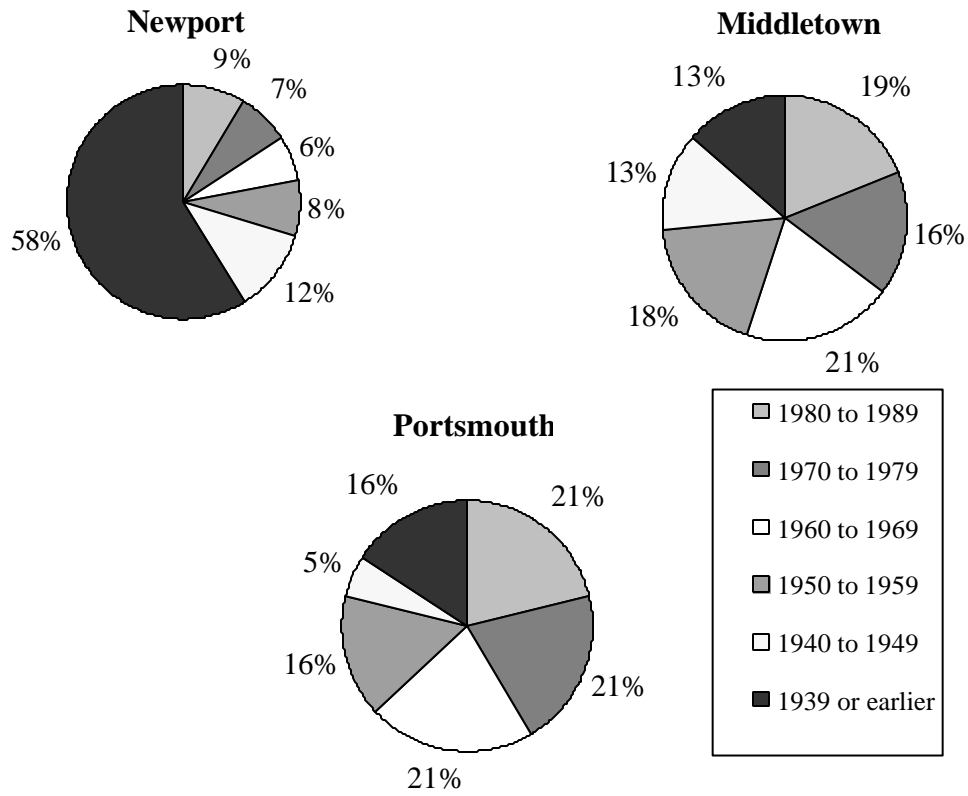
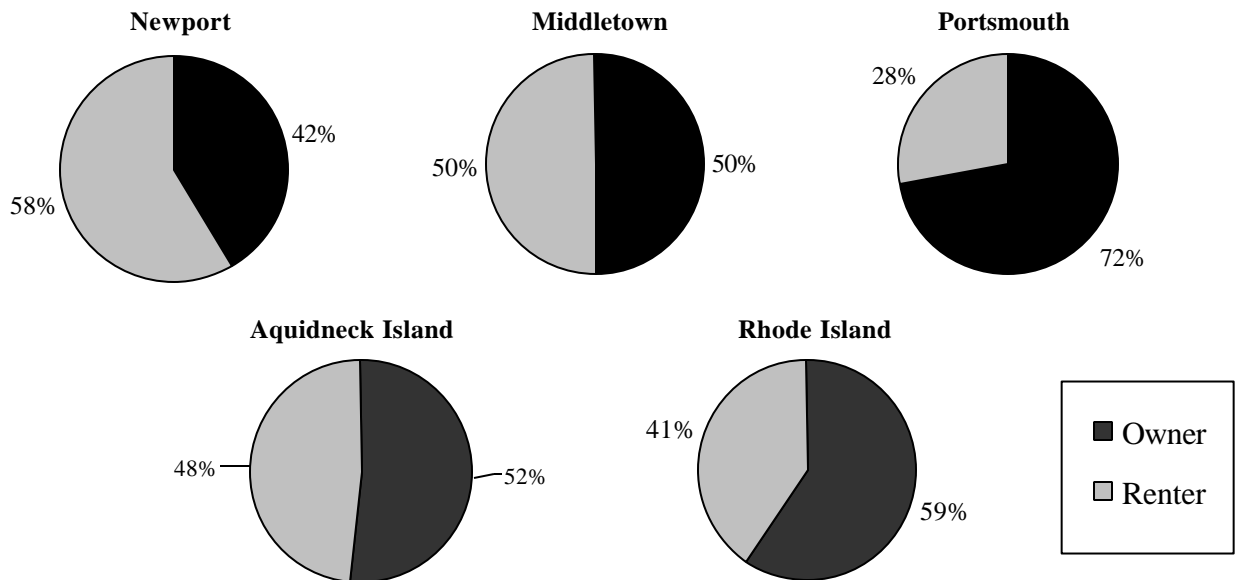


Figure 91. Age of Aquidneck Island housing – year structures were built.



Source: U.S. Census Bureau, 1990.

Figure 92. Ratio of owner to renter occupied housing, 1990.



Source: U.S. Census Bureau.

Figure 93. Distribution of housing on Aquidneck Island 1990

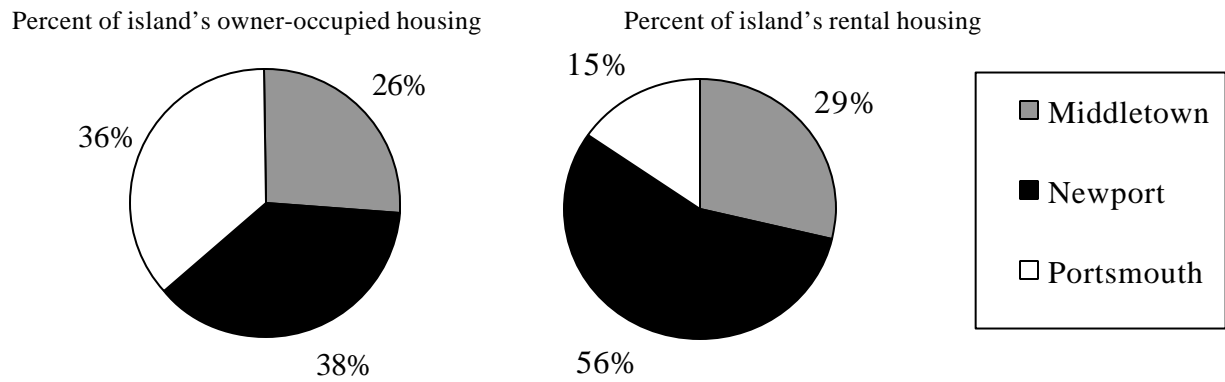


Figure 94. Number of owner-occupied and rental housing units, 1970-1990.

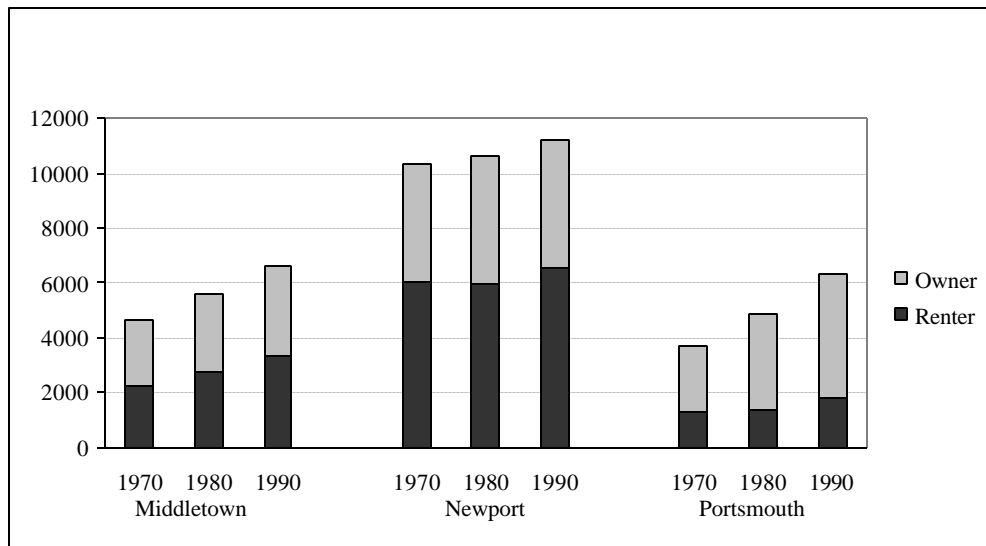


Figure 95. Houses with rooms rented to Newport visitors, 20 rooms or less, 1996-1999.

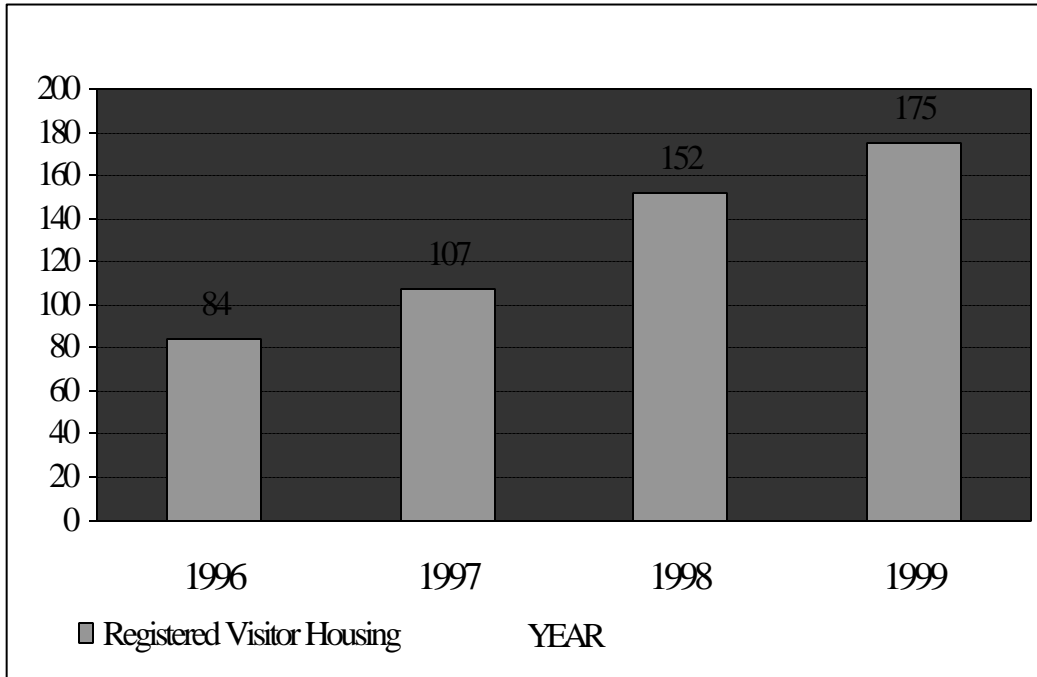


Figure 96. Newport, number of years in same residence.

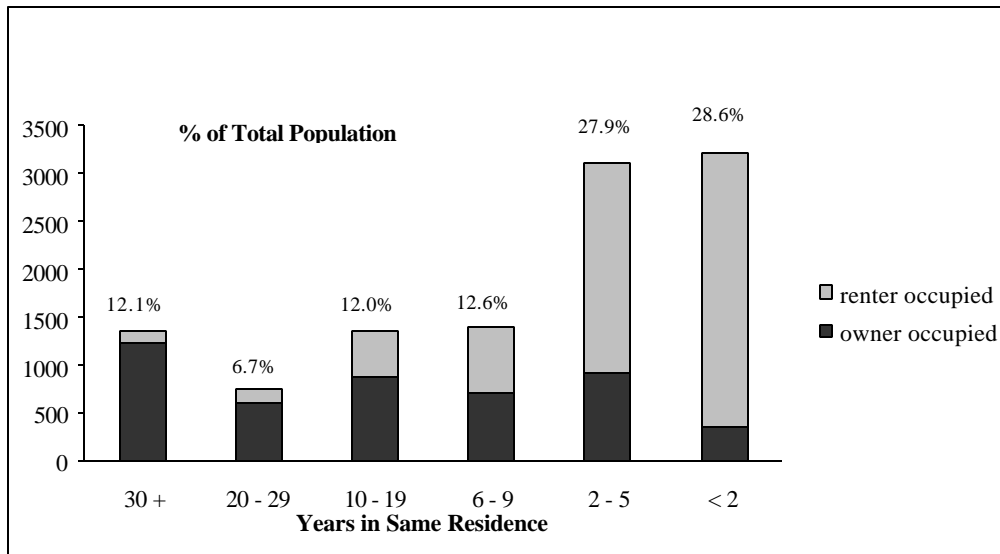


Figure 97. Middletown, number of years in same residence.

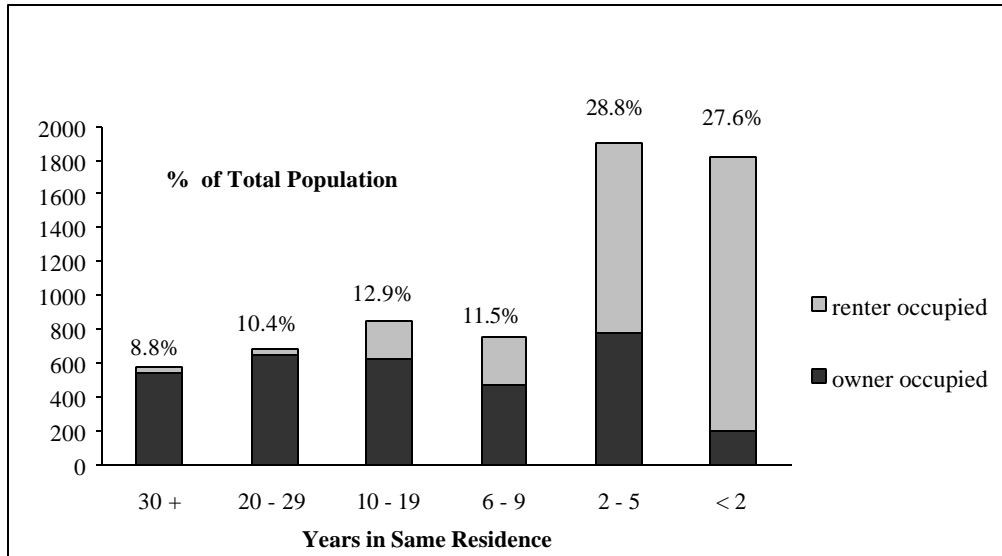


Figure 98. Portsmouth, number of years in same residence.

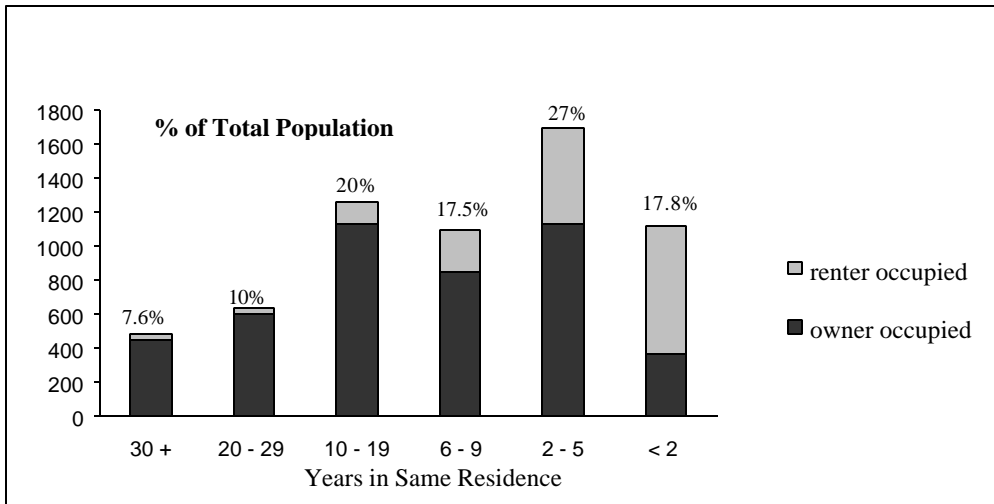
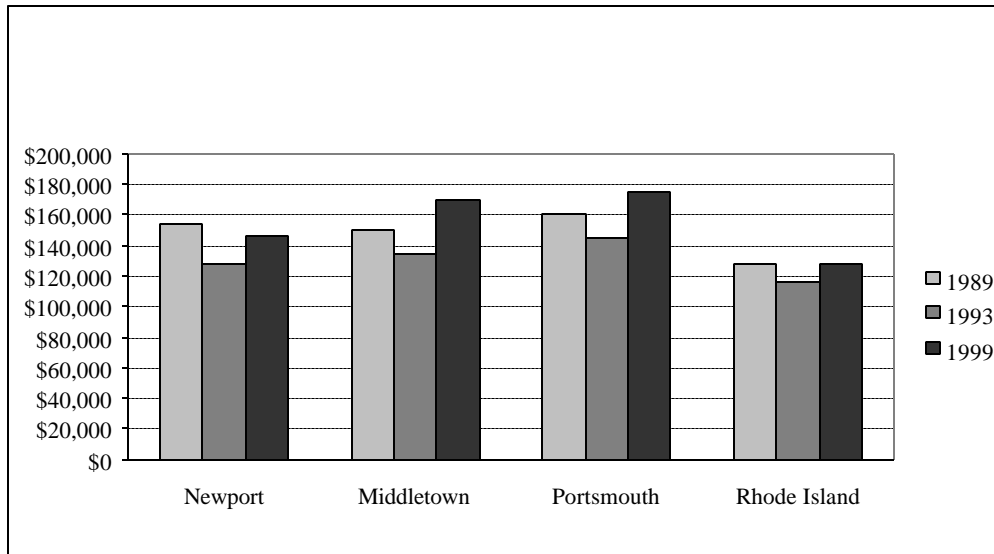
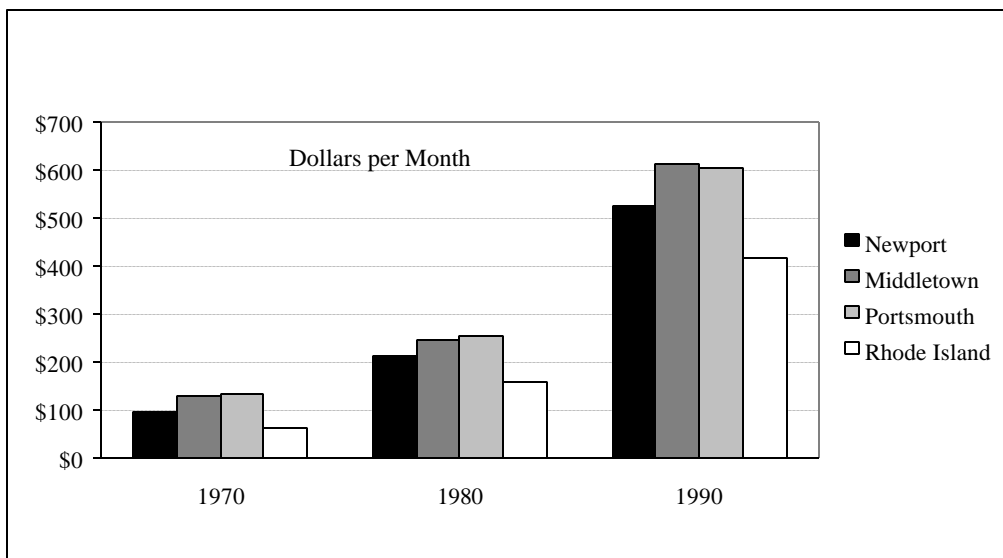


Figure 99. Median sales price single family homes, 1989-1999.



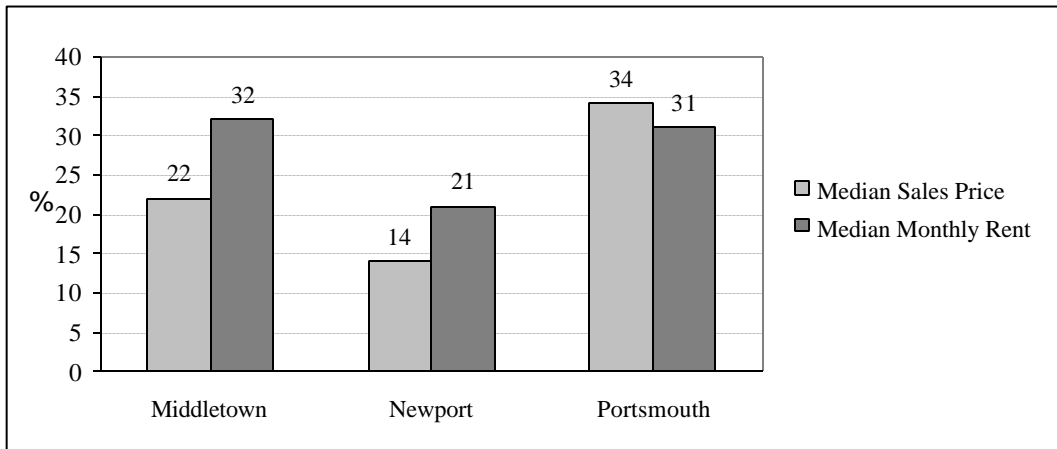
Source: Rhode Island Statewide Multiple List Service, March 2000.

Figure 100. Median contract rent, 1970-1990.



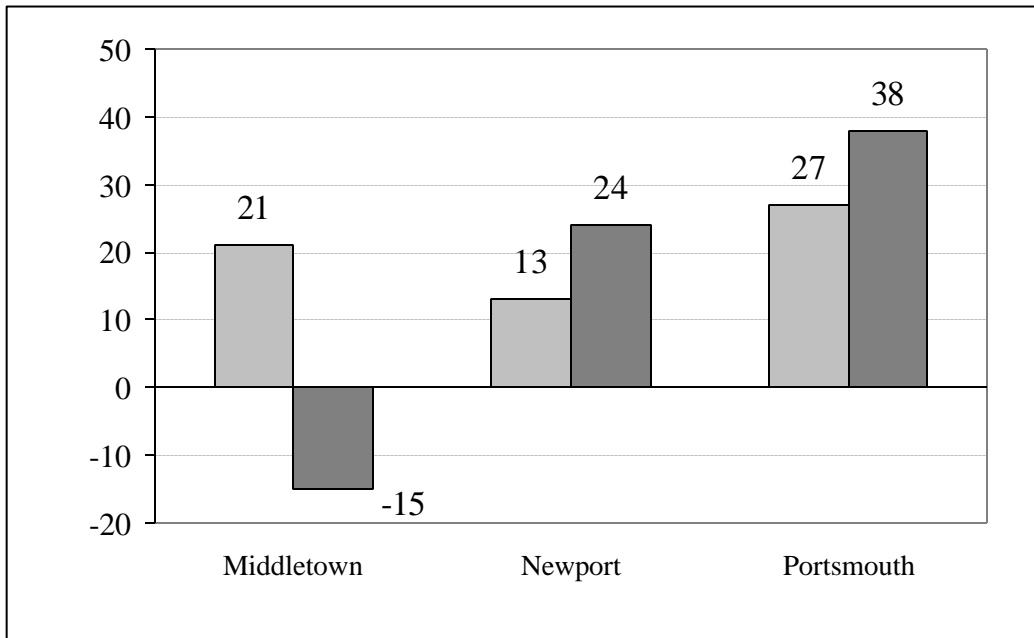
Source: U.S. Census Bureau.

Figure 101. 1990 Median housing sales price and contract rent percent difference from statewide costs.



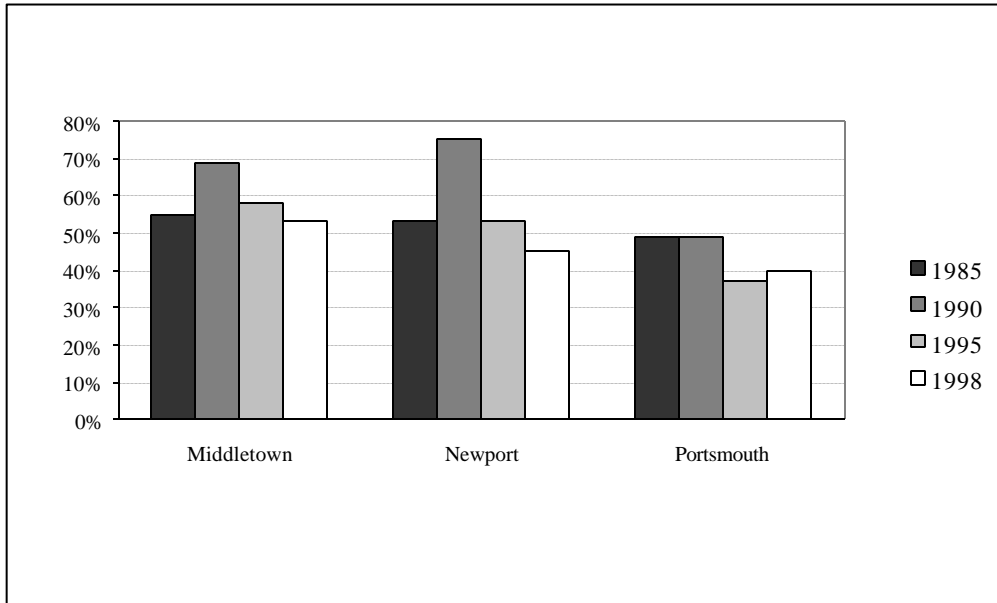
Source: Rhode Island Statewide Multiple List Service, U.S. Census Bureau.

Figure 102. 1998 Median housing sales price and contract rent percent difference from statewide costs.



Source: Rhode Island Statewide Multiple List Service; 1998 Rhode Island Housing Rent Survey.

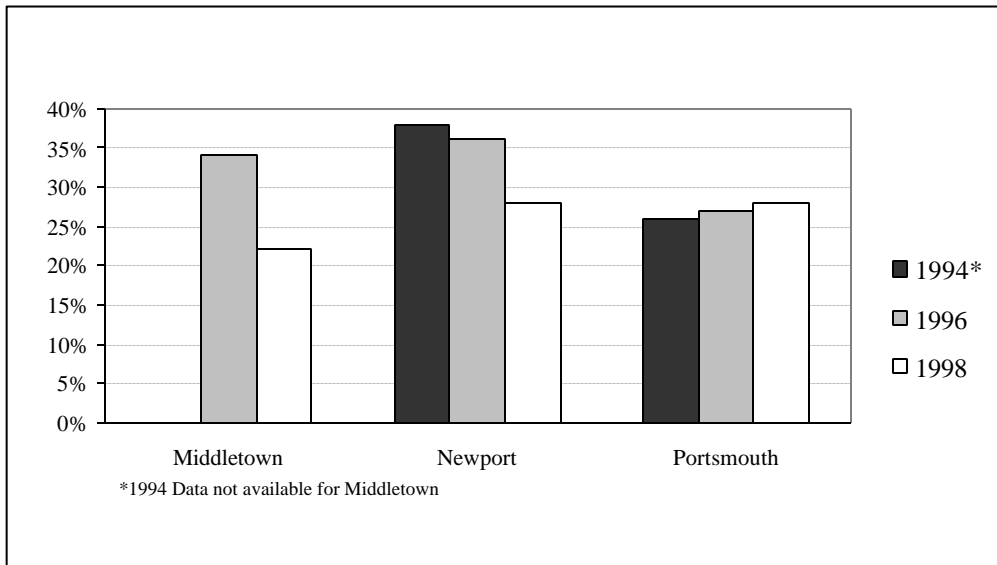
Figure 103. Percent of average monthly wage needed to pay monthly mortgage*, median priced house, 1985-1998.



* Mortgages based on a 30-year mortgage with 10% down payment and 8.5% interest.

Sources: Rhode Island Statewide Multiple List Service; Rhode Island Department of Labor and Training Labor Market Information.

Figure 104. Percent of average monthly wage needed to pay average monthly rent, 1994-1998.



Source: Rhode Island Department of Labor and Training, Labor Market Information Rhode Island Department of Housing Rent Survey.

Transportation

Kelly Woodward, Sue Kennedy

Land use patterns, environmental concerns, and economic growth are all impacted by transportation. The transportation infrastructure on the island consists of roadways (with two major north-south highways near capacity), a Rhode Island Public Transit Authority (RIPTA) bus line, a rail line, and several boat ramps (Map 26). To deal with increasing transportation pressures, municipalities are implementing measures to maintain roadways, calm traffic, and encourage use of alternative modes of transportation. At the same time, they are starting to search for long-term methods to accommodate travel demands while respecting pedestrian and biker safety, heritage preservation, shoreline vistas, and other quality-of-life issues.

Roadway Conditions

Island communities, especially Middletown and Portsmouth, are seeing increases in auto-dependent residents, subdivisions, and business development, in spite of an overall decline in the Navy-based population. Also, Newport, an internationally prominent visitor destination that feeds the state's annual \$2.5 billion tourism industry, attracts about 3.5 million tourists, yachting enthusiasts and conference attendees during the May through October high season. Visitors enhance municipal revenues but also increase auto traffic on island roadways serving residential, business and tourism development.

Many residential or neighborhood roads are in acceptable physical condition, but main arteries such as East Main Road and West Main Road are deteriorating, and some sections of West Main Road are considered "failing."³¹ Traffic congestion and roadway damage are signs that the current transportation system may not be able to fully support the traffic produced by growing communities.

Roadways and Economic Development

Island municipalities recognize that transportation infrastructure can impact economic development and the creation of revenues and jobs. Municipal comprehensive plans and zoning ordinances currently allow a total additional 20.74 million gross square feet of commercial/industrial space. This additional development could support 107,850 jobs or a work force nearly four times larger than the existing number of island jobs. Economic development also creates needs for additional new housing, public services (including water service and sewage treatment), and public infrastructure. Municipalities have implemented some transit alternatives, such as the Burma Road Bike Path and Providence-Newport ferry service to start addressing increasing transportation needs.

Transportation alternatives and roadway improvements are expected to enhance the island's economic climate once the effects of traffic congestion are reduced.

Bus Service

RIPTA provides bus service to island communities:

³¹ Edwards and Kelcey, Inc. *The 2000 West Side Transportation Guide Plan*.

- **Route 60:** Service between downtown Newport and Providence via West Main Road.
- **Route 63:** Local route connecting Middletown shopping centers to Gateway Center.
- **Route 62:** Service for the Thames Street – Spring Street - Towne Center area.
- **Route 64:** Service for Newport and URI.

Ferry Service

Long-term RIPTA improvements could include development and construction of rail/transit service along the rail corridor, implementation of additional ferry terminals at Melville or Pier 1, and increased usage of water taxis to alleviate daily, tourism-related, and special-events-related traffic in Newport.

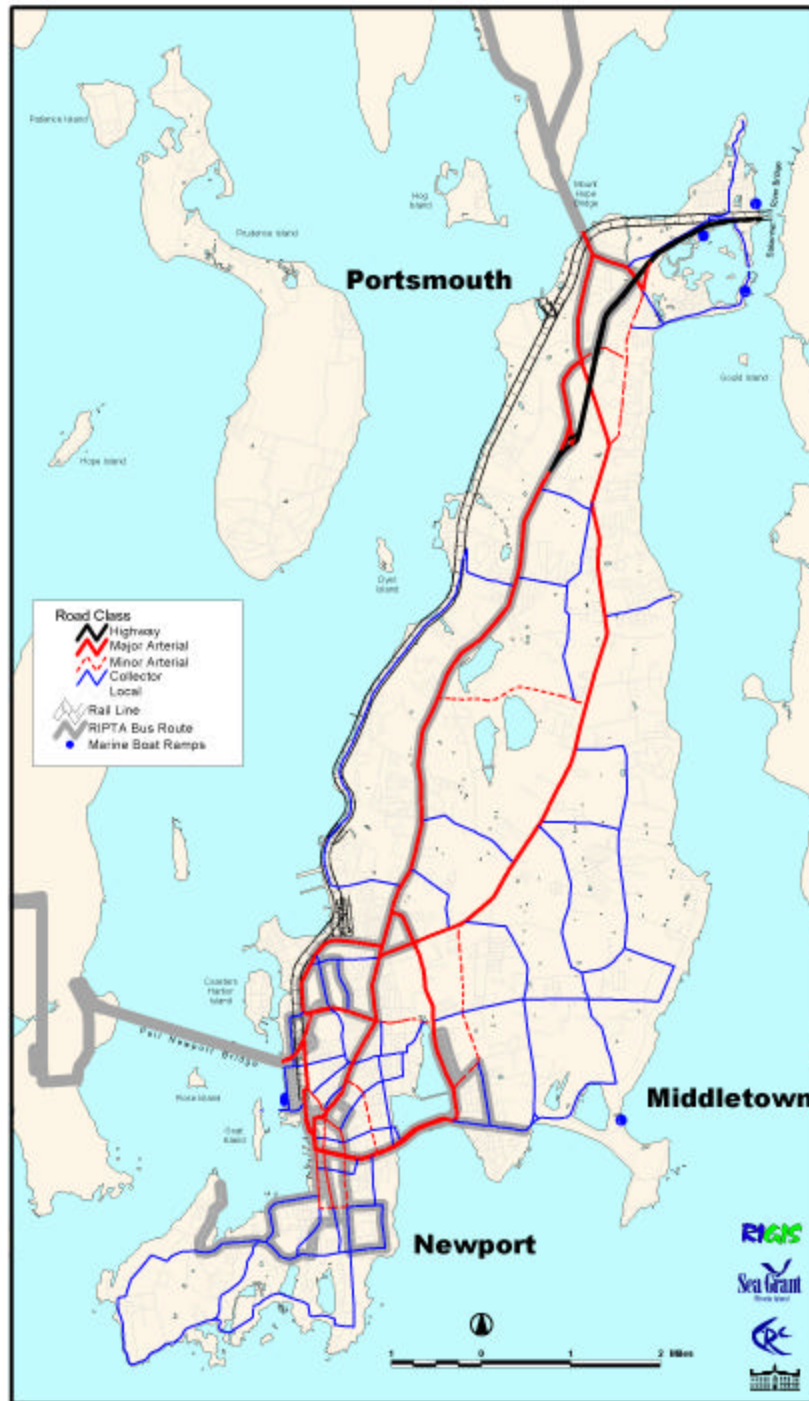
Table 29 is a Rhode Island Department of Transportation partial listing of state and federal transportation improvement projects for Aquidneck Island (1999 – 2001)

Table 29. Partial listing of state and federal transportation improvement projects.

Project Category	Project	Town	Limits	Notes
Study & Development	East Main Road	Middletown	Upgrade and connect East Main Road with Coddington. Adjust traffic pattern around 2 Mile Corner and signal improvements.	Preliminary cost estimates to be presented to Transportation Advisory Committee for potential programming of construction work.
Study & Development	JT Connell Highway	Middletown - Portsmouth	All	Reconstruction of highway will soon be under study/preliminary design. Could go to construction in 2003.
Study & Development	Newport Transportation Initiatives	Newport	Includes Pell Bridge Ramps and Rail Study.	Studies just beginning.
Study & Development	RI-138	Middletown - Portsmouth	All	The entire stretch of Route 138 is included in the Study & Development category of the TIP for reconstruction in affordable phases over a period of years. The earliest phases are shown separately.
Resurfacing Program	East Main/Union Avenue Intersection	Portsmouth	Route 114 to Route 138	Resurfacing plus intersection work completed in 2000.
Resurfacing Program	Schoolhouse Road	Portsmouth	Middle Road to East Main Road	Resurfaced in 2000.
Highway	East Main Road/Valley Road Intersection	Middletown	Bailey Brook to Enterprise Drive	Soon to be underway (2001), this project is for the complete reconstruction (new pavement structure, drainage improvements, landscaping etc.) of a 0.6 mile section of the four lane Route 138 arterial on Aquidneck Island from Bailey Brook to Enterprise Drive including the intersection of Valley Road.
Enhancements	Diesel Locomotive Overhaul	Newport		Scheduled for 2001.
Enhancements	Park Avenue Enhancements	Portsmouth	East Main Road to the Stone Bridge	Scheduled for 2001. ADA Improvements including sidewalk and curbing repairs and wheelchair ramps.
Enhancements	Patriots' Park	Portsmouth		Scheduled for 2002.
Enhancements	Scenic Highway Signage	Middletown		Scheduled for 2001.
Enhancements	Union Street Roadway Runoff Improvements	Portsmouth		Scheduled for 2003.
Enhancements	Washington Sq./Historic Pavement Program	Newport		Scheduled for 2002.

Bridge	Sakonnet River #250	Portsmouth/ Tiverton		Interim repairs now underway. An EIS is being completed to determine whether the Bridge should be replaced or be rehabilitated in place.
Bike/Pedestrian	Aquidneck Island West Shore Bikepath	Portsmouth		Study to be performed.
CMAQ	Arterial Traffic Signal System	Middletown	East Main Road/Valley Road, K-Mart Plaza, Forest Avenue, Aquidneck Avenue, Turner Road, Meadow Lane, Oliphant Lane	Scheduled for 2002.
Safety	Newport Secondary Track Rehab	Newport/ Portsmouth		Completed in 2000.
Highway	ADA Improvements Memorial Boulevard	Newport/ Middletown	Memorial Boulevard: Rhode Island Avenue to Middletown T/L and West Main Road: Boulevard Avenue to Linden School	Completed in 2000. This project involved accessibility improvements including sidewalk removal and replacement, handicap ramps, and removal of any other barriers.

Map 26. Transportation infrastructure on Aquidneck Island.



Map Index

Map No.	Data Source
1	RIGIS 1995 Land Use/Land Cover.
2	RIGIS 1995 Land Use/Land Cover, code=111-115, 120, 130, 141-145, 150, 161-163, 170.
3	RIGIS 1995 Land Use/Land Cover. Undeveloped lands are code=210-250, 310-340, 400, 500, 600, 710-730. Constrained lands are code=600, 710-730. Conservation lands are from RIGIS 1990 Open Space (juris=1, 2, 5); RIGIS 1995 Wildlife Management Areas; RIGIS 1998 Private Land Trust Holdings; RIGIS 1995 Publicly Owned Lands; RIGIS 1995 Audubon Lands; Hutchinson 1999 Open Space (type=committed).
4	RIGIS 1995 Land Use/Land Cover, code=111-115.
5	RIGIS 1995 Land Use/Land Cover, code=120, 130, 150.
6	RIGIS 1995 Land Use/Land Cover, code=210-250.
7	RIGIS 1995 Land Use/Land Cover, code=310-400.
8	RIGIS 1990 Open Space; RIGIS 1995 Wildlife Management Areas; RIGIS 1998 Private Land Trust Holdings; RIGIS 1995 Publicly Owned Lands; RIGIS 1995 Audubon Lands; Hutchinson 1999 Open Space (type=committed).
9	RIGIS 1995 Land Use/Land Cover, code=600.
10	RIGIS 1995 Rare Species Habitat.
11	RIGIS 1995 Eelgrass Sites.
12	RIGIS 1995 Winter Flounder Habitat & Migration Routes.
13	RIGIS 1995 Shellfish Distribution.
21	RIGIS 1995 Schools; RIGIS 1997 Libraries; RIGIS 1996 Hospitals; RIGIS 1997 Municipal Facilities.
22	RIGIS 1995 Land Use/Land Cover, code=500.
23	RIGIS 1995 Water Pump Station; RIGIS 1995 Sewer Pump Station; RIGIS 1995 Water Lines; RIGIS 1995 Sewer Lines; RIGIS 1995 Water District; RIGIS 1995 Sewer District.
24	RIGIS 1990 Archaeological Sites; RIGIS 1995 Historical Sites; RIGIS 1995 Historic Districts; RIGIS 1995 Historic Candidates; RIGIS 1995 Land Use/Land Cover code=163; Hutchinson 1997 Land Use/Land Cover code=163.
25	RIGIS 1990 Open Space juris=1, 2, 3, 5; RIGIS 1995 Wildlife Management Areas; RIGIS 1995 Publicly Owned Lands.
26	RIGIS 1996 Boat Ramps; RIGIS 1997 RIPTA Bus Routes; RIGIS 1996 Railroad Rights of Way; RIGIS 1995 Roads All.