The Economic and Fiscal Impact of Aging Retirees on a Small Rural Region

Judith I. Stallmann, PhD, Martin Shields, PhD, Steven C. Deller, PhD
The economic and fiscal impacts of in-migrating retirees on rural communities tend to concentrate on the younger, more affluent newly retired. This article addresses an issue not systematically addressed: the impacts on communities as these retirees age. Households that vary by age have different income levels and expenditure patterns. A county-level, conjoined input-output/econometrics simulation model is used to assess the impacts of an aging rural population. As hypothesized, the magnitude and nature of impacts is in direct proportion to relative household size and income level. The increased local government expenditures are covered by the increased revenues, even as retirees age.

Key Words: Economic impacts, Fiscal impacts, Development policy, Local government

The Economic and Fiscal Impact of Aging Retirees on a Small Rural Region

Judith I. Stallmann, PhD, Steven C. Deller, PhD, and Martin Shields, PhD

One notable feature of the U.S. population is the increasing number and percentage of elderly persons. In 1920, fewer than 1 American in 20 was over the age of 65. By 1995, the proportion of Americans over 65 had risen to 1 in 8. It is estimated that 1 in 5 Americans will be over the age of 65 by 2030 (Smith, Willis, & Weber, 1987). These changes in the population are of interest not only to gerontologists but also to economists and development policy decisionmakers at the local level. As demonstrated by the baby boom, the age structure of the population greatly influences consumption patterns, which in turn ripple throughout the economy. The "graying of America" and its impact on the economy have been a topic of considerable discussion and research for more than 20 years (Bigger, 1984).

But the graying of the population is not a geographically uniform trend. A higher percentage of the rural than of the urban population is over the age of 65. In addition, the percentage of the population that is older has increased more rapidly in rural than in urban areas (Glasgow & Beale, 1985; Reeder, 1998). The aging of rural America is the result of two trends: out-migration of rural, young adults to urban areas and in-migration of urban retirees to rural areas.

The phenomenon of retirees migrating to rural communities has been well documented in the literature (e.g., Stallmann & Siegel, 1995). The research falls into three primary areas: (a) their decision processes concerning migration (Cuba, 1989, 1991; Wiseman, 1980; Wiseman & Roseman, 1979), (b) their impacts on social aspects of the receiving communities (Glasgow, 1985; Green, Marcoviller, Deller, Erkkila, & Sumathi, 1996; Kelsey, Smith, & Luloff, 1993), and (c) their economic and fiscal impacts on the receiving communities (Barkley & Henry, 1993; Deller, 1995; Deller & Walzer, 1993; Happel, Hogan, & Pflantz, 1988; Happel, Hogan, & Sullivan, 1983; Joseph & Cloutier, 1991; Miller, 1993; Mullins & Rosentrab, 1992; Sastry, 1992; Siegel & Leuthold, 1993; Woods, Miller, Voth, Song, & Jones, 1997).

The preponderance of the economic impact research has tended to find positive economic impacts for receiving communities from in-migrating elderly persons. Over the past 20 years, counties identified as retirement destination regions (see Appendix, Note 1) have experienced above-average population and employment growth and rapid income growth (Cook & Hady, 1993; Reeder & Glasgow, 1990; U.S. Department of Agriculture [USDA], 1997a; Walzer & Deller, 1996).

As a result of this research, the recruitment of retirees has become a popular rural development strategy. Because of the coming surge in the number of retiring baby boomers, the attraction of retirees seems an even more promising strategy. As such, both individual communities and several states have begun development programs to attract retirees (Fagan & Longino, 1993; Reeder, 1998; Reeder, Hopper, & Thompson, 1995).

But before the retirement of the boomers, the distribution of elderly people will look very different than the recent past. The expected rate of growth for the population over 65 is only about 1.2% annually from 1988 to 2010 (U.S. Bureau of the Census, 1989). During that time the actual growth will be in the population over age 70. This is because the number of persons...
in their 60s will decline through the 1990s (Exter, 1990). In
short, the bubble of young, wealthy retirees that
are being pursued by so many communities will enter
a lull for several years. The aging of retirees is the
newest retirement phenomena.

What the research has not systematically addressed
is the impact on communities as retirees age. The con-
cern that the positive economic and fiscal impacts of
in-migrating retirees hide longer run increased health
care and human services costs has been called "the
gray peril" (Longino, 1988). Longino pointed out that
although the issue is often raised, "Nowhere is the
direct impact of such migration on government ex-
penditures estimated. Nor are there studies that com-
pare the aggregate or per capita impact of younger
and older migrant households on different types of
government expenditures" (p. 453).

The intent of this study is to systematically examine
the economic and fiscal impacts of the aging of the
retiree population, using a holistic modeling approach,
the Wisconsin Economic Impact Modeling System.
Using data from the Bureau of Labor Statistics' Con-
sumer Expenditure Survey, we constructed profiles of
two elderly households: 65–75, the young-old, and
older than 75, the old-old. Then, within an experi-
mental framework, 500 households of each type were
introduced into a small rural economy in Wisconsin.
On the basis of their expenditure patterns, the eco-
omic and fiscal impacts were estimated for each age
group. This study provides information about the
changing nature of the long-run impacts as retirees
age, and the article closes with an overview of find-
ings and a discussion of implications for community
decisionmakers.

Available Impact Literature

Research quantifying economic impacts of re-
tirees on communities has tended to concentrate on
planned retirement communities (Barkley & Henry,
1993; Miller, 1993; Siegel & Leuthold, 1993) that at-
tract younger and wealthier retirees (Stallmann &
Jones, 1995). There are several studies that have
tried to determine the economic impacts in other types
of retirement communities that might contain older
retirees. Henderson (1994), for example, compared
expenditures of independent-living and assisted-living
retirees in an Ohio community of 5,000. Woods and
Allen (1993) studied two counties in Oklahoma with
a high percentage of retirees in assisted-care facilities.

The earliest studies estimated only direct economic
impacts of retiree in-migration (Happel et al., 1983;
Happel, Hogan, & Pflantz, 1988). More recent stud-
ies have considered the standard multiplier effects
and use input–output (I/O) analysis to estimate direct,
direct, and induced impacts. Still, many of these
studies are based on new, planned retirement com-
munities.

Research has often stopped at quantifying economic
(jobs and income) impacts and has not quantified the
fiscal impacts on local government. Fiscal impact analysis
is important because, even among new, planned re-
tirement communities, there is wide variation in what
is provided by local government and what is provided
by the homeowners' association (Barkley & Henry, 1993;
Siegel & Leuthold, 1993). In addition, over time new
communities of retirees may attempt to shift some
services from the association to the local government
(Siegel, Leuthold, & Stallmann, 1995), or they may
begin to demand new services specifically aimed at
retirees (Longino, 1988; Rowles & Watkins, 1993). A
study in Pennsylvania found that preferential tax treat-
mant of elderly persons resulted in low fiscal benefits
for local communities and that elderly persons do
actively attempt to influence local taxes and expendi-
tures (Kelsey et al., 1993).

Although a number of fiscal impact studies are avail-
able in the literature, wide variations in methodologi-
cal approaches make it difficult to generalize results.
Historically, fiscal impact assessment has followed a
number of methods from case study analysis, to the
service standard method, to the per capita multiplier
method (Burchell & Listokin, 1979). Some case stud-
ies have reported only the additional tax revenues
generated by the in-migrating retirees and have not
included public expenditures necessitated by the in-
migrants (Jones, Whitehorn, & Wyse, 1993). Other studies
have included both the additional public revenues and
costs caused by the in-migration, or the additional costs
of services to the new community. Barkley & Henry,
1993). Still others have estimated the increased pub-
lc costs based on local per capita expenditures and
multiplied by the number of in-migrating retirees. The
increased tax revenues paid by the retirees are sub-
tracted from the estimated costs of the retirees to de-
terline the fiscal impact (Miller, 1993). Many of these
more traditional approaches can be viewed as partial
analysis because the complex dynamics of the local
economy are not explicitly captured.

Two retiree in-migration studies have provided ho-
listic fiscal impact analyses that directly tie the fiscal
analysis to the economic impact analysis. Siegel and
Leuthold (1993) estimated the economic and fiscal
impacts on the county of a planned retirement com-
munity in Tennessee. The multiplier effect creates ad-
ditional jobs and additional in-migration. This leads to
fiscal impacts not only by the retirees but also by the
additional migration (multiplier effect) that they cre-
ate. The study found positive fiscal impacts directly
from the retirees, negative fiscal impacts from the
indirect and induced effects, and an overall passive
fiscal impact. This study was of a new, planned re-
tirement community, and the authors noted that the
community is already trying to shift some homeowners'
costs to the public sector. Thus, the fiscal impacts are
likely to be less positive in the future than those esti-
mated by the study (Siegel et al., 1995).

Using a fully integrated regional economic model-
ling system, Deller (1995) estimated the economic and
fiscal impacts of retiree migration for the state of Maine.
This study did not report the same level of positive
fiscal impacts as suggested by the Tennessee study.
Rather, it found that demand for public services in-
creases in proportion to the increase in population.
Deller went on to suggest that this difference may be
due to the level of analysis—state versus county. A
state-level analysis included demand for state government services that would not be included in a local fiscal analysis.

The available literature, which focuses on the migration of younger and wealthier retirees, points to the positive impacts these retirees can bring to a community. There are few studies, however, that have addressed the economic and fiscal impacts of the aging of elderly persons, and the impacts are generally not estimated in a systematic matter. Henderson (1994) compared expenditure patterns of independent- and assisted-living elderly persons in an Ohio subdivision. Although not stated, it is likely that the assisted-living elderly people were older than those living independently. Although the two groups spent the same amount weekly, the assisted-living group spent more of their income locally because of their reduced mobility. Thus, they had a higher direct impact on the local community. This study did not estimate the full economic impact of the retirees and did not address the fiscal impacts.

The literature that addresses the fiscal impacts of aging tends to focus on health care needs. Health declines with age, and consequently the use of medical services increases. Those older than 75 are more likely to have seen a doctor during the year than those 60-74 years old. In 1984, health expenditures were 8.4% of total expenditures for those 65-74, and 13.3% for those 75 and older (Rogers, 1993).

Hass and Crandall (1988) examined the impacts of elderly migrants on the health care systems of two counties, one in North Carolina and the other in Florida. In general, the in-migration of retirees increased the health care services available in the county by increasing the number of physicians, increasing the number of medical specialists, and upgrading facilities. Physicians in the study did report increased difficulties in placing patients in nursing homes and voiced fear that this may become more severe as the population ages.

Poverty also increases with age as elderly persons exhaust their assets. In 1996, 25% of the nonmetropolitan population aged 60-74 were poor or near poor compared with 42% of persons older than 75. Metropolitan areas also showed poverty increasing with age: 19% of persons aged 60-74 compared with 28% of persons 75 and older (USDH, 1997b).

One concern of rural communities with limited budgets, especially if the hospital is publicly owned, is that the increasing poverty and increasing health care needs of the old-old will increase local health care expenditures. A higher percentage of rural than urban hospital patients are publicly supported. For rural hospitals, a higher percentage of net patient revenue is from Medicare than for urban hospitals. As a result, rural hospitals face higher uncompensated costs than do urban hospitals (Nelson & Salmon, 1993), and rural hospitals engage in more cost shifting to private patients than do urban hospitals (Frenzen, 1996).

The bulk of the economic and fiscal impact literature does not distinguish between the young-old and the old-old. Studies that treat aged persons as heterogeneous groups have tended to focus on a single issue, such as health care. To provide a more holistic view of the diverse nature of the impacts among different groups of elderly people, we used a holistic modeling approach described below. The following sections provide a comparative economic and fiscal analysis of the young-old and the old-old, as Longino (1988) stressed is needed.

**The Wisconsin Economic Impact Simulation Modeling System**

The model used in this analysis, the Wisconsin Economic Impact Modeling System, is a conjoined I/O–econometric model. This model is one of a family of integrated I/O and econometric models that began with a national model in 1975 (Preston, 1975). The integration allows the strengths of both to be used while compensating for their weaknesses. Since then, integrated models have been used to analyze regions of various sizes: Kort and Cartwright (1981) for U.S. states; Conway (1990) for Washington state; and Coomes, Olson, and Merchant (1991) for the Louisville SMSA. In addition, researchers such as Swallow and Johnson (1987) began adding fiscal modules to the economic models for counties and cities in Virginia. Shields and Deller (1997) provided a concise description, and Shields (1998) provided a complete description of the Wisconsin model.

A graphical overview of the conjoined model is presented in Figure 1. Key components of the model include the I/O model, and labor, housing, fiscal, and retail modules, which are estimated econometrically. The I/O model used is derived from IMPLAN. To avoid double counting, only Type I multipliers—the direct and indirect effects—from the I/O model are used (Rey, 1994). The induced effects due to changes in household income are estimated econometrically.

The I/O model provides a very detailed production function, based on the standard I/O assumptions, and details the intermediate production relationships in the local economy. The simulation begins by introducing a change in final demand due to, in this case, the expenditures of 500 in-migrating elderly households. The I/O core is used to estimate changes in output by industry due to the change in final demand from the expenditures of elderly households. The I/O model assumes that all changes in the local economy occur instantaneously. Thus, the model estimates total impacts from a one-time change in final demand. The model is comparative statics, not dynamic, and there is no implication about the time frame for the total impacts. For the comparative purposes of this article, only the total impacts are of interest. For more detail on I/O models, see Wagner, Deller, and Alward (1992) and Leistritz (1997).

In the labor market module, direct and indirect changes in total industrial output, computed via IMPLAN, were fed into a series of econometric equations of industry labor demand to determine changes in industry employment and wages. These changes were in turn used to econometrically estimate changes in local unemployment, commuting patterns, population, and per capita income. Finally, changes in population, employment, and per capita income were fed
into the housing, fiscal, and retail modules (each a series of econometric equations) to simulate “induced” impacts, that is, impacts due to increased household income. The current version of the model provides a “without” (i.e., baseline) and “with” picture, and the difference is attributed to the scenario under consideration. The following sections emphasize government revenues and expenditures in the induced impact modules because of concerns that the burden on local government will increase as the elderly population ages.

**Demographic and Labor Market Module**

The labor and demographic module is linked to the production sector by means of industry output as determined by the I/O component (Figure 1). Because the I/O model is a model for a single year and time series data for industry output are not available at the county level, the demographic and labor market module is also estimated using 1 year of Wisconsin county cross-sectional data. The changes in output of each industry are used to simultaneously estimate employ-
ment and wages by industry. The new employment opportunities affect the locally unemployed, commuters, and migrants (who change population). In addition, total personal income and income distribution respond to the changes in economic activity. The demographics part of this module—unemployment, population, labor force, students, in-commuting, out-commuting, income, and poverty—is estimated as a system of simultaneous equations using three-stage least squares. Three outputs of the demographic and labor market module—income, commuting, and population—feed into the induced effects that are estimated later in the model (Figure 1).

**Induced Effects**

The induced effects estimated by the model are the impacts of changes in household income on housing, retail, and local government. The induced effects are estimated by using pooled time-series, cross-sectional data. Because the error term of such data is not randomly distributed, this must be considered in the estimation technique. Baltagi (1979) suggested that a fixed model is appropriate when the sample is exhaustive (e.g., all Wisconsin counties). Instead of using a dummy variable for each county, we developed a taxonomy of economic regions and used regional dummy variables (Shields, 1998; Shields & Deller, 1998).

**Housing.**—Housing starts are estimated by using per capita income, which was derived in the labor market module. Other variables include user housing cost, the property tax rate, inflation, age of housing, local government expenditures, and growth in the number of households. This equation was estimated by using ordinary least squares. The value of new housing permits was estimated by per capita income and the lagged permit value. The equation was estimated by using generalized least squares to correct for heteroskedasticity.

Local government revenues and expenditures are dependent on property values. Equalized assessed value of all property and median housing value are estimated by using ordinary least squares regressions. The equalized assessed value of all property, residential and commercial, is estimated by using per capita income, per student expenditures, per capita safety and road expenditures, the property tax rate, and population density. Median housing value is estimated by using the same variables in addition to crimes per 1,000 population and percentage of homes built after 1970. Many of the variables in these equations were estimated in, and hence explicitly linked to, the demographics and labor market module and the local government module.

**Fiscal Model.**—Modeling local fiscal behavior is a complex and daunting task. Although there is a clear market mechanism for the interaction of supply and demand forces for private goods, such a market does not exist for public goods and services (Samuelson, 1954). The nonexcludability and nonrivalry that characterize public goods and services prevent the market from operating effectively (i.e., market failure).

Inman (1978) offered a modification of the demand-supply model for public goods and services delivery to capture the two-step process of decisionmaking and production. Provision of the good or service refers to the collective choice (i.e., demand) that determines what goods and services to provide and at what level, how to raise the necessary revenue, and how to arrange for the production of the good or service. The second step of the process is the actual production (supply) of the public good or service. Production of the good or service refers specifically to the technical process of transforming inputs into outputs (i.e., the public good or service). It is vitally important to note that it is in the latter stage that actual costs are incurred. The importance of the distinction between provision and production cannot be overstated (Advisory Commission on Intergovernmental Relations [ACIR], 1987; Brooks, 1996; Cigler, 1987; Deller & Halstead, 1994; Oakerson, 1987). Given this simple theoretical framework, one can more easily dissect and analyze the problem of modeling local fiscal behavior.

**Government Expenditures.**—Government expenditures on health and welfare, administration, roads, police and fire, water and sewer, amenities, schools, and total expenditures are estimated by using population and income, which were estimated in the demographic and labor market module. Because limited budgets mean that government expenditures in one area are not independent of expenditures in other areas, the equations are estimated by using seemingly unrelated regression (Baltagi, 1979).

Expenditures are a function of real per capita income, equalized assessed value of property, the property tax rate, and the number of households. In addition, each equation includes other socioeconomic factors unique to the particular public services. For example, the highway maintenance expenditure equation includes the miles of roads, and the school expenditure equation includes the percentage of the population below poverty. In addition to the poverty rate, the health, administration, and total expenditures equations include the unemployment rate.

**Government Revenues.**—Revenue equations are more difficult to model in a theoretical sense because revenue sources are often structured in accounting terms. For example, state aid to local units of government is commonly formula driven and dependent on such items as population, property tax rates, income, or miles of road. Property tax revenues are a second important source of local revenues and depend primarily on the assessed value of local property and the local property tax rate. The property tax rate is exogenous because it has been frozen for several years.

Three government revenue equations are estimated by using ordinary least squares. Property tax revenues per capita are estimated as a function of equalized assessed value and the property tax rate. State aid is estimated as a function of equalized assessed value and government expenditures per capita. Total local government revenues per capita are a function of equalized assessed value, property tax rates, and gov-
government per capita expenditures. To ensure consistency in the analysis, all revenues and expenditures are aggregated to the county level. Because local public services in Wisconsin are provided within a tiered system between county and municipal governments, this is a reasonable approach.

Retail Sales.—Retail sales are estimated for the retail subsectors of furniture, automobiles, building supplies, apparel, drug stores, food, general merchandise, eating establishments, miscellaneous, and gas stations. Retail sales are estimated as a function of real per capita income, unemployment rate, percentage of elderly people in the population, population density, in-and-out commuters, distance to a city of 25,000, establishments per 1,000 population, and the region of the state. In addition, the equations for furniture and building supplies include housing starts.

Model Implementation

To assess the economic and fiscal impacts of settlement by two distinct groups of elderly persons, we constructed two scenarios and simulated them through the Wisconsin Economic Impact Modeling System. Each scenario assumed that 500 elderly households relocate into a rural region in north central Wisconsin (see Appendix, Note 2). As such, the scenarios take the form of exogenous in-migration of two different household types: (a) the young-old, households aged 65 to 75 and (b) the old-old, households older than 75. The model estimates both a “without,” or baseline, and a “with” scenario, and the difference between them is the impact of the scenario. The baseline is a static picture of the economy. There are two “with” scenarios, generated by using the expenditure patterns of the two groups of retirees as final demand vectors. In addition to the “with” and “without” comparison, comparisons can be made between younger and older retirees. From a modeling perspective, this second comparison is akin to examining the impacts in a community as retirees age, an important policy question.

Because the conjoined model has an I/O model at its core, the two scenarios are best described in terms of how the expenditure patterns of these households modify the existing household demand (final demand) in the I/O model. To do this we turn to the 1995 Bureau of Labor Statistics Consumer Expenditure Survey (BLS-CES). Previous work with these data has shown that there are significant differences in spending habits between household types (Rubin & Nieswiadomy, 1994), and these differences can be used to assess differences in economic and fiscal impacts (Sastry, 1992; Woods et al., 1997). In the real world, communities would have some mix of younger and older retirees. Thus, this analysis can be thought of as simulating the most extreme scenario of the differential impacts of these two groups of elderly people on the community.

The expenditure patterns of the average household in each of the two groups are presented in Table 1, and the economic characteristics of the young-old and old-old households are summarized in Table 2. Of particular interest for this comparison is the difference in expenditures between the two groups. The young-old spend approximately $25,553 annually, and the old-old spend $18,006. The BLS-CES categories had to be aggregated to coincide with IMPLAN, the source

| Table 1. Expenditure Patterns of Young-Old and Old-Old Households, 1995 |
|-----------------------------|-----------------------------|-----------------------------|
| BLS Expenditure Category    | IMPLAN Sector No. | Young-Old Household: Age 65-75 ($) | Old-Old Household: Age 75+ ($) |
| Shelter maintenance        | 55                  | 1,014                         | 798                          |
| Telephone                  | 441                 | 577                           | 443                          |
| Electricity                | 443                 | 888                           | 696                          |
| Natural gas                | 444                 | 295                           | 271                          |
| Water and other public services | 445           | 271                           | 226                          |
| Food at home               | 450                 | 2,610                         | 2,069                        |
| Vehicle purchases          | 451                 | 2,459                         | 931                          |
| (gasoline and oil)         |                     |                               |                              |
| Apparel and services       | 452                 | 1,115                         | 583                          |
| Household furnishings/ equipment | 453           | 933                           | 1,197                        |
| Food away from home        | 454                 | 1,285                         | 698                          |
| Drugs and medical supplies | 455                 | 618                           | 639                          |
| Miscellaneous retail       | 455                 | 2,385                         | 1,538                        |
| Shelter (owned housing)    | 456                 | 730                           | 242                          |
| Rented housing             | 462                 | 782                           | 1,116                        |
| Other lodging              | 463                 | 415                           | 237                          |
| Health insurance           | 459                 | 1,527                         | 1,557                        |
| Vehicle insurance          | 459                 | 621                           | 423                          |
| Maintenance and repair     | 479                 | 586                           | 335                          |
| Medical services           | 490                 | 473                           | 487                          |
| Cash contributions         | 502                 | 1,164                         | 1,021                        |
| Property taxes             | 522                 | 1,071                         | 853                          |
| Total expenditures         | 21,819              | 16,360                        |                               |


| Table 2. Characteristics of Young-Old and Old-Old Households, 1995 |
|-----------------------------|-----------------------------|-----------------------------|
| Household Characteristics    | Young-Old Household: Age 65-75 | Old-Old Household: Age 75+ |
| Income before taxes          | $25,553                      | $18,006                     |
| Income after taxes           | $24,205                      | $17,252                     |
| Average annual expenditure (total) | $25,277                  | $18,572                     |
| Average no. of persons in CUs | 1.9                         | 1.5                         |
| Average no. of earners in CUs | 0.6                         | 0.2                         |
| Average no. of vehicles in CUs | 1.8                       | 1.0                         |
| % homeowners                | 82                           | 76                          |
| % homeowner with mortgage    | 20                           | 8                           |
| Estimated market value of owned home | $86,635               | $74,535                     |
| Estimated market rent of owned home | $568                       | $484                        |

of the Wisconsin model's core I/O. Given the reported categories of expenditures and industries (commodities), some BLS-CES data were lost to IMPLAN, hence the annual expenditure levels in Tables 1 and 2 differ by the lost BLS-CES data. The category that accounted for the largest discrepancy is entertainment.

These households also differed by factors other than expenditure patterns. For example, a typical young-old household has 1.9 persons, whereas an old-old household has 1.5 persons (Table 2). In addition, young-old households have, on average, 0.6 earners within the household, whereas old-old households have only 0.2 earners. These are important differences when describing scenarios to the Wisconsin Economic Impact Modeling System. For the simulations reported here, differences in household size mean initial population changes of 950 versus 600, which has significant implications for the simulated impacts. We used households for the analysis rather than an equal number of retirees because communities tend to plan for public services in terms of number of houses.

The difference in number of earners per household also has implications because it requires the scenario construction to reflect the sectors in which they will be employed. The fact that the typical household in our scenarios has a person in the labor force part time is consistent with the literature on aging and work. Among in-migrant retirees in western North Carolina, 30% of the households had someone in the labor force (Haas & Serow, 1997). Cockerham (1997) observed that workforce participation of persons over age 65 is declining steadily, but the proportion of part-time workers increases at retirement age. Many elderly people work part time because they want to continue some work, or they work part rather than full time to avoid having Social Security benefits reduced (Kahne, 1985). Cox (1993) further contended that low-income, unmarried retired women are "very likely" to work at least part time to supplement Social Security payments. Although the motivation to return to, or remain in, the labor force may vary across the two groups studied here, the scenario with some level of employment in elderly households is consistent with the data.

Given the descriptive information reported in Table 2, 500 additional young-old households suggest there will be 300 (500 × 0.6) persons in the workforce and 100 (500 × 0.2) persons for old-old households. For simulation purposes, we assumed that these entrants to the local labor force are evenly distributed across the trade and service sectors. Kurt (1997) suggested that, due to the changing occupational structure and the health status of older persons in general, many elderly people elect to return to work in part-time service jobs or self-employment. Kahne (1985) found that retired men, working part time, were most commonly employed in finance and personal service jobs and in service occupations. In general, part-time work in rural areas is commonly found in the trade and service sectors (Gunter & McNamara, 1990; Kahne, 1985). In addition, a high proportion of the jobs created by elderly people tend to be in the retail and services sectors (Sastry, 1992; Siegel & Leuthold, 1993).

As reported in Table 1, not only total expenditures (i.e., change in final demand) but also the pattern of expenditures are significantly different between the two household types. The young-old, for example, spend $2,610 for food at home and $1,285 for food away from home; whereas the old-old spend $2,069 for food at home and only $698 for food away from home. Clearly, such differences between household types will significantly alter the nature and magnitude of their economic contribution to the local economy. The young-old spend much more on vehicles than the old-old, as well as on apparel and miscellaneous retail. The expenditure patterns also indicate that the young-old are more likely to own their home, whereas the old-old are more likely to rent. Although the two types of households spend nearly the same for medical services and drugs and medical supplies, that amount is spent by a smaller household in the case of the old-old.

Simulated Economic and Fiscal Impacts

The simulated impacts of 500 new households of each type are reported in Tables 3 through 6. Although the fiscal impact is the focus of this article, three important variables—employment, population, and income—from the other modules of the model drive the fiscal component, and hence are discussed before the results of the fiscal module are presented.

Overall Impacts

The simulated results for the labor market module (employment, earnings, population, migration, and commuting) are provided in Table 3. For the young-old households, the BLS-CES data suggest that 500 new households will create 300 initial jobs and a total of 399 jobs for an implicit employment multiplier effect of 1.33, or 0.42 jobs for every person in the household. This compares with 100 initial jobs for the old-old, with a total employment impact of 173 jobs and an implicit multiplier effect of 1.73, or 0.23 jobs for every person in the household. Clearly the larger employment impact for the young-old households comes from (a) more persons in the young-old household remaining in the workforce and (b) higher levels of expenditures in the local economy.

Impacts on income are measured two separate ways: earnings and per capita income. As reported in Table 3, earnings per worker decrease slightly from the baseline under both the young-old (~$35, or ~0.18%) and old-old (~$13, or ~0.07%) scenarios. Although the reduction in per worker earnings resulting from the in-migration of the old-old is not unexpected, the larger reduction in per worker earnings from in-migration of the young-old is unexpected. This result is in part due to scenario construction: We assumed that all retirees working in the local labor force will earn prevailing wages in the trade and service sectors. Because the wages in these two sectors are lower than the regional average wage, and the majority of jobs created in both scenarios go to elderly persons themselves, the result is consistent. In addition, many elderly people work part time, thus the large increase...
Table 3. Simulated Labor Market and Housing Impacts Baseline Young-Old Household Old-Old Household

<table>
<thead>
<tr>
<th>Labor Market and Housing</th>
<th>Baseline</th>
<th>Impact</th>
<th>%</th>
<th>Impact</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total employment</td>
<td>33,312</td>
<td>2,441</td>
<td>0.2</td>
<td>3,392</td>
<td>1,837</td>
</tr>
<tr>
<td>Total in-commuters</td>
<td>41</td>
<td>0</td>
<td>0.17</td>
<td>45</td>
<td>0.48</td>
</tr>
<tr>
<td>Total out-commuters</td>
<td>31,780</td>
<td>63,210</td>
<td></td>
<td>$654,971,430</td>
<td></td>
</tr>
<tr>
<td>Jobs to immigrants</td>
<td>1,837</td>
<td>56</td>
<td>3.04</td>
<td>24</td>
<td>1.31</td>
</tr>
<tr>
<td>Unemployed</td>
<td>373</td>
<td>1,075</td>
<td>1.70</td>
<td>842</td>
<td>1.33</td>
</tr>
</tbody>
</table>

Table 4. Simulated Retail Impacts

<table>
<thead>
<tr>
<th>Retail Sectors</th>
<th>Baseline</th>
<th>Impact</th>
<th>%</th>
<th>Impact</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furniture</td>
<td>$228</td>
<td>$0.50</td>
<td>-0.22</td>
<td>$0.32</td>
<td>-0.14</td>
</tr>
<tr>
<td>Autos</td>
<td>$1,950</td>
<td>$1.18</td>
<td>-0.06</td>
<td>$4.74</td>
<td>-0.24</td>
</tr>
<tr>
<td>Building</td>
<td>$300</td>
<td>$0.01</td>
<td>0.00</td>
<td>$22</td>
<td>-0.04</td>
</tr>
<tr>
<td>Apparel</td>
<td>$297</td>
<td>$0.90</td>
<td>0.30</td>
<td>$7.67</td>
<td>0.26</td>
</tr>
<tr>
<td>Drug stores</td>
<td>$213</td>
<td>$0.41</td>
<td>0.19</td>
<td>$0.05</td>
<td>0.02</td>
</tr>
<tr>
<td>Food stores</td>
<td>$1,590</td>
<td>$7.83</td>
<td>-0.49</td>
<td>$5.19</td>
<td>-0.33</td>
</tr>
<tr>
<td>General</td>
<td>$1,054</td>
<td>$2.72</td>
<td>0.26</td>
<td>$4.22</td>
<td>0.04</td>
</tr>
<tr>
<td>Eating</td>
<td>$853</td>
<td>$2.15</td>
<td>-0.25</td>
<td>$1.61</td>
<td>-0.19</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>$1,164</td>
<td>$9.95</td>
<td>-0.85</td>
<td>$7.56</td>
<td>-0.65</td>
</tr>
<tr>
<td>Gas</td>
<td>$770</td>
<td>$2.09</td>
<td>-0.27</td>
<td>$1.00</td>
<td>-0.13</td>
</tr>
<tr>
<td>Retail sales per capita</td>
<td>$8,620</td>
<td>$19.65</td>
<td>-0.23</td>
<td>$19.40</td>
<td>-0.23</td>
</tr>
</tbody>
</table>

in part-time workers also lowers earnings per worker. Per capita income also declines (Table 3). Under the old-old scenario, per capita income declines by $51, or -0.31% and under the young-old scenario by $44, or -0.27%.

A third important variable feeding into the fiscal impact module is population. Although the initial population effect of elderly in-migration is determined by the scenario, the ripple or multiplier effect in employment, earnings, changes in relative housing prices, and unemployment will influence population changes through indirect migration. The estimated population impacts are reported in Table 3. For young-old households, the initial effect is 950 (500 x 1.9) additional persons and an indirect effect of 125 persons for a total population change of 1,075 persons (1.7% increase). For the old-old households, the initial effect is 750 (500 x 1.5) additional persons and an indirect effect of an additional 92 persons for a total population change of 842 persons (1.33% increase). Note that although the individual income measures (per worker earnings and per capita income) may fluctuate downward, the increase in population dictates that total earnings and total income increase (Table 3).

The Wisconsin model also provides insight into the impact of these two distinct groups of retirement households on local housing and retail markets. Under both scenarios, the demand placed on the local housing market results in similar increases in construction and higher prices for new construction (Table 3). Under the young-old scenario, the number of new houses increases by 197, with an average value of about $70,000, or a 3.22% increase in value. Under the old-old scenario, the increase is 192 new houses with a value of about $70,000, or a 3.21% increase.

When compared with the estimated market value of owner-occupied homes for these age groups from the BLS-CES profile (Table 2), the Wisconsin model seems to underestimate the impact that these types of households might have on the local housing market. In short, the result suggests that the in-migrants are leaving a housing market with higher housing values.
and entering another with lower housing costs. This is a common practice among migrating retirees (Stallmann & Siegel, 1995). In addition, the model captures changes in the local housing market, including indirect and induced housing, not just the particular houses that retirees purchase.

Total retail sales increase in each subsector under both scenarios. The increase ranges from 0.67 to 2.01%. Per capita retail expenditures do not always increase (Table 4). Per capita retail sales increase for both scenarios only in apparel, drug stores, and general retail. For the young-old, drug store retail increases about 0.2% whereas for the old-old the increase is only 0.02%. General retail also increases more for the young-old, 0.26%, than for the old-old, 0.04%. For the young-old scenario, building supplies retail also increases. Auto retail per capita decreases in both scenarios, but it decreases −0.24% for the old-old and only −0.06% for the young-old. For all other types of retail, per capita sales decrease more in the young-old scenario than in the old-old scenario. The young-old are generally more mobile than the old-old, so the old-old may shop more in the community than the young-old (Pinkerton, Hassinger, & Obrien, 1995; Walzer & Schmidt, 1977).

Fiscal Impacts

The fiscal impacts of the scenarios presented in this study are reported in Tables 5 and 6. Total noneducational expenditures increase in all categories. In the young-old scenario, total noneducation expenditures

Table 5. Simulated Fiscal Impacts of Local Government Expenditures, Per Capita and Total

<table>
<thead>
<tr>
<th>Expenditures</th>
<th>Baseline</th>
<th>Impact</th>
<th>%</th>
<th>Impact</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per capita noneducation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td>$206</td>
<td>−$1.57</td>
<td>−0.77</td>
<td>−$0.74</td>
<td>−0.36</td>
</tr>
<tr>
<td>Government</td>
<td>$149</td>
<td>$0.71</td>
<td>0.48</td>
<td>$0.30</td>
<td>0.20</td>
</tr>
<tr>
<td>Safety</td>
<td>$190</td>
<td>−$1.11</td>
<td>−0.58</td>
<td>−$0.62</td>
<td>−0.33</td>
</tr>
<tr>
<td>Roads</td>
<td>$167</td>
<td>−$0.54</td>
<td>−0.32</td>
<td>−$0.57</td>
<td>−0.34</td>
</tr>
<tr>
<td>Waste</td>
<td>$40</td>
<td>$0.26</td>
<td>0.65</td>
<td>$0.24</td>
<td>0.59</td>
</tr>
<tr>
<td>Amenity</td>
<td>$62</td>
<td>$0.05</td>
<td>0.08</td>
<td>$0.04</td>
<td>0.06</td>
</tr>
<tr>
<td>Noneducation expenditures per capita</td>
<td>$814</td>
<td>−$2.20</td>
<td>−0.27</td>
<td>−$1.36</td>
<td>−0.17</td>
</tr>
<tr>
<td>Total noneducation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td>$12,991,000</td>
<td>$119,888</td>
<td>0.92</td>
<td>$125,788</td>
<td>0.97</td>
</tr>
<tr>
<td>Government</td>
<td>$9,409,000</td>
<td>$205,736</td>
<td>2.19</td>
<td>$144,296</td>
<td>1.53</td>
</tr>
<tr>
<td>Safety</td>
<td>$12,025,000</td>
<td>$133,334</td>
<td>1.11</td>
<td>$120,514</td>
<td>1.00</td>
</tr>
<tr>
<td>Roads</td>
<td>$10,564,000</td>
<td>$145,101</td>
<td>1.37</td>
<td>$104,019</td>
<td>0.98</td>
</tr>
<tr>
<td>Waste</td>
<td>$2,545,000</td>
<td>$60,138</td>
<td>0.78</td>
<td>$49,145</td>
<td>1.93</td>
</tr>
<tr>
<td>Amenity</td>
<td>$3,897,000</td>
<td>$99,280</td>
<td>2.56</td>
<td>$94,787</td>
<td>1.39</td>
</tr>
<tr>
<td>Noneducation expenditures</td>
<td>$51,431,000</td>
<td>$733,477</td>
<td>1.43</td>
<td>$597,956</td>
<td>1.16</td>
</tr>
<tr>
<td>Education expenditures per capita</td>
<td>$1,196</td>
<td>−$19.51</td>
<td>−1.63</td>
<td>−$15.39</td>
<td>−1.29</td>
</tr>
<tr>
<td>Total education expenditures</td>
<td>$75,599,192</td>
<td>$802,737</td>
<td>1.06</td>
<td>$652,135</td>
<td>0.86</td>
</tr>
</tbody>
</table>

Table 6. Simulated Fiscal Impacts of Local Government Noneducational Revenues

<table>
<thead>
<tr>
<th>Revenues</th>
<th>Baseline</th>
<th>Impact</th>
<th>%</th>
<th>Impact</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per capita noneducation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intergovernmental</td>
<td>$435</td>
<td>−$1.28</td>
<td>−0.30</td>
<td>−$0.79</td>
<td>−0.18</td>
</tr>
<tr>
<td>Property tax</td>
<td>$1,092</td>
<td>$0.06</td>
<td>0.01</td>
<td>$0.02</td>
<td>0.00</td>
</tr>
<tr>
<td>Noneducation revenues per capita</td>
<td>$1,527</td>
<td>−$1.22</td>
<td>−0.08</td>
<td>−$0.81</td>
<td>−0.05</td>
</tr>
<tr>
<td>Total noneducation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intergovernmental</td>
<td>$27,496,350</td>
<td>$385,326</td>
<td>1.40</td>
<td>$315,577</td>
<td>1.15</td>
</tr>
<tr>
<td>Property tax</td>
<td>$69,025,320</td>
<td>$1,178,399</td>
<td>1.71</td>
<td>$918,334</td>
<td>1.33</td>
</tr>
<tr>
<td>Total noneducation revenues</td>
<td>$96,521,670</td>
<td>$1,563,725</td>
<td>1.62</td>
<td>$1,233,911</td>
<td>1.28</td>
</tr>
</tbody>
</table>
within the three-county region of analysis increase by about $733,477 (1.43%); in the old-old scenario, the increase is less, $569,956 (1.16%). The driving factors behind the differences in total spending between the two scenarios are higher population impacts and higher levels of income (both per capita and aggregate income) under the young-old retirement scenario.

Per capita noneducational expenditures, however, decrease by $2.20 (or -0.27%) in the young-old scenario but they decrease less $1.36 (or -0.17%), in the old-old scenario. Econometric results suggest that public goods are normal goods, and significant differences in income levels will have significant impacts on service levels. The larger decline in per capita expenditures for the young-old is explained simply by the empirical result that population in this scenario is growing faster than expenditure levels, thus driving the per capita estimate downward. Under the old-old scenario, per capita expenditures do not decline as much because population is not growing as rapidly.

Under both scenarios, per capita expenditures increase for waste and amenity services and for general government. Per capita health expenditures decrease -0.77% in the young-old scenario compared with -0.36% in the old-old scenario. Per capita safety expenditures also decrease more in the young-old scenario, -0.58% compared with -0.33% for the old-old. Per capita road expenditures decrease similarly for both scenarios. In addition to reflecting differences in tastes and preferences for public services, these results also hint at possible costs savings through economies of scale in the production process.

There are differences in support for public education across the two age groups. In the young-old scenario, per capita expenditures on public education decrease by $19.51 (-1.63%) but increase in total by about $803,000 (1.06%). In the old-old scenario, per capita expenditures do not decline as much, $15.39 (-1.29%), but total education expenditures increase less, about $652,000 (0.86%). The difference in per capita expenditures hinges on rates of change in population across the two scenarios. Elderly people do not directly increase demand for public education services (the households do not have school-aged children), but the increase in housing expands the property tax base, which supports public education. Although total expenditures on schools increase under both scenarios, the larger change in population under the young-old scenario decreases the per capita expenditure more than under the old-old scenario.

Elderly migration also affects the ability of local governments to generate revenues (Table 6). Under both scenarios, there is a small increase in property taxes per capita ($0.01, or 0.00%). In Wisconsin, state aids are a significant portion of local noneducational revenues, and the simulation must reflect the unique aspects of the formulas of aid flowing to local governments. For the young-old scenario, total intergovernmental, noneducational revenues per capita decline ($1.28, or 0.3%) but increase in aggregate ($385,000, or 1.40%). In the old-old scenario, total intergovernmental noneducational revenues per capita decrease less ($0.09, or -0.18%) and increase less in aggregate ($316,000 or 1.15%). The difference in per capita intergovernmental aid impacts rests on the uniqueness of the Wisconsin formulas: As local governments increase expenditures and corresponding property tax rates, the aid formula increases the flow of dollars to place downward pressure on property taxes. In other words, the aid formulas are set up to "reward" (within state budget limitations) those local governments who place higher values on local public services and are willing to tax themselves to pay for that higher level of service (i.e., higher per capita property taxes). Impacts on educational revenues were not simulated because rules surrounding educational revenues are currently in transition.

It is important to note that not all expenditure and revenue categories are included in the analysis. On the expenditure side, capital improvement and the small miscellaneous categories are excluded; on the revenue side fees, charges, and other miscellaneous sources are not considered. For most small rural communities, however, these categories tend to be small and should not play a significant role in the final analysis.

Under the young-old scenario, noneducational expenditures increase about $733,000, and government revenues increase $1.6 million, resulting in a positive net fiscal impact. Although educational revenues were not estimated, the increase of $800,000 in educational expenditures suggests that there is an overall positive net fiscal impact from the young-old. Under the old-old scenario, noneducational expenditures increase about $600,000 and revenues increase $1.2 million. Educational expenditures increase $650,000. Even though educational revenues were not estimated, it appears likely that the overall net fiscal impact is also positive for the old-old.

Conclusions

The economic and fiscal impacts of elderly settlement were examined within the context of a conjoined I/O econometric model of Wisconsin counties. Using the BLS-CES, two household expenditure patterns were constructed and used to simulate the impact of two elderly in-migration scenarios—young-old (65–75) and old-old (older than 75). These households are proxies for the aging of in-migrant retirees.

The results do not support the fear of the "gray peril." Although per capita earnings and per-capita incomes decline, this is mainly because the majority of new jobs created for employed elderly people in these households are part-time jobs in the trade and services sectors. Total earnings and total incomes increase, as do total retail sales. Some retail sectors increase total sales more rapidly than do others.

Government expenditures per capita decrease in some areas, suggesting the possibility of scale economies, and increase in other areas, suggesting a more conventional supply curve. Property taxes per capita increase, but per capita local noneducational revenues decline because of changes in intergovernmental revenues. Under both scenarios, total noneducational expenditures increase, but noneducational revenues increase nearly twice as much. This suggests that eld-
erly people have a positive net fiscal impact on the community. The young-old may provide a larger positive fiscal impact for the community than the old-old.

References


special.requests/ce/crosstabs/y9495/AGEbyINC65orup.txt. Accessed Sep-
tember 1999.


ence Review, 13(1–2), 141–165.


Exter, T. (1990). How big will the older market be? American Demo-
graphics, 12, 31–36.


VOL. 39, NO. 5, 1999 609

U.S. Census Bureau, Economics and Statistics Division. (1995). Table 16. Consumer units with reference person age 65 and over by income before taxes: Average annual expenditures and characteristics, Con-
special.requests/ce/crosstabs/y9495/AGEbyINC65orup.txt. Accessed Sep-
tember 1999.


ment Society, 25, 259–276.


Jones, L. L., Whitehorn, N. C., & Wyse, A. J. (1993). Economic and social impacts of retirees migrating to east Texas (DIR 93–2). College Sta-
town, Texas A&M University, Texas Agriculture Experiment Station.

tions for service provision in rural communities: An Ontario perspec-


ment potential of retirement. Local impacts of the increased aged/retired population in rural communities. Final report to the Center for Rural Pennsylvania. State College: Department of Agricultural Economics and Rural Sociology, Pennsylvania State University.

Kort J., & Cartwright, J. (1981). Modeling the multiregional economy: In-
tegrating econometric and input-output models. The Review of Re-


Oakerson, R. J. (1987). Local government economics: Provision, produc-
tion and governance. Intergovernmental Perspectives, 12, 20–25.


view, 16(1), 3–19.

Reeder, R. (1998). Retiree-attraction policies for rural development (Agric-


Rey, S. (1994). Integrated multiregional modeling for systems of small re-

Vol. 39, No. 5, 1999 609


Rogers, C. C. (1993). Health status and use of health care services by the older population: A residential comparison (Rural Development Re-


Samuelson, P. (1954). The pure theory of public expenditure. Review of Econ-


Siegel, P. B., & Leuthold, F. O. (1993). Economic and fiscal impacts of a retirement/recreation community: A study of Tellico Village, Tennes-


recreation communities are among development strategies open to
amenity-rich rural areas. Rural Development Perspectives, 10, 8–14.
tion, retirement income and the local economy (Community Econom-
ics Monograph WRDE 36). Corvallis: Western Rural Development Center,
Oregon State University.
community analysis. Journal of the Community Development Society,
26, 1–14.
development strategy: Looking into the future. Economic Develop-
ment Quarterly, 9, 372–383.
United States by age, sex, and race: 1988–2080 (Current Population
Printing Office.
non-metro per capita income growth. Rural Conditions and Trends, 8,
40–45.
off than metro elders on some measures, not on others. Rural Condi-
tions and Trends, 8, 46–59.
impacts using industry and household expenditures. Journal of the Com-
Walzer, N., & Deller, S. C. (1996) Rural issues and trends: Role of vision-
ing programs. In N. Walzer (Ed.), Community visioning programs: Practices
and experiences (pp. 1–19). Westport, CT: Praeger Press.
small communities. Growth and Change, 8(1), 45–49.
search on Aging, 2, 141–154.
Wiseman, R. F., & Roseman, C. C. (1979). A typology of elderly migra-
tion based on the decision making process. Economic Geography, 55,
324–337.
migrating to Tahlequah and Cherokee counties (Agricultural Econom-
ics Reports 9321). Stillwater, OK: Oklahoma State University, Depart-
ment of Agricultural Economics.
Economic impacts of in-migrating retirees on local economies. Journal
of the Community Development Society, 28, 206–224.
Received November 4, 1998
Accepted May 26, 1999

Appendix

Notes

1. Retirement destination counties are defined as
nonmetropolitan counties with a net in-migration of
persons aged 60 or older of at least 15% (Cook &
Hady, 1993).

2. The region selected was the three-county area
of Oneida-Forest-Langlade in north central Wis-
sin. Total population of the three-county area is
63,000 with a per capita income of $16,551. This is
an amenity-rich area that is experiencing significant
in-migration of retirees to seasonal lakefront property.