Simulating the Economic and Fiscal Impacts of High- and Low-Income Elderly on a Small Rural Region

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Abstract: We assess the impact of an aging rural population using the Wisconsin Economic Impact Modeling System, a county-level conjoined input-output/econometrics simulation model. Using data from the U.S. Bureau of Labor Statistics Consumer Expenditure Survey, we construct profiles of two household types to simulate the economic and fiscal impacts of 500 additional elderly households in a small rural economy. Household types vary by income levels and expenditure patterns. The results suggest that, from the perspective of local government officials, high-income elderly households will increase local expenditures more than a similar number of low-income retiree households, but the resulting increase in revenues will more than offset the increased expenditures.

I. INTRODUCTION

In 1920 less than one American in 20 was over the age of 65. By 1995, the proportion of Americans over 65 had risen to one in eight. As this trend continues, it is estimated that one in five Americans will be over the age of 65 by the year 2030 (Smith, Willis, and Weber 1987). An important consequence of the "graying of America" is that aggregate consumption patterns have changed as people have aged. For example, as the baby boomers have grown older, they have changed their consumption bundles according to their changing tastes and preferences. This has resulted in a fundamental shift in purchasing patterns that has dramatically altered the level and type of the goods and services demanded in the economy. In turn, the effects of changing consumption patterns are felt throughout the economy because of extensive economic linkages. The upshot is that an aging population can profoundly affect the economy (Bigger 1994).

Analogously, an increase in the number of elderly alters the environment in which local governments operate. Because the profile of an elderly household can differ substantially from that of a working-age household, the desired level of specific public goods and services can vary substantially between the "traditional" clientele and the elderly. For example, many retirees are "empty-nesters," and the absence of children might result in a lower willingness to support the local school

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system. Conversely, the elderly could place increased demands on other publicly provided services, such as transportation and other elderly care. The end result is that an increase in the elderly population could dramatically affect local government responsibilities.

While a large body of research recognizes the impacts of an aging population on local economies, it is unfortunate that this literature is scattered over several disciplines, including economics, sociology, and gerontology. One result of this dispersion is that the literature has numerous strands that are not well integrated. For example, one strand of the literature examines effects of aging on local employment, while another examines its effects on local governments. The consequence is that previous studies offer only a partial understanding of the economic impacts of an aging population.

The fact that the elderly are not a homogeneous group, as many previous impact studies implicitly suggest, complicates our ability to understand the economic impacts of retirees. Instead, elderly households differ greatly in their income level, demographic make-up and, subsequently, their consumption patterns. Because of these differences, it is quite likely that the economic impacts of the elderly will vary substantially across elderly "type."

In this study we try to tie these various strands of the literature together by integrating the previous impact-of-aging literature in a simple, yet comprehensive, modeling framework. To accomplish this, we systematically examine the economic and fiscal impact of two distinct sets of elderly populations within the context of a conjoined input-output/econometric model of rural Wisconsin counties. Using data from the U.S. Bureau of Labor Statistics Consumer Expenditure Survey, we construct profiles for two different types of elderly households that we then introduce into a small Wisconsin economy within an experimental framework. Our goal is to compare the economic and fiscal impacts of different "types" of retirees in a consistent and holistic framework.

We have specified the two groups to reflect the characteristics of those most likely to 1) age in place; and 2) relocate. We proxy the former by low-income (less than $20,000 annual income) households 65 years of age and older and the latter by high-income (more than $50,000 annual income) households 65 years of age and older. In both scenarios, 500 households are introduced.

Our simulation results suggest that, while both groups generated notable economic and fiscal impacts, the size of these impacts varies substantially by household type. In sum, high-income elderly households will increase local expenditures more than a similar number of low-income retiree households, but the resulting increase in revenues will more than offset the increased expenditures. The same cannot be said for low-income elderly. While they have positive economic impacts on the local economy, their net fiscal impacts are not nearly as strong as that of high-income retirees.

Our paper proceeds as follows. First, we review the limited literature that focuses on the economic and fiscal impacts of the elderly. We then introduce and

describe the Wisconsin Economic Impact Modeling System, which is used to frame the simulated aging scenario. Next, we describe the two scenarios and report on the estimated economic and fiscal impacts. The paper closes with an overview of findings and a discussion of implications for local community development decision makers.

II. DOCUMENTING TRENDS AND ECONOMIC IMPACTS OF THE AGING OF RURAL AMERICA

The aging of rural America is the result of two trends: 1) in-migration of urban retirees to rural areas—often the result of active local development policies; and 2) out-migration of rural young adults to urban areas. These two trends, however, are not uniform across rural areas. Areas that attract in-migrating older persons tend to also attract or retain young adults because of the jobs created by the in-migrants. In the second case, young adults leave rural areas in search of jobs, leaving behind an older population that "ages in place" (Glasgow and Beale 1985).

The impact of in-migrating older persons on rural communities is a common theme in the literature (e.g., Stallmann and Siegel 1995). The research falls into three primary areas: 1) retiree impacts on social aspects of the community (e.g., Glasgow 1985; Green et al. 1996; Kelsey, Smith, and Luloff 1993); 2) retiree decision processes concerning migration (e.g., Wiseman 1980; Wiseman and Roseman 1979; Cuba 1991, 1989); and 3) retirees' economic and fiscal impacts on the receiving communities (e.g., Deller 1995; Deller and Walzer 1993; Sastry 1992; Siegel and Leuthold 1993; Barkley and Henry 1993; Miller 1993; Happel, Hogan, and Sullivan 1983; Mullins and Rosentraub 1992; Joseph and Cloutier 1991). In this paper we are primarily interested in the third area, that is, quantifying the economic and fiscal impacts of retirees.

Economic Impacts

There is an extensive body of research that documents positive community economic impacts from in-migrating elderly (e.g., Woods et al. 1997). Over the past 20 years, counties identified as retirement destination regions by the USDA Economic Research Service have experienced above average population and employment growth and rapid income growth (Deller 1995; Walzer and Deller 1996).[1] Given that research suggests that retirees offer economic benefits to communities, coupled with a surge in potential retirees as baby boomers grow older, it should not be surprising that recruiting retirees has become a popular rural development strategy (Reeder, Hopper, and Thompson 1995; Fagan and Longino 1993).

Sastry (1992), for example, compares the economic impacts on the Florida economy of in-migrating retirees to the impact of an alternative strategy aimed at attracting a comparable number of nonelderly, finding that, contrary to common perceptions, the elderly spend more of their income in sectors with

[1]Retirement destination counties are defined as nonmetropolitan counties with a net in-migration of persons *aged 60 and over of at least 15 percent* (Bender et al. 1985).

higher-than-average earnings than do the nonelderly. The consumption pattern of the elderly resulted in higher indirect and induced effects and higher total impacts on earnings and employment.

A shortcoming of previous impact literature, however, is that it tends to focus on higher-income retirees who exhibit a greater tendency to migrate long distances and are the target of retirement recruitment strategies (Cox 1993). But, as noted by Schultz (1988), the aged are not a homogeneous group and should not be treated as such. Clearly, not all retirees can be described as high-income or footloose and looking to relocate into a rural area. Instead, a large proportion of the elderly population is mobile and low-income, and a second large share is aging in place. Unfortunately, most previous studies in the development literature fail to recognize the heterogeneity of this large population cohort.

For instance, while a number of elderly migrants can be classified as low-income, their impacts on the communities to which they migrate generally have not been well documented. One exception is a study of trailer parks, which are known to cater to lower-income retirees, in Apache Junction, Arizona (Happel, Hogan, and Pflanz 1988). The study, unfortunately, provides only partial economic and fiscal analyses. Cox (1993) observes that retirees that relocate into trailer parks tend to integrate into the social and economic structure of the park, but not the larger community. In addition, without a comparison group of higher-income retirees, the differential impact of income levels cannot be determined. Of particular interest would be the differences in consumption patterns, which will affect the multiplier and fiscal impacts. Lower-income migrants would also be expected to generate less tax revenues and might demand higher levels of certain public services.

A second overlooked group are the elderly who age in place. Because the characteristics and needs of the aging-in-place are different from those of in-migrating elderly, they often require a different set of services and policies (Glasgow and Beale 1985; Kelsey, Smith, and Luloff 1993). The need for different services reflects, in part, the fact that urban-to-rural elderly migrants are generally more affluent than those elderly who age in place. A notable consequence of these differentials is that communities with a high percentage of elderly due to aging-in-place differ from communities with high in-migration (Reeder and Glasgow 1990). For example, in a study of older movers, Speare and Meyer (1988) confirm an earlier result of Krout (1983), finding that those who move for amenity or retirement reasons tend to be younger (aged 55-65), wealthier, more highly educated, and more often are married and own their home than those who do not move. Still, as observed by Barrow (1992), for any given five-year period, only about one person in 20 of the population over the age of 60 makes a long-distance move. In essence, the majority of elderly elect to age in place.

Woods et al. (1997) provide one of the few studies on aging in place, using Consumer Expenditure Survey data and the IMPLAN modeling system to examine the employment and income impacts of in-migrant retirees and those that age

in place across a number of places in the south-central United States. In their study, they reveal that there exist substantial differences in impacts across household types and places. They conclude that local spending patterns and local economic structure, among other things, greatly influence the magnitude of local impacts.

Fiscal Impacts

While the economic impact of elderly migration appears to be well understood (Sastry 1992; Deller 1995; Stallmann and Siegel 1995; Woods et al. 1997), the fiscal impact on local governments is not as well established (Voth, Miller, and Cluck 1993; Miller, Voth, and Cluck 1993). This is a noteworthy shortcoming because it is important for communities to understand that retirees can affect the way in which local governments collect and spend their money. And this understanding is necessary even among new, planned retirement communities, where there is wide variation in what is provided by the local government and what is provided by the homeowners association (Siegel and Leuthold 1993; Barkley and Henry 1993). Underscoring the need for fiscal analysis is that new communities of retirees may attempt to shift some services from the association to the local government over time (Siegel, Leuthold, and Stallmann 1995), or they may begin to demand new services specifically aimed at retirees (Longino 1982; Rowles and Watkins 1993).

Perhaps the primary reason previous fiscal results are difficult to generalize is that, despite the existence of a number of impact studies in the literature, there is no common methodological approach. Instead, fiscal impact assessment has followed a number of methods, ranging from the per capita multiplier method to case study analysis to the service standard method (Burchell and Listokin 1979).

Although studies using traditional methods have provided some genuine insights, they fail to explicitly capture the complex dynamics of the local economy. As such, they are best viewed as "partial analysis." For example, some studies report only the additional tax revenues generated by the in-migrating retirees and do not include new public expenditures created by the in-migrants (Jones, Whitehorn, and Wyse 1993). Other studies include the additional public costs caused by the in-migration or the additional costs of services to the new community (Barkley and Henry 1993) or they estimate the increased public costs based on local per capita expenditure and multiplied by the number of in-migrating retirees (Miller 1993). The increased tax revenues are subtracted from the estimated costs to determine the fiscal impact.

Such shortcomings are commonplace in the literature, but the consequence of relying on partial analyses is that we only attain partial understanding. Halstead and Johnson (1986) and Swallow and Johnson (1987) recognized this early on and argued that many fiscal models are incomplete because they are "rudimentary" in terms of modeling approaches, empirical estimation methodologies, or theoretical foundation.

There are several notable studies, however, that are methodologically strong in their attempts to estimate the impacts of retirees on local governments. For example, in a study of local government expenditure levels in rural areas, Reeder and Glasgow (1990) and Glasgow and Reeder (1990) find that expenditures on infrastructure, such as roads and bridges, tend to be 28 percent lower in retirement counties than other rural counties. Surprisingly, they also found that local governments in retirement counties spend 11 percent less on public health and hospitals and between 11 percent and 17 percent less per person on public education than the rural average. Reeder and Glasgow (1990) hypothesize that since retirees do not directly benefit from public education, they are less likely to support education expenditures.

In a study of metropolitan counties, Mullins and Rosentraub (1992) find that near-retirement-age populations seem to have a lower demand for public goods, but these preferences change quickly and areas with larger proportions of postretirement people in their populations spend more for public services. They warn that programs to attract older citizens may be both fiscally and socially unsound. Immediate windfalls from attracting higher-income, low service-demanding elders may give way to an older population that will want and need expanded public services. In a complementary study of rural Ontario, Joseph and Cloutier (1991) find that the social and fiscal impact of retirees varies dramatically by the composition of the retirees themselves. They find that retirees who age in place tend to place very different demands on local services than wealthier retirees who relocate from greater distances.

Integrating the Economic and Fiscal Analyses

Although the review above notes that few studies have adopted a "holistic" approach to examining the impacts of retirees on a community (i.e., consider both economic and fiscal impacts), there are two notable papers providing fiscal impact analyses that also directly consider economic impact analysis. In their Tennessee study, Siegel and Leuthold (1993) find positive fiscal impacts directly from the retirees, a negative fiscal impact from the indirect effects created by the retirees, but an overall positive fiscal impact. This is a study of a new planned retirement community and the authors note 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 estimated by the study (Siegel, Leuthold, and Stallmann 1995).

Deller (1995) estimates the economic and fiscal impacts of retiree migration for the state of Maine, but his results do not corroborate the same level of positive fiscal impacts suggested by Siegel and his colleagues (1993, 1995). Rather, Deller (1995) finds that the demand for public services increases in proportion to the increase in population. Deller (1995) goes on to suggest that this difference may be because of the level of analysis (i.e., state versus county). The state analysis will include the demands on state government that would not be included in a county fiscal analysis.

Summary

While this brief review has not included all studies, it is reasonable to conclude that the relatively new and growing retiree impact literature has raised more questions than it has been able to address. The early literature, which focused on the migration of younger and wealthier retirees, has pointed to the positive impacts that retirees can bring to a community. But Schultz (1988) observed that the aged are not a homogenous group, as is assumed by the literature. Because there are important differences among the elderly, it is quite possible that their associated economic impacts will differ dramatically, depending on factors such as age, income, etc.

As the literature matures, more targeted questions are necessary. For example, what are the economic and fiscal impacts of the aging-in-place? Or, what will happen if in-migrants are older? Or poorer? Preliminary attempts to answer these questions have led to inconsistencies in research findings and policy recommendations, thus muddying the waters.

III. THE WISCONSIN ECONOMIC IMPACT SIMULATION MODELING SYSTEM

We examine the economic and fiscal impacts of different types of elderly settlement patterns on local economies in an integrated (or conjoined) input-output (IO)/econometric modeling framework. Our model—dubbed the Wisconsin Economic Impact Modeling System (Deller and Shields 1996; Shields and Deller 1997, 1998; Shields 1998)—closely resembles a plethora of regional models constructed for policy simulations (e.g., Kort and Cartwright (1981) for U.S. states; Conway (1990) for the state of Washington; Coomes, Olson, and Glennon (1991) for the Louisville SMSA; Treyz, Rickman, and Shao (1992) for user-defined regions; and Rey (1994) for San Diego).[2] For conjoined models, the IO component is used to determine industry outputs and primary factor demands. The econometric component estimates final demands, factor prices, and primary factor supplies. The aim is to retain the sectoral detail afforded by IO techniques and close it with a system of endogenous econometric relationships (Dewhurst and West 1990).

As noted above, many studies estimating the impacts of retirees are limited because they offer only partial analysis. Using an integrated approach to assess the economic and fiscal impact of retiree settlement patterns is a marked improvement over these previous studies because it moves toward the "holistic" approach that is often lacking in this literature. In particular, our approach recognizes the economic relationships among all agents in the economy and thus provides a better understanding of wide-reaching impacts.

The Wisconsin System is a rather complex model, consisting of more than 50 stochastic equations. Because many of the details of the complete model are not relevant for our purpose, we focus our discussion on the demographic and fiscal

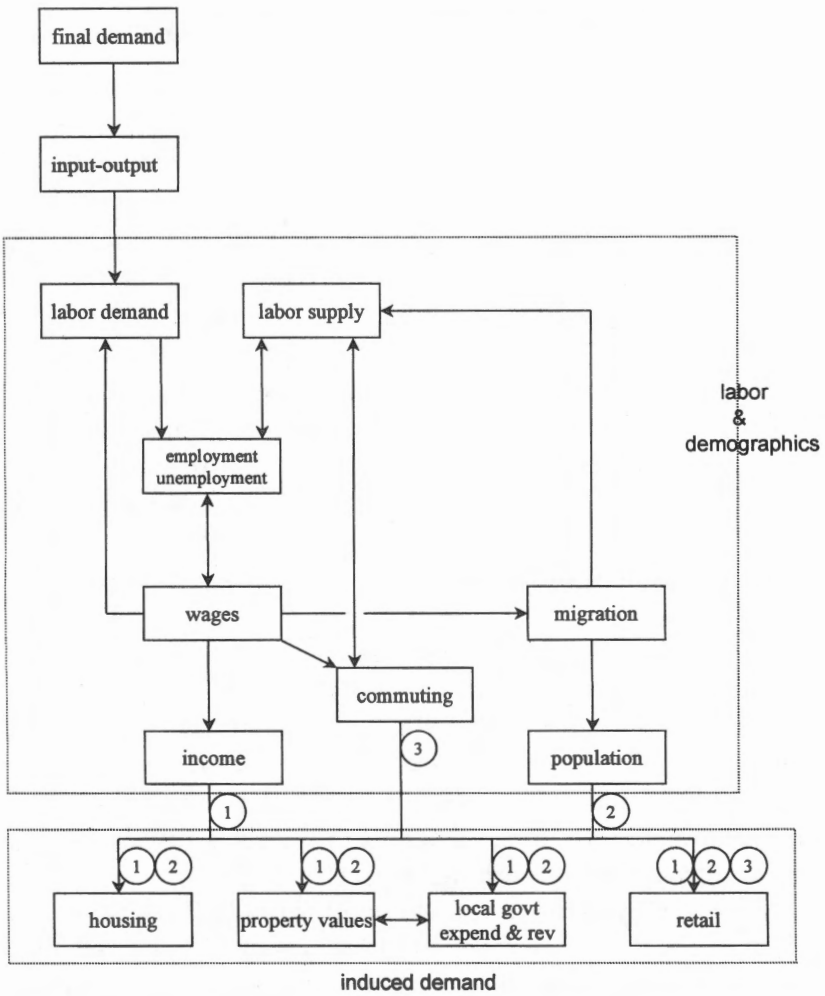
[2]Rey (1999) reviews recent integrated models; Bolton (1985) reviews earlier efforts.

modules. Additionally, since we want to keep our presentation as intuitive as possible, we approach this section by considering how the impacts of retirees are specifically examined in the model framework.[3]

A graphical overview of the Wisconsin System is presented in Figure 1. Six modules compose the model: 1) production; 2) labor; 3) demographics; 4) retail; 5) housing; and 6) local government (fiscal). All modules, save the production module, consist of a series of stochastic econometric equations. To capture interrelationships, the modules are linked by one or more endogenous variables (indicated by the circled figures). Similarly to other models of its type, the Wisconsin model recognizes two sources of economic demand, external and local. While county growth is driven primarily by export production, the model also contains a number of local policy variables that allow users to model locally induced demand shocks.

FIGURE 1

The Wisconsin Economic Impact Modeling System



[3]A detailed description of the Wisconsin System is available in Shields (1998) and at: http://www.aers.psu.edu/d/fac/shields.htm

Intermediate production relationships in the local economy are examined in the IO component. The IO model provides a very detailed family of production functions, albeit reliant on a number of fairly strong assumptions. A common way to initiate a policy simulation in the Wisconsin System is to specify a demand shock—the scenario often involves reducing or increasing output for a single industry. The IO core is used to estimate changes in output by industry due to changes in final demand.

The labor market components of the model are linked to the production sector via industry output as determined by the production module. Part one of the labor module is used to estimate industrial employment and wages while part two examines unemployment, commuting patterns, population (including migration), total personal income, and income distribution responses to the initial change in economic activity.

The remaining induced demand modules incorporate information provided by the labor market modules. Local retail sales rely on personal income, population, and commuting patterns. Income and population change, among other things, drive the local housing market. Key forecasts from the housing sector include housing starts and property values. Income, population, and income distribution drive local government expenditures and revenues. Local government is also closely integrated with the local housing sector through property values (i.e., the property tax base).

While the Wisconsin model provides information on a number of induced impacts, our desire to stay true to our objective limits our focus to one of examining how elderly migrants—and their spin-offs—impact local government expenditures and revenues. On the expenditure side, our model adopts a variant of Inman's (1979) two-step framework for analyzing public good expenditures. Specifically, we offer a series of local government expenditure equations that are driven by important demand and supply factors, including household income, local population, and the "price" of the public good. Because local population characteristics may also be important in understanding local spending decisions, we include a vector of community characteristics that previous researchers have used to explain local government spending. We derived the empirical expenditure equations from a supply and demand framework for local public goods. The empirical results are used as parameters in the simulation.

The econometric reduced form expenditure takes the form:

$$(1) \quad govtexp_k = \alpha_{k,0} + \alpha_{k,1}pci + \alpha_{k,2}hholds + \alpha_{k,3}proptax + \alpha_{k,4}pceav + \alpha_{k,5}\Theta + \varepsilon_k,$$

where *govtexp* is per capita expenditure for public good *k*, *pci* is per capita income, *hholds* is the number of households, *proptax* is the local property tax rate, *pceav* is per capita equalized assessed property value, and Θ represents socioeconomic characteristics based on a review of the median voter and fiscal impact literature.

Equation 1 is quite similar to expenditure equations in previous studies (e.g., Swenson and Otto 1998; Johnson, Ma, and Scott 1995). Seven expenditure

categories are considered: total, police and fire, waste disposal, road maintenance, health and human service, general government, and public school expenditures. In general, it is expected that per capita expenditures will be higher in communities with higher income levels ($\alpha_{k,1}>0$), higher tax rates ($\alpha_{k,3}>0$), and higher property values ($\alpha_{k,4}>0$). The sign on the number of households is not hypothesized because it can capture congestion (a positive effect on per capita expenditures) or economies of scale (a negative effect). The socioeconomic variables, which vary by equation, include local poverty and unemployment rates, the local crime rate, and other unique demand conditions.

Although space limitations prevent a detailed review of our estimation results, we summarize the important ones here. In general, we find that per capita government expenditures increase in income; we also find that total outlays increase in population. These results hint that local government expenditures will be higher when the new residents have more income and there are more of them.

The local government revenue side of the fiscal module examines two primary sources of revenue: intergovernmental transfers and property tax revenues. In Wisconsin, intergovernmental revenue is determined by formula; thus, the revenue-sharing formula can be used to estimate those revenues. Given that local revenues are, for the most part, based on formulae and definitions, it is rather easy to specify local (linear) revenue equations:

$$(2) \qquad \text{igovrev} = \psi_0 + \psi_1 \text{pcgovtexp} + \psi_2 \text{pceav} + \varepsilon$$

$$(3) \qquad \text{prtaxrev} = \mu_0 + \mu_1 \text{proptax} + \mu_2 \text{pceav} + \varepsilon,$$

where *igovrev* is per capita intergovernmental revenue and *prtaxrev* is local property tax revenue. In accordance with the formula, it is expected that intergovernmental revenue is positively related to government revenues ($\psi_1>0$) and negatively related to per capita equalized assessed value (EAV) ($\psi_2<0$). For estimating local property tax revenues, it is expected that both property tax rates and per capita EAV have positive coefficients ($\mu_1>0$, $\mu_2>0$). Given that these two sources are the primary local revenue sources in Wisconsin, property value obviously plays a critical part in local government finance in the state. Thus, we have modeled it endogenously as a hedonic property value equation after Oates (1969).

IV. SCENARIO DESCRIPTION AND DATA

Briefly, we initiate our scenarios by introducing new households into the community. After specifying the number of retiree households, we shock the IO model with an "expected" total change in final demand, as suggested by the consumption and demographic profiles of a representative household. After working their way through the IO model, these changes in final demand lead to changes in employment, which are then allocated across various labor supply pools (i.e., local residents, commuters, and in-migrants). The two important outcomes (i.e., economic impacts) from this first stage are 1) changes in the local population (both from migrating retirees and migrants responding to new

job opportunities); and 2) changes in local income as a result of new retirees and migrants.

Because the fiscal module is founded, in part, on economic demand theory, changes in local population and income are expected to affect the demand for locally provided public goods and services. Accordingly, the fiscal module uses information generated in the first stage of the analysis to examine the potential impacts of a change in retiree patterns on local government expenditures. Because migrants can also alter the local tax base, we also use the fiscal module to examine how the first-stage impacts can affect local government revenues. When the results from the revenue and expenditure analyses are combined, we can predict and compare the net fiscal impact of the separate scenarios.

To assess the economic and fiscal impacts of alternative elderly settlement patterns, we construct and simulate two separate patterns through the Wisconsin System. Each simulation assumes that 500 households relocate into a rural region in north central Wisconsin.[4] As such, the scenarios take the form of exogenous in-migration of two different household types. The household types are: 1) households aged 65 and over with incomes below $20,000; and 2) households aged 65 and over with incomes over $50,000. This breakdown allows us to compare higher- and lower-income retirees. From a modeling perspective, this comparison is akin to examining the difference between those retirees who might in-migrate to a region (rich) and those who age in place (poor).

Because the conjoined Wisconsin System has an IO model at its core, the two scenarios are best described in terms of the changes in final demand that different household types introduce to the local economy. To do this we use the 1995 U.S. Bureau of Labor Statistics Consumer Expenditure Survey (BLS-CES). Previous work with this data shows that there are significant differences in spending habits between household types (Rubin and Nieswiadomy 1994) and these differences can be used to assess differences in economic and fiscal impacts (Sastry 1992; Woods et al. 1997). Because reality suggests these two elderly groups would actually contain some mix of income levels, this analysis can be thought of as simulating the most extreme scenario of the differential impacts of these heterogeneous groups of elderly on the community.[5]

Representative household expenditure patterns from each of the two groups, along with the economic characteristics of the high- and low-income elderly, are summarized in Table 1. Of particular interest is the difference in expenditures between the two groups. Spending for the low-income elderly totals approximately $13,000 annually, while the high-income elderly spend about

[4]The region selected is the three-county area of Oneida-Forest-Langlade in north central Wisconsin. The total population of the three-county area is 63,000, with a per capita income of $16,551 (see Tables 2, 3, and 4 for descriptive statistics). This is an amenity-rich area that is experiencing significant in-migration of retirees to seasonal lakefront property.

[5]While the detailed information off the BLS-CES provides us with a refined description of the economic characteristics of the different households, we do not have data on specific taste and preference characteristics. For example, higher-income elderly may prefer to devote greater resources to local schools or police protection than lower-income elderly. Hence, when interpreting the results it is important to keep in mind that the simulated results are based on IO computations and econometric estimations. Subtle, but important, differences in political philosophies that may exist between household groups are lost.

$40,000 per year. Note that we have aggregated the BLS-CES categories to coincide with IMPLAN. Given the reported categories of expenditures and industries (commodities), some BLS-CES data are lost to IMPLAN, hence the total aggregate expenditure levels in Table 1 differ by the lost BLS-CES data. The category that accounts for the largest discrepancy is "entertainment."[6]

TABLE 1

Scenario Description of Retirement Patterns

BLS-CES Category	IMPLAN Sector	Low-Income Aged	High-Income Aged
Shelter maintenance	55	$676	$1,745
Telephone	441	$442	$828
Electricity	443	$677	$1,137
Natural gas	444	$265	$382
Water and other pub service	445	$223	$458
Food at home	450	$1,972	$3,565
Vehicle purchases – gasoline and oil	451	$1,210	$3,800
Apparel and services	452	$592	$2,278
Household furnishings/equipment	453	$522	$3,905
Food away from home	454	$628	$3,126
Drugs and medical supplies	455	$570	$756
Miscellaneous retail	455	$1,476	$4,192
Shelter (owner dwelling/rent)	456	$243	$1,319
Rented dwellings	462	$1,029	$724
Other lodging	463	$184	$1,382
Maintenance and repair	479	$318	$1,045
Medical services	490	$432	$1,105
Cash contributions	502	$594	$6,463
Property taxes	522	$731	$2,003
Total household expenditures		$12,785	$40,212
Income before taxes		$10,494	$91,439
Income after taxes		$10,152	$83,146
Average number of persons in CU		1.5	2.3
Average number of earners in CU		0.2	1.2
Average annual expenditure (total)		$16,241	$55,202
Percent homeowner		72.6	91.0
Percent renters		27.4	9.0
Estimated market value of owner home		$60,259	$198,517

Source: U.S. Bureau of Labor Statistics, Consumer Expenditure Survey. On the Web at: (ftp://146.142.4.23/pub/special.requests/ce/crosstabs/y9495/AGEbyINC/x65orup.txt)

When describing scenarios to the Wisconsin System it is important to recognize also that the comparative household types have important differences that extend beyond their respective expenditure patterns. For example, a typical lower-income elderly household has 1.5 persons, while a higher-income elderly household has 2.3 persons. In addition, lower-income elderly households have, on average, only 0.2 earners within the household, yet higher-income elderly households have 1.2 earners. For the simulations reported here, differences in household size result in initial population changes of 1,150 for the rich versus 750 for the poor. These population differences prove to have significant implications on the simulated impacts.

[6]Because IMPLAN data are in producer prices and the BLS-CES data are in consumer prices, it is necessary to adjust the BLS-CES data by appropriate margining rates. The margining rates were constructed from the U.S. Census Bureau and Robert Morris and Associates industry summaries. Expenditure levels were also adjusted by IMPLAN-produced regional purchase coefficients.

The difference in the number of household earners also affects our analysis because it requires us to examine the notion that some migrating elderly will be employed. Contrary to popular perceptions, not all elderly retire from the labor force. Instead, many elderly persons work part time, for either personal or financial reasons. Given the descriptive information reported in Table 1, the addition of 500 high-income retirement households suggests that there will be 600 (=500*1.2) persons in the work force. Analogously, lower-income households are expected to increase the workforce by 100 persons (=500*0.2). For simulation purposes, we assume that these "new" entrants to the local labor force are evenly distributed across the Trade and Service sectors, which are the predominant sources of part-time employment in rural areas.[7]

As reported in Table 1, not only are aggregate expenditure differences (i.e., change in final demand) significant across the two household types, but the pattern of expenditures across categories differs significantly as well. The data indicates that higher-income elderly tend to spend their money very differently from lower-income retirees. Higher-income elderly, for example, spend $3,565 for food at home and $3,126 for food away from home, whereas lower-income retirees spend $1,972 for food at home and only $628 for food away from home. Clearly, such fundamental differences across household types will significantly alter the nature and magnitude of their economic contribution to the local economy.

As noted above, the manner in which we specify the expenditure patterns is important because these patterns are used to define the vector of the final demand "shock" for the IMPLAN model. In turn, IMPLAN is used to compute the direct and indirect (note: to avoid double counting we use Type I multipliers, not Type II or Type III) changes in total industrial output (TIO). Once the various changes in industry output are determined, they are used to "drive" the labor market module, estimating changes in employment and wages. These changes, in turn, are used to estimate changes in unemployment, commuting patterns, population, and per capita income.[8] Finally, changes in population, employment, and per capita income are fed into the housing, fiscal, and retail modules to simulate "induced" impacts. The current version of the model provides "before" (baseline) and "after" pictures with the difference attributed to the scenario under consideration.

V. SIMULATED ECONOMIC AND FISCAL IMPACTS

We now turn our attention to examining how our empirical models' results are reflected in the simulations, shedding light on the differential impacts

[7]Our assumption that the typical household has persons in the labor force is consistent with the retirement migration theme. While Cockerham (1997) observes that the percent of older persons (over age 65) remaining in the workforce is steadily declining, Palmore (1981) notes that retirees with more education often elect to remain in the labor force. Kurt (1997) suggests that due to the changing occupational structure and health status of older persons in general, many retirees elect to return to work in part-time service sector jobs or as self-employed. Cox (1993) further contends that low-income, unmarried retired women are "very likely" to work at least part time to supplement social security payments.

[8]The essence of the labor and demographic modules is that changes in industry output lead to income and population changes. Here's how. The output change (from IMPLAN) enters a simultaneous system of labor supply and demand equations. On the demand side, changes in TIO lead to changes in industry employment and wages. On the supply side, various labor pools respond to new employment and earnings opportunities via migration, commuting, or exit from unemployment.

of retiree migrants versus the aging-in-place. The simulated impacts of 500 new households across the two household types are reported in Tables 2 through 4. While the fiscal impact is the focus of this analysis, three important variables (employment, population, and income) from the other modules of the model drive the fiscal component and thus warrant consideration here. These results are presented in Table 2, while the fiscal analyses are presented in Tables 3 and 4.

Economic Impacts

For the low-income elderly households, the BLS-CES data suggest that 500 new household will create 100 initial jobs and a total of 156 jobs for an implicit employment multiplier effect of 1.56, or 0.2 jobs for every person in the household. This compares with 600 initial jobs for higher-income elderly with a total employment impact of 810 jobs. The result is an implicit multiplier effect of 1.35, or 0.7 jobs for every person in the household. Clearly, the larger employment impact for the higher-income households comes from 1) more persons in the higher-income household remaining in the work force; and 2) higher levels of expenditures in the local economy.

Impacts on income are measured in two separate ways: earnings and per capita income. As reported in Table 2, earnings per worker decrease slightly under both the high-income (-$71, or -0.36 percent) and low-income (-$12, or -0.06 percent) scenarios. While the reduction in earnings resulting from the in-migration of low-income elderly is not unexpected, the larger reduction in per worker earnings from in-migration of high-income elderly is unexpected. This result is in part due to scenario construction: we presume that all retirees who are working in the local labor force will earn prevailing wages in the Trade and Service sectors, which are lower than the regional average wage. Changes in per capita income, however, are more in line with prior expectations. Under the low-income scenario, per capita income declines by $107, or 0.65 percent, but increases by $416, or 2.52 percent, under the high-income scenario. This difference reflects significant differences in nonwage income flowing into these higher-income households.

Because it feeds into the fiscal module, population is a third important variable. While the scenario dictates the bulk of the population impact, indirect migration—driven by the multiplier effect in employment, earnings, changes in relative housing prices, and unemployment—also influences population change. The estimated population impacts are reported in Table 2. For low-income elderly households, the initial effect is 750 (=500*1.5) additional persons and an indirect effect of an additional 69 persons for a total population change of 819 persons (or a 1.3 percent increase). For higher-income elderly households, the initial effect is 1,150 (=500*2.3) additional persons and an indirect effect of 266 persons for a total population change of 1,416 persons (or a 2.2 percent increase). Note that while the individual income measures (per worker earnings and per capita income) may fluctuate downward, the increase in population dictates that total income increases significantly.[9]

[9]Surely, another important economic impact is new housing construction, and the Wisconsin System has a module that predicts housing starts. We do not elaborate on that module here for two reasons. First, it is peripheral to our agenda here; second, it is a "one-time" shock, which will play itself out in a rather short time.

TABLE 2

Economic Impact of High-Income/Low-Income Retirement Patterns: Summary

Economic Indicator	Baseline	Low-Income Aged	(%)	High-Income Aged	(%)
Employment	33,312	156	0.47%	810	2.43%
Earnings Per Worker	$19,662	($12)	-0.06%	($71)	-0.36%
Per Capita Income	$16,551	($107)	-0.65%	$416	2.52%
Population	63,210	819	1.30%	1,416	2.24%
Jobs to In-migrants		27		4	
Jobs to In-Commuters		-15		93	
Jobs to Unemployed		22		113	

Source: Wisconsin Economic Impact Modeling System.

Fiscal Impacts: Expenditures

The fiscal impacts of the elderly migration scenarios are reported in Tables 3 and 4. Aggregate total per capita expenditures (noneducation) decrease by $1.99 (or 0.24 percent) for the low-income scenario but increase by $1.87 (or 0.23 percent) for the high-income scenario. We suspect that differences in per capita income are the driving factor behind this significant difference between the two income groups. The econometric results suggest that public goods (as measured by expenditures) are normal goods and significant differences in income levels will have significant impacts on service levels. The decline in per capita expenditures for lower-income retirees 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 high-income scenario, expenditures are growing at a faster rate than population, hence driving up the per capita estimates. It is important to recognize that total expenditures increase under both scenarios; it is the rate of increase that varies significantly across the two retirement household groups.

There are also significant differences in per capita expenditure levels across public good categories. Under both scenarios, per capita expenditures on public health services decrease, while per capita expenditures on general government administration and waste services increase. Given that the direction of change is the same for these three categories, the magnitude of change is quite different. For example, under the low-income scenario per capita public health expenditures decrease by $0.72 (0.35 percent), but decrease even more ($2.74, or 1.33 percent) under the high-income scenario. For road maintenance, however, per capita expenditures under the low-income scenario decrease by $0.89 (0.53 percent), but increase by $2.02 (1.21 percent) under the high-income scenario.

Again, however, total expenditures for all categories increase. For the low-income scenario, total noneducation expenditures within the three-county region of analysis increase by about $538,000 (1.05 percent), while for the high-income scenario the increase exceeds $1,272,000 (2.47 percent). The driving factors behind the large differences in absolute spending increases are higher population impacts (due to larger household size) and higher levels of income (both per capita and

aggregate income) under the high-income retirement scenario. In no category did aggregate expenditures decline.

In terms of support for public education, there appears to be a significant difference across the two income groups. For lower-income elderly, per capita expenditures on public education increase by $31.11 (2.60 percent)—or about $1.5 million (2.06 percent) in total—but for high-income retirees, per capita expenditures decline by $16.83 (1.41 percent). Still, under the latter scenario, total education expenditures increase by $1.4 million (1.85 percent). The difference in per capita expenditures hinges on rates of change in population across the two retirement household types. While in-migrating retirees tend not to increase demand for public education services (i.e., no school-aged children), they do expand the property tax base (e.g., housing), which supports public education. While total school expenditures increase about the same under both scenarios ($1.4 million compared to $1.5 million), the larger change in population under the high-income scenario suggests that the denominator is growing faster than the numerator, hence the ratio declines.

TABLE 3

Fiscal Impact of High-Income/Low-Income Retirement Patterns: Expenditures

Economic Indicator	Baseline	Low-Income Aged	(%)	High-Income Aged	(%)
Per Capita Govt Expenditures					
Health Services	$205.52	($0.72)	-0.35%	($2.74)	-1.33%
Government Admin.	$148.85	$0.37	0.25%	$0.61	0.41%
Safety Services	$190.24	($0.85)	-0.44%	$0.13	0.07%
Road Maintenance	$167.13	($0.89)	-0.53%	$2.02	1.21%
Waste Management	$40.26	$0.11	0.29%	$1.29	3.20%
Amenity Services	$61.65	($0.03)	-0.04%	$0.56	0.90%
Total Per Capita Expenditures	$813.65	($1.99)	-0.24%	$1.87	0.23%
Total Govt Expenditures					
Health Services	$12,991,000	$122,234	0.94%	$114,088	0.88%
Government Admin.	$9,409,000	$145,556	1.55%	$250,197	2.66%
Safety Services	$12,025,000	$101,572	0.84%	$277,688	2.31%
Roads Maintenance	$10,564,000	$80,170	0.76%	$367,283	3.48%
Waste Management	$2,545,000	$40,314	1.58%	$140,311	5.51%
Amenity Services	$3,897,000	$48,822	1.25%	$123,233	3.16%
Total Government Expenditures	$51,431,000	$538,668	1.05%	$1,272,799	2.47%
Per Capita Expenditures (Education)	$1,196.00	$31.11	2.60%	($16.83)	-1.41%
Total Expenditures (Education)	$75,599,192	$1,557,179	2.06%	$1,396,015	1.85%

Source: Wisconsin Economic Impact Modeling System.

Elderly migration also affects the ability of local governments to generate revenues. For property tax revenues, the low-income scenario shows a small reduction in property taxes per capita of $0.24, or 0.02 percent, while the high-income scenario shows an increase of $1.95, or 0.18 percent (see Table 4). This latter result derives from the larger impact of high-income elderly on housing values and overall expenditure levels of local governments.

TABLE 4

Fiscal Impact of High-Income/Low-Income Retirement Patterns: Revenues

Economic Indicator	Baseline	Low-Income Aged	(%)	High-Income Aged	(%)
Government Revenues					
Intergovernmental Aid	$435.00	($1.15)	-0.27%	$1.04	0.24%
Property Tax	$1,092.00	($0.24)	-0.02%	$1.95	0.18%
Total Per Capita Revenues	$1,527.00	($1.40)	-0.09%	$2.99	0.20%
Total Government Revenues					
Intergovernmental Aid	$27,496,350	$282,321	1.03%	$683,101	2.48%
Property Tax	$69,025,320	$878,576	1.27%	$1,671,791	2.42%
Total Government Revenues	$96,521,670	$1,160,897	1.20%	$2,354,892	2.44%

Source: Wisconsin Economic Impact Modeling System.

Fiscal Impacts: Revenues

In Wisconsin, the state aid revenues are a significant portion of local revenues and simulated impacts of economic change to aids flowing to local governments must reflect the unique aspects of the formulas. For the low-income elderly scenario, total intergovernmental revenues decline on a per capita basis ($1.15, or 0.27 percent), but increase in aggregate ($282,000, or 1.03 percent). On the other hand, in the high-income scenario, total intergovernmental revenues increase both on a per capita basis ($1.04, or 0.24 percent) and in aggregate ($683,000, or 2.48 percent). 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" those local governments that place higher values on local public services (i.e., spend more) and are willing to tax themselves to pay for that higher level of service (i.e., higher per capita property taxes).

In the end, total local government revenues increase under the low-income scenario by $1.1 million (1.20 percent) and by $2.3 million (2.44 percent) under the high-income scenario. Under these two scenarios it appears that low-income elderly migration does not pay for itself (expenditure increase of 0.54 million with a revenue increase of $1.16 million, not inclusive of schools), while high-income elderly migration is a net positive gain (expenditure increase of $1.27 million with revenues increasing by $2.35 million, not inclusive of schools).

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; and 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. From a fiscal perspective, the basic result—that low-income migrating elderly may result in a net cost while high-income migrating elderly may result in a net benefit—appears justified.

VI. SUMMARY AND CONCLUSIONS

In this paper, we examine the economic and fiscal impacts of elderly settlement within the context of a conjoined input-output/econometric model of Wisconsin counties. Using the BLS Consumer Expenditure Survey, we construct a series of household expenditure patterns. We then use the conjoined Wisconsin model to simulate the impact of two elderly in-migration scenarios—low- and high-income elderly households. These households are representative of aging-in-place elderly households and in-migrating elderly households.

Simulation results suggest that there are unique patterns of impact by the different household types. While local government expenditures increased across all categories, the level of increase differs significantly by household type. We attribute these changes to two causes. First, migration of the high-income elderly leads to a substantial increase in population, both through direct migration (remember: the wealthy households have more members) and indirect migration in response to job creation. Of course, this influx of new residents is a growth engine. The second source of differing impacts is the fact that the wealthier households spend more money in the local economy, thus providing an important boost.

In sum, the results suggest that, from the perspective of local government officials, high-income elderly households will increase local expenditures more than a similar number of low-income retiree households, but the resulting increase in revenues will more than offset the increased expenditures. The same cannot be said for low-income elderly. While they have positive economic impacts on the local economy, their net fiscal impacts are not nearly as strong as that of high-income retirees.

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