Health care policy remains a leading topic of debate as the nation struggles to address persistent projected funding deficits; Medicare is central to that debate. Recent enacted reforms, including the Patient Protection and Affordable Care Act, as well as proposed reforms will affect the distribution of the program’s benefits and funding sources across and within generations. How those benefits and funding, through taxes and premiums, are distributed over a lifetime is the focus of Executive Associate Director of PERC Andrew J. Rettenmaier in PERC Working Paper #1107.

This paper exploits a unique dataset that includes both administrative earnings records and Medicare reimbursement amounts for Social Security recipients who began collecting benefits in 1980 and 1981. He finds that before netting out taxes and premiums, gross lifetime Medicare benefits are uniformly distributed across income groups, but that net benefits decline in lifetime earnings percentiles. He also examines the differences in distribution of the Hospital Insurance (HI) and Supplementary Medical Insurance (SMI) parts of Medicare and finds that the HI portion is more progressive than is the SMI portion.


Two recent papers used different approaches to identify the distribution of lifetime Medicare benefits across income groups but reached contradicting conclusions. McClellan and Skinner (J. Public Econ. 2006) used claims data to calculate expenditures by ZIP code and then impute the taxes in the same ZIP code by using a longitudinal survey matched to income in the ZIP code. They found that net benefits are generally equally distributed within the generation they consider, though there is some evidence of transfers from lower to higher income beneficiaries. Alternatively, Bhattacharya and Lakdawalla (J. Public Econ. 2006) used the Medicare Current Beneficiary Survey Cost and Use files from 1992-1999 paired with imputed earnings based on education levels from the Health and Retirement Study to determine the relationship. Their focus was on the HI portion of the program, and they found that lower income beneficiaries have higher net benefits than do higher income beneficiaries.

This paper improves upon past studies because income and benefit payments are linked at the individual level, and therefore does not rely on imputed earnings data from which taxes are estimated. The direct link thus allows for more precise calculations of tax payments by income group. Additionally, the Medicare benefits data, though spanning fewer years than the data used by McClellan and Skinner, is directly matched with income and reported ages of death which allow for structured lifetime spending estimates for a majority of the sample.

The author calculates the present values (as of the beginning of the surveys, 1981) of benefits and taxes for each component of the program. He then uses these present values to calculate net present value (the difference in benefits and taxes), the money’s worth ratio (the ratio of benefits and taxes), and the internal rate of returns. Since the Medicare payment information does not span the entire lifetime for each beneficiary, he predicts spending based on respondents’ age, sex, race, and age of death.

He finds that moving up one percentile in the lifetime income distribution increases Medicare-related taxes by $171, but increases benefits by only $107. Lifetime benefits exhibit a positive slope because of higher income beneficiaries’ longer lifespans. The net present value (NPV)
of Medicare for each percentile is positive due to the large between-generation transfers. In the bottom decile average net benefits are $58,245 in 2010$ and are $44,620 for the beneficiaries in the top decile. When excluding the inter-generational transfers, the NPV ranges from a positive net transfer of $5,445 to the lowest income participants down to negative net transfers of $8,189 from the highest income participants.

The internal rates of return and money’s worth ratios also decline in income with medians of 14.4% and 4.3, respectively, and the rates of return outperform government bonds. The author notes that it is possible that these metrics may indicate that lower income beneficiaries fare better on their “investments,” while at the same time, receive smaller net benefits. All these figures combine to suggest that the earliest beneficiaries of the Medicare program received a large inter-generational transfer, but within the cohorts, the program produced transfers from high to low income enrollees.

With regard to the differences between Medicare’s subprograms, the author finds that the HI portion of the program produces the largest net benefits and the largest difference in net benefits across the income distribution. He also finds that the premiums in support of the SMI portion of the program results in more uniformly distributed funding. Also, because the benefits show much smaller effects from differences in income, the revenue side drives the differential NPVs.

The results withstand alteration of some supporting assumptions. For example, the interest rate used to calculate present values did not alter the qualitative results. Neither did modification of the sample or the method used to impute benefits beyond the sample period affect the results. As the nation faces decisions about the future viability of Medicare, knowledge of the income redistribution effects of the program will help inform the debate.

Charter School Efficiency

As the primary education market continues to explore alternatives to traditional public schools, it’s important to understand how this transformation will affect both student outcomes and the resources required. Improvement in either measure will bolster the justification for further reform (as long as it doesn’t come at the expense of the other measure), while improvement in neither will frustrate reform.

In PERC Working Paper #1106, PERC Research Fellow Timothy Gronberg, Mary Julia and George R. Jordan Professor Dennis Jansen, and Lori Taylor address these issues by focusing on resource use. They use stochastic cost frontier analysis to estimate how efficiently schools budget their resources and compare charter schools to public schools. They find that though charter schools’ regulatory advantages allow them to operate at a lower cost than public schools, they actually realize less of their potential savings than do public schools.

Proponents of charter schools argue in their favor based on three possible outcomes: (1) charter schools will directly improve student achievement via instruction, (2) charter schools will indirectly improve student achievement by allowing public schools to focus on a more homogenous student body, (3) charter schools will have no effect on achievement but will perform as well as public schools with fewer resources and compel public schools to operate more efficiently. Though the research on the first two possibilities has been ongoing, it has yielded mixed conclusions; the authors here focus on the third possibility.

The authors focus on the education market in Texas. Texas charter schools receive their funding from state and federal governments, charitable donations, and nontax revenue streams (such as food service). Public schools can receive revenues from those sources and local tax authorities. From the state, charter schools receive a standard per-pupil payment (which is also given to public schools) and supplements based on student participation in programs directed towards certain groups of students.
Additionally, public schools receive supplements based on size of the district and high education costs. On the spending side, charter and public schools spend very similar amounts per pupil but the allocation of that spending differs substantially. About half of the charter schools serve predominantly students at high risk for dropping out, and are excluded from this analysis.

To develop a cost function for the schools, it is necessary to understand that schools’ inputs comprise factors both in their control and not. For example, schools have discretion over the quality of teachers and equipment they employ as well as the size and extent of facilities they use. However, they have little control over the quality and ability of students (though charters can wield some control with enrollment). They use a translog functional form with year and metropolitan area fixed effects.

Output is measured using two quality metrics based on students’ standardized test scores. They first construct an estimated score based on students who scored similarly in the prior year. The quality measure then takes the difference of the score received and the expected score. The authors then correct for variance.

The next challenge the authors face is how to account for differing qualities of inputs when estimating efficiency. Because charter schools and public schools employ teachers with varying degrees of education and experience, excluding that information from the analysis might bias the results. To address this, the authors use a hedonic model where wages are a function of labor market characteristics, job characteristics, and observable and unobservable teacher characteristics. They also include a charter school indicator interacted with the observable characteristics to account for intrinsic differences in payment practices between charter and public schools.

In their hedonic model, they find that controlling for the observable characteristics, charter schools pay teachers less than do public schools. The premiums for a range of characteristics, however, suggest a complicated relationship. For example, charter schools pay higher premiums for certified teachers and teachers with bachelor degrees while they pay smaller premiums for experience. They construct a wage index by taking the predicted wage based on a teacher with zero experience and a bachelor’s degree and average values for the other observable characteristics working at a particular school. That predicted wage is then divided by the average predicted wage of all schools to yield the index.

They estimated three models: one in which charter schools and public schools were forced to share the same production technology, one in which they could have different technologies, and one which forced a single technology but allowed for substantial differences in the two types. Their initial results reflect general expectations: higher scores and higher salaries lead to higher spending. They also find that higher grades tend to cost more than lower grades and special needs students increase costs.

Across all specifications, they find that non-charter schools have higher mean efficiency, higher minimum efficiency, higher maximum efficiency, and a tighter distribution of efficiencies than do charter schools. However, the results don’t clearly indicate which is more efficient because in the latter two specifications, the two types of schools have different cost frontiers. In other words, a perfectly efficient charter school would cost less to educate a student than a perfectly efficient non-charter, but non-charter schools realize more of their efficiency. The authors suggest that the inchoate competitive market for charter schools allows them to be less efficient while still offering lower cost education, but as the market develops, those efficiency figures will rise.

As alternatives to public schools gain wider acceptance, parents and citizens must understand the advantages and disadvantages of their choices. This paper helps to delineate those characteristics. Charter schools seem to provide similar outcomes for less money, but more research needs to be done on why charter schools aren’t fully realizing their advantages before policy can react.