

Value of Life and Cost of Pre-mature Deaths with the Perspective of Productivity as Net Tax Revenue: A Comparison in USA, Canada, Japan and Australia

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Objectives

The Human Capital Theory emphasizes investments to the healthcare sector as an important element in achieving and sustaining economic development. Investments to healthcare sector not only reduce morbidity or mortality for individuals, but also improve macro and micro economic outcomes for the whole society. It is widely acknowledged that reducing mortality, especially pre-mature deaths, may lead to improving economic outcomes. As premature deaths before the average life expectancy means a loss in production and taxes paid, this may also lead to a loss in the productivity and the value for the wealth of the country. The aim of this study is to calculate the possible produced value for a life-time term and cost of pre-mature deaths from the productivity as net tax revenue perspective for USA, Canada, Japan and Australia where the life expectancies were noted as 78.5, 81.4, 82.5 and 82 respectively.

Methodology

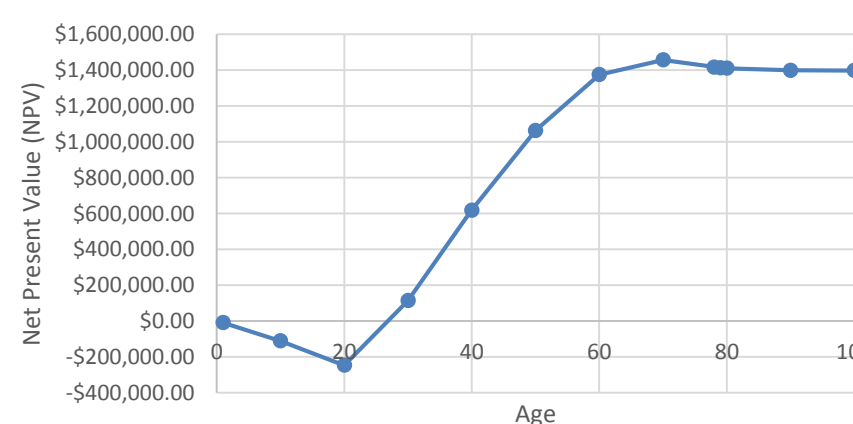
A fixed income tax burden to the earnings over the lifetime was applied for reflecting the government tax revenue. Net present value (NPV) of the taxes and spending for each year were calculated. For calculating NPV in the government perspectives, two modelling approaches were combined, human capital modelling based on lives saved and lost productivity, and generational accounting, which accounts for a range of other government fiscal transfers to citizens such as education health costs and pension costs. The possible produced value for a life-time term for each country were assumed as calculating the total NPV for each country depending on the countries life expectancy. Cost of pre-mature deaths for each countries were assumed as the difference between NPV on the year of life expectancy and each decades as life years 60, 50, 40, 30, 20, 10.

The economic values for the model of each country derived from World Bank, OECD, UNESCO or WHO. Discount rate was taken as 3% per year for all countries.

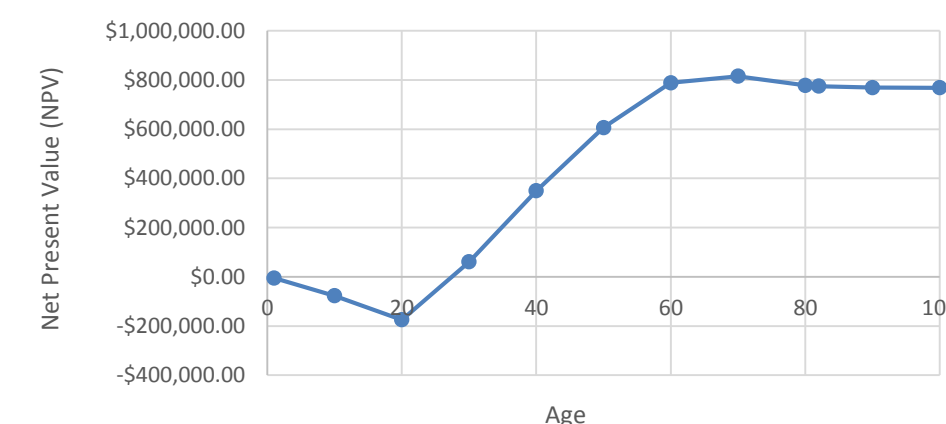
Results

Possible produced value for a life-time term for each country were calculated as US \$ 1.415.530, US\$ 774.663, US\$ 238.236 and US\$ 2.917.835 for USA, Canada, Japan and Australia, respectively. Cost of pre-mature death per person for USA were calculated as US\$ -1.526.126, US\$ -1.661.257, US\$ -1.300.923, US\$ -796.547, US\$ -351.827 and US\$ -40.507 for the life years 10, 20, 30, 40, 50 and 60 respectively. Although numbers were different, the trend was same for Canada, Japan and Australia. Cost of premature death was calculated as the highest in early ages and was decreasing up to the retirement age.

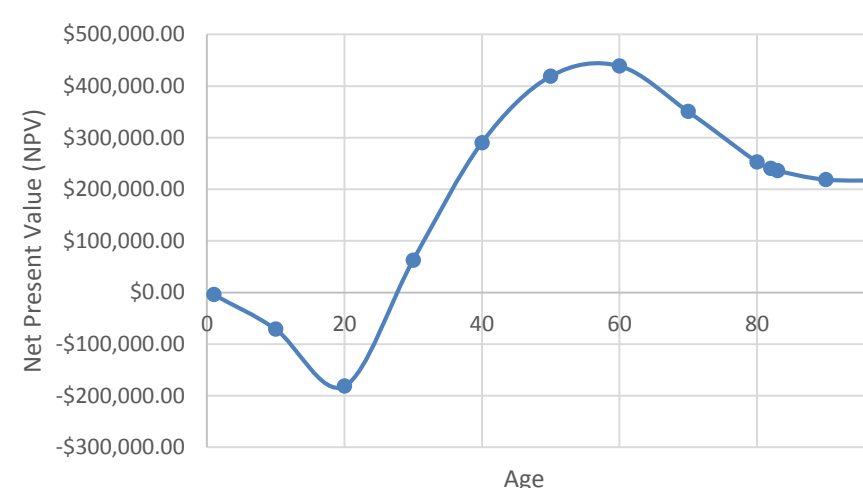
Net Present Value and Cost of Premature Death in USA



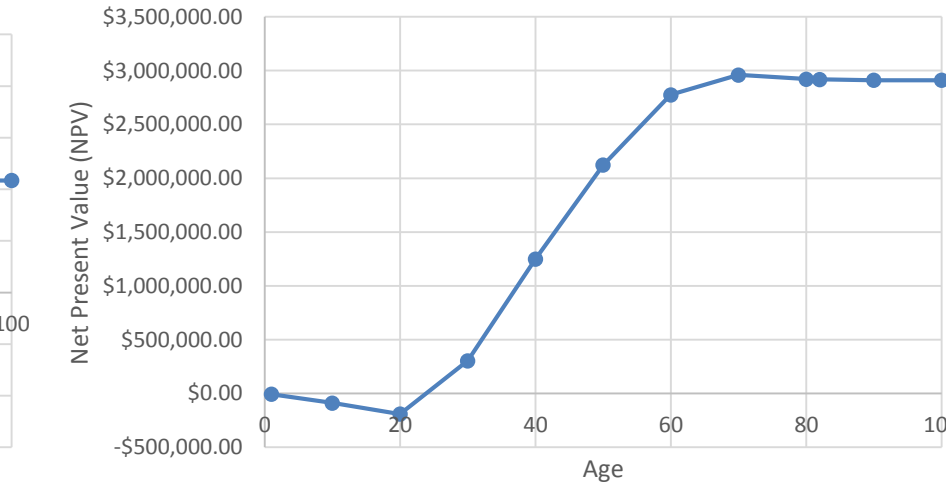
Net Present Value and Cost of Premature Death in Canada



Net Present Value and Cost of Premature Death in Japan



Net Present Value and Cost of Premature Death in Australia



Conclusion

However, the study was based on a hypothetical model that calculated NPV with the taxes and spending in a life-time term, the results of each country were parallel. The results will be reference for the decision makers. Health policy makers may improve the access to the treatments in the early life years for the possible increased cost of premature deaths.

References: The Impact of Rotavirus Vaccination on Discounted Net Tax Revenue in Egypt, A Government Perspective Analysis, Mark P. Connolly, Oleksandr Topachevskiy, Baudouin Standaert, Omayra Ortega and Maarten Postma, *Pharmacoeconomics* 2012; 30 (8)
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