



What is the cost of a life in a disaster? - Examples, Practice and Global Analysis

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An analysis is presented based on historical evidence and global exposure metrics using the CATDAT Socio-economic databases, in order to create a global distribution of the cost of life in a disaster using various metrics. Casualty insurance models require a value of life & mitigation and cost-benefit studies require a value of life in order to make decisions and set premiums. Although this is a contentious concept, there are two general approaches to human life costing: the first is based on human capital which looks at the production capacity and potential output as a proxy for future earning; the second looks at willingness to pay which estimates people's value on reducing risk and compensation payouts. A combination approach is used.

For each of the 245 nations, a value of life is estimated using the following parameters:-

- (1) Age of people in a country using the life expectancy and distribution data in CATDAT
- (2) Output of the economy and wage distribution
- (3) Household and community interactions
- (4) Lost quality of life

The range of statistical life costs are examined globally from different sources, with the range of a life value being from \$10,000 up to in the order of \$10 million between different countries.

The difference of the cost for a fatality vs. that of a severe injury is also discussed with a severe injury often having higher costs than a fatality for loss purposes. The losses in terms of historical disasters are looked at and examined with the percentage of life cost shown as a proportion of total losses. The losses of a future major earthquake in a low seismicity region show some of the largest potential life cost losses with that of a M6.8 in Adelaide, Australia; having around \$160 billion in life costs (25,000 deaths, 15,000 severe injuries).

This study has benefits post-disaster for quantification of human capital losses in major disasters, and pre-disaster for the analysis of insurance and mitigation options.