Does High Healthcare Spending at End of Life Imply Waste? Predictive Modeling Suggests Not Necessarily

November 2017

Liran Einav PhD, Stanford and NBER
Amy Finkelstein PhD, MIT and NBER
Sendhil Mullainathan PhD, Harvard and NBER
Ziad Obermeyer MD, Harvard Medical School

Abstract: U.S. healthcare spending is concentrated at the end of life—one-quarter of Medicare spending occurs in the last 12 months of life. This is commonly interpreted as evidence of waste, but doing so implicitly presumes we know ahead of time who will die in the next 12 months. To assess this presumption, we predict mortality risk by applying machine learning techniques to rich Medicare claims data. We quantify the extent to which spending is concentrated not just on those who *end up* dying but on those who are *expected* to die. Death is highly unpredictable: less than 5 percent of Medicare beneficiaries who end up dying in a year have an annual mortality risk above 50 percent; most deaths can be viewed as unexpected. Moreover, adjusting for the fact that we spend more on the sick—*both on those who recover and those who die*—we can eliminate between 30 and 50 percent of the concentration of spending on the dead. Our results suggest a re-interpretation of much of the so-called "end-of-life" spending: we do spend on the ex-post dead but not necessarily on the ex-ante "hopeless." This makes it difficult to infer whether spending on the ex-post dead is 'waste' without knowing more about the impact of treatments on survival probabilities.