

Assessing the Potential Value of the Flatiron Health Commercial Mortality Data Combined with Publicly Available Death Data for Non-Oncology Research

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Background

- Amalgamating death information from oncology electronic health record (EHR), commercial, and US Social Security Death Index (SSDI) data sources has been shown to result in a highly reliable mortality variable for oncology populations, but requires access to EHR data.¹
- The National Death Index (NDI) is considered a gold standard for mortality data, but utility in research is limited due to its two-year time lag.
- This study aimed to evaluate the viability of using the Flatiron Health Commercial Mortality Data and SSDI data without the added insight of the death information available in the Oncology EHR, thus creating a framework for potential use of these mortality data for non-oncology purposes.

Methods

- Data Source:** The US nationwide Flatiron Health EHR-derived de-identified database,^{2,3} comprising patient-level data originating from ~280 cancer clinics (~800 sites of care), mostly from community oncology settings (varies by cohort).
- Flatiron Health owns a proprietary commercial mortality database drawn from public obituary data collected since 2010. This obituary data (OD), along with the Social Security Death Index (SSDI), and electronic health record (EHR) data (structured and unstructured) are curated to derive Flatiron Health's composite mortality variable (CMV).
- While the latest CMV has been validated against the gold standard of the National Death Index (NDI) (91%+ sensitivity and 98% specificity) in oncology populations, it hasn't been evaluated for non-oncology purposes.
- Analyses were conducted in 2021 with complete mortality data through 2017 (to account for the NDI data lag).¹

The combination of Flatiron Health's Obituary Data and the Social Security Death Index was very effective in reliably identifying vital status.



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Results

- In an analysis of 160,436 patients across 18 cancer types, we found that the combination of OD and SSDI (without EHR data) had a 74.5% sensitivity and 98.3% specificity when compared to the NDI as a gold standard (**Table 1**). This was more complete than the OD alone (66.3% sensitivity) or the SSDI alone (26.6% sensitivity) when compared to the NDI.

Table 1. Mortality Validation Assessments of Obituary Data and Social Security Death Index Death Data

Assessments	OD Alone (%)	SSDI Alone (%)	OD+SSDI (%)
<i>Sensitivity</i>	66.3	26.6	74.5
<i>Specificity</i>	98.6	99.5	98.3
<i>+/- 15 Day Date Accuracy</i>	97.7	98.3	97.7

Conclusions

- The combination of Flatiron Health's OD and the SSDI identified vital status with high specificity, acceptable sensitivity, and high date accuracy.
- Given the flexibility of this data to be used in direct linkage or via tokenization, it is likely that when combined with any other dataset (e.g., medical claims, trials, etc.) it would serve as a viable measure of mortality.

Abbreviations

EHR, electronic health record; OD, obituary data; SSDI, US Social Security Death Index; CMV, composite mortality variable,

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