

# International Journal of Population Data Science



Swansea University  
Prifysgol Abertawe

Journal Website: [www.ijpds.org](http://www.ijpds.org)

## Making the link: using long-term cancer survival measures linked with acute care data to plan health services.

Wright, C<sup>1</sup> and Moorin, R<sup>1</sup>

<sup>1</sup>Curtin University

### Introduction

Long-term cancer survival measures have become more important as management has improved outcomes. However, we know some cancer-related acute care use persists into the long-term. This project sought to integrate cancer survival analysis and health services research, validating our modelling retrospectively, for prospective application for health service planning.

### Objectives and Approach

We used linked Western Australian cancer registry, mortality and hospitalisation data. Flexible parametric models for first-time invasive cancer diagnoses between 1/1/1997 and 31/12/2006 were used to extract marginal estimates of the cure proportion –that expected not to experience excess mortality from cancer - for those diagnosed in 1999. Fine and Gray competing risks regression was used to estimate the proportion who had died of non-cancer causes. The expected number of individuals diagnosed in 1999 still alive in 2011 was multiplied by the mean expected rate of cancer-related hospitalisations 12 years post-diagnosis (modelled for individuals diagnosed between 1/1/1997 and 31/12/2011).

### Results

Cure modelling was appropriate for colorectal cancer (CRC) and melanoma. CRC cure proportions were 0.58 for  $\leq 50$  years at diagnosis, 0.61 for 51 – 70 years, and 0.49 for  $\geq 71$  years. For melanoma, corresponding proportions were 0.94, 0.91 and 0.83. The expected number still alive in 2011 was similar to the actual observed in the linked data for the youngest age group, with an over-estimate for older groups. The actual age-standardised, cancer-related hospitalisations in 2011 for those diagnosed with CRC or melanoma in 1999, was within the lower and upper limits of the expected number for all except melanoma diagnosed between 51 and 70 years of age. For this group, observed cancer-related hospitalisations were higher than the expected (355 versus 271 (203 – 341)).

### Conclusion/Implications

Cancer registry linked with health service use data can provide useful insights for health service planners. While a decline in cancer-related hospitalisations from diagnosis is expected, this study shows that some demand remains 12 years post-diagnosis. Further refinement of our approach will facilitate its utility in planning cancer-related acute care.

