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What impact did the 2006-2018 ICRP cancer survivorship portfolio have on research, policy, and/or practice: a multi-funder portfolio research impact assessment

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Abstract

Cancer survivorship is a priority research topic globally yet receives limited research investment, compared with treatment or biology research. Given the number of survivors is projected to rise significantly in coming years, we present a timely case-study research impact assessment (RIA) of cancer survivorship research grants from the International Cancer Research Partnership (ICRP). Our analysis represents a novel application of big-data methodologies to analyze research impacts at the grant-level using data sourced from Dimensions, Overton, and other public data sources for a multi-funder grants portfolio.

Our study uses the Canadian Academy of Health Sciences' (CAHS) Framework to capture impacts across the five CAHS impact categories for ICRP cancer survivorship grants funded from 2006–2018, incorporating six years of follow-up time (data collected through 2024). We use a multi-step methodology to: 1) identify ICRP grants within Dimensions, link related publications, datasets, clinical trials and patens from Dimensions, policy documents from Overton, and other downstream research impacts from public data sources; 2) assess time to impact accrual; and 3) examine persistence of cancer survivorship topics (using the ICRP Common Scientific Outline (CSO) coding) across our data.

We find evidence of impacts across all categories, with most impacts occurring as linked publications or policy documents. The 3,104 ICRP grants located in Dimensions yielded 13,599 publications (from 45% of grants) and 6,005 policy documents (27.0% of grants). Capacity-building grants represented a small percentage (~ 20%) of the overall portfolio, and less than 5% of grants were linked to health-professional materials. On average, grants received their first publication, policy, and patent citation two, seven, and 8.4 years after grant funding began, respectively. Linked policies were more likely to focus on topics of cost analyses and health care delivery (CSO 6.4) and education/communication (CSO 6.5) related to cancer survivorship than grants or publications.

These results indicate the ICRP survivorship portfolio is performing similarly to other research portfolios when compared to other bibliometric studies analyzing related indicators of research impact. Future studies should prioritize investigation of potentially high non-publication rates by grants and the relative alignment of research funding and related outputs to the patient-identified research priorities.

Introduction

Cancer survivorship – a topic also known as "living with and beyond cancer (LWBC)" in the UK – is the study of issues relating to life beyond cancer diagnosis and treatment for both the patient and caregivers (Foster et al. 2018). The NCI defines survivorship research as including "efforts to understand, prevent, and mitigate acute, long-term, and late-occurring physical, psychological, social, and economic effects of cancer and its treatment, improve care delivery, promote healthy behaviors, develop and sustain research infrastructure, and improve research methodologies for those impacted by cancer" (National Cancer Institute 2025). Definitions about "when" cancer survivorship begins can vary, however, we have taken an inclusive perspective that considers cancer survivorship beginning immediately after diagnosis, as adopted by NCI (Mollica et al. 2025). As global advances in cancer research permit more people living beyond the completion of their cancer treatment, the perspectives and experiences of persons living with cancer and their caregivers has taken on a larger importance. The global cancer survivor population was most recently estimated by the International Agency for Research on Cancer (IARC) in 2022 at approximately 53.5 million people alive within five years post diagnosis (World Health Organization 2024). As the number of people diagnosed with cancer is projected to rise significantly by 2050 (Luo and Smith 2025), the numbers of persons living years beyond cancer diagnosis will likely increase dramatically as well. Cancer survivors' complex physical and mental health needs beyond diagnosis and treatment, as well as their experiences reintegrating into school, employment, and family life, necessitate a sustained research focus on cancer survivorship needs and an urgency for policymaking solutions to improve the lives of survivors and their families (Schapira and Duffy 2025; Mbengi, Schittecatte, and Theys 2024).[1] This is a topic likely to have relevance to patients in the real world, as evidenced by previous efforts to capture patient priorities for survivorship care (Austin et al. 2021; Mead et al. 2021, 2020) and research (James Lind Alliance 2025a; Foster et al. 2018; James Lind Alliance 2024a).

Within cancer research, a dedicated global partnership of funding organizations, the International Cancer Research Partnership (ICRP) was established in 2000 to share best practices, work together to analyze funding priorities and trends, promote collaboration, and submit their annual funding portfolios to a commonly coded database (Abudu et al. 2021), containing over 140,000 grants to-date (International Cancer Research Partnership 2025). The ICRP is a membership organization of more than 140 public and nonprofit cancer research funders such as the U.S. National Cancer Institute (NCI), the Canadian Institutes of Health Research (CIHR), Cancer Research UK (CRUK), and Cancer Australia. Grants are classified using the Common Scientific Outline (CSO), making it possible to compare grants and funding trends by topic across funders.

In 2021, ICRP published the first major trends analysis of funding patterns across ICRP cancer funders (Abudu et al. 2021). This analysis compared funding from 2006 to 2018 and served as an important benchmark of progress in cancer research funding among the partners. While overall investment for cancer research increased 2006–2018, the Covid-19 Pandemic threatened to undermine these gains in research investment, and notable gaps in research funding remained at the topic-level (Abudu et al. 2021), particularly around childhood cancer, primary prevention, and cancer survivorship. To date, while the partnership has investigated trends in cancer research funding across the partners, there has not been an evaluation of collective impacts generated from funders belonging to the ICRP, nor an assessment of how these impacts have worked – together or separately – to advance cancer research. This study attempts, perhaps ambitiously, to begin to tackle these "next endeavors" through a research impact assessment (RIA) of cancer survivorship research.

At a topic-level, reviews of cancer survivorship literature have identified a commendable raised level of discourse about the needs of cancer survivors since the landmark 2006 U.S. Institute of Medicine report "From Cancer Patient to Cancer Survivor: Lost in Transition" (Institute of Medicine and National Research Council 2006), and some consensus-building around developing comprehensive survivorship care plans to provide patients with wrap-around care that they need but are often not receiving. However, research has mostly been descriptive about the problems survivors face, not very extensive in terms of the unique population groups it covers (i.e. research attention is still needed on young adults and older adults, and survivors of diverse cancer types), and has failed to produced substantive evidence that survivorship care plans, which are often pushed by clinicians, actually provide better survivorship care, are routinely used, or have the necessary support and financial coverage from policymakers and insurers that would make them useful to patients (Mollica et al. 2024; Jefford et al. 2026; Rowland et al. 2019; Benci et al. 2020; Blanch-Hartigan et al. 2014; Tarver et al. 2025; Gallicchio et al. 2025; Ross, Townsend, and Rohan 2022). From a policymaking perspective, this research area has a large potential for a research-to-policy interface since care access and quality, as well as financial assistance, employment, and loan discrimination could all be supported through policymaking approaches.

RIAs seek to examine the impact generated from a portfolio of research, by identifying the outputs (i.e. publications, researchers trained), outcomes (i.e. patents generated and follow-on funding secured), and impacts (i.e. linkages to policy documents, legislation, or changes in clinical practice) (Abudu, Oliver, and Boaz 2022; Onken, Miklos, and Aragon 2020). These assessments can be implemented at the grant, individual (researcher), institutional (university, hospital, or funder), national, or international level. Our previous work has found that there are relatively few examples of funder-led RIAs published in peer-reviewed literature that focus on identifying impacts at the grant-level for a portfolio of funded grants (Abudu, Oliver, and Boaz 2022; Boyack and Jordan 2011). Previously published RIAs at the funder-level typically focus on the contributions of one funder only, if conducted at the grant level (Even, Leshno, and Porath 2025). Fewer still are examples of funders tracing impacts at the grant level (i.e. grant to publication to policy outcome) using a big-data tool like Dimensions or Overton to trace grant-level impacts that have been recorded in public data.

Our study aims to assess the impact of the ICRP cancer survivorship portfolio. This analysis has the potential to make a unique contribution to RIA literature because it seeks to compare impacts generated across a single topic from multiple funders. An analysis of the research impact of this portfolio is needed as ICRP partners have previously identified it as an area of interest to explore further, indicating that the assessment will have an interested audience among funders and evaluators (Mead et al. 2020). Our objectives are to:

- Identify the scale, nature and timeliness of impacts on research, policy and practice from the ICRP cancer survivorship portfolio;
- Trace the persistence of cancer survivorship topics across impact types; and
- Assess the overall collective impact of the ICRP survivorship portfolio using a RIA approach.

We conclude with observations about future research opportunities for the ICRP cancer survivorship portfolio.

Methods

Research Impact Assessment Framework

Building on the Canadian Academy of Health Sciences (CAHS)' Making an Impact Research Assessment Framework (Panel on the Return on Investment in Health Research 2009), a reporting checklist for effective Research Impact Assessment was developed (Abudu, Oliver, and Boaz 2024). In this study, we use this checklist to assess the impact of cancer survivorship research. A full analysis of the feasibility and effectiveness of the methods used to identify matching grants and outputs is available in our corresponding methods paper (UNDER REVIEW).

Selecting a Research Sample with Adequate Time Lag

ICRP data was provided by ICRP in January 2024. The original dataset contained information for 6,783 awards funded between 2006–2018, with a CSO code of 6.1 Patient Care and Survivorship Issues and 6.6 End of Life Care. To be included in this study, awards needed to start *and* end between the years 2006–2018. Data was retrieved over summer 2025, allowing for a minimum of six years of follow-on time post grant completion. After checking project dates and de-duplicating projects (largely NIH projects that receive unique award codes for each year of project funding), the final dataset included 4,267 unique awards.

Impact categories and indicators

This impact analysis evaluates research impacts across the five CAHS impact categories: 1) Advancing Knowledge; 2) Capacity Building; 3) Informing Decision Making; 4) Health Impacts; and 5) Broad Economic and Social Impacts. Our analysis seeks to measure 24 impact indicators (see **Results**), sourced from the CAHS Menu of Preferred Indicators and Metrics of Impact (Panel on the Return on Investment in Health Research 2009), and selected based on data availability. We created additional indicators to supplement the analysis, when possible.

Data sources and tools used

Analysis was completed with Microsoft Excel and Google Sheets. A listing of specific data sources used per indicator is available in the **Supplementary Materials**.

Data collection and analysis

For each ICRP award code in the dataset (n = 4,267), the award code was checked for a matching grant in the Dimensions.Ai grants database. To be considered a "match", the award code OR the award title needed to be listed under the relevant funder for the corresponding project dates and/or project budget. All ICRP awards with a Dimensions grantID were checked to determine if they had any matched outputs including Dimensions Publications, Datasets, Patents, Clinical Trials, and Policies. Finally, we inputted all matching Dimensions publication DOIs into the Overton search functionality to identify matching Overton scholarly documents and policy documents.

All grants received CSO codes from their ICRP funder; however, publications and policies were not automatically coded to CSO codes. We used ChatGTP to apply the ICRP CSO coding framework to publications and policies to enable cross-comparison.

Several types of descriptive variables were included within the ICRP data set (e.g., cancer sites, CSO codes) and the Dimensions and Overton data sources (e.g., grant, publication, or policy type). Specific coding instructions for all coding methodologies are available as **Supplementary Materials**.

Non-academic partners

We incorporated publicly available data from patient perspectives on cancer survivorship within our assessment. We developed a novel impact metric to measure how many PIs from the ICRP cancer survivorship grants cohort participated in the development of patient guidelines for survivorship care, by reviewing the staff names on the NCI Supportive and Palliative Care Physician Data Queries (PDQs) and the US National Comprehensive Cancer Network's Guidelines for Patients on Supportive Care.

Results

The results of this study are organized into three sections, below. They are: 1) the ICRP cancer survivorship grants portfolio; II) evidence of impacts generated; and III) understanding the cancer survivorship impacts found.

I. The ICRP Cancer Survivorship Grants Portfolio

The ICRP cancer survivorship grants portfolio contained a starting dataset of 6,873 unduplicated awards. After deduplication, the resulting dataset contained 4,341 awards from 99 ICRP funders, based in eight high-income countries (Australia, Belgium, Canada, France, Japan, Netherlands, the United Kingdom, and the United States). We found matching grant records for 72.0% of the 4,341 awards (n = 3,125 awards) in Dimensions that could be used for further forward-tracing of research impacts. These 3,125 ICRP awards corresponded to 3,104 unique Dimensions grants IDs from 84 ICRP funders which were the basis for our Dimensions grants dataset. Grants coded to cancer survivorship represented about 9% of the overall ICRP funding portfolio in 2018, and cancer survivorship was tied with prevention as the lowest-funded CSO codes within the portfolio (Abudu et al. 2021).

II. Evidence of Impacts Generated

In this section, we examine results found for each of the impact indicators we selected in the methods, summarized in Table 1.

Table 1
Headline Findings by Impact Indicator

Advancing Knowledge			
Indicator	**Indicators from the ICRP Analysis**	**Results**	**Headline Findings**
1	Number of Publications (DOIs) linked to ICRP-funded cancer survivorship grants	13,599 publications linked to 1,419 grants from 46 ICRP funders	• Less than half of ICRP cancer survivorship grants were linked to a publication in Dimensions via grant ID • 1,419 grants were linked to 13,599 publications • ICRP publications are highly cited • Only a small number of datasets were linked to ICRP-linked publications (2.2% of publications had linked datasets)
	Average publications per grant	11 publications per grant on average	
	Average grants and funders per publication	1.2 grants and 1 funder on average	
	Publications by ICRP funder	46 ICRP funders had > 1 publication 308 publications per funder on average	
	Publications by additional funders	1,574 different funders	
	Publications by funder countries	53 funder countries	
	Publications with international co-authorship	89 author countries 25.6% of publications had multi-country authorship 1.4 author countries per publication on average	
	Publications by journal	2,253 different sources (journals)	
2	Average times cited per publication	63 (median 29)	
3	Average relative citation impact per publication	2.0 (median 1.1)	
4	Average field citation impact per publication	10.9 (median 5.4)	
5	Number of linked datasets	803 datasets linked to 298 publications from 175 grants and 28 ICRP funders	
Capacity Building			
Indicator	**Indicators from the ICRP Analysis**	**Results**	**Headline Findings**
6	Number of research training or career development grants	571 research training or career development grants (18.4% of portfolio)	• Approximately 18% of the ICRP cancer survivorship grants portfolio is research training or career development grants; however, these grants account for less than 5% of total portfolio spend • Only about 20% of PIs with multiple grants in the ICRP cancer survivorship portfolio had more than one training/capacity building grant or a training/capacity building grant and an additional grant
7	Funding dollars of capacity building grants	$75,226,032 USD; 4.6% of total portfolio spend	
8	Number of principal investigators with capacity building grants	4,127 PIs	

Advancing Knowledge			
Indicator	**Indicators from the ICRP Analysis**	**Results**	**Headline Findings**
9	Patterns of grant acquisition by grant type, for PIs with multiple grants	807 PIs had > 1 grant in the portfolio (across any grant type) • 78.6% (n = 635) of these PIs had multiple grants that were *not* training/capacity building • 7.8% (n = 63) of these PIs had multiple *training/capacity building* grants • 13.6% (n = 110) PIs held one training/capacity building grant and one or more other grants 41.5% of these PIs (n = 335) received funding from two or more funders during the study period to work on multiple grants	
10	PI membership on guideline panels and boards	26 PIs (0.6%) participated on guideline panels and boards at time of analysis	
Informing Decision Making			
Indicator	**Indicators from the ICRP Analysis**	**Results**	**Headline Findings**

Advancing Knowledge			
Indicator	**Indicators from the ICRP Analysis**	**Results**	**Headline Findings**
11	Use of research in policy documents (Dimensions)	No matching policy documents in Dimensions	• ~27% of ICRP-linked publications and ICRP grants were linked to policy documents in Overton (6,005 total policy docs) • Policy documents were linked to a median of 2 publications and 3 grants from the ICRP cancer survivorship portfolio • Policy documents were authored by over 70 countries and were frequently authored by a country different from the authors of the linked ICRP publication • Most of the linked policy documents from Overton were publications and clinical guidance rather than legal documents • ICRP-linked publications with a linked policy document tended to have a RCR and FCR than publications not linked to a policy document • Approximately 1% of linked publications were cited within the NCI Physician Data Query resources for supportive and palliative cancer care • Little evidence that ICRP-linked publications had been incorporated into other downstream outputs like NCCPS (0), legislation-related outputs (1 article), patents (56 granted), approved drugs (0), clinical trials (224).
12	Use of research in policy documents (Overton)	6,005 policy documents linked to 3,682 publications and 851 grants from 41 funders	
	Policy Documents by Linked Publications	26.7% of ICRP linked publications were linked to > 1 policy Policy documents were linked to a median of 2 publications	
	Policy Documents by Linked Grants	27.4% of ICRP grants were linked to > 1 policy Policy documents were linked to a median of 3 grants	
	Policy Documents by ICRP Funder	Top 5 ICRP funders with linked policy documents had between 30.0–36.0% of their grants linked to policy documents	
	Policy Documents by Country	70 countries & 2 multinational organizations authored policy documents	
	Dissemination of Research by Country	46.1% of policies cited ICRP-linked publications with all foreign authors 24.0% of policies cited ICRP-linked publications with mixed country authorship (some foreign countries and some domestic (i.e. same country as the policy author) 29.9% of policies cited only ICRP-linked publications with domestic authorship	
	Policy documents by policy sector source	69.4% were from the public sector 0.8% were from the private sector 29.9% were from the third sector	
	Policy documents by organization type	56.5% were from government 25.5% were from think tanks 10.5% were from IGOs 5.1% were from NGOs 2.4% were from legislative bodies 1 (0.02%) was from a university	
	Policy documents by document type	Publications (60.9%) Clinical guidance (35.1%) Working papers (1.8%) Scholarly articles (1.4%) Transcripts (0.3%) Legal documents (0.2%)	

Advancing Knowledge			
Indicator	**Indicators from the ICRP Analysis**	**Results**	**Headline Findings**
		Blog posts (0.1%) White papers (0.1%) Periodicals (0.02%)	
	Publication metrics on likelihood to policy citation	Policy-linked publications had 2.5 times higher mean RCR and 2.7 times higher mean FCR than publications not linked to policy documents	
	Citations to policy documents	Policy documents have accumulated 26,241 citations; however, most policy documents have 0 citations (68.4%)	
13	Research cited in health professional education material (NCI Physician Data Queries)	148 publications (1.1% of all linked publications) were cited within 19 of the 23 NCI PDQs	
	Publications cited in NCI PDQs that were also in Overton policy documents	99 publications linked to the PDQs (67%) were also found in Overton policy documents	
14	Research cited in National Cancer Control Plans (NCCPs)	0 publications cited in NCCPs from the 7 funder countries	
15	Legislation passed focusing on cancer survivorship or cancer research	3 countries (Belgium, France, the Netherlands) have passed cancer survivorship focused legislation (each have passed a “right to be forgotten” law aimed at preventing discrimination in financial lending for cancer survivor). The US has passed three iterations of the *Childhood Cancer Survivorship, Treatment, Access, and Research (STAR) Act.* The *Comprehensive Cancer Survivorship Act* has been introduced in Congress several times but has yet to be passed. One ICRP-linked publication was included in advocacy materials for this Act.	
16	Number of patent applications	96 patent applications	
17	Number of patents granted	56 patents granted	
18	Number of drugs approved (in the US Food & Drug Administration Orange Book)	0 drugs approved (that were linked to the 56 patents granted)	
19	Number of clinical trials	224 clinical trials	
20	Collaboration with industry (co-authorship with industry)	3.9% of publications reported funding from an industry funder 0 policy documents with industry co-authorship	

Advancing Knowledge			
Indicator	**Indicators from the ICRP Analysis**	**Results**	**Headline Findings**
Health Impacts			
Indicator	**Indicators from the ICRP Analysis**	**Results**	**Headline Findings**
21	Global 5-year prevalence of all cancer cases		• The number of cancer survivors is growing and projected to grow significantly in the future
22	Perceptions of cancer research by cancer patients	Most survey participants (88%) agreed that cancer research and innovation benefits people like them, but few (11%) reported participating in a clinical trial	• Cancer care satisfaction remains a challenge; emotional health problems and other symptomatic treatment remain high
23	Perceptions of survivorship care by cancer patients: acceptability; appropriateness	While many patients (60+%) are satisfied with their cancer care, reported satisfaction is lower in 2025 than 2024. More patients report emotional health problems and 93% of patients experienced at least one physiological or psychological issue during treatment.	
Broad Economic and Social Impacts			
Indicator	**Indicators from the ICRP Analysis**	**Results**	**Headline Findings**
24	Perceptions of survivorship care costs by cancer patients	Compared to 2024, in 2025 more patients reported that they face greater financial challenges dealing with cancer care costs.	• In the US, costs related to cancer care are increasing

Advancing Knowledge

The total number of publications linked to ICRP cancer survivorship grants published between 2006–2024 was **13,599**, ranging from 6,759 to below 10 publications per funder. While most publications were linked to only one grant and one funder, nearly 12% were linked to multiple grants and nearly 4% were linked to multiple funders. Grants were linked to between 1-427 publications, with an average of 11 linked publications.

Forty-six ICRP funders (45.7%) had one or more linked publications matched in Dimensions by grant ID.

In total, 1,574 different funders from 53 countries were listed on the linked publications. Most survivorship research from the ICRP portfolio was funded and authored by institutions and authors in high-income countries. NCI-linked publications were the most international amongst the portfolio – they acknowledged additional funding partners from 47 countries and were authored by researchers from 89 countries. While most publications had single-country authorship (80.3%, n = 10,364), some ICRP grants were highly international, producing dozens of internationally authored publications from a wide range of author countries (e.g. (Rashedi et al. 2020; Tonorezos et al. 2018)). Two such grants were an NCI grant “Obesity in ovarian cancer prognosis” resulting in 63 international publications from 41 author countries; and a Marie Curie Cancer Cure grant “Marie Curie Palliative Care Research Unit” with 92 international publications from 40 author countries.

Cancer survivorship papers were published very widely and identified from 2,253 different sources; the top 10 sources (16.1% of all linked publications) include: *Supportive Care in Cancer* (n = 347); *Psycho-Oncology* (n = 306); *Cancer* (n = 283); *Journal of Clinical Oncology* (n = 271); *Journal of Pain and Symptom Management* (n = 235); *PLOS ONE* (n = 229); *Journal of Cancer Survivorship* (n = 129); *Breast Cancer Research and Treatment* (n = 135); *Transplantation and Cellular Therapy* (n = 129); and *Cancer Epidemiology Biomarkers & Prevention* (n = 114).

Publications linked in Dimensions to ICRP grants were cited a total of 849,807 times (mean 63 citations, media = 29, range 0-7999 citations per publication). Topics discussed among the top 10 publications associated with the most grants, funders, and top citations (see Table 2) included fertility preservation for cancer survivors and the integration of palliative care into oncology care.

Table 2
Top 10 ICRP Cancer Survivorship-Linked Publications, Ranked by Number of Matched Grants and Times Cited

Top 10 ICRP Cancer Survivorship-Linked Publications, Ranked by Number of Matched Grants and Times Cited				
Rank	**Title**	**# of Matched Grants**	**# of Linked Funders**	**Times Cited***
1	The Oncofertility Consortium: Addressing fertility in young people with cancer	10	4	2674
2	From the bench to bedside to babies: translational medicine made possible by funding multidisciplinary team science	10	4	1794
3	Preserving female fertility following cancer treatment: Current options and future possibilities	6	4	558
4	Obesity and Energy Balance in GI Cancer	5	1	560
5	Integration of oncology and palliative care: a Lancet Oncology Commission	4	1	10768
6	Integrating palliative care into the trajectory of cancer care	4	2	4224
7	Availability and Integration of Palliative Care at US Cancer Centers	4	2	3752
8	Current achievements and future research directions in ovarian tissue culture, in vitro follicle development and transplantation: implications for fertility preservation	4	3	3536
9	Concepts and definitions for “supportive care,” “best supportive care,” “palliative care,” and “hospice care” in the published literature, dictionaries, and textbooks	4	2	2408
10	Parenteral Hydration in Patients with Advanced Cancer: A Multicenter, Double-Blind, Placebo-Controlled Randomized Trial	4	2	1904

*Total represents Times Cited as captured by Dimensions through study data collection period; current times cited may be higher.

Publications linked in Dimensions to ICRP grants had an average relative citation ratio (RCR) of 2.0 (median 1.1). This ratio means that most ICRP-linked publications with a RCR received slightly more citations than expected for an average NIH-funded publications of the same year and area of research. About half of funders with linked publications had a median RCR of 1.0 or greater (there was an observed maximum funder-level RCR of 6.9), indicating that their publications were performing at or above the field-standard for NIH-funded publications in the same field, although this median was driven in part by the total linked publications per funder, which varied considerably. Publications linked in Dimensions to ICRP grants had an average FCR of 5.4 (median 4.6). Finally, 298 publications (2.2% of total publications) linked in Dimensions to 175 ICRP grants and 28 ICRP funders were associated with 803 unique datasets, captured via Dimensions from DataCite and Figshare.

Building Capacity

Nearly 20% of the grants in our portfolio (n = 571, 18.4%, from 38 funders) were capacity-building: undergraduate (n = 49 awards); masters/graduate (n = 175); doctoral/PhD (n = 82); postdoctoral/early career (n = 237); mid-career (n = 6); established/senior investigator (n = 20); other/not stage-specific (n = 3). These grants only accounted for $75,226,032 USD, or 4.6% of total research funding across the portfolio.

We found 4,127 principal investigators (PIs) from 735 research organizations participated on the 3,104 ICRP grants (including co-PIs). Most PIs participated on only one grant from a single funder, with only 17% of PIs awarded a capacity-building grant. For most PIs with a capacity-building grant, this grant was their only grant in the portfolio, meaning that they were not associated with another grant from ICRP funders during our study period (but may have done so after our study period ended in 2018). Only a very small percentage of PIs (0.6%) participated on select guideline panels or study groups for cancer survivorship at the time of analysis (see **Methods**).

Informing Decision Making

Linked Policy Documents

The total number of linked policy documents identified via Overton was 6,005. We found no ICRP linked publications using the Dimensions database. Policy documents were attributed to 3,628 unique matching Overton scholarly articles and 851 grants, meaning that 26.7% of all linked publications and 27.4% of all ICRP linked grants yielded at least one policy document in the Overton database, and nearly 60% of grants with linked publications were linked to at least one policy document in Overton. Policies were identified for 41 of 46 ICRP funders with linked publications in Dimensions. There was a wide range of linked impacts observed across both datasets. Compared to linked publications, more policy documents were attributed to multiple funders: nearly 15% of ICRP-linked policy documents were attributed to two or more ICRP funders within our portfolio, and 25.1% of ICRP-linked policy documents were linked to two or more ICRP grants. Topics discussed within the top 10 policy documents by number of matched grants, linked DOIs, and linked funders (see Table 3) included: pediatric survivorship care, psycho-oncology, and palliative/end of life care.

Table 3
Top 10 ICRP Cancer Survivorship Linked Policy Documents Ranked by Number of Matched Grants and Linked DOIs

Top 10 ICRP Cancer Survivorship Linked Policy Documents Ranked by Number of Matched Grants and Linked DOIs					
Rank	**Title**	**# of Matched Grants**	**# of Linked DOIs**	**# of Linked Funders**	**Year**
1	Disparities and Barriers to Pediatric Cancer Survivorship Care	81	141	14	2021
2	Psycho-oncological diagnostics, advice and treatment of adult cancer patients	49	52	8	2023
3	End of life care for adults: service delivery	41	72	9	2019
4	Complementary medicine in the treatment of oncological patients	33	48	5	2021
5	Interventions for promoting habitual exercise in people living with and beyond cancer	29	36	11	2018
6	Consultation: Advanced S3 Guideline on palliative care for patients with incurable cancer	29	35	8	2018
7	Palliative care for patients with incurable cancer	29	34	7	2020
8	Early detection, diagnosis, therapy and aftercare of breast cancer	29	24	6	2021
9	Consultation version: Complementary medicine in the treatment of oncological patients	28	29	5	2023
10	Clinical practice guidelines on the evidence-based used of integrative therapies during and following breast cancer treatment	24	24	4	2018

Most policy impact was driven by a small number of very high-performing grants; 10 grants generated 47.3% of all ICRP-linked policy documents. This relationship can be seen in Table 4, which shows the top 10 grants by numbers of linked policy

documents.

Table 4
Top 10 ICRP Cancer Survivorship Grants by Number of Linked Publications

Top 10 ICRP Cancer Survivorship Grants by # of Linked Policy Documents							
Rank	**Title**	**Funder**	**Grant Year**	**# of Linked DOIs**	**# of DOIs Linked to Policy**	**# of Linked Policy Docs.**	**% of DOIs Linked to Policy**
1	Marie Curie Palliative Care Research Unit	Marie Curie	2012	427	171	746	40.0%
2	Harvard Transdisciplinary Research in Energetics and Cancer Center	NCI	2011	188	87	561	46.3%
3	Marie Curie Palliative Care Research Centre	Marie Curie	2010	178	65	134	36.5%
4	Morphine versus Methadone as First Line Strong Opioid for Cancer Pain	NCI	2007	169	82	158	48.5%
5	Methylphenidate for Fatigue in Advanced Cancer Patients	NINR	2006	168	83	155	49.4%
6	Improved Models to Inform Tobacco Product Regulation	NCI	2013	153	99	444	64.7%
7	Parenteral Hydration in Advanced Cancer Patients: A Randomized Controlled Trial	NCI	2006	151	80	135	53.0%
8	A Multilevel Approach to Energy Balance and Cancer Across the Lifecourse	NCI	2011	142	52	190	36.6%
9	Mechanisms of Symptoms of Multiple Myeloma and Its Therapy	NCI	2008	141	13	32	9.2%
10	The Oncofertility Consortium: Fertility Preservation for Woman (1 of 10)	NIDCR	2007	126	20	46	15.9%

We also found evidence that ICRP-linked policies reflected an international uptake of evidence generated by ICRP grants and publications. Over 800 policies were linked to multiple funders from different countries, and nearly half of policies (46.1%) cited ICRP-linked publications with authorship different than the policy author country, indicating that policy development builds from international evidence generation. Policy documents came from 70 countries and two multilateral organizations (the World Health Organization (WHO) and the European Union). The US and UK are major exporters of ICRP-linked publications to other countries for policy development; this is expected since the US and the UK have the largest share of ICRP-linked publications within the dataset.

Most ICRP-linked policy documents came from the public sector (n = 4,166, 69.4%) and were often linked to government (n = 3,390, 56.5%), think tanks (n = 1,531, 25.5%), and inter-governmental organizations (n = 629, 10.5%). Policy documents were most often described as publications (n = 3,657, 60.9%) within Overton's coding scheme, followed by clinical guidance (n = 2,106, 35.1%).

Publications with a linked policy document had an average RCR that was 2.5 times higher than publications that were not linked to a policy document (3.7 mean RCR versus 1.5 mean RCR), and an average FCR that was 2.7 times than publications not linked to policy documents (21.61 mean FCR versus 7.95 mean FCR). Policy documents received 26,241 citations at the time of analysis, with a range of 0–5,258 citations. Most policy documents had not yet accumulated citations.

Research cited in health professional education material

NCI PDQs were borne out of legislative mandates to expand cancer research dissemination to physicians and other healthcare professionals. These documents provide an up-to-date evidence base summary of current guidance for specific supportive and palliative care subtopics such as how to manage cancer fatigue or nausea and vomiting during cancer treatment, falling outside of formal clinical practice guidelines or treatment recommendations ('PDQ® Health Professional Cancer Information - NCI' 2015). We found 148 publications (1.1% of all linked publications) were cited within 19 of the 23 NCI supportive and palliative care PDQs. These publications arose from 109 grants and 15 ICRP funders. The top 5 PDQs by linked ICRP-linked publications were related to: physical side effects of cancer (*fatigue* (n = 25 linked DOIs) and *cognitive impairments in adults with cancer* (n = 12)); caregivers (*informal caregivers in cancer* (n = 18)); and end-of-life care (*last days of life* (n = 16) and *planning the transition to end-of-life care in advanced cancer* (n = 12)). No ICRP-linked publications were cited as references in the NCI PDQs related to cancer-related post-traumatic stress; gastrointestinal complications; pruritus; and spirituality in cancer care. ICRP-linked publications represented a small portion of the overall included references for each PDQ. All PDQs had been updated through 2024 (n = 8) or 2025 (n = 11), and ICRP-linked publications listed in these PDQs had an average publication year of 2015.

Research cited in National Cancer Control Plans (NCCPs)

NCCPs are strategy documents typically created by a country's ministry or department of health that outline the national cancer control plan for an upcoming period (typically 3–10 years). In our review, we found no matching ICRP-linked publications included in any one of these plans from our ICRP funder countries. The number of peer-reviewed publications included these documents varies widely – sometimes these were brief, high-level strategy documents with little to no included reference section, and sometimes they listed a more detailed bibliography of included references to support planning efforts.

Legislation passed focusing on cancer survivorship or cancer research

This is an indicator examining if and how the overall body of evidence on cancer survivorship generated from the ICRP cancer survivorship portfolio has influenced lawmaking in the seven funder countries included in our analysis. We found only one example where an ICRP-linked publication, "*Washington State Cancer Patients Found to be at Greater Risk for Bankruptcy Than People Without a Cancer Diagnosis*" by Scott Ramsey et al., published in June 2013 (Ramsey et al. 2013) resulting from a 2009 NIH grant, was cited in a 2023 legislative fact sheet produced by Cancer Nation for the US Comprehensive Cancer Survivorship Act known as H.R.4363. The bill aimed to "establish programs and requirements to support the provision of services for cancer survivors, including health care, employment, and supportive services", including Medicare coverage of cancer care planning and coordination services, and establishes grant programs for patient navigation services and employment assistance (Rep. Wasserman Schultz 2024). However, it was not passed and has an unclear future.

We found some examples of national legislation focused on financial and workforce protections for cancer survivors however, we did not find a tangible link between the research in our portfolio and this legislation, most likely because these legislative bills did not include references to supporting research within the bill text.

Since 2008, the US has had a Childhood Cancer Act (Rep. Pryce 2008); the most recent bill passed was S.4120 – the "Childhood Cancer Survivorship, Treatment, Access, and Research Reauthorization Act of 2022", also known as the "Childhood Cancer STAR Act" (Sen. Reed 2023). This law directed NCI, one of the major funders participating in the ICRP to fund new survivorship research projects ('Childhood Cancer STAR (Survivorship, Treatment, Access, Research) Act (Public Law No' 2023); however, these projects were funded after our study period ended. Interestingly, we found evidence that the Childhood STAR Act influenced further evidence consolidation within the ICRP portfolio we were tracking ('Childhood Cancer STAR Act Implementation' 2022). The Childhood Cancer STAR Act included a provision for NCI to commission three AHRQ Evidence Reports, which we captured as linked policy documents from ICRP grants. These are: "Transitions of Care from Pediatric to Adult Services for Children with Special Healthcare Needs" (*Transitions of Care From Pediatric to Adult Services for Children with Special Healthcare Needs* 2020); "Models of Care that Include Primary Care for Adult Survivors of Childhood Cancer" (*Models of*

Care That Include Primary Care for Adult Survivors of Childhood Cancer 2020); and “Disparities and Barriers for Pediatric Cancer Survivorship Care” (*Project Title: Disparities and Barriers for Pediatric Cancer Surivorship Care* 2020).

Linked Patents

The 3,104 grants in our portfolio were linked, ultimately, to 42 unique patents from 36 grants successfully granted between the years 2014 and 2024. More patent applications were observed than granted patents. Granted patents came from US funders only, with many resulting from NIH funding. Among approved patents, only a small percentage focused on cancer survivorship issues. Such patents include efforts to treat side effects of cancer treatment (such as US-9642941-B2, “Implantable modular hydrogel for salivary gland restoration” (Witt, Robert L. et al. 2017) and US-9248150-B2, “Use of transplatin to prevent hearing loss” (Vickram Ramkumar; Debashree Mukherjea; Len Rybak 2016)) and patents to treat fertility or sexual dysfunction issues following treatment (such as US-10925928-B2, “Methods for treating chemotherapy-induced male fertility” (Hermann, Brian P. 2021) and US-9623004-B2, “Administration of a therapeutic amount of genistein to mitigate erectile dysfunction resulting from radiation therapy for prostate cancer only throughout a defined administration period commencing shortly before and concluding after radiation therapy” (Kaytor, Michael D. et al. 2017)).

Linked Clinical Trials

The 3,104 grants in our portfolio were linked to 224 unique clinical trial IDs started between 2006–2024 from 212 unique grants and 13 ICRP funders. ICRP-linked trials included 183 interventional trials and 41 observational studies. Most interventional trials (n = 128) were not coded to a particular phase, indicating that they may have been pilot studies, device studies, phase 0 studies, or studies that followed a behavioral or dietary intervention. Interventional trials coded to phase categories included: eight Phase 1 trials, one Phase ½ trial, 23 Phase 2 trials, two Phase 2/3 trials, 16 Phase 3 trials, and five Phase 4 trials.

Linked Drugs

We did not find any approved patent numbers in the FDA Orange Book, suggesting that the ICRP-linked patents were not for drugs but other inventions such as new methodologies for disease treatment or prevention.

Collaboration with industry (co-authorship with industry)

Less than 5% of publications (n = 3.9%, 537 publications) reported funding from an industry funder (classified as a funder listed on the publication that was identified as a “company” within the Research Organization Registry). These 537 publications listed support from 177 industry funders such as AstraZeneca or Novartis. None of the ICRP-linked policy documents originated from an industry-funded organization.

Health Impacts

This category measures indicators of cancer prevalence as well as perspectives on cancer survivors’ healthcare experience. The Global Cancer Observatory at the IARC estimates the number of 5-year prevalent cases for 2022 was 53.5 million persons living with and beyond their initial cancer diagnosis (Ferlay J; Ervik M; Laversanne M; Colombert M; Mery L; Pineros M; Znaor A; Soejomataram I; Bray F 2024). This represents an increase in 5-year globally prevalent cancer cases from 2018 at 43.8 million cases (International Agency for Research on Cancer 2018).

Further, while most patients agreed cancer research was beneficial (Cancer Nation; 2025), only 11% of patients had participated in cancer research (trending upward slightly from 9% clinical trial participation measured in 2020). The most common reason reported for not participating in clinical trials was that patients had not been asked to participate in such trials.

Economic and Social Impacts

Economic issues related to cancer care were widespread from the patient surveys but could not be attributed to research.

III. Understanding ICRP Cancer Survivorship Impacts

Time to Impact Accrual

Publications were recorded from 2006–2024, with a peak in 2016 (n = 1,361). Most publications in our dataset (79.0%, n = 10,743) were published by the end of grant funding in 2018. An additional 2,856 publications (21%) were captured in the six years of follow-up we included in our study (2019–2024). Approximately 26.0% of publications in our dataset were published two or more years after their grant ended. The median time for a grant to reach its first publication was two years.

Policy documents were recorded from 2007–2024, with a peak in 2021. Less than half (42.9%) of the total linked policy documents were published by the end of grant funding in 2018. Nearly 60% of policy documents were captured in the six years of follow-up from 2019–2024. Among grants with any linked policy documents, grants reached their first policy document citation, on average, seven years after grant funding began (range of 1–17 years). Grant-linked publications were on average five years old when they were cited by policy documents. Publication and policy document linkages are likely to continue, at declining rates, over time. Policy document linkages could follow a different trend than publication linkages if ICRP research is taken up in new or different ways in the future. Grants, publications, and policies are plotted by year in Fig. 1.

Patents linked to ICRP grants were granted between 2014–2024, and were granted, on average, 8.4 years after grant funding began (range of 2 to 17 years). Nearly half (n = 101, 45.1%) of clinical trials had a recorded start year that was the same year as the grant funding start year (suggesting that these may not be true “linked” (occurring after grant funding) clinical trials), 11 clinical trials had negative time elapsed since grant funding, and one trial had a missing start date. Further analysis was not performed for clinical trials given these inconclusive data.

Impact Attrition over Time

In our dataset, 54.3% of grants (n = 1,685) had no linked publications, as identified via Dimensions. Among grant-linked publications, 73.3% of publications (n = 9,971) had no linked policy documents identified via Overton. This observed attrition is depicted in Fig. 2.

Building evidence bases over time

We traced key policy documents (as identified by number of linked DOIs) backwards, to understand the underlying grants and publications contributing to these documents. In Fig. 3 we show that the top 15 linked policy documents highlighted key cancer survivorship topics (as evidenced by their titles), and that they relied on evidence generated from multiple grant and publication cohorts across our study period.

Note

Figure 3 depicts the evidence pathways built from grants to publications to policies for the top 15 policies linked to ICRP cancer survivorship grants (based on number of linked publications, listed in chronological order of publication. Figure built with ChatGPT.

Seventy-two policy documents were linked to 10 or more ICRP-funded grants, with one policy document linked to 81 different ICRP-funded cancer survivorship grants. This policy document, “Disparities and Barriers to Pediatric Cancer Survivorship Care”, was linked to 141 different publications and 81 different ICRP cancer survivorship grants and was one of the AHRQ evidence reviews commissioned by the NCI in 2020 under the direction of the Childhood Cancer STAR Act (‘Childhood Cancer STAR (Survivorship, Treatment, Access, Research) Act (Public Law No’ 2023). As research diffuses across the impact pipeline, resulting impacts are more likely to be attributed to multiple publications, grants and funders.

Cancer survivorship topics across the impact dataset

Grants, publications, and policies covered a variety of cancer survivorship issues and cancer sites. Compared to grants in our portfolio (where 67% mentioned a cancer term within the title – see Supplemental Materials for coding details), only 49% of linked publications and 19% of linked policies included explicit mention of cancer or a cancer-related term (such as cancer, oncology, a cancer site, or palliative/end-of-life care) within the title. Of course, documents do not need to explicitly mention a

cancer-related term in the title to indicate a relevance to cancer issues, but this does suggest that as research is diffused across the impact pipeline, it may be adapted more broadly to topics beyond cancer survivorship. Linked policies were more likely to focus on topics of cost analyses and health care delivery (CSO 6.4) and education/communication (CSO 6.5) related to cancer survivorship than grants or publications (see Fig. 4). Pediatric and adolescent cancers were a small part of the ICRP grants portfolio (8.8%) and represented a declining share of linked publications (3.3%) and policies (1.5%). Research focusing on outcomes for older adults with cancer represented only a small portion of grants (7.3%) and linked publications and policies were only discussed in 4.7% and 3.4% of the portfolio, respectively. Other under-represented topics included survivors of multiple malignancies (less than 2% of grants focused on research in this area, and only one linked policy was identified for this topic) and outcomes for survivors 10 or more years past diagnosis (this topic was present in approximately 0.6% of grants and 1 policy). Impacts on caregivers were discussed in 9.3% of grants but only 3.1% of linked policy documents (as identified by policy title). Comparatively, only about 1.3% of grants had a substantial tobacco/smoking focus, but about 7.4% of linked policy documents had this tobacco/smoking focus. Top cancer sites discussed across grants, publications, and policy documents included multisite cancers or a general cancer focus, breast, lung, hematologic, prostate, gynecologic, and colorectal cancers.

Among patents, key observed themes were issues of survivorship toxicity (i.e., fertility preservation, cardiotoxicity, hearing loss); immunology (i.e., T cells, chronic graft versus host disease); supportive care and symptom management (i.e., cachexia); tumor response and treatment optimization (i.e. chemotherapy resistance, tyrosine kinase inhibitors). Top topics within clinical trials included: behavioral, psychosocial, and survivorship interventions; symptom management, supportive care, and quality of life; physical activity, rehabilitation, and lifestyle; and treatment toxicity management and survivorship complications. Fewer trials discussed: palliative and end of life care; health services, disparities, and care delivery; pediatric or adolescent and young adult survivorship; biomarkers, imaging, and monitoring; transplantation and immune recovery, and tobacco, cancer prevention, and screening.

Discussion

In this study, we have assessed the impact of a multi-funder grants portfolio focusing on a single topic, cancer survivorship. During 2006–2018, ICRP captured cancer survivorship research grants from 99 funders across Australia, Belgium, Canada, France, the Netherlands, the UK, and the UK, totaling over $1.6 billion USD. Despite the size of these investments made in the field to-date, the collective impacts of these grants had not yet been assessed in a formal RIA. Our assessment provides an important benchmark of the downstream impacts of cancer survivorship research funded by ICRP-funders with matching cancer survivorship grants from 2006–2018. While this assessment is not meant to comprehensively list every impact generated by the portfolio, nor is it meant to pass judgement on the quality of research undertaken, it is designed to provide an overview of the types of impacts that can be traced from a portfolio of this type using Dimensions, Overton, and other publicly available data sources. We believe our work can serve as a starting point for other cancer survivorship researchers, evaluators, or funders to investigate this portfolio or other similar portfolios further. We hope that our work will reflect an initial answer to the suggestion by Rowland et al. to track the outcomes of cancer survivorship more regularly through portfolio analysis, bibliometrics, and research impact assessments (Rowland et al. 2019) and build off of recent portfolio analysis work by Mollica et al. (Mollica et al. 2024).

1. Evidence of numerous impacts across several impact categories was observed

We measured research impact across the five impact categories within the CAHS Framework: advancing knowledge, building capacity, informing decision making, health impacts, and economic and social impacts, and we found evidence that the 2006–2018 ICRP cancer survivorship grants portfolio has indeed produced impacts in most categories.

Within the category of advancing knowledge, we found linked publications for 45.0% of the ICRP cancer survivorship grants portfolio with a matching grant in Dimensions, yielding a total of 13,599 linked publications. Publications came from 46 ICRP funders (approximately half of the funders in our dataset), and funders were linked, on average, to 308 publications each. The median number of linked publications for grants with any linked publications was five. Comparable RIAs have found median

number of linked publications of eight (Agarwal and Tu 2022), and 12.7 (Boyack and Jordan 2011), both with significantly longer timespans. Given that our study only includes a maximum of six years of follow-up, a wide range of grant types, and a diverse set of funders, our results demonstrate that ICRP funders are performing at or slightly better than expectations for publication productivity. Compared to a 2011 study of NIH grants funded from 1980 to 2009, the median time from grant to publication for ICRP cancer survivorship grants was one year faster (median time of two vs three years to first publication) (Boyack and Jordan 2011).

We found that over 50% of grants we tracked in Dimensions did not have a linked publication attributed to them by grant ID and funder name. While many of these grants could have published without specifying a grant number in the funding acknowledgements section of their linked papers (and thus were not picked up by our analysis), we cannot rule out the possibility that some of these grants did not result in any publications at all, as has been found elsewhere. Boyack and Jordan acknowledge this as a distinct possibility in their own study, finding that "roughly 30% of awarded grants never produce an article" over the course of their analysis, suggesting that at least some of these grants could have been truly non-publishing (Boyack and Jordan 2011). If a similar proportion of grants within our analysis are indeed non-publishing, we would consider this a significant limitation to scientific advancement, and exploring reasons for non-publication could be important (i.e. are some of these studies trying to publish null results and running into difficulties getting published)?

Linked publications were well-cited, with papers receiving a median of 29 citations each, a median RCR of 1.2, and a median FCR of 4.6. We noted differences in median funder-level RCRs, although these differences may be partially explained by a wide variety in the total number of contributing articles for each funder. Compared to other studies that have examined median RCRs of: academic orthopedic hand surgeons (median of 1.27) (McNamara et al. 2022), academic radiation oncologists (1.32) (Rock et al. 2018), neurological surgeons (1.37) (Reddy et al. 2020), and NIH-funded academic otologists (1.6) (Revercomb et al. 2024), our study reports a fairly comparable RCR across all linked publications. As was found in Chan et al.'s analysis of 2007–2020 publications from the Journal of Cancer Survivorship (Chan et al. 2021), most linked publications in our study were from high income countries. Funding and publishing more survivorship research from LMICs is critical to address the growing survivorship crisis within LMICs and the global south (dos Anjos et al. 2025; Chan et al. 2021; Martos et al. 2025).

Within the category of capacity building, we found evidence that more work may be needed to build opportunities for survivorship researchers. Capacity building grants were a small portion of the overall survivorship grants portfolio, and an even smaller portion of the overall portfolio spend. Fewer than 20% of PIs in our portfolio participated on capacity building grants. A lack of dedicated training funding and mentorship programs have been major barriers to researchers pursuing survivorship research in Australia (Morris et al. 2023) and in the US (Gallicchio et al. 2021). There is also evidence that gender dynamics may factor into an undervaluing of survivorship research funding opportunities. Garton et al. examined gender representation of PIs within ICRP grant funding from 2006–2022 (which includes our portfolio of ICRP CSO 6 grant funding from 2006–2018), and found that CSO 6 – cancer control, survivorship, and outcomes research had the highest percentage of female PIs across all the CSO codes, at 53.1% female PIs (Garton et al. 2026). When comparing these findings to a 2006–2018 analysis of ICRP funding which found that CSO 6 was among the lowest-funded CSO codes within the portfolio (Abudu et al. 2021, again including our portfolio from this paper), Garton et al. suggest that "female-dominated research areas are undervalued compared to traditionally male-dominated areas, such as basic science and clinical trials" (Garton et al. 2026).

The undervaluing of female-dominated research areas such as cancer survivorship research can take many forms. The literature suggests there is good evidence that women in general are less likely to receive grant funding and receive smaller awards than men (Schmaling and Gallo 2023; Cruz-Castro, Ginther, and Sanz-Menéndez 2023), experience lower peer review scores (Fox and Paine 2019) and harsher or implicitly biased peer review comments than their male counterparts (Silbiger and Stubler 2019; Sato et al. 2021) and are more likely to have delays in career advancement due to unequal childcare responsibilities (Derrick et al. 2022; Zhao et al. 2026). Researchers have even found that notions of value around research impact can be gendered into "hard" and "soft" impacts and evidence that evaluators in Australia, the UK, and in evaluators of the UK Research Excellence Framework had adopted some of this gendered language of impact within their evaluations (Chubb and Derrick 2020), which can impact the likelihood that certain research areas receive future funding, and that women scientists are less likely to be active in research topics prioritized by funding agencies (Mancuso, Rossi-Lamastra, and Franzoni

2023; James, Alex et al. 2024). Given the above ICRP analysis shows that women are more likely to pursue survivorship research than men, further work to build equitable strategies for survivorship research funding and career opportunities may be needed.

Within the category of informing decision making, we found evidence of several kinds of impacts from the ICRP cancer survivorship portfolio. Approximately 27% of grants and publications in our sample were linked to at least one policy document. Studies using Overton to identify research linkages to policy documents are relatively new, and our study represents one of the first studies of cancer research related policy influence. Previous estimates of publication to policy linkages within in health sciences research using Overton have found: 5.7% of 18 million publications from Web of Science (Fang, Zhichao et al. 2024); 10% from Scopus (Pinheiro, Vignola-Gagné, and Campbell 2021); and 13% from articles linked to NIH-funded Clinical and Translational Science Awards Program (Llewellyn et al. 2023).

Pinherio et al., found that in a sample of 1000 Health Policy & Services publications, 40.0% were cited in Overton documents and in a sample of 1000 Public Health publications, 27.7% were cited in Overton documents (Pinheiro, Vignola-Gagné, and Campbell 2021). This public health result is nearly identical to our own finding within the ICRP cancer survivorship portfolio and suggests that ICRP survivorship research is performing likely as expected from a publication to policy translation perspective (we make this assessment with respect to counts of policy documents only). Some of the highest publication to policy translation has been observed for U.S. Centers for Disease Control and Prevention (CDC)-authored publications at 52%, suggesting that author status as a CDC scientist may confer increased policy translation success (Ortega et al. 2025).

Nearly all ICRP-linked policy documents reflected evidence building activities such as publications from a policy organization (60.9%) or clinical guidelines (35.1%), rather than legal documents (0.2%). Both Pinheiro et al. (Pinheiro, Vignola-Gagné, and Campbell 2021) and Dibbern et al. (Dibbern et al. 2026) observed that “evidence synthesis documents, scientific advice reports, and other grey literature” were the main types of documents retrieved in their Overton analyses. While the linkage of peer-reviewed literature to these types of evidence synthesis documents does not capture “definitive evidence of policy impact" (Pinheiro, Vignola-Gagné, and Campbell 2021), we agree that it provides an important indicator of evidence making processes. This evidence making process occurred over several years – we found publications received their first policy citation on average five years after publication, slightly longer than the average time to policy citation observed by Pinherio (three years) (Pinheiro, Vignola-Gagné, and Campbell 2021).

We found limited evidence that ICRP cancer survivorship research could reliably be linked to downstream policy and practice impacts beyond linkages to policy documents, with fewer than 5% of grants linked to publications in health professional training materials, the PDQs. While PDQs are key resources from NCI, we found only one evaluation focused on PDQs (a 2012 evaluation looking at a counseling program based on the Cancer-related Fatigue PDQ guidance) (Bauml et al. 2012). No evaluations have assessed the relative impact of PDQs from a bibliometric standpoint. We encourage future studies to explore the utility of NCI PDQ guidance for patients, as well as the potential impact for publications cited by this patient-oriented guidance.

A single ICRP-linked publication was included as supportive evidence in Cancer Nation’s legislative fact sheet for the Comprehensive Cancer Survivorship Act (H.R.4363 in 2023), which marks the largest policy initiative in the U.S. to-date to attempt to tackle high-priority issues for cancer survivors (Congr. Debbie Wasserman Schultz Biogr. 2023; The ASCO Post 2022), on a national scale. We could not find any other evidence of ICRP-linked research contributing to national cancer survivorship legislation within our seven countries of focus; however, it is possible that ICRP cancer survivorship research could have influenced national policymaking through unofficial or undocumented routes. Further, some novel policy initiatives exist outside of our study sample, such as the Italian legislation that provides cancer patients working in both the private and public sectors with the ability to change from full-time to part-time to back to full-time as their needs change over the course of cancer treatment (De Lorenzo et al. 2018).

All the countries in our sample had a national or subnational cancer control plan published during our study period, and no ICRP-linked publications were cited. As found elsewhere (Romero et al. 2025), few reviewed NCCPs had any citations. There

are two key issues to overcome: 1) countries need relevant evidence to support recommended cancer control strategies and interventions in their country and 2) countries need to cite this evidence in their NCCP to demonstrate that their plan is evidence-based and locally relevant. Future research may wish to examine the influence of cancer survivorship research on sub-national cancer control plans as well, such as the US State-level comprehensive cancer control plans reviewed by Falisi et al. (Falisi, Angela, Mollica, Michelle, and Nekhlyudov, Larissa 2018). Finally, linked patents and clinical trials did focus on key cancer survivorship issues, but only a handful of ICRP grants resulted in such outputs.

The CAHS Framework recommends several potential indicators such as incidence/prevalence as well as acceptability, accessibility, and appropriateness of care, and socio-economic status to measure the health impacts and broad economic and social impacts of biomedical research funding portfolios, recognizing that measurement in these categories can be difficult or burdensome. We used the 2025 Cancer Nation Survivorship Survey, from the US's leading cancer survivorship advocacy organization to assess current patient perspectives on cancer survivorship care and research. Future research evaluation initiatives may be able to make use of the WHO's forthcoming Global Survey on the lived experience of people affected by cancer, a new global survey designed to capture the experiences of people living with cancer, as well as their caregivers' (Schilstra et al. 2025). Persons LWBC currently feel that there is room for greater patient involvement in research, and the care they are receiving is not fully addressing their concerns about side effects of treatment, financial costs of care and lost income due to treatment, maintaining health after treatment, and fear of cancer recurrence. Satisfaction with care is trending down, and patients infrequently report receiving a survivorship care plan. These findings were observed in other surveys of cancer patients in our ICRP funder countries over the course of our study period, such as the 2012 LIVESTRONG Survey for People Affected by Cancer (Banegas et al. 2019), the 2016 Canadian Partnership Against Cancer, *Experience of Cancer Patients in Transition Study* (Fitch et al. 2019) and the 2022 International Survey of Psychosocial Care for Cancer Survivors in Low-/Middle- and High-Income Countries: Current Practices, Barriers, and Facilitators to Care (Signorelli et al. 2024). In sum, these surveys reveal that despite research advances, patients continue to experience challenges related to their experience with cancer (spanning physical, emotional, and practical issues), face obstacles receiving care for such issues, report low psycho-oncology guideline usage among their clinicians (Fitch et al. 2019; Signorelli et al. 2024), and frequently experience significant financial distress as a result of their cancer care (Banegas et al. 2019). As the number of persons living past their initial cancer diagnosis continues to increase, ensuring that research evidence on how best to improve the lives of cancer survivors is quickly and equitably adopted into practice will be critical.

2. Do we know if the research generated by the ICRP cancer survivorship portfolio is impactful to survivors?

A key goal for our RIA was to be able to reflect, ultimately, on the contributions of the ICRP survivorship portfolio to the overall field of cancer survivorship, not in numbers of resulting impacts but in science achievements made. To that end, we were interested in understanding how topics of cancer survivorship were explored across our impact dataset. We used CSO coding for grants, publications, and policies to examine topics across our dataset and found that linked publications and policies were generally related to cancer survivorship topics discussed by ICRP grants. Grants and publications were most often coded to patient care and survivorship issues and end of life care; and policies were most often coded to health services, economic, and health policy analyses. Generally, trends in the coverage of survivorship topics and study populations within ICRP grants, linked publications, and linked policies followed expected patterns seen in the literature (Gitonga et al. 2023). That is, grants/ publications/ policies had an overwhelming focus on adult survivors, and a tendency to focus on mixed or multi-cancer types, followed by breast, prostate, and colorectal cancers.

We hope to conduct future research to compare if survivorship topics covered in ICRP-linked publications and policies align with patient-defined priority areas for research. This work could build on efforts by the UK National Cancer Research Institute and the James Lind Alliance to identify the top 10 cancer research priorities for persons LWBC via a priority-setting partnership exercise in 2017 (James Lind Alliance 2024a). Additional priority setting partnership exercises have since been conducted for: palliative and end of life care in the UK and Ireland in 2025 (James Lind Alliance 2025c); teenage and young adult cancer in the UK in 2024 (James Lind Alliance 2024b); and child and adolescent cancer in Australia in 2025 (James Lind Alliance 2025b). These exercises demonstrate that persons LWBC have important unmet research questions and suggest key areas to emphasize for improved research to policy translation.

Limitations in our approach

Our RIA relied on a broad rather than in-depth approach to understanding research impact within the collective ICRP cancer survivorship portfolio. This approach allowed us to take a bird's eye view of the multi-funder ICRP portfolio, but it necessarily has some key limitations. First, we chose to exclude potentially very-high performing grants such as NCI's P30 Cancer Center Support Grants that have existed for decades to analyze only time-limited grants. The impact of these Cancer Center grants is likely to be significant, though they represent likely more infrastructure funding than project funding. Second, although we uncovered many linked publications, our analysis likely reflects an underestimation of the total publications that have arisen from the ICRP grants in our portfolio. Sources of the underestimation may include a missing grant number in a publication or gaps in Dimensions' publication coverage. Third, while our RIA can answer questions about the range of potential quantitative impacts generated by this grants portfolio, we are limited in our ability to answer questions about how or why impact may have occurred at this time. Future research that incorporates in-depth qualitative interviewing of PIs and funders could reveal key insights about what worked well (or didn't) when it comes to research translation. Fourth, our high-level review of impacts could be accompanied by a future in-depth topic analysis from cancer survivorship experts to uncover the extent of science advancement achieved by the ICRP portfolio. It is important to note that CSO coding for grants was applied by expert coders examining grant titles and abstracts by each individual funder and CSO coding for publications (titles and abstracts) and policies (titles and matched snippets only) was applied by ChatGTP, after an iterative refinement process based on the ICRP CSO coding guidelines. This means that there could be variations in coding quality and accuracy across the datasets.

Conclusions

We conducted a case-study RIA using Dimensions,Ai., Overton, and public data sources to understand the research, policy, and practice impacts of ICRP cancer survivorship grants funded between 2006–2018. To the best of our knowledge, this is one of the first studies to examine the downstream research impacts of an international, multi-funder portfolio of grants. Our study reveals that the ICRP cancer survivorship portfolio yielded over 13,000 linked publications, 6,000 linked policy documents, and evidence of further impacts along the research impact pipeline. Downstream impacts of ICRP cancer survivorship grant funding were generally related to cancer and palliative care, and further analysis is needed to understand how and where research translation success and pitfalls may occur for specific cancer survivorship topic areas along the research impact pipeline. While direct comparisons to other large, multi-funder RIAs are hard to find, these results find that the ICRP survivorship portfolio is performing roughly on par with other research portfolios when compared to other bibliometric studies analyzing similar indicators of research impact. However, we note two areas worthy of future investigation: examining the possibility of high non-publication rates of research findings by research grants and the relative alignment (or lack thereof) of research funding and related outputs to the research priorities of patients and their caregivers.

Declarations

Ethics: This project did not require ethical approval.

Materials: See Supplemental Materials.

Resources: Access to Dimensions.Ai was provided on a temporary 12-month basis as part under PhD student access. Access to Overton.io was provided under PhD researcher access.

Source of funding: This project is the result of a self-funded PhD; no external funding was provided.

Competing Interests

K.O. serves a Chief Editor of the journal and R.A. serves as an Assistant Editor of the journal.

Author Contribution

R.A. performed data analysis, R.A. and K.O. provided interpretation of the data, and all authors contributed to the main manuscript text.

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Data Availability

This data uses grant information obtained upon request from the International Cancer Research Partnership, Dimensions.Ai, and Overton. The ICRP provides a public record of all of the grants contained in our analysis at: https://www.icrpartnership.org/db_search. Dimensions.Ai and Overton provided access to data as part of data sharing agreements for PhD researchers. Many grant to publication, patent, clinical trial, data set, or policy document linkages in our analysis can also be made in the public domain; performing this analysis at-scale was made easier by the use of Dimensions.Ai and Overton data systems.

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Figures

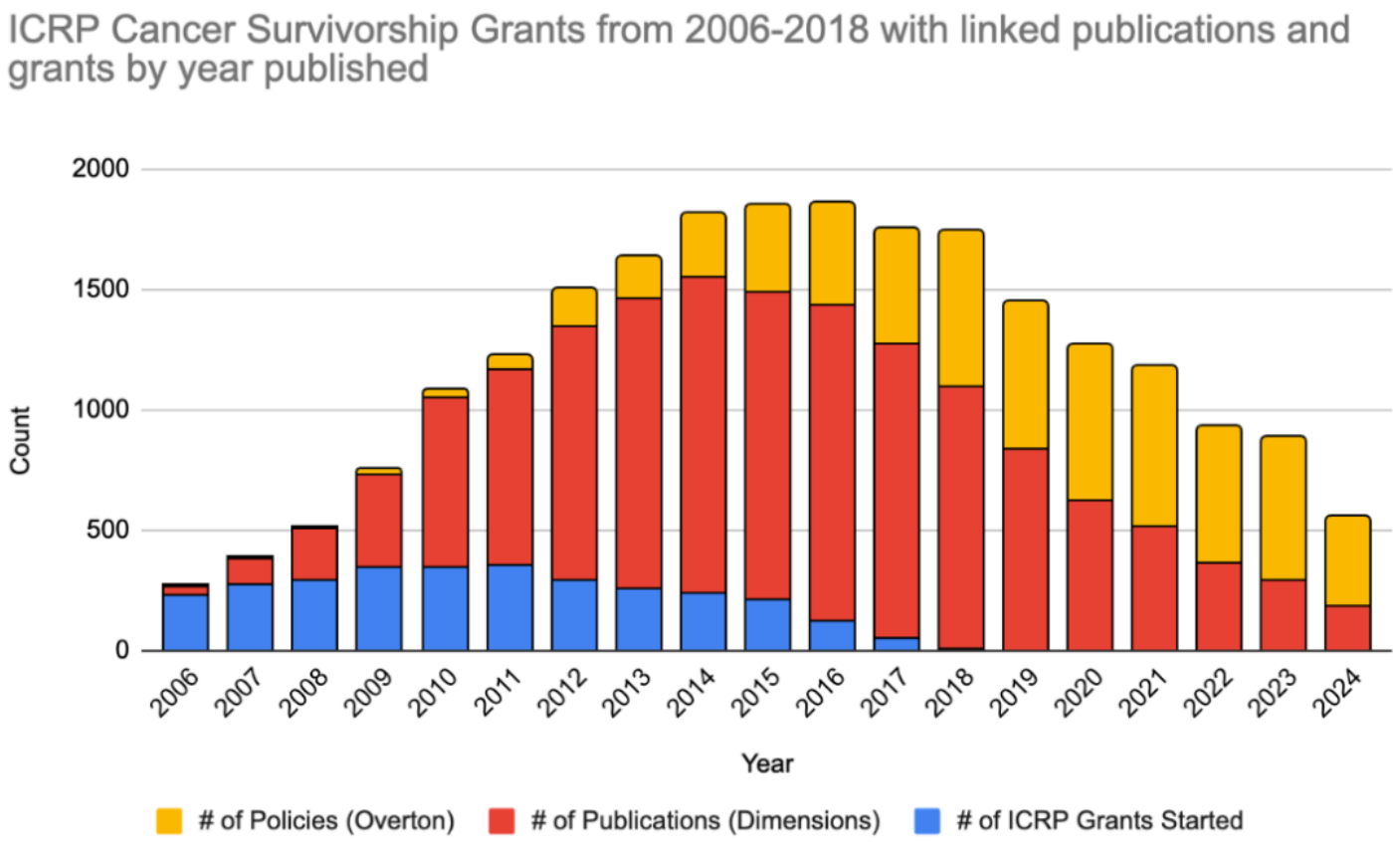


Figure 1

ICRP Cancer Survivorship Grants from 2006-2018 with linked publications and policies by year

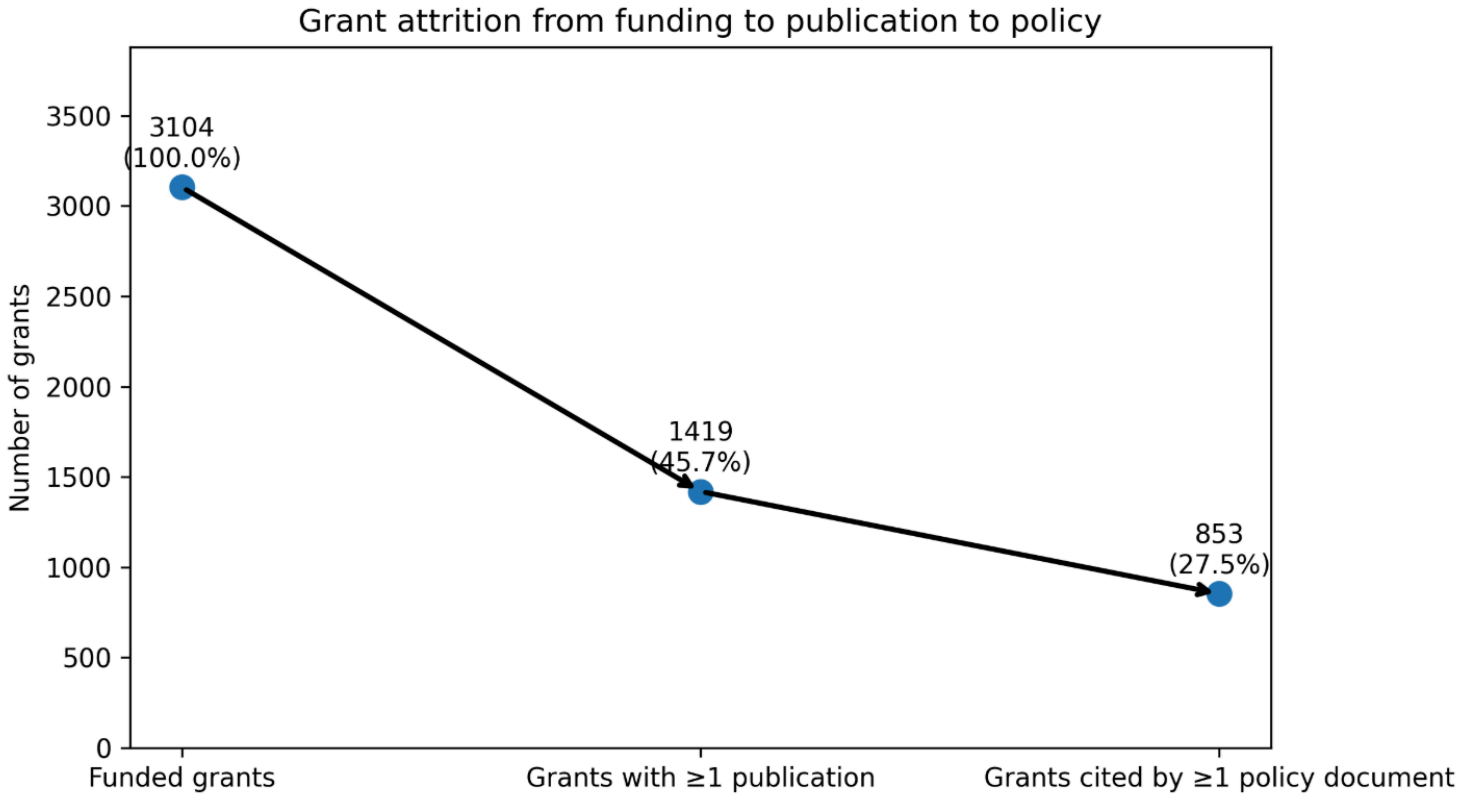


Figure 2

Grant attrition from grant funding to publication to policy

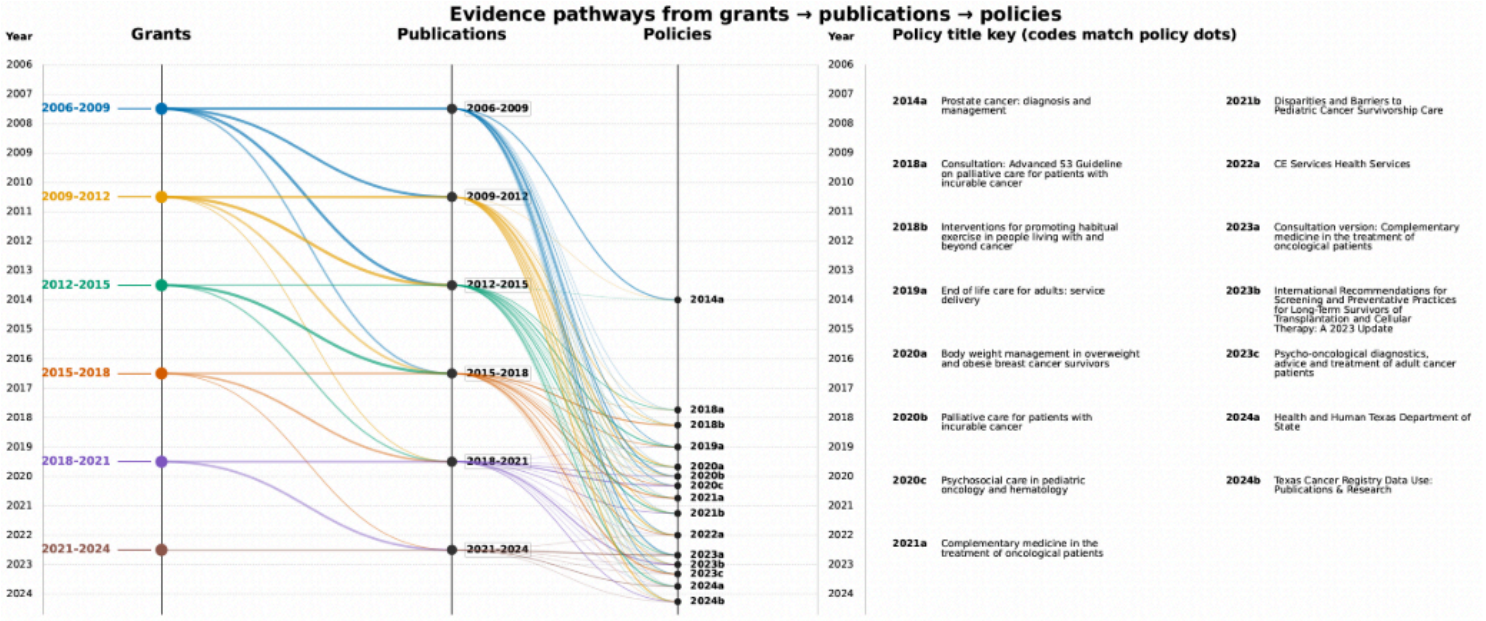


Figure 3

Tracing evidence pathways from grant funding to publications to policies

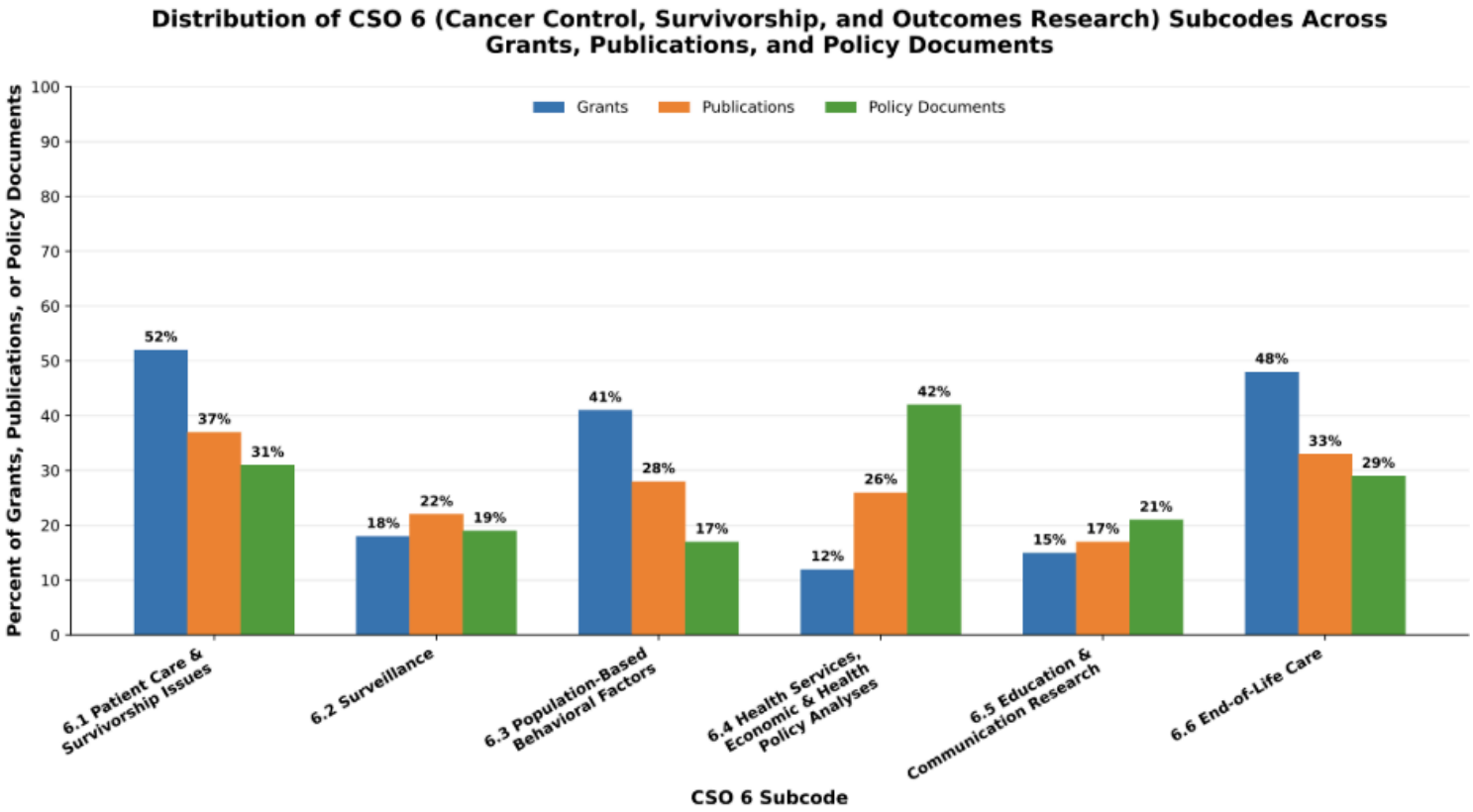


Figure 4

Distribution of CSO codes across Grants, Publications, and Policy Documents

Supplementary Files

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