Health Impacts of Resource Extraction & Development (HIRED): Knowledge synthesis and policy insights

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UNBC UNIVERSITY OF NORTHERN BRITISH COLUMBIA

Source: Extraction.ca

northern health
the northern way of caring

OVERVIEW

- Health Impacts of Resource Extraction & Development
  - Background and Context
  - Knowledge Synthesis (Phase 1): Scoping Review

"as a process of mapping the existing literature or evidence base" (Armstrong et al 2011)

- Methods and Analysis
  - : "from 21237 to 2801"…
  - Analysis: general description and extent of the evidence.
- Findings and Discussion
  - Overview of findings
  - Next steps

BACKGROUND & CONTEXT

Supporting Communities with Evidence

What does the evidence say?

UNBC HIRED

YGT

What do communities want?

northern health

First Nations Health Authority

Community Level Engagement

Health and Resource Development Support Tools

.... designed with First Nation and local communities in mind

Project Overview

Overall guiding question: *How are the public health impacts of resource development understood and addressed, and how can these approaches be applied (especially to the context of northern BC)?*

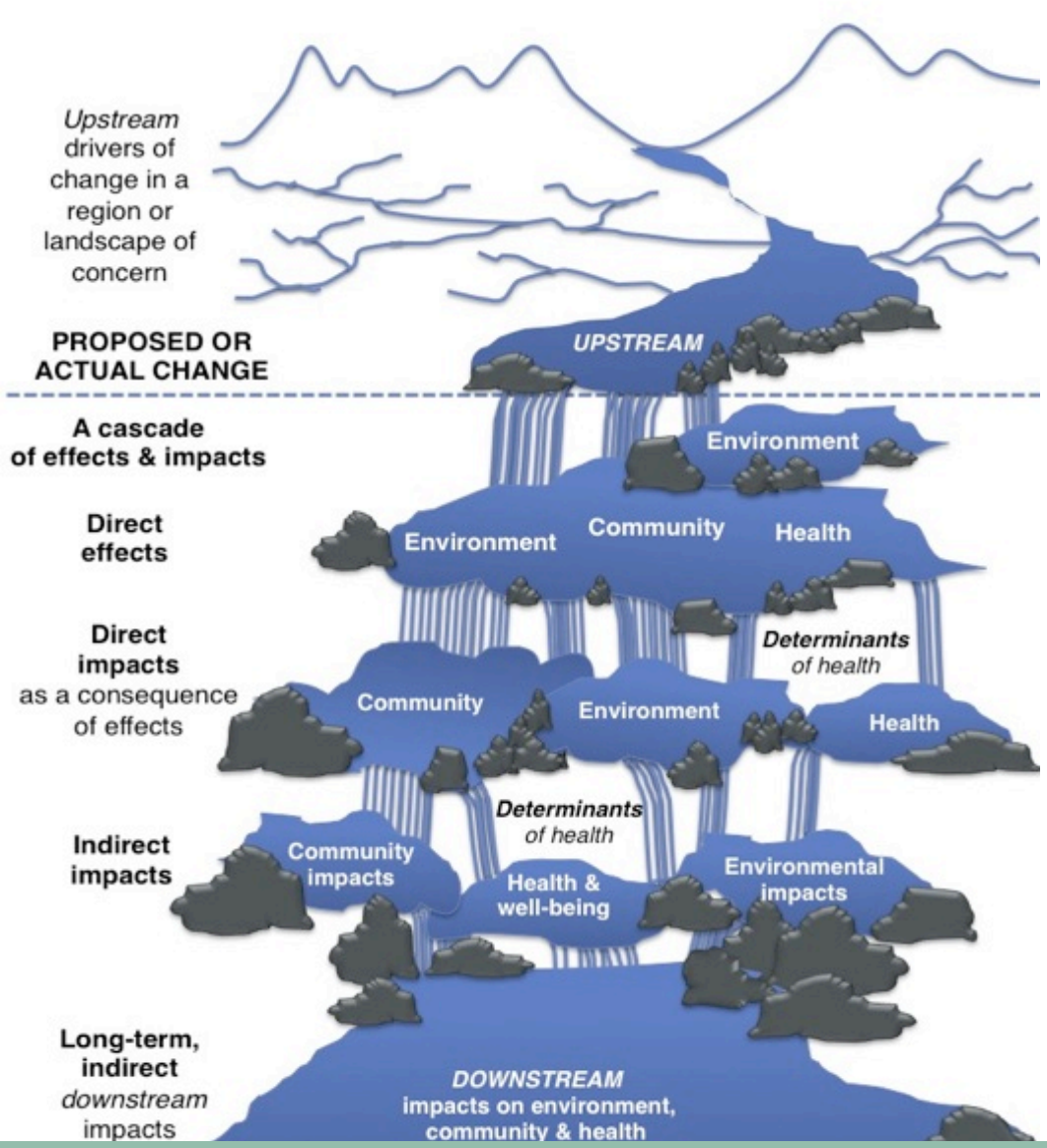
Phase 1: Scoping Review (comp. May 2016). **Specific Question**:

"What is the scope of published literature that addresses the links between resource extraction from the earth's crust (e.g. mining/oil & gas) and health outcomes?"

→A 'map' of the what kinds of papers have been published;
→Does not comment on the quality of evidence;
→Does identify hotspots (and/or gaps) for future work.

Phase 2: Informed by the Scoping Review (May 2016-Sept 2017)
•Metanarrative Analysis
+ Targeted Systematic Literature Reviews

Health Impacts of Resource Extraction & Development



Cumulative Determinants of Health Impact:

- Diverse drivers of change in region or landscape of concern;

→ A 'cascade of effects and impacts'

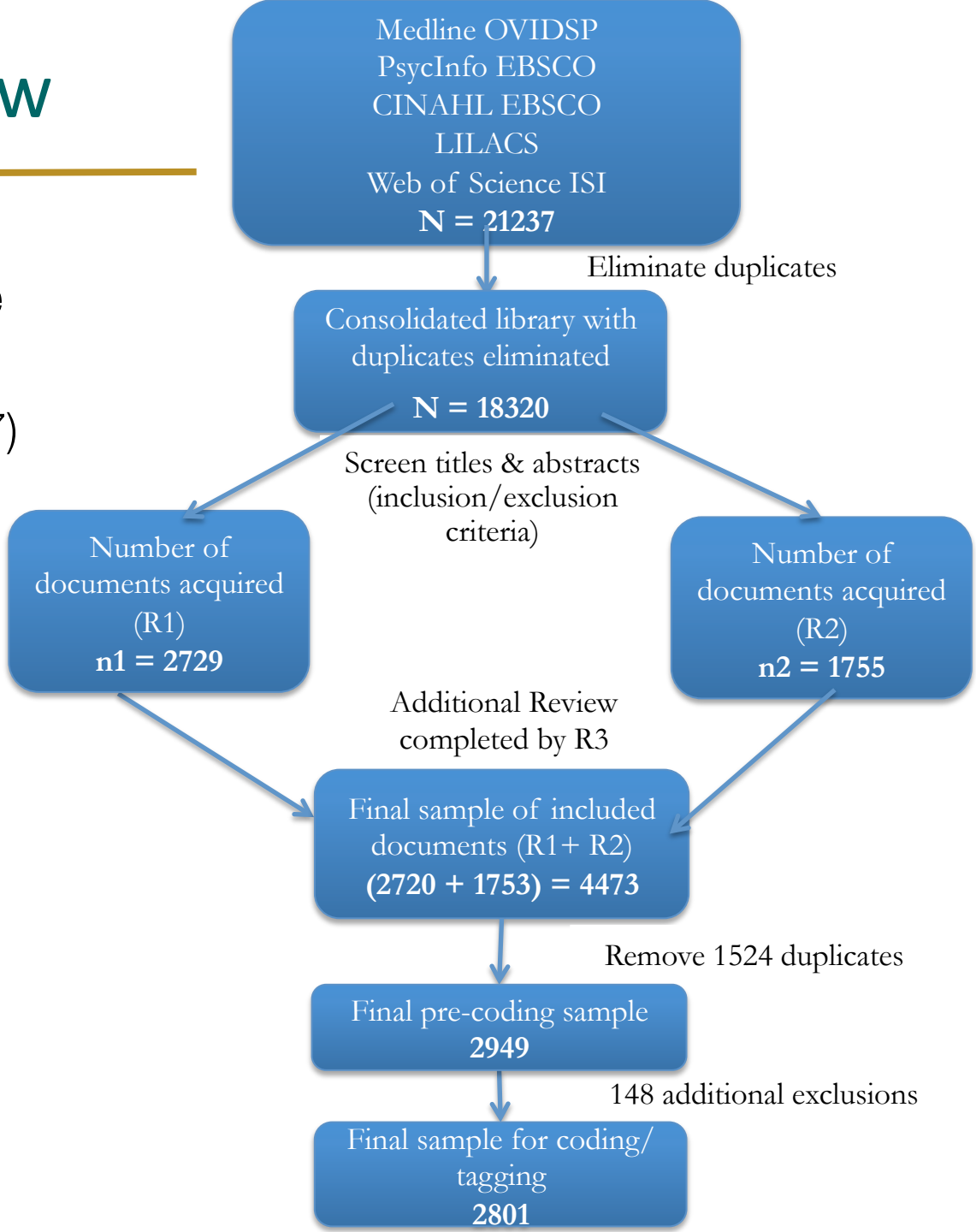
- Direct effects
- Direct impacts (as a consequence of effects)
- Indirect Impacts
- Long-term indirect (downstream) impacts

(Parkes et al, Figure 5.2 in Gillingham et al, 2015)

Scoping Review

Selection of review sample

- Initial scan completed by UNBC librarian (n = 21237)
- Use of inclusion/exclusion criteria to narrow search (n=4473)
- Final Sample for coding/ tagging (**n=2801**)



Inclusion Criteria

When the title/abstract deals with extraction OR transport of resources from the earth's crust AND one or more health outcomes OR human exposures to toxic substances. **Includes papers that describe/address:**

- environmental distribution of **toxic substances** AND actual calculated or measured human exposure and/or health impact;
- **resource extraction and health services,** even if they don't describe health outcomes (*e.g.* paramedics on resource extraction worksites);
- **changes in human physiology in relation to resource extraction**, even if you don't recognize those physiological changes as a pathology or health 'problem';
- **occupational health risks** at a national, regional / continental or even global level **if they specifically mention mining/oil & gas**
- **health interventions to prevent health impacts from resource extraction**, even if it doesn't specify any specific health outcomes;
- historical accounts of social / legal / political / scientific / **health services activity related to health effects of extractive industry** (even if they describe events long ago);
- **mathematic models of resource extraction** – health relationships in humans;
- **'safety'** in resource extraction;
- **diagnostic tests for health conditions** actually or potentially related to resource extraction.

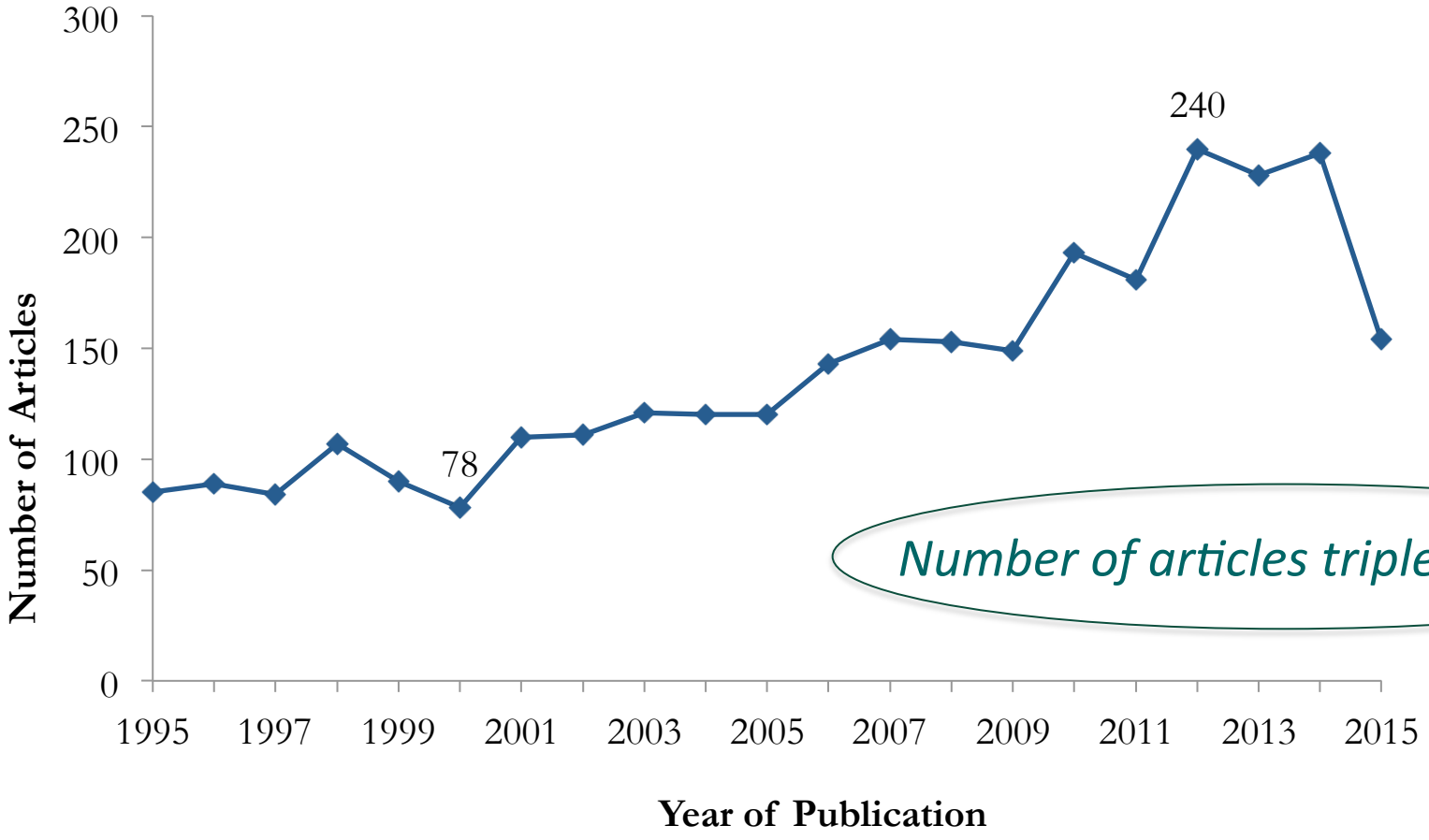
Scoping Review Analysis

Source: Extraction.ca

Explore the extent of the literature in a particular domain without describing findings in detail (Armstrong, 2011)

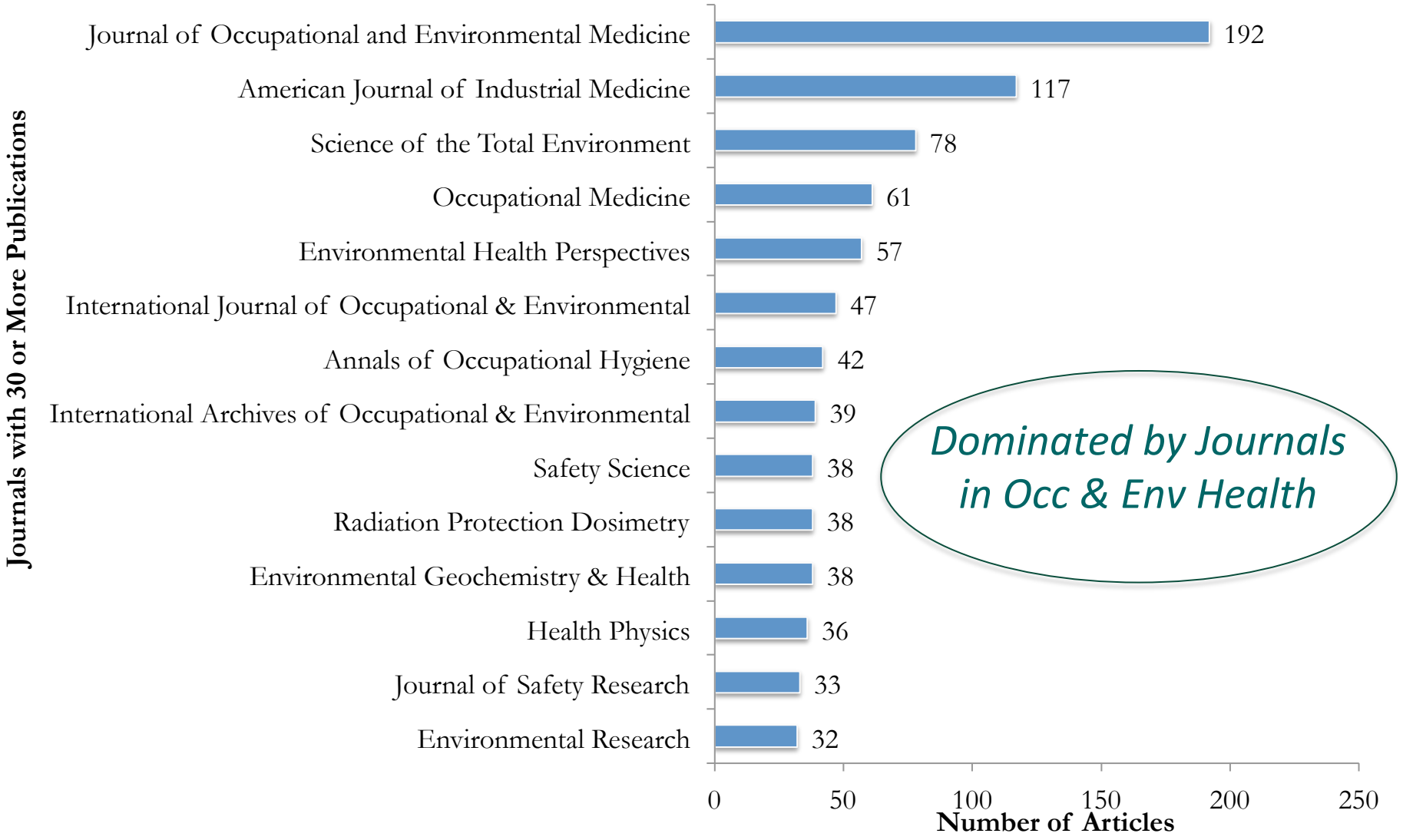
- General Descriptors: Year of publication, Journal, country, world economies
- Sector/type of extractive activity
- Affected population
- Objective of the study
- Type of health impacts
- Methodological approach used in the study
- Type of impact pathways examined in the study

Results: Distribution of Sources per Year

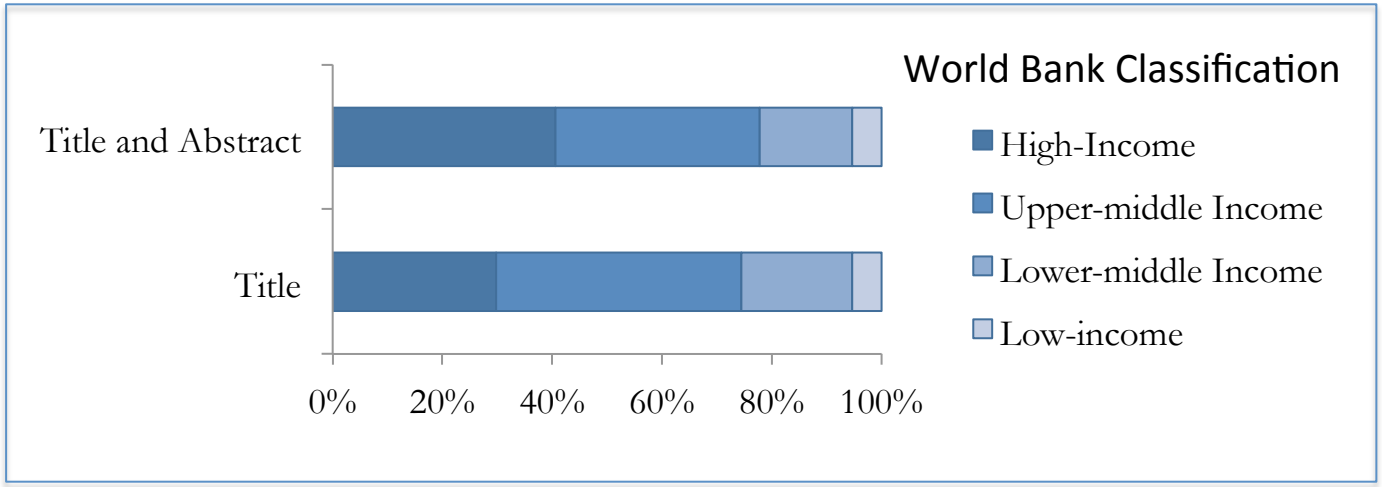


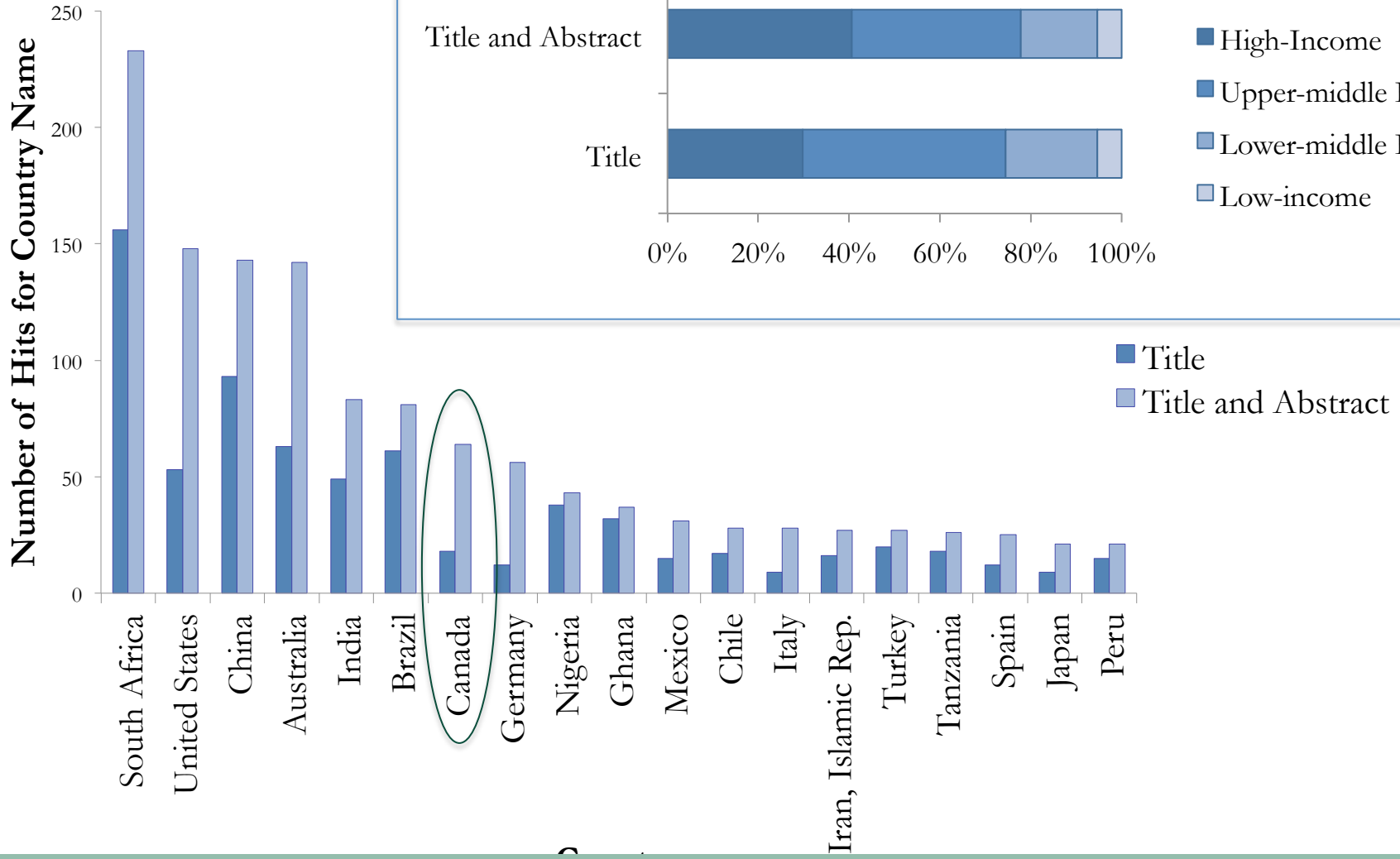
Number of articles triple in 20 years

Results: Distribution of Sources per Journal



Results: Distribution of Sources per Country

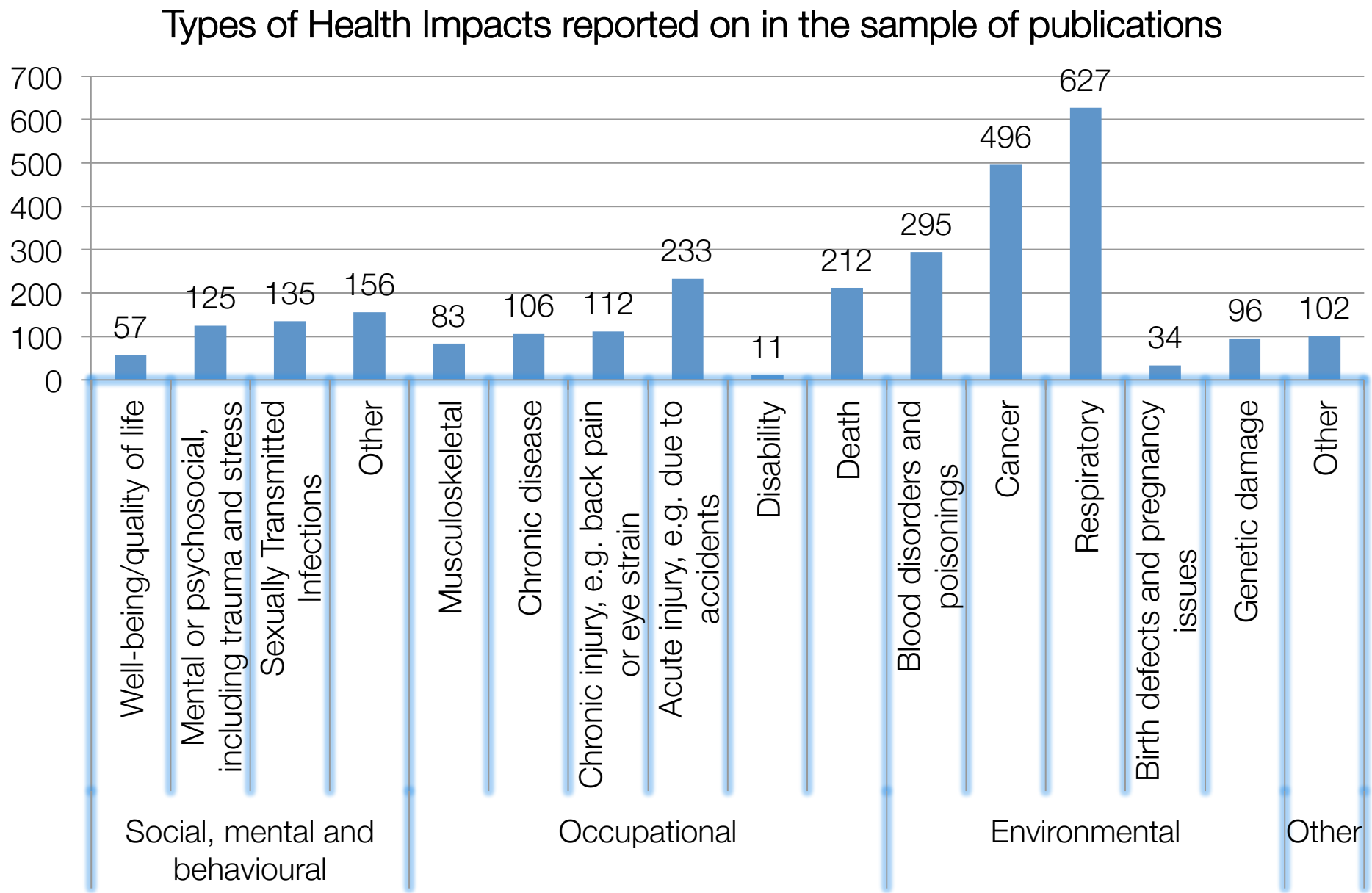




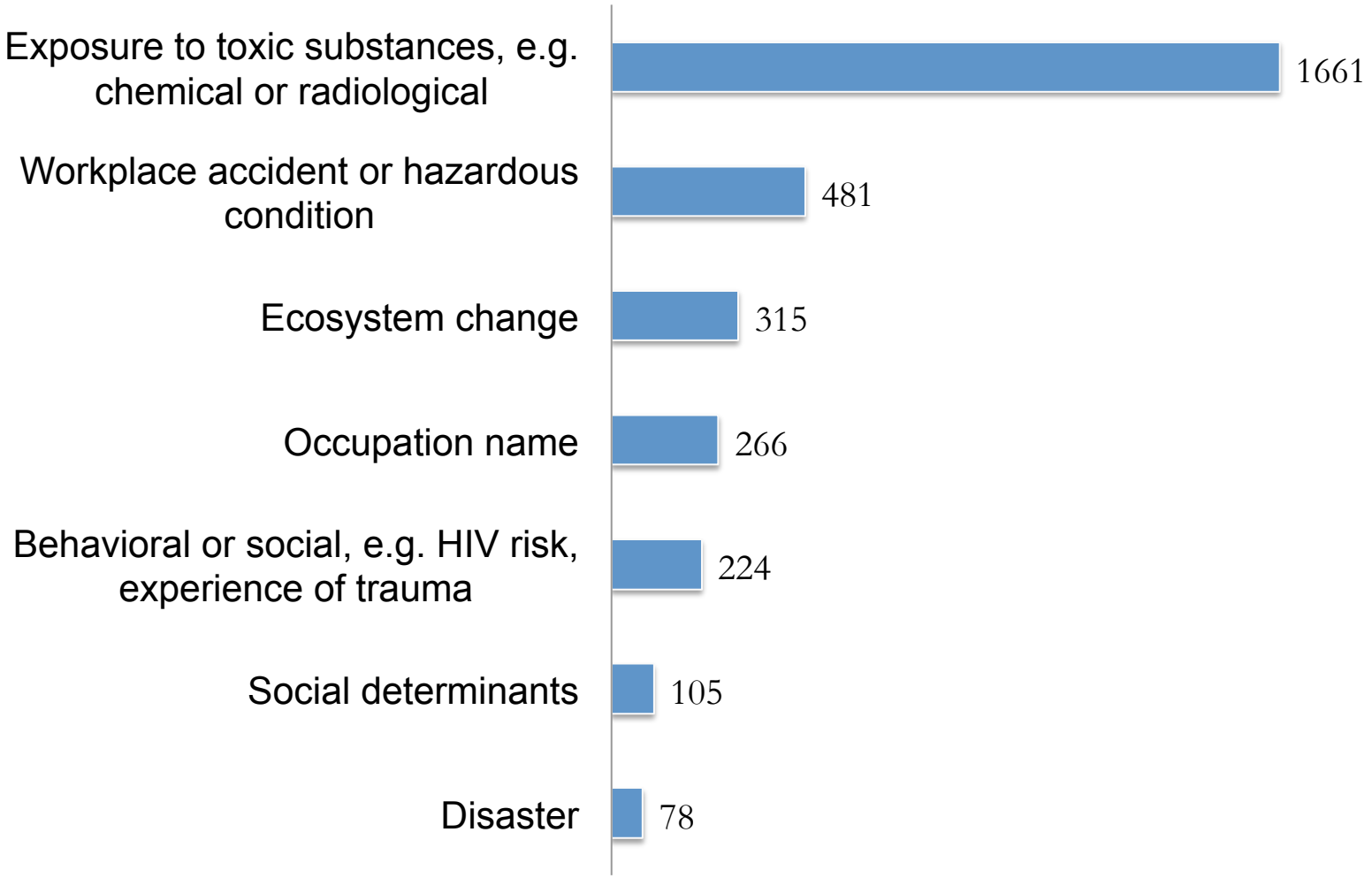
Key findings: Orientation of Study

- **Industry:** Mining was cited in 85% of the sources; Oil and Gas in 15% of the studies
- **Affected population:** workers (57%) and surrounded communities (18%) most often cited as affected populations
- **Objectives of the published studies:** Of the study objectives cited in the publications, 83% focused on distinct health impacts (as described in modeling, epidemiological or toxicological studies). Occupatonal health and safety intervention were the next most common study objective.
- **Study designs of published studies:** Nearly all studies (89%) used a quantitative methodological framework in their design. Other study types included: Qualitative (5%); Mixed Methods (3%) and Other (3%)

Key findings: Types of impact in study sample



Key findings: Type of Impact Pathways



Discussion

- **Limitations:** Scoping review – does not pick up information available in reports and grey literature (including unpublished health impact assessments)

- Provides a '**map**' of studies published – including **parameters, patterns and gaps**:
  → Some surprises, some affirmations, a more informed view

- **Mismatch between types of studies published and community concerns,** including:
  - Impacts on mental health and well-being
  - Impact on determinants of health, via social pathways
  - Impacts to culture, community cohesion (including through ecological pathways)

Conclusions & Next steps

- **The 'map' of published studies has identified gaps:**
  - What kinds of bias could be contributing to these gaps? A bias in what kinds of research is funded? Is conducted? Is published in peer-reviewed sources? and/or a reflection of 'traditional methods'?

"Absence of evidence is not evidence of absence"

- **Targeted systematic reviews –inc. grey literature e.g.**
  - Impacts on mental health and well-being? (solastalgia)
- **Metanarrative synthesis:** 'eco-social' pathways of impact?
  - via 'social' pathways: housing, education, social cohesion, community infrastructure;
  - via 'ecological' pathways: land, water, air, ecosystem services (supporting, provisioning, regulating and cultural services for wellbeing)

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