

# Retractions of Health Economic Models: A Systematic Review

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## INTRODUCTION

- Retractions of scientific articles are on the rise --- across time,<sup>1,2</sup> clinical fields,<sup>3-6</sup> disease indications,<sup>7,8</sup> and study designs such as RCTs<sup>9</sup> and systematic reviews.<sup>10</sup>
- Estimates suggest a rate of **2.5 retractions per 10,000** papers.<sup>2</sup> This would be equivalent to retracting at least 15 studies in the ISPOR poster database.
- Whether to correct errors or remove fraud, retractions of primary studies have a negative downstream effect in evidence synthesis, which may not be easily addressed.<sup>11</sup>
- Currently it is unknown whether, and to what extent, the phenomenon of retractions has impacted the literature of health economic (HE) modelling.

## AIMS

This research sought to investigate retractions of published HE models. Specifically, we wanted to:

- Describe characteristics of retracted HE models
- Identify reasons for retraction
- Outline implications for health decision-making

## METHODS

- We conducted a pre-registered systematic review of published economic models of health interventions that were subsequently retracted.

## ELIGIBILITY CRITERIA

<b>Population</b>	Any health domain
<b>Intervention</b>	Any health intervention
<b>Study design</b>	Any published economic model subsequently retracted
<b>Language</b>	Any
<b>Publication year</b>	Any
<b>Retraction year</b>	Any

## PROTOCOL

Pre-registered on the Open Science Framework:



## SEARCH, SELECTION & EXTRACTION

- We searched the following databases on 02 May 2024:

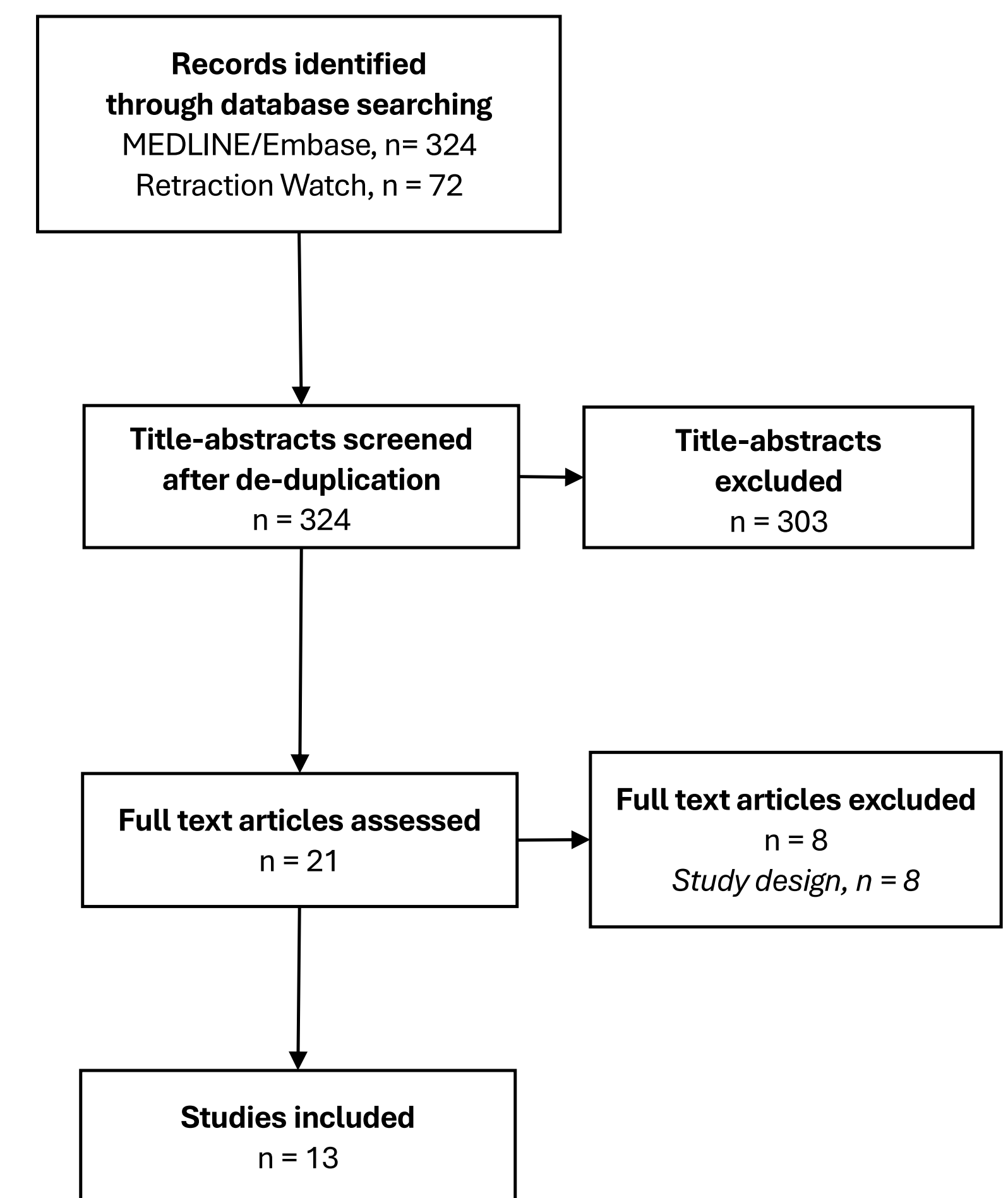
<b>MEDLINE / Embase</b>	Validated filter for economic models <sup>12</sup> AND ('retracted article'/exp OR 'retracted article') OR ('retracted publication'/exp OR 'retracted publication') OR ('retraction notice'/exp OR 'retraction notice') OR (retracted:ti)
<b>Retraction Watch Database</b>	Subject: (HSC) Health Sciences Title: economic*, 'economic model', cost, pharmaco-economic, 'pharmaco economic*', Markov, 'decision tree'

- After de-duplication, abstracts & full texts were screened by two reviewers. Extraction was performed using a standardised form, with full validation.

## RESULTS

### Retractions of HE models

- We identified 13 retracted HE models, published 2006-2024.
- 9/13 models were retracted within the same year of publication, indicating rapid removal from the evidence base.
- Retracted models were published in 13 unique journal outlets, 6/13 from top-tier journals.
- Retractions occurred in a range of indications, e.g., CVD (3/13), cancers (2/13), and infectious diseases (2/13).



### Reasons for retraction

- The most common reason for retraction: **errors** (8/13 models).
- Evidence for **misconduct** was found in 3/13 models, including: plagiarism, duplicate publication, and peer-review manipulation.

Study ID	Evidence of misconduct?	Details	Retraction initiated by	Subsequent publication
Arreola-Ornelas 2014	Yes	Plagiarism	Editorial committee	-
Chen 2022	Yes	Peer review manipulation, concerns about data	Publisher	-
Lamotte 2006	Yes	Duplication of previously published text & images by same authors	Authors, publisher	-
Autiero 2018	No	Errors in model structure	Authors	-
Breeze 2015	No	Errors in analysis	Authors	✓
Cordiero 2020	No	Errors in analysis (identified through independent feedback)	Authors, editor, publisher	-
Leung 2018	No	Errors in data	Authors, editor, publisher	-
McConnell 2024	No	Errors in analysis	Authors, editor, publisher	-
Portnoy 2021	No	Errors in analysis	Authors	-
Quinonez 2008	No	Errors in analysis (identified through independent feedback)	Authors, editor	-
Sowa 2015	No	Errors in analysis	Authors	✓
Ademi 2020	Unclear	Reason for retraction not specified	Authors	✓
Blaxill 2023	Unclear	Concerns about data, analysis (authors disagree with retraction)	Editor, publisher	-

## DISCUSSION

- This is the first systematic review of retractions of HE models. We found evidence of model retractions in a range of disease indications and journal sources, including top-tier outlets.
- Errors were the most common reason for retraction. This is contrary to findings in other scientific fields, where errors typically account for less than 40% of retractions.<sup>13,14</sup> Evidence for researcher misconduct was also found.
- The relatively low number of retractions raises questions about the field's ability to detect problems with submitted models during the peer review process, including errors and researcher misconduct, which are likely under-detected.

**REFERENCES including retracted models:** Available in supplement