Health Economics, Policy and Law (2025), page 1 of 23
doi:10.1017/S1744133125100315

HEALTH ECONOMICS, POLICY and LAW

ARTICLE

The relationship between healthcare provider ownership and performance in high-income countries: An umbrella review

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(Received 7 July 2025; revised 15 October 2025; accepted 30 November 2025)

Abstract

The role of healthcare provider ownership in shaping health system performance remains contested. An umbrella review was conducted to synthesise evidence on the relationship between healthcare provider ownership and performance in high-income countries. Systematic reviews were included that examined performance of healthcare providers based on ownership status. Searches yielded 1,862 results, with 31 systematic reviews meeting the inclusion criteria, and one further systematic review identified through grey literature searches. Following the exclusion of 10 reviews classified as low-quality and two previous umbrella reviews both published in 2014, 20 reviews were eligible for data extraction and synthesis. Inconsistent evidence was found across reviews between healthcare provider ownership and several performance indicators including health outcomes, technical efficiency, and patient satisfaction. Private hospitals tend to serve wealthier patients, select less complex or costly patients, and charge higher payments for care than public comparators. Private for-profit (FP) providers of hospital and long-term care generally had poorer workforce outcomes than private not-for-profit or public providers, including reduced staffing levels, higher workloads, and lower job satisfaction. Private PF hospitals and nursing homes had improved financial performance based on revenues or profit margins. Our findings underscore the need for nuanced regulatory responses to the expansion of private FP provision within publicly funded systems.

Keywords: Private healthcare; private equity; healthcare quality; health system; healthcare efficiency

1. Introduction

There is mixed public and private ownership of healthcare facilities in nearly all healthcare systems (Montagu 2021). Private healthcare providers are 'individuals and organizations that are neither owned nor directly controlled by governments' (WHO 2021). The opposite holds for public healthcare providers, which governments own or directly control. Private healthcare providers can be further subcategorised according to their financial objectives as for-profit (FP) or not-for-profit (NFP), with FP healthcare providers primarily driven by financial returns to

shareholders, while NFP providers are motivated by reinvesting surplus revenues to improve quality of care (Horwitz 2005).

Economists have emphasised the relationship between healthcare provider ownership status and dimensions of health system performance, such as efficiency, accessibility, and quality of care, relies upon the incentives, motivations, and information asymmetries of different agents and principals involved in healthcare (Moscelli 2018; Brekke *et al.* 2011). Assuming that private healthcare providers are motivated more by financial gains compared to public healthcare providers, they may engage in behaviours such as cream-skimming or quality skimping to maximise profits (Ellis 1998). These incentives may also be stronger in FP than NFP healthcare providers, although the literature to date does not consistently distinguish between FP and NFP status among providers.

Empirical evidence examining the relationship between healthcare provider ownership status and performance has been mixed. Herrera *et al.* (2014) was a previous umbrella review that summarised evidence on the relationship between healthcare provider ownership status and quality of care in high-income countries (HICs) and low- and middle-income countries (LMICs) from nine systematic reviews (Herrera *et al.* 2014). They noted that private FP providers tended to have worse outcomes than their private NFP counterparts, but emphasised that limited comparisons between public and private (either FP or NFP) healthcare providers existed. Focusing specifically on HICs, the evidence base has developed further. Kruse *et al.* (2018) focused exclusively on evidence from European countries. They found that patients with higher socioeconomic backgrounds have better access to private hospital provision. Still, the evidence on the quality of care was too diverse to make a conclusive statement (Kruse *et al.* 2018). Borsa *et al.* (2023) evaluated trends in private equity ownership and found evidence predominantly from the United States (US), which suggested that private equity ownership was associated with increased costs and mixed to harmful impacts on healthcare quality (Borsa *et al.* 2023). Recently, Goodair and Reeves (2024) focused on the effect of healthcare privatisation on the quality of care. They found evidence that a change in ownership status from public to private for healthcare facilities in the US, South Korea, Croatia, and Germany was associated with increased profits and mixed impacts on quality (Goodair and Reeves 2024). Moreover, they also found evidence from England suggesting that aggregate increases in publicly funded care in private healthcare facilities at the regional level were associated with worse patient health outcomes. Considering the significant development of the evidence-base on healthcare provider ownership and performance over the last decade, there is a need to collate recent evidence on this relationship to inform policy and future research on healthcare provision and financing.

We aim to provide a comprehensive assessment of evidence on the relationship between healthcare provider ownership and measures of health system performance in HICs. We focus specifically on HICs as the health system arrangements and relationship between public and private healthcare sectors vary significantly between HICs and LMICs. Moreover, analysing both within a single review would be challenging due to the breadth of evidence generated in both HICs and LMICs, and presenting results together could obscure context-specific patterns and reduce the validity of cross-country comparisons.

2. Methods

We chose to conduct an umbrella review because numerous systematic reviews on health system performance and provider ownership already exist, and this approach allows us to synthesise the large body of evidence previously collected and assessed across multiple reviews and meta-analyses (Belbasis *et al.* 2022). We followed the Joanna Briggs Institute (JBI) guidelines for umbrella reviews in the design and execution of the review (Aromataris *et al.* 2015), and the PRISMA guidelines for reporting purposes (Page *et al.* 2021). Our study protocol was pre-registered on PROSPERO prior to commencing the review process (CRD42024608140) (Anderson, Wimmer, *et al.* 2024).

https://doi.org/10.1017/S1744133125100315 Published online by Cambridge University Press

2.1. Eligibility criteria

We included any systematic review that captured studies examining the performance of healthcare providers based upon ownership status in HICs (defined according to the Fiscal Year 2026 World Bank classification, (World Bank 2025)). Ownership status is typically categorised as public or private, and NFP or FP if classified as private. Review types included systematic reviews, systematised reviews, integrative reviews, realist reviews, umbrella reviews, meta-ethnography reviews, meta-analyses, mixed-methods reviews, critical reviews, and state-of-the-art reviews. Performance was conceptualised according to the following dimensions: health outcomes, patient safety, patient satisfaction, accessibility, efficiency, workforce outcomes, and financial performance.

We excluded scoping or narrative reviews, any reviews focusing on LMICs, and non-English language reviews. Existing umbrella reviews with overlapping scope were reviewed, and relevant reviews were extracted for inclusion if not identified elsewhere. We made no restrictions based on the healthcare systems sector, and therefore, we included studies focusing on primary, secondary, mental health, and long-term care settings. We also made no exclusion based on types of studies (*i.e.* quantitative or qualitative) included within identified reviews.

2.2. Search strategy and data selection process

We adapted our search strategy from Herrera *et al.* (2014), applied to Medline, EMBASE, and EconLit to identify reviews published until 29 October 2024 (see Appendix 1 for search strategy). We limited our search strategy to three databases, as it has been shown that searching at least two databases improves coverage and recall and decreases the risk of missing eligible studies when conducting reviews (Ewald *et al.* 2022).

Two reviewers (MA, SW) independently screened all records based on their titles and abstracts to identify relevant reviews assessed against eligibility criteria. Any disagreements were resolved by a third reviewer (RF). After retrieving the full-text articles for all potentially eligible reviews, each full-text review was screened for eligibility by both reviewers (MA, SW). Consensus of disagreements was resolved by the third reviewer (RF).

We reviewed the reference list of all identified articles for additional reviews not captured by our search strategy. Additionally, we conducted a grey literature search on Google Scholar, reviewing the first 300 results as recommended by (Haddaway *et al.* 2015). Records retrieved from databases were organised and managed using Rayyan Systems (Ouzzani *et al.* 2016).

Two primary reviewers (MA, SW) conducted a quality assessment using the Critical Appraisal Skills Programme (CASP) systematic review checklist (Critical Appraisal Skills Programme, n.d.). Then they discussed to reach a consensus on the quality of each review. All questions within the CASP checklist were included, except for 'Are the benefits worth the harms and costs?', which was deemed irrelevant to our umbrella review. This tool was specifically designed to assess a range of dimensions of quality in systematic reviews, including whether the review addresses a clearly focused question, includes all relevant studies, and assesses the potential bias of included studies. Once quality assessment was complete, reviews classified as low quality were excluded from further analysis. Reviews were categorised as low quality if the response to either of the first two questions was negative: Did the review address a clearly focused question? Did the authors look for the right type of papers? We also excluded studies if the answers to more than three other questions were negative. Reviews were categorised as high quality if there were either one or no negative responses to questions included in the quality assessment. Reviews were categorised as moderate quality if they did not meet high- or low-quality criteria.

A potential limitation of umbrella reviews is that some primary studies may be included in multiple systematic reviews, inflating the weight of evidence and biasing conclusions. To quantify the degree of overlap in primary studies across systematic reviews within an umbrella review, we estimated the corrected covered area (CCA) using a citation matrix of all identified studies and

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Table 1. Dimensions of health system performance and metrics examined

Dimension of health system performance	Examples of metrics examined
Health outcomes	Mortality, readmissions, revision surgery
Patient safety	Adverse events, medication errors, hospital association infections, pressure ulcers, adverse drug reactions
Patient satisfaction	Patient satisfaction survey scores, patient experience survey scores
Accessibility	Waiting times and patient charges
Efficiency	Technical efficiency scores, length of stay, use of low-value care
Workforce outcomes	Staffing levels, turnover rates, vacancy rates, job satisfaction
Financial performance	Revenues, costs, and profit margins

inclusion within each individual systematic review (Hennessy and Johnson 2020). Following guidance in Pieper et al (2014), the following thresholds were used to quantify the extent of overlap (Pieper *et al.* 2014): slight overlap: 0% to 5%; moderate overlap: 6% to 10%; high overlap: 11% to 15%; and very high overlap: greater than 15%.

2.3. Data extraction and thematic analysis

Two reviewers independently extracted data for each literature review using a pre-determined data extraction table. Information included the focus of the review; dimensions of health system performance examined (*i.e.* health outcomes, patient safety, patient satisfaction, accessibility, efficiency, workforce outcomes, financial performance); number of types of studies; publication dates of included studies; countries and sectors analysed (*i.e.* hospital care, primary care, long-term care); and main findings. Health system performance dimensions were based on intermediate and final goals contained within the European Observatory on Health Systems and Policies health system performance assessment framework (Papanicolas *et al.* 2022). Thematic narrative synthesis was conducted according to different dimensions of health system performance (Table 1). Where possible, we narratively compared and contrasted findings from different reviews that had a similar focus, contextual background, or objective. We opted not to undertake a meta-analysis or integrate findings statistically due to the heterogeneity of findings.

3. Results

Our search strategy identified 1,862 reviews after de-duplication. Following abstract, title, and full-text screening, we identified 31 reviews focused on the relationship between healthcare provider ownership status and health system performance (Figure 1). One additional review was identified through grey literature searches (Fletcher *et al.* 2024).

The quality of identified reviews varied considerably (Appendix 2). Ten reviews were classified as low-quality and therefore removed from subsequent analyses. Eleven reviews were classified as medium quality, and 9 were classified as high quality. Two existing umbrella reviews were excluded after cross-referencing to ensure they contained no additional literature reviews not identified within our search strategy (Herrera *et al.* 2014; Bambra *et al.* 2014). Common quality concerns raised among low-quality reviews included no quality assessment of identified studies (8 reviews), unclear inclusion criteria or search strategies (6 reviews), and unclear research questions (3 reviews). In total, 20 reviews were synthesised thematically according to different health system dimensions (Table 2). This included 14 reviews focused on hospital care

https://doi.org/10.1017/S1744133125100315 Published online by Cambridge University Press

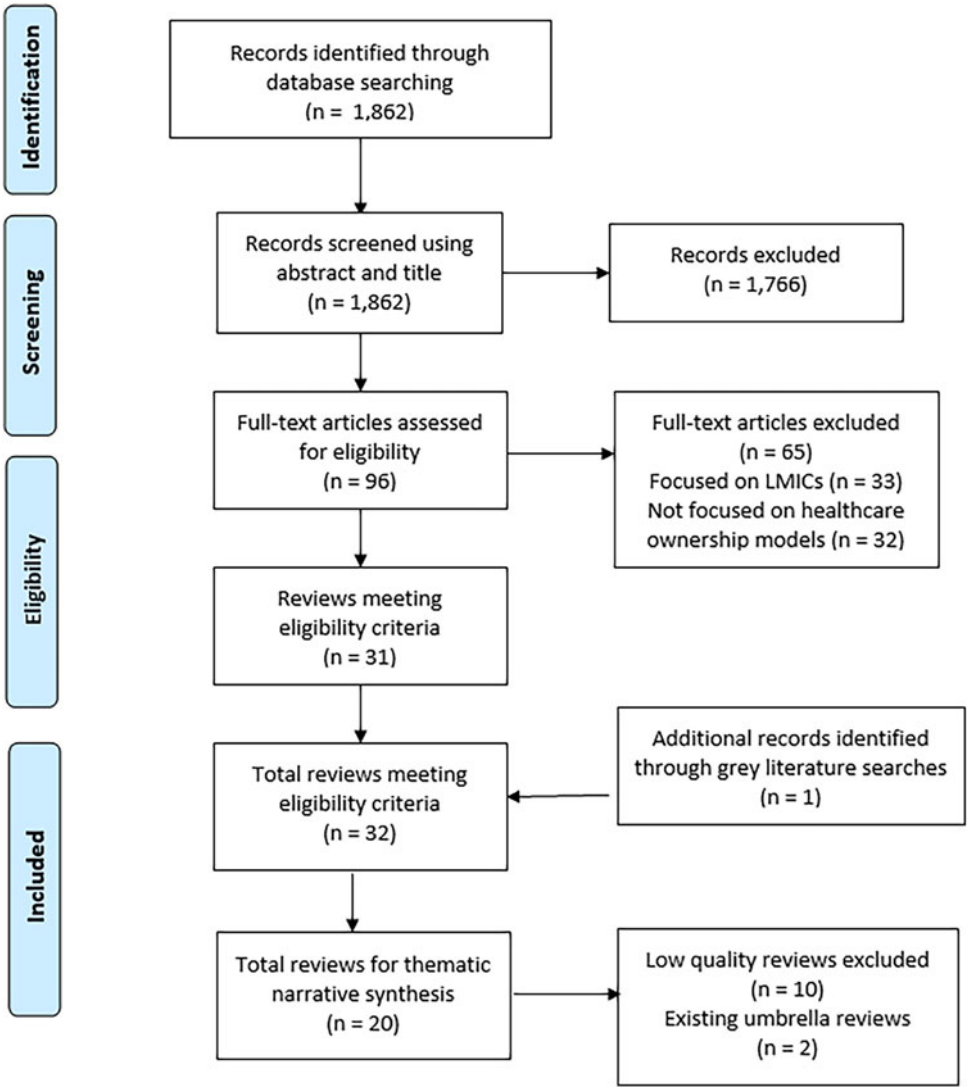

Figure 1. PRISMA flowchart diagram.

(Kruse *et al.* 2018; Fletcher *et al.* 2024; Currie *et al.* 2003; Tiemann *et al.* 2012; Shen *et al.* 2007; Keyhani *et al.* 2013; Engineer *et al.* 2016; Akpinar *et al.* 2023; Mazurenko *et al.* 2017; Devereaux, Schünemann, *et al.* 2002; Eggleston *et al.* 2008; Devereaux, Choi, *et al.* 2002; Malheiro *et al.* 2021; Devereaux *et al.* 2004), and 4 reviews focused on long-term care (Bach-Mortensen *et al.* 2021; Aloisio *et al.* 2021; Comondore *et al.* 2009; Bos *et al.* 2017). Two reviews incorporated evidence from mixed settings, with inclusion criteria not restricted to specific sectors (Borsa *et al.* 2023; Goodair and Reeves 2024).

In total, 543 studies were extracted across the 20 systematic reviews (Appendix 3). 474 studies were uniquely included, and 621 total study inclusions existed across the systematic reviews. This meant the percentage overlap was 12.71% (69/543), and the CCA was 0.76%. Therefore, the extent of overlap was classified as minor, and we excluded no systematic reviews from our thematic narrative analysis.

https://doi.org/10.1017/S1744133125100315 Published online by Cambridge University Press

Table 2. Main results

Review	*Focus*	*Dimension*	*Number of studies**	*Dates published*	*Country and setting*	*Main Findings*
(Devereaux, Choi, et al. 2002)	Mortality rates in FP versus private NFP hospitals	Health outcomes (*i.e.* mortality)	15 observational studies	1988–2001	United States Hospital care	• Private FP hospitals were associated with an increased risk of death in adults (relative risk [RR] 1.020, 95% confidence interval [CI] 1.003–1.038; $p = 0.02$).
(Malheiro et al. 2021)	Surgical site infection rate in public versus private hospitals	Patient safety	1 cohort study	2018	Germany Hospital care	• Ownership had no significant association with surgical site infections after colorectal surgery. • Public hospitals had significantly less surgical site infections after hip prosthesis following arthrosis.
(Devereaux, Schünemann, et al. 2002)	Mortality rates in dialysis at private FP and private NFP hospitals	Health outcomes (*i.e.* mortality)	8 cohort studies	1984–2000	United States Hospital care	• 6 studies showed statistically significant increased adjusted mortality. Private FP dialysis centres were associated with an increased risk of death (relative risk 1.08, 95% confidence interval [CI] 1.04–1.13; $P < 0.001$). • 2 studies showed non-significant findings.
(Kruse et al. 2018)	Relative performance of private versus public hospitals	Health outcomes Efficiency Access Patient satisfaction	45 observational studies	2000–2017	Austria, France, Germany, Greece, Italy, Portugal, Spain, and United Kingdom Hospital care	• 7 studies on health outcomes. 3 studies showed private hospitals had better outcomes than public hospitals. 4 studies showed public hospitals have better outcomes. • 12 studies focused on technical efficiency. ○ 5 studies showed private FP less efficient than public hospitals, 1 study showed private FP more efficient than public hospitals, 2 studies showed no difference. ○ 3 studies showed private NFP less efficient than public hospitals. 4 studies no difference. 1 study showed private FP hospitals more efficient than public hospitals • 7 studies on length of stay. 3 showed private hospitals had shorter length of stay than public hospitals. 3 studies showed private hospitals have longer length of stay. 1 study showed no difference.

(*Continued*)

Table 2. (*Continued*)

Review	*Focus*	*Dimension*	*Number of studies**	*Dates published*	*Country and setting*	*Main Findings*
						• 11 studies focused on accessibility. 8 studies showed more deprived patients had reduced access to private hospitals. 3 studies showed evidence of cream-skimming in private FP hospitals. • 2 studies focused on patient satisfaction, with one showing private hospitals have higher satisfaction, and one showing no significant differences.
(Borsa et al. 2023)	Private equity ownership impacts	Health Outcomes (*i.e.* hospital mortality) Access (*i.e.* costs to payers and patients) Financial performance Workforce Patient satisfaction	55 studies included (cross-sectional, longitudinal and mixed methods)	2000–2023	Canada, England, Germany, Norway, the Netherlands, Sweden, Turkey, and United States (47 studies) Hospital care Ambulatory care Long-term care	• 8 studies focused on health outcomes, 2 showed significant beneficial impacts, 3 significant harmful impacts, and three no significant findings. • 12 studies focused on costs to payers or patients. 9 showed increased costs to patients or payers and three found no significant differences • 5 studies assessed costs to operators, with 3 finding reduced costs associated with PE acquisition and 2 finding increased costs • 12 studies focused on staffing (*i.e.*, staffing hours per patient), with 8 showing harmful impacts, 3 mixed impacts, and 1 beneficial • 4 studies focused on patient satisfaction or experience, with all showing harmful impacts.
(Bos et al. 2017)	Private FP and private NFP nursing homes	Financial performance Workforce (*i.e.* employee well-being) Health outcomes Adverse events	49 cross-sectional studies 1 longitudinal study	2004–2014	United States Long-term care	• 2 studies show private FP nursing homes have significantly higher profit margins. • 11 studies in staffing levels, private NFP nursing homes have higher staffing levels in 9 studies, no significant findings in 2 studies. • 4 studies on turnover rates, 3 studies showing higher rates in private FP nursing homes, and 1 study showing non-significant findings. • 2 studies on job satisfaction, both showing lower satisfaction in private FP nursing homes. • 9 studies on pressure ulcers, 5 show higher rates in private FP, and 4 non-significant findings. • 10 studies on hospitalisations, all show higher rates in private FP facilities.

(*Continued*)

Table 2. (*Continued*)

Review	*Focus*	*Dimension*	*Number of studies**	*Dates published*	*Country and setting*	*Main Findings*
(Eggleston et al. 2008)	Quality of care at public, private NFP, and private FP hospitals	Health outcomes (*i.e.* mortality) Patient safety (*i.e.* surgical complications, and adverse events)	31 observational studies	1990–2004	United States Hospital care	• 25 studies focused on mortality in private FP and NFP, with 2 studies showing higher mortality in private FP, 1 study showing higher mortality in private NFP, and 22 studies non-significant findings. • 12 studies focused on adverse events in private FP and NFP, with 2 studies showing higher rates in private FP, and 10 studies non-significant findings. • 12 studies focused on mortality in public and private NFP, with 5 studies showing higher mortality in public, and 7 studies non-significant findings. • 5 studies focused on adverse events in public and private NFP, with 1 study showing higher rates in public, and 4 non-significant findings.
(Devereaux et al. 2004)	Payments for care in the private FP and private NFP hospitals	Access (*i.e.* payments for care)	8 observational studies	1986–2001	United States Hospital care	• 5 of the 8 studies showed significant higher payments at private FP hospitals, 1 showed statistically significant lower payments, 2 showed no significant findings. • Meta-analysis demonstrated that private FP hospitals were associated with higher payments for care (relative payments for care 1.19, 95% confidence interval [CI] 1.07–1.33, $p = 0.001$).
(Mazurenko et al. 2017)	Patient satisfaction at FP and NFP hospitals	Patient satisfaction	5 cross-sectional studies	2008–2015	United States Hospital care	• Private FP versus private NFP hospitals were associated with lower patient satisfaction in all 5 studies examined.
(Comondore et al. 2009)	Quality of care in FP and NFP nursing homes	Health outcomes (*i.e.* mortality, hospital admissions) Patient safety (*i.e.* adverse events) Workforce outcomes	82 observational studies	1973–2005	Australia, Canada, Taiwan, and United States (74 studies) Long-term care	• In 40 studies, all statistically significant comparisons ($P < 0.05$) favoured private NFP facilities; in three studies, all statistically significant comparisons favoured private FP facilities, and the remaining studies had less consistent findings. • Meta-analyses showed private NFP facilities had higher staffing (OR 1.11, 95% CI 1.07 to 1.14, $P < 0.001$) and lower pressure ulcer prevalence (OR 0.91, 95% CI 0.83 to 0.98,

(*Continued*)

Table 2. (*Continued*)

Review	*Focus*	*Dimension*	*Number of studies**	*Dates published*	*Country and setting*	*Main Findings*
						$P = 0.02$). Non-significant results were found for physical restraint use (OR 0.93, 95% CI 0.82 to 1.05, $P = 0.25$) and negative regulatory assessments (OR 0.90, 95% CI 0 0.78 to 1.04, $P = 0.17$).
(Aloisio et al. 2021)	Nurse job satisfaction in FP and NFP nursing homes	Workforce (*i.e.* job satisfaction)	2 cross-sectional studies	2012–2015	Taiwan and United States Long-term care	• Study from the United States showed lower job satisfaction in private FP facilities. • Study from Taiwan showed high turnover intention in private FP facilities.
(Akpinar et al. 2023)	Private orthopaedic and cataract clinics	Health outcomes (*i.e.* readmissions and revisions) Access (*i.e.* waiting times) Patient satisfaction Patient safety Financial performance (*i.e.* operator costs)	29 observational studies	1980–2015	Austria, Australia, Canada, Denmark, Italy, the Netherlands, Norway, and United Kingdom, Hospital care	• 8 studies on waiting times, with 7 showing shorter waiting times in private facilities and 1 showing shorter in public facilities. • 7 studies on patient satisfaction, 3 showing significantly higher satisfaction in private facilities, 2 significantly higher satisfaction in public facilities, and 2 non-significant findings. • 6 studies on readmissions. 3 showed significant higher rates in private facilities, 3 showed significant higher rates in public facilities. • 7 studies focused on complication rates, 4 significantly worse in public facilities, and 3 significantly worse in private facilities. • 2 studies focused on revision rates, both showed significantly higher rates in private facilities. • 6 studies focused on length of stay, all showed lower length of stay in private facilities. • 1 study focused on costs, showing lower costs in private facilities.
(Bach-Mortensen et al. 2021)	Outbreaks and mortality of COVID-19 in public, NFP and FP care homes	Health outcomes (*i.e.* mortality), Patient safety (*i.e.* facility acquired infections)	32 cross-sectional and cohort studies	2020–2021	Canada, England, France, Scotland, and United States Long-term care	• Unadjusted incidences of deaths and infections were higher in private FP care homes in all included studies, but this association was not always statistically significant in adjusted models. • Private FP care home ownership was found to be associated with other risk factors such as crowdedness, client vulnerability, care home size, and ethnicity of residents.

(*Continued*)

Table 2. (*Continued*)

Review	*Focus*	*Dimension*	*Number of studies**	*Dates published*	*Country and setting*	*Main Findings*
(Engineer et al. 2016)	Hospital quality indicators in public, private, private NFP and FP providers	Health Outcomes (*i.e.* mortality rates measured by AHRQ IQI)	5 studies	2006-2011	United States Hospital care	• Coronary Artery Bypass Graft mortality rate: 1 study showed significantly higher rate in public vs private hospitals, 2 studies no significant associations. • Craniotomy mortality rate: 1 study showed significantly higher rate in public vs private hospitals, 2 studies showed no significant associations. • Acute myocardial infarction mortality rate: private NFP ownership was associated with no association in 3 studies, higher mortality in 1 study, and lower mortality in 1 study. • Pneumonia mortality rate: 1 study found no association with ownership, 1 study found higher mortality for public compared to private, and 1 found higher mortality for private FP compared to public. • No associations for abdominal aortic aneurism, hip replacement, acute stroke, gastrointestinal haemorrhage, and hip fracture mortality rates.
(Keyhani et al. 2013)	Overuse of care in Veteran Affairs versus non-Veteran Affairs hospitals	Efficiency (*i.e.* low-value care)	3 cross-sectional studies	2005–2011	United States Hospital care	• 1 study showed significantly higher rate of inappropriate surveillance endoscopy in Veteran Affairs hospitals, 2 studies show non-significant findings.
(Goodair and Reeves 2024)	Transition from public to private ownership	Health outcomes (*i.e.* mortality) Workforce outcomes Financial performance	13 longitudinal analyses (including 5 ecological studies)	2003–2022	Canada, Croatia, England, Germany, Italy, South Korea, Sweden, and United States Hospital care Ambulatory care	• 3 ecological studies find higher rates of avoidable mortality as outsourcing of care to private providers increased. • 1 ecological study found increased hospital infection rates after outsourcing cleaning services to private providers. • 3 studies showed privatisation resulted in reduced staffing levels. • 2 studies showed worsening working conditions (*i.e.*, higher workloads, and short-term contracts) following privatisation. • 2 studies showed improved efficiency followed privatisation including profitability,

(*Continued*)

Table 2. (*Continued*)

Review	*Focus*	*Dimension*	*Number of studies**	*Dates published*	*Country and setting*	*Main Findings*
						and ratio between inpatient treatments and hospital costs. • 1 study showed evidence of evidence of cream-skimming following privatisation. • 1 study showed privatisation of primary care services resulted in improved accessibility, with more precise appointment times, and telephone follow-up after working hours.
(Shen et al. 2007)	Hospital financial performance in FP and NFP	Financial performance (*i.e.* operator costs, profit margin) Efficiency	40 studies	1990–2004	United States Hospital care	• 18 studies focused on hospital costs, 9 showed higher costs in private FPs, 3 showed higher costs in private NFPs, 6 no significant findings. • 11 studies on hospital revenues, 7 studies showed higher revenues in private FPs, and 4 no significant findings. • 14 studies on profit margins, 9 showed higher profit margins in private FPs, 5 no significant findings. • 14 studies on efficiency, 5 studies showed private FPs are more efficient, 7 showed private NFPs are more efficient, and 2 studies showed no significant findings.
(Tiemann et al. 2012)	Ownership on overall efficiency of hospital in Germany. Private FP, private NFP, and public sector.	Efficiency	11 Data Envelop Analysis studies 9 Stochastic Frontier Analysis studies	1992–2011	Germany, Italy, and United States Hospital care	• 8 studies from Germany. 3 showed public more efficient than private FP, and 2 showed private FP more efficient than public. 4 showed public more efficient than private NFP, and 1 showed private NFP more efficient than public. • 11 studies from United States. 6 show public more efficient than private FP, 4 showed private FP more efficient than public. 5 showed public more efficient than private NFP, and 5 showed private NFP more efficient than public. • 1 study from Italy showing public hospitals were more efficient than private FP and NFP providers.

(*Continued*)

Table 2. (*Continued*)

Review	*Focus*	*Dimension*	*Number of studies**	*Dates published*	*Country and setting*	*Main Findings*
(Currie et al. 2003)	For-profit and NFP hospital care	Health outcomes (*i.e.* mortality, readmissions) Efficiency Financial performance (*i.e.* hospital costs, profits)	34 observational studies	1980–2000	United States Hospital care	• 17 studies on hospital costs, 2 studies favourable to private FP, 6 unfavourable to private FP, and 9 showed no significant difference. • 11 studies on quality of care, 4 unfavourable to private FP and 7 showed no difference in relation to quality of care. • 9 studies on efficiency, 2 studies favourable to private FP, 2 unfavourable to private FP and 5 showed no significant difference.
(Fletcher et al. 2024)	Performance of public and private hospitals	Health outcomes Patient safety Efficiency Workforce	33 observational studies 7 qualitative studies	2005–2024	United Kingdom Hospital care	• 12 studies on health outcomes, 9 showed improved outcomes in private hospitals, 1 showed worse outcomes in private hospitals, 2 no significant findings. • 3 studies on patient satisfaction, 1 showed improved patient satisfaction in private hospitals compared to public, 2 studies showed no significant findings. • 7 studies on length of stay, 5 showed reduced length of stay in private hospitals, 2 increased the length of stay in private hospitals. • 2 studies on adverse events, 1 showed reduced rates in private hospitals, and one showed reduced rates in public hospitals. • 3 studies showed reduced waiting times in private hospitals. • 5 qualitative studies on workforce showed negative implications for physician training, and differences in contractual arrangements between private and public hospitals.

Note: Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS). Agency for Healthcare Research and Quality (AHRQ) Inpatient Quality Indicators (IQI). For-profit (FP). Not-for-profit (NFP).
*This refers to number of studies relevant to relationship between ownership and performance of healthcare providers within the identified review.

3.1. Health outcomes

Devereaux, Choi, *et al.* (2002) and Devereaux, Schünemann, et al. (2002b) undertook a meta-analysis of studies from the US on private FP and NFP hospitals (Devereaux, Choi, *et al.* 2002), and dialysis centres (Devereaux, Schünemann, *et al.* 2002) with both studies showing a higher mortality rate in FP hospitals. Currie *et al.* (2003), focused on a subset of studies from Devereaux, Choi, *et al.* (2002) and found conflicting evidence on mortality rates in private FP and NFP private hospitals, and emphasised that the location of FP private hospitals may be driving differences in mortality rates rather than ownership status (Currie *et al.* 2003). Eggleston *et al.* (2008) undertook a meta-regression of 31 studies focused on comparing mortality rates in private FP compared to NFP hospitals in the US, and public and private NFP hospitals (Eggleston *et al.* 2008). However, pooled estimates of ownership effects showed no consistent relationship with mortality rates when using different data sources or analysis time frames. Engineer *et al.* (2016) focused on hospital mortality rates for certain conditions defined by the Agency for Healthcare Research and Quality (AHRQ) Inpatient Quality Indicators (IQI). They found no consistent relationship with ownership status when comparing public and private FP hospitals, and public and private NFP hospitals (Engineer *et al.* 2016). Although several studies included within Engineer *et al.* (2016) used hospital-level data without adjustment for patient-level differences in case-mix. Borsa *et al.* (2023) focused on the impact of private equity ownership and found mixed effects on hospital mortality, unplanned admissions, and fertility outcomes (Borsa *et al.* 2023). Kruse *et al.* (2018) summarised evidence on ownership status and hospital performance in Europe (Kruse *et al.* 2018), finding reduced mortality in public versus private FP hospitals in studies from France (Gobillon and Milcent 2016), and reduced mortality in private hospitals versus public hospitals in Germany (Tiemann and Schreyögg 2009) and Italy (Moscone *et al.* 2012). The same study also found evidence of increased readmissions in private compared to public hospitals in France (Gusmano *et al.* 2015), and reduced readmissions in private compared to public hospitals in Italy (Moscone *et al.* 2012; Berta *et al.* 2013). Akpinar *et al.* (2023) focused on evidence from orthopaedic care and cataract surgery and found mixed evidence on readmission rates between private and public hospitals (Akpinar *et al.* 2023). Notably, two studies focused on revision rates for orthopaedic surgery and found higher revision rates in private hospitals in Australia (Harris *et al.* 2019), and the Netherlands (Tulp *et al.* 2020). Fletcher *et al.* (2024) reviewed evidence from the United Kingdom and found twelve studies focused on hospital mortality and readmission rates (Fletcher *et al.* 2024). Nine studies consistently showed better health outcomes in private hospitals, one study found increased readmission rates in private hospitals (Bannister *et al.* 2010), and two studies found no significant differences when using instrumental variable approaches to adjust for unobservable differences in case-mix (Moscelli *et al.* 2018; Anderson *et al.* 2024).

Comondore *et al.* (2009) focused on FP and NFP nursing homes. They identified four studies on mortality rates, one finding higher rates in FP nursing homes, and three with non-significant findings (Comondore *et al.* 2009). Three studies focused on hospital admission rates, one finding higher rates in FP hospitals and two with non-significant findings (Comondore *et al.* 2009). Bach-Mortensen *et al.* (2021) focused on COVID-19 mortality and found that unadjusted incidences of deaths were higher in FP care homes in all included studies. Still, this association was not always statistically significant in adjusted models (Bach-Mortensen *et al.* 2021).

3.2. Patient safety

Eggleston *et al.* (2008) examined the association between hospital ownership status and adverse events, including medication errors and surgical complications (Eggleston *et al.* 2008). Meta-analysis of pooled estimates showed no consistent findings between private FP and NFP hospitals and public and private NFP hospitals. Malheiro *et al.* (2021) focused on hospital-level determinants of surgical site infections (SSIs) (Malheiro *et al.* 2021). They identified one study from Germany that showed public hospitals have significantly lower rates of SSI after hip surgery

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than private hospitals (Schröder *et al.* 2018). However, the same study showed no significant findings when analysing SSI following colorectal surgery. Akpinar *et al.* (2023) focused on surgical complication rates in orthopaedic and cataract surgery, with mixed findings between public and private hospitals (Akpinar *et al.* 2023). Fletcher *et al.* (2024) identified two studies that examined adverse events in public and private hospitals (Fletcher *et al.* 2024); one found lower rates in private hospitals (Anderson *et al.* 2024), and the other found higher rates in private hospitals (Bannister *et al.* 2010).

Comondore *et al.* (2009) undertook a meta-analysis showing significantly lower pressure ulcer prevalence in NFP versus FP nursing homes (Comondore *et al.* 2009), although non-significant findings were found for physical restraint use and negative regulatory assessments. Bach-Mortensen *et al.* (2021) found higher unadjusted COVID-19 infections in private FP versus NFP nursing homes. Still, they emphasised that private FP care home ownership was also associated with other risk factors such as crowdedness, client vulnerability, care home size, and ethnicity of residents (Bach-Mortensen *et al.* 2021).

3.3. Patient experience

Mazurenko *et al.* (2017) examined hospital determinants of patient satisfaction measured using the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS). They identified five studies focused on hospital ownership, showing lower patient satisfaction in private FP versus NFP hospitals (Mazurenko *et al.* 2017). Borsa *et al.* (2023) examined the impacts of private equity ownership on patient satisfaction or experience measures and found that four studies showed significant adverse consequences (Borsa *et al.* 2023). Kruse et al. (2018) identified two studies on patient satisfaction from the United Kingdom, with one study showing higher patient satisfaction rates in private versus public hospitals (Owusu-Frimpong *et al.* 2010), and the other showed no significant relationship (Pérotin *et al.* 2013). Akpinar *et al.* (2023) examined patient satisfaction for orthopaedic care and cataract surgery (Akpinar *et al.* 2023), and found three studies showing higher patient satisfaction in private hospitals in the Netherlands (Kruse *et al.* 2019), Australia (Pager and McCluskey 2004), and Denmark (Andersen and Jakobsen 2011), two studies with higher patient satisfaction in public facilities in Australia (Adie *et al.* 2012; Naylor *et al.* 2016), and two studies from the United Kingdom with non-significant findings (Perotin *et al.* 2013; Browne *et al.* 2008).

3.4. Accessibility

Kruse *et al.* (2018) found consistent evidence that private hospitals provide access to more affluent patients in eight studies and engage in cream-skimming to provide care to less complex patients in three studies (Kruse *et al.* 2018). Goodair and Reeves (2024) used longitudinal data to assess the impact of ownership status. They found evidence to suggest that private hospitals engaged in cream-skimming following conversion, taking on more profitable Medicaid patients (Goodair and Reeves 2024). Akpinar *et al.* (2023) examined waiting times for orthopaedic and cataract surgery. They found eight studies, seven showing short waiting times in private hospitals and one showing shorter waiting times in public hospitals (Akpinar *et al.* 2023). Fletcher *et al.* (2024) examined evidence from the United Kingdom (Fletcher *et al.* 2024) and found three studies showing reduced waiting times in private versus public hospitals (Marques *et al.* 2014; Kelly and Stoye 2020; Beckert and Kelly 2021). Goodair and Reeves (2004) identified one study from Croatia that showed that the privatisation of primary care services resulted in improved accessibility, with more precise appointment times, and telephone follow-up after working hours (Hebrang *et al.* 2003).

Devereaux *et al.* (2004) examined the relationship between hospital ownership status and payments for care, and a meta-analysis showed private FP versus NFP hospitals had higher payments (Devereaux *et al.* 2004). Borsa *et al.* (2023) examined whether private equity ownership

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was associated with higher costs for patients or payers, with nine out of 12 studies showing higher costs for patients or payers related to private equity ownership and no significant findings in the remaining studies (Borsa *et al.* 2023). In most cases, the studies identified in Devereaux *et al.* (2004) and Borsa *et al.* (2023) reported no disaggregate findings according to payments by patients or payers.

3.5. Efficiency

Several reviews measured technical efficiency using data envelopment analysis (DEA) and Stochastic Frontier Analysis (SFA). Shen *et al.* (2007) identified 14 studies from the US and undertook a meta-regression to establish the relationship between hospital ownership and technical efficiency, which showed no consistent findings (Shen *et al.* 2007). Currie *et al.* (2003) included many of the same studies and also found no consistent findings related to technical efficiency between private FP and NFP hospitals in the US (Currie *et al.* 2003). Tiemann *et al.* (2012) also found an inconsistent relationship between hospital ownership status and technical efficiency in the US and Germany (Tiemann *et al.* 2012). The same review also found one study from Italy, which showed public hospitals were more efficient than private FP and NFP providers (Daidone and D'Amico 2009). Kruse *et al.* (2018) identified twelve studies focused on technical efficiency and hospital ownership status from Europe, comparing either private FP hospitals with public hospitals or private NFP hospitals with public hospitals (Kruse *et al.* 2018). These studies either found that private FP and NFP hospitals were less efficient than public hospitals or no significant differences, with the exception of one study from Germany showing private FP hospitals are more efficient than public hospitals (also identified in Goodair and Reeves (2024)) (Tiemann and Schreyögg 2012), and one study from Austria finding private NFP hospitals are more efficient than public hospitals (Czypionka *et al.* 2014).

Other measures of efficiency used within reviews include hospital length of stay and the use of low-value services. Kruse *et al.* (2018) found seven European studies focused on length of stay, with inconsistent findings between ownership status and length of stay (Kruse *et al.* 2018). Akpinar *et al.* (2023) identified six studies focused on orthopaedic and cataract surgery that all showed that the length of stay was shorter in private versus public hospitals (Akpinar *et al.* 2023). Fletcher *et al.* (2024) found seven studies from the United Kingdom (Fletcher *et al.* 2024), consistently showing that length of stay was lower in private versus public providers, except for one study that used an instrumental variable to account for unobserved differences in case-mix and found private hospitals had longer length of stay (Anderson *et al.* 2024; Friebel *et al.* 2022). Keyhani *et al.* (2013) examined overuse of services in public (*i.e.* Veteran Administration (VA) hospitals) and private hospitals in the US, and found one study showing significantly higher rates of inappropriate surveillance endoscopy in VA hospitals, and two studies with non-significant findings (Keyhani *et al.* 2013). Fletcher *et al.* (2024) also included two studies on low-value care, one showing private hospitals reduced low-value services at a lower rate than public hospitals following implementation of a national disinvestment initiative (Anderson *et al.* 2023), and one showing private hospitals increased provision of privately funded low-value services following withdrawal of publicly funded care (Anderson 2023).

3.6. Workforce outcomes

Goodair and Reeves (2024) identified four studies that examined workforce implications following the privatisation of hospitals, with three studies showing decreased staffing levels, and one study showing employment conditions declined with more short-term contracts, higher workload, and more unequal pay between physicians and other workers (Goodair and Reeves 2024). Borsa *et al.* (2023) examined the impact of private equity ownership on staffing levels, such as the number of full-time equivalent staffing numbers per patient treated, and identified 12 studies, eight of which

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showed harmful impacts, three had mixed impacts, and one showed beneficial impacts (Borsa *et al.* 2023). Fletcher *et al.* (2024) synthesised findings from five qualitative studies on the workforce implications of private provision of publicly funded care in the United Kingdom (Fletcher *et al.* 2024), which emphasised potential negative consequences for physician training, misalignment of governance arrangements between public and private hospitals, and differences in contracting arrangement (such as the use of temporary contracts in private hospitals).

Comondore *et al.* (2009) provide a meta-analysis showing private NFP nursing homes were associated with higher staffing levels (Comondore *et al.* 2009). Bos *et al.* (2017) examined several workforce outcomes in private FP and NFP nursing homes (Bos *et al.* 2017). FP ownership was consistently associated with lower staffing levels in nine out of 11 studies, higher turnover rates in three out of four, and reduced job satisfaction in two. The remaining studies showed non-significant findings. Aloisio *et al.* (2021) identified two studies focused on private FP and NFP nursing homes, with reduced job satisfaction in private FP nursing homes in the US (Choi *et al.* 2012), and higher turnover intention in private FP nursing homes in Taiwan (Chen *et al.* 2015).

3.7. Financial performance

Shen *et al.* (2007) examined differences in financial performance between private FP and NFP hospitals in the US. They undertook a meta-regression of 40 studies focused on hospital costs, revenues, and profit margins (Shen *et al.* 2007). Results varied based on whether studies adjusted for a limited or broad range of confounding factors, applied log transformation to highly skewed expenditure data, and the sample size of studies. There was conflicting evidence on hospital costs, whereas the meta-regression favoured private FP hospitals when examining hospital revenues and profit margins. Currie *et al.* (2003) also found mixed evidence on ownership status and hospital costs (Currie *et al.* 2003). Borsa *et al.* (2023) identified five studies that examined the impact of private equity ownership on operator costs, with three studies finding reduced operator costs associated with private equity acquisition and two studies finding increased costs (Borsa *et al.* 2023). Akpinar *et al.* (2023) identified one study focused on operator costs in private and public cataract surgery providers in the Netherlands, showing lower costs in private providers (Kruse *et al.* 2019). There was limited evidence of the implications of the ownership status of nursing homes and financial performance. Bos *et al.* (2017) identified two studies demonstrating that private FP nursing homes had significantly higher profit margins (Bos *et al.* 2017).

4. Discussion

Ownership in healthcare systems across HICs differs widely, often including a mix of public and private, FP and NFP models. The implications on healthcare system performance are unclear, restricting policymakers' ability to effectively regulate healthcare models to enhance the quality of patient care and reduce costs. Evidence from our umbrella review shows that the relationship between hospital ownership and health outcomes was inconsistent, and varied depending on data source, health system context, and period analysed. In contrast, there was consistent evidence of higher mortality rates in private FP nursing homes than in private NFP nursing homes. There were mixed findings related to hospital ownership and patient safety indicators; however, the prevalence of certain adverse events was higher in private FP nursing homes than in private NFP counterparts. We found consistent evidence that hospital ownership was associated with worse patient satisfaction in the US, particularly with private equity ownership or acquisition. The evidence from Europe and Australia on hospital ownership and patient satisfaction was mixed.

Evidence existed on multiple dimensions of accessibility for hospital care but not for nursing homes, with private hospitals serving wealthier patients than public hospitals, and engaging in 'cream-skimming' to favour less complex and costly cases. Private hospitals also appeared to have shorter waiting times and charge higher payments for care to patients and payers. There was

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inconsistent evidence between hospital ownership and technical efficiency, although several reviews identified evidence that length of stay was generally shorter in private hospitals when compared to public hospitals, likely related to differences in patient case-mix. There was also limited evidence that the provision of low-value care was more prevalent in private rather than public hospitals. However, this literature often did not distinguish between FP private and NFP private ownership.

Privatisation and private equity ownership were associated with reduced staffing levels, higher workload, and lower job satisfaction. There was evidence that private FP nursing homes generally had lower staffing levels, higher turnover rates, and reduced job satisfaction than NFP providers. Private FP hospitals generally had higher revenues and profit margins, though evidence on hospital costs was mixed. Private equity ownership also had mixed effects on operator costs, which sometimes increased or reduced following private equity acquisition. There was limited evidence on nursing home ownership and financial performance, with existing studies, indicating that private FP nursing homes have higher profit margins.

4.1. Comparison with existing literature

We identified two previous umbrella reviews focused on the relationship between healthcare ownership and performance measures. Herrera *et al.* (2014) reviewed the performance of private FP, private NFP, and public healthcare providers. They identified nine systematic reviews (Herrera *et al.* 2014), and six focused on HICs with evidence predominantly from the US (Shen *et al.* 2007; Devereaux, Schünemann, *et al.* 2002; Eggleston *et al.* 2008; Devereaux, Choi, *et al.* 2002; Devereaux *et al.* 2004; Comondore *et al.* 2009). The review concluded that private FP providers tended to have worse outcomes than their NFP counterparts, but emphasised that limited comparisons between public and private healthcare providers existed. Bambra *et al.* (2014) examined how the organisation and financing of healthcare impacted equity of access (Bambra *et al.* 2014), and identified a review, rated as low-quality, which focused on how private hospital ownership impacts access to care (Braithwaite *et al.* 2011). This review described evidence indicating that the emergence of FP providers in the US contributed to reduced access to care for the poor and uninsured (Braithwaite *et al.* 2011).

Our umbrella review demonstrates that the evidence base has expanded considerably over the last ten years, with 20 reviews identified compared to six identified within Herrera *et al.* (2014). While most evidence in our review remained from the US, we found considerable evidence from Europe (including the United Kingdom, Germany, Italy, France, and the Netherlands), and Australia, suggesting that mixed public and private provision is of increasing interest to academics and funders in countries outside the US. Unsurprisingly, the evidence base on healthcare ownership and performance from countries outside the US was more heterogeneous, reflecting differences in health system organisation and financing arrangements.

4.2. Strengths and limitations

Our review provides a comprehensive synthesis of broad evidence from diverse sources to provide a concise overview of the implications of healthcare ownership across multiple dimensions of performance. However, there are several limitations to acknowledge when interpreting the findings. First, by adopting an umbrella review approach of existing reviews rather than analysing findings and quality of individual articles, we limited the scope of our work. We may have incorporated existing bias and restrictions inherent to previously published syntheses. However, we followed best practice by adopting the JBI guidelines for umbrella reviews to promote consistency and ensure the quality of our findings. Second, our review may have discounted more recently published evidence on this topic drawn from individual studies published beyond the search periods of identified systematic reviews. However, this is an unavoidable limitation

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inherent to any umbrella review as there is a time lag between when primary studies are published, when they are synthesised in systematic reviews, and when these systematic reviews are included in umbrella reviews. Third, we summarised findings from a broad range of systematic reviews and meta-analyses, and differences in methodologies, populations, and outcomes across studies may introduce inconsistencies and reduce comparability. We addressed this concern by adopting a comprehensive and transparent data extraction process and comparing and contrasting findings based upon sector, health system contexts, and performance measures analysed. Fourth, we excluded 10 reviews from data extraction and synthesis as they were rated low quality, though they may have provided additional insights. However, their scope and remit overlapped with many retained reviews, likely limiting the impact of their inclusion on our overall findings. Fifth, although many Eastern European countries are classified as HICs by the World Bank, we found no systematic reviews analysing these settings, which may limit the geographical representativeness of our findings. Sixth, differences in reimbursement mechanisms between public and private hospitals were not explicitly addressed in the included reviews. As payment systems may vary across and within countries, incentives for length of stay and efficiency may differ irrespective of ownership status. This may partly explain the heterogeneity of findings. Finally, there was overlap between systematic reviews included within our narrative synthesis. However, the extent of overlap was quantified as low using the CCA and not considered necessary to exclude any systematic review (Pieper *et al.* 2014).

4.3. Policy implications and directions for future research

While healthcare ownership and performance evidence were mixed for several measures, consistent relationships existed in specific contexts or sectors. These include higher mortality rates and adverse events in private FP than private NFP nursing homes (Bach-Mortensen *et al.* 2021; Comondore *et al.* 2009), lower patient satisfaction in private FP than private NFP hospitals in the US (Borsa *et al.* 2023; Mazurenko *et al.* 2017), evidence of selecting less costly and complex patients (*i.e.* cream-skimming) in private hospitals (Kruse *et al.* 2018; Akpinar *et al.* 2023), higher payments for care in private FP than in private NFP hospitals in the US (Borsa *et al.* 2023; Devereaux *et al.* 2004), and worse workforce outcomes in private FP than private NFP hospitals (Borsa *et al.* 2023; Goodair and Reeves 2024), and nursing homes (Aloisio *et al.* 2021; Comondore *et al.* 2009; Bos *et al.* 2017). To mitigate the possible negative implications of private FP providers, in comparison with public providers, policymakers, and regulators ought to adopt standardised measures that aim to ensure equity, quality, and accountability, while still allowing private providers to contribute to service delivery. These include measures that increase transparency, such as mandatory reporting of outcomes (Anderson *et al.* 2020), audits, and inspections, financial regulations such as risk-adjusted payment mechanisms to address cream-skimming, particularly when private providers serve publicly funded patients (Ellis and McGuire 1990), or more intrusive measures such as profit caps or higher payments for public providers (Mason 2010). Similarly, to address workforce-related concerns, regulators may consider introducing and enforcing measures such as minimum staffing ratios, training requirements, and parity clauses, particularly for private providers funded through public contracts.

There were noticeable gaps in our literature, including evidence related to ambulatory care and mental health settings. We identified limited evidence about ambulatory care, including one study on ambulatory care in Croatia (Hebrang *et al.* 2003), and one on ambulatory surgical clinics (Bruch *et al.* 2022). However, an increasing trend of private equity acquisitions of ambulatory care clinics in Germany, Ireland, the United Kingdom, Sweden, and the Netherlands has been described, which has not been subject to robust evaluation (Rechel *et al.* 2023; Tille 2023). There are also several countries with mixed public and private provision of mental health services (Younès *et al.* 2005; Bjørngaard *et al.* 2008; Leslie and Rosenheck 2000), and while we identified one review focused on mental health settings, this was rated as low-quality

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(Rosenau and Linder 2003). Therefore, there is a need for a high-quality synthesis of evidence related to potential comparative differences in quality of care and performance in this sector based on ownership status. More broadly, classification of private providers as FP or NFP was inconsistent within the evidence identified in our umbrella review. As the motivations and impact of incentives have been shown to vary significantly between private FP and NFP providers in many healthcare contexts (Herrera *et al.* 2014; Borsa *et al.* 2023; Kruse *et al.* 2019), it is important this distinction is consistently made when examining the implications of ownership models for health system performance.

5. Conclusion

This review provides a comprehensive synthesis of evidence related to the relationship between healthcare provider ownership and health system performance in HICs. While mixed evidence existed for several performance dimensions, we found more consistent evidence that private FP provision of healthcare negatively impacts patient outcomes, accessibility, and workforce. However, the variation in findings among other performance dimensions emphasises the need for a robust and effective regulatory system that examines the comparative performance of private FP, private NFP, and public healthcare providers.

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/S1744133125100315.

Acknowledgements. The authors are grateful to two anonymous referees for their helpful comments and suggestions on earlier drafts of the paper. We are also grateful to Associate Professor Rocco Friebel and Professor Iris Wallenburg for co-editing this special issue on privatisation in healthcare. Finally, we thank Professor Michael Sparer, Professor Lawrence Brown, and Associate Professor Miriam Laugesen for convening a meeting on privatisation in healthcare at Columbia University, where this paper and others in the special issue were presented and discussed.

Financial support. Dr M Anderson is funded by the National Institute of Health and Care Research (NIHR) as a Clinical Lecturer. Professor M Sutton is an NIHR senior investigator. Cornelia Henschke holds research grants that are unrelated to the topic of this study and received no specific funding for this work. Dr Rocco Friebel is a 2025-2026 Harkness Fellow based at Columbia University and Brown University, supported by the Commonwealth Fund. The views expressed are those of the authors and do not necessarily reflect those of the NIHR, the Department of Health and Social Care, the REAL Supply Research Unit, or the Commonwealth Fund.

Competing interests. The authors declare no relevant conflicts of interest.

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Cite this article: Anderson M, Wimmer S, Pittam B, Henschke C, Sutton M, Rapp T, Gutacker N and Friebel R (2025). The relationship between healthcare provider ownership and performance in high-income countries: An umbrella review. *Health Economics, Policy and Law* 1–23. https://doi.org/10.1017/S1744133125100315