BERGISCHE
UNIVERSITÄT
WUPPERTAL

CEO turnover in German hospitals: An analysis of the reasons and consequences

Inaugural Dissertation

In partial fulfillment of the requirement for the degree of

Doctor rerum oeconomicarum (Dr. rer. oec.)

Schumpeter School of Business and Economics

University of Wuppertal

by

Marius Hermes

Wuppertal, September 2025

Submitted to Prof. Dr. Stefan Bock, Chairman of the Doctoral Examination Board, Schumpeter School of Business and Economics, University of Wuppertal, in partial fulfillment of the requirements for the degree Doctor rerum oeconomicarum, in accordance with the examination regulations of 28 August 2019.

Dean

Prof. Dr. Nils Crasselt

Schumpeter School of Business and Economics

University of Wuppertal

First supervisor

Prof. Dr. Vera Winter

Chair of Healthcare Management

Schumpeter School of Business and Economics

University of Wuppertal

Second supervisor

Prof. Dr. Juliane Koeberlein-Neu

Center for Health Economics and Health Services Research

Schumpeter School of Business and Economics

University of Wuppertal

Author

Marius Hermes

Bembergstraße 1, 42103 Wuppertal

Matriculation number: 2253659

Mail: hermes@wiwi.uni-wuppertal.de

Contents

List of Figures

List of Tables

Chapter 1

General Introduction

1.1 Significance of chief executive officers and leadership succession

Chief Executive Officers (CEOs) hold the highest leadership position within organizations and shape their development and long-term viability. As the uppermost decision-makers, they bear responsibility not only for the strategic direction and sustainable economic success but also for the coordination and oversight of all core organizational processes. These include the formulating and implementing of corporate strategies, allocating resources, fostering innovation, compliance with legal requirements, and the cultivation of the organizational culture (Glick 2011; Porter and Nohria 2018). In addition, CEOs represent the company to investors, public authorities, and the broader public, thereby actively shaping the external perception of the organization's legitimacy (Love et al. 2017).

Given the broad range of responsibilities and extensive decision-making power of CEOs, CEO turnover represents a crucial moment in the life of any organization. The significance of such events is also reflected in their signaling effect. The mere announcement of a potential CEO turnover can provoke strong investor reactions, which are reflected in rising or falling share prices depending on the outcomes of the transition expected by investors (Gangloff et al. 2016; Gomulya et al. 2017; Tao and Zhao 2019).

From a theoretical perspective there are two diametrically opposed views on the effects of CEO turnover: the adaptive view and the disruptive view (Schepker et al. 2017).

Proponents of the adaptive perspective see CEO turnover as a strategic response to changing organizational needs – an opportunity for organizational renewal and adaptation. CEOs bring a unique combination of experience, skills, and personality to the organization (Hambrick 2007). These resources enable them to view existing situational circumstances from new perspectives, allowing new ideas to be developed and potentials to be exploited (Hambrick 2007; Haveman et al. 2001; Pfeffer and Salancik 1978). In addition, replacing the CEO can enable an organization to overcome existing technological, regulatory, or competitive challenges, as these place special demands on the organization and its management, which can be taken into account when filling the position in order to ensure a better fit between the organizational needs and the CEOs profile (Allgood and Farrell 2003).

By contrast, proponents of the disruptive perspective view CEO turnover as a destabilizing event that can harm organizational functioning and performance and thus stress the considerable risks associated with CEO turnover. New CEOs often strategically realign organizations, which may involve profound structural changes that can trigger uncertainty

and resistance within the organization, thereby weakening internal cohesion (Kim et al. 2021). The resulting instability can delay decision-making and hinder the implementation of urgently needed changes, which can have a negative impact on service delivery and economic performance (Friedman and Singh 1989; Grusky 1963). In the worst case, a downward spiral ("vicious cycle") of repeated turnovers and declining outcomes may be set into motion, which can culminate in organizational failure (Grusky 1963; Kim et al. 2021).

Given the potential impact of CEO turnover and the increase in the annual CEO turnover rates worldwide since the early 2000s (PWC 2019), scholarly attention to this topic has intensified. With a focus on firms in the general corporate sector, researchers from diverse disciplines have developed an extensive theoretical foundation, ranging from psychological concepts (e.g., the dynamics of power development) and classical management theories (e.g., agency theory) to new game-theoretic approaches (Berns and Klarner 2017; Cragun et al. 2016; Giambatista et al. 2005; Nyberg et al. 2021). Numerous drivers of CEO turnover have been identified, ranging from voluntary resignations due to personal reasons (e.g., health, career changes) to forced turnover prompted due to poor performance (Weil and Kimball 1995; Zhang 2008). Moreover, empirical studies show that CEO turnover can affect a wide array of important organizational outcomes, such as financial indicators and investment activities (Giambatista et al. 2005; Schepker et al. 2017; Shen and Cannella 2002). However, findings vary considerably in both the magnitude and the direction of the effects (Cragun et al. 2016; Nyberg et al. 2021).

Emerging evidence suggests that contextual conditions faced by organizations, such as industry performance, regulatory environments, and cultural logics, can explain variation in both the predictors and consequences of CEO turnover (Gomulya and Boeker 2016; Hearld et al. 2019; Jenter and Kanaan 2015; Li et al. 2017). This implies that the majority of insights derived from the corporate sector can not be generalized across different sectos, particularly to those characterized by a unique mix of regulatory requirements, dominant market logics, and complex relationships among market actors, as these factors shape not only the specific demands and responsibilities of CEOs but also the expectations of key stakeholders toward the organization and its leadership. Therefore, sector specific studies of the predictors and effects of CEO turnover are needed to develop a nuanced understanding of the phenomenon and to create a solid evidence base for decision-makers involved in CEO succession processes.

1.2 The leadership crisis in the hospital sector

Among sectors where CEO turnover may follow distinct patterns, the hospital sector stands out as particularly important and underexplored. The hospital sector exhibits three distinctive features that make it particularly interesting for examining the predictors and consequences of CEO turnover:

1) Relevance of CEO turnover in hospitals

Given the societal responsibility of hospitals as providers of inpatient medical care, CEO transitions in this sector carry exceptional weight. Organizational changes that often accompany strategic realignments following a CEO turnover do not merely affect financial performance, as in most corporate settings, but can also have serious implications for the scope and quality of medical care in a region. In extreme cases, destabilizing effects of excessive CEO turnover lead to financial distress, which can result in hospital closures (Alexander and Lee 1996; Lee and Alexander 1999), creating gaps in regional healthcare provision with severe consequences for patients (Mills et al. 2024).

2) Prevalence of CEO turnover in hospitals

Although hospitals depend on stable leadership to ensure the consistent delivery of high-quality care (Kaiser et al. 2020; Leggat and Balding 2019), few sectors experience comparably high annual CEO turnover rates as the hospital sector. For instance, in 2023 about 7% of CEOs in the financial sector and 9% in the technology sector of the S&P 1500 changed (SpencerStuart 2024), whereas the proportion in hospitals in the United States (US) was roughly twice as high (ACHE 2023). Similar or even higher rates of hospital CEO turnover have been reported in other OECD countries, including Australia, the United Kingdom, and Germany (BDO and DKI 2021; Janke et al. 2019; Mathew et al. 2024a). Germany ranks among the highest, with one in four hospitals experiencing CEO turnover annually between 2011 and 2021 (BDO and DKI 2021).

3) Distinctive structural characteristics of hospitals

Hospitals are expert organizations operating in an highly regulated environment. In addition to strict accreditation requirements and unique reimbursement mechanisms, they are subject to comprehensive quality standards as well as documentation and reporting obligations (Tiemann et al. 2012). These regulations affect nearly all aspects of service delivery, limiting managerial scope of actions and creating sector-specific challenges. In many

countries, such as Germany, hospitals are bound by standardized reimbursement (e.g., diagnosis-related groups) systems that rule out strategic price-setting (Quentin et al. 2010). Further restrictions include mandatory minimum nurse staffing ratios (Miedaner et al. 2025) and strict regulations on advertising (e.g., Medicines Advertising Law). Moreover, hospitals operate under diverse ownership types (public, private non-profit, private for-profit), which differ both structurally and in their inherently underlying institutional logics (Horwitz 2005; Jennings et al. 2019; Silvera et al. 2022). Hospitals are also part of the critical infrastructure and are legally obliged to ensure the provision of high-quality medical care (BBK 2025). This responsibility is especially demanding in light of ongoing regulatory efforts to reduce healthcare spending, which intensify financial pressures and force hospitals to maintain high quality of care under exceptionally tight economic constraints.

Despite the critical role of hospital CEOs and the far-reaching implications of their turnover, research on the predictors and consequences of CEO turnover in the hospital sector remains fragmented and methodologically inconsistent. Existing studies differ widely in design, analytical approach, and variables examined, raising concerns about the comparability and validity of findings. The lack of a comprehensive synthesis has further constrained the field's ability to derive generalizable insights and to inform evidence-based succession planning. These gaps are particularly problematic given the structural complexities and mounting external pressures hospitals face, which suggest that CEO turnover may follow distinct patterns and produce unique effects in this context. Against this backdrop, this dissertation seeks to advance understanding of hospital CEO turnover by (1) synthesizing the existing empirical literature, (2) examining its determinants through a mixed-methods design, and (3) empirically analyzing its organizational consequences.

1.3 Structure and outline

This dissertation comprises three studies that address different aspects of CEO turnover in hospitals and contribute to a more comprehensive understanding of the phenomenon. The first study presents a systematic literature review of the predictors and effects of hospital CEO turnover and serves as the starting point for the subsequent empirical analyses. Building on the research gaps identified in Study 1, the following two studies examine in depth the predictors of turnover using a convergent parallel mixed-methods design (Study 2) and the consequences of turnover using a quasi-experimental design (Study 3). The empirical studies draw on a combination of secondary and primary data from German

hospitals and their CEOs. The following section outlines the chapters and their respective studies.

Chapter 2 focuses on the predictors and consequences of hospital CEO turnover. The aim of this study is to consolidate the fragmented body of empirical evidence, assess the methodological quality of prior research, and provide a common foundation for understanding and scholarly advancing research on hospital CEO turnover. To this end, a comprehensive search algorithm was used to screen three electronic databases for relevant empirical studies published between 1980 and 2024. Out of 4,711 initial hits, 30 studies were included after subsequent title and abstract screening and full-text review. The included studies were evaluated for their methodological and reporting quality using a modified version of the Quality Assessment for Diverse Studies (QuADS) tool and then synthesized thematically. In total, 46 unique predictors of hospital CEO turnover were identified, including various organizational, environmental, and personal characteristics, as well as performance-related factors. The predictors varied in terms of how frequently they have been investigated and how consistently there association with CEO was found to be. With respect to the consequences of CEO turnover, effects were identified across nine outcome variables, which can be grouped into the categories of financial performance, quality of care, other organizational performance dimensions, and organizational activities. Although the evidence on outcomes remains limited, it suggests temporary declines in financial performance and an increased risk of organizational failure. The review provides a comprehensive overview of the current state of research for both scholars and practitioners, but also identifies several research gaps. Many predictors were examined only once, often relied solely on CEO self-reports, showed mixed results, or lacked insights into the underlying mechanisms. Regarding the outcomes of CEO turnover, robust causal evidence is scarce, non-financial performance indicators remain underexplored, and heterogeneity of effects has not yet been adequately investigated.

Chapter 3 investigates the predictors of hospital CEO turnover. The study seeks to deepen the understanding of the drivers and dynamics of CEO turnover, moving beyond prior research that typically analyzed isolated factors. It employs a convergent parallel mixed-methods design, combining a quantitative analysis of a large unbalanced panel dataset (754 hospitals and 1,049 CEO turnovers, 2012–2020) with a qualitative analysis of semi-structured interviews with 23 hospital CEOs, board members, and hospital consultants. In the quantitative analysis, a broad set of predictors was considered and their partial effects

estimated using multivariate regression models. To account for interdependencies among organizational and contextual characteristics, cluster analysis was conducted to identify distinct groups of hospitals with characteristic profiles and to assess differences in turnover rates across them. The qualitative data were coded and analyzed through a two-step deductive–inductive process, yielding deep insights into motivations and mechanisms underlying turnover. The results indicate that multiple predictors shape the likelihood of turnover. For example, poor performance, as measured by technical efficiency, patient satisfaction and financial success is associated with an increased probability of CEO turnover in the subsequent year. Additional findings highlight the role of various organizational, environmental, and individual characteristics, as well as the underlying mechanisms. The study shows that CEO turnover is less a matter of single factors than of the interplay among multiple predictors, whose configuration can either promote or prevent CEO turnover. By integrating quantitative and qualitative evidence, the study not only advances theory but also provides decision-makers with differentiated insights into the drivers of turnover and actionable knowledge to reduce unwanted CEO departures.

Chapter 4 examines the effects of CEO turnover in hospitals. The study aims to develop a more nuanced understanding of how CEO turnover affect multiple performance dimensions and how these effects are moderated by organizational and contextual contingencies. Using a difference-in-differences (DiD) approach, the analysis draws on a large unbalanced longitudinal dataset covering 1,019 German hospitals and 2,142 CEO turnover events between 2012 and 2020. Outcomes include hospital technical efficiency, financial performance, and patient satisfaction. To assess heterogeneity of effects, a triple-differences design was applied using hospital characteristics such as ownership type, size, and intensity of the regional competition. The findings show that CEO turnover is associated with temporary decreases in technical efficiency and patient satisfaction, both of which are moderated by contextual contingencies. For instance, efficiency losses were greater in hospitals located in rural areas and in those with frequent CEO turnovers. No consistent evidence was found for effects on financial performance. Overall, the results suggest that CEO turnover can lead to short-term disruptions in hospital performance. Given the moderate average impact, the study argues that future research should focus more strongly on the moderating effects of CEO characteristics and additional contextual factors. For practitioners, the findings imply that turnover should occur rarely, be accompanied by

systematic succession planning, and be managed carefully to avoid performance losses and organizational instability.

Chapter 5 synthesizes the key findings of the three studies and outlines their implications for both research and practice.

Chapter 2

Predictors and effects of hospital chief executive officer turnover: A systematic review

Joint work with Vera Winter and Eva-Maria Wild

Published as: Hermes, M., Winter, V., & Wild, E. M. (2025). Predictors and effects of hospital chief executive officer turnover: A systematic review. Health care management review, 50(3), 197-210.

2.1 Introduction

Chief executive officers (CEOs) hold the highest-ranking administrative position in organizations, representing them externally and bearing overall accountability for their economic success. The main responsibilities of a CEO are to develop and implement business strategies, lead the management team, shape organizational culture, and oversee business operations and regulatory compliance (Wilson and Stranahan 2000). Given the scope of a CEO's decisions and actions, CEO turnover constitutes a critical event often marked by profound organizational change (Nyberg et al. 2021).

Organizations frequently initiate CEO turnover in response to poor financial performance (Ballantine et al. 2008), viewing it as an opportunity for organizational turnaround (Eldenburg et al. 2004). Indeed, a new CEO can bring fresh perspectives, ideas, and skills essential for addressing current and future challenges, potentially steering the organization towards economic success (Berns and Klarner 2017; Haveman et al. 2001). However, CEO turnover also carries risks, including the possibility of radical shifts in strategy that may erode stakeholder trust, lead to conflict among employees, and increase turnover in other leadership positions, exacerbating the leadership vacuum (Khaliq et al. 2006; Mosadeghrad et al. 2013). Such dynamics can impair financial performance and amplify organizational instability, potentially leading to further CEO turnovers and creating a vicious cycle (Grusky 1963; Kim et al. 2021; Schepker et al. 2017).

Given the far-reaching implications of CEO turnover and its increasing rate worldwide in recent decades (PWC 2019), it is unsurprising that the topic has attracted considerable research attention. Several literature reviews have examined related theories, causes, and effects, with their findings emphasizing the role of contingencies and developing comprehensive frameworks (Berns and Klarner 2017; Nyberg et al. 2021; Schepker et al. 2017). None of these reviews, however, have focused on specific industries. This omission is particularly unfortunate in the case of the hospital industry, which represents a unique environment, making the findings from existing reviews less likely to be fully generalizable. Hospitals are complex, highly regulated organizations that provide a wide range of medical services, employ specialized staff across multiple disciplines, and operate under diverse ownership structures. They also face the challenge of maintaining high-quality care within economic constraints that are often exceptionally tight (Bertrand et al. 2005; Schneider et al. 2020).

These industry-specific differences are further evident in CEO turnover patterns, for which some evidence suggests that hospital CEOs may have shorter tenures compared to CEOs in other industries. For example, the average tenure of hospital CEOs in the US is approximately 5 years (Khaliq et al. 2006), which is considerably lower than the US average across all industries of 7 years (Korn Ferry 2020). In Germany, a recent study showed an annual turnover rate of approximately 25% among hospital CEOs from 2011 to 2021, with large variations in tenure lengths (BDO and DKI 2021).

Individual studies on hospital CEO turnover have attempted to take these unique characteristics into account, examining industry-specific factors such as community involvement, ownership type, and quality of care (Janke et al. 2019; Mathew et al. 2024a; Potter and Dowd 2003). Other studies have adapted theoretical explanatory models to reflect industry-specific factors (e.g., Weil and Kimball 1995), with their findings suggesting that CEO turnover patterns may vary based on industry dynamics.

Overall, studies that have investigated the predictors and effects of CEO turnover in the hospital industry, have varied widely in terms of their methods, variables, designs, and methodological quality, raising questions about the consistency and validity of their findings. Additionally, the lack of an overview of this research area has left the findings scattered across individual studies, making it more difficult for decision-makers to develop evidence-based strategies for succession planning. Our systematic literature review therefore aims to fill this gap by providing a comprehensive review of the empirical literature on the predictors and effects of CEO turnover in hospitals. In doing so, it will also assess the methodological quality of the identified studies to determine the reliability and validity of their findings. Such an assessment is crucial because most previous studies offer only limited scope for causal inference – a key requirement for evidence-based decision-making in managing CEO turnover in practice, and for furthering research in this area.

2.2 Theory and concept

CEO turnover is a complex event with far-reaching effects on the organization and its environment. Accordingly, researchers from various disciplines, including strategic management, organizational behavior, and finance, have examined this topic and applied a variety of theoretical approaches to categorize and explain its causes and effects (for an overview, see Giambatista et al. 2005). For example, theories such as resource dependence theory (Pfeffer and Salancik 1978), job match theory (Allgood and Farrell 2003), and

organizational life cycle theory (Cragun et al. 2016) conceptualize CEO turnover as an adaptive process that can help achieve a better fit between a CEO's profile and new demands triggered by changes in the organization or its environment. Other theoretical perspectives include the theory of relative standing and agency theory, which explain CEO dismissals as a punitive response to poor financial performance (Bilgili et al. 2017). In contrast, scapegoat theory posits that financial performance is beyond CEOs' control and their dismissal primarily serves to appease shareholders (Rowe et al. 2005). Lastly, the circulation of power theory suggests that the influence a CEO wields within an organization diminishes with increasing tenure and age, thereby increasing the likelihood of turnover (Ocasio 1994).

Regarding the effects of CEO turnover, common sense theory suggests that new CEOs bring fresh perspectives and abilities to the organization, leading to a positive impact on performance (Giambatista et al. 2005). Conversely, CEO turnover can also cause major disruptions in the organization, which, according to the theory of the vicious cycle, can trigger a downward spiral of organizational instability, poor performance, and further CEO turnover (Grusky 1963; Kim et al. 2021; Schepker et al. 2017).

Beyond the general direction of the determinants and effects of CEO turnover, theories have also been applied to make more differentiated explanations. For example, upper echelons theory has been used to explain differences in the strategic actions and outcomes of CEO turnover based on the individual characteristics of the CEO (Hambrick 2007). In turn, contingency theory has been drawn upon to posit that there are a variety of situational factors that influence both the causes and consequences of CEO turnover (Giambatista et al. 2005).

Overall, CEO turnover theories can be described as fragmented and ambiguous. Many are used to explain different types of relationships, and some even contradict each other regarding cause-and-effect mechanisms. However, the prevailing view in recent years is that most of the theories are valid in their respective contexts (Giambatista et al. 2005; Schepker et al. 2017). As a conceptual framework for this study, we followed Berns & Klarner (2017) and posit broadly that:

1) there are various predictors of hospital CEO turnover, which can be subsumed under the categories of environment, organization, and personal characteristics of the CEOs,
2) the outcomes of hospital CEO turnover are the result of strategic choices (reflecting, in particular, changes of strategy) and hospital performance,

3) the links between predictors and CEO turnover and between CEO turnover-and outcomes are subject to contingencies, which again comprise factors related to the environment, the organization, and the personal characteristics of the CEOs.

2.3 Methods

2.3.1 Design

Our systematic review followed the guidelines set out in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. The PRISMA statement includes a 27-item checklist, which is designed to ensure transparent, complete, and accurate reporting in systematic reviews (Page et al. 2021).

2.3.2 Search strategy

We developed the following algorithm-based search strategy, which included several keywords and synonyms derived from existing reviews of the literature on executive turnover and succession (Berns and Klarner 2017; Nyberg et al. 2021), but with additional minor adjustments for the hospital sector: (“ceo” OR “chief executive” OR “executive director”) AND (turnover OR succession OR change OR dismiss* OR replac* OR transition OR appoint* OR terminat* OR quit* OR leav* OR retention OR tenure) AND (hospital OR “medical center” OR “medical facilit*” OR “health* system” OR “health* facilit*” OR “health* center” OR “secondary care” OR “tertiary care” OR “care facilit*” OR “care center”). We subsequently used the algorithm to search titles, abstracts, keywords and related concepts via EBSCOhost in the following databases: Business Source Premier, APA PsychINFO, and MEDLINE. The search was conducted on September 13, 2024. Lastly, we conducted backward-looking and forward-looking citation searches of included publications using Google Scholar on September 16, 2024.

2.3.4 Eligibility criteria

Our review only included publications if they met all of the following inclusion criteria:

a) Publication type: Publications had to be research articles published in peer-reviewed journals in order to ensure a minimum level of methodological quality.

b) Language and year of publication: The articles had to be published in English between 1980 and 2024. We chose this period because the early 1980s marked the beginning of research on hospital CEO turnover (Dwore and Murray 1996).

c) Thematic relevance*:* Articles had to explore the predictors or effects of CEO turnover in hospitals.

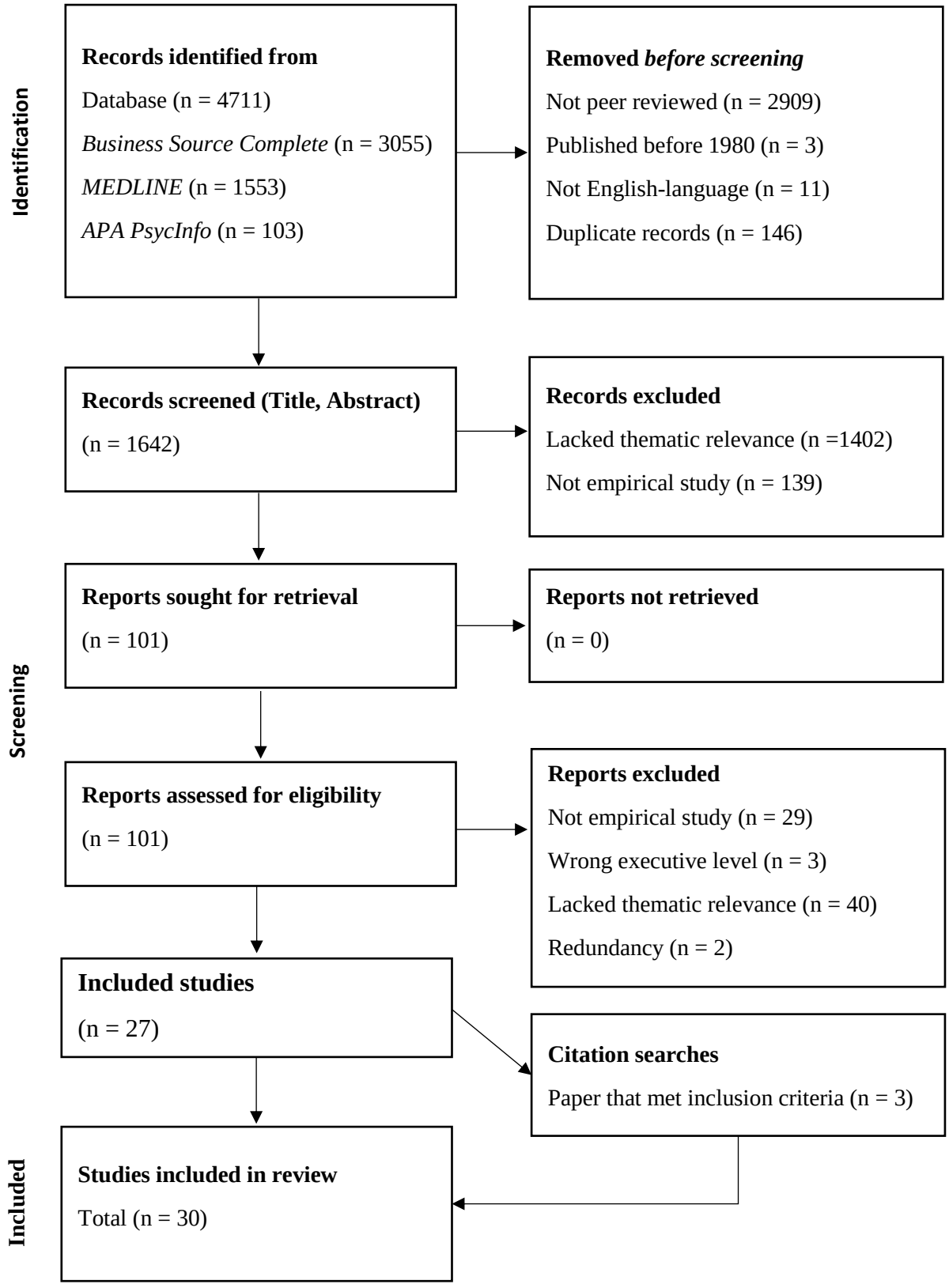
d) Study design: Articles had to report the results of quantitative empirical studies or qualitative empirical studies. We excluded commentaries, reviews, and theoretical analyses in order to focus exclusively on empirical results.

e) Study population: To ensure that our analysis focused on the relevant population, articles had to report the results of studies whose sample consisted of secondary data from hospitals (of any type and ownership) or data from surveys or qualitative interviews of hospital CEOs. These could also include articles reporting the results of intersectoral studies that analyzed hospitals or hospital CEOs in one or more subsamples.

2.3.5 Study selection

Study selection followed a three-stage process as seen in Figure 1. First, the bibliographic information from the records identified in the algorithm-based search was screened to determine whether the records met the inclusion criteria related to publication type, language, and year of publication. Second, the remaining titles and abstracts were evaluated for thematic relevance, study design, and study population. Third, full-text reports of the remaining records were sought for retrieval and assessed for eligibility. The three stages were performed independently by two of the authors (MH and VW). At regular intervals during each stage, disagreements were discussed and resolved bilaterally through discussion.

Figure 1 PRISMA flow chart of study selection



In total, the systematic literature search yielded 4711 records. Out of these, 3069 were excluded in the first stage and an additional 1541 records were excluded in the subsequent title and abstract screening. The remaining 101 records were retrieved and screened as full-text reports. Among these, 74 were eliminated because they lacked an empirical approach (n = 29), lacked thematic relevance (n = 40), focused on other executive levels (e.g., ward management, CNO) (n = 3), or were redundant (n = 2) because they analyzed a subsample of a sample in other identified articles and did not generate additional findings relevant to this review (see Appendix, Table A1).

In addition, the backward and forward citation searches identified two peer-reviewed articles that met our inclusion criteria. These searches also identified one recent working paper that met all of our inclusion criteria apart from the requirement to be peer-reviewed. After thoroughly reviewing the methodological quality of the paper using the Quality Assessment for Diverse Studies (QuADS) tool developed by Harrison et al. (2021) and determining it to be of high quality, the two authors conducting the search mutually agreed to include it. Therefore, a total of 30 articles were ultimately included in the review, each of which reported the results of one study.

2.3.6 Data extraction

We designed a data extraction sheet in Microsoft Excel®, which two authors (MH & VW) used to extract data independently from the included studies. Extracted data were compared at regular intervals to ensure accuracy, with any discrepancies being resolved bilaterally through discussion. The following data were extracted: author names, publication year, data (type and sources), study design and analyses (type and methods), setting (country, observation period, number of hospitals or CEOs), theories used to explain hypothesized or identified relationships between predictors, contingencies and effects and CEO turnover, and the main results regarding the predictors and effects of hospital CEO turnover. The type of data extracted for the main results varied by study type: In the case of quantitative inferential studies examining secondary data from hospitals, the direction of coefficients and statistical significance were extracted. For quantitative descriptive studies involving surveys of hospital CEOs, information on the frequency of the three most frequent responses was extracted. For qualitative studies involving interviews of hospital CEOs, information on the frequency of responses was extracted or, if no aggregated information was available, a condensed summary of the main findings was created and recorded in the extraction sheet.

In instances where data were not reported, we made estimates where feasible. For example, in some studies, we estimated the number of CEO turnovers using the number of observed hospitals and information on turnover rates (e.g., Weil 1990). See Table A1 in the Appendix for a comprehensive summary of the extracted data.

2.3.7 Data synthesis

After data extraction was completed, two of the authors (MH & VW) jointly categorized the predictors of CEO turnover reported in the quantitative inferential studies through a three-step process. First, they deductively derived four thematic blocks of factors that have been recognized as predictors of CEO turnover in previous research (Berns and Klarner 2017). These comprise organizational, environmental, and personal characteristics of the CEO, as well as characteristics related to the hospital's prior performance. Prior performance was extracted as a distinct dimension from the organizational characteristics due to its dynamic nature and its particular relevance to CEO turnover, as reported in the literature (e.g. Eldenburg et al. 2004; Mathew et al. 2024b). In the second step, all identified predictors were assigned to one of the thematic blocks. In the third step, the authors developed subcategories for the predictors in each thematic block based on thematic similarity using an inductive, iterative process. This final step was performed by each of the authors individually. Subsequently, the subcategories and assigned predictors were compared, with any discrepancies being resolved bilaterally through discussion.

The two authors also categorized the effects of CEO turnover that had been reported in the included studies. Almost all of the quantitative inferential studies focused on the effects of CEO turnover on hospital performance. Following the same procedure as that used to categorize the predictors of CEO turnover, the following categories were formed: financial performance, quality of care, and other organizational performance measures such as the number of day cases and staff satisfaction. Furthermore, based on the results of the quantitative descriptive and the qualitative studies, the two categories “organizational activities” and “competitor behavior” were added.

2.3.8 Quality assessment

We assessed the methodological and reporting quality of the included studies using a modified version of the QuADS tool originally developed by Harrison et al. (2021). Because a large proportion of the studies used secondary data, we made some modifications to the

assessment criteria. For example, we did not assess the extent to which the studies reported stakeholder involvement in the development and conduct of the studies, as this would be unusual for studies based on secondary data. Our adapted scale comprised 11 criteria grouped into four dimensions, as follows: Concept and design of the study (items 1-4), transparency of methodological procedures (items 5-7), methodological appropriateness (items 8-10), and limitations (item 11). The final assessment template can be found in Table A2 in the Appendix. For each criterion, studies were assigned a score between 0 and 3, with a 3 indicating the highest quality ranking.

The methodological and reporting quality of each study was assessed independently by two of the authors (MH & VW). Disagreements in the assessment were discussed and resolved bilaterally through discussion. Based on its total score, each study was grouped into one of the following three categories to provide a basic indication of overall quality: low (score < 60%), moderate (score ≥ 60% but ≤ 80%), and high (score > 80%). When reporting the results of our systematic review, we emphasize the results of studies with high quality ratings but do not exclude studies with low quality ratings because these also provide important insights and excluding them would contradict the concept of QuADS (Harrison et al. 2021).

2.4 Results

2.4.1 Characteristics of the included studies

Table 1 summarizes the characteristics of the 30 studies included in our systematic review. The majority of studies were published before 2000 (n=12) or in the early 2000s (n=11), whereas only seven studies were published between 2011 and September 2024. Thirteen of the studies were published in journals related to healthcare management and healthcare administration. The remaining studies were published in journals with a different focus, such as hospital and medicine (n=6), general management (n=7), and other (n=3).

Overall, most studies analyzed secondary data (n=18) and had a longitudinal design (n=18). Most of the studies used data from the United States (US) (n=24). Of the remaining six studies, two used data from the United Kingdom (UK), two used data from Iran, and two used data from Australia. In terms of their research focus, 16 of the studies focused on predictors, eight on effects, and six on both. With regard to study type, the included studies were dominated by quantitative inferential approaches (n=19), followed by quantitative

descriptive (n=8) and qualitative approaches (n=3). Among these, nineteen studies used inferential analyses. The remaining 11 studies relied solely on descriptive methods, reporting the distribution of responses.

Regarding methods of analysis, two of the quantitative inferential studies used basic methods, such as Pearson chi-square or ANOVA, to analyze variation in their data. The remaining 17 studies estimated the predictors and effects with regression models, comprising studies that used basic regression models (n=10), including ordinary least squares, logit or probit regressions with or without lagged independent variables, and studies that used sophisticated analytic methods (n=7), such as difference-in-differences estimators, survival estimators, or regression models with fixed or random effects following a matching approach.

The distribution of analytical methods differed by research topic. For instance, with the exception of one survival analysis and one random effects regression, studies on predictors of CEO turnover exclusively used analysis of variance and basic regressions, which were dominated by logistic regressions with lagged independent variables. In contrast, studies dealing with the effects of CEO turnover (n=8) or with both predictors and effects (n=6) comprised seven of the eleven non-inferential studies. They also accounted for five of the seven studies that used sophisticated analytic methods, including two survival analyses, two quasi-experiments with matching, and one multiple regression on pooled time series data.

Six of the quantitative descriptive studies involved surveys of hospital CEOs, whereas three of the qualitative studies involved semi-structured or structured interviews of hospital CEOs. These nine studies were dominated by frequency tables presenting data from responses to closed-ended or open-ended questions (with grouped similar responses).

Table 1 Characteristics of hospital CEO turnover literature

Literature Characteristics	# of Articles	% of Articles
Publication Period		
1987-1999	12	40%
2000-2010	11	37%
2011-2024	7	23%
Journal Type*		
Healthcare Management and Healthcare Administration	13	45%
Hospital or Medical	6	21%
General Management (inc. Finance, Administration, Organizational Behavior)	7	24%
Socioecological, Law & Labor Economics	3	10%
Data Source		
Mixed	2	7%
Secondary Data	18	60%
Primary Data	10	33%
• *Survey*	*6*	
• *Interview*	*3*	
• *Mixed*	*1*	
Country		
United States	24	80%
Other countries	6	20%
Research Design		
Longitudinal	18	60%
Cross-Sectional	12	40%
Research Type & Method of Analysis		
Descriptive	11	37%
• *Quantitative descriptive (e.g. Number and Distribution of Responses)*	*8*	
• *Qualitative descriptive (e.g. Responses of Interviewees)*	*3*	
Analytical	19	63%
• *Analysis of Variance and Hypothesis Tests (e.g. Pearson Chi-Square)*	*2*	
• *Basic (Multiple) Regression Models (e.g., Linear or Logistic or Probit Regression)*	*10*	
• *Elaborate Regression Models (e.g., DiD-Estimator, Survival-Estimators, Fixed or Random Effects, Matching)*	*7*	
Content		
Predictors	16	53%
Effects	8	27%
Both	6	20%

*The working paper was not included in this element.

2.4.2 Quality assessment

An overview of the quality assessment for each study with respect to each criterion and the overall rating is presented in the Table A2 in the Appendix. In terms of overall methodological and reporting quality, we rated ten of the included studies as low, 14 as moderate, and six as high. The average total quality score was 21.2 out of a maximum of 33, which was in the lower range of a moderate rating. The studies received an average of 1.9 points per item across all dimensions. Regarding the concept and design of the studies, the studies performed well in reporting the theoretical or conceptual underpinning of the research and the statement of research aims, as well as in choosing an appropriate study design, with an average rating of 2.2 in this dimension. Quantitative descriptive and qualitative studies were rated below average because the research aims were often only briefly stated without providing a theoretical grounding or adequately explaining the current state of research (e.g., Dwore and Murray 1996; Wilson and Meadors 1990). With an average score of 2.1, the studies scored well in terms of the transparency of their methodological procedures. Within this dimension, the studies scored lowest with regard to describing the data collection procedure, receiving an average of 1.8 points. Regarding the appropriateness of the methodology, the included studies achieved a modest average score of 1.8. In studies using secondary data, the representativeness of the sample was, in most cases, insufficiently addressed or not discussed at all. In general, the quality of reporting increased with the complexity of the analysis methods used. Finally, the included studies performed worst in critically addressing their own limitations, with an average score of 0.8.

2.4.3 Theoretical and conceptional frameworks of hospital CEO turnover

The included studies varied substantially in the extent to which they drew upon theoretical and conceptual frameworks, as well as in the specific theoretical and conceptual frameworks they applied (if any). Thirteen of the included studies did not draw on any theory. Two studies that examined both the predictors and effects of CEO turnover considered theoretical frameworks only for predictor or only for effects. Seven studies based their rationale on key terms closely linked to theoretical concepts (e.g., agency costs) without explicitly referring to the corresponding theories. Eight studies provided explicit theoretical foundations for the relationships examined.

The diversity of theories used and their content is comparable to that of studies on the causes and effects of CEO turnover in the general management literature. However, institutional theories were considered somewhat more frequently in the studies included in our systematic review, probably due to the unique set of ownership types in the hospital sector. For an overview of the relationships examined and the theories applied to them, see Table A1 in the Appendix.

Theoretical explanations for the reasons of CEO turnover

Of the 22 studies investigating predictors of CEO turnover, 10 provided theoretical explanations for the observed relationships. Institutional theories were applied in four studies, and agency theory and organizational life cycle theory were each applied in two studies. The remaining two studies focused their theoretical considerations on a model of voluntary turnover and the resource-based view. As some studies examined multiple predictors, the punctuated equilibrium model, person-organisation fit theory and leadership instability theory were each used once to explain additional predictors of CEO turnover. Interestingly, the studies also varied in terms of whether they reported hypotheses or expectations regarding the impact of the investigated predictors on CEO turnover. Eight studies (36%) did not make any predictions; rather, they analyzed or derived a set of variables without an a priori assumption about whether these variables would increase or decrease CEO turnover. Twelve studies (55%) predicted the direction of effects for all of their predictors, whereas two further studies predicted the direction of effects but only for a subset of variables (e.g., Eldenburg et al. formulated predictions for their focal variables but not for their control variables). In general, studies the drew on specific theories more frequently provided directional predictions for relationships.

Theoretical explanations for the effects of CEO turnover

Of the 14 studies investigating effects of CEO turnover in hospitals, eight referred to theories to explain the observed relationships. Two of these studies were based on the theory of leadership instability and two on the resource-based view. The remaining studies drew upon organizational ecology theory, the manager socialization model, the strategic collaborative quality management model, and the new public management theory in their assumptions. As a second theory, one of the studies referred to the person organisation fit theory. Ten studies (71%) reported expectations about the effects of CEO turnover. Among these, three assumed that CEO turnover would have beneficial effects, whereas six expected effects to be detrimental and one hypothesized that the effect would be either negative or

positive depending on the time frame considered. Interestingly, six of the studies that only investigated predictors also elaborated on the potential effects of CEO turnover; of these studies, two assumed CEO turnover would have detrimental consequences, and four provided arguments for why CEO turnover might have detrimental or beneficial effects.

2.4.4 Predictors of hospital CEO turnover

The included quantitative inferential studies examined a total of 78 unique predictors of hospital CEO turnover, of which 46 were statistically significant. We assigned each of the 78 unique predictors to one of four thematic blocks and then created 22 subcategories (see Data synthesis). These subcategories were distributed among the thematic blocks as follows: organizational characteristics (10), prior hospital performance (3), personal characteristics (5), and environmental characteristics (4). Only the most frequently investigated and relevant predictors are discussed here because predictors examined in only a single study lack sufficient evidence of consistency across studies to be considered robust. For the sake of transparency, a complete list of the predictors investigated, including their categorization, references and supplemental information, is provided in the Table A3 in the Appendix for quantitative inferential studies and in Table A4 in the Appendix for quantitative descriptive and qualitative studies. We summarize the results for each of the thematic blocks in the following subsections. When doing so, we first report the result of the quantitative studies that used statistical inference to analyze the relationships and subsequently complement each result, where feasible, with findings from the quantitative descriptive and qualitative studies.

Organizational characteristics

Organizational characteristics were the most frequently examined predictors of CEO turnover, with 10 such characteristics being analyzed in 14 quantitative inferential studies. Starting with hospital size, a consistent picture emerged. CEO turnover occurred significantly less often in larger hospitals, measured in terms of the number of beds, total assets, or the number of admissions. Hospitals that were members of a hospital system or hospital network had higher CEO turnover rates than free-standing hospitals. A higher probability of CEO turnover was also found for hospitals that had either recently joined a hospital system or had been members of a system for a long time. Concerning hospital ownership, a range of studies found that the frequency of hospital CEO turnover varied according to ownership type. The studies consistently showed that CEO turnover occurred

most frequently in for-profit hospitals compared to nonprofit or public hospitals. With regard to the other forms of ownership, a higher frequency of CEO turnover in public hospitals than in nonprofit hospitals was not consistently identified. Furthermore, it appears that changes in ownership increased the likelihood of CEO turnover.

The available evidence suggests that being a teaching hospital does not have a significant effect on the likelihood of CEO turnover. Two out of four studies showed lower CEO turnover, but the results were only significant at an alpha level of 0.10 and varied by the type of teaching hospital. As for other organization-specific predictors, one study found a positive relationship between both the number of services offered and the service usage intensity and CEO turnover, whereas other studies found no significant relationship for either. Furthermore, it was found that older hospitals had a higher probability of CEO turnover, while hospital accreditation and the circumstances surrounding the previous CEO turnover did not serve as predictors of CEO turnover. Additionally, there were conflicting results regarding the impact of time since the last turnover. Alexander et al. (1993) found that some characteristics of the board of directors or the board-CEO relationship – including CEO power and influence over the board, and board size and heterogeneity – significantly related to CEO turnover. This relationship is supported by a number of survey and interview studies which suggest that a poor working atmosphere and existing conflicts between the board and the CEO are major reasons for the change of CEO.

Prior hospital performance

In terms of prior performance, six studies found that weak financial performance was associated with increased hospital CEO turnover. This was also stated by CEOs and board members in various survey and interview studies as one of the most frequent reasons for CEO turnover. However, the relevance of finance-related predictors seemed to vary depending on hospital type. For example, the sensitivity of CEO turnover to performance was found to be at least as strong in nonprofit as in for-profit hospitals (Brickley and van Horn 2002), but was lowest in public hospitals. Additional differences between hospital types were found by Eldenburg et al. (2004). For instance, they showed a lack of significance for the negative relationship between excess profit margin and CEO turnover in church-owned hospitals, as well as for the positive relationship between high administrative costs and CEO turnover in nonprofit and government hospitals. In terms of organizational performance, the likelihood of CEO turnover was higher when the hospitals were in an unstable or declining stage of their life cycle, had a poor multidimensional

performance rating or a low occupancy rate, as investigated in five studies. Furthermore, two studies looked at altruistic performance measures, such as the nurse-to-patient ratio and the level of uncompensated care provided, as predictors of CEO turnover, but found no statistical correlation.

Personal characteristics

Personal characteristics as potential predictors of CEO turnover were examined in five of the included quantitative inferential studies and can be summarized as follows. First, three studies investigated CEO age and tenure, pointing to an inverse U-shaped relationship between age and the probability of CEO turnover. In addition to age, some evidence suggests that gender plays a role. Wilson and Stranahan (2000) found that CEO turnover was significantly more common among female than male CEOs, albeit only in large hospitals. Three other personal characteristics – job satisfaction, education, and life situation – were analyzed, each in one study only. Other personal characteristics related to work that were frequently cited in surveys and interviews included a lack of career opportunities and feelings of isolation or lack of support, both of which are probably related to job satisfaction.

Environmental characteristics

Environmental characteristics include the overall socioeconomic context in which a hospital operates. A number of studies examined differences in the incidence of CEO turnover by geographic location, the degree of urbanization and the intensity of competition, yielding mixed results. Four studies examined the relationship between CEO turnover and regulatory changes. Although certain regulatory changes in the US, such as the New Charity Period or the Affordable Care Act, led to periods of higher CEO turnover rates, Haveman et al. (2001) could not find a systematic relationship between regulatory changes and CEO turnover. In terms of the regional socioeconomic environment, hospital CEO turnover was found to be more likely to occur in areas with shortages of health professionals or a high share of minority residents. Additionally, dissatisfaction with cultural offerings and lifestyle in a particular area or conflicts with the local community were frequently stated as reasons for CEO turnover.

2.4.5 Effects of hospital CEO turnover

In total, 15 studies examined the effects of CEO turnover. We present the results of the quantitative inferential studies in Table A3 in the Appendix and the results of studies using descriptive methodologies in Table A4 in the Appendix. In the case of the quantitative inferential studies, we classified the effects into four groups: financial performance, quality of care, other organizational performance measures, and organizational activities. In the case of the qualitative and quantitative descriptive studies, we added the category of competitor behavior. For each potential effect, we first report the results of the quantitative inferential studies and then complement these with insights from the qualitative and purely descriptive studies. Where applicable, we additionally highlight the results of the studies with the most sophisticated analytic approaches because these come closest to providing causal evidence on the effects of CEO turnover.

Most studies considered the financial impact of CEO turnover, yielding mixed results. The studies with the highest quality scores reported negative effects on financial performance. For example, Ford et al. (2018) showed in their quasi-experimental study that hospital CEO turnover led to short-term productivity losses (cost efficiency). In addition, they found that outsider CEOs were able to close the performance gap on average one year after taking office, whereas this was not demonstrated for insider successors. Two other longitudinal studies showed in their survival analysis a relationship between hospital CEO turnover and hospital closure. In contrast, Janke et al. (2019) found no association between CEO turnover and the so-called retained surplus of National Health Service (NHS) hospitals in England, and Haveman et al. (2001) showed that CEO succession following regulatory change had an effect on the operating margin that was positive but diminished over time. In addition, the majority of CEOs stated in surveys that their hospitals' profitability and revenues had improved since their arrival. Yet, in the study of Leibert and Leaming (2010), financial performance was among the top three most frequently mentioned negative impacts of CEO turnover, with 35% agreement.

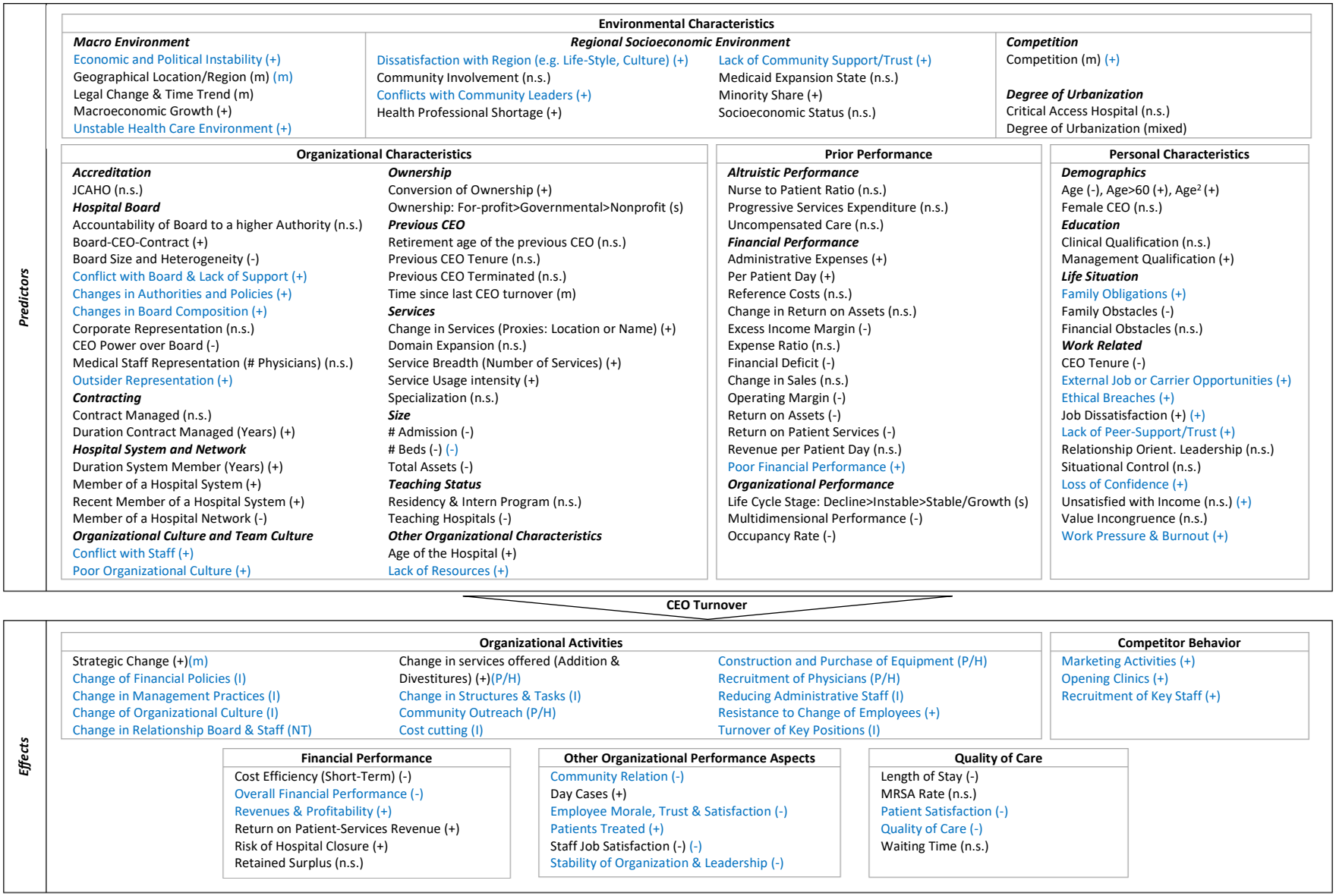
Apart from a slight deterioration in the length of stay, which was inconsistent, and one study that concluded that patient satisfaction decreased as a result of several CEO turnovers, no effect of CEO turnover on the quality of care was found in the included quantitative inferential studies. However, some CEOs reported negative effects on quality of care in an interview study (Mathew et al. 2024a).

Regarding other organizational performance aspects, Janke et al. (2019) detected a positive effect of CEO turnover on the number of day cases and a negative effect on staff job satisfaction. However, while the study is of high methodological quality, its results stem from different models (non-/parametric) and the authors advise caution in interpreting the results. Yet, various qualitative and quantitative descriptive studies found comparable results.

With respect to organizational activities as a result of CEO turnover, Mick et al. (1993) found a positive effect on strategic changes, such as entry into hospital systems, networks, sale, or hospital restructuring. Consistent with this, Goodstein and Boeker (1991) found that CEO turnover leads to to changes in the range of services provided, including the addition and divestiture of services. The qualitative and quantitative descriptive studies pointed to increases in the number of cases treated (Dworkin et al. 2010), while statements about strategic activities were contradictory. For instance, some studies suggested that strategic planning and action were initiated after CEO turnover, whereas other studies suggested that these activities were halted or postponed. In the descriptive studies, additional organizational and operational changes triggered by CEO turnover were mentioned. These included changes in organizational culture, the leadership style, as well as restructuring and the turnover of key personnel, such as Chief Nurse Officers (Freund 1987). Furthermore, Kaliq et al. (2006) investigated whether CEO turnovers affected competitor behavior and detected increases in marketing activities, the opening of new clinics and the recruitment of key employees.

An overview of the empirical results regarding the direction of the coefficients of all considered predictors and effects of CEO turnover can be found in Figure 2.

Figure 2 Comprehensive framework for hospital CEO transition literature



Note: Majority of quantitative inferential studies find a (+) positive significant relationship; (-) negative significant relationship; (m) mixed significant relationship; (n.s.) non-significant relationships; (s) significant relationship; Majority of qualitative and quantitative descriptive studies find a (+) positive relationship; (-) negative Relationship; (m) mixed relationship; (IN) initiated; (NT) no tendency; (P/H) postponed/halted.

2.5 Discussion

We conducted a systematic literature review with the aim of providing a comprehensive overview of the predictors and effects of hospital CEO turnover and assessing the methodological quality of existing research to determine the reliability and validity of its findings. In the following section, we discuss and interpret our main findings, starting with the predictors.

Predictors of hospital CEO turnover

We compiled a comprehensive list of 46 unique and statistically significant predictors of CEO turnover, as identified in quantitative inferential studies included in our systematic review. These predictors fell into four broad categories: organizational, environmental, personal characteristics, and prior performance. For the sake of parsimony and robustness, we focus in our discussion on the most frequently examined predictors.

The evidence from our review suggests that organizational predictors play an important role in CEO turnover. For example, smaller hospitals are more likely to have higher CEO turnover rates, a finding that might be attributable to a common career trajectory of hospital CEOs, who often start in smaller facilities and progress to larger ones (Hearld et al. 2019). Furthermore, CEO turnover is more likely to occur in hospitals after major organizational changes like joining a hospital system, ownership changes, or shifts in the mix of services provided. Such situational changes may lead to a reassessment of CEO profile requirements, presenting an opportunity to identify a CEO whose skills align more closely with the organization's needs (Allgood and Farrell 2003; Haveman et al. 2001). Additionally, CEO turnover rates are higher in for-profit hospitals compared to nonprofit or public hospitals. One reason for this might be the clearer, more quantifiable goals of profitability in for-profit hospitals, contrasting with the multiple, less specific goals in nonprofit and public institutions. This clarity makes it easier to evaluate CEO performance in for-profit hospitals (Potter and Dowd 2003). In addition, the focus on short-term performance targets in for-profit hospitals, driven by shareholder interests, may cause managers to prioritize immediate value creation at the expense of sustainability and long-term value creation strategies (Haessler 2020). This approach could influence CEO turnover in these hospitals by incentivizing CEOs to leave voluntarily while the financials are still favorable to avoid

reputational damage later when the lack of sustainability becomes apparent (Garay et al. 2007).

Furthermore, we found that hospitals with poor performance metrics, such as low occupancy rates or poor financials, were more likely to undergo CEO turnover in the following years. Poor performance and the failure to meet organizational goals are presumably two of the most frequent reasons for forced CEO turnover in any type of hospital (Brickley and van Horn 2002; Eldenburg et al. 2004). This could be due to the pursuit of a better-fitting CEO who can provide new impulses and commit to major changes (Allgood and Farrell 2003; Haveman et al. 2001; Mick et al. 1993).

In terms of environmental characteristics, we found mixed evidence of a relationship between regulatory change and CEO turnover, suggesting that the impact of regulatory changes on the likelihood of CEO turnover is highly dependent on the specific regulation and cannot be generalized. There is also mixed evidence for the relationship between competition or the degree of urbanization in a hospital's region and CEO turnover. It appears that competition may play a secondary role compared to internal challenges that can pose an acute threat to a hospital's survival, such as the pressure to reduce costs and improve efficiency due to tight refinancing (Cantor and Poh 2017) or difficulties in recruiting and retaining qualified staff (Chan et al. 2013). With regard to the degree of urbanization, in contrast to studies from the 1990s (e.g. Weil and Timmerberg 1990), the most recent studies suggest that there is a higher probability of CEO turnover in rural areas. This may be due to the structural decline observed in many rural areas in high-income countries and the progressive closure of rural hospitals (Kaufman et al. 2016). Structural decline, in turn, might lead to an increasing number of young professionals and managers moving to urban areas, where they have better career prospects and a more diverse range of leisure activities (Hart et al. 1993; Manshadi et al. 2022).

Regarding CEOs' personal characteristics the studies identified a U-shaped relationship between age and CEO turnover. This phenomenon could be due to the frequent job changes common in the early stages of a professional's career, which decrease as experience and professional development increase (Ng and Feldman 2009). However, turnover tends to rise again in later stages of life, often due to retirement or health issues (BDO and DKI 2021).

As for the relationship between gender and hospital CEO turnover, the included studies found no statistically significant differences in general. However, there is evidence in the general management literature that the determinants of CEO turnover and their importance

may differ by gender. For example, Gupta et al. (2020) found that in well-performing organizations, female CEOs face a higher risk of dismissal compared to their male counterparts. Moreover, Silvera and Clark (2021) detected that female hospital CEOs are more likely to improve the interpersonal care experience, especially in large hospitals and those located in metropolitan areas. These findings suggest the need for a nuanced approach in future research when addressing the role of gender in CEO turnover in hospitals.

Other personal characteristics contributing to CEO turnover that were frequently stated by CEOs in surveys and interview studies were a loss of confidence and a lack of peer support. This issue could be connected to the limited practice of succession planning in hospitals. For example, one study found that only 21% of freestanding hospitals in the US routinely engage in succession planning (Garman and Tyler 2004). Yet, various studies show that new hospital CEOs need support, particularly in the transition phase, such as when familiarizing themselves with core tasks, getting to know key personnel, and building a professional network (Dworkin and Goldstein 2004; Khaliq et al. 2007a). The absence of such support can have a negative impact on CEOs' confidence in their abilities and increase the likelihood of turnover (Gupta et al. 2018). This not only risks losing capable CEOs but also incurs additional time and costs in finding replacements (Nyberg et al. 2021).

Effects of hospital CEO turnover

The studies examining the impact of CEO turnover on hospital performance present a mixed and complex picture that is difficult to interpret due to differences in outcome variables and research methods. The quantitative inferential studies included in our review generally concluded that CEO turnover has a negative impact on financial performance. In more extreme cases, the results of survival analyses have linked CEO turnover and short tenures with an increased risk of hospital closure (Alexander and Lee 1996; Lee and Alexander 1999). Especially in scenarios of frequent CEO turnover, this is not surprising given evidence suggesting that CEO turnover is associated with high costs and strategic shifts (Nyberg et al., 2021) which can result in organizational instability (Schepker et al. 2017). Supporting this, studies like Ford et al. (2018) have found that CEO turnover can adversely affect hospital productivity in terms of cost efficiency in the short term. However, it should be noted that other characteristics such as inadequate financial performance and hospital size, which are common predictors of CEO turnover, were also associated with the risk of closure in the included studies (Alexander and Lee 1996; Lee and Alexander 1999). Therefore, CEO turnover may just be a symptom of other contextual characteristics rather

than a direct cause of hospital closures. Furthermore, Ford et al.'s (2018) study of post-turnover productivity performance did not account for additional CEO turnover during their study period, making it difficult to attribute the effects unambiguously to a specific CEO turnover event.

On the other hand, while Janke et al. (2019) observed a negative relationship between CEO turnover and hospital performance, they did not statistically demonstrate a decline in performance as measured by retained surplus. Moreover, Haveman et al. (2001) found that CEO turnover following regulatory change actually led to an increase in return on patient-services revenue. However, the validity of these studies was limited by their sample sizes, with a maximum of 185 hospitals included. Additionally, the use of retained surplus as a financial measure to assess performance effects within one year after CEO turnover seems inadequate, as investments or restructuring measures might reduce surplus while improving operational efficiency. Thus, when assessing the financial impact of CEO turnover, it would be more appropriate to use performance indicators that more accurately reflect efficient service delivery. These indicators can provide a clearer picture of the short-term change in a hospital's financial health.

In contrast, the results from the quantitative descriptive and qualitative descriptive studies included in our systematic review suggest a mostly positive picture. For instance, CEOs often reported that they had been able to improve their hospital's profitability and revenue since their appointment. However, these studies must be interpreted with caution due to the methodological limitations identified in our quality assessment, including small sample sizes and potentially inadequate sampling methods, which could lead to selection bias. In addition, subjective statements by survey respondents can introduce a self-serving bias, as seen in studies where self-report and third-party ratings differed significantly. For example, Hart et al. (1993) found that CEOs tended to rate their own performance much more positively compared to evaluations by their respective boards in various performance categories. Similarly, Khaliq et al. (2006) observed a pronounced disparity in the assessments of the outcomes of CEO turnover, with CEOs tending to overstate their own performance while underestimating that of their successors.

Limitations and further research

When interpreting the results of our systematic review, it is important to consider its various limitations, some of which also provide avenues for future research:

Magnitude and causality of associations

Our review focused on the direction and statistical significance or frequency of agreement of the identified associations. Due to the heterogeneity of methods and indicators used across the studies, however, we cannot draw definitive conclusions about the magnitude of effects or the relative importance of different predictors. Our review can thus only provide an overview of which predictors seem to affect the probability of CEO turnover in hospitals and which outcomes appear to be affected by it; however, we cannot ascertain the practical relevance of these relationships. Furthermore, despite the predominance of longitudinal data in the included studies, many relied solely on descriptive data analysis, correlations, and simple regression models. There is a remarkable lack of studies which enable causal inference. Further quantitative research using longitudinal data and more sophisticated methods to investigate the predictors and effects of CEO turnover is clearly needed. These could include sophisticated survival analysis to investigate predictors, as well as quasi-experimental designs or other causal methods to assess the effects of CEO turnover.

Heterogeneous treatment effects

It is also important to acknowledge that most of the included studies did not adequately account for potential heterogeneity in treatment effects. There is a strong likelihood, with some evidence already supporting this notion, that the impact of CEO turnover depends on the circumstances. These include prior organizational performance, the nature of and reason for the turnover (voluntary or involuntary; internal vs. external), and environmental characteristics like competition (Berns and Klarner 2017; Ford et al. 2018; Nyberg et al. 2021). Recognizing and incorporating these diverse characteristics in future analyses could greatly enrich our understanding of the effects of CEO turnover in hospitals.

Underexplored predictors and outcomes

Many of the predictors and effects identified in our review were examined only once or twice. This lack of replication presents challenges in making precise statements about many of the relationships because of the possibility that the results may be due to random, systematic, or other errors. Consequently, there is a need for further research on less frequently examined predictors, including hospital size, ownership type, and degree of

urbanization. Moreover, future studies should explore additional outcomes beyond financial performance metrics. These could include a range of competitive factors for hospitals, such as technical efficiency and patient satisfaction.

Measurement bias

An additional concern arises from the reliance of several studies on self-reported or peer assessments by current or former CEOs. The discrepancies in the statements and results of these studies, such as those highlighted by Khaliq et al. (2006), suggest the presence of self-serving bias, which affects the reliability of their findings. Future research, especially when using qualitative interview or survey methods, should strive for a multi-perspective approach or use data triangulation to mitigate respondent bias.

Limitations of review methodology

In addition to the limitations inherent to the data or methodologies of the included studies, our systematic review itself has limitations that should be considered. One of these is the potential exclusion of relevant literature, primarily due to our focus on articles published in peer-reviewed journals, which could introduce publication bias. Furthermore, our categorization of data was conducted inductively based on the perceived thematic context in the studies. Thus, these categories should be viewed as fluid rather than fixed, allowing for variation in categorization depending on the context. For example, the number of hospital admissions, while highly correlated with hospital size, can be categorized as a predictor within the hospital size category. At the same time, the number of admissions can also serve as a performance indicator for evaluating hospital CEOs, leading to a different categorization. This highlights the importance of not only considering aggregate results but also paying attention to specific indicators and individual findings.

2.6 Practical implications and conclusion

The findings from our review suggest that CEO turnover in hospitals is associated with short-term financial performance losses and that frequent CEO turnover can pose a threat to organizational stability and financial viability. Hospitals with characteristics associated with a higher likelihood of CEO turnover should consider implementing early and systematic succession planning to mitigate the substantial costs of CEO recruitment and fill leadership gaps more efficiently. A well-structured succession plan can also ease transitions for the

CEOs by ensuring a smoother adjustment to a hospital's corporate culture and job requirements (Khaliq et al. 2007a).

Despite the potential for financial setbacks, CEO turnover can serve as a strategic catalyst for reorienting and potentially improving hospital performance. Often, CEO turnover is accompanied by strategic shifts that can yield substantial long-term benefits for hospitals, offsetting any short-term financial losses. However, the impact of these strategic changes frequently outlasts the tenure of the CEOs, who are typically assessed based on immediate financial results and may be dismissed for poor performance. The delayed effects of a CEO's strategic decisions are rarely included in performance evaluations, and current problems may stem from decisions made by predecessors. Hence, decision-makers should carefully consider the potential negative consequences of frequent CEO replacements.

That being said, it appears that, overall, little is known about the subsequent processes and effects of CEO turnover in hospitals. Future research should explore these topics using causal methods to provide more meaningful insights into the effects of CEO turnover. This research should take into account the different contextual conditions and situational challenges that hospitals face. A deeper understanding of these dynamics will aid in developing tailored strategies to facilitate smooth transitions and the successful integration of new CEOs.

Chapter 3

Explaining variation in hospital CEO turnover rates: A convergent parallel mixed-methods study

Joint work with Theresa Maurer, Vera Winter and Eva-Maria Wild

Preliminary version published as: Hermes, M., Maurer, T., Wild, E. M., & Winter, V. (2025). Explaining Variation in Hospital CEO Turnover Rates–A Convergent Parallel Mixed-Methods Study. In Academy of Management Proceedings (Vol. 2025, No. 1, p. 18540). Valhalla, NY 10595: Academy of Management.

Awarded: Best International Paper – Health Care Management Division (AOM 2025)

Nominated: Carolyn B. Dexter Award (AOM 2025)

3.1 Introduction

Chief Executive Officers (CEOs) are the highest-ranking executives in hospitals. They represent the hospital externally and are responsible for developing and implementing long-term strategies. Their leadership influences organizational structures, culture and performance, thereby leaving a lasting imprint on the organization (Wilson and Stranahan 2000). Because successors often introduce wide-ranging and sometimes unpredictable changes, CEO turnover constitutes a pivotal event for hospitals (Hearld et al. 2019). Such transitions can have positive and negative consequences. Successors may bring new experiences, skills and ideas that address existing problems or drive strategic realignment (Bigley and Wiersema 2002). Empirical studies show that CEO turnover may lead to changes in service provision (Goodstein and Boeker 1991), the initiation of strategic planning processes (Dworkin and Goldstein 2004; Khaliq et al. 2007a) and, in some cases, improved financial performance (Dworkin et al. 2010). At the same time, turnover can disrupt operations and create instability (Alexander and Lee 1996). Reported negative effects include reduced cost efficiency (Ford et al. 2018), diminished morale (Mathew et al. 2024a) and an increased risk of organizational failure, with adverse implications for employees and regional patient care (Lee and Alexander 1999).

Despite these risks, hospitals have unusually high turnover rates. In the United States (US), the annual rate has averaged about 18% over the past decade (ACHE 2023) compared with 7–9% among S&P 1500 firms in finance and technology in 2023 (SpencerStuart 2024). Rates are even higher in Germany, where roughly one in four hospitals experiences CEO turnover each year (BDO and DKI 2021). Turnover rates vary considerably among German hospitals (BDO & DKI, 2021), raising questions about whether they reflect systematic organizational patterns or rational responses to underperformance. Germany therefore provides a particularly relevant setting in which to investigate the determinants and dynamics of hospital CEO turnover. A recent systematic review found that most previous research has examined only isolated factors, reported mixed results, relied on CEO self-reports, or provided little evidence on underlying mechanisms (Hermes et al. 2025). These limitations point to the need for more comprehensive explanations of this phenomenon.

To address this gap, our study examines the drivers and dynamics of hospital CEO turnover by identifying patterns among hospitals and analyzing the contexts and mechanisms that influence turnover processes. We make several contributions to the literature. First, we

analyze a panel data set covering 1,049 CEO turnovers in 754 German hospitals between 2012 and 2020. Rather than examining single predictors in isolation, we consider a broad range of organizational and contextual characteristics and use multivariate regression to assess their partial effects. We further apply cluster analysis to identify groups of hospitals with distinct profiles and examine how they differ in their turnover rates. Second, we complement these findings with qualitative data from 23 interviews with CEOs, board members and management consultants. The interviews provide insight into perspectives, motivations and mechanisms that have received little attention in previous work. By integrating both analyses, our study links measurable predictors with contextual dynamics, providing a more comprehensive account of hospital CEO turnover. This knowledge can inform efforts to reduce unwanted departures and tailor succession planning to hospital-specific circumstances.

3.2 Theoretical background

Theories on CEO turnover

Over the past six decades, scholars have developed a range of theories to explain CEO turnover (Giambatista et al. 2005). The most prominent are resource dependence theory, vicious cycle theory, and scapegoating theory.

Resource dependence theory views CEOs as responsible for securing and deploying critical resources to ensure long-term organizational success. CEO replacement is seen either as a strategic response to environmental change or a reaction to poor performance, which is interpreted as inefficient resource management (Grusky 1963; Hillman et al. 2009; Pfeffer and Salancik 1978).

In contrast, vicious cycle theory argues that CEO turnover disrupts organizational equilibrium, fosters conflict, and erodes cohesion, thereby increasing the likelihood of further turnover and creating a self-reinforcing cycle (Friedman and Singh 1989; Grusky 1960).

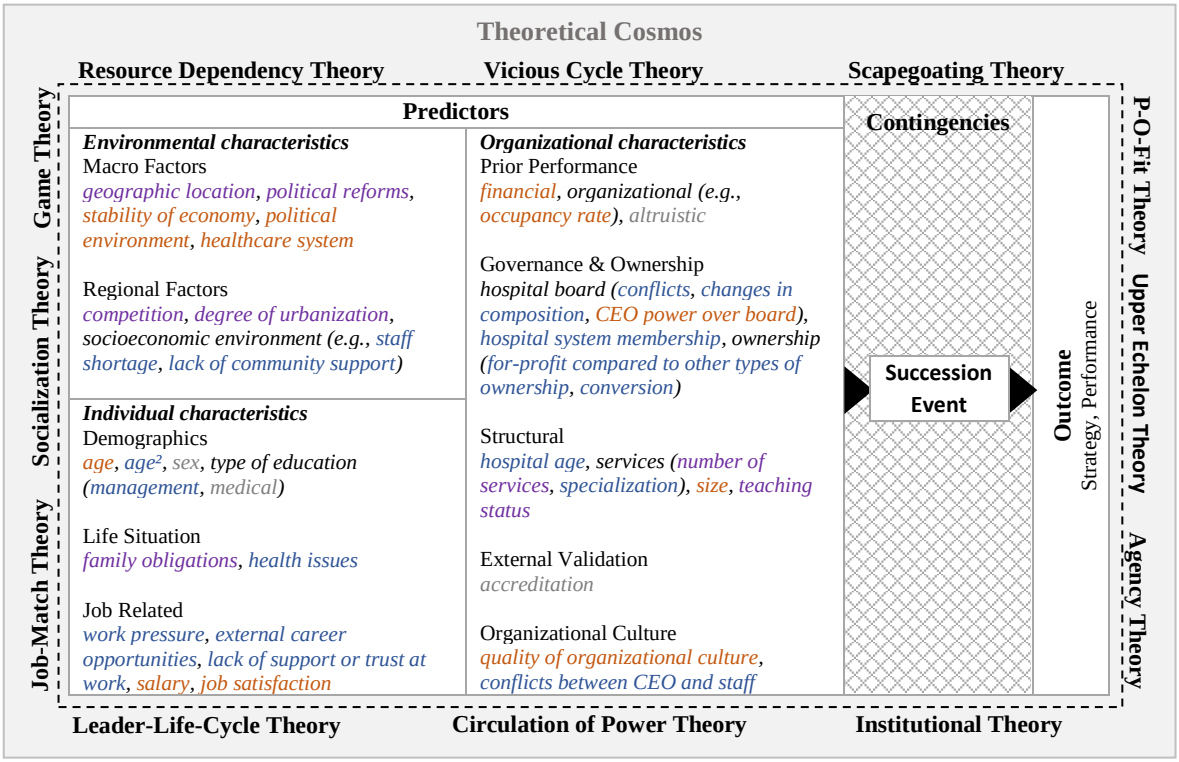
Scapegoating theory assumes that CEOs have little influence over organizational outcomes but are nonetheless held responsible for poor performance, even when this is driven by external conditions such as economic downturns (Jenter and Kanaan 2015). Dismissal is therefore symbolic, aiming to appease shareholders and signal renewal (Gangloff et al. 2016).

More recent work has incorporated additional perspectives, such as the circulation of power theory (Agrawal et al. 2006) and life cycle theory (Giambatista 2004) while stressing the role of contextual factors (Berns and Klarner 2017; Giambatista et al. 2005). Overall, these theories suggest that CEOs may be driven both by measurable factors, such as performance, and by less tangible factors, such as internal cohesion, stakeholder perceptions and broader contextual dynamics.

Previous evidence on the predictors of hospital CEO turnover

A recent review by Hermes et al. (2025) summarized previous studies on hospital CEO turnover, grouping predictors into environmental, organizational and individual characteristics. Below, we present selected findings for each category, along with a framework in Figure 3.

Figure 3 Theories and evidence on predictors of hospital CEO turnover



Color coding: Brown = negative relationship between the predictor and the likelihood of CEO turnover, blue = positive relationship between the predictor and the likelihood of CEO turnover, purple = mixed results regarding the relationship, gray = evidence found no relationship.
Note: For more specific information on the current state of research, see Hermes et al. (2025).

Environmental characteristics include macro-level factors, such as political regulation, and regional factors, such as urbanization. Although findings are mixed, evidence suggests that stable environments are associated with a lower probability of turnover (Mathew et al. 2024a), whereas regional challenges, including workforce shortages, are associated with a higher probability of this phenomenon (Hearld et al. 2019).

Organizational characteristics include prior performance, governance, and structural factors. In particular, financial underperformance has been consistently linked to increased CEO turnover (e.g. Eldenburg et al. 2004), as have for-profit ownership and affiliation with a hospital system (Hearld et al. 2019).

Individual characteristics include demographics, life circumstances, and job-related perceptions. Age shows a U-shaped relationship with turnover (Ballantine et al. 2008), whereas no consistent association with CEO gender has been found (e.g., Janke et al. 2019). Family obligations can either increase (Hart et al. 1993) or decrease the likelihood of turnover (Weil and Kimball 1995). Perceptions of stress and pressure also appear to influence CEOs' likelihood of leaving (Mathew et al. 2024b).

3.3 Methods

3.3.1 Research design

We employed a convergent parallel mixed-methods design, conducting a quantitative and qualitative study in parallel and analyzing them separately before integrating and then interpreting the results (Fetters et al. 2013). The two components interacted in multiple ways. First, the qualitative findings enabled triangulation, allowing us to compare the interview-based perspectives with patterns in the quantitative data. Second, the qualitative data served an explanatory function, clarifying mechanisms underlying statistical associations. Third, the qualitative findings served an expansion function by identifying determinants and dynamics of CEO turnover not included in the quantitative model. Integration took place both at the methods level (i.e., through merging the two data sets for comparison) (Fetters et al., 2013) and at the interpretation and reporting stages.

3.3.2 Setting

The study was conducted in Germany, which in 2023 had 1,874 hospitals (DESTATIS 2024). The sector is highly regulated, for example through the Diagnosis-Related Groups

(DRG) payment system, which promotes cost efficiency and performance transparency but has also been criticized for unintended effects, such as financial strain on smaller hospitals and incentives to prioritize efficiency over quality (Flintrop 2006). It comprises a balanced mix of public, private for-profit, and private non-profit hospitals, all operating under financial and economic pressures. Hospitals range from small regional facilities to large centers and university hospitals, with some operating independently and others as part of larger systems. Urban areas tend to have an oversupply of hospitals, whereas some rural regions face undersupply. Despite certain distinct features, the German hospital market is broadly comparable to those of other developed countries with mixed hospital ownership, such as the US.

3.3.3 Quantitative study

Sample and data

For the quantitative study, we constructed an unbalanced panel data set from German acute care hospitals for the years 2012 to 2020 by combining four data sources. The German commercial register ("Handelsregister") provided information on CEO appointments, dismissals and financial statements. Mandatory annual quality reports supplied details on hospital activities and structures (e.g., number of cases, ownership, size). Patient satisfaction data were drawn from the "Weisse Liste", a representative national survey of hospital stays. Additional contextual data, such as population density, were collected through web searches.

To ensure comparability, we followed prior research and excluded hospitals with fewer than 50 beds, university hospitals, psychiatric hospitals, rehabilitation clinics, day and night clinics, hospitals specialized in pediatrics or geriatric medicine, and hospitals with ownership changes. Because many German hospitals are organized into centrally managed systems with joint annual financial statements, data for such hospitals were aggregated at the system level. We excluded systems covering more than six hospitals but retained smaller subsystems of large chains if they had separate reports and dedicated CEOs.

The final data set comprised 319 freestanding hospitals and 174 hospital systems with an average of 2.5 hospitals each. The sample was not fully representative of the German hospital landscape, particularly underrepresenting for-profit hospitals (15% of hospitals in our sample), due to their frequent affiliation with large systems. Nevertheless, it captured

substantial variation in ownership, size and market competition. Table 2 contains the summary statistics.

Table 2 Summary statistics

	Obs	Mean	Std.Dev.	Min	Max
CEO turnover	4,814	0.179		0	1
Performance					
Efficiency	4,410	0.444	0.086	0.034	0.901
Return on assets	3,302	0.005	0.052	-0.146	0.126
Patient satisfaction	4,622	5.062	0.235	2.037	6.000
Hospital characteristics					
Public ownership	4,814	0.365		0	1
Non-profit ownership	4,814	0.482		0	1
For-profit ownership	4,814	0.152		0	1
Size	4,799	350	284	50	3,344
Teaching	4,739	0.553		0	1
Hospital system member	4,814	0.397		0	1
Large hospital chain	4,814	0.079		0	1
Environmental characteristics					
Large city	4,814	0.255		0	1
Urban district	4,814	0.296		0	1
Rural district	4,814	0.297		0	1
Remote district	4,814	0.152		0	1
HHI (30Km)	4,814	0.179	0.131	0.019	0.817
Municipal election	4,814	0.227		0	1
CEO characteristics					
CEO sex (Female)	4,814	0.10		0	1
CEO age	4,791	52.76	6.66	29	76
CEO age²	4,791	2,828	693	841	5,776

Variables

Dependent variable

CEO turnover was defined as the replacement of a CEO in a hospital. Because data on the reasons for turnover were unavailable and stated reasons are often face-saving (Firth et al. 2006), we followed previous studies in treating both hospital-initiated and CEO-initiated (voluntary and involuntary) departures as turnover events (Cragun et al. 2016; Finkelstein et al. 2009; Giambatista et al. 2005). Turnover was identified by changes in the names of acting CEOs (or of at least one name in multi-CEO hospitals) at year-end, and coded as a binary variable (0 = no turnover, 1 = turnover).

Independent variables

We included predictors from four domains: prior performance, organizational characteristics, environmental context, and CEO characteristics. Performance was measured using three indicators: technical efficiency (via data envelopment analysis), financial performance (return on assets), and average patient satisfaction. Organizational characteristics consisted of teaching status, size (number of beds), ownership type (public, non-profit, for-profit), and affiliation with a system or a large hospital chain. Environmental context was captured through market concentration (Herfindahl-Hirschman Index) as a proxy for competition, district type (degree of urbanization), and the occurrence of municipal elections in the hospital's region. CEO characteristics comprised age, gender, and a squared age term to account for non-linear effects. A full overview of variables, definitions, and data sources is provided in Table A5 in the Appendix.

Data analysis

We estimated predictors of hospital CEO turnover using logistic regression. This method was appropriate given the binary nature of the dependent variable (turnover vs. no turnover) and allowed us to assess the partial effects of multiple predictors simultaneously. In addition, it has been frequently used in similar work (Eldenburg et al. 2004; Hearld et al. 2019; Weil and Kimball 1995). The independent variables were lagged by one year and included prior performance, and organizational, environmental, and CEO-related factors. We controlled for the state within which hospitals were located and the calendar year of the turnover event. We used clustered standard errors to account for the nesting of CEO turnovers within hospitals.

For the cluster analysis, we used information on ownership, hospital size, teaching status, affiliation with a hospital chain, competition intensity, and degree of urbanization. Because the data consisted predominantly of dummy variables and the optimal number of clusters was unknown, we opted for agglomerative hierarchical clustering using the complete linkage method (Vijaya et al. 2019). This was preceded by a single linkage procedure to identify outliers, of which three were excluded in the final clustering. We then compared turnover probabilities between clusters using one-way ANOVA.

3.3.4 Qualitative study

Sample and data

We conducted semi-structured online interviews with hospital CEOs, board members and management consultants. The interview guide was developed collaboratively by all four authors to ensure thematic congruence with the quantitative study. It was informed by existing theories and previous literature on CEO turnover, and piloted with colleagues experienced in qualitative interviews.

The guide addressed hospital performance, organizational and environmental characteristics, and personal characteristics, with relevant subtopics under each category (see Appendix, Table A6). The study protocol received ethics approval from the responsible board of the investigating organization.

Participants were selected using purposive sampling to maximize variation across dimensions such as hospital ownership type and geographic region. In addition to CEOs, we included board members and management consultants with experience in hospital management to capture perspectives beyond those directly affected by succession events. We also sought to achieve gender balance among participants. Invitations were distributed via email and LinkedIn, with an information sheet included; two days before the interview, participants received a list of the main questions. In total, 23 individuals (11 hospital CEOs, 9 management consultants, 3 board members) provided informed consent and participated in the study (see Table 3 for participant characteristics). Eighty-three percent of interviewees were male and 17% were female, reflecting the gender distribution in German hospital leadership. The 11 CEOs had collectively held 21 CEO positions across diverse ownership types and regions. Board members and management consultants generally reported broad professional experience, which cannot be meaningfully summarized by position.

Table 3 Interviewee characteristics

Perspective	CEO	Board member	Hospital consultant	Total
# Interviewees	11	3	9	23
Sex				
Male	7 (64%)	3 (100%)	9 (100%)	19 (83%)
Female	4 (36%)	0 (0%)	0 (0%)	4 (17%)
# Hospital CEO positions	21			
# Positions by ownership type				
Public	9 (43%)			
For-profit	8 (38%)			
Non-profit	4 (19%)			
# Positions by federal state				
Baden-Wuerttemberg	1 (5%)			
Bavaria	5 (24%)			
Bremen	1 (5%)			
Hamburg	2 (10%)			
Hesse	1 (5%)			
Mecklenburg-Western Pomerania	1 (5%)			
Lower Saxony	1 (5%)			
North Rhine Westphalia	6 (29%)			
Saxony	1 (5%)			
Schleswig-Holstein	2 (10%)			

Interviews were conducted via Zoom or Microsoft Teams by one author (TM) between September 2024 and January 2025, recorded and transcribed using OpenAI Whisper and manually corrected. Recruitment continued until thematic saturation was reached.

Data analysis

We coded the transcribed interviews using MAXQDA 24 (VERBI Software 2023) and following the two-step deductive–inductive coding methodology (basic coding and fine coding) suggested by Rädiker and Kuckartz (2020). In the basic coding cycle, we deductively assigned codes corresponding to the previously mentioned investigated factors. Segments were only coded if an interviewee made a specific comment regarding the relevance or influence of the overarching categories and/or the subordinate factors on the occurrence of hospital CEO turnover. During the subsequent fine coding stage, we inductively assigned codes to newly emerging subordinate factors and applied the subcode "mechanism" to segments that explained how or why a particular factor influences hospital CEO turnover. It is important to note that not all interviewees discussing a specific factor provided an explanation of the underlying mechanisms.

Two researchers were involved in the coding process to help ensure the validity of the findings. The first researcher (TM) was involved in all aspects of preparing the fieldwork and collecting data. The other researcher (MH) scrutinized the analysis. Disagreements in coding or interpretation were solved through discussions between the two researchers. Two of the authors (EW, VW) contributed extensive expertise in qualitative methods, including sampling strategies, interview guide development, interviewing, coding and validity procedures. The researchers who conducted the fieldwork and primary coding (TM, MH) had completed formal training in interview design, data collection and coding techniques.

3.4 Results

3.4.1 Quantitative study

Table 4 reports results from the logistic regression, presented as average marginal effects.

Regarding hospital performance, the results show significant associations between all previous-year performance indicators and CEO turnover: hospitals with higher return on assets, efficiency, and patient satisfaction had a lower probability of turnover in the following year.

With respect to ownership, for-profit hospitals had a significantly higher probability of CEO turnover than public hospitals, whereas non-profit hospitals did not differ significantly in this respect from public hospitals. Other organizational characteristics, such as teaching status, size, and system affiliation were not significant predictors.

Among environmental characteristics, turnover was significantly less likely in urban and rural districts compared with large cities, whereas remote districts did not differ significantly from large cities. Turnover was also more likely in the year after a municipal election.

With regard to CEO characteristics, turnover displayed a U-shaped relationship with age: the probability initially decreased with increasing CEO age but rose again at higher ages. Hospitals led by women had a lower probability of turnover compared to hospitals led by men, although this effect was only marginally significant.

The model demonstrated acceptable discriminatory power according to the area under the receiver operating characteristic curve (AUC = 0.667) and no evidence of poor calibration (Hosmer–Lemeshow-Test, $p > 0.629$).

Table 4 Predictors of CEO turnover – Quantitative results

	dy/dx	(SE)	Z	P>|z|	[95% CI]	
Prior performance						
Efficiency	-0.194	(0.099)	-1.96	0.049	-0.388	0.000
Return on assets	-0.977	(0.134)	-7.31	0.000	-1.239	-0.715
Patient satisfaction	-0.159	(0.046)	-3.45	0.001	-0.250	-0.069
Hospital characteristics						
Ownership | Public^{REF}						
Non-profit	0.013	(0.021)	0.61	0.539	-0.028	0.053
For-profit	0.089	(0.033)	2.66	0.008	0.024	0.155
Size	-0.001	(0.023)	-0.06	0.951	-0.046	0.043
Teaching	-0.025	(0.018)	-1.40	0.160	-0.059	0.010
Hospital system member	0.026	(0.017)	1.52	0.130	-0.008	0.060
Environmental characteristics						
Degree of urbanization | Large city^{REF}						
Urban district	-0.048	(0.023)	-2.12	0.034	-0.093	-0.004
Rural district	-0.066	(0.033)	-2.02	0.044	-0.130	-0.002
Remote district	-0.052	(0.038)	-1.35	0.176	-0.126	0.023
HHI (30Km)	0.137	(0.081)	1.68	0.093	-0.023	0.296
Municipal election	0.044	(0.024)	1.87	0.062	-0.002	0.090
CEO characteristics						
CEO female	-0.055	(0.031)	-1.82	0.069	-0.115	0.004
CEO age	-0.034	(0.010)	-3.30	0.001	-0.055	-0.014
CEO age²	0.000	(0.000)	3.36	0.001	0.000	0.001
Fixed effects						
Year	Yes					
State	Yes					
Obs. 2,619	Pseudo R^2	0.059	AUC	0.667	H-L P>|chi²|	0.629

Abbrevations: AUC = area under the receiver operating characteristic curve; H-L = Hosmer–Lemeshow-Test; REF = Reference category

Using the Duda-Hart test, we identified eight clusters as the optimal solution. Table 5 summarizes clusters, including turnover probabilities and dominant organizational, environmental, performance, and CEO characteristics. CEO turnover frequencies differed significantly among clusters, with pairwise comparisons reported in Table A7 in the Appendix.

Table 5 Description of cluster

Cluster	1	2	3	4	5	6	7	8
Observations	440	147	359	724	615	162	55	94
Turnover	0.19	0.22	0.2	0.16	0.18	0.3	0.36	0.14
Ownership	public	public	public	non-profit	non-profit	for-profit	for-profit	for-profit
Teaching	yes	yes	no	yes	no	yes	mixed	no
Size	large	med-large	medium	med-large	small	medium	small	very small
Market concentration	moderate	high	moderate	low	moderate	moderate	high	moderate
Degree of urbanization	*urban*	remote	rural	*urban*	*rural*	*urban*	remote	*rural*
Large chain	no	no	no	no	no	*yes*	yes	no
Efficiency	0.43	0.43	0.46	0.43	0.44	0.44	0.49	0.55
Return on assets	-0.01	0.00	-0.02	0.01	0.01	0.03	-0.02	0.06
Patient satisfaction	4.96	5.03	5.09	5.02	5.06	4.97	4.89	5.35
Female CEO	0.08	0.12	0.09	0.07	0.06	0.22	0.16	0.09
CEO Age	54.68	53.73	53.62	53.44	53.67	45.93	42.92	53.14

Note: The information on the clusters is based on the mean values. For categorical variables with mixed distributions within a cluster, the predominant tendency is indicated in italics. Abbreviations: med-large = medium to large

The highest turnover frequency occurred in small for-profit hospitals that belonged to large chains and were located in remote areas with low competitive intensity. In contrast, non-profit and public hospital clusters showed significantly lower turnover rates. The lowest turnover was found in a cluster of very small non-teaching for-profit hospitals located mostly in rural areas outside large chains and operating in moderately competitive markets.

3.4.2 Qualitative study

Coding density varied substantially across the 23 interviewees, ranging from 8 to 42 codes per transcript. A code matrix summarizing the frequency of codes by category and factor is provided in Table A8 in the Appendix.

We present findings for the four categories of factors, focusing on the mechanisms through which they influence CEO turnover. To maintain clarity, we report only the three most frequently mentioned mechanisms for each factor and direction of influence. This approach highlights the most salient patterns while avoiding overinterpretation of isolated statements. A detailed overview, including illustrative quotations and references to the quantitative results, is presented in Table 6.

Table 6 Joint display of mixed-methods results

Factor	Quant. Result	Explanations & Mechanisms (Qualitative results)	Exemplary quotes
Hospital performance			
Poor financial performance	+ (***)	+ CEOs are held responsible for financial shortfalls (including scapegoating) because boards often judge success based on surplus or deficit + Belief that economic problems can be solved by replacing CEOs with someone new (common sense theory) + Hospital owners face pressure to replace leadership when financial performance deteriorates + CEOs may be replaced when they fail to meet financial performance targets + CEO turnover is triggered by liquidity crises or bankruptcy - Many poorly performing hospitals cannot find suitable replacements due to lack of alternatives and the unattractiveness of the hospital, preventing CEO turnover - Desire to maintain leadership continuity during uncertain times or economic crises despite financial difficulties o Since good financial performance is seen as unattainable in the German hospital market, financial performance becomes less relevant for turnover. o In prestigious hospitals, poor financial performance is often tolerated and does not trigger leadership change	*"Of course, CEOs are often blamed for financial troubles, even though much of it comes from system constraints, because you don't have the freedom to let staff go […] and so on. In the end, [the CEOs] are often the ones sacrificed like pawns." (Interview 10)* *"[When the hospital runs into] financial trouble, the supervisory board – or the municipal authority, or whoever – suddenly feels that they're on the hook, that things aren't running on autopilot anymore. And because they don't really understand the problem as a whole, they go looking for a new captain for the team, hoping that will improve the score." (Interview 14)* *"I get the impression that, despite financial trouble – or maybe even because of it – CEOs are often not replaced but kept on, just to provide some consistency in these very uncertain, turbulent times". (Interview 2)* *"There's also, though this is more of a special case, the exact opposite effect, which I'm seeing in some places. Some hospitals are in such dire straits that they only stay open because a local politician knows that closing them would mean losing the next election. In those cases, nobody even applies for the [CEO] job. So they end up with some complete idiot sitting there, and they don't kick them out because they say, "We wouldn't find anyone else." So that actually lowers the likelihood of CEO turnover […]."(Interview 10)*
Low efficiency	+ (*)	Not considered in the qualitative analysis	
Low quality of care	+ (**)	o If quality of care decreases / is low despite good financial performance, this can lead to a forced CEO turnover	*"When it comes to quality of care, there's a statutory mandate that has to be taken seriously. If a CEO ignores that and makes radical cutbacks, I saw a case in [state X] where he was dismissed – even though financially he'd not only brought the hospital to break-even*

		○ Quality of care is often not the primary criterion used by boards when evaluating CEO performance, resulting in minimal influence on turnover decisions	*but into positive figures. In the end, he was let go because, in the eyes of several board members, he had simply gone too far." (Interview 22)*
Organizational characteristics			
Public ownership type	Used as reference category	- In public hospitals, CEOs may be scapegoated to deflect political responsibility - In public hospitals, informal board – chief physician alliances can disadvantage CEOs in conflicts - Low perceived competence of supervisory boards in public hospitals leads to misunderstandings and conflicts with CEOs that can trigger turnover - Due to political pressure and fear of voter backlash, local politicians often prevent public hospitals from dismissing CEOs, even in cases of poor performance.	*"There are also forced replacements. I think they mostly happen in publicly owned hospitals, especially municipal ones, where politicians try to cover up their own incompetence by swapping out the CEO." (Interview 18)* *"In the past, when hospitals were doing better financially, there were cases in public hospitals where the chief physicians had more social standing than incoming CEOs. Because they were often better connected – to municipal authorities, the mayor and so on – they could play the 'we don't like his face' card and say, "He isn't making any strategic decisions here so you've got to get rid of him somehow."" (Interview 10)*
For-profit ownership type	+ (**) compared to public hospitals	+ For-profit hospitals often use a rotation model (systematic and strategic leadership exchanges) + For-profit hospitals are more sensitive to performance and quickly replace CEOs when performance targets are not met + Quickly replacing CEOs when hospital performance is poor is part of the organizational culture in for-profit hospitals	*"The economic orientation of private providers is completely different. Management is accountable to the shareholders who've put their money in. They didn't invest for nothing – of course they expect a return." (Interview 3)* *"In private hospitals, regular turnover is more or less built into the system. On the one hand, there's a certain career ladder – you start out running a small hospital, then move on to bigger ones, and maybe later become a regional director, and so on. On the other hand, they want to keep up the pace and bring in fresh energy. And since they have a larger pool of people to draw from, they can rotate managers in and out – sometimes into central functions, then back into a CEO role for a few years." (Interview 12)*
Non-profit ownership type	+ (n.s.) compared to public hospitals	+ Many non-profit hospitals lack large financial reserves and must be performance-sensitive and replace poor performing CEOs - Non-profit hospitals, often due to denominational values, emphasize long-term relationships with management and are less performance-sensitive	*"Church-affiliated hospitals operate on faith-based convictions, so they aim to avoid losing employees wherever possible." (Interview 3)* *"My perception is that church-affiliated non-profits don't get nervous right away when the results are bad. But in municipal politics, you're immediately under fire from the public. [In the church sector,] they're more likely to say, "This is a good man, this is a good woman, they're*

		- Non-profit hospitals face less political pressure, resulting in lower CEO turnover	*doing their job. So even if they've had three bad years, that doesn't mean they need to be replaced right away."" (Interview 20)*
Small hospital size	- (n.s.)	+ Typical career path in the hospital sector: progression from small to medium to large hospitals + Many small hospitals have an unfavorable operating size, greater economic problems and higher CEO turnover + Larger hospitals tend to use more professional selection processes, improving fit and reducing turnover - CEOs have relatively less influence in larger hospitals and may be replaced sooner when conflicts persist	*"My impression is that the [CEO] changes we see are very often about career development. In hospitals, the common path is moving from controlling or finance into management of a smaller hospital, then to a medium-sized one, and eventually to a larger hospital." (Interview 13)* *"The greatest pressure – and the highest turnover – is in hospitals with what I'd call a poor operating size. In my view, that's the typical district hospital with up to 150 beds, and that's a tough size." (Interview 7)*
Member of hospital system	+ (n.s.)	- Hospitals in larger systems often use a rotation model (systematic and strategic leadership exchanges) - Career progression from smaller to larger hospitals is especially common in hospital systems - Synergy effects in system hospitals can improve financial performance and reduce CEO turnover	*"Another reason is career moves within hospital systems. These days, many hospitals in Germany aren't stand-alone anymore but are part of systems, whether denominational, municipal or private. So if one CEO leaves, it sets off a reshuffle. It's a bit like a change of coach in the Bundesliga: a CEO moves up from a smaller hospital to a bigger one, someone else comes in to take over the smaller hospital, and it just keeps going back and forth." (Interview 11)*
Specialized hospitals	Not considered	+ In specialized hospitals, CEOs are seen as less important than the medical director and are replaced more quickly - Specialized hospitals are easier to optimize, leading to better financial performance and lower CEO turnover - Stronger interpersonal relationships within the management of specialized hospitals may reduce CEO turnover	*"I'd say the more specialized the hospital, the more likely there is to be a change. It's just a simpler setting – take an orthopedic specialty clinic, for example. The CEO's role isn't as important there, so turnover happens more quickly. At least that's my impression." (Interview 1)*
Hospitals with teaching status	- (n.s.)	+ In university hospitals (a special case of teaching hospitals), CEOs are seen as less important than the medical director and replaced more quickly - The complexity of managing university hospitals and the limited pool of alternative candidates usually lead to greater retention of CEOs	*"So people don't move in and out that often, which makes sense […] I've been here a while myself, and the specifics and peculiarities are definitely there. So I'd say turnover feels relatively low, at least from my perspective. I think that's also because the pool of people really suited for the job is pretty small." (Interview 12)*

		- CEO turnover due to poor financial performance is less common in university hospitals because of the special status of these hospitals	
Organizational change	Not considered	+ No need for multiple CEOs following hospital mergers + Change of hospital owner can lead to CEO replacement + Strategic reorganization of hospital groups disrupts the alignment between senior management and the CEO, prompting departure - Hospital closures and mergers reduce the overall number of CEO positions, leading to fewer changes in absolute terms over time	*"There's also a third aspect – the strategic realignment of [hospital] groups, of corporations, of management culture. I was directly involved in a case at a large private provider where a long-serving CEO was replaced because his mindset and leadership style no longer matched the way the company wanted to position itself for the future." (Interview 13)*
Relationship between CEO and hospital board / owner	Not considered	+ Conflicting objectives between CEO and board/owner create tensions that can trigger CEO turnover + Board mistrust in CEOs accelerates transitions + Boards may replace CEOs following complaints from chief physicians (linked to informal power structures) + Information asymmetries or lack of appropriate expertise or experience among board members can lead to flawed assessment of CEOs' performance - Good relations with the board prevent CEOs from leaving (despite bad performance)	*"The relationship with the supervisory board is extremely important. If you don't manage to build a good, trusting relationship – especially when it's a political board, where members often act out of strong self-interest – then as soon as the finances go south, it's the final nail in the coffin." (Interview 7)* *"What's definitely true, especially in large hospitals, and particularly in municipal ones, is that the better connected I am politically with the supervisory bodies, the safer I am. If I've got a good relationship with the chair of the board, with the district council, and so on, then I can frame financial or other problems in a way that doesn't make me look like the one who caused them or failed to fix them. The stronger those connections, the less likely it is that I'll be forced to leave." (Interview 2)*
Relationship between CEO and chief physicians	Not considered	+ The strong influence of chief physicians can force a CEO's departure when they are dissatisfied with the CEO - Stable, supportive relationships with chief physicians can improve hospital performance and reduce turnover	*"What often happens is that when chief physicians aren't happy with their CEO, they go to the supervisory board. I've seen it countless times – and countless times it leads to the CEO leaving and not the chief physician." (Interview 18).*
Environmental characteristics			
High competition	- (*)	+ Increased competitive pressure may worsen hospital finances and raise CEO turnover - Competitive pressure leads to closures/mergers, eliminating CEO positions and reducing turnover in absolute terms	*"With the competitive pressure, hospitals will simply disappear. And when two hospitals merge, suddenly you've got two CEOs – and then the question is whether both positions are really justified financially, or whether in fact they'll try to push through the more qualified one. […] In the end, that means fewer CEO jobs." (Interview 3)*

		○ No differential effect when competitive pressure affects all hospitals equally	
Changes ins political and regulatory environment	+ (*)	+ Strategic uncertainty and economic pressure (due to market consolidation, greater dynamics and rising complexity) increase likelihood of CEO turnovers + CEO turnover linked to replacement of local politicians or changes in dominance of local political parties	*"Take regulatory issues – new requirements keep popping up all the time now, not just once a year, and that makes things more and more complex. And if a CEO doesn't have one of those topics on his agenda, it can later be held against him." (Interview 13)* *"Yes, especially in public hospitals, political changes play a role. All of a sudden, you've got a different city council, a different political configuration. Then things can get interesting – I've seen it myself, where the same party […] supports you one moment and opposes you the next, just depending on whether they're in the majority or in the minority." (Interview 9)*
Urbanized hospitals	- (*) Compared to large cities	No explanations/mechanisms given in the interviews	-
Hospitals in rural / remote districts	- (*) / - (n.s.) Compared to large cities	+ Dissatisfaction of CEOs and their families with rural lifestyle/infrastructure increases turnover probability - Many rural hospitals cannot find suitable replacements due to lack of alternatives and low attractiveness of the hospital or region, reducing turnover probability	*"What you can say, and I think it's true regardless of ownership, is that the more remote the hospital, the harder it is – well, it's like if you've got a CEO who's there for three years, you'll probably be glad keep them another ten, simply because you can't find anyone else who wants to work way out near the Polish border. And if the person is rooted in the region, has a family there, and is doing a decent job – not perfect, but enough – then you'll just leave them in place." (Interview 16)*
Availability of alternatives	Not considered	+ Frequent approaches by headhunters lower the threshold for CEOs to initiate turnover + A limited pool of qualified candidates can lead to poor hiring matches and subsequent turnover + The growing number of management companies with pools of experienced CEOs facilitates short-term replacements, increasing the likelihood of turnover as hospitals can more easily rely on temporary solutions	*"What's driving more rapid CEO turnover these days is the constant stream of offers. […] I've never seen such a flood before. Headhunters are no longer just targeting chief physicians, but now also CEOs – it's practically a whole new industry. And the more often you get approached, the more you start to wonder how much longer you're willing to put up with the way you're treated in your current role. I think that definitely plays a part." (Interview 8)*

Personal characteristics			
Low age / age close to retirement	+ (**) / + (**) (U-shaped)	+ CEO turnover due to retirement (contract not extended or voluntary exit) + Higher turnover at younger ages due to career development - Greater need for security and stability at older ages reduces turnover probability	*"Of course, one of the most common reasons for a change in leadership among long-serving CEOs is retirement or early retirement." (Interview 14)* *"If the CEO is a younger colleague, it's obvious that this won't be his final destination. From the outside, you can see pretty clearly that it's a temporary post – he'll do it for four years or two years, and then move up and use it as a kind of stepping stone." (Interview 17)*
Female CEO	- (*)	+ Family formation contributes more to turnover among female CEOs - Female CEOs tend to adopt a more participative and transformational leadership style, making them more effective and less likely to leave - Higher barriers to entry for female CEOs mean that those who reach top positions are generally more successful and less prone to turnover o No effect when temporary replacement arrangements are available for female CEOs starting a family	*"The CEOs coming up today are more often women, and they embrace their identity as women. They embrace leadership, they embrace participation. It's more of a shift from a transactional to a transformational leadership style. And with that, they tend to be more successful, more effective, and therefore less likely to move on so quickly." (Interview 1)*
Family related / Life situation / Health status	Not considered	+ CEO turnover due to changes in life or family situation and job fit (e.g., family planning, partner's career move) + CEO turnover due to long-term illness or burnout - Strong local ties or willingness to integrate (e.g., community engagement) can support CEO's success and decrease turnover probability	*"Well, let me put it this way: if a partner relocates for a new job somewhere completely different, then of course you might feel pressure to move as well. That has nothing to do with hospitals. It can always happen. Yes, having children can have an impact. So, of course, that can lead to you taking a break." (Interview 18)* *"The other thing I'm seeing more and more is health [issues]. People are getting sick in this job. I've seen plenty of cases of burnout – one even ended with a CEO leaving hospital management altogether, going on sick leave and then into early retirement with depression. It's becoming increasingly common for people to step down because they can't cope anymore, because they're worn out. And, of course, there are other fates, too – someone might get cancer or something else unrelated to the job. That happens as well, and it's not that rare." (Interview 10)*

Job satisfaction	Not considered	+ Restricted freedom of action reduces job satisfaction and increases turnover + Low job satisfaction from poor self-perceived performance or psychological strain contributes to turnover + CEO turnover due to liability concerns	*"Yes, satisfaction is definitely very important. As long as you're satisfied and feel you can shape and manage things the way you think is best – with support from the supervisory board, the chief physicians, whoever – and the pay is right, then there's usually little reason to leave." (Interview 12)* *"The other side of the coin is that many CEOs say the job isn't fun anymore because they have no real freedom to act. "I'm running a huge deficit. I can't fire anyone because we're already understaffed. I can't cut supply costs either. I can't invest because there's no money coming in. So here I am on a burning ship that's slowly sinking – and I'm supposed to put on a brave face." That combination is driving a lot of people out of the job right now." (Interview 7)*
Professional experience / previous changes	Not considered	+ Previous self-initiated departures may increase the likelihood of future changes, possibly due to positive prior experiences + Multiple past transitions can make CEOs more experienced and suitable to fill vacancies	*"Or take the CEO of another large private hospital chain, where I once interned. He went through a lot of moves, both inside and outside the organizations, also with relocations. And sometimes that's how it goes – if you handle [those transitions] well and there happen to be openings, you can get catapulted upwards in short order." (Interview 16)*
Skills / personality traits	Not considered	+ CEOs with necessary skills but high level of assertiveness may come into conflict with the board, leading to turnover - CEOs with strong emotional intelligence and social skills can manage relationships with boards and chief physicians more effectively, communicate issues well, and are therefore less likely to leave	*"The CEOs I've seen who've been on the job a long time usually have a high level of emotional intelligence. They're great with people, often highly charismatic, […] and know how to work well with the supervisory board. From the chief physician's perspective, they're very understanding when it comes to communicating tough financial decisions. Many are also good at dealing with the works council. But those who lack these skills tend to run into difficulties quickly when conflicts arise – sometimes to the point where their position is called into question." (Interview 17)*

+ Mechanisms promoting turnover - Mechanisms preventing turnover o No influence *** P<0.001; ** P<0.01; * P<0.1; n.s. non-significant

Quotes were selected based on their relevance to the research objectives (the extent to which they provided meaningful insights into the findings of the qualitative phase), whether they were representative of the broader data set (capturing the diversity of perspectives or experiences in the study population), clarity and precision (conveying the intended message), and impactfulness (uniqueness or depth of insight provided).

Interviewees emphasized the role of “hard” financial indicators as an important driver of CEO turnover. They noted that supervisory boards often equate CEO performance with annual surpluses or deficits, making liquidity crises, unmet budget targets and looming insolvency strong triggers for dismissal. According to the interviewees, this tendency was reinforced by the frequent lack of sector-specific expertise of many board members, who viewed rapid leadership change as a viable response to financial strain. Exceptions to this logic were also mentioned: during periods of uncertainty or economic crisis, continuity in leadership was sometimes valued as a stabilizing signal. Although financial performance was seen as crucial, the quality of care was also regarded as important, even if not always applied as a formal criterion when evaluating CEO performance.

Interviewees identified ownership type as an important driver of CEO turnover. For-profit hospitals were described as particularly prone to leadership transitions, for example due to deliberate rotation models in multi-hospital systems and heightened economic pressure. Non-profit hospitals were also seen as being increasingly sensitive to performance given their limited refinancing options. In public hospitals, mechanisms were described as more ambivalent: politically accountable boards were said to dismiss CEOs on occasion as scapegoats to deflect from governance failures, yet at other times the board protected CEOs to avoid electoral fallout from disruptive leadership changes.

Hospital size and system membership were also identified as influencing CEO turnover. Smaller hospitals were usually viewed as more vulnerable, both because CEOs typically move from smaller to larger hospitals as they climb the career ladder and because of these hospitals’ greater financial fragility. System membership, however, was cited as producing opposite mechanisms: rotation models and career mobility patterns were seen as making turnover more likely, whereas the financial stability afforded by synergies were reported as reducing it. Specialized hospitals were described as less dependent on CEO leadership and therefore quicker to replace executives, although their relatively straightforward economic management and thus greater financial stability were described as a countervailing force. University hospitals presented mixed dynamics: a limited candidate pool and special funding structures were viewed as reducing the likelihood of dismissal, but conflicts with medical directors, whose roles were often perceived as more central, could precipitate turnover. Beyond structural characteristics, organizational change, such as restructuring, mergers or strategic reorientation, was cited as a major destabilizing factor.

Interpersonal relationships and power dynamics were also viewed as crucial. Dynamics between the CEO and the board were described as being dependent on trust, shared objectives, and the board's ability to interpret complex hospital economics. Information asymmetry and perceived incompetence among board members were reported to heighten tensions, whereas strong social capital was seen as allowing CEOs to frame unfavorable results in ways that would make them less of a threat to their position. Chief physicians were highlighted as especially influential: their dissatisfaction could undermine CEOs by influencing supervisory board decisions through informal power. Relationships with other internal stakeholders, such as employees, were mentioned less consistently and described in less detail.

Interviewees agreed that environmental characteristics influence CEO turnover in multifactorial ways. Competitive pressures were viewed as important, but because they affect all hospitals, they were thought to increase turnover generally rather than explain differences between hospitals. Two mechanisms were identified in relation to the political and regulatory environment. First, complex regulatory landscapes and economic uncertainty were seen as heightening the likelihood of turnover, especially when poor performance erodes the confidence of supervisory boards. Second, local political changes, such as those in municipal governments or party dominance, were also highlighted as being able to precipitate turnover.

The role of urbanization elicited mixed explanations. Rural and remote settings were sometimes seen as increasing the likelihood of turnover by reducing CEO and family satisfaction with local infrastructure and lifestyle, yet these same settings were noted as having limited replacement options, thereby limiting involuntary turnover. The availability of alternatives was therefore viewed as critical, with access to large candidate pools and to management companies that could provide interim leaders being reported as facilitating higher turnover. Along these lines, the frequent attention of headhunters was cited as lowering the threshold for CEOs to leave voluntarily.

Most interviewees agreed that CEO's personal characteristics strongly influence turnover, particularly when departures are initiated by the CEOs themselves. Age emerged as a decisive factor: younger CEOs were seen as being more likely to leave for career advancement, whereas older CEOs were described as valuing stability, reducing turnover until retirement approached. Gender dynamics were viewed as complex. Interviewees pointed out that higher entry barriers for women may create a "survivor effect" of particular

successful female CEOs, yet family commitments could increase their likelihood of turnover. Life events, such as family changes or a partner's career move, were also cited as triggers for resignation, as were health issues, including burnout and chronic illness. Other personal factors were seen as shaping retention. Strong community ties were cited as encouraging stability, while job dissatisfaction resulting from limited autonomy or self-perceived poor performance was reported as promoting turnover. Positive experiences of self-initiated turnover were thought to increase the probability of future career moves by lowering psychological barriers and demonstrating marketability. Finally, personal skills were cited as playing a role: assertiveness was seen as necessary but sometimes as a source of conflict with boards, whereas emotional intelligence and social skills were cited as helping CEOs better manage relationships with boards and clinical leaders, thereby reducing the likelihood of turnover.

3.5 Discussion

We conducted a parallel convergent mixed-methods study to identify the factors that influence hospital CEO turnover and examine the mechanisms and contexts through which they operate. By integrating quantitative and qualitative evidence, we provide a more comprehensive account of the determinants and dynamics of this pivotal moment in hospital governance.

Hospital performance

Both our quantitative and qualitative results emphasize the importance of financial performance in CEO turnover, consistent with prior research (e.g., (Ballantine et al. 2008; Eldenburg et al. 2004). Our findings also extend this literature by showing that poor quality of care can trigger turnover even when financial performance is strong. This emphasizes how boards evaluate CEOs not only through financial results but also through perceived clinical outcomes, pointing to an underexplored dimension of turnover decisions.

Organizational characteristics

Our findings also point to hospital ownership as a key factor. The quantitative results showed a higher turnover probability in for-profit hospitals, and the qualitative evidence explained this through the presence of rotation models, defined career pathways and heightened performance sensitivity, consistent with previous research (e.g., (Hearld et al. 2019; Potter and Dowd 2003; Wilson and Stranahan 2000). Although there was no

statistically significant difference in turnover probability between public and non-profit hospitals, interviewees described stabilizing influences such as public demand for continuity of provision in public hospitals and the mission-driven values of many non-profit hospitals, particularly those with religious sponsorship. These were counterbalanced by vulnerabilities such as electoral cycles in public hospitals or limited refinancing options in non-profits.

The somewhat ambivalent results regarding hospital ownership also suggest that single hospital characteristics rarely determine turnover on their own. For example, interviewees frequently linked the mechanism of rotation models to both ownership and system affiliation, and the cluster analysis showed wide variation in turnover rates for different combinations of hospital characteristics.

Our non-significant quantitative finding for system affiliation contrasts with interviewee accounts and prior studies that associate system affiliation with higher turnover (Eldenburg et al. 2004; Hearld et al. 2019). A possible explanation is that these mechanisms are more extensively developed in large systems, most of which we excluded from the quantitative analysis. This interpretation is consistent with the cluster analysis, which found the highest turnover rate in the cluster dominated by hospitals affiliated with large systems.

Our findings on hospital size were also mixed. The quantitative analysis did not suggest greater turnover in small hospitals, whereas the interviews generally supported earlier evidence of higher turnover in this group (Hearld et al. 2019; Potter and Dowd 2003; Wilson and Stranahan 2000). Explanations included career mobility and financial vulnerability, but interviewees also emphasized stabilizing mechanisms: in smaller hospitals, CEOs wield greater influence, which can lead to greater stability and thus potentially improve retention. These countervailing forces may cancel each other out, which would explain why our cluster analysis identified the lowest turnover among the smallest hospitals.

We found no consistent link between teaching status and turnover. Some interviewees suggested that university hospitals have lower turnover, possibly due to their funding structures and limited candidate pools, but these hospitals were excluded from our quantitative data set. Earlier research has also produced inconsistent findings (Hearld et al. 2019; Janke et al. 2019; Weil and Timmerberg 1990), probably reflecting different sample compositions or different national contexts.

Finally, our qualitative findings emphasize the destabilizing effects of organizational change, such as restructuring, mergers or strategic reorientation, consistent with earlier work (Eldenburg et al. 2004; Mick et al. 1993). Interpersonal dynamics were also highlighted as playing a central role. Conflicts between CEOs and boards or chief physicians were seen as a strong factor increasing turnover probability, consistent with existing research (see e.g. Hart et al. 1993; Leibert and Leaming 2010; Mathew et al. 2024a; Mathew et al. 2024b). Our qualitative analysis suggests that many of these conflicts originate or are exacerbated by information asymmetries or a perceived lack of competence among board members, especially in public and non-profit hospitals. A further novel insight was the influence of chief physicians, who emerged in conversations as a powerful internal stakeholder group whose dissatisfaction with a CEO could prompt dismissals through their informal sway over boards. Conversely, as would be expected, trust among stakeholders was reported as an important stabilizing factor.

Environmental characteristics

Our findings on competition were mixed, echoing prior research (Bertrand et al. 2005; Brickley and van Horn 2002). Because our measure of competitive intensity was based on treatment categories rather than hospital availability, specialized hospitals tended to appear less exposed to competition. This may explain why CEOs in such hospitals were viewed as more easily replaced, although the quantitative effects were only marginally significant and interviewees generally downplayed competition as a major source of variation.

In contrast, both components of the study point to the importance of the broader regional environment. Turnover increased after municipal elections, particularly in public hospitals, and interviewees emphasized that wider regulatory changes can also destabilize leadership. This is consistent with previous studies documenting turnover spikes during major reforms such as the Affordable Care Act in the US (Ballantine et al. 2008; Hearld et al. 2019).

The effects of urbanization were more complex. Our quantitative results indicated higher turnover in large cities and remote districts. This provides a tentative reconciliation of earlier studies, one of which reported higher turnover in more highly urbanized districts and the other in less urbanized ones (Hearld et al. 2019; Weil and Timmerberg 1990). Interviews suggested different mechanisms at these extremes: abundant career opportunities in large cities may draw CEOs away, whereas weak infrastructure and lifestyle constraints in remote areas can generate dissatisfaction, although recruitment challenges in such regions may limit forced dismissals.

Personal characteristics

Our qualitative and quantitative results were consistent with a U-shaped relationship between CEO age and turnover. Younger CEOs were more likely to leave for career advancement, turnover declined in mid-career as stability became more important, and increased again approaching retirement, consistent with previous literature (e.g. Ballantine et al. 2008).

Our quantitative analysis also showed a lower probability of turnover among female CEOs. Interviewees attributed this to higher entry barriers, which produce a "survivor effect" of particularly capable women reaching CEO positions, as well as distinct leadership qualities often reported in the literature (see e.g. Galstian et al. 2018; Appelbaum et al. 2003).

Beyond demographics, our qualitative analysis points to additional personal factors. Burnout and other health issues, as well as declining job satisfaction linked to rising complexity, limited autonomy, and liability concerns, were all cited as triggers for resignation. Life circumstances and personal career trajectories also mattered, and strong interpersonal skills were viewed as protective. These findings are reinforced by recent survey evidence identifying stress and work-related pressures as leading causes of turnover (Mathew et al. (2024b)), emphasizing their relevance across healthcare systems.

Additional findings

Altogether our results suggest a complex interplay between performance indicators, organizational and environmental characteristics, personal factors, and interpersonal dynamics in affecting the probability of hospital CEO turnover. The interviews and cluster analysis indicate that single factors rarely operate in isolation; rather, their effects are conditioned by context and combinations of influences. Ownership emerged as a particularly important moderator: for instance, financial performance had a stronger effect in for-profit hospitals, whereas supervisory boards exerted more influence in public hospitals. These patterns emphasize the multifaceted and context-dependent nature of CEO turnover in healthcare.

Our qualitative analysis allowed us to differentiate between forced and CEO-initiated turnover. Performance and organizational factors were most often linked to forced dismissals, whereas personal characteristics and contractual terms were mostly linked with voluntary departures. Interpersonal relationships and environmental conditions played roles in both, helping explain the variability across cases.

Our findings speak to established theories of CEO succession. Many interviewees described replacements as strategic responses to environmental demands, which is consistent with resource dependency theory, especially in large for-profit systems with professionalized selection and monitoring processes. At the same time, concerns about "a vicious cycle" of repeated turnover reflected how staff resistance and organizational instability can undermine new leaders, perpetuating further exits. The scapegoating perspective was also highlighted by interviewees, who described how CEOs were wrongly blamed for structural problems or influence and decisions stemming from individual board members – for example, local politicians in public hospitals.

Strikingly, our interviewees frequently drew analogies to sports, likening CEOs to team coaches –replaced when not up to the task, and easier to dismiss than the whole team. Such metaphors resonate with the history of leadership succession theories and illustrate how CEO turnover is often understood and communicated in accessible, emotionally charged terms. They also point to the symbolic and cultural dimension of executive change, which formal performance metrics alone cannot capture.

Limitations and further research

This study has several limitations. First, the two components of the mixed-methods design cover different time periods: the quantitative analysis used data from 2012–20, whereas the qualitative interviews were conducted in 2024–25, which may limit direct comparability. However, because hospital characteristics tend to be stable over time and the qualitative study was designed to provide complementary explanations rather than replicate the quantitative analysis, this is unlikely to undermine the findings. Second, qualitative findings are influenced by respondents' individual histories and experiences. Interpretations may have differed depending on whether participants had experienced repeated personal transitions or observed turnover primarily in the course of reorganizations. Third, the quantitative analysis could not distinguish between voluntary and involuntary CEO turnover, although predictors may operate differently in one category compared to the other. Fourth, for comparability, we excluded hospitals belonging to large systems without separate financial reporting, which limits transferability. The discriminatory power of the quantitative model, while acceptable, was constrained by unobserved factors, such as interpersonal relationships, that emerged as important in the interviews. Finally, the distinct features of the German hospital market, including its regulatory framework and diverse

ownership structures, may restrict the generalizability of our results. Replication in other healthcare systems would clarify the extent of transferability.

Future research should continue to triangulate data from multiple sources across methods, as neither quantitative nor qualitative approaches alone provide a complete picture of CEO turnover. Distinguishing more systematically between forced and voluntary exits, ideally with quantitative data, would be particularly valuable. Further work could also investigate the relative importance of the different categories of factors identified here, and explore how their interaction produces the patterns observed among hospitals.

3.6 Practice implications and conclusion

Practice implications

This study points to the need for a multifaceted approach to improving leadership stability in hospitals, addressing both performance management and stakeholder relations. Boards, physicians and CEOs should build trust by prioritizing transparent communication and developing shared goals, so that differences in visions and interests can be identified and resolved before they escalate. Developing hospital-specific expertise within boards is also important to foster realistic expectations and informed evaluations of CEO performance.

Clear formal delineation of responsibilities between the CEO and chief physicians is essential given the latter's considerable informal influence. Formal agreements on decision-making authority can reduce conflicts and prevent situations in which medical leaders undermine or displace CEOs.

Performance evaluation should take account of the broader context of a hospital's financial situation. Recognizing that strategic realignments and restructuring often produce temporary declines can help prevent premature dismissals or frustration-driven resignations.

Finally, it is important to have a formal system of succession planning in place. These systems should emphasize interpersonal skills, such as conflict resolution and trust building, to support smooth leadership transitions. In addition, promoting an organizational culture that values diversity, gender equality, and work–life balance may improve CEO retention and reduce turnover linked to stress or burnout.

Conclusion

This study examined hospital CEO turnover as a pivotal moment in hospital governance. Using a convergent parallel mixed-methods design, we found that strong financial performance reduces the likelihood of turnover, but deficiencies in quality of care could lead to leadership change even in financially stable hospitals. For-profit ownership and affiliation with hospital systems or chains were associated with higher turnover, whereas public and non-profit hospitals were influenced by political cycles, value systems, and financial constraints in more complex ways. CEO age followed a U-shaped relationship with turnover, reflecting career trajectories and personal life-cycle considerations, whereas female CEOs were less likely to leave, which is consistent with selection effects and distinct leadership expectations. Across contexts, interpersonal dynamics, particularly the role of boards and chief physicians, proved decisive in determining outcomes.

These findings help explain why previous studies have reported inconsistent results: predictors of CEO turnover rarely act alone, but interact with organizational, political and interpersonal factors. By linking measurable outcomes to the mechanisms through which boards, management consultants, and executives interpret and respond to performance, our study contributes to the understanding of executive succession in healthcare. In doing so, it demonstrates the relevance of established management theories to hospital governance while also drawing attention to the symbolic and relational dimensions of leadership transitions, which are often overlooked in quantitative research.

Chapter 4

Heterogenous effects of hospital chief executive officer turnover

Joint work with Vera Winter

Submission to the journal *'Social Science & Medicine'* is planned for September 2025.

4.1 Introduction

Chief Executive Officers (CEOs) are the highest-ranking executives in hospitals, responsible for setting strategic direction, maintaining financial stability, cultivating a constructive organizational culture, and overseeing operations and resource management (Wilson and Stranahan 2000). Given the breadth and scope of these responsibilities, CEO turnover usually constitutes a major organizational event that is accompanied by substantial changes to internal structures and processes (Nyberg et al. 2021).

Although hospitals depend on stable leadership to support the consistent delivery of high-quality patient care (Kaiser et al. 2020; Leggat and Balding 2019), the hospital sector has one of the highest CEO turnover rates of any industry. In the United States (US), the average CEO tenure across sectors is approximately seven years (Korn Ferry 2020) compared to roughly five years in hospitals (Khaliq et al. 2006). In other high-income countries, such as Germany and Australia, hospital CEO turnover is even more frequent, with average tenures closer to four years (BDO and DKI 2021; Mathew et al. 2024a).

While the antecedents of CEO turnover in the hospital sector have been widely studied over the past three decades, comparatively little is known about its consequences (for an overview, see Hermes et al. 2025). Successor CEOs bring their own experiences, values, skills, and strategic priorities to the role (Berns and Klarner 2017; Haveman et al. 2001), which influence how they interpret and respond to organizational challenges (Hambrick 2007; Kaiser et al. 2020). From this perspective, leadership change may provide an opportunity for strategic renewal, especially in underperforming hospitals (Eldenburg et al. 2004). In contrast, other scholars contend that CEO turnover is a disruptive event that can compromise organizational stability and performance (Khaliq et al. 2006). Empirical evidence generally supports the disruptive view, reporting negative consequences such as temporary declines in cost efficiency (Ford et al. 2018), increased risk of organizational failure (Alexander and Lee 1996; Lee and Alexander 1999), and workforce disruption (Khaliq et al. 2007b; Mathew et al. 2024a). However, most existing research relies on observational data, employs research designs that preclude causal inference, neglects relevant outcome measures such as patient satisfaction and technical efficiency, and fails to account for heterogeneity in the effects of CEO turnover depending on contextual contingencies (Hermes et al. 2025).

This study aims to address these gaps by examining the effects of CEO turnover in hospitals using an unbalanced longitudinal dataset comprising 1,019 German hospitals and 2,142 CEO turnovers between 2012 and 2020. We apply a difference-in-differences (DiD) approach combined with propensity score matching to estimate the effects of CEO turnover on hospital technical efficiency, financial performance, and patient satisfaction. To account for potential effect heterogeneity, we further analyze variation in outcomes across hospitals with differing organizational (e.g., ownership) and environmental (e.g., location) contingencies that have previously been linked to differences in hospital performance and CEO profiles (Leibert and Leaming 2010; Silvera et al. 2022).

4.2 Theoretical background

Over the past six decades, scholars across disciplines have developed a range of theoretical frameworks to explain the dynamics and consequences of CEO turnover (for an overview, see Giambatista et al. 2005). This body of work has gradually moved towards a more differentiated and context-sensitive understanding, recognizing that multiple and, at times, partially contradictory theories may apply depending on the circumstances. As a result, recent research emphasizes the importance of situational factors and organizational contingencies in determining which theoretical approach is most appropriate in a given context (Berns and Klarner 2017; Georgakakis and Ruigrok 2017; Giambatista et al. 2005). Broadly, these theories have crystallized into two contrasting theoretical streams that seek to explain the effects of CEO turnover as being influenced by contextual conditions: the organizational disruption and the organizational adaptation perspectives.

4.2.1 Organizational disruption perspective

The first stream views CEO turnover as a disruptive event that generates organizational instability and may adversely affect performance (Friedman and Singh 1989). In hospitals, CEO turnover is usually associated with substantial costs. Severance packages for outgoing executives and recruitment expenses for new appointments can reach up to US$500,000 (Sinnott 2008), not including the costs of interim leadership. New CEOs usually require time to familiarize themselves with the organization and acquire institution-specific knowledge (Georgakakis and Ruigrok 2017). The learning process is frequently hampered by inadequate onboarding practices and limited organizational support (Khaliq et al. 2007b). The transfer of knowledge from existing leadership can also be difficult, especially when there is resistance or even hostility towards the incoming CEO (Friedman and Saul 1991;

Shen and Cannella 2002). As a result, new CEOs may be forced to make decisions without a full understanding of internal structure, available resources, or the broader organizational context, increasing the risk of misjudgment and declines in performance (Zhang and Rajagopalan 2004).

In addition to these transitional issues, most CEOs initiate substantial changes to an organization's strategy, culture, and performance goals after taking office (Dworkin and Goldstein 2004). These can disrupt established norms and values, and may lead to the reconfiguration of formal and informal relationships in the organization (Grusky 1960; Khaliq et al. 2006; Nyberg et al. 2021). The adjustment process can trigger temporary uncertainty and conflict among staff, which may weaken organizational cohesion and negatively affect performance (Mathew et al. 2024a). In many cases, CEO turnover also prompts changes in other senior leadership positions, increasing organizational instability, replacement costs, and the loss of institutional knowledge (Khaliq et al. 2006). Competitors may exploit these periods of disruption by attempting to attract personnel and patients (Khaliq et al. 2006).

Implementing new strategies entails additional costs. For example, establishing new departments to expand service offerings can require capital investments of up to €300,000 per bed in construction costs alone (Sdino et al. 2021). New services are unlikely to see high demand immediately because patients rely mostly on recommendations from their social networks when choosing a hospital (Groot et al. 2012) – something that is not yet possible when departments and specialists are new. As a result, such investments can negatively affect short-term performance due to high initial costs and underutilization.

4.2.2 Organizational adaptation perspective

The second theoretical stream views CEO turnover as a form of organizational adaptation to changing internal and external conditions, ideally resulting in improved performance. The underlying assumption is that successful organizations actively manage their competitive resources to exploit opportunities and mitigate threats in the market (Hillman et al. 2009; Pfeffer and Salancik 1978). However, certain developments in the external environment, changes in internal structures and power relations, and the position of the organization in its life cycle continually present CEOs with new situational challenges (Cragun et al. 2016). Addressing these requires skills and competencies that may change over time (Porter and McLaughlin 2006). Because individuals have deeply ingrained values,

beliefs, and personality traits (McCrae and Costa 2008) that influence how they interpret situations and make strategic decisions (Bigley and Wiersema 2002; Hambrick 2007), a mismatch between a CEO's profile and the situational demands of the organization inevitably arises over time (Giambatista 2004; Hambrick and Fukutomi 1991). According to the job-match theory, this misalignment prevents organizations from achieving optimal performance (Allgood and Farrell 2003). CEO replacement is therefore viewed as an important mechanism for restoring an optimal match between leadership characteristics and organizational requirements (Allgood and Farrell 2003; Ployhart et al. 2006).

4.2.3 The importance of contingencies

Previous research has investigated the role of organizational and environmental factors in relation to CEO turnover and performance in four areas: first, such factors have been used to explain the likelihood of CEO turnover (Hearld et al. 2019). Second, studies have examined how hospital CEO performance varies according to individual characteristics, such as educational background (Kaiser et al. 2020) or prior organizational experience (Ford et al. 2018). Third, researchers have analyzed how CEO profiles systematically differ across hospitals. For instance, Silvera et al. (2022) found that CEOs in non-profit hospitals are older and have longer tenure than their counterparts in for-profit hospitals. Similarly, CEOs in rural or smaller hospitals are more likely to lack a medical background and have less executive experience (Leibert and Leaming 2010). Fourth, studies have investigated whether CEO perceptions vary by contextual factors. For example, Matthew et al. (2024a) observed that CEOs in rural hospitals are more likely to report difficulties recruiting staff, whereas CEOs in financially distressed hospitals report more intense pressure to improve financial performance.

Contingency theory suggests that the impact of CEO turnover is not uniform but depends on specific organizational and environmental conditions (Berns and Klarner 2017). For instance, the consequences of a leadership transition may differ between large and small hospitals, or between stable and volatile market environments. However, little empirical research has examined the role of such factors in moderating the relationship between CEO turnover and hospital performance. In the following, we outline several organizational and environmental contingencies that may moderate this relationship.

Prior performance of the hospital

Prior organizational performance is a contingency that, although not always made explicit, underlies all theories of CEO turnover. Poor performance has consistently been shown to increase the likelihood of leadership change (e.g., Eldenburg et al. 2004; Ballantine et al. 2008). Underperforming hospitals face stronger pressure to adapt and may benefit more from a change of leadership. In such cases, a new CEO may be better positioned to implement fundamental strategic reforms, especially if they bring the necessary expertise to reverse performance declines (Allgood and Farrell 2003). The pressure to improve financial outcomes is usually greater in situations in which the long- or even medium-term viability of a hospital may be at stake (Mathew et al. 2024a). Accordingly, new CEOs may initially prioritize short-term optimization strategies, such as eliminating unprofitable services, outsourcing non-clinical functions, or joining group purchasing arrangements to alleviate immediate pressure and lay the groundwork for broader structural change (Khaliq et al. 2007b; Langabeer 2008). In contrast, hospitals that are already performing well tend to operate at higher levels of efficiency and may have already realized much of their optimization potential. Further improvements in such cases are more difficult to achieve and may require substantial investment (Al-Amin et al. 2016). As a result, CEOs in well-performing hospitals may focus more on patient-centered initiatives such as improving service quality, communication, and care delivery, which can contribute to higher patient satisfaction.

Frequency of CEO turnover

Another relevant contingency in the CEO turnover–performance relationship is the frequency with which leadership changes occur. From the perspective of organizational disruption, hospitals with a high rate of CEO turnover are particularly vulnerable to instability and diminished performance (Kim et al. 2021). Frequent turnover can disrupt the implementation and continuity of strategic initiatives (Khaliq et al. 2006; Mathew et al. 2024a; Mosadeghrad et al. 2013), such as when incoming CEOs discontinue their predecessors' projects in favor of their own agenda, resulting in the forfeiture of sunk costs (Clark 1994). Repeated changes in leadership may also generate uncertainty and unrest among staff (Kim et al. 2021), which can negatively affect employee motivation and well-being (Bordia et al. 2004). In turn, this may negatively affect overall organizational performance.

Empirical evidence supports this view: performance declines following CEO turnover are more pronounced in organizations with a history of frequent leadership change (Akbar et al. 2021). Hospitals with high CEO turnover rates may therefore experience not only more severe short-term disruption, but also longer-term declines in performance. Over time, these dynamics can contribute to a self-reinforcing cycle of instability and underperformance (Grusky 1960), which may ultimately increase the risk of organizational failure (Lee and Alexander 1999).

Organizational contingencies in CEO turnover

In addition to prior performance and turnover frequency, the effects of CEO turnover on hospital performance may also depend on structural characteristics of the organization. Two frequently reported organizational contingencies are hospital ownership type and hospital size.

Hospital ownership type

Hospitals differ in important ways depending on whether they are publicly owned or privately owned as either non-profit or for-profit institutions. One key distinction lies in the influence and representation of stakeholders: shareholders play a dominant role in for-profit hospitals, whereas public hospitals are substantially influenced by local political actors (Helmig et al. 2014; Lindlbauer et al. 2016). These differences are reflected, first, in leadership appointments. A recent study shows that CEO characteristics such as age and tenure vary systematically by ownership type of hospitals (Silvera et al. 2022). Second, stakeholder expectations influence strategic orientation. For-profit hospitals are generally driven by profit maximization, non-profits by mission fulfillment, and public hospitals by obligations to fulfill public service obligations, such as ensuring regional healthcare provision (Jennings et al. 2019; Tiemann et al. 2012). Accordingly, studies have found that hospitals adopt different types of strategies depending on ownership type (Zajac and Shortell 1989).

Ownership is also associated with broader differences in hospital characteristics and organizational structure. Public and non-profit hospitals tend to be larger, more likely to serve as teaching institutions, and are less profitable than for-profit hospitals (Silvera et al. 2022). These distinctions imply different operational constraints and resources, such as access to capital and personnel. It is therefore plausible that ownership also moderates the effects of CEO turnover on hospital performance.

Hospital size

Hospital size has been shown to be associated with strategic orientation and operational decision-making. Larger hospitals are more likely to adopt proactive rather than defensive or reactive strategies (Helmig et al. 2014), possibly due to their greater access to the financial and human resources needed to invest in and implement new strategies (Hoogestraat et al. 2024). They also tend to invest more heavily in advanced equipment, technology-based services (Li and Benton 2006), and certifications such as those related to quality management (Lindlbauer et al. 2016). In addition, large hospitals have been found to show higher levels of community orientation (Jennings et al. 2019) and benefit from economies of scale, which can impact operational efficiency (Coyne et al. 2009). However, larger organizational structures also involve a higher degree of complexity, which may complicate management and affect service quality. For example, McFarland and colleagues (2017) found that patient satisfaction decreases with increasing hospital size. Taken together, these structural and operational differences suggest that the effects of CEO turnover vary systematically by hospital size.

Environmental contingencies in CEO turnover

The impact of CEO turnover on hospital performance may also depend on environmental factors, such as the degree of urbanization. Hospitals in urban areas, where population density is higher, tend to experience more stable demand, which simplifies financial planning and enables the pursuit of new revenue opportunities, such as through service specialization (Williams et al. 1992). At the same time, competition is generally more intense in urban areas. In contrast, rural hospitals often have a mandate to provide basic local care, which limits their competitiveness relative to more comprehensive or specialized urban facilities and complicates their economic situation (Radcliff et al. 2003). These hospitals also have greater difficulties in recruiting specialized staff (Mathew et al. 2024a).

Despite these disadvantages, rural hospitals can benefit from stronger social ties between staff and patients, as well as from a greater degree of local identification with the hospital (Atkinson et al. 2022; Mandal and Phillips 2022). This may increase patient loyalty and improve the exchange of information, leading to better communication around strategic changes and enabling faster recognition of emerging patient needs (Atkinson et al. 2022; Li et al. 2024). Altogether, these differences suggest that the effects of CEO turnover vary depending on hospital location.

4.3 Methodology

4.3.1 Data

This study used data from multiple sources. Information on CEO appointments was obtained from the German Commercial Register ("Handelsregister"), which records information such as the names and appointment dates of chief executives. Hospital-level characteristics, including ownership, size, case numbers, and diagnoses, were taken from the legally mandated Structured Quality Reports. These data were also used to calculate technical efficiency and, combined with geolocation data from Google, to assess market competition. Patient satisfaction data were obtained from the Patient Experience Questionnaire (PEQ), which is administered annually in collaboration with statutory health insurers as part of the "Weisse Liste" initiative. The PEQ is distributed to patients two to eight weeks after discharge and covers aspects such as staff friendliness and satisfaction with processes of care. Financial performance measures were derived from annual hospital financial statements. To capture geographic context, hospitals were categorized according to the degree of urbanization of their district, following the four-level classification by the Federal Institute for Research on Building, Urban Affairs and Spatial Research (BBSR), which distinguishes between major cities, urban districts, rural districts, and remote rural districts.

Similar to Schneider et al. (2020), we excluded hospitals with fewer than 50 beds, university hospitals, psychiatric hospitals, rehabilitation clinics, day and night clinics, hospitals with pediatric or geriatric specialization, and hospitals with changes in ownership to ensure comparability across institutions. We then conducted several plausibility checks and corrected the data set for errors. The resulting unbalanced panel covered the period from 2012 to 2020 and included data on 1,019 hospitals and 2,142 CEO turnover events (Sample A).

Because financial data for hospitals that are part of hospital systems are only available at the system level, we constructed a separate sample (Sample B) to analyze the financial impact of CEO turnover. This included aggregated data on hospital systems with up to six hospitals, as well as data on freestanding hospitals. Larger hospital systems were excluded to ensure comparability. In total, the sample with financial data included 306 freestanding hospitals and 169 hospital systems, with an average of 2.5 hospitals per system.

4.3.2 Variables

Independent variable

We defined CEO turnover as the replacement of a hospital's chief executive regardless of whether the departure was voluntary or involuntary. Voluntary turnover could result from resignations, retirements, or internal promotions, whereas involuntary turnover could result from dismissal, illness, or death. Because we did not have access to information on the reasons for specific CEO departures, we could not distinguish between voluntary and involuntary turnover, similar to previous studies (Cragun et al. 2016; Finkelstein et al. 2009; Giambatista et al. 2005). CEO turnover was identified based on changes in the names of acting CEOs recorded at the end of each calendar year and was coded as a binary variable (0 = no turnover, 1 = turnover).

In Germany, it is legally permissible for multiple CEOs to be appointed jointly to manage a hospital, either as a transitional or permanent arrangement. For hospitals with more than one CEO, we defined CEO turnover as the appointment of at least one new CEO, reflecting the assumption that a newly appointed CEO contributes new personal resources and is actively involved in strategic decision-making.

Dependent variables

Efficiency

In response to rising healthcare expenditures, various regulatory measures have been introduced over recent decades in Germany that have led to intense competition and cost pressure in the hospital sector. This has contributed to the closure of inefficient hospitals (Tiemann et al. 2012), making efficiency a key performance indicator. To calculate the relative efficiency of the hospitals, we applied data envelopment analysis (DEA), using an input-oriented model. This approach assumes that hospitals have greater control over inputs (e.g., staff) than outputs (e.g., inpatient cases), and therefore seeks to identify the minimum input needed to produce a given level of output. We specified the production function using four input and two output variables. Inputs consisted of full-time equivalents (FTEs) for three staff categories (physicians, registered nurses[1], and nursing assistants), as well as the number of beds, which limits treatment capacity in conjunction with staffing levels. Outputs

[1] In this paper, the term "registered nurses" refers to "examinierte Pflegekräfte" in the German healthcare system, i.e., nurses who have completed formal vocational training and passed a state examination. This designation excludes nursing assistants or support staff without full qualification.

consisted of inpatient cases and outpatient cases. To account for variation in case severity, we followed the case-mix adjustment approach proposed by Schneider et al. (2020), which weights inpatient cases by relative length of stay for different groups of hospital diagnoses (see Table 7). The calculation was performed in accordance with the specifications outlined in the second algorithm of Simar and Wilson (2007), which involves a two-stage data envelopment analysis (DEA) with truncated regression followed by a double bootstrap procedure. We allowed for variable returns to scale. The analysis was conducted using the simarwilson package in Stata version 15.

Patient satisfaction

Patient satisfaction is an important competitive factor in the hospital market. Satisfied patients are more likely to return to the same hospital and recommend it to others (Cheng et al. 2003), which can influence patient volumes and, ultimately, revenue. As a result, maintaining or improving patient satisfaction is a fundamental strategic priority for hospital CEOs. We calculated patient satisfaction as the average overall satisfaction reported by patients, comprising assessments of medical staff, care processes, and treatment outcomes. Ratings are provided on a six-point scale, with one indicating the lowest level of satisfaction. We adopted a composite measure to capture the putative influence of CEO turnover across all relevant domains.

Financial performance

Due to limited refinancing options, profitability is a central concern in hospital management. Hospitals must generate sufficient surplus to sustain operations, especially when financially distressed owners, such as municipalities, are unable to provide enough support. Profitability is also necessary to finance investments. Accordingly, the financial implications of CEO turnover are of considerable interest. Although performance targets may differ across ownership types (Jennings et al. 2019; Tiemann et al. 2012), all hospitals operate under structural conditions that require financial viability. For-profit hospitals must meet shareholder expectations; unprofitable public hospitals cannot be indefinitely subsidized by municipal budgets; and non-profit hospitals depend on surpluses to reinvest in their social mission (Brickley and van Horn 2002). We measured financial performance using the net profit margin. In sensitivity analyses, we also examined other indicators, such as return on assets (ROA), earnings before interest, taxes, depreciation, and amortization (EBITDA) margin, and before interest and taxes (EBIT) margin.

Control variables

We included a set of control variables to account for organizational and environmental contingencies that may have influenced hospital performance, such as the intensity of local competition, hospital location, ownership, hospital size, and affiliation with a hospital system. A list of all variables and their operationalization can be found in Table 7.

Table 7 Description and operationalization of variables

Variable	Type of Variable	Definition	Data Source
Performance metrics			
Efficiency	Numeric	Hospitals' technical efficiency was calculated using an input-oriented DEA model, focusing on minimizing inputs for a given level of outputs. Inputs include full-time equivalent hospital staff (doctors and nurses) and the number of beds, which together limit treatment capacity. Outputs consist of inpatient and outpatient cases, with inpatient cases adjusted for case severity using a case-mix adjustment based on relative length of stay for different groups of hospital diagnoses. Information on case-mix adjustment: Following Schneider et al. (2020) we calculated weights (π_d) for each diagnosis group d based on the average length of stay (LOS_d) for the different groups and use these weights to adjust the total number of inpatient cases for each hospital. $\pi_d = \frac{LOS_d}{\frac{1}{D}\sum_{d=1}^{D} LOS_d}; d = 1, \dots, D.$ We then multiplied the number of inpatient cases in a diagnosis group by their respective weight to obtain the adjusted number of inpatient cases for each hospital (h). $inpatientsadj_h = \sum_{d=1}^{D} \pi_d \cdot inpatients_{d,h}; h = 1, \dots, H \; and \; d = 1, \dots, D$	SQR
Net profit margin	Numeric	Calculated as the ratio of net income to total revenue. This metric reflects the proportion of revenue that remains as profit after all expenses have been deducted.	CR
Patient satisfaction	Numeric	Calculated as the average overall patient satisfaction score across multiple domains (e.g. satisfaction with staff, clinical processes, and treatment) based on responses to a standardized patient experience questionnaire. Scores rang from 1 to 6, with higher values indicating greater satisfaction.	WL
Hospital characteristics			
Beds	Numeric	Total number of beds, measured in thousands	SQR
Hospital size	Categorial	1 = small (<150 beds), 2 = medium (150-500 beds), 3 = large (>500 beds)	SQR
Hospital system	Dummy	0 = Freestanding hospital , 1 = Member of a hospital system	SQR
Ownership	Categorial	1 = Public, 2 = Non-profit, 3 = For-profit	SQR
Market characteristics			
Herfindahl-Hirschman Index (HHI)	Numeric	Measure of market concentration (and thus competition) within a 30 km catchment area. To account for different service profiles, a separate HHI was calculated for each of the 22 ICD-10-GM chapters. A chapter-specific weighted average was then computed to derived to hospital-level HHI. The index is scaled from 0 to 1, with a higher value indicating lower competition.	SQR, GLD
Market concentration	Categorial	1 = low concentration (HHI<0.10), 2 = moderate concentration (HHI 0.10 – 0.18), 3 = high concentration (HHI>0.18)	SQR, GLD
Degree of urbanization	Categorial	1 = large cities (>100,000 inhabitants), 2 = urban districts (>300 inhabitants/km^2), 3 = rural districts (>150 inhabitants/km^2), 4 = remote districts (<150 inhabitants/km^2)	WS

Note: SQR = structured quality reports, CR = commercial register, WL = "Weiße Liste", WS = web search, GLD = geoloaction data

4.3.3 Data analysis

To analyze the effects of CEO turnover, we implemented a sequential difference-in-differences (DiD) model separately for two samples. Sample A contained hospital-level data on technical efficiency and patient satisfaction, whereas Sample B also included financial data. Because some hospitals in Sample B belonged to larger systems that reported consolidated financial statements, we partially aggregated data at the system level to ensure comparability. For example, without aggregation, a small hospital might have appeared to generate implausibly high profits due to system-wide reporting. To preserve comparability, we retained only those systems with up to six hospitals in Sample B.

For both samples, we constructed separate DiD estimation panels for two-, three- and four-year observation windows, resulting in six panels in total (A1–3, B1–3). In each panel, hospitals were assigned to the treatment group if they experienced exactly one CEO turnover in year t and no additional turnover during the observation window. Hospitals with no CEO turnover during that window served as the control group. This design ensured that each estimate captured the effects of a single leadership change and reduced the risk of contamination from multiple turnover events. It also allowed for us to balance the trade-off between observing longer-term effects and maintaining an adequate sample size, which was particularly relevant given the high rate of turnover in the German hospital market.

For each panel, the year preceding turnover ($t-1$) served as the baseline. Our main model used a three-year observation window ($t-1$ to $t+1$), which captured short-term effects while retaining sufficient statistical power. Thus, our main model estimated the ATT both for the year of the CEO turnover and the subsequent year. Previous research suggests that this early post-turnover period is especially sensitive due to disruptions during the leadership transition (Ford et al. 2018). For a robustness check, we also estimated effects over two- and four-year windows. The latter allowed us to observe effects up to two years after turnover (t+2), which is a relevant benchmark given that the average strategic planning horizon in organizations ranges from three to five years (Sołoducho-Pelc 2015).

To ensure comparability between treatment and control hospitals, we used propensity score matching in each DiD panel. Propensity scores were estimated via logistic regression using a comprehensive set of one-year lagged structural covariates that may have affected the likelihood of CEO turnover and subsequent hospital performance. These included ownership type, hospital size, competitive intensity, and prior hospital performance on the

outcome variable under investigation. Treatment and control hospitals were then paired using nearest-neighbor matching with replacement, allowing each control hospital to serve as a match for more than one treatment hospital. We chose this approach to accommodate the heterogeneity of the hospital landscape and the small number of comparable controls.

Due to varying data availability for individual hospital-year combinations, we performed separate matching for each combination of outcome variable and observation window. Without taking the sensitivity analysis into account, we conducted a total of 18 matchings. Differences across the resulting matched samples were mainly due to variation in the number of available observations, with only minor and statistically non-significant variation in sample characteristics. Overall, the matching process reduced observable bias and improved comparability between treatment and control groups. Matching statistics for the main model, divided by outcome, are provided in the Appendix (Tables A9 – A17). Descriptive statistics for the matched samples used in the main model for each of the three outcomes (efficiency, patient satisfaction, and net profit margin) are provided in Tables 8 – 11.

Table 8 Descriptive statistics – Sample matched for the outcome parameter efficiency

	t-1			t			t+1		
Variables	**Obs**	**Mean**	**SD**	**Obs**	**Mean**	**SD**	**Obs**	**Mean**	**SD**
Efficiency	1,283	0.454	0.088	1,282	0.449	0.085	1,283	0.443	0.088
Treated	714	0.451	0.088	713	0.442	0.084	714	0.435	0.089
Control	569	0.456	0.087	569	0.457	0.085	569	0.451	0.087
Patient satisfaction	1,246	5.041	0.220	1,260	5.037	0.221	1,270	5.031	0.224
Treated	691	5.017	0.212	700	5.011	0.210	708	5.001	0.216
Control	555	5.064	0.225	560	5.063	0.228	562	5.061	0.229
Inpatient cases weighted (per 1,000)	1,283	11.402	8.743	1,283	11.402	8.743	1,283	11.402	8.743
Treated	714	11.445	8.754	714	11.445	8.754	714	11.445	8.754
Control	569	11.359	8.739	569	11.359	8.739	569	11.359	8.739
Outpatient cases (per 1,000)	1,283	25.525	26.147	1,283	26.310	27.273	1,283	25.883	26.963
Treated	714	24.648	26.080	714	25.484	27.883	714	25.314	27.766
Control	569	26.402	26.205	569	27.137	26.645	569	26.452	26.145
Beds (per 1,000)	1,283	0.310	0.229	1,283	0.311	0.232	1,283	0.309	0.230
Treated	714	0.313	0.228	714	0.313	0.228	714	0.313	0.232
Control	569	0.307	0.230	569	0.309	0.235	569	0.305	0.228
Physicians	1,283	92.465	86.166	1,282	94.667	88.041	1,283	96.835	89.160
Treated	714	93.920	85.835	713	95.457	87.206	714	97.553	87.762
Control	569	91.010	86.540	569	93.878	88.931	569	96.116	90.602
Nurses	1,283	207.772	177.913	1,283	208.287	180.717	1,283	213.577	182.443
Treated	714	209.337	176.184	714	209.059	176.907	714	213.753	179.166
Control	569	206.207	179.753	569	207.514	184.588	569	213.402	185.807
Nurse assistants	1,283	15.191	20.737	1,283	15.191	20.737	1,283	15.191	20.737
Treated	714	15.138	21.826	714	15.138	21.826	714	15.138	21.826
Control	569	15.243	19.605	569	15.243	19.605	569	15.243	19.605
High turnover rate hospital	1,283	0.313	0.464	1,283	0.313	0.464	1,283	0.313	0.464
Treated	714	0.483	0.500	714	0.483	0.500	714	0.483	0.500
Control	569	0.143	0.350	569	0.143	0.350	569	0.143	0.350
Hospital system	1283	0.672	0.470	1283	0.672	0.470	1283	0.672	0.470
Treated	714	0.704	0.457	714	0.704	0.457	714	0.704	0.457
Control	569	0.640	0.480	569	0.640	0.480	569	0.640	0.480
Herfindahl-Hirschman Index	1,283	0.180	0.145	1,283	0.180	0.145	1,283	0.182	0.146
Treated	714	0.180	0.146	714	0.179	0.146	714	0.182	0.148
Control	569	0.180	0.143	569	0.181	0.144	569	0.182	0.145

Table 9 Descriptive statistics – Sample matched for the outcome parameter patient satisfaction

	t-1			t			t+1		
Variables	**Obs**	**Mean**	**SD**	**Obs**	**Mean**	**SD**	**Obs**	**Mean**	**SD**
Efficiency	1,227	0.450	0.087	1,231	0.448	0.087	1,230	0.439	0.088
Treated	689	0.451	0.089	691	0.442	0.084	691	0.434	0.089
Control	538	0.448	0.086	540	0.454	0.090	539	0.443	0.087
Patient satisfaction	1,306	5.020	0.221	1,306	5.019	0.227	1,306	5.022	0.229
Treated	720	5.022	0.216	720	5.017	0.220	720	5.010	0.224
Control	586	5.018	0.226	586	5.022	0.234	586	5.034	0.233
Inpatient cases weighted (per 1,000)	1,306	11.065	8.735	1,306	11.065	8.735	1,306	11.065	8.735
Treated	720	11.195	8.770	720	11.195	8.770	720	11.195	8.770
Control	586	10.936	8.705	586	10.936	8.705	586	10.936	8.705
Outpatient cases (per 1,000)	1,243	24.809	25.326	1,243	25.542	26.471	1,243	25.254	25.874
Treated	693	24.681	25.711	693	25.446	27.250	693	25.141	26.687
Control	550	24.940	24.942	550	25.641	25.663	550	25.371	25.027
Beds (per 1,000)	1,305	0.300	0.222	1,306	0.300	0.225	1,302	0.300	0.226
Treated	720	0.305	0.224	720	0.305	0.226	718	0.306	0.230
Control	585	0.295	0.219	586	0.295	0.225	584	0.295	0.223
Physicians	1,306	88.989	84.291	1,305	90.832	86.176	1,305	93.101	87.576
Treated	720	92.063	86.372	719	93.354	86.903	720	95.171	87.089
Control	586	85.915	82.109	586	88.315	85.437	585	91.024	88.082
Nurses	1,306	201.148	176.580	1,306	200.210	175.647	1,306	203.884	178.514
Treated	720	205.907	178.911	720	205.120	177.435	720	209.116	178.154
Control	586	196.389	174.228	586	195.300	173.841	586	198.652	178.861
Nurse assistants	1,291	15.093	20.274	1,291	15.093	20.274	1,291	15.093	20.274
Treated	717	15.055	21.816	717	15.055	21.816	717	15.055	21.816
Control	574	15.130	18.591	574	15.130	18.591	574	15.130	18.591
High turnover rate hospital	1,306	0.301	0.459	1,306	0.301	0.459	1,306	0.301	0.459
Treated	720	0.488	0.500	720	0.488	0.500	720	0.488	0.500
Control	586	0.115	0.320	586	0.115	0.320	586	0.115	0.320
Hospital system	1306	0.637	0.481	1306	0.637	0.481	1306	0.637	0.481
Treated	720	0.681	0.467	720	0.681	0.467	720	0.681	0.467
Control	586	0.593	0.492	586	0.593	0.492	586	0.593	0.492
Herfindahl-Hirschman Index	1,306	0.188	0.149	1,306	0.187	0.147	1,306	0.188	0.148
Treated	720	0.183	0.146	720	0.181	0.146	720	0.184	0.148
Control	586	0.193	0.152	586	0.192	0.149	586	0.193	0.149

Table 10 Descriptive statistics – Sample matched for the outcome parameter net profit margin

	t-1			t			t+1		
Variables	**Obs**	**Mean**	**SD**	**Obs**	**Mean**	**SD**	**Obs**	**Mean**	**SD**
Net profit margin	491	-0.001	0.065	482	0.002	0.069	491	0.005	0.063
Treated	260	-0.002	0.064	254	0.004	0.070	260	0.005	0.055
Control	231	-0.001	0.066	228	0.000	0.068	231	0.004	0.070
Efficiency	463	0.450	0.083	462	0.452	0.081	462	0.443	0.088
Treated	247	0.449	0.086	246	0.448	0.081	247	0.441	0.092
Control	216	0.451	0.079	216	0.456	0.082	215	0.457	0.084
Patient satisfaction	478	5.066	0.208	480	5.054	0.208	482	5.042	0.219
Treated	254	5.045	0.212	258	5.049	0.215	258	5.029	0.229
Control	224	5.087	0.203	222	5.059	0.201	224	5.055	0.207
Inpatient cases weighted (per 1,000)	491	12.204	9.354	491	12.241	9.168	491	11.923	8.694
Treated	260	12.252	8.912	260	12.188	8.349	260	11.976	8.439
Control	231	12.156	9.795	231	12.293	9.938	231	11.870	8.960
Outpatient cases (per 1,000)	491	26.747	28.343	491	27.163	29.023	491	26.921	28.874
Treated	260	26.101	26.230	260	26.575	27.214	260	26.612	27.903
Control	231	27.393	30.352	231	27.752	30.772	231	27.230	29.867
Beds (per 1,000)	491	0.337	0.260	491	0.337	0.261	491	0.333	0.252
Treated	260	0.342	0.244	260	0.342	0.245	260	0.339	0.236
Control	231	0.332	0.275	231	0.333	0.276	231	0.328	0.267
Physicians	491	97.999	92.334	491	100.041	93.923	491	101.776	94.585
Treated	260	98.884	84.564	260	101.318	86.832	260	102.830	87.327
Control	231	97.114	99.670	231	98.764	100.683	231	100.723	101.498
Nurses	491	225.480	189.986	491	224.157	189.796	491	227.411	188.197
Treated	260	228.040	176.538	260	227.593	177.144	260	231.053	179.700
Control	231	222.920	202.882	231	220.721	201.970	231	223.769	196.634
Nurse assistants	491	16.615	20.893	491	16.615	20.893	491	16.615	20.893
Treated	260	16.124	18.858	260	16.124	18.858	260	16.124	18.858
Control	231	17.105	22.776	231	17.105	22.776	231	17.105	22.776
High turnover rate hospital	491	0.279	0.449	491	0.279	0.449	491	0.279	0.449
Treated	260	0.442	0.498	260	0.442	0.498	260	0.442	0.498
Control	231	0.115	0.320	231	0.115	0.320	231	0.115	0.320
Hospital system	491	0.368	0.483	491	0.368	0.483	491	0.368	0.483
Treated	260	0.362	0.481	260	0.362	0.481	260	0.362	0.481
Control	231	0.375	0.485	231	0.375	0.485	231	0.375	0.485
Herfindahl-Hirschman Index	491	0.171	0.131	491	0.173	0.132	491	0.176	0.135
Treated	260	0.173	0.135	260	0.175	0.137	260	0.179	0.142
Control	231	0.169	0.127	231	0.170	0.127	231	0.172	0.129

Table 11 Distribution of categorial variables of the matched samples of the main model

	Matched sample for efficiency				Matched sample for patient satisfaction				Matched sample for net profit margin			
Variables	**Obs**	**Overall**	**Treated**	**Control**	**Obs**	**Overall**	**Treated**	**Control**	**Obs**	**Overall**	**Treated**	**Control**
Ownership												
Public	457	35.64%	34.59%	36.69%	417	31.94%	32.92%	30.97%	191	38.85%	38.46%	39.23%
Nonprofit	498	38.80%	39.64%	37.96%	531	40.69%	39.58%	41.81%	218	44.42%	43.85%	45.00%
For-profit	328	25.56%	25.77%	25.35%	357	27.36%	27.50%	27.22%	82	16.73%	17.69%	15.77%
Total	1,283	100%	100%	100%	1,306	100%	100%	100%	491	100%	100%	100%
Degree of urbanization												
Large city	365	28.43%	28.29%	28.57%	353	27.01%	28.33%	25.69%	141	28.65%	28.08%	29.23%
Urban	422	32.91%	33.33%	32.49%	433	33.12%	32.92%	33.33%	172	35.00%	35.77%	34.23%
Rural	243	18.98%	18.91%	19.05%	257	19.65%	19.17%	20.14%	107	21.73%	20.38%	23.08%
Remote	252	19.68%	19.47%	19.89%	264	20.21%	19.58%	20.83%	72	14.62%	15.77%	13.46%
Total	1,283	100%	100%	100%	1,306	100%	100%	100%	491	100%	100%	100%
Hospital size												
Small	302	23.53%	23.11%	23.95%	346	26.46%	25.14%	27.78%	90	18.27%	18.08%	18.46%
Medium	796	62.04%	61.62%	62.46%	774	59.24%	59.72%	58.75%	317	64.62%	63.08%	66.15%
Large	185	14.43%	15.27%	13.59%	187	14.31%	15.14%	13.47%	84	17.12%	18.85%	15.38%
Total	1,283	100%	100%	100%	1,306	100%	100%	100%	491	100%	100%	100%
Market concentration												
Low	489	38.10%	38.38%	37.82%	474	36.32%	37.78%	34.86%	180	36.73%	38.08%	35.38%
Moderate	262	20.45%	20.31%	20.59%	271	20.76%	20.56%	20.97%	108	21.92%	21.54%	22.31%
High	532	41.46%	41.32%	41.60%	560	42.92%	41.67%	44.17%	203	41.35%	40.38%	42.31%
Total	1,283	100%	100%	100%	1,306	100%	100%	100%	491	100%	100%	100%

Following the matching procedure, we estimated the ATT, using a DiD regression model, consistent with the approaches used in similar prior research (Ahmad et al. 2024):

$$Y_{i,t} = \beta_0 + \beta_i + \beta_t + \beta_1 \cdot Post + \beta_2 \cdot Turn + \beta_3 \cdot Post \cdot Turn + \gamma Xi_{i,t} + \varepsilon_{i,t}$$

where i indexes hospitals and t indexes time. The dependent variable $Y_{i,t}$ represents one of the three outcomes under investigation: technical efficiency, financial performance, or patient satisfaction. The interaction term $\beta_3 \cdot Post \cdot Turn$ captures the DiD estimator and serves as our estimate of the effect of CEO turnover. The variable *Turn* is a binary indicator equal to 1 if hospital i experiences a CEO turnover in year t, and 0 otherwise. Post is a time dummy equal to 1 for years following the turnover. Hospital fixed effects β_i and year fixed effects β_t control for time-invariant heterogeneity and temporal shocks, respectively. $X_{i,t}$ is a vector of time-varying control variables, and $\varepsilon_{i,t}$ is the error term. To account for serial correlation and unobserved heteroskedasticity, standard errors were clustered at the hospital level.

Moderating role of organizational and environmental contingencies

To examine whether and to what extent the consequences of CEO turnover varied by organizational and environmental contingencies, we estimated an extension of the DiD model: a difference-in-difference-in-differences (DiDiD) design. This approach allowed us to test whether the treatment effect differed systematically across groups defined by specific contingencies (e.g., ownership, size, etc.). The model was specified as follows:

$$Y_{i,t} = \beta_0 + \beta_i + \beta_t + \beta_1 \cdot Turn + \beta_2 \cdot G + \beta_3 \cdot Post + \beta_4 \cdot Turn \cdot G + \beta_5 \cdot Turn \cdot Post + \beta_6 \cdot G \cdot Post + \beta_7 \cdot Turn \cdot G \cdot Post + \gamma Xi_{i,t} + \varepsilon_{i,t}$$

Here, G denotes group membership based on organizational or environmental contingencies (e.g., ownership type, hospital size, or location). The triple interaction term β_7 captures whether the estimated effect of CEO turnover differed systematically across groups. All models were estimated in Stata version 15.

Sensitivity analyses

For the sensitivity analyses, we first calculated time-differenced values of the outcome variables for each observation window. We then estimated standard firm and year fixed effects models, as well as multiple regression models. In addition, the DiD models were re-estimated using alternative outcome variables. These included further financial indicators, such as return on assets, and an alternative measure of technical efficiency excluding the number of outpatients. The latter addressed possible distortion due to outpatient cases not being adjustable for case severity with the available data. Finally, to obtain an additional treatment effect estimator that was robust to contamination, we applied the approach recommended by Sun and Abraham (2021), using a subsample restricted to hospitals with no CEO turnover or exactly one CEO turnover during the observation window.

4.4 Results

4.4.1 Efficiency

Tables 12-14 present the results of the main analyses. The DiD estimates indicate that hospitals that experienced a CEO turnover were less efficient than control hospitals both in the year of the turnover and in the following year (Table 12). The largest decline in efficiency occurred in the year after the turnover. By the second year after the leadership change, no statistically significant differences between treatment and control hospitals remained.

The results of the triple difference analysis are presented in Table 15. These indicate that the decline in efficiency following CEO turnover was particularly pronounced in hospitals located in remote rural districts ($p<0.05$) and in those with a high frequency of CEO turnover ($p<0.05$).

4.4.2 Patient satisfaction

As shown in Table 13, hospitals that experienced a CEO turnover reported significantly lower patient satisfaction in the year after the turnover compared to the control hospitals ($p<0.05$). No significant differences could be observed in the year of the turnover or in the second year.

The effect in the year after the CEO turnover was moderated by hospital location and whether the hospital belonged to a hospital system (Table 15). The effect was negative for hospitals in major cities (reference category; $p<0.05$). It differed significantly for hospitals in urban districts ($p<0.10$) and remote rural districts ($p<0.05$); in both cases, the positive coefficients indicate that there was no change in patient satisfaction. The effect for hospitals in rural districts was not significantly different from that in major cities. The negative effect appears to have been driven by freestanding hospitals (reference category; $p<0.05$), whereas the effect for system hospitals was significantly different and close to zero ($p<0.05$).

4.4.3 Financial performance

As shown in Table 14, no significant differences in financial performance were observed between hospitals with and without CEO turnover in any of the observation windows in the main model. In the supplementary models, however, a positive treatment effect on the net profit margin was identified for the year of the turnover ($p<0.1$) and again in the four-year model for the year after the CEO turnover ($p<0.05$).

The relationship was moderated by hospital size and competitive intensity (Table 15). Among small hospitals (reference category; $p<0.10$), the effect was positive, and the estimate for medium-sized hospitals did not differ significantly. In contrast, large hospitals showed a significant negative DiDiD coefficient, resulting in a negative net effect ($p<0.05$). Regarding market competition, the relationship between CEO turnover and financial performance was positive in low-competition environments (reference category; $p<0.01$), with no significant difference for hospitals operating in markets with moderate levels of competition. However, in highly competitive markets, the DiDiD coefficient was significantly negative, resulting in a negative overall effect ($p<0.01$).

Table 12 DiD results for the outcome parameter efficiency

Compared to t_{-1}	main model			short-term sample			mid-term sample		
	CEO Turnover*Post			CEO Turnover*Post			CEO Turnover*Post		
Period	DiD Coeff.	(SE)	N	DiD Coeff.	(SE)	N	DiD Coeff.	(SE)	N
t	- 0.0081*	(0.0048)	2,568	- 0.0065**	(0.0032)	4,504	- 0.0084**	(0.0039)	1,596
t_{+1}	- 0.0096*	(0.0053)	2,566	-	-	-	- 0.0136**	(0.0054)	1,608
t_{+2}	-	-	-	-	-	-	- 0.0076	(0.0054)	1,602

Note: DiD = difference-in-differences; N = number of observations | *p<.1;**p<.05;***p<.01

Table 13 DiD results for the outcome parameter patient satisfaction

Compared to t_{-1}	main model			short-term sample			mid-term sample		
	CEO Turnover*Post			CEO Turnover*Post			CEO Turnover*Post		
Period	DiD Coeff.	(SE)	N	DiD Coeff.	(SE)	N	DiD Coeff.	(SE)	N
t	- 0.0090	(0.0081)	2,628	-0.0001	(0.0075)	4,440	- 0.0076	(0.0105)	1,622
t_{+1}	- 0.0275**	(0.0109)	2,612	-	-	-	- 0.0256***	(0.0094)	1,620
t_{+2}	-	-	-	-	-	-	0.0015	(0.0104)	1,586

Note: DiD = difference-in-differences; N = number of observations | *p<.1;**p<.05;***p<.01

Table 14 DiD results for the outcome parameter net profit margin

Compared to t_{-1}	main model			short-term sample			mid-term sample		
	CEO Turnover*Post			CEO Turnover*Post			CEO Turnover*Post		
Period	DiD Coeff.	(SE)	N	DiD Coeff.	(SE)	N	DiD Coeff.	(SE)	N
t	- 0.0012	(0.0047)	950	0.0071*	(0.0039)	1,650	- 0.0020	(0.0076)	598
t_{+1}	0.0025	(0.0056)	982	-	-	-	0.0110**	(0.0055)	614
t_{+2}	-	-	-	-	-	-	0.0016	(0.0075)	612

Note: DiD = difference-in-differences; N = number of observations | *p<.1;**p<.05;***p<.01

Table 15 Triple differences results

		Efficiency			Patient satisfaction			Net profit margin		
Moderator	Subgroup*	DiD/-iD Coeff.	(SE)	P>t	DiD/-iD Coeff.	(SE)	P>t	DiD/-iD Coeff.	(SE)	P>t
Ownership	Public	-0.0045	(0.0063)	0.470	**-0.0227****	(0.0097)	0.019	-0.0008	(0.0080)	0.919
	Nonprofit	0.0029	(0.0082)	0.724	-0.0167	(0.0254)	0.510	0.0122	(0.0108)	0.261
	For-Profit	-0.0013	(0.0115)	0.909	0.0069	(0.0232)	0.766	-0.0118	(0.0206)	0.567
Hospital size	Small	0.0038	(0.0098)	0.698	-0.0490	(0.0333)	0.141	**0.0207***	(0.0124)	0.095
	Medium	-0.0169	(0.0106)	0.111	0.0290	(0.0346)	0.402	-0.0168	(0.0136)	0.218
	Large	0.0201	(0.0139)	0.149	0.0329	(0.0361)	0.363	**-0.0456****	(0.0221)	0.040
Urbanization	Large city	0.0080	(0.0092)	0.386	**-0.0666****	(0.0309)	0.032	0.0024	(0.0121)	0.844
	Urban district	-0.0114	(0.0110)	0.300	**0.0649***	(0.0338)	0.055	0.0008	(0.0160)	0.962
	Rural district	-0.0132	(0.0116)	0.257	0.0135	(0.0373)	0.718	0.0015	(0.0151)	0.919
	Remote district	**-0.0283****	(0.0112)	0.012	**0.0722****	(0.0363)	0.047	-0.0047	(0.0163)	0.772
Competition	Low market Concentration	-0.0017	(0.0071)	0.811	**-0.0454***	(0.0239)	0.057	**0.0224*****	(0.0076)	0.004
	Moderate market concentration	0.0035	(0.0110)	0.749	0.0163	(0.0305)	0.593	-0.0222	(0.0135)	0.101
	High market concentration	-0.0068	(0.0085)	0.429	0.0328	(0.0270)	0.226	**-0.0351*****	(0.0124)	0.005
Member of hospital system	Freestanding	-0.0053	(0.0073)	0.475	**-0.0578****	(0.0234)	0.014	0.0072	(0.0070)	0.307
	System Member	0.0021	(0.0085)	0.804	**0.0491****	(0.0250)	0.049	-0.0126	(0.0115)	0.275
CEO turnover frequency	Low	-0.0021	(0.0048)	0.660	**-0.0359*****	(0.0128)	0.005	0.0038	(0.0067)	0.572
	High	**-0.0172****	(0.0085)	0.043	0.0239	(0.0200)	0.234	0.0077	(0.0125)	0.536
Underperformer	No	-	-	-	-	-	-	0.0009	(0.0058)	0.873
	Yes	-	-	-	-	-	-	0.0058	(0.0168)	0.731
	Observations	2,566			2,612			982		

Note: DiD = difference-in-differences; DiDiD = triple differences; *The first category of each moderator represents the reference category. | *p<.1;**p<.05;***p<.01

4.4.4 Sensitivity analyses

Overall, the sensitivity analyses supported the robustness of the main results for various outcomes (see Appendix, Table A18). This was especially the case for the negative effect of CEO turnover on hospital efficiency, which remained consistent and statistically significant when comparing efficiency two years after turnover with the baseline year before turnover.

For patient satisfaction, the direction of the estimated effects was consistent with the main findings, but the coefficients in the sensitivity models were not statistically significant. Regarding financial performance, the sensitivity analyses for all examined observation windows showed a more positive net profit margin for hospitals that had a CEO turnover. However, no statistically significant differences were found when alternative financial indicators were used (Appendix, Tables A19 – A21)

4.5 Discussion

The aim of this study was to examine the effects of CEO turnover in hospitals on three key outcomes – technical efficiency, patient satisfaction, and financial performance – and to examine whether these effects were moderated by organizational and environmental contingencies.

We found that hospitals in our sample experienced a short-term decline in technical efficiency following CEO turnover. This effect appears to have been temporary and is consistent with previous research by Ford et al. (2018), who observed similar short-term inefficiencies in US hospitals. The decline was particularly pronounced in hospitals located in remote rural districts and in those with frequent CEO turnover. The former may be explained by a more acute leadership vacuum compared to more densely populated areas. Previous research has shown that CEO turnover is frequently followed, within the same year, by changes in other top leadership roles, such as the chief medical officer (Khaliq et al. 2007b). In remote areas, such vacancies may be more difficult to fill, leading to prolonged periods without key leadership (Mathew et al. 2024a). Additionally, staff in these settings may show stronger interpersonal loyalty (Mandal and Phillips 2022), which can heighten resistance to forced CEO departures, especially when the successor is external or

initiates unpopular strategic reforms (Rivolta 2018; Schepker et al. 2017)(Del Pardo Val and Martínez Fuentes 2003).

Our finding that hospitals with more frequent CEO turnover experienced greater efficiency losses than those with less frequent turnover is consistent with evidence from other sectors (e.g., Akbar et al. 2021). Recurrent leadership change can hinder the implementation of long-term strategic initiatives and create persistent organizational insecurity (Kim et al. 2021). This, in turn, may negatively affect employee morale and health (Bordia et al. 2004), ultimately reducing overall efficiency. Collectively, these findings lend support to the organizational disruption perspective, which posits that high rates of CEO turnover can precipitate a self-reinforcing cycle of instability and underperformance.

With regard to patient satisfaction, we found a negative effect in the year following CEO turnover, as well as two moderating variables: degree of urbanization and membership in a hospital system. However, the observed differences across district types were non-linear and therefore difficult to interpret. One possible explanation is that patients in rural hospitals, many of which are freestanding, may feel a stronger sense of attachment to the hospital and its staff due to a lack of regional alternatives and closer social ties between patients and providers (Mandal and Phillips 2022). In such settings, structural or cultural changes introduced by a new CEO, such as department closures or personnel turnover, may trigger dissatisfaction and temporarily lower patient satisfaction. System membership also appeared to moderate the effect of CEO turnover on patient satisfaction. Hospitals belonging to larger systems benefit from a bigger pool of talent and more formalized internal career pathways (Hearld et al. 2019). For this reason, CEO turnovers in these hospitals may more frequently involve internal appointments, bringing individuals already familiar with the culture, processes, and strategic direction of the organization. This continuity may reduce both organizational disruption and adverse effects on staff dynamics and patient experience (Schepker et al. 2017).

We found little support for the assumption that CEO turnover influences financial performance. Only in the case of net profit margin did some regression models indicate a positive ATT, and even then, statistical significance varied. This may be attributable to newly appointed CEOs feeling pressured to demonstrate results quickly to consolidate their leadership position. Although our main models showed a negative effect on technical efficiency, this does not necessarily contradict the observed positive effects on net profit margin. For example, cost-cutting measures such as the renegotiation of supplier contracts

may yield immediate financial benefits that outweigh short-term inefficiencies. Similarly, one-off revenue gains, such as asset sales, may contribute to short-term improvements in profitability without indicating a broader or sustained performance effect. When considering alternative financial metrics, we did not find any effects. These findings are broadly consistent with prior work, for example by Janke et al. (2019), who found no reliable impact of CEO turnover on hospital financial performance. However, our sensitivity analyses suggest modest but consistent positive effects, indicating that performance improvements may occur under certain conditions and should be investigated further.

Altogether, our findings on technical efficiency and patient satisfaction support the disruptive perspective, which posits that CEO turnover creates friction and organizational instability that can negatively impact performance (Friedman and Saul 1991; Friedman and Singh 1989). In line with Ford et al. (2018), however, we found that these effects were short-lived and diminishedover the medium term. Effect sizes were small, and we did not identify any consistent effects on financial performance. Importantly, our extended analysis using the dynamic treatment effect estimation method proposed by Sun and Abraham suggests that financial performance may improve in the longer term, with significant positive effects appearing from the third year after a CEO turnover event. This pattern implies that the disruptive and adaptive perspectives may not be mutually exclusive but rather operate sequentially: early disruptions may give way to positive adaptation provided that the new CEO remains in office long enough for strategic initiatives and is not replaced prematurely.

Limitations

Several methodological and data-related limitations must be considered when interpreting our findings. First, CEO turnover is not an exogenous event but is influenced by various individual and organizational factors that cannot be fully observed or controlled, raising the possibility of endogeneity problems. In addition, our analysis does not account for the reasons behind CEO turnover or include personal characteristics of the departing or incoming CEOs, both of which may affect the relationship between turnover and performance. Second, the high frequency of CEO turnover in the hospital sector complicates the construction of a valid control group. Hospitals were assigned to treatment and control groups based on predefined observation windows, which allowed some hospitals to appear in multiple panels and in both groups across different time periods. As a result, certain hospitals received greater weight in the analysis. In hospitals with multiple turnover events, unobserved confounding from earlier turnovers may have influenced the results. Third, the

small number of years covered by the data set combined with the high frequency of CEO turnover precluded the analysis of longer-term effects, which could not be assessed beyond two years after a turnover event in the main models. Finally, our measurement of financial outcomes was restricted by limited data availability. Financial data and information on former CEOs were not available at the individual hospital level for many institutions due to variation in disclosure requirements and the use of consolidated financial reporting in hospital systems. For-profit hospitals were particularly affected and are underrepresented in the financial analysis. The small size of the sample with financial data also reduced the reliability of the matching procedure and limited the robustness of findings related to financial performance.

Further research

Although our study indicates that certain hospital- and market-level characteristics can moderate the effects of CEO turnover, their moderating influence appears to be weaker than is frequently suggested in the literature. One possible explanation is that it is not individual characteristics in isolation, but rather combinations of hospital and environmental contingencies that shape the effects of CEO turnover. Future research should therefore explore how configurations of multiple contextual factors interact to moderate these outcomes.

Furthermore, differences in individual CEO characteristics may play an important role in determining the extent to which CEO turnover affects hospital performance. CEOs differ substantially in their professional background, experiences, and values, which are known to affect strategic decision-making (Hambrick 2007). For example, some studies show that CEOs with a medical background are associated with higher quality of care, whereas CEOs with a business background tend to be linked to stronger financial performance (e.g., Kaiser et al. 2020). This suggests that the performance consequences of CEO turnover may depend not only on the fact of turnover itself but also on the attributes of the incoming CEO. Future research should extend our model to consider the role of CEO-level characteristics when examining the effects of leadership change.

4.6 Conclusion

This study examined the effects of CEO turnover in hospitals on technical efficiency, patient satisfaction, and financial performance. The results indicate that, in the short term, hospitals undergoing a CEO turnover show lower technical efficiency and patient satisfaction than comparable hospitals without a leadership change. These effects are moderated by both environmental and hospital contingencies. For example, the decrease in efficiency is more pronounced in hospitals with a high frequency of CEO turnover, consistent with the view in the literature that frequent leadership change can disrupt operations and undermine performance. At the same time, the findings suggest that these negative effects are temporary and tend to fade over time. Nevertheless, the results point to the importance of avoiding excessive leadership turnover, as repeated disruptions may initiate a self-reinforcing cycle of instability. Systematic succession planning may reduce friction during leadership transitions and help mitigate short-term disruptions. Future research should examine the role of CEO-level characteristics in moderating post-turnover outcomes and explore how different combinations of contextual factors influence hospital performance.

Chapter 5

General Conclusion

This dissertation provides important new insights into the predictors and effects of CEO turnover in hospitals and contributes to a deeper understanding of this complex and multifactorial phenomenon.

With respect to predictors, the dissertation shows that despite certain overlaps with CEO turnover in the general corporate sector, such as the high prevalence of CEO turnover following poor financial results, hospitals are characterized by a number of specific factors related to CEO turnover. These include various organizational and environmental characteristics, such as ownership structure, membership in a hospital system, and the influence of local political cycles. Another distinctive feature is the omnipresent power of chief physicians. The findings reveal that hospital CEOs may be forced to leave even when demonstrating high performance if persistent conflicts with chief physicians arise and these physicians advocate for the CEO's dismissal. For hospital but also other sectors, this indicates that drawing conclusions based on individual predictors is of limited value; instead, it is valuable to focus on the interplay of multiple contextual circumstances when assessing the reasons of CEO turnover. This is further reflected in the fact that for many of the examined predictors, multiple mechanisms were identified which, depending on the context, produced mixed conclusions regarding the direction of their effect on CEO turnover. Taken together, these findings offer a robust foundation for understanding the drivers of CEO turnover in hospitals and provide decision-makers with actionable insights to adjust organizational levers in order to mitigate the risk of undesired CEO turnover.

Regarding the effects of CEO turnover, the dissertation indicates short-term declines in technical efficiency and patient satisfaction, highlighting the risks associated with frequent leadership changes in the hospital sector. However, the findings also provide indications that despite initial setbacks, hospitals with moderate CEO turnover rates achieve in a mediumterm comparison to hospitals without CEO turnover superior financial performance. This suggests, first, that newly appointed CEOs require time to generate positive performance effects, meaning that dismissals should not be initiated prematurely. Second, it indicates that retaining CEOs at all costs may likewise be detrimental. Moreover, similar to predictors, contextual factors also play a decisive role in moderating outcomes. The effects of CEO turnover on the studied outcomes were contingent on various organizational and environmental characteristics, suggesting that decision-makers should account for such contextual factors when evaluating CEO performance. Doing so can help prevent

unnecessary CEO turnover triggered by exogenous conditions and reduce the risk of entering a vicious cycle of recurring turnovers.

Despite the different methodological approaches and extensive datasets employed in this dissertation, several avenues for further research can be identified. Regarding predictors, future studies should address the interdependencies among predictors. The cluster analysis conducted here demonstrates that distinct configurations of predictors are associated with varying CEO turnover rates. A more in-depth analysis of these patterns using large longitudinal datasets that comprehensively capture different dimensions of predictors holds promise for advancing our understanding of predictor interplay and deriving more nuanced recommendations for practitioners. Furthermore, there is need for more studies with causal-analytic research designs to generate robust evidence on the effects of CEO turnover. In this regard, accounting for heterogeneous effects is essential to develop a more nuanced understanding of how the consequences of CEO turnover vary across different contextual settings. Beyond the organizational and environmental factors considered in this dissertation, future research should pay greater attention to individual CEO characteristics (e.g., professional background, value orientation) and differentiate between the reasons and types of turnover (e.g., internal vs. external succession). Moreover, in addition to economic outcomes, greater emphasis should be placed on indicators that reflect the societal role and relevance of hospitals, such as quality of care.

Bibliography

ACHE (2023). Hospital CEO Turnover Rate Remains Steady. American College of Healthcare Executives. Available online at: https://www.ache.org/about-ache/news-and-awards/news-releases/hospital-ceo-turnover-rate-remains-steady; Last accessed 01 September 2025.

Agrawal, A./Knoeber, C. R./Tsoulouhas, T. (2006). Are outsiders handicapped in CEO successions? Journal of Corporate Finance, 12 (3), 619–644. https://doi.org/10.1016/j.jcorpfin.2004.04.005.

Ahmad, W./Farag, H./Wang, Y. (2024). Do new CEOs really care about innovation? European Financial Management, 30 (1), 230–283. https://doi.org/10.1111/eufm.12411.

Akbar, A./Jiang, X./Fareed, Z./Akbar, M. (2021). Does frequent leadership changes influence firm performance? Insights from China. Economics and Business Letters, 10 (3), 291–298.

Al-Amin, M./Makarem, S. C./Rosko, M. (2016). Efficiency and hospital effectiveness in improving Hospital Consumer Assessment of Healthcare Providers and Systems ratings. Health care management review, 41 (4), 296–305. https://doi.org/10.1097/HMR.0000000000000076.

Alexander, J. A./Fennell, M. L./Halpern, M. T. (1993). Leadership Instability in Hospitals: The Influence of Board-CEO Relations and Organizational Growth and Decline. Administrative Science Quarterly, 38 (1), 74. https://doi.org/10.2307/2393255.

Alexander, J. A./Lee, S.-Y. D. (1996). The Effects of CEO Succession and Tenure on Failure of Rural Community Hospitals. The Journal of Applied Behavioral Science, 32 (1), 70–88. https://doi.org/10.1177/0021886396321005.

Allgood, S./Farrell, K. A. (2003). The Match between CEO and Firm. The Journal of Business, 76 (2), 317–341. https://doi.org/10.1086/367752.

Appelbaum, S. H./Audet, L./Miller, J. C. (2003). Gender and leadership? Leadership and gender? A journey through the landscape of theories. Leadership & Organization Development Journal, 24 (1), 43–51. https://doi.org/10.1108/01437730310457320.

Atkinson, M. K./Hick, J. L./Singer, S. J./Cagliuso, N. V./Biddinger, P. D. (2022). Do Rural Hospitals Have An Advantage During A Pandemic? Health Affairs Forefront, 2022. https://doi.org/10.1377/forefront.20220321.42134.

Ballantine, J./Forker, J./Greenwood, M. (2008). The Governance of CEO Incentives in English NHS Hospital Trusts. Financial Accountability & Management, 24 (4), 385–410. https://doi.org/10.1111/j.1468-0408.2008.00459.x.

BBK (2025). KRITIS-Sektor: Gesundheit. Bundesamt für Bevölkerungsschutz und Katastrophenhilfe. Available online at: https://www.bbk.bund.de/DE/Themen/Kritische-Infrastrukturen/Sektoren-Branchen/Gesundheit/gesundheit_node.html; Last accessed 01 September 2025.

BDO/DKI (2021). Schleudersitz Krankenhausgeschäftsführer. BDO & Deutsches Krankenhausinstitut. Available online at: https://www.bdo.de/getattachment/Insights/Weitere-Veroffentlichungen/Studien/Schleudersitz-Krankenhausgeschaftsfuhrer/DKI-Studie-2021.pdf.aspx?lang=de-DE&ext=.pdf&disposition=attachment; Last accessed 01 September 2025.

Berns, K. V. D./Klarner, P. (2017). A Review of the CEO Succession Literature and a Future Research Program. Academy of Management Perspectives, 31 (2), 83–108. https://doi.org/10.5465/amp.2015.0183.

Bertrand, M./Hallock, K. F./Arnould, R. (2005). Does Managed Care Change the Management of Nonprofit Hospitals? Evidence from the Executive Labor Market. ILR Review, 58 (3), 494–514. https://doi.org/10.1177/001979390505800310.

Bigley, G. A./Wiersema, M. F. (2002). New CEOs and Corporate Strategic Refocusing: How Experience as Heir Apparent Influences the Use of Power. Administrative Science Quarterly, 47 (4), 707–727. https://doi.org/10.2307/3094914.

Bilgili, T. V./Calderon, C. J./Allen, D. G./Kedia, B. L. (2017). Gone With the Wind: A Meta-Analytic Review of Executive Turnover, Its Antecedents, and Postacquisition Performance. Journal of Management, 43 (6), 1966–1997. https://doi.org/10.1177/0149206316635252.

Bordia, P./Hunt, E./Paulsen, N./Tourish, D./DiFonzo, N. (2004). Uncertainty during organizational change: Is it all about control? European Journal of Work and Organizational Psychology, 13 (3), 345–365. https://doi.org/10.1080/13594320444000128.

Brickley, J. A./van Horn, R. L. (2002). Managerial Incentives in Nonprofit Organizations: Evidence from Hospitals. The Journal of Law and Economics, 45 (1), 227–249. https://doi.org/10.1086/339493.

Cantor, V. J. M./Poh, K. L. (2017). Integrated Analysis of Healthcare Efficiency: A Systematic Review. Journal of Medical Systems, 42 (1), 8. https://doi.org/10.1007/s10916-017-0848-7.

Chan, Z. C. Y./Tam, W. S./Lung, M. K. Y./Wong, W. Y./Chau, C. W. (2013). A systematic literature review of nurse shortage and the intention to leave. Journal of Nursing Management, 21 (4), 605–613. https://doi.org/10.1111/j.1365-2834.2012.01437.x.

Cheng, S.-H./Yang, M.-C./Chiang, T.-L. (2003). Patient satisfaction with and recommendation of a hospital: effects of interpersonal and technical aspects of hospital care. International Journal for Quality in Health Care, 15 (4), 345–355. https://doi.org/10.1093/intqhc/mzg045.

Clark, G. L. (1994). Strategy and Structure: Corporate Restructuring and the Scope and Characteristics of Sunk Costs. Environment and Planning, 26 (1), 9–32. https://doi.org/10.1068/a260009.

Coyne, J. S./Richards, M. T./Short, R./Shultz, K./Singh, S. G. (2009). Hospital Cost and Efficiency: Do Hospital Size and Ownership Type Really Matter? Journal of Healthcare Management, 54 (3), 163–175. https://doi.org/10.1097/00115514-200905000-00005.

Cragun, O. R./Nyberg, A. J./Wright, P. M. (2016). CEO succession: what we know and where to go? Journal of Organizational Effectiveness: People and Performance, 3 (3), 222–264. https://doi.org/10.1108/JOEPP-02-2016-0015.

Del Pardo Val, M./Martínez Fuentes, C. (2003). Resistance to change: a literature review and empirical study. Management Decision, 41 (2), 148–155. https://doi.org/10.1108/00251740310457597.

DESTATIS (2024). Krankenhäuser 2023 nach Trägern und Bundesländern. Statistisches Bundesamt. Available online at: https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Gesundheit/Krankenhauser/Tabellen/eckzahlen-krankenhaeuser.html; Last accessed 01 September 2025.

Dwore, R. B./Murray, B. P. (1996). A Comparison of Utah Hospital CEO Turnover Between 1973-1987 and 1988-1992. Health Care Management Review, 62–73.

Dworkin, N. R./Drozdenko, R. G./Goldstein, J. (2010). Managerial Socialization in Short-Term Hospitals: A Descriptive Analysis. Problems and Perspectives in Management, 8 (2), 94–101.

Dworkin, N. R./Goldstein, J. (2004). Managerial socialization in short-term hospitals: some early evidence. Hospital Topics, 82 (2), 18–26. https://doi.org/10.3200/HTPS.82.2.18-26.

Eldenburg, L./Hermalin, B. E./Weisbach, M. S./Wosinska, M. (2004). Governance, performance objectives and organizational form: evidence from hospitals. Journal of Corporate Finance, 10 (4), 527–548.

Fetters, M. D./Curry, L. A./Creswell, J. W. (2013). Achieving integration in mixed methods designs-principles and practices. Health Services Research, 48 (6), 2134–2156. https://doi.org/10.1111/1475-6773.12117.

Finkelstein, S./Hambrick, D. C./Cannella, A. A. (2009). Strategic leadership. Theory and research on executives, top management teams, and boards. New York, Oxford Press.

Firth, M./Fung, P. M. Y./Rui, O. M. (2006). Firm Performance, Governance Structure, and Top Management Turnover in a Transitional Economy. Journal of Management Studies, 43 (6), 1289–1330. https://doi.org/10.1111/j.1467-6486.2006.00621.x.

Flintrop, J. (2006). Auswirkungen der DRG-Einführung: Die ökonomische Logik wird zum Maß der Dinge. Deutsches Ärzteblatt, 103 (46), 3082–3085.

Ford, E. W./Lowe, K. B./Silvera, G. B./Babik, D./Huerta, T. R. (2018). Insider versus outsider executive succession: The relationship to hospital efficiency. Health Care Management Review, 43 (1), 61–68. https://doi.org/10.1097/HMR.0000000000000112.

Freund, C. M. (1987). CEO Succession and Its Relationship to CNO Tenure. The Journal of nursing administration, 17 (7), 27–30. https://doi.org/aspx.

Friedman, S. D./Saul, K. (1991). A Leader's Wake: Organization Member Reactions to CEO Succession. Journal of Management, 17 (3), 619–642. https://doi.org/10.1177/014920639101700306.

Friedman, S. D./Singh, H. (1989). CEO Succession and Stockholder Reaction: The Influence of Organizational Context and Event Content. Academy of Management Journal, 32 (4), 718–744. https://doi.org/10.5465/256566.

Galstian, C./Hearld, L./O'Connor, S. J./Borkowski, N. (2018). The Relationship of Hospital CEO Characteristics to Patient Experience Scores. Journal of Healthcare Management, 63 (1), 50–61. https://doi.org/10.1097/JHM-D-16-00020.

Gangloff, K. A./Connelly, B. L./Shook, C. L. (2016). Of Scapegoats and Signals. Journal of Management, 42 (6), 1614–1634. https://doi.org/10.1177/0149206313515521.

Garay, U./González, M./Molina, C. A. (2007). Firm Performance and CEO Reputation Costs: New Evidence from the Venezuelan Banking Crisis. Emerging Markets Finance and Trade, 43 (3), 16–33. https://doi.org/10.2753/REE1540-496X430302.

Garman, A. N./Tyler, J. L. (2004). Strategic planning: what kind of CEO will your hospital need next? A model for succession planning. Trustee, 57 (9), 38–40.

Georgakakis, D./Ruigrok, W. (2017). CEO Succession Origin and Firm Performance: A Multilevel Study. Journal of Management Studies, 54 (1), 58–87. https://doi.org/10.1111/joms.12194.

Giambatista, R. C. (2004). Jumping through hoops: A longitudinal study of leader life cycles in the NBA. The Leadership Quarterly, 15 (5), 607–624. https://doi.org/10.1016/j.leaqua.2004.07.002.

Giambatista, R. C./Rowe, W. G./Riaz, S. (2005). Nothing succeeds like succession: A critical review of leader succession literature since 1994. The Leadership Quarterly, 16 (6), 963–991. https://doi.org/10.1016/j.leaqua.2005.09.005.

Glick, M. B. (2011). The Role of Chief Executive Officer. Advances in Developing Human Resources, 13 (2), 171–207. https://doi.org/10.1177/1523422311415642.

Gomulya, D./Boeker, W. (2016). Reassessing board member allegiance: CEO replacement following financial misconduct. Strategic Management Journal, 37 (9), 1898–1918. https://doi.org/10.1002/smj.2427.

Gomulya, D./Wong, E. M./Ormiston, M. E./Boeker, W. (2017). The role of facial appearance on CEO selection after firm misconduct. The Journal of applied psychology, 102 (4), 617–635. https://doi.org/10.1037/apl0000172.

Goodstein, J./Boeker, W. (1991). Turbulence at the Top: A New Perspective on Governance Structure Changes and Strategic Change. Academy of Management Journal, 34 (2), 306–330. https://doi.org/10.5465/256444.

Groot, I. B. de/Otten, W./Dijs-Elsinga, J./Smeets, H. J./Kievit, J./Marang-van de Mheen, P. J. (2012). Choosing between hospitals: the influence of the experiences of other patients. Medical Decision Making, 32 (6), 764–778. https://doi.org/10.1177/0272989X12443416.

Grusky, O. (1960). Administrative Succession in Formal Organizations. Social Forces, 39 (2), 105–115. https://doi.org/10.2307/2574148.

Grusky, O. (1963). Managerial Succession and Organizational Effectiveness. American Journal of Sociology, 69 (1), 21–31. https://doi.org/10.1086/223507.

Gupta, P. D./Bhattacharya, S./Sheorey, P./Coelho, P. (2018). Relationship between onboarding experience and turnover intention: intervening role of locus of control and self-efficacy. Industrial and Commercial Training, 50 (2), 61–80. https://doi.org/10.1108/ICT-03-2017-0023.

Gupta, V. K./Mortal, S. C./Silveri, S./Sun, M./Turban, D. B. (2020). You’re Fired! Gender Disparities in CEO Dismissal. Journal of Management, 46 (4), 560–582. https://doi.org/10.1177/0149206318810415.

Haessler, P. (2020). Strategic Decisions between Short-Term Profit and Sustainability. Administrative Sciences, 10 (3), 1–31. https://doi.org/10.3390/admsci10030063.

Hambrick, D. C. (2007). Upper Echelons Theory: An Update. Academy of Management Review, 32 (2), 334–343. https://doi.org/10.5465/amr.2007.24345254.

Hambrick, D. C./Fukutomi, G. D. S. (1991). The Seasons of a Ceo's Tenure. Academy of Management Review, 16 (4), 719–742. https://doi.org/10.5465/amr.1991.4279621.

Harrison, R./Jones, B./Gardner, P./Lawton, R. (2021). Quality assessment with diverse studies (QuADS): an appraisal tool for methodological and reporting quality in systematic reviews of mixed- or multi-method studies. BMC Health Services Research, 21 (1), 144–164. https://doi.org/10.1186/s12913-021-06122-y.

Hart, L. G./Robertson, D. G./Lishner, D. M./Rosenblatt, R. A. (1993). CEO turnover in rural northwest hospitals. Hospital & Health Services Administration, 38 (3), 353–374.

Haveman, H. A./Russo, M. V./Meyer, A. D. (2001). Organizational Environments in Flux: The Impact of Regulatory Punctuations on Organizational Domains, CEO Succession, and Performance. Organization Science, 12 (3), 253–273. https://doi.org/10.1287/orsc.12.3.253.10104.

Hearld, L. R./Opoku-Agyeman, W./Kim, D. H./Landry, A. Y. (2019). CEO Turnover Among U.S. Acute Care Hospitals, 2006-2015: Variations by Type of Geographic Area. Journal of Healthcare Management, 64 (1), 28–42. https://doi.org/10.1097/JHM-D-18-00019.

Helmig, B./Hinz, V./Ingerfurth, S. (2014). Extending Miles & Snow's strategy choice typology to the German hospital sector. Health policy, 118 (3), 363–376. https://doi.org/10.1016/j.healthpol.2014.06.006.

Hermes, M./Winter, V./Wild, E.-M. (2025). Predictors and effects of hospital chief executive officer turnover: A systematic review. Health Care Management Review, 50 (3), 197–210. https://doi.org/10.1097/HMR.0000000000000441.

Hillman, A. J./Withers, M. C./Collins, B. J. (2009). Resource Dependence Theory: A Review. Journal of Management, 35 (6), 1404–1427. https://doi.org/10.1177/0149206309343469.

Hoogestraat, F./Wild, E.-M./Winter, V. (2024). Factors driving differences in the adoption of quality management practices among hospitals: A two-phase, sequential mixed-methods analysis. Health care management review, 49 (3), 161–175. https://doi.org/10.1097/HMR.0000000000000402.

Horwitz, J. R. (2005). Making profits and providing care: comparing nonprofit, for-profit, and government hospitals. Health Affairs, 24 (3), 790–801. https://doi.org/10.1377/hlthaff.24.3.790.

Janke, K./Propper, C./Sadun, R. (2019). The Impact of CEOs in the Public Sector: Evidence from the English NHS. (No. w25853) National Bureau of Economic Research.

Jennings, J. C./Landry, A. Y./Hearld, L. R./Weech-Maldonado, R./Snyder, S. W./Patrician, P. A. (2019). Organizational and environmental factors influencing hospital community orientation. Health Care Management Review, 44 (3), 274–284. https://doi.org/10.1097/HMR.0000000000000180.

Jenter, D./Kanaan, F. (2015). CEO Turnover and Relative Performance Evaluation. The Journal of Finance, 70 (5), 2155–2184. https://doi.org/10.1111/jofi.12282.

Kaiser, F./Schmid, A./Schlüchtermann, J. (2020). Physician-leaders and hospital performance revisited. Social Science & Medicine, 249 (1), 1–12. https://doi.org/10.1016/j.socscimed.2020.112831.

Kaufman, B. G./Thomas, S. R./Randolph, R. K./Perry, J. R./Thompson, K. W./Holmes, G. M./Pink, G. H. (2016). The Rising Rate of Rural Hospital Closures. The Journal of Rural Health, 32 (1), 35–43. https://doi.org/10.1111/jrh.12128.

Khaliq, A. A./Thompson, D. M./Walston, S. L. (2006). Perceptions of hospital CEOs about the effects of CEO turnover. Hospital Topics, 84 (4), 21–27. https://doi.org/10.3200/HTPS.84.4.21-27.

Khaliq, A. A./Walston, S. L./Thompson, D. M. (2007a). Incoming and outgoing hospital CEOs: what kind of help do they want? Hospital Topics, 85 (4), 10–16. https://doi.org/10.3200/HTPS.85.4.10-16.

Khaliq, A. A./Walston, S. L./Thompson, D. M. (2007b). Is chief executive officer turnover good for the hospital? The Health Care Manager, 26 (4), 341–346. https://doi.org/10.1097/01.HCM.0000299252.83935.ed.

Kim, Y./Jeong, S. S./Yiu, D. W./Moon, J. (2021). Frequent CEO Turnover and Firm Performance: The Resilience Effect of Workforce Diversity. Journal of Business Ethics, 173 (1), 185–203. https://doi.org/10.1007/s10551-020-04534-0.

Korn Ferry (2020). Age and tenure in the C-Suite. Available online at: https://www.kornferry.com/content/dam/kornferry/docs/pdfs/age-tenure-c-suite-infographic.pdf; Last accessed 01 September 2025.

Langabeer, J. (2008). Hospital turnaround strategies. Hospital Topics, 86 (2), 3–10. https://doi.org/10.3200/HTPS.86.2.3-12.

Lee, S.-Y. D./Alexander, J. A. (1999). Managing hospitals in turbulent times: do organizational changes improve hospital survival? Health Services Research, 34 (4), 923–946. https://doi.org/Review.

Leggat, S./Balding, C. (2019). The impact of leadership churn on quality management in Australian hospitals. Journal of Health Organization and Management, 33 (7/8), 809–820. https://doi.org/10.1108/jhom-08-2018-0216.

Leibert, M./Leaming, L. E. (2010). Critical access hospital chief executive officer turnover: implications and challenges for governing boards. Health Care Manager, 29 (1), 22–28. https://doi.org/10.1097/HCM.0b013e3181cd8add.

Li, L./Benton, W. C. (2006). Hospital technology and nurse staffing management decisions. Journal of Operations Management, 24 (5), 676–691. https://doi.org/10.1016/j.jom.2005.06.001.

Li, W./Lu, Y./Makino, S./Lau, C.-M. (2017). National power distance, status incongruence, and CEO dismissal. Journal of World Business, 52 (6), 809–818. https://doi.org/10.1016/j.jwb.2017.08.001.

Li, Z./Ho, V./Merrell, M. A./Hung, P. (2024). Trends in patient perceptions of care toward rural and urban hospitals in the United States: 2014-2019. The Journal of Rural Health, 40 (3), 565–573. https://doi.org/10.1111/jrh.12813.

Lindlbauer, I./Winter, V./Schreyögg, J. (2016). Antecedents and Consequences of Corporatization: An Empirical Analysis of German Public Hospitals. Journal of Public Administration Research and Theory, 26 (2), 309–326. https://doi.org/10.1093/jopart/muv016.

Love, E. G./Lim, J./Bednar, M. K. (2017). The Face of the Firm: The Influence of CEOs on Corporate Reputation. Academy of Management Journal, 60 (4), 1462–1481. https://doi.org/10.5465/amj.2014.0862.

Mandal, A./Phillips, S. (2022). To stay or not to stay: the role of sense of belonging in the retention of physicians in rural areas. International Journal of Circumpolar Health, 81 (1), 1–4. https://doi.org/10.1080/22423982.2022.2076977.

Manshadi, M. G./Mosadeghrad, A. M./Jaafaripooyan, E. (2022). Reasons for turnover of hospital managers in Iran: A qualitative study. The International journal of health planning and management, 37 (5), 2869–2888. https://doi.org/10.1002/hpm.3526.

Mathew, N./Liu, C./Khalil, H. (2024a). Causes & Consequences of Health Care CEO Turnover in Australia and Retention Strategies: A Qualitative Study. The Journal of Health Care Organization, Provision, and Financing, 61 (1), 1-9. https://doi.org/10.1177/00469580241233250.

Mathew, N./Liu, C./Khalil, H. (2024b). Turnover factors and retention strategies for chief executive officers in Australian hospitals. Australian Health Review, 48 (5), 546–555. https://doi.org/10.1071/AH24185.

McCrae, R. R./Costa, P. T. (2008). Empirical and Theoretical Status of the Five-Factor Model of Personality Traits. In: Gregory John Boyle/Gerald Matthews/Donald H. Saklofske (Eds.). The SAGE handbook of personality theory and assessment. Vol. 1. Los Angeles, Calif./London, Sage, 273–294.

McFarland, D. C./Shen, M. J./Parker, P./Meyerson, S./Holcombe, R. F. (2017). Does Hospital Size Affect Patient Satisfaction? Quality Management in Health Care, 26 (4), 205–209. https://doi.org/10.1097/qmh.0000000000000149.

Mick, S. S./Morlock, L. L./Salkever, D./Lissovoy, G. de/Malitz, F. E./Wise, C. G./Jones, A. (1993). Rural Hospital Administrators and Strategic Management Activities. Journal of Healthcare Management, 38 (3), 329. https://doi.org/aspx.

Miedaner, F./Barbara, W./Roth, B./Metzner, L. (2025). Understanding the impact of minimum staff level policies on the ward nursing team: Insights from a qualitative research study conducted in Germany. Health policy, 155, 105286. https://doi.org/10.1016/j.healthpol.2025.105286.

Mills, C. A./Yeager, V. A./Unroe, K. T./Holmes, A./Blackburn, J. (2024). The impact of rural general hospital closures on communities-A systematic review of the literature. The Journal of Rural Health, 40 (2), 238–248. https://doi.org/10.1111/jrh.12810.

Mosadeghrad, A. M./Ferdosi, M./Afshar, H./Hosseini-Nejhad, S. M. (2013). The impact of top management turnover on quality management implementation. Medical archives, 67 (2), 134–140. https://doi.org/10.5455/medarh.2013.67.134-140.

Ng, T. W./Feldman, D. C. (2009). Re-examining the relationship between age and voluntary turnover. Journal of Vocational Behavior, 74 (3), 283–294. https://doi.org/10.1016/j.jvb.2009.01.004.

Nyberg, A. J./Cragun, O. R./Schepker, D. J. (2021). Chief Executive Officer Succession and Board Decision Making: Review and Suggestions for Advancing Industrial and Organizational Psychology, Human Resources Management, and Organizational Behavior Research. Annual Review of Organizational Psychology and Organizational Behavior, 8 (1), 173–198. https://doi.org/10.1146/annurev-orgpsych-012420-061800.

Ocasio, W. (1994). Political Dynamics and the Circulation of Power: CEO Succession in U.S. Industrial Corporations, 1960-1990. Administrative Science Quarterly, 39 (2), 285–312. https://doi.org/10.2307/2393237.

Page, M. J./McKenzie, J. E./Bossuyt, P. M./Boutron, I./Hoffmann, T. C./Mulrow, C. D./Shamseer, L./Tetzlaff, J. M./Akl, E. A./Brennan, S. E./Chou, R./Glanville, J./Grimshaw, J. M./Hróbjartsson, A./Lalu, M. M./Li, T./Loder, E. W./Mayo-Wilson, E./McDonald, S./McGuinness, L. A./Stewart, L. A./Thomas, J./Tricco, A. C./Welch, V. A./Whiting, P./Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ Open, 372, n71. https://doi.org/10.1136/bmj.n71.

Pfeffer, J./Salancik, G. R. (1978). The external control of organizations. A resource dependence perspective. New York, Harper & Row.

Ployhart, R. E./Weekley, J. A./Baughman, K. (2006). The Structure and Function of Human Capital Emergence: a Multilevel Examination of the Attraction-Selection-Attrition Model. Academy of Management Journal, 49 (4), 661–677. https://doi.org/10.5465/amj.2006.22083023.

Porter, L. W./McLaughlin, G. B. (2006). Leadership and the organizational context: Like the weather? The Leadership Quarterly, 17 (6), 559–576. https://doi.org/10.1016/j.leaqua.2006.10.002.

Porter, M. E./Nohria, N. (2018). How CEOs manage time. Harvard Business Review, 96 (4), 42–51.

Potter, S. J./Dowd, T. J. (2003). Executive Turnover and the Legal Environment: The Case of California Hospitals, 1960–1995. Sociological Forum, 18 (3), 441–464. https://doi.org/10.1023/A:1025769603135.

PWC (2019). CEO Success Study: Succeeding the long-serving legend in the corner office. Available online at: https://www.strategyand.pwc.com/gx/en/insights/ceo-success.html; Last accessed 01 September 2025.

Quentin, W./Geissler, A./Scheller-Kreinsen, D./Busse, R. (2010). DRG-type hospital payment in Germany: The G-DRG system. Euro Observer, 12 (3), 4–7.

Radcliff, T. A./Brasure, M./Moscovice, I. S./Stensland, J. T. (2003). Understanding rural hospital bypass behavior. The Journal of Rural Health, 19 (3), 252–259. https://doi.org/10.1111/j.1748-0361.2003.tb00571.x.

Rädiker, S./Kuckartz, U. (2020). Focused analysis of qualitative interviews with MAXQDA: Step by step (1st ed.). MAXQDA Press.

Rivolta, M. L. (2018). Heir to the Throne: Choice of the Replacement CEO After Unexpected CEO Turnovers. International Journal of Financial Research, 9 (2), 172–190. https://doi.org/10.5430/ijfr.v9n2p172.

Rowe, W. G./Cannella, A. A./Rankin, D./Gorman, D. (2005). Leader succession and organizational performance: Integrating the common-sense, ritual scapegoating, and vicious-circle succession theories. The Leadership Quarterly, 16 (2), 197–219. https://doi.org/10.1016/j.leaqua.2005.01.001.

Schepker, D. J./Kim, Y./Patel, P. C./Thatcher, S. M./Campion, M. C. (2017). CEO succession, strategic change, and post-succession performance: A meta-analysis. The Leadership Quarterly, 28 (6), 701–720. https://doi.org/10.1016/j.leaqua.2017.03.001.

Schneider, A. M./Oppel, E.-M./Schreyögg, J. (2020). Investigating the link between medical urgency and hospital efficiency - Insights from the German hospital market. Health care management science, 23 (4), 649–660. https://doi.org/10.1007/s10729-020-09520-6.

Sdino, L./Brambilla, A./Dell'Ovo, M./Sdino, B./Capolongo, S. (2021). Hospital Construction Cost Affecting Their Lifecycle: An Italian Overview. Healthcare, 9 (7), 1–14. https://doi.org/10.3390/healthcare9070888.

Shen, W./Cannella, A. A. (2002). Revisiting the Performance Consequences of CEO Succession: The Impacts of Successor Type, Postsuccession Senior Executive Turnover, and Departing CEO Tenure. Academy of Management Journal, 45 (4), 717–733. https://doi.org/10.5465/3069306.

Silvera, G. A./Clark, J. R. (2021). Women at the helm: Chief executive officer gender and patient experience in the hospital industry. Health Care Management Review, 46 (3), 206–216. https://doi.org/10.1097/HMR.0000000000000252.

Silvera, G./Hamadi, H./Tafili, A. (2022). Hands and gloves: The relationship between CEOs and organizational context in U.S. hospitals. International Journal of Healthcare Management, 15 (3), 188–195. https://doi.org/10.1080/20479700.2020.1870351.

Simar, L./Wilson, P. W. (2007). Estimation and inference in two-stage, semi-parametric models of production processes. Journal of Econometrics, 136 (1), 31–64. https://doi.org/10.1016/j.jeconom.2005.07.009.

Sinnott, D. J. (2008). Leadership turnover: the health care crisis nobody talks about. Trustee, 61 (7), 29, 32.

Sołoducho-Pelc, L. (2015). Planning Horizon as a Key Element of a Competitive Strategy. Journal of Economics, Business and Management, 3 (2), 161–166. https://doi.org/10.7763/JOEBM.2015.V3.174.

SpencerStuart (2024). 2023 CEO Transitions. Available online at: https:// www.spencerstuart.com/research-and-insight/2023-ceo-transitions; Last accessed 01 September 2025.

Sun, L./Abraham, S. (2021). Estimating dynamic treatment effects in event studies with heterogeneous treatment effects. Journal of Econometrics, 225 (2), 175–199. https://doi.org/10.1016/j.jeconom.2020.09.006.

Tao, R./Zhao, H. (2019). "Passing the Baton": The effects of CEO succession planning on firm performance and volatility. Corporate Governance: An International Review, 27 (1), 61–78. https://doi.org/10.1111/corg.12251.

Tiemann, O./Schreyögg, J./Busse, R. (2012). Hospital ownership and efficiency: a review of studies with particular focus on Germany. Health policy, 104 (2), 163–171. https://doi.org/10.1016/j.healthpol.2011.11.010.

VERBI Software (2023). MAXQDA 24 [Computer software]. Berlin, Germany, VERBI Software.

Vijaya/Sharma, S./Batra, N. (2019). Comparative Study of Single Linkage, Complete Linkage, and Ward Method of Agglomerative Clustering. In: 2019 International Conference on Machine Learning, Big Data, Cloud and Parallel Computing (COMITCon). IEEE, 568–573.

Weil, P. A. (1990). Job turnover of CEOs in teaching and nonteaching hospitals. Academic Medicine, 65 (1), 1–7. https://doi.org/10.1097/00001888-199001000-00001.

Weil, P. A./Kimball, P. A. (1995). A model of voluntary turnover among hospital CEOs. Hospital & Health Services Administration, 40 (3), 362–385.

Weil, P. A./Timmerberg, J. (1990). Hospital CEO turnover: modelling more or less durable places to work. Health services management research, 3 (3), 208–217. https://doi.org/10.1177/095148489000300306.

Williams, D./Hadley, J./Pettengill, J. (1992). Profits, Community Role, and Hospital Closure: An Urban and Rural Analysis. Medical Care, 30 (2), 174. https://doi.org/aspx.

Wilson, C. N./Meadors, A. C. (1990). Hospital chief executive officer turnover. Hospital Topics, 68 (1), 35–39. https://doi.org/10.1080/00185868.1990.10544102.

Wilson, C. N./Stranahan, H. (2000). Organizational characteristics associated with hospital CEO turnover. Journal of Healthcare Management, 45 (6), 395–404.

Zajac, E. J./Shortell, S. M. (1989). Changing generic strategies: Likelihood, direction, and performance implications. Strategic Management Journal, 10 (5), 413–430. https://doi.org/10.1002/smj.4250100503.

Zhang, Y. (2008). Information asymmetry and the dismissal of newly appointed CEOs: an empirical investigation. Strategic Management Journal, 29 (8), 859–872. https://doi.org/10.1002/smj.689.

Zhang, Y./Rajagopalan, N. (2004). When the Known Devil is better Than an Unknown God: An Empirical Study of the Antecedents and Consequences of Relay CEO Successions. Academy of Management Journal, 47 (4), 483–500. https://doi.org/10.5465/20159598.

Appendix

Table A1 Summary of literature on predictors and effects of hospital CEO turnover

Authors, Year	Data Source(s)	Design & Analysis	Setting	Expected Relationships (Theories)	Key Findings*
Mathew et al. (2024a)	**Primary Data** Interview	**Cross-Sectional Descriptive** Thematic analysis	14 CEOs of public and private Hospitals Period: 2022; Country: AUS	Individual characteristics affect the likelihood of CEO turnover (NT | Predicted signs: none) (Frequent) CEO turnover impacts hospital performance (NT | Predicted sign: negative)	**Reasons for CEO turnover:** Burnout, Work Pressure, Bad Political Environment, Conflicts with Board, Scapegoating **Consequences of CEO turnover**: Organizational Instability, Leadership Instability, Staff Distrust, Negative Impact on Organizational Culture and Quality of Care, Staff Resistance to Change, Declining Staff Moral
Mathew et al. (2024b)	**Primary Data** Survey	**Cross-Sectional Descriptive** Thematic analysis	51 CEOs of public and private Hospitals; RR: 46% Period: 2022; Country: AUS	Environmental, organizational, and individual characteristics affect the likelihood of CEO turnover (NT Predicted signs: partially)	**Reasons for CEO turnover:** Stress & work-related Pressure (82%), Lack of Ressources (69%), Lack of Support from Board (67%), External & Internal Criticism (59%), Retirement (53%), Poor Performance (49%), Family Commitments (39%), Carreer Change (37%), Ethical Conduct Lapses (10%), Other Reasons (22%) **Note:** The study finds statistically significant differences in the turnover reasons depending on gender, hospital location, CEO work history, organisation size, and CEO qualifications.
Manshadi et al. (2022)	**Primary Data** Interview	**Cross-Sectional Descriptive** Thematic analysis	12 Hospital CEOs without restriction to a particular type of hospital, 34 Hospital Managers, 7 Experts of the Ministry of Health and medical universitiesPeriod: 2021 Country: IRN	Environmental, organizational and individual characteristics affect the likelihood of CEO turnover (NT | Predicted signs: none)	**Reasons for CEO turnover:** *Related to CEO:* Poor Performance, Conflicts (e.g. Staff, Board), Better Job Alternative *Related to Hospital:* Bad Organizational Culture and Climate, Bad Performance *Related to University:* Change of University Authorities, Policy Changes *Related to Country*: Economic and Political Instability Note: Most frequently mentioned reasons as classified/rated by the study authors.
Janke et al. (2019)	**Secondary Data** NHS, IDS, NCHOD, PHE, VAS	**Longitudinal Analytical** *Predictors* Not reported *Effects* DID with NNM Fixed effects regression	Approx. 185 Public hospitals Approx. 2,200 Hospital-years Period: 2000/1-2013/4 Country: UK (England)	Environmental, organizational and individual characteristics affect the likelihood of CEO turnover (NT | Predicted signs: none) CEOs impact public service delivery organizations (New Public Management Theory | Predicted sign: none)	**Predictors:** Clinical Qualification (+, n.s.), Female (+, n.s.), Management Qualification (+)$^{p<0.10}$, Region (non-linear effect), Specialist (-, n.s.), Teaching (-) **Effects (parametric):** Day Cases (+)$^{p<0.10}$, Length of Stay (+, n.s.), MRSA rate (+, n.s.), Staff Job Satisfaction (-, n.s.), Retained Surplus (-, n.s.), Waiting time (-, n.s.), **Effects (nonparametric):** Day Cases (+, n.s.), Length of Stay (-)$^{p\leq0.10}$, MRSA rate (+, n.s.), Staff Job Satisfaction (-)$^{p<0.10}$, Retained Surplus (-, n.s.), Waiting Time (-, n.s.) **Note:** Pre-assignment tests indicate that the effect on day cases in the parametric models could be due to selection rather than CEOs imposing their style.
Hearld et al. (2019)	**Secondary Data** AHA[A], ARF	**Longitudinal Analytical** Random effects logistic regression	3,947 Hospitals without restriction to a particular type of hospital 39,469 Hospital-years 3,961 CEO turnoverPeriod: 2006-2015; Country: US	Environmental characteristics affect the likelihood of CEO turnover (IT: Resource base view | Predicted signs: yes)	**Predictors:** Affordable Care Act introduction (+), Competition (+, n.s.), Contract managed (+, n.s.), Critical Access Hospital (-, n.s.), Health Professional Shortage Area (+), Hospital Size (-), Location (Frontier compared to urban) (+), Medicaid expansion state (+, n.s.), Minority Share (+), Network Member (-), Ownership (For-profit>Governmental> Nonprofit), Socioeconomic status (+, n.s.), Teaching hospital (+, n.s.), Hospital System Member (+), Years since last CEO turnover (+) **Note**: Effects partially vary by rurality of hospitals.
Ford et al. (2018)	**Secondary Data** AHA[A]	**Longitudinal Analytical** SFA, PSM Fixed effects regression Random effects regressions	1,640 Hospitals without restriction to a particular type of hospital; INT: 490 Hospitals CG: 1,230 HospitalsPeriod: 2003-2007; Intervention: 2005; Country: US	The impact of CEO turnover on hospital performance may vary by the time span considered and the type of succession (Resource base view | Predicted sign: non-linear (moderated))	**Effects:** Cost Efficiency (one period) (-) **Note:** The negative effect decreased over time for firms with outsider CEO successions, yet not significantly for firms with insider successions..

Mosadeghrad et al. (2013)	**Primary Data** Checklists, Questionnaires, Interviews, Observations, Document analysis	**Longitudinal Descriptive** Qualitative and quantitative (descriptive) methods of data analysis	1 Medium-size public general hospital 3 CEO turnovers Period: 2005-2011; Country: IRN	CEOs impact strategies and outcomes of hospitals (Strategic Collaborative Quality Management Model) CEO turnover impacts the implementation of quality management (NT | Predicted sign: negative)	**Effects:** Replacement of Key Positions, Changes in Strategy, Department Structures & Human Resources Policy **Authors conclusion**: CEO turnover threatens consistency, thereby delaying and jeopardizing the long-term success of the SCQM measure and making it very difficult to sustain the benefits.
Leibert & Leaming (2010)	**Primary Data** Survey	**Cross-Sectional Descriptive** Frequencies of responses	46 CEOs of critical access hospitals; RR: Not Reported Period: 2008 Country: US (KS, IA, MN, TX, NE)	Poor relationship between CEO and gov. board or medical staff increases likelihood of CEO turnover (NT | Predicted sign: yes) CEO turnover impacts hospital performance (NT | Predicted sign: negative)	**Reasons for CEO turnover:** Bad Board Relations (39%), Bad Hospital Performance (35%) **Consequences of CEO turnover**: Strategic Planning (-) (40%), Community Relations (-) (40%), Financial Performance (-) (35%)
Dworkin et al. (2010)	**Primary Data** Survey	**Cross-Sectional Descriptive** Frequencies of responses to closed-ended questions	98 CEOs of non-federal general surgical and medical short-term hospitals; RR: 14.4% Period: 2009; Country: US	After a CEO change, new CEOs will pass through a managerial socialization process which results in various outcomes (Managerial Socialiation Model | Predicted signs: no)	**Consequence of CEO turnover** **Effects (Top 3):** Revenues (+) (78%), Profitability (+) (71%), Patients Treated (+) (65%)
Ballantine et al. (2008)	**Secondary Data** AHT, CHI, IDS, LB, NHS	**Longitudinal Analytical** Logistic regression	600 Hospital-years 106 CEO turnover in public hospitals; Period: 1998-2005 Country: UK (England)	Poor prior performance increases likelihood of CEO turnover (Agency Theory | Predicted sign: yes)	**Predictors:** CEO Age (-), CEO Age^2 (+), Financial Deficit (-), Multidimensional Performance Rating (-), Reference Costs (operating cost efficiency) (+, n.s.), RoA (-)
Khaliq et al. (2006)***	**Primary Data** Survey	**Cross-Sectional Descriptive** Frequencies of responses to closed-ended questions	805 CEOs of non-federal general surgical and medical short-term hospitals; RR: 38% Period: 2005; Country: US	CEO turnover impacts hospital performance, hospital activities and competitor activites (NT | Predicted signs: no)	**Consequence of CEO turnover**** **Competitor Actions (Top 3):** Marketing Activities (43%), Recruiting Key Employees (34%), Recruiting Physicians (33%) **Initiated Activities (Top 3):** Cost Cutting (33%), Development of Services (25%), Reducing Administrative Staff (25%) **Postponed/Halted Activities (Top 3):** Development of Services (43%), Strategic Planning (41%), Community Outreach (36%) **Unaffected Activities (Top 3):** Reducing Clinical Staff (72%), Closing Services (65%), Reducing Administrative Staff (65%) **Positive Impacts on Performance: (Top 3):** Relationship with Medical Staff (40%), Relationship with Board (38%), Hospital Culture (37%) **Further Impacts (Top 3):** Senior executive turnover within one year of CEOs departure (up to 77%), Hospital mergers (8%), Joining a Hospital System (10%) **Note:** Statistically significant differences between responses on the impact of the last CEO turnover at the previous hospital and at the current hospital.
Bertrand et al. (2005)	**Secondary Data** AHA[A], IRS, GHAA	**Longitudinal Analytical** Linear probability model	4,259 Hospital-years Approx. 547 CEO turnover in nonprofit hospitals Period: 1992-1996; Country: US	Negative income pressures increase likelihood of CEO turnover (Institutional Theories | Predicted sign: yes)	**Predictors:** Areal Penetration of Health Maintenance Organizations (HMO) (+) **Note:** Predictor gets insignificant when control variables for hospital and area characteristics are included. The effect of HMO penetration is higher for hospitals with lower base-year profitability levels and with higher physician-to-patient-ratios (no significant differences in effects depending on service expenditures per patient day, nurse-to-patient-ratio, and share of Medicaid patients).

Eldenburg et al. (2004)	**Secondary Data** OSHPD	**Longitudinal Analytical** Logistic regression	486 Hospitals without restriction to a particular type of hospital; 6,434 Hospital-years >83,000 Director-years Approx. 1,565 CEO turnover Period: 1980-1996 Country: US (CA)	Differences in ownership types' objectives explain how financial and non-financial performance affect CEO turnover (IT: Institutional Theories | Predicted signs: yes, for focal variables)	***Predictors:*** Administrative Expenses (+), Conversion of Ownership (+), Excess Income Margin (-), Uncompensated care (+, n.s.), Hospital System Member (+) **Note:** Results vary by ownership type (religious, nonprofit, for-profit, governmental, district, teaching hospital); the effect of excess income on CEO turnover does not significantly vary for system members versus freestanding hospitals
Dworkin & Goldstein (2004)	**Primary Data** Interview	**Cross-Sectional Descriptive** Frequency of similar responses to open-ended questions	5 CEOs of nonprofit community hospitals Period: 2001; Country: US	After a CEO change, new CEOs will pass through a managerial socialization process which results in outcomes (NT | Predicted signs: no)	**Consequence of CEO turnover** **Planned/Envisioned Activities (Top 3):** Strategic Planning (80%), Revamping Organizational Design and culture (60%), Improvement of Financial Performance and Quality (60%) **New Goals (Top 3):** Enhance organizational communications (60%), Enhance financial performance (40%), Strategic plan development/implementation (40%) **Initiated changes (Top 3):** Management changes (60%), Cultural change (60%), Financial policy changes (40%), **Tactics for Change Implementation (Top 3):** Opening Lines of Communication (60%), Change in Leadership (40%), Identifying desired goals/outcomes (40%),
Potter & Dowd (2003)	**Secondary Data** AHA[A], ACHE	**Longitudinal Analytical** Event history analysis	144 Nonprofit and for-profit hospitals; 4,418 Hospital-years 879 CEO turnover Period: 1960-1995 Country: US (CA)	The legal environment affects CEO turnover (Institutional Theories | Predicted signs: yes) CEO turnover is more likely at for-profit than nonprofit hospitals (Institutional Theories | Predicted sign: yes)	**Predictors:** Hospital System Member (n.s.), Conversion of Ownership (to For-profit +; to Nonprofit +, to alternate Nonprofit +, n.s.), Expense Ratio (n.s.), Hospital Age (+), Hospital Size (-, n.s.), Legal period (mixed results), Occupancy Rate (-), Organizational Change (+), Ownership (For-profit>Governmental/Nonprofit), Residency/Intern Program (-, n.s.), Retirement age of the previous CEO (n.s.), Time trend (+, n.s.), Urban (+, n.s.)
Brickley & van Horn (2002)	**Secondary Data** AHA[A], HCFA, IRS	**Longitudinal Analytical** Logistic regression	2,334 Short-term non-system affiliated hospitals 2,134 Nonprofit 220 For-profit 7,800 Hospitals-years Period: 1991-1995; Country: US	The relationship between prior performance and CEO turnover varies by hospital ownership type (FP, NP) due to differences in agency problems, incentives, and control (IT: Agency Theory | Predicted sign: yes)	**Predictors:** Change in RoA (-, n.s.), Competition (HHI) (-)$^{p<0.10}$, Nurse to Patient Ratio (+, n.s.), Revenue per patient day (+, n.s.), RoA (-), Total Assets (-), Ownership (For-profit>Nonprofit, n.s.) **Note:** Interaction term between ROA and for-profit hospital status (+) $^{p<0.10}$
Haveman et al. (2001)	**Secondary Data** OSHPD	**Longitudinal Analytical** *Predictors* Event history analysis *Effects* OLS regression	119 Nonprofit hospitals 1,547 Hospital-years Period: 1978 -1991 Country: US (CA)	Regulatory change affects CEO turnover (Punctuated Equilibrium Model, Institutional Theories | Predicted sign: yes) CEO turnover impacts hospital performance in times of major regulatory change (Organizational ecology | Predicted sign: positive (moderated))	**Predictors:** CEO Tenure (-), Hospital Size (-), Macroeconomic Growth (+), Organizational Age (+), Organizational Growth (+, n.s.), Prior-Year Performance (Compared to Industry Average) (-), Time Since last Regulatory Change (+), Regulatory Change (-, n.s.) **Effects:** Performance (as return on sales = gross patient-services revenue over net income) (+, but gradual attenuation of this benefit over time)
Wilson & Shanahan (2000)	**Secondary Data** AHA[C]	**Cross-Sectional Analytical** Probit regression	864 Hospitals without restriction to a particular type of hospital Period: 1995; Country: US	Environmental and organizational characteristics affect the likelihood of CEO turnover (NT | Predicted signs: yes)	**Predictors:** Gender (Female in large Hospitals) (+), Hospital Location (non-linear effect), Hospital Size (-), JCAHO accreditation (n.s.), Number of Services (+), Occupancy (n.s.), Ownership (For-profit/Church-owned>Governmental/Nonprofit), Urban (n.s.), Service Breadth (Number of Services) (+), Service Depth (Usage Intensity) (+)
Lee & Alexander (1999)	**Secondary Data** AHA[A, C], ARF	**Longitudinal Analytical** Cox proportional hazards model	5,781 Non-federal short-term hospitals 66,909 Hospital-years 8,547 CEO turnovers Period: 1981-1994; Country: US	CEO turnover impacts the risk of hospital closure (IT: Resource base view, Person-organization fit | Predicted sign: positive)	**Effects:** Risk of Hospital Closure (+) **Note:** If CEO turnover occurred together with other peripheral changes (e.g., downsizing, restructuring), the risk of hospital closure increased.

Dwore & Murray (1996)* **	**Secondary Data** UHA	**Longitudinal Analytical** Chi-Square tests	54 Hospitals without restriction to a particular type of hospital; 1,554 Hospital-years 267 CEO turnover Period: 1973-1992; Country: US (UT)	Organizational characteristics affect the likelihood of CEO turnover (NT | Predicted signs: none)	**Reasons for CEO turnover:** Transfer/promotion (54%), Force Out (33%), Retirement (7%), Other or Unknown (6%) **Predictors:** Hospital Size (n.s.), Hospital System Member (n.s.), Ownership (For-profit vs. Other, n.s.), Time Period (n.s.) **Noteworthy:** Causes and predictors of CEO turnover do not differ significantly over compared periods (1973-1987 & 1988 -1992).
Alexander & Lee (1996)	**Secondary Data** AHA[A], ARF, HCFA	**Longitudinal Analytical** Event history analysis	2,780 Rural community hospitals 16,929 Hospital-years Period: 1984-1991; Country: US	CEO turnover increases risk of failure (IT: Leadership instability theory | Predicted sign: yes) Risk of failure will be greatest when the CEO has either very long tenure or very short tenure. (NT | Predicted sign: non-linear)	**Effects:** Risk of Hospital Closure (+)
Weil & Kimball (1995)	**Primary Data** Baseline Survey (CEO attitudes & performance) Leaver survey (identification of voluntary leaver) **Secondary Data** AHA[A]	**Longitudinal Analytical** Logistic regression	1,692 CEOs of non-federal general surgical and medical short-term hospitals; 123 CEO turnover; RR Survey I: 63%; RR Survey II: 79%; Final Sample: 1,411 Obs. Incl. 49 Voluntary turnovers Period: 1989-1990, Country: US	Voluntary turnover is influenced by both push and hump factors (Voluntary Turnover Model | Predicted signs: yes)	**Predictors:** Age (-), Age>60 (+), Community involvement (-, n.s.), Family obstacles (-), Financial obstacles (+, n.s.), Hospital System (-, n.s.), Income (+, n.s.), Job dissatisfaction (+), Operating margin (+, n.s.), Previous CEO terminated (-, n.s.), Relationship oriented Leadership (+, n.s.), Situational control (-, n.s.), Value Incongruence (+, n.s.) **Note:** The effect of Value Incongruence, Income, Predecessor termination, Situational control might be mediated by Job dissatisfaction.
Alexander et al. (1993)	**Secondary Data** AHA[A, B]	**Longitudinal Analytical** Poisson regression	1,534 Nonprofit community hospitals Approx. 1,964 CEO turnover Period: 1980-1988; Country: US	The stability of the CEO position depends on both the organization's life-cycle stage and the relative distribution of expertise, resources, and influence between the CEO and the board of directors. (IT: Leadership instability theory, Organizational life cycle theory | Predicted signs: yes)	**Predictors:** Board Accountability (-, n.s.), Board-CEO-Contract (+), Board Size-Heterogeneity (-), CEO Power (-), Competition (+, n.s.), Duration Contract Managed (+), Duration Hospital System Member (+), Hospital Size (-), Life Cycle Stage (Decline >Instable>Stable=Growth), Time since last CEO turnover (-)
Hart et al. (1993)	**Primary Data** Survey - CEOs Survey - Board	**Cross-Sectional Descriptive** Frequencies of responses to closed-ended questions and of similar responses to open-ended questions Chi-square and t-tests for differences in responses between CEOs and Board members	148 Rural non-federal general surgical and medical short-term hospitals 85 CEO turnovers**;** 63 CEOs; RR Survey CEO: 84%; 67 Board Members; RR Survey Board: 80% Period: 1987-1990 Country: US (WA, AK, MT, ID)	Environmental, organizational, and individual characteristics affect the likelihood of CEO turnover (NT | Predicted signs: none)	**Reasons for CEO turnover (Early-Leaver):** **Professional Reasons (Top 4):** Unstable Health Care-System Environment (64%), Financial Instability (53%), Conflicts with Staff/Board (50%), Found Better Position (47%) **Personal Reasons (Top 3):** Isolation/Lack of peer support (56%), Inadequate Salary (49%), Missing Growth Opportunity (49%) **Community reasons (Top 3):** Dissatisfaction with Town (44%), Lack of Cultural Opportunities (39%), Lack of Community Support (34%) **Predictors:** Average, poor or very poor prior performance of Early-Leavers rated on 10 performance dimensions (average agreement 63% by board members, 28% by CEOs) **Note**: Results point to a perception bias about CEOs' self and external (e.g. performance) evaluations.

Mick et al. (1993)	**Primary Data** Survey **Secondary Data** AHA, ARF, HCFA	**Longitudinal Analytical** Logistic regression	797 Chief Administrator of rural non-federal general surgical and medical short-term hospitals, RR: 80% Period: 1983-1988 Country: US (UT)	CEO turnover is related to strategic activity (IT: Leadership instability theory | Predicted sign: negative)	**Effects:** Strategic Change (+) (e.g., Affiliation with ambulatory services, consortium arrangements, corporate restructuring, downsizing, managed care system affiliation (HMOs, PPOs), multihospital affiliation)
Goodstein & Boeker (1991)	**Secondary Data** CHFC	**Cross-Sectional (Pooled) Analytical** Weighted generalized OLS regression	327 Hospitals without restriction to a particular type of hospital Period: 1980-1986 Country: US (CA)	Organizational and environmental characteristics affect the likelihood of CEO turnover (NT | Predicted signs: none) Changes in ownership and board composition will increase the number of service additions and divestitures; this effect will be greatest when they interact with CEO succession (NT | Predicted signs: positive (moderating))	**Predictors/Correlates:** Ownership change (+), Board composition change (+), Outsider representation on board change (-), Change in Standard Metropolitan Statistical Area bed capacity (-, n.s.), Prospective Payment System implementation (+), Occupancy rate change (-, n.s.), Outsider representation on board (+), Total services (-), Ownership (For-profit>Governemtal>Religious>Nonprofit, significance not tested) **Effects:** Total Service Additions (+), Total Service Divestitures (+) **Note:** Joint changes in CEO and ownership have a significant, positive effect on service changes. Joint changes in CEO and board turnover do not appear to have an effect on service changes. Joint changes in outsider representation and CEO have a significantly positive effect on service additions, but not on divestitures.
Wilson & Meadors (1990)	**Secondary Data** AHA[C]	**Cross-Sectional Descriptive** Turnover rates by different hospital groups	6,804 Hospitals without restriction to a particular type of hospital Approx. 1,490 CEO turnovers Period: 1986-1987; Country: US	Organizational and environmental characteristics affect the likelihood of CEO turnover (NT| Predicted signs: none)	**Predictors:** Hospital Location (non-linear relationship), Hospital Size (-), Ownership (For-profit>Governmental>Nonprofit) **Note:** In this study, the results were not tested for statistical significance.
Weil (1990)	**Secondary Data** ACHE, AHA[C]	**Longitudinal Analytical** Chi-square, Analysis of Variance	5,288 Non-federal general surgical and medical short-term hospitals Approx. 6,728 CEO turnoverPeriod: 1981-1987; Country: US	Organizational and environmental characteristics affect the likelihood of CEO turnover (NT| Predicted signs: partially)	**Predictors:** Admission (-), City Size (+), Costs (+), Hospital Location (non-linear), Hospital Size (-), Occupancy Rate (-), Operating Margin (-), Ownership (For-profit>Governmental>Nonprofit), Hospital System Member (+) **Note:** Predictors vary by teaching status. A small group of "high turnover hospitals" account for 64%/49% of all CEO turnover in non-/teaching hospitals.
Weil & Timmerberg (1990)	**Secondary Data** AHA[C]	**Longitudinal Analytical** Chi-square, ANOVA, OLS regression	5,288 Non-federal general surgical and medical short-term hospitals Approx. 5,029 CEO turnover Period: 1982-1986; Country: US	Organizational and environmental characteristics affect the likelihood of CEO turnover (NT | Predicted signs: yes)	**Predictors:** Cost per Patient Day (n.s.), Hospital Location (non-linear), Hospital Size (-), JACHO Accreditation (n.s.), Occupancy Rate (-), Operating Margin (-), Ownership (For-profit>Governmental>Nonprofit), Recent Hospital System Member (+), Hospital System Member (+), Teaching (-), Urban (+) **Note:** In sub-group analyses, predictors partially vary by type of hospital (For-profit-/Nonprofit-Hospital-System-Member, Nonprofit-Freestanding, Governmental)
Freund (1987)	**Primary Data** Survey - CEOs	**Cross-Sectional Descriptive** Frequency of similar responses to open-ended questions	118 CEOs of university-owned or affiliated hospitals; RR: 47% Period: 1973-1982; Country: US	Organizational and environmental characteristics affect the likelihood of CEO turnover (Person-organization fit, IT: Organizational life cycle theory | Predicted signs: none) CEO turnover affects CNO turnover (NT| Predicted signs: positive)	**Reasons for CEO turnover:** Termination (25%), Retirement (17%), Promotion/better Job (13%), Personal/family (8%), Job Dissatisfaction (8%), , Other(13%) **Consequences of CEO turnover**: Chief Nurse Officer termination within the first year (12%)

Abbreviations: ACHE = American College of Healthcare Executives; AHA = American Hospital Association (A) Annual Survey Database, (B) Governing Board Survey, (C) Guide to the Healthcare Field; AHT = No information can be found.; ARF = Area Resource File; CG = Control Group; CHI = Commission for Health Improvement; CHFC = California Health Facilities Commission; DID = Difference in Differences; GHAA = Group Health Association of America (National Directory); HCFA = Healthcare Financing Administration (Medicare Cost Reports); IDS = Income Data Service; INT = Intervention Group; IRN = Iran; IRS = Internal Revenue Service; IT = Implicit Theory; LB = LaingBuisson (NHS Trust Financial Database); NCHOD = Clinical and Health Outcomes Knowledge Base; NHS = National Health Service (NHS Staff Survey, NHS Digital, NHS Improvement); NNM = Nearest-Neighbor-Matching; NT = No Theory mentioned ; OSHPD = Office of Statewide Health Planning and Development; PHE = Public Health England; PSM = Propensity-Score-Matching; RR = Response Rate; SFA = Stochastic Frontier Analysis; UHA = Utah Hospital Association; UK = United Kingdom; US = United States; VAS = Various Additional Sources

Notes: ***n.s. corresponds to p>0.1. **** Due to significant differences (p<0.01) in responses regarding the impact of own CEO turnover at previous hospital and previous CEO turnover at current hospital. Values reported are based on unweighted means. For more information, please contact the authors or refer to Khaliq et al. (2006).

*******Due to redundancy (e.g. analyzing supsamples, not generating additional relevant results) with the marked studies, the following studies were excluded:

Dwore, R. B., & Murray, B. P. (1989). Turnover at the top: Utah hospital CEOs in a turbulent era. Journal of Healthcare Management, 34(3), 333-351.

Khaliq, A. A., Walston, S. L., & Thompson, D. M. (2007). Is chief executive officer turnover good for the hospital?. The Health Care Manager, 26(4), 341-346.

Table A2 Assessment of methodological and reporting quality

Criteria | Author, Year	Freund (1987)	Weil (1990)	Weil & Timmerberg (1990)	Wilson & Meadors (1990)	Goodstein & Boeker, (1991)	Alexander et al. (1993)	Hart et al. (1993)	Mick et al. (1993)	Weil & Kimball (1995)	Alexander & Lee (1996)	Dwore & Murray (1996)	Lee & Alexander (1999)	Wilson & Stranahan (2000)	Haveman et al. (2001)	Brickley & van Horn (2002)	Potter & Dowd (2003)	Dworkin & Goldstein (2004)	Eldenburg et al. (2004)	Bertrand et al. (2005)	Khaliq et al. (2006)	Ballantine et al. (2008)	Dworkin et al. (2010)	Leibert & Leaming (2010)	Mosadeghrad et al. (2013)	Ford et al. (2018)	Hearld et al. (2019)	Janke et al. (2019)	Manshadi et al. (2022)	Mathew et al. (2024b)	Mathew et al. (2024a)	Average Score	Average Score by Category	Comments by Category
Concept & Design																																	
Theoretical or conceptual underpinning to the research	0	1	2	0	3	3	2	3	3	3	1	3	2	3	1	3	1	2	2	1	3	3	2	2	3	2	3	1	0	0	1.9	2.2	In general, the studies performed well in their choice of a suitable study design and its description. Only five studies received a low rating of one point for the appropriateness of their study design because it was only partially suitable for answering the stated research aims.
Statement of research aim/s	1	2	2	1	2	3	3	1	2	2	1	2	3	2	2	2	2	2	2	3	2	2	2	2	3	2	2	2	3	3	2.1		
Clear description of research setting and target population	1	1	2	1	2	3	3	3	2	3	1	3	3	3	2	3	2	3	2	1	3	2	3	1	2	2	3	3	2	2	2.2		
The study design is appropriate to address the stated research aim/s	1	1	3	2	2	3	3	3	3	3	3	3	3	3	3	3	2	3	3	2	3	3	1	1	3	3	3	1	3	3	2.5		
Methodological Transparency																																	
Description of datasets, variables and their operationalization	2	2	2	2	3	3	2	2	3	3	1	3	2	3	3	3	1	2	3	1	2	2	1	1	2	3	3	1	3	3	2.2	2.1	Most studies used appropriate data collection tools and described their data sets and variable operationalization in detail, but some only mentioned data sources without further explanation. Studies using secondary data often omitted details on exclusion/inclusion criteria or the number of observations affected, and primary data studies often did not provide sufficient explanation of the recruitment process.
The format and content of data collection tool is appropriate to address the stated research aim/s	1	2	3	3	3	3	2	2	2	3	2	3	3	3	3	3	1	3	2	1	3	2	0	1	2	3	3	1	2	2	2.2		
Quality of data collection procedure	1	2	2	1	2	2	3	3	2	1	1	2	2	1	3	2	1	2	0	2	2	3	1	1	3	3	2	1	2	2	1.8		
Methodological Appropriateness																																	
Appropriate sampling to address the research aim/s	1	2	2	1	2	2	2	2	2	2	2	2	1	2	2	3	2	2	1	2	2	2	0	1	2	2	2	2	2	2	1.8	1.8	The majority of studies scored low in their handling of the sampling. Studies also showed weaknesses in selecting and describing analytical methods appropriately, particularly in qualitative and quantitative descriptive research
Justification for analytic method selected	1	0	2	0	2	3	1	2	2	3	1	3	3	3	1	3	0	2	1	0	2	0	0	1	3	3	3	2	1	1	1.6		
The method of analysis was appropriate to answer the research aim/s	0	1	2	1	2	2	1	2	2	3	1	3	2	3	2	3	1	2	2	1	2	1	1	1	3	2	3	1	2	3	1.8		
Limitations																																	
Limitations critically discussed	0	1	0	0	1	2	0	0	1	0	0	3	0	0	1	0	0	0	1	2	1	0	0	0	3	2	1	1	2	2	0.8	0.8	Most studies failed to report limitations, and when mentioned, they were often scattered throughout the text or generic in content. Only two studies thoroughly addressed the limitations related to design, method, data collection, sampling, and analysis.
Score	9	15	22	12	24	29	22	23	24	26	14	30	24	26	23	28	13	23	19	16	25	20	11	12	29	27	28	16	23	22	21.2		
Rating	L	L	M	L	M	H	M	M	M	M	L	H	M	M	M	H	L	M	L	L	M	M	L	L	H	H	H	L	M	M	M		

Abbreviations: L = Low (score < 60%); M = Moderate (score ≥ 60% but ≤ 80%); H = High (score > 80%)
Note: The adapted assessment tool is available from the authors upon request.

Table A3 Predictors and effects of CEO turnover – Evidence from inferential studies

Categories	# Studies	Predictors	Studies
Predictors of CEO turnover			
Organizational Characteristics			
Size	9	# Admission (Nonteaching)	Weil (1990)
		# Beds	Hearld et al. (2019); Potter & Dowd (2003); Haveman et al. (2001); Wilson & Stranahan (2000); Dwore & Murray (1996); Alexander et al. (1993); Weil (1990); Weil & Timmerberg (1990)
		Total Assets (Nonprofit)	Brickley & van Horn (2002)
Ownership	9	For-profit>Governmental>Nonprofit	Hearld et al. (2019); Potter & Dowd (2003); Brickley & van Horn (2002); Wilson & Stranahan (2000); Dwore & Murray (1996); Goodstein & Boeker (1991); Weil (1990); Weil & Timmerberg (1990)
		Ownership conversions	Eldenburg et al. (2004); Potter & Dowd (2003); Goodstein & Boeker (1991)
Hospital System or Network	8	Duration System Member (Years)	Alexander et al. (1993)
		Member of a Hospital System	Hearld et al. (2019); Eldenburg et al. (2004); Potter & Dowd (2003); Dwore & Murray (1996); Weil & Kimball (1995); Weil (1990); Weil & Timmerberg (1990)
		Recent Member of a Hospital System	Weil & Timmerberg (1990)
		Member of a Hospital Network	Hearld et al. (2019)
Previous CEO	4	Retirement age of the previous CEO	Potter & Dowd (2003)
		Tenure	Potter & Dowd (2003)
		Terminated	Weil & Kimball (1995)
		Time since last CEO turnover (Years)	Hearld et al. (2019); Alexander et al. (1993)
Services	5	Change in Services (Proxies: Location or Name)	Potter & Dowd (2003)
		Domain Expansion (Increase Services Offered)	Haveman et al. (2001)
		Service Breadth (Number of Services)	Wilson & Stranahan (2000); Goodstein & Boeker (1991)
		Service Usage intensity (Census/Number)	Wilson & Stranahan (2000)
		Specialization	Janke et al. (2019)
Teaching Status	4	Teaching Hospitals	Hearld et al. (2019); Janke et al. (2019); Weil & Timmerberg (1990)
		Residency & Intern Program	Potter & Dowd (2003)
Hospital Age	2	Age of the Hospital	Potter & Dowd (2003); Haveman et al. (2001)
Accreditation	2	JCAHO	Wilson & Stranahan (2000); Weil & Timmerberg (1990)
Contracting	2	Contract Managed	Hearld et al. (2019)
		Duration Contract Managed (Years)	Alexander et al. (1993)
Board	2	Accountability of board to a higher authority	Alexander et al. (1993)
		Board-CEO-Contract	Alexander et al. (1993)
		Change in Board Composition	Goodstein & Boeker (1991)
		CEO power and influence over board	Alexander et al. (1993)
		Corporate Representation (# Corporate Executives)	Alexander et al. (1993)
		Outsider Representation	Goodstein & Boeker (1991)
		Medical Staff Representation (# Physicians)	Alexander et al. (1993)
		Board Size and Heterogeneity	Alexander et al. (1993)
Prior Performance			
Financial Performance	8	Administrative Expenses	Eldenburg et al. (2004)
		Costs Per Patient Day	Weil (1990); Weil & Timmerberg (1990)
		Reference Costs	Ballantine et al. (2008)
		Change in Return on Assets	Brickley & van Horn (2002)
		Excess Income Margin	Eldenburg et al. (2004)
		Expense Ratio	Potter & Dowd (2003)
		Financial Deficit	Ballantine et al. (2008)
		One Year Change in Sales	Haveman et al. (2001)
		Operating Margin	Haveman et al. (2001), Weil & Kimball (1995); Weil (1990); Weil & Timmerberg (1990)
		Return on Assets	Ballantine et al. (2008); Brickley & van Horn (2002)
		Revenue per Patient Day	Brickley & van Horn (2002)
Organizational Performance	7	Life Cycle Stage (Decline>Instable>Stable/Growth) (Change in Inpatient Admissions)	Alexander et al. (1993)
		Multidimensional Performance Rating	Ballantine et al. (2008)
		Occupancy Rate	Potter & Dowd (2003); Weil & Timmerberg (1990); Wilson & Stranahan (2000); Goodstein & Boeker (1991); Weil (1990)
Altruistic Performance	2	Nurse to Patient Ratio	Brickley & van Horn (2002)
		Progressive Services Expenditure	Brickley & van Horn (2002)
		Uncompensated Care	Eldenburg et al. (2004)

Personal Characteristics			
Age & Tenure	3	Age	Ballantine et al. (2008); Weil & Kimball (1995)
		Age>60	Weil & Kimball (1995)
		Age^2	Ballantine et al. (2008)
		CEO Tenure	Haveman et al. (2001)
Gender	2	Female CEO	Janke et al. (2019); Wilson & Stranahan (2000)
Job Satisfaction	1	Income	Weil & Kimball (1995)
		Job Dissatisfaction	Weil & Kimball (1995)
		LPC-Score (relationship orientation in leadership)	Weil & Kimball (1995)
		Situational Control	Weil & Kimball (1995)
		Value Incongruence	Weil & Kimball (1995)
Education	1	Clinical Qualification	Janke et al. (2019)
		Management Qualification	Janke et al. (2019)
Life Situation	1	Family Obstacles	Weil & Kimball (1995)
		Financial Obstacles	Weil & Kimball (1995)
Environmental Characteristics			
Macro Factors	9	Geographical Location/Regions	Janke et al. (2019); Weil (1990); Weil & Timmerberg (1990); Wilson & Stranahan (2000)
		Regulatory Change & Legal Change Periods (Affordable Care Act Period, Cost Containment Period, Medicare Period, New Charity Period, PAF Period, PPS)	Hearld et al. (2019); Ballantine et al. (2008); Potter & Dowd (2003); Haveman et al. (2001); Goodstein & Boeker (1991)
		Macroeconomic Growth (Change in Gross National Product)	Haveman et al. (2001)
		Time Since last Regulatory Change	Haveman et al. (2001)
		Time Trend	Potter & Dowd (2003)
Degree of Urbanization	5	Degree of urbanization	Hearld et al. (2019); Potter & Dowd (2003); Wilson & Stranahan (2000); Weil (1990); Weil & Timmerberg (1990)
		Critical Access Hospital	Hearld et al. (2019)
Regional Socioeconomic Environment	2	Community involvement	Weil & Kimball (1995)
		Health professional shortage area (County)	Hearld et al. (2019)
		Medicaid Expansion State	Hearld et al. (2019)
		Minority Share (County)	Hearld et al. (2019)
		Socioeconomic Status (County)	Hearld et al. (2019)
Competition	4	# Hospitals 15-mile radius	Alexander et al. (1993)
		Herfindahl-Hirschman Index (Nonprofit)	Hearld et al. (2019); Brickley & van Horn (2002)
		Health Maintenance Organization Penetration (County)	Bertrand et al. (2005)*
Effects of CEO turnover			
Financial Performance	5	Cost Efficiency (One year after)	Ford et al. (2018)
		Return on Patient-Services Revenue (After Regulatory Change)	Haveman et al. (2001)
		Retained Surplus	Janke et al. (2019)
		Risk of Hospital Closure	Alexander & Lee (1996); Lee & Alexander (1999)
Quality of Care	1	Length of Stay	Janke et al. (2019)[NP]
		MRSA Rate	Janke et al. (2019)
		Waiting Time	Janke et al. (2019)
Other Organizational Performance Aspects	1	Day Cases	Janke et al. (2019)[P]
		Staff Job Satisfaction	Janke et al. (2019)[NP]
Organizational Activities	2	Strategic Change	Mick et al. (1993)
		Total Service Additions	Goodstein & Boeker (1991)
		Total Service Divestitures	Goodstein & Boeker (1991)

Color coding: Green (group differences), brown (-) and blue (+) significant relationships. Purple mixed significant results. Gray non-significant relationships.
For predictors: A positive relationship indicates a higher likelihood of CEO turnover.
For effects: A positive relationship indicates an increase and a negative relationship indicates a decrease in the measured outcome.
Note: * Becomes non-significant when all control variables for hospital and area characteristics are included; [P] significant in the parametric model; [NP] significant in the nonparametric model.

Table A4 Predictors and effects of CEO turnover – Evidence from descriptive studies

Categories	# Studies	Predictors	Studies
Predictors of CEO turnover			
Organizational Characteristics			
Hospital Board and Authorities	4	Changes in Authorities and Policies	Hart et al. (1993)
		Conflict with Board & Lack of Support	Mathew et al. (2024b); Mathew et al. (2024a); Manshadi et al. (2022); Leibert & Leaming (2010); Hart et al. (1993)
Hospital Resources	1	Lack of Resources	Mathew et al. (2024b)
Organizational Culture and Team Climate	3	Poor Organizational Culture	Hart et al. (1993)
		Conflicts with Staff	Manshadi et al. (2022); Hart et al. (1993)
Ownership	1	For-profit>Governmental>Nonprofit	Wilson & Meadors (1990)
Size	1	# Beds	Wilson & Meadors (1990)
Prior Performance			
Financial Performance	3	Poor Financial Performance	Mathew et al. (2024b); Manshadi et al. (2022); Leibert & Leaming (2010); Hart et al. (1993)
Personal Characteristics			
Life Situation	1	Family Obligations	Mathew et al. (2024b); Hart et al. (1993)
Job Related	4	Burnout & Work Pressure	Mathew et al. (2024b); Mathew et al. (2024a)
		External Job or Carrer Opportunities	Mathew et al. (2024b); Manshadi et al. (2022); Hart et al. (1993)
		Ethical Breaches	Mathew et al. (2024b)
		Lack of Peer- Support /Trust	Mathew et al. (2024b); Manshadi et al. (2022); Leibert & Leaming (2010); Hart et al. (1993)
		Loss of Confidence	Hart et al. (1993)
		Unsatisfied with Salary	Mathew et al. (2024b); Manshadi et al. (2022); Hart et al. (1993)
Environmental Characteristics			
Macro Factors	5	Economic and Political Instability	Mathew et al. (2024a); Manshadi et al. (2022)
		Geographic Location/Region	Wilson & Meadors (1990)
		Unstable Health Care Environment	Mathew et al. (2024b); Hart et al. (1993)
Regional Socioeconomic Environment	2	Conflicts with Community Leaders	Hart et al. (1993)
		Dissatisfaction with Region (e.g. Life-Style)	Hart et al. (1993)
		Lack of Community Support/Trust	Leibert & Leaming (2010); Hart et al. (1993)
Competition	1	Competition	Hart et al. (1993)
Effects of CEO turnover			
Financial Performance	3	Overall Financial Performance	Khaliq et al. (2006); Dworkin & Goldstein (2004)
		Profitability	Dworkin et al. (2010)
		Revenues	Dworkin et al. (2010)
Quality of Care	3	Quality of Care	Mathew et al. (2024b); Khaliq et al. (2006)
		Patient Satisfaction	Mosadeghrad et al. (2013)
Other Organizational Performance Aspects	5	Community Relation	Leibert & Leaming (2010); Khaliq et al. (2006)
		Employee Morale	Mathew et al. (2024a); Khaliq et al. (2006)
		Employee Satisfaction	Mosadeghrad et al. (2013)
		Employee Trust	Mathew et al. (2024a)
		Leadership Stability	Mathew et al. (2024a)
		Organizational Stability	Mathew et al. (2024a)
		Patients Treated	Dworkin et al. (2010)
Organizational Activities	6	Change of Financial Policies	Dworkin & Goldstein (2004)
		Change in Management Practices (e.g. Leadership)	Mosadeghrad et al. (2013); Dworkin & Goldstein (2004)
		Change of Organizational Culture	Mathew et al. (2024a); Khaliq et al. (2006); Dworkin & Goldstein (2004)
		Change in Relationship Board & Staff	Khaliq et al. (2006)
		Employee Resistance to Change	Mathew et al. (2024a)
		Strategic Activity/Planning	Mosadeghrad et al. (2013); Leibert & Leaming (2010); Khaliq et al. (2006); Dworkin & Goldstein (2004)
		Community Outreach	Khaliq et al. (2006)
		Cost cutting	Dworkin et al. (2010); Khaliq et al. (2006); Dworkin & Goldstein (2004)
		Development of Services	Khaliq et al. (2006)
		Introduction/Change Departments Structure/Tasks	Dworkin et al. (2010); Dworkin & Goldstein (2004)
		Construction and Purchase of Equipment	Khaliq et al. (2006)
		Recruitment of Physicians	Khaliq et al. (2006)
		Reducing Administrative Staff	Khaliq et al. (2006)
		Replacement/Turnover of Key Positions	Dworkin et al. (2010); Khaliq et al. (2006); Freund (1987)
Competitor Behavior	1	Marketing Activities in the Area	Khaliq et al. (2006)
		Opening Clinics in the Area	Khaliq et al. (2006)
		Recruitment of Key Employees & Physicians	Khaliq et al. (2006)

Color coding: Negative Relationship or Postponement/Halt of Activites (brown); Positive Relationship or Initation of Activities (blue); No Tendency (gray); Group Differences (green)
Note: Due to significant differences ($p<0.01$) in CEO responses regarding the impact of their own CEO turnover at the previous hospital and their assessment of the previous CEO turnover at the current hospital, the relationships for Khaliq et al. (2006) are summarized on the basis of the unweighted mean.

Table A5 Description of variables

Variable	Type of Variable	Definition	Data Source
Performance metrics			
Efficiency	Numeric	Hospitals' technical efficiency was calculated using an input-oriented DEA model, focusing on minimizing inputs for a given level of outputs. Inputs include full-time equivalent hospital staff (doctors and nurses) and the number of beds, which together limit treatment capacity. Outputs consist of inpatient and outpatient cases, with inpatient cases adjusted for case severity using a case-mix adjustment based on relative length of stay for different groups of hospital diagnoses. Information on case-mix adjustment: Following Schneider et al. (2020) we calculated weights (π_d) for each diagnosis group d based on the average length of stay (LOS_d) for the different groups and use these weights to adjust the total number of inpatient cases for each hospital. $\pi_d = \frac{LOS_d}{\frac{1}{D}\sum_{d=1}^{D} LOS_d}; d = 1, \dots, D.$ (1) We then multiplied the number of inpatient cases in a diagnosis group by their respective weight to obtain the adjusted number of inpatient cases for each hospital (h). $inpatientsadj_h = \sum_{d=1}^{D} \pi_d \cdot inpatients_{d,h}; h = 1, \dots, H \text{ and } d = 1, \dots, D$ (2)	SQR
Return on Assets	Numeric	Net Income / Total Assets	CR
Patient Satisfaction	Numeric	Calculated as average patient satisfaction across all categories (e.g. satisfaction with staff, processes and treatment) of the patient experience questionnaire. The maximum achievable score is 6; the higher the score, the more satisfied the patients.	WL
Hospital characteristics			
Teaching	Dummy	0 = No teaching hospital , 1 = Teaching hospital	SQR
Size	Numeric	Number of beds in thousand	SQR
Hospital system	Dummy	0 = Freestanding hospital , 1 = Hospital system	SQR
Large hospital chain	Dummy	0 = Freestanding hospital or member of small hospital system , 1 = Associated with large hospital system	SQR
Ownership	Categorial	1 = Public, 2 = Non-profit, 3 = For-profit	SQR
Environmental characteristics			
Herfindahl-Hirschman Index (HHI)	Numeric	We used the HHI as a measure of the intensity of competition within a catchment area of 30 km radius. To account for different service profiles, we first calculated an individual HHI for each of the 22 ICD-10-GM chapters. We then calculated a chapter-specific weighted average of the individual HHI values. The HHI is scaled to an interval from 0 to 1, with 0 indicating the highest degree of competition.	SQR
Municipal election	Dummy	0 = No election year, 1 = Election year	WS
Degree of urbanization	Categorial	1 = Large Cities (>100,000 inhabitants), 2 = Urban districts (>300 inhabitants per km²), 3 = Rural districts (>150 inhabitants per km), 4 = Remote districts (< than 150 inhabitants per km2)	WS
CEO characteristics			
CEO age	Numeric	Age of the CEO (Mean age if multiple CEOs)	CR
CEO age²	Numeric	Squared age of the CEO (Squared mean age if multiple CEOs)	CR
CEO female	Dummy	0 = Male CEO (Majority male if multiple CEOs), 1 = Female CEO (Majority female if multiple CEOs)	CR
Abbreviations: SQR = structured quality reports, CR = commercial register, WL = "Weiße Liste", WS = web search			

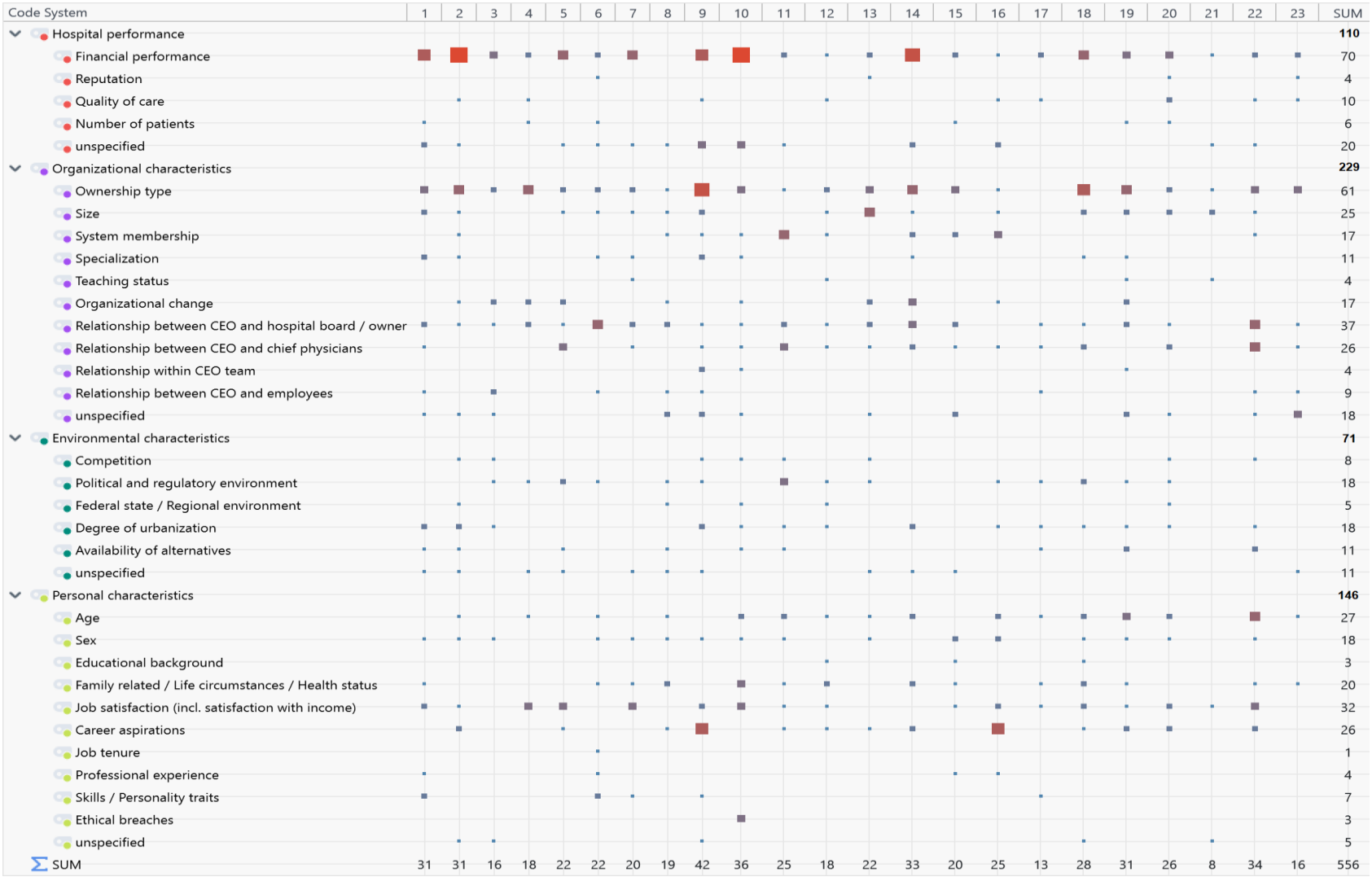
Table A6 Interview guide

1.	**Introduction**
	Can you briefly outline your professional background (training, previous positions, etc.)?
2.	**CEO turnover experienced/accompanied and hospital sector in general**
2.1	CEO: First of all, we are interested in the CEO turnovers you have experienced. Can you please describe them to us? What were the circumstances, what was your role in the turnover? Board member: First of all, we are interested in the CEO turnovers you have experienced. Can you please describe theme to us? What were the circumstances, where did the CEOs come from or where did they go? What was the reason(s) for the turnover from the perspective of the board/hospital? Consultant: First of all, we are interested in the CEO turnovers you have accompanied. Can you please describe them to us? What do you know about the circumstances, where did the CEOs come from or where did they go? Where did you get this information from? What (in your view) was the reason(s) for the turnover?
2.2	When there is a CEO turnover in hospitals, it is difficult to tell from the outside **who is responsible** for this turnover. There are no figures available for the hospital market as to what proportion of turnovers were forced and what proportion were voluntary. Who would you estimate is the main driver of CEO turnover?
2.3	We know from research: There is more CEO turnover in hospitals than in other sectors. What do you think could be the reasons for this?
2.4	If we now look at change over time, i.e. think about trends: have you noticed more CEO turnover in hospitals in recent years? If so, what could be the reason for this?
3.	**Factors to explain the frequency and probability of CEO turnovers**
3.1	By **hospital performance**, we mean how efficient and competitive the hospital is. This includes, for example, the economic situation, reputation, quality of service provision and the development of patient numbers. In your opinion, what role does the hospital's previous performance play in the likelihood of CEO turnover in the hospital sector?
3.2	A second category of factors relates to **hospital characteristics** that are associated with differences in the likelihood or frequency of switching. These include, for example, ownership, size, system membership or degree of specialization. To what extent is the number of CEO turnovers related to hospital characteristics? For example, is there a higher frequency and probability of change depending on ownership, size, etc.?
3.3	There are also factors that refer to **interpersonal relationships** and **the distribution of power** in the hospital, e.g. the relationship between the CEO and the board or the chief physicians (type and quality of communication, existing expectations, etc.). In your opinion, what role do these interpersonal relationships within the hospital play in the likelihood of CEO turnover?
3.4	Another category of factors refers to **contractual reasons**, i.e. aspects relating to the structure of management contracts, e.g. fixed term, performance monitoring, incentivization. To what extent do you think these factors play a role in the occurrence of CEO turnover in the hospital sector?
3.5	Characteristics that affect the **hospital market** often also play a role. These include, for example, competitive pressure, regulatory conditions/changes or regional characteristics. In your opinion, what role do these market characteristics play in the occurrence of CEO turnover in the hospital sector?
3.6	A final category of factors concerns **the characteristics** of the CEOs themselves. These include, for example, demographic factors such as age or gender, the educational background and previous experience of a CEO, as well as job satisfaction and self-efficacy. In your opinion, to what extent are these characteristics of CEOs related to the likelihood of CEO turnover in hospitals?
3.7	Can you think of any other factors that have not yet been mentioned but could still be important?
3.8	If you had to rank them, what do you think are the top 5 aspects that explain CEO turnover?
4.	**Turnover frequencies and expectations associated with CEO turnover**
4.1	To what extent do **previous turnovers** in a hospital influence the likelihood of another turnover? To what extent is there a risk of falling into a vortex of (organizational) instability with a CEO turnover?
4.2	In your opinion, what role do different backgrounds of CEOs (professional, educational, ...) play in their success? What should a potential CEO bring to the table (previous experience, internal/external, qualifications, etc.)? To what extent does the gender of the potential CEO play a role?
4.3	To what extent does the hope or expectation of finding a more suitable CEO with a new appointment play a role?
4.4	To what extent is a CEO turnover also an important signal to the outside world that you are taking action and initiating change? In your opinion, are hospital managers also dismissed even though they are not responsible for the poor situation?

Table A7 Pairwise comparison of clusters regarding CEO turnover rates

Comparison of Clusters	Mean difference	(SE)	t	P>|t|	[95% Conf.	Interval]
2 vs 1	0.313	(0.371)	0.84	0.991	-0.081	0.144
3 vs 1	0.011	(0.027)	0.41	1.000	-0.073	0.096
4 vs 1	-0.028	(0.024)	-1.17	0.941	-0.099	0.044
5 vs 1	-0.008	(0.243)	-0.31	1.000	-0.081	0.066
6 vs 1	0.109	(0.036)	3.07	0.045	0.001	0.218
7 vs 1	0.177	(0.056)	3.18	0.032	0.008	0.346
8 vs 1	-0.048	(0.044)	-1.08	0.960	-0.182	0.086
3 vs 2	-0.019	(0.038)	-0.52	1.000	-0.136	0.096
4 vs 2	-0.059	(0.035)	-1.67	0.708	-0.166	0.048
5 vs 2	-0.039	(0.036)	-1.08	0.960	-0.147	0.069
6 vs 2	0.079	(0.044)	1.77	0.641	-0.056	0.213
7 vs 2	0.146	(0.061)	2.37	0.258	-0.041	0.333
8 vs 2	-0.079	(0.051)	-1.54	0.785	-0.235	0.077
4 vs 3	-0.389	(0.025)	-1.55	0.782	-0.115	0.037
5 vs 3	-0.019	(0.026)	-0.73	0.996	-0.097	0.059
6 vs 3	0.099	(0.037)	2.67	0.132	-0.013	0.210
7 vs 3	0.166	(0.056)	2.94	0.066	-0.005	0.210
8 vs 3	-0.059	(0.045)	-1,32	0.893	-0.197	0.078
5 vs 4	0.020	(0.021)	0.94	0.983	-0.045	0.085
6 vs 4	0.137	(0.034)	4.06	0.001	0.035	0.240
7 vs 4	0.205	(0.055)	3.76	0.004	0.039	0.370
8 vs 4	-0.021	(0.043)	-0.48	1.000	-0.150	0.109
6 vs 5	0.117	(0.034)	3.41	0.015	0.013	0.222
7 vs 5	0.185	(0.055)	3.37	0.018	0.018	0.351
8 vs 5	-0.041	(0.043)	-0.94	0.982	-0.172	0.090
7 vs 6	0.067	(0.061)	1.11	0.956	-0.117	0.252
8vs 6	-0.158	(0.051)	-3.13	0.038	-0.311	-0.005
8 vs 7	-0.225	(0.066)	-3.40	0.016	-0.426	-0.025

Table A8 MAXQDA code matrix



Code System	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	SUM
Hospital performance																								**110**
Financial performance																								70
Reputation																								4
Quality of care																								10
Number of patients																								6
unspecified																								20
Organizational characteristics																								**229**
Ownership type																								61
Size																								25
System membership																								17
Specialization																								11
Teaching status																								4
Organizational change																								17
Relationship between CEO and hospital board / owner																								37
Relationship between CEO and chief physicians																								26
Relationship within CEO team																								4
Relationship between CEO and employees																								9
unspecified																								18
Environmental characteristics																								**71**
Competition																								8
Political and regulatory environment																								18
Federal state / Regional environment																								5
Degree of urbanization																								18
Availability of alternatives																								11
unspecified																								11
Personal characteristics																								**146**
Age																								27
Sex																								18
Educational background																								3
Family related / Life circumstances / Health status																								20
Job satisfaction (incl. satisfaction with income)																								32
Career aspirations																								26
Job tenure																								1
Professional experience																								4
Skills / Personality traits																								7
Ethical breaches																								3
unspecified																								5
SUM	31	31	16	18	22	22	20	19	42	36	25	18	22	33	20	25	13	28	31	26	8	34	16	556

Note: Overview of the frequency of codes assigned per category of factors per interviewee, with larger, brighter-colored boxes indicating higher frequencies.

Table A9 Propensity score matching – Logistic regression – Outcome efficiency

	Coefficient	(SE)	z	P>z	[95% Confidence Interval]	
Ownership						
Nonprofit	- 0.133	(0.106)	- 1.25	0.211	- 0.341	0.075
For-profit	0.632	(0.116)	5.42	0.000	0.404	0.860
Hospital size						
Medium	- 0.037	(0.112)	- 0.33	0.738	- 0.256	0.182
Large	0.123	(0.158)	0.78	0.436	- 0.187	0.433
Degree of urbanization						
Urban	- 0.086	(0.119)	- 0.72	0.470	- 0.319	0.147
Rural	- 0.046	(0.156)	- 0.29	0.768	- 0.351	0.259
Remote	- 0.136	(0.161)	- 0.84	0.401	- 0.452	0.181
Market concentration						
Moderate	- 0.332	(0.125)	- 2.65	0.008	- 0.578	- 0.086
High	- 0.265	(0.131)	- 2.02	0.043	- 0.521	- 0.008
Outcome parameter						
Efficiency	0.093	(0.528)	0.18	0.860	- 0.942	1.129
Constant	- 1.288	(0.308)	- 4.18	0.000	- 1.891	- 0.684
Additional information						
Obs. 3,716	LR $chi^2(10)$	58.17	Prob > chi^2	0.000	Pseudo R^2	0.016

Number of matched observations						
	Treated			Controls		
Matched	Yes	No	Total	Yes	No	Total
	714	0	714	569	2433	3002

Note: LR = Likelihood-Ratio

Table A10 Matching frequency of controll units – Outcome efficiency

Frequency	Obs	Percent of Obs	Cumulated	Percent of matched	Cumulated
0	2,433	81.05	81.05%		
1	455	15.16	96.20%	79.96	79.96%
2	95	3.16	99.37%	16.70	96.66%
3	12	0.40	99.77%	2.11	98.77%
4	4	0.13	99.90%	0.70	99.47%
5	1	0.03	99.93%	0.18	99.65%
6	2	0.07	100%	0.35	100%
Total	3,002	100		100	

Table A11 Matching results – Outcome efficiency

Variable	Matched	Treated	Control	% Bias	% Bias reduction	t	p>t	V(C)
Ownership								
Nonprofit	U	0.40	0.47	- 12.7		- 5.31	0.000	.
	M	0.40	0.38	3.8	69.7	0.90	0.368	.
For-profit	U	0.26	0.15	26.7		12.04	0.000	.
	M	0.26	0.25	0.0	99.9	0.00	0.998	.
Hospital size								
Medium	U	0.62	0.65	- 6.6		- 2.79	0.005	.
	M	0.62	0.62	- 1.4	78	- 0.33	0.739	.
Large	U	0.15	0.13	6.1		2.61	0.009	.
	M	0.15	0.14	4.0	34.4	0.91	0.364	.
Degree of urbanization								
Urban	U	0.33	0.35	- 2.6		- 1.09	0.276	.
	M	0.33	0.32	1.8	32.4	0.41	0.680	.
Rural	U	0.19	0.19	- 1.5		- 0.61	0.542	.
	M	0.19	0.19	- 0.4	75.8	- 0.08	0.934	.
Remote	U	0.19	0.21	- 4.6		- 1.89	0.059	.
	M	0.19	0.20	- 1.0	77.3	- 0.24	0.806	.
Market concentration								
Moderate	U	0.20	0.23	- 7.4		- 3.06	0.002	.
	M	0.20	0.21	- 0.4	94.1	- 0.10	0.917	.
High	U	0.41	0.44	- 4.2		- 1.75	0.080	.
	M	0.41	0.42	- 0.2	95.1	- 0.05	0.962	.
Outcome parameter								
Efficiency	U	0.45	0.45	- 7.4		- 3.12	0.002	1.03
	M	0.45	0.46	- 14.9	-102.2	- 3.45	0.001	1.03

Additional information								
Sample	Pseudo R^2	LR chi^2	$p>chi^2$	% Mean bias	% Median bias	Rubins B	Rubins R	%Var
Unmatched	0.018	199.73	0.000	8	6.3	33.3*	1.48	0.00
Matched	0.005	17.12	0.072	2.8	1.2	17.9	0.98	0.00

Note: U = unmatched; M = matched; V(C) = variance ratio; LR = Likelihood-Ratio; %Var = proportion of variables that do not achieve adequate balance after matching; * if variance ratio outside [0.92; 1.09] for unmatched and [0.92; 1.09] for matched

Table A12 Propensity score matching – Logistic regression – Patient satisfaction

	Coefficient	(SE)	z	P>z	[95% Confidence Interval]	
Ownership						
Nonprofit	- 0.044	(0.106)	- 0.41	0.678	- 0.251	0.164
For-profit	0.671	(0.115)	5.83	0.000	0.446	0.897
Hospital size						
Medium	- 0.125	(0.107)	- 1.17	0.241	- 0.334	0.084
Large	- 0.042	(0.155)	- 0.27	0.785	- 0.347	0.262
Degree of urbanization						
Urban	- 0.151	(0.119)	- 1.26	0.207	- 0.384	0.083
Rural	- 0.052	(0.155)	- 0.33	0.739	- 0.355	0.252
Remote	- 0.080	(0.162)	- 0.49	0.623	- 0.398	0.238
Market concentration						
Moderate	- 0.204	(0.127)	-1.61	0.107	- 0.452	0.044
High	- 0.112	(0.131)	-0.85	0.394	- 0.369	0.145
Outcome parameter						
Efficiency	- 1.051	(0.214)	- 4.9	0.000	- 1.471	- 0.631
Constant	3.958	(1.103)	3.59	0.000	1.796	6.120
Additional information						
Obs. 3,863	LR chi²(10)	80.93	Prob > chi²	0.000	Pseudo R²	0.022

Number of matched observations

	Treated			Controls		
Matched	Yes	No	Total	Yes	No	Total
	720	0	720	586	2557	3143

Note: LR = Likelihood-Ratio

Table A13 Matching frequency of controll units – Patient satisfaction

Frequency	Obs	Percent of Obs	Cumulated	Percent of matched	Cumulated
0	2,557	81.36	81.36%		
1	472	15.02	96.37%	80.55	80.55%
2	86	2.74	99.11%	14.68	95.22%
3	20	0.64	99.75%	3.41	98.63%
4	5	0.16	99.90%	0.85	99.49%
5	2	0.06	99.97%	0.34	99.83%
9	1	0.03	100%	0.17	100%
Total	3,143	100%	100%	100%	100%

Table A14 Matching results – Patient satisfaction

Variable	Matched	Treated	Control	% Bias	% Bias reduction	t	p>t	V(C)
Ownership								
Nonprofit	U	0.40	0.46	- 13.1		- 5.48	0.000	.
	M	0.40	0.42	- 5.4	59.2	- 1.25	0.210	.
For-profit	U	0.28	0.16	27.9		12.49	0.000	.
	M	0.28	0.27	1.6	94.2	0.34	0.732	.
Hospital size								
Medium	U	0.60	0.63	- 6.2		- 2.61	0.009	.
	M	0.60	0.59	2.0	67.8	0.46	0.646	.
Large	U	0.15	0.13	7.5		3.24	0.001	.
	M	0.15	0.13	4.8	36.0	1.09	0.275	.
Degree of urbanization								
Urban	U	0.33	0.35	- 5.4		- 2.26	0.024	.
	M	0.33	0.33	- 1.0	82.0	- 0.23	0.819	.
Rural	U	0.19	0.20	- 1.5		- 0.63	0.527	.
	M	0.19	0.20	- 2.5	-66.7	- 0.59	0.557	.
Remote	U	0.20	0.20	- 1.1		- 0.48	0.632	.
	M	0.20	0.21	- 2.8	-148.7	- 0.66	0.508	.
Market concentration								
Moderate	U	0.21	0.24	- 7.2		- 2.99	0.003	.
	M	0.21	0.21	- 1.1	85.1	- 0.26	0.798	.
High	U	0.42	0.43	- 2.6		- 1.09	0.274	.
	M	0.42	0.44	- 4.9	-87.4	- 1.14	0.255	.
Outcome parameter								
Patient satisfaction	U	5.02	5.06	- 20.4		- 8.71	0.000	1.12*
	M	5.02	5.02	- 0.8	96.1	- 0.18	0.859	0.95

Additional information								
Sample	Pseudo R^2	LR chi^2	$p>chi^2$	% Mean bias	% Median bias	Rubins B	Rubins R	%Var
Unmatched	0.023	253.49	0.000	9.3	6.7	36.8*	1.66	100
Matched	0.002	7.82	0.647	2.7	2.3	12	0.99	0.00

Note: U = unmatched; M = matched; LR = Likelihood-Ratio; V(C) = variance ratio; %Var = proportion of variables that do not achieve adequate balance after matching; * if variance ratio outside [0.92; 1.09] for unmatched and [0.92; 1.09] for matched

Table A15 Propensity score matching – Logistic regression – Net profit margin

	Coefficient	(SE)	z	P>z	[95% Confidence Interval]	
Ownership						
Nonprofit	- 0.179	(0.172)	- 1.04	0.297	- 0.515	0.157
For-profit	0.609	(0.226)	2.70	0.007	0.166	1.051
Hospital size						
Medium	0.120	(0.194)	0.62	0.538	- 0.261	0.501
Large	- 0.017	(0.248)	- 0.07	0.946	- 0.503	0.469
Degree of urbanization						
Urban	- 0.070	(0.187)	- 0.37	0.711	- 0.437	0.298
Rural	0.055	(0.251)	0.22	0.828	- 0.438	0.547
Remote	- 0.301	(0.268)	- 1.13	0.260	- 0.826	0.223
Market concentration						
Moderate	- 0.190	(0.202)	- 0.94	0.346	- 0.585	0.205
High	- 0.093	(0.213)	- 0.44	0.663	- 0.511	0.325
Outcome parameter						
Efficiency	- 6.837	(1.351)	- 5.06	0.000	- 9.485	- 4.189
Constant	- 1.495	(0.283)	- 5.28	0.000	- 2.050	- 0.940
Additional information						
Obs. 1,578	LR $chi^2(10)$	42.71	Prob > chi^2	0.000	Pseudo R^2	0.030

Number of matched observations

	Treated			Controls		
Matched	Yes	No	Total	Yes	No	Total
	260	0	260	231	1087	1318

Note: LR = Likelihood-Ratio

Table A16 Matching frequency of controll units – Net profit margin

Frequency	Obs	Percent of Obs	Cumulated	Percent of matched	Cumulated
0	1,087	82.47	82.47%		
1	205	15.55	98.03%	88.74	88.74%
2	22	1.67	99.70%	9.52	98.27%
3	4	0.30	100.00%	1.73	100.00%
Total	1,318	100		100	

Table A17 Matching results – Net profit margin

Variable	Matched	Treated	Control	% Bias	% Bias reduction	t	p>t	V(C)
Ownership								
Nonprofit	U	0.44	0.53	- 16.5		- 3.48	0.001	.
	M	0.44	0.45	- 0.8	95.2	- 0.10	0.917	.
For-profit	U	0.18	0.12	15.1		3.36	0.001	.
	M	0.18	0.16	4.8	68.1	0.60	0.548	.
Hospital size								
Medium	U	0.63	0.61	5.5		1.16	0.245	.
	M	0.63	0.66	- 6.1	-10.1	- 0.82	0.415	.
Large	U	0.19	0.20	- 3.7		- 0.77	0.439	.
	M	0.19	0.15	8.1	-119.7	1.11	0.265	.
Degree of urbanization								
Urban	U	0.36	0.37	- 3.1		- 0.64	0.522	.
	M	0.36	0.34	3.2	-3.7	0.42	0.672	.
Rural	U	0.20	0.17	9.9		2.13	0.034	.
	M	0.20	0.23	- 6.9	30	- 0.87	0.387	.
Remote	U	0.16	0.18	- 7.1		- 1.45	0.148	.
	M	0.16	0.13	6.1	13.5	0.85	0.395	.
Market concentration								
Moderate	U	0.22	0.25	- 8.4		- 1.74	0.081	.
	M	0.22	0.22	- 1.7	79.2	- 0.24	0.813	.
High	U	0.40	0.39	6.2		1.32	0.186	.
	M	0.40	0.42	- 1.4	78	- 0.18	0.857	.
Outcome parameter								
Net profit margin	U	0.00	0.02	- 25.4		- 5.36	0.00	0.98
	M	0.00	0.00	4.4	82.7	0.56	0.57	0.83*

Additional information								
Sample	Pseudo R^2	LR chi^2	$p>chi^2$	% Mean bias	% Median bias	Rubins B	Rubins R	%Var
Unmatched	0.022	63.55	0	10.1	7.7	37.6*	1.11	0
Matched	0.004	4.3	0.933	4.4	4.6	15.7	1.01	100

Note: U = unmatched; M = matched; V(C) = variance ratio; LR = Likelihood-Ratio; %Var = proportion of variables that do not achieve adequate balance after matching; * if variance ratio outside [0.84; 1.18] for unmatched and [0.84; 1.18] for matched

Table A18 Robustness across samples and models

		Efficency					Patient Satisfaction					Financial Performance (net-profit-margin)				
Periods Compared to t_{-1}	Sample	DiD model	FE model	MR model	S&A	Rob. across models	DiD model	FE model	MR model	S&A	Rob. across models	DiD model	FE model	MR model	S&A	Rob. across models
t	short-term sample	(-)**	(-)n.s.	(-)*		2/3	(-)n.s.	(+)n.s.	(+)n.s.		0/3	(+)*	(+)***	(+)**		3/3
	main model	(-)*	(-)*	(-)***		3/3	(-)n.s.	(+)n.s.	(+)n.s.		0/3	(-)n.s.	(+)**	(+)**		2/3
	mid-term sample	(-)**	(-)**	(-)**		3/3	(-)n.s.	(-)n.s.	(+)n.s.		0/3	(-)n.s.	(+)***	(+)n.s.		1/3
	S&A				(-)**	1/1				(-)n.s.	0/1				(+)**	1/1
Robustness across Samples		3/3	2/3	3/3	1/1		0/3	0/3	0/3	0/1		1/3	3/3	2/3	1/1	
t_{+1}	main model	(-)*	(-)**	(-)**		3/3	(-)**	(-)n.s.	(-)n.s.		1/3	(+)n.s.	(+)**	(+)**		2/3
	mid-term sample	(-)**	(-)**	(-)***		3/3	(-)***	(+)n.s.	(-)n.s.		1/3	(+)**	(+)**	(+)***		3/3
	S&A				(-)**	1/1				(-)n.s.	0/1				(+)**	1/1
Robustness across Samples		2/2	2/2	2/2	1/1		2/2	0/2	0/2	0/1		1/2	2/2	2/2	1/1	
t_{+2}	mid-term sample	(-)n.s.	(-)***	(-)***		2/3	(+)n.s.	(-)n.s.	(+)n.s.		0/3	(+)n.s.	(+)**	(+)*		2/3
	S&A				(-)*	1/1				(-)n.s.	0/1				(+)n.s.	0/1
Robustness across Samples		0/1	1/1	1/1	1/1		0/1	0/1	0/1	0/1		0/1	1/1	1/1	0/1	

Note: Rob. = robustness; DiD = difference-in-differences; FE = fixed effects; MR = multiple regression; S&A = Sun & Abraham; *p<.1;**p<.05;***p<.01

Table A19 DiD results for the outcome parameter return on assets

Compared to t_{-1}	main model			short-term sample			mid-term sample		
	CEO Turnover*Post			CEO Turnover*Post			CEO Turnover*Post		
Period	DiD Coeff.	(SE)	N	DiD Coeff.	(SE)	N	DiD Coeff.	(SE)	N
t	-0.0008	(0.0042)	882	0.0023	(0.0033)	1,538	0.0002	(0.0052)	596
t_{+1}	-0.0014	(0.0045)	890	-	-	-	0.0056	(0.0053)	576
t_{+2}	-	-	-	-	-	-	0.0027	(0.0050)	582

Note: DiD = difference-in-differences; N = number of observations | *p<.1;**p<.05;***p<.01

Table A20 DiD results for the outcome parameter EBITDAm

Compared to t_{-1}	main model			short-term sample			mid-term sample		
	CEO Turnover*Post			CEO Turnover*Post			CEO Turnover*Post		
Period	DiD Coeff.	(SE)	N	DiD Coeff.	(SE)	N	DiD Coeff.	(SE)	N
t	-0.0028	(0.0022)	1,044	0.0005	(0.0016)	1,770	0.0056	(0.0035)	714
t_{+1}	-0.0014	(0.0020)	1,048	-	-	-	0.0012	(0.0027)	696
t_{+2}	-	-	-	-	-	-	-0.0001	(0.0030)	696

Note: DiD = difference-in-differences; N = number of observations | *p<.1;**p<.05;***p<.01

Table A21 DiD results for the outcome parameter EBITm

Compared to t_{-1}	main model			short-term sample			mid-term sample		
	CEO Turnover*Post			CEO Turnover*Post			CEO Turnover*Post		
Period	DiD Coeff.	(SE)	N	DiD Coeff.	(SE)	N	DiD Coeff.	(SE)	N
t	0.0006	(0.0008)	1,010	-0.0002	(0.0006)	1,788	-0.0007	(0.0010)	638
t_{+1}	-0.0011	(0.0009)	1,002	-	-	-	0.0002	(0.0011)	656
t_{+2}	-	-	-	-	-	-	0.0011	(0.0013)	608

Note: DiD = difference-in-differences; N = number of observations | *p<.1;**p<.05;***p<.01