



# Hospital Mergers in Norway: Employee Health and Turnover to Three Destinations

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## ABSTRACT

*This article investigates the probability of turnover to three destinations following hospital mergers: within the hospital sector, out of the hospital sector, and out of work. It is hypothesized that mergers increase turnover to nonemployment among employees with poor health and increase turnover to employment outside of the hospital sector among healthy employees. Discrete-time survival analyses show that mergers increase turnover within the hospital sector for all employees, regardless of health. Turnover to other sectors and out of work does not increase. Possible explanations for the limited turnover out of the sector associated with mergers are aspects of the Norwegian labor market such as the institution of employee participation, low unemployment, and labor shortages within hospitals.*

## KEY WORDS

*Employee / health / hospital / merger / Norway / register data / reorganization / turnover*

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## Introduction

The demographic trend toward an older population in addition to the expanding range of treatable diseases contribute to a growing pressure on the health sector in Norway, as in the rest of the industrialized world. The ratio of retired to employed citizens is increasing, reducing the tax base paying for hospital services. Moreover, the hospitals have difficulties meeting their increasing demand for personnel. These challenges create the need for higher efficiency in the sector. While hospital mergers are increasingly initiated to save costs and to achieve higher efficiency and better quality care (Kjekshus and Hagen, 2007), reviewers of research on mergers and acquisitions call for more studies on their effect on employees (Haleblian et al., 2009: 488). A large body of research has documented negative health effects of mergers on employees (Fulop et al., 2005; Kjekshus et al., 2014; Vaananen et al., 2011; Vaananen et al., 2004; Wang et al., 2012). Moreover, previous research from the US has found that turnover increases during hospital mergers (Jick, 1979) and organizational change (Sylling et al., 2014). Since attracting and retaining employees is one of the main challenges faced by the Norwegian health sector (NOU 2010: 13, 2010), there is a concern that the mergers involve increased turnover of employees out of the hospital sector. Further investigation

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into the effects of mergers on turnover is warranted. This article examines the relationship between hospital mergers and turnover. More specifically, it investigates whether the relationship between mergers and turnover to three destinations is dependent on employees' health.

From an organizational perspective, disadvantages of turnover include replacement costs, lost productivity, and compromised continuity and quality of care. For hospitals, a high turnover rate may represent a threat to both health care worker and patient safety. High nursing turnover has been found to be associated with deterioration in nurses' mental health and job satisfaction, and patient satisfaction with care (Hayes et al., 2012). However, some degree of staff turnover may be beneficial. Turnover allows employers to replace higher paid workers with lower paid workers and to renew the workforce both in terms of demographic characteristics and qualifications (Brannon et al., 2002). Turnover may also be beneficial for an organization as a means of weeding out poor performers. As such, turnover among unhealthy employees, who have more days of sickness absence, may be positive for hospital performance. Turnover among healthy personnel may be predominantly negative. Turnover may indeed be a desired result of a merger. However, the turnover destination matters. When services are relocated or amalgamated between merging hospitals, professionals specializing in those services are expected to follow their service. For some of course, this means moving to another hospital. turnover within the hospital sector may be a desired result of mergers, turnover out of the hospital sector represents a loss for a sector in dire need of personnel.

From a societal perspective, it is interesting to investigate turnover in relation to employee health. In addition to the benefits of working to the individual (Jahoda, 1982), it is a political goal in Norway that as many as possible participate in work. Through the Tripartite Agreement on an Inclusive Working Life, first signed in 2001, the government has invested in measures to reduce sickness absence, to include people with disabilities, and to retain older employees in work. While it is beneficial for society that as many as possible remain in employment, a hospital might profit from employees with poor health leaving. Employees with poor health may have a harder time finding alternative work, and they might also be eligible for health-related benefits. Thus, it is interesting to investigate whether turnover to nonemployment increases during mergers.

This article contributes to the literature in several respects. Previous studies of turnover during mergers have, to the author's knowledge, not distinguished between turnover destinations. Furthermore, earlier research has been criticized for treating all employees as a single entity, neglecting to distinguish between different employee categories (Martin et al., 2006). Earlier research on reactions to change among change recipients in the management and behavioral science tradition has mainly used self-reported cross-sectional data from a single source (Oreg et al., 2011). This article's strengths are that the variables measuring mergers and turnover are collected from objective registers. The analyses distinguish between three independent turnover destinations and investigate whether the effect of mergers on turnover is dependent on employees' health.

## Hospital Mergers in Norway

The Norwegian health care system is based on the model of the British NHS, a public, tax-financed, universal health service. As in the NHS, reforms have been initiated in

the Norwegian hospital sector creating market-like mechanisms to increase efficiency. In January 2002, hospital ownership was transferred from the counties to the state. At the same time, hospitals were made autonomous enterprises. The goals were to achieve greater performance, accountability, and political control (Læg Reid et al., 2004). The Health Enterprise Act was approved by the Norwegian Parliament in 2001, about 1 year after it was introduced. The political process was rapid (Herfindal, 2008). Following the reform, hospital mergers have been widespread, initiated to save costs and to achieve higher efficiency and better quality care (Kjekshus and Hagen, 2007).

A key value of Norwegian working life is close cooperation between employers and employees both at the national and company level. Employees are encouraged and expected to voice their opinion, participating in productivity enhancement, restructuring, and organizational development within their company. Employee participation is generally believed to facilitate restructuring at the company level (Løken et al., 2013). When studying the effects of hospital mergers in Norway on the employees, it is important to keep in mind that the hospital mergers in Norway have not entailed major downsizing (Kjekshus et al., 2014).

## Theory and Hypotheses

### Turnover During Mergers

Psychologists have made models of why people turnover and how the process of deciding to quit unfolds (Lee et al., 1999; Maertz and Campion, 2004; Morrell et al., 2008). The role of shocks at work for employees deciding to quit their jobs is one aspect of these models. Following Lee et al. (1999), a shock can be a positive, neutral, or negative jarring event that triggers the employee's thoughts about quitting their job. Morrell et al. (2004) suggest that organizational change may induce specific events at work that are experienced by the individual employee as shocks, prompting the employee to think about leaving. Klag et al. (2015) emphasize turnover as a process. Certain events can activate an assessment of how the work context fits with the individuals' situation, needs, values, and beliefs. If organizational changes over time add to a negative overall evaluation of the work context, the employee may become more likely to quit their job. The decision to quit may develop gradually, as incompatibility between self and work tasks increases, or a certain change or proposed change may become the final straw leading to a turnover decision (Klag et al., 2015).

A merger between two work organizations can be described as a social-psychological event that, whether positive or negative, employees will have a reaction to. Employees may find a merger threatening and painful. It involves uncertainty as to what is to come, and may also involve loss of identity, status, and autonomy (Jick, 1979). Regardless of the level of change following a merger, all employees become members of a new organization, a change that may threaten their sense of self (Colman, 2011). Insecurity surrounding the merger and struggles related to the amalgamation and relocation of services may also induce employee reactions.

Hirschman (1970) proposes 'voice' and 'exit' as two possible employee responses to workplace changes that are perceived as negative. The response chosen depends on a number of factors, but most notably loyalty to the work organization and whether exit



is a viable option for the employee. A key value of Norwegian working life is employee participation and employees are encouraged and expected to voice their opinion about proposed changes to the workplace (Løken et al., 2013). Employees with a high degree of loyalty toward their employer will most likely voice their concerns so as to influence the employer to remedy the situation. Employees with low loyalty might be more prone to consider exit as a strategy. The ease of getting another job is also a factor; employees must have another alternative available before exiting the organization. Notably, professional employees, such as registered nurses and physicians, may have few job options outside the hospital sector, at least outside the big cities.

Bazzoli et al. (2002) suggest that hospital mergers in the USA during both the 80s and 90s were followed by substantial organizational change, and that this was among the main stated reasons for the merger. On the other hand, Fulop et al. (2005) argue that in the NHS, which shares more similarities with the Norwegian hospital sector, the context of the public sector with multiple stakeholders, conflicting objectives, and strong professions make a merger process more complex. In a study of Norwegian hospital mergers in the 90s, Kjekshus and Hagen (2007) found no efficiency gain in the short term following most mergers. Any lack of efficiency gains does not mean that mergers did not affect the employees. A large body of research has documented increased strain on employees during mergers. Mergers are associated with increases in general anxiety disorders (Wang et al., 2012), exhaustion, functional incapacity (Vaananen et al., 2004), and psychiatric events (Vaananen et al., 2011). Earlier research on hospital staff has shown that mergers are associated with emotional costs due to anxiety, uncertainty, higher workloads (Fulop et al., 2005), and increased sickness absence (Kjekshus et al., 2014).

Mergers are likely to be followed by internal organizational changes in the merged organization (Kjekshus et al., 2014). Effects of other types of organizational change suggest that they are associated with a deterioration of psychosocial working conditions (Bourbonnais et al., 2005; Robinson and Griffiths, 2005) and increased sickness absence (Bernstrom and Kjekshus, 2015; Kokkinen et al., 2013; Røed and Fevang, 2007). In the study of a merger between two hospitals in New York, Jick (1979) found increased turnover in the year of the merger. The turnover rate increased significantly more for skilled employees, particularly doctors and nurses and other professionals, than for unskilled employees. A recent contribution to the turnover literature is the study of turnover among primary care providers employed by the US Veteran Health Association (VHA) during a substantial system reengineering. The study found that turnover increased slightly in the 2 years following the implementation compared to the 7 years before (Sylling et al., 2014). Based on these studies, mergers are expected to increase employees' inclination to exit the organization.

### *H1: Turnover increases during mergers*

Sylling et al. (2014) point to change fatigue resulting in clinician turnover following the re-engineering of the VHA primary care system. Given the amount of mergers and restructuring across the Norwegian hospital sector in the period studied, it is likely that employees tired of the constant restructuring are searching for jobs in other sectors. The ability to exit depends on the existence of alternative workplaces (Hirschman, 1970). In Norway, the public sector has had a monopoly on hospital services. However, the

increasing number of private outpatient clinics during the study period (Martinussen and Magnussen, 2009) may have provided an alternative for professional employees. Primary care, nursing homes, and community care are other alternative workplaces for health care workers.

*H2: Turnover to other sectors increases during mergers*

## **Mergers, Health, and Turnover**

Earlier research has found a link between mergers and morbidity. The added strain of a merger will most likely have a disproportionate effect on the turnover of employees who already have poor health. These employees are more likely to be working close to their sickness threshold – the level at which the individual feels fit enough to attend work (Barmby et al., 1994). A merger might tip the balance in two ways, either separately or in combination. First, the added strain can cause stress in the individual, increasing their level of illness beyond the level at which work is viable. Second, the added strain can make working more demanding, increasing the efforts needed at work to beyond the level they are able to provide given their health. These effects have been described by Westin (1990), who found that increased strain in daily work life can lead to higher levels of perceived disability, even when the individual's health state remained unchanged.

Studying the same hospital mergers as those analyzed in this article, Kjekshus et al. (2014) found that sickness absence among staff who remained employed at the same hospital was significantly higher in the merger year and in the second to fourth year after the merger than in nonmerger years. Josephson et al. (2008) argue that turnover and sickness absence are two separate ways of actively coping with unhealthy working conditions. The authors found that working in geriatric care, social exclusion in the workplace, experiencing negative effects of organizational change, and reporting poor self-rated health influenced both sickness absence and job turnover among Swedish nurses. Turnover and sickness absence were both more common among employees reporting poor health than among those reporting good health. However, employees seldom both entered sickness absence and changed workplaces during the study period. It seems that entering sickness absence and changing workplaces were two different response options chosen by different employees (Josephson et al., 2008).

Changing employer is an effective way of escaping deteriorated working conditions (Griffeth et al., 2000; Hirschman, 1970). However, employees do not have equal opportunities to leave their workplace. Job-lock was initially used as a term for employees not changing jobs because of nontransferable employer-provided health insurance (Kapur, 1998), but has in newer research been used as a term for employees who do not change jobs despite job dissatisfaction (Huyse-Gaytandjieva et al., 2013). Thoits (2006) has argued that personal resources, such as health, affect how people appraise and respond to stress. She describes how people with good mental health actively confront difficulties and both deal with and select themselves out of stressful situations. Changing jobs requires personal resources like self-esteem, mastery, and optimism, all associated with good mental health (Thoits, 2006). The onset of health problems increases the likelihood of employees staying with the original employer (Pelkowski and Berger, 2003). Unhealthy employees may have greater

difficulty attaining other positions than their healthy counterparts, and also less energy to search for and apply to alternative jobs.

Taken together, the earlier research gives contradictory expectations as to which employees are the most likely to exit following mergers. However, the turnover destinations are likely to differ according to employee health. Employees with poor health are less likely to find an alternative job than healthy employees, both because they may be less inclined to search and apply for a new job, and because they are less employable. They are also more likely to be eligible for health-related benefits. The sum of these effects leads to the assumption that employees with poor health who exit during mergers are more likely to enter nonemployment.

*H3: Mergers increase turnover to nonemployment to a greater extent among employees with poor health than among employees with good health*

Turnover within the hospital sector may be a desired effect of mergers, while turnover to other sectors must be considered a negative effect for a hospital sector facing personnel shortages. The goal of increased efficiency following mergers raises the question of whether mergers cause the healthiest employees to leave the hospital sector. The effect has parallels with the health selection effect among migrants: the healthy are the most mobile (Swallen, 1997). For the same reasons that employees with good health have greater ease finding alternative jobs upon deciding to quit, they are more likely to find jobs outside the hospital sector following mergers than employees with poor health.

*H4: Mergers increase turnover to other sectors to a greater extent among employees with good health than among employees with poor health*

## Data and Methods

### Data

The study combines individual-level register data with hospital-level information about mergers. The individual-level data comprise information from several administrative registers on marriage and childbirth, completed education, income, demographics, benefits, and employment. This includes information about the start and end dates of employment spells between 1992 and 2008 and the standard industrial classification (NACE) of the work organization. The individual-level data were made available by Statistics Norway. Data on hospital mergers were derived from the National Patient Register (NPR).

The dataset includes everybody working in the hospital sector (NACE 85.11) in November each year from 2000 through 2006. In the NACE 85.11 category, ‘hospital activities’ comprises somatic and psychiatric institutions, which offer medical examination, treatment, and overnight stays (known as ‘hospitals’ in everyday speech), excluding outpatient clinics, laboratories, and medical practices, where these are separate institutions. Employees are included in the study in the first year they are registered as working in a hospital with valid merger data (2000 being the earliest year). Employees are only included for their first employment spell in the data. To avoid frequent turnover among

people who may not have finished their education, only employees aged 25 years or older at inclusion were included. Employees are censored at death, the year they turn 61 (because they are eligible for early retirement at age 62), or in 2007. The final data include 211,615 person-years distributed among 54,787 individual employees clustered within 53 hospitals over 7 years.

### **Turnover**

A turnover is recorded when employees are no longer employed in the hospital that they were employed at in November of the previous year. Turnover is modeled to three destinations, measured in November after leaving the organization. The three turnover destinations include working in the hospital sector (NACE 85.11), working in another sector, and not working. It is not possible to discriminate between voluntary and involuntary turnover in this study. Given the lack of downsizing in the time-period studied (Kjekshus et al., 2014), turnover to other sectors and out of work following mergers is most likely to be voluntary in the sense that employees have not been dismissed. However, amalgamation of services is an often stated aim of hospital mergers (Kjekshus and Hagen, 2007) involving the relocation of some jobs from one hospital to another within the merged enterprise. Thus, the within-sector turnover unique to mergers is less likely to be voluntary in the sense that it is not employee initiated. Also, in general, turnover within the hospital sector is largely caused by the turnover among medical interns and residents for which temporary contracts are the norm. However, this is not unique to mergers, and will thus not affect the results of this study.

### **Hospital mergers**

Hospitals report to the NPR on January 1 each year. The study records a hospital merger when two or more hospitals that had previously reported individually report to the NPR as a single unit. Hospitals reporting jointly on January 1 had merged sometime during the previous year. The merger is operationalized as a dummy set with one variable for each year of the merger process. The reference category consists of the years before the merger. Variables include the merger year (the year prior to joint reporting) and the four first years after the registered merger. Among the 53 included hospitals, 30 underwent a merger in 2001, nine in 2002, three in 2004, and one in 2005. There were no mergers in 2000, 2003, or 2006, and 10 of the hospitals did not merge in the study period. The speed of the decision-making process leading up to the hospital enterprise reform makes it unlikely that any anticipation effects of mergers were present in 2000, which is the first year included in the study and the only reference year for mergers in 2001.

### **Health**

Long-term sickness absence has been shown to have a strong association with general health (Marmot et al., 1995) and to predict mortality (Kivimaki et al., 2003). However,

experiencing one long-time sickness absence event can largely be termed ‘bad luck’, rather than indicative of generally poor health. In these analyses, registered sickness absence in at least two of the three prior years is used as a proxy for poor health. Only physician-certified episodes of more than 16 days are registered. Sickness absence in the year studied is excluded from the measure, as being on sick-leave will most likely prohibit turnover. In order to have registered sickness absence, a person needs to be employed, receive unemployment benefits, or be on paid leave. Knowing that the most unhealthy are also the most likely to be outside the labor market, a consequence of measuring health over 3 years is that the sample is skewed toward the most healthy population (van de Mheen et al., 1999). Furthermore, the youngest employees who have not been employed in previous years will not have a valid health measure. The observations with valid health data comprise 95% of the included sample, so the selection is limited in this respect.

### **Education**

Detailed education codes are registered using the Norwegian Standard Classification of Education. Employees’ highest completed level of education was coded into seven categories based on length and specific field of education. It was possible to classify two main occupational categories in the health sector, physicians and registered nurses, because these professions require specific vocational training and certification. Other staff with health training were identified based on field of training. The seven categories are primary education (up to 10 years of school), secondary health training (up to 14 years), other secondary education (11–14 years), registered nurses (lower tertiary college degree), other lower tertiary education (up to 4 years of university or college education), physicians (higher tertiary university degree), and other higher tertiary education (5 years or more of university or college education). Educational attainment was only recorded once in the data (at the time of the last completed education). All employees who had not completed their education before entering the analyses were excluded.

### **Control variables**

The analyses are controlled for age, sex, earnings, immigrant status, and family situation. Family situation is entered as a dummy set of married with children below 18 years, unmarried with children, married without children, and unmarried without children. Cohabitants are registered as unmarried. The log of last year’s earnings was included. Thus, those who were not employed are excluded from the analysis. Year dummies were entered to control for changes in turnover across years.

### **Method**

This paper investigates the link between mergers and turnover to three different destinations using discrete-time survival analysis. The analyses estimate the probability



of turnover in a given year, conditional on it not having happened before. Each of the destination-specific rates are estimated directly (Petersen, 1991: 303) using multinomial logistic regression (Allison, 1982: 89). Interaction terms between merger year and health are included to test whether the effect of mergers is dependent on employee health. To be able to compare results across destination states and across different models, the average marginal effects (AMEs) are calculated using Stata's margins command. AMEs show the increase in the probability of turnover on a likelihood scale from 0 to 1. To simplify interpretation of the interaction effect between health and mergers, the AMEs of each merger year for turnover to each destination conditional on health are reported. The models include hospital dummy variables, termed 'hospital fixed effects', to account for systematic time-constant differences between hospitals that merge and hospitals that do not merge. This means that each hospital is its own control group, and the likelihood of turnover in each merger year is compared to turnover in the year(s) before the merger at the same hospital. Standard errors are clustered on hospital level in all models.

It would have been interesting to differentiate between turnover to other hospitals in the new merged enterprise and turnover to other enterprises. Unfortunately, the dataset does not identify all organizations belonging to the same health enterprise post-merger. This information is only available for 62% of the turnover events within the hospital sector. Additional regression analyses are performed on the restricted sample investigating the destinations of turnover within the hospital sector. These analyses and tables reporting log odds ratio estimates are available from the author upon request.

## Results

### Descriptive Analysis

Table 1 summarizes the characteristics of the sample. The sample consists of 82% women and the mean age is 44.1 years (st.d. 9.4). Registered nurses are the largest employee category at 35% and employees with other lower tertiary education comprise 18% of the sample. Employees with secondary health training comprise 12% of the sample and other secondary education comprise 16%. Physicians amount to 7%; employees with other higher tertiary education are 2%. At the other end of the scale, 9% have completed primary education. First- and second-generation immigrants comprise 8% of the sample. Around one-third of the sample are married with children under the age of 18 years (34%). Over a quarter are unmarried and have no children (27%) and a further quarter are married without children (25%). The remainder are unmarried but have children under the age of 18 (14%). Of all included person-years, 16% are years in poor health. Those with poor health are more often women, more often have secondary or lower education, and are on average 1.4 years older than those with good health. Turnover to nonemployment is almost twice as prominent in years of poor health as in years of good health, while there are no substantial differences in turnover within the hospital sector or to other sectors when comparing years of good and poor health.

**Table 1** Descriptive statistics of all observations (person-years) included in the analyses

	Total % or mean (SD)	Years with good health % or mean (SD)	Years with poor health % or mean (SD)
N (observations)	211,615	178,129	33,486
N (individuals)	54,787		
Merger year			
Before or nonmerger	50%	50%	47%
Merger year	12%	12%	13%
1 <sup>st</sup> year	13%	12%	13%
2 <sup>nd</sup> year	10%	10%	11%
3 <sup>rd</sup> year	8%	8%	9%
4 <sup>th</sup> year	7%	7%	8%
Poor health	16%	0%	100%
Age	44.1 (9.40)	43.9 (9.44)	45.3 (9.08)
Immigrant	8%	8%	8%
Man	18%	19%	10%
Education			
No registered	0.2%	0.1%	0.3%
Primary	9%	8%	16%
Other secondary	16%	16%	19%
Secondary health	12%	11%	17%
Other tertiary lower	18%	18%	13%
Registered nurse	35%	36%	32%
Other tertiary higher	2%	3%	1%
Physician	7%	8%	2%
Log earnings (lagged one year)	12.5 (0.5)	12.5 (0.52)	12.4 (0.42)
Family			
Unmarried, no children	27%	27%	26%
Unmarried, has children	14%	14%	18%
Married, no children	25%	25%	25%
Married with children	34%	34%	30%
Turnover destination			
Hospital sector	4%	4%	4%
Other sector	2%	2%	2%
Out of work	3%	3%	6%

Note: SD = standard deviation.

### What is the Effect of Mergers on Turnover?

The results of the survival analysis presented in Tab. 2 show that the likelihood of any turnover is significantly higher in the second year of the merger than in years before the merger (Model 1). Looking at turnover to the three destinations, only turnover within the hospital sector is significantly higher in the second merger year than in pre-merger years (Model 2). The results support hypothesis 1, which states that turnover increases

during mergers. Analyses of the restricted sample of turnovers for which we know the enterprise of the destination organization (not shown, available upon request) indicate that the increase in turnover within the hospital sector is caused by turnover within the merged enterprise. These analyses show no significant increase in turnover to other hospital enterprises following mergers. The results do not support hypothesis 2, as turnover to other sectors does not increase during mergers.

**Table 2** Average marginal effects (AME) from logit models of turnover with health by merger interaction terms. Any turnover (Model 1) and turnover by destination (Model 2)

	Model 1		Model 2		Other sector		Out of work	
	AME	SE	AME	SE	AME	SE	AME	SE
Merger year (ref. years before merger or nonmerger)								
Merger year	0.0030	0.0169	0.0091	0.0127	-0.0031	0.0022	-0.0025	0.0046
1 <sup>st</sup> year	0.0221	0.0204	0.0250	0.0175	0.0004	0.0019	-0.0020	0.0029
2 <sup>nd</sup> year	0.0461***	0.0167	0.0368*	0.0148	0.0036	0.0031	0.0032	0.0042
3 <sup>rd</sup> year	0.0072	0.0177	0.0075	0.0134	0.0013	0.0033	-0.0006	0.0054
4 <sup>th</sup> year	0.0233	0.0233	0.0230	0.0198	0.000	0.0028	-0.0003	0.0062
Poor health	0.0318***	0.0026	0.0006	0.0013	0.0017	0.0010	0.0286***	0.0014
Age	-0.0035***	0.0002	-0.0012***	0.0001	-0.0011***	0.00005	-0.0012***	0.0001
Immigrant	0.0039	0.0031	0.0032	0.0026	-0.0038***	0.0008	0.0058**	0.0021
Man	0.0185***	0.0047	0.0098**	0.0034	0.0104***	0.0017	-0.0051**	0.0017
Education (ref. registered nurse)								
No registered	0.0226	0.0193	0.0073	0.0081	0.0019	0.0042	0.0155	0.0174
Primary	0.0163*	0.0068	0.0048	0.0068	0.0035**	0.0012	0.0090***	0.0016
Other secondary	0.0149**	0.0057	0.0087	0.0059	0.0064***	0.0013	0.0014	0.0014
Secondary health	0.0071	0.0042	0.0003	0.0033	0.0066**	0.0021	0.0014	0.0014
Other tertiary lower	0.0106**	0.0032	0.0032	0.0029	0.0070***	0.0008	0.0004	0.0012
Other tertiary higher	0.0693***	0.0149	0.0196**	0.0070	0.0354***	0.0049	0.0057	0.0043
Physician	0.1322***	0.0087	0.0486***	0.0071	0.0314***	0.0041	0.0378***	0.0043
Log earnings (lagged one year)	-0.0418***	0.0022	-0.0067***	0.0014	-0.0089***	0.0006	-0.0215***	0.0010
Family (Ref. Unmarried, no children)								
Unmarried, has children	-0.0154***	0.0026	-0.0077***	0.0014	0.0003	0.0010	-0.0071***	0.0011
Married, no children	-0.0031	0.0024	-0.0044**	0.0015	-0.0015	0.0010	0.0029*	0.0014
Married with children	-0.0174***	0.0029	-0.0079***	0.0018	-0.0006	0.0009	-0.0078***	0.0010
Merger year by poor health interaction	Yes		Yes					
LL	-61442.1		-78586.2					
Pseudo R2	0.0657		0.0799					
N observations	211,615		211,615					
N individuals	54,787		54,787					

Note: Standard errors (SE) clustered at hospital level. \*\*\*p<0.001, \*\*p<0.01, \*p<0.05. Control variables not shown: Year dummy variables, hospital fixed effects.

### Is There a Difference in the Effects of Mergers on Turnover Among Employees With Good and Poor Health?

Table 3 summarizes the AME of mergers on turnover conditional on health with all other variables at sample values. The results show no differences in the effects of mergers on any turnover between employees with good and poor health (Model 1), but there were some small differences in turnover destinations (Model 2). The results do not support hypothesis 3 stating that mergers increase turnover to nonemployment to a greater extent for employees with poor health than for employees with good health. The AME on turnover to other sectors is higher for the healthy than for the unhealthy, but not significantly so. The exception is in the merger year, when employees with poor health have a significantly lower likelihood of turnover to other sectors than in pre-merger years. The risk is also significantly lower for employees with poor health than for employees with good health, determined by nonoverlapping confidence levels. Hypothesis 4 is partly supported, in that hospital mergers seem to have reduced turnover out of the hospital sector for employees with poor health. However, mergers have not led to significantly higher turnover out of the hospital sector for employees with good health.

**Table 3** Average Marginal Effects (AME) of mergers on turnover conditional on health

	Model 1		Model 2					
	Any turnover		Within HS		Other sector		Out of work	
	AME	SE	AME	SE	AME	SE	AME	SE
Good health								
Merger year	0.0034	0.0164	0.0095	0.0129	-0.002	0.0023	-0.0031	0.0041
1 <sup>st</sup> year	0.0201	0.0197	0.0237	0.0172	0.0004	0.0019	-0.0025	0.0024
2 <sup>nd</sup> year	0.0456**	0.0162	0.0355*	0.0147	0.0043	0.0031	0.0032	0.0038
3 <sup>rd</sup> year	0.0090	0.0174	0.0074	0.0136	0.0017	0.0034	-0.0008	0.0047
4 <sup>th</sup> year	0.0228	0.0223	0.0208	0.0194	0.0005	0.0029	-0.0005	0.0054
Poor health								
Merger year	0.0008	0.0207	0.0071	0.0121	-0.0108***	0.0020	0.0014	0.0085
1 <sup>st</sup> year	0.0330	0.0249	0.0324	0.0192	-0.0001	0.0022	0.0005	0.0068
2 <sup>nd</sup> year	0.0484*	0.0205	0.0444**	0.0160	-0.0011	0.0034	0.0032	0.0080
3 <sup>rd</sup> year	-0.0031	0.0207	0.0079	0.0131	-0.0016	0.0042	0.0001	0.0109
4 <sup>th</sup> year	0.0258	0.0307	0.0356	0.0223	-0.0036	0.0032	0.0008	0.0123

Note: Standard errors (SE) clustered at hospital level. \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$ .

All other variables at sample values. Based on estimates from Models 1 and 2 in Table 2.

## Discussion and Conclusion

The analyses confirm that increased turnover is a consequence of the mergers. This is in line with earlier research (Jick, 1979; Sylling et al., 2014). However, the only significant increase in turnover following mergers was to other hospitals. Contrary to what was hypothesized, turnover to other sectors or out of work did not increase significantly

during the merger process. Earlier research has suggested that organizational changes act as shocks that can induce thoughts about leaving the organization (Morrell et al., 2004), and that frequent changes cause change fatigue (Sylling et al., 2014). These effects are strongest when the changes are perceived as negative (Klag et al., 2015). Analyses on a limited subsample indicate that there was only an increase in turnover to other hospitals within the merged enterprise, which is assumed to be a desired effect of the merger. The increase in within-sector turnover following mergers indicates that actual changes did happen in the merged organization. The effect increased until the second merger year before it dropped, with a slight upswing in the fourth year (not significant). This indicates that actual changes following the mergers happened some years into the merger. There are no signs that emotional costs associated with uncertainty and anxiety in the first stages of a merger (Fulop et al., 2005) have led to higher turnover in the first merger years. On the contrary, employees with poor health had a lower likelihood of turnover to other sectors in the merger year than in pre-merger years. There are several plausible explanations for the limited detrimental effect of mergers on turnover in Norway.

One possible explanation for the lack of turnover out of the hospital sector is that the hospital mergers in Norway have not been perceived as jarring events with negative consequences by the employees. Organizational practices affecting employees' change appraisal, like the quality of information, participation, support, and trust in management and co-workers and procedural justice (de Jong et al., 2016; Sørensen et al., 2011; Tvedt et al., 2009), may have been handled well in all mergers. Employees might also have been happy with the mergers, anticipating that they improve working conditions at the hospitals. No negative employee reactions to the mergers are, however, unlikely. Earlier research on Norwegian hospital mergers has shown increases in sickness absence (Kjekshus et al., 2014). The effect of the mergers was temporary in this study, suggesting that the employees adapted to the new circumstances.

Earlier research has suggested that sickness absence and turnover are two separate responses to unhealthy working conditions (Josephson et al., 2008). The results of this study rather indicate that the possibility of entering sickness absence acts as a buffer. Sickness absence increases during mergers, but employees return to their job when they have adapted to the 'shock'. A second explanation lies in the institutionalization of employee participation during restructuring processes. Where voice is an option, it limits employee exit (Hirschman, 1970). Earlier research has, however, found that the hospital employees reported that they felt a lower degree of employee participation following the Health Enterprise Reform than before it (Gamperiene and Holte, 2007). The possibility of employee participation does not fully explain the lack of exit to other sectors and out of work. Organizational practices and support from leaders and coworkers may have been sufficient to reduce turnover following mergers. A fourth explanation for employees not exiting the hospital sector following mergers is a lack of alternative workplaces with the same status. The growth in the number of private clinics offering out-patient services is still small and mainly located in a few cities. Changing occupations altogether is less likely an option for employees who have invested in an education and achieved experience and skills within the health services.

Contrary to what was expected, there were few substantial or significant differences between employees with good and poor health in the effect of mergers on turnover to the three destinations. Differences were anticipated based on the assumption that employees with poor health work closer to their illness threshold and thus are more



vulnerable to the negative health effects of mergers. Furthermore, employees with poor health were expected to be more likely to enter nonemployment. Borrowing from migration research, the healthiest employees were assumed to be the most mobile, and to have the best chance of finding alternative work in other sectors. Mergers do not seem to have affected turnover to nonemployment among employees with poor health, neither absolutely nor relative to healthy employees. Due to the staff shortage in the health sector, it is likely that alternative employment possibilities are good for all employees, regardless of health.

One limitation of the study is the use of sickness absence as a proxy for health. In comparable Swedish data, the overlap between subjective health, physician-certified disease, and sickness absence was relatively small (Wikman et al., 2005). In order to select the employees with the poorest health, sickness absence is measured over several years and employees with sickness absence in at least two of the three previous years were categorized with poor health. Although an improvement, earlier sickness absence is still a crude measure of health. Sickness absence in previous years is not a guarantee of poor health in the future. However, earlier research has shown strong associations between long-term sickness absence and general health (Marmot et al., 1995) and predicted mortality (Kivimaki et al., 2003). A further limitation is that the employees who are included in the analyses have all worked in at least two of the three previous years. Thus, they have a solid attachment to the labor force and might not have a difficult time finding alternative work, regardless of their health. Although necessary for methodological reasons, focusing on individuals with a solid connection to the labor force is also informative for policy reasons. Turnover to nonemployment in this category would be more serious than the same effect amongst employees who are more loosely attached. Another limitation is the heterogeneity of the destination 'out of work'. It includes employees leaving work to study, for self-supported unemployment and to receive welfare benefits. All employees who had not completed their education before inclusion in the study are excluded. However, we only have data on education completed before the end of 2008. Employees entering education that was completed after 2008 are included in the analysis. Finally, the mobility of the healthiest employees may have caused them to leave the merging hospitals in anticipation of the mergers, with the consequence that the effects on turnover are underestimated. Because of the speed of the decision process leading up to the corporate reform, such anticipation effects are unlikely to have affected the majority of mergers, which were undertaken in 2001.

This paper looks at hospital mergers in Norway; the results of the study must therefore be interpreted in light of aspects of the Norwegian working life, such as low unemployment and characteristics unique to Norwegian mergers. Research on an adjacent topic has shown important differences in the effect of downsizing on the morbidity of downsizing survivors in Finland and Norway. Despite an effect on the morbidity of downsizing survivors in Finland, research has shown that downsizing does not increase morbidity among survivors in Norway (Østhus, 2011). Moreover, the lack of staff reductions in the period studied may explain why the Norwegian hospital mergers have not increased turnover to other sectors and out of work, contrary to expectations. While privatization lead to increased risk of disability among public sector workers in the British Whitehall II cohort (Virtanen et al., 2010), no such effects were found in a study of privatization in Finland (Vahtera and Virtanen, 2013). In the British study, staff reductions accompanied the privatization.

The register data used in this study are from a longitudinal and objective source with very good quality. However, they are limited in that they do not include information about how actual changes affect the daily working life of the individual employees, and the employees' direct reactions. Further research combining objective measures of organizational change and individual outcomes with employees' appraisal of the changes is needed to increase the knowledge about how mergers can be implemented without the loss of valuable personnel.

To conclude, turnover within the hospital sector increased following Norwegian hospital mergers, most likely as a direct and desired consequence. The hospital mergers did not increase turnover to other sectors or out of work, regardless of employee health. Possible explanations for the limited turnover out of the sector are the institution of employee participation and other aspects of the Norwegian labor market, including low unemployment and hospitals' high demand for labor.

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