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Original research

Patterns of sickness absence from a secondary hospital in Melbourne: a 10-year longitudinal study

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Abstract

Background/Aims: There has been significant concern in recent years regarding increases in absenteeism in the healthcare sector, leading to lost productivity and projected workforce shortages. This study aimed to identify patterns of sickness absence over a 10-year period in a single-site secondary hospital in Melbourne, Australia.

Methods: Data regarding sickness absences were extracted from anonymised payroll records from 2007 to 2016. The patterns of sickness absence analysed included seasonality, amount of leave and category of leave. These were explored both for individuals and in the aggregate.

Results: Compared to the Australian average of 9.7 days, this cohort of employees took less sick leave, averaging at 8.81 days each. As a group, a consistent proportion of staff took no sick leave, 1–3 days, 4–6 days, or 7–9 days each year in the 10-year timespan. Only a small proportion took more than 9 days of sickness leave per year.

Conclusions: The pattern of leave-taking was consistent for the group as a whole, however, individual leave patterns vary.

Key words

Background

Absenteeism can be challenging for managers and organisations in all sectors of work. International trends suggest increasing rates of absenteeism in many countries, resulting in loss of productivity and financial costs, as well as highlighting the health and wellbeing needs of employees (Kivimäki et al, 2003; Eurofound, 2010). This trend can also be seen in Australia, with absenteeism estimates averaging at 9.7 days leave a year for each employee (Direct Health Solutions, 2019). In

the private sector rates are particularly high at 11.4 days, compared to 9.5 days for workers in the public sector (Direct Health Solutions, 2019).

These absences are approaching the limits of personal leave allowances common in employment agreements. The Australian national employment standards mandate a minimum of 10 days paid personal leave and an additional 2 days unpaid leave, both of which can be used for either sickness absence or carer responsibilities for full time employees (Fair Work Commission, 2019a). No enterprise, agreement or award can override these standards, but some healthcare organisations provide additional entitlements. For example, the state government in Victoria allows nurses working in public hospitals to take up to 11 days leave in their first year of employment, 13 days in years 2–4, and 19 days in their following years. These allowances are also provided pro-rata for part-time employees (Fair Work Commission, 2019b).

In the healthcare sector, increasing absenteeism rates are commonly reported alongside an increased recognition of the impacts that high job stress, job demands, burnout, staff turnover and attrition can have on staff. Widespread incidences of presenteeism (attending work while unwell) have also been noted (Albion et al, 2008; Rantanen and Tuominen, 2011; Brborović et al, 2017). Sickness absence has a variety of reported antecedents that have been classified as either voluntary or involuntary, spanning a range of factors which can affect an individual's motivation or ability to attend work (Magee et al, 2011; Kottwitz et al, 2018). A range of complex and interrelated factors both within and outside of the individuals' control have been shown to have an association with absenteeism behaviour (Johns, 2011; Milner et al, 2015; Magee et al, 2016). Theoretical models show links between absenteeism and demographic characteristics, job satisfaction, job demands and control, work characteristics, individual health, organisational culture and social norms (Halbesleben et al, 2014; Bakker and Demerouti, 2017). Bakker's model hypothesises that the duration of absence is more indicative of poor health (ability), whereas the frequency of absence suggests withdrawal and influences from factors affecting employee motivation (Bakker et al, 2003).

While there has been much literature investigating the influences contributing to absenteeism behaviour, research exploring longitudinal patterns of absenteeism is lacking. Some studies have reported specific trajectories based on the amount of leave taken each year by individuals, noting distinct low-level, middle-range and high level sickness absence patterns. In other words, the same employees consistently took the same amount of personal leave each year (Carcamo and de Seguridad, 2013; Magee et al, 2016). In some cases, these trajectories have been linked to differences in health-related factors (Carcamo and de Seguridad, 2013; Haukka et al, 2014). With increasing rates of occupational stress in the healthcare sector, such longitudinal analyses in this industry are particularly relevant to policy-making.

This study aimed to identify patterns of sickness absence using the organisational payroll records over a 10-year period for a single-site secondary hospital in Melbourne, Australia. It was hypothesised that annual sickness absence patterns for the employees as a group would vary across the timespan, as individuals respond to a variety of influencing factors and conform to organisational social norms.

Methodology

Data set

The data set used in this study contained the sickness absences of all hospital staff from 2007 to 2016, including management, health service, allied health, hospitality, administration, engineering, maintenance and support staff. It should be noted that the hospital employs proportionally more nursing staff than other personnel groups, therefore nurses comprised the most represented

profession in this study. Ethical approval was received from Mercy Health (approval number, 2017-003) and the University of Notre Dame Australia (approval number 017062S).

Anonymised sickness absence data were extracted retrospectively from the payroll systems. Because data were collected from a single site, no demographic details were extracted as this would risk identification of individual employees. The collected data comprised each instance of sickness absence for every employee including category of leave, pay period in which the absence occurred and the hours of leave for each absence. The exact dates of leave were not included; instead each instance of leave was allocated to the pay period in which the absence occurred to allow analysis of the seasonality of absenteeism.

Sickness leave absences were allocated to one of five categories, as shown in *Table 1*. Policy dictates that paid sickness absence or 'personal leave' must be evidenced by either a medical certificate or statutory declaration, although nurses are entitled to take 1 day of personal leave three times a year without providing evidence. A statutory declaration is a legal document containing a written statement of fact which must be witnessed by an approved person, such as a police officer. It is considered an acceptable form of evidence that a worker was ill and therefore entitled to personal leave when a medical certificate is not obtainable. A statutory declaration can only be used as evidence three times a year and only for absences of 3 days or less.

Table 1. Personal leave entitlements and definitions of categories of sick leave for employees.

Category of Sickness Absence	Definition
Sick leave with certificate	Employee has provided a medical certificate from a family physician
Sick leave without certificate	Employee was absent from work because of illness. Absence was not verified by a statutory declaration or a medical certificate from a family physician
Sick leave with statutory declaration	Employee has provided a legally valid statutory declaration stating they were unfit for work
Sick leave carer's leave	Employee was unable to attend work because of the care of an ill dependent or immediate family member. A medical certificate from a family physician or statutory declaration was provided
Sick leave without pay	Employee has arranged a period of absence from work with their employer in advance of the leave. The employee is not paid during this period of leave

Data analysis

All instances of absenteeism were included in the initial analysis, including outliers. Data cleaning was then conducted to validate absenteeism values.

Many employees had no sickness absence values entered over one or multiple years, while a very small proportion of individuals had extreme values recorded, in excess of 1000 hours in one calendar year. The latter was likely to be related to long term injury or chronic illness. The lack of a value for absences in the payroll records may indicate that no sick leave was taken that year, or that the individual had ceased employment. To allow for this, the proportion of employees deemed to have taken no sick leave was calculated by subtracting the number of employees whose sickness absence was recorded from the known number of employees for that calendar year.

An assessment of normality was conducted to determine the appropriate statistical tests to describe the data. The normality testing showed that the payroll data was not normally distributed, therefore non-parametric descriptive statistics—median and interquartile ranges (IQR)—were reported.
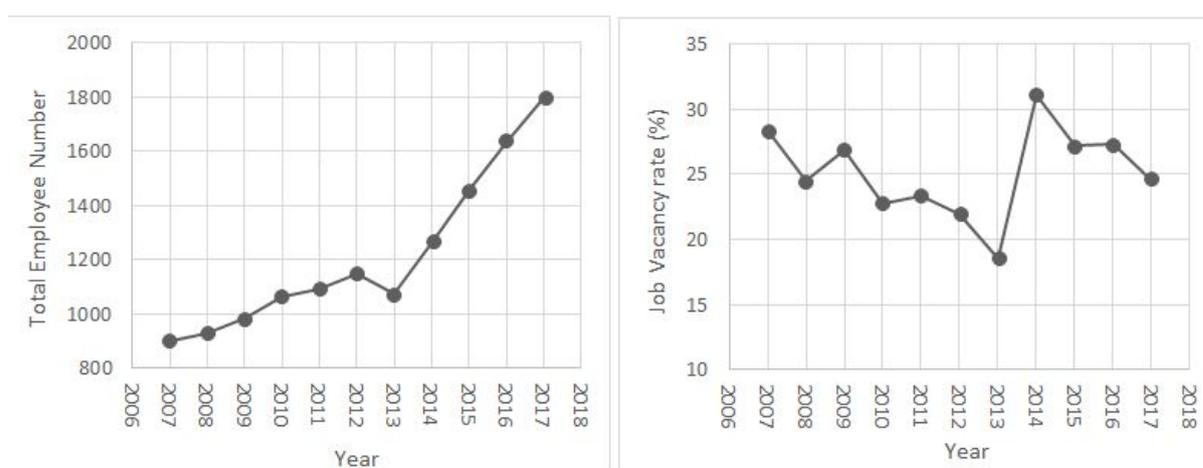
Calculations of absenteeism

Employee absences were calculated by summing the corresponding hours of recorded absence by either leave type, individual employee code, pay period of each year, or by total hours taken each year. Calendar year start and end dates were used as cut off points to sum totals for each year. As every year saw an increasing number of employees (*Figure 1*), differences in leave patterns were compared across years by calculating the median hours of leave taken by each individual and also the proportion of staff taking leave each year. Descriptive statistics were calculated using the Statistical Package for the Social Sciences (SPSS) version 24.

Results

Hospital demographics

Hospital demographic data showed that employee numbers increased steadily during the data collection period, approaching a twofold growth (*Figure 1*). Vacancy rates were calculated by summing the number of new starters and dividing by the total number of workers in each year (*Figure 1*). Job vacancy rates were investigated to see if there was any correlation with absenteeism patterns. We proposed that vacancy rates would be a reflection of employment availability in general and may act as an external influence that affected absenteeism. We hypothesised that when employment was scarce workers may feel under more pressure to keep their job and might be less likely to take leave even when ill. Because absenteeism patterns were consistent across the timespan studied, no influence of job vacancy rates was observed.

Figure 1. Employee numbers and job vacancy rate for each year of data collection. The left panel shows the total number of staff employed by the hospital each year while the right panel shows the number of job vacancies filled (new starters) each year

Aggregate amounts of absenteeism across the 10-year span

The proportion of staff each year with at least one recorded instance of sickness absence is shown in *Table 2*. The calculations of proportions allow for a comparison between years that adjusts

for the increasing numbers of employees contributing to the total amount of sick leave through the timespan.

Table 2. Descriptive statistics for the number of employees taking sick leave each year and the median amount of leave taken by individuals. Days of sickness absence were calculated assuming an 8-hour working day. IQR: interquartile range.

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total number of employees	900	931	983	1065	1091	1150	1073	1265	1458	1634
Number of employees with at least one recorded sickness absence	586	569	594	631	655	686	660	768	853	955
Proportion of employees with at least one recorded sickness absence (%)	65.1	61.1	60.4	59.2	60.0	59.7	61.6	60.7	58.5	58.5
Median hours of sickness absence taken [IQR]	48.0 [24, 90]	48.0 [24, 88]	48.0 [24, 82]	48.0 [24, 90]	48.0 [23, 87]	48.0 [22, 93]	52.3 [24, 90]	48.4 [20, 96]	48.0 [24, 96]	54.0 [23, 99]
Median days of sickness absence taken [IQR]	6.0 [3.0, 11.3]	6.0 [3.0, 11.0]	6.0 [3.0, 10.2]	6.0 [3.0, 11.2]	6.0 [2.8, 10.9]	6.0 [3.0, 11.3]	6.5 [3.0, 11.3]	6.0 [3.0, 11.3]	6.0 [3.0, 11.3]	6.8 [3.0, 11.3]
Average days of sickness absence taken by employees	9.1	8.5	8.1	8.5	8.7	8.8	9.1	8.9	9.1	9.4

The data show that absenteeism was generally stable across the 10-year period. As a group, there was no evidence of an increasing proportion of staff taking leave nor of individual staff taking increasing amounts of leave. The proportion of staff recording a sickness absence does not vary more than 6% across the 10-year period studied. The median amount of leave taken by an individual during each year of the data collection period ranged from 48 hours (6 days) to 54 hours (6.8 days).

Individual amounts of sickness absence

Group patterns of sickness absence were assessed further by stratifying the data by the amount of leave taken by each individual during each year. The total amount of leave hours taken were summed for each individual employee and converted to days of leave per annum, assuming an 8-hour working day. Frequency counts were conducted to determine how many individuals recorded taking zero days, 1–3 days, 4–6 days, 7–9 days, 10–12 days, 13–15 days, 16–20 days, 21–25 days or greater than 25 days of sickness absence in each year. To account for the number of employees increasing over the years, the total staff counts were converted to proportions of total staff taking these amounts of leave in each year (*Figure 2*).

Figure 2. Proportion of staff with a recorded sickness absence and number of days taken for each year.
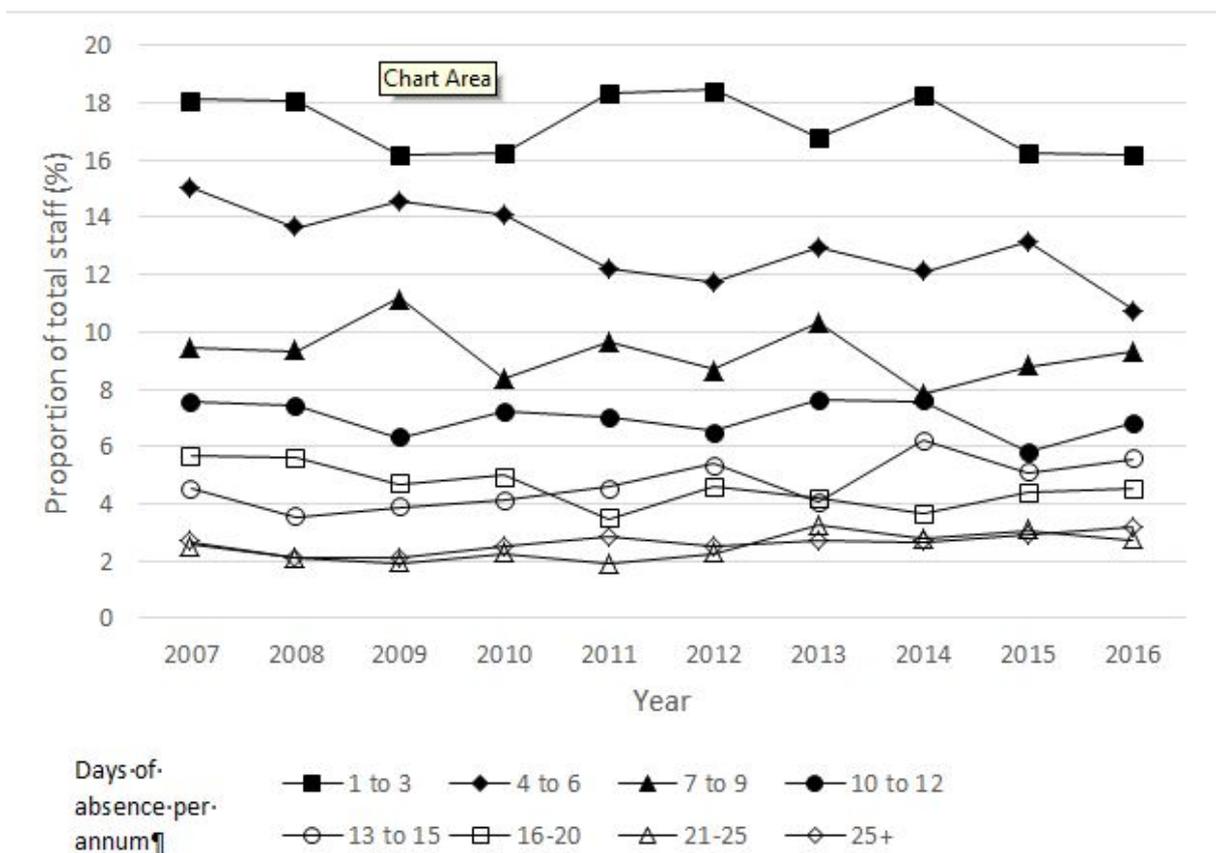
These group patterns indicate that the proportion of staff taking these different amounts of leave was consistent across the 10-year span. For example, the proportion of staff taking 1–3 days of leave in one year was consistently between 16% and 18% in this time period. This proportion of staff was consistent, however, the group that comprises that 16–18% will contain different individuals each year.

On an individual basis there were no clear absence patterns. Staff recorded varying amounts of leave each year. To investigate this further, we assessed the data of individuals who had at least one absence recorded in every year of the 10-year period, excluding any cases with missing data. There was no consistent amount of leave nor increasing amount of absenteeism over time for these individuals.

Category of leave

Sickness absences were also analysed by category of leave (*Table 3*). Because of the increasing number of staff employed at the hospital each year, the total hours of sickness absences climbed steadily. To determine if the relative amount of leave taken in each category changed between years, the individuals taking each category of leave in each year were summed and expressed as a proportion of total staff numbers for that year. It should be noted that each individual often took more than one type of leave, therefore the proportions for all categories cannot be summed to 100%. The proportion of staff taking different leave types showed little variation across the timespan with the exception of statutory declarations, which increased slightly.

The amount of leave taken across the categories was also investigated. The total number of sickness absence hours in each category was divided by the number of individuals that contributed to the absences in that category to give the average hours taken in each category. While this is not indicative of the actual amount of leave individuals took, this measure can be used to evaluate if the same proportions of staff were taking more leave each year in any category.

The majority of leave in any year was categorised as leave 'with certificate'. All categories of leave showed a consistent pattern across the timespan. The category of leave 'without pay' showed the most variation in leave amounts. The category 'statutory declaration' showed that staff were using this method of leave validation more as time progressed.

Table 3. Sickness absence by category of leave

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total employee number	900	931	983	1065	1091	1150	1073	1265	1458	1634
Total hours absence	41139	38792	38727	43184	45267	47394	47797	54686	61817	71710
Certificate	24703	22360	23183	25223	24518	27639	27615	31865	36222	40833
No Certificate	7277	6839	6632	7501	8315	8749	7915	8488	9126	10386
Carers' Leave	2179	2476	2979	2607	2669	2208	2432	2635	3380	3498
Statutory Declaration	913	867	1346	1917	2181	1999	1782	2177	2480	6282
Leave Without Pay	6067	6250	4587	5936	7584	6799	8053	9521	10609	10711
Proportion of staff (%)										
Certificate	51.0	48.4	48.4	47.5	46.2	45.9	48.1	47.3	48.4	45.1
No Certificate	51.2	49.2	46.4	48.2	50.7	49.9	50.5	46.6	45.3	45.0
Carers' Leave	13.8	16.4	15.4	13.5	14.3	12.7	14.0	14.2	14.7	14.0
Statutory Declaration	9.2	9.3	12.3	16.1	16.4	16.7	16.4	15.4	16.8	22.5

Leave Without Pay	26.0	29.3	27.5	23.2	21.7	23.3	24.0	23.9	23.0	22.3
Average hours per staff member										
Certificate	53.8	49.6	48.7	49.8	48.6	52.3	53.5	53.3	51.4	55.4
No Certificate	15.8	14.9	14.5	14.6	15	15.2	14.6	14.4	13.8	14.1
Carers' Leave	17.6	16.2	19.7	18.1	17.1	15.1	16.2	14.7	15.8	15.3
Statutory Declaration	11	10	11.1	11.2	12.2	10.4	10.1	11.2	10.1	17.1
Leave Without Pay	25.9	22.9	17	24	32	25.4	31.2	31.5	31.6	29.4

Seasonality of absenteeism

The seasonality of absenteeism between years was assessed by comparing the amount of leave taken during each fortnightly pay period. Patterns of absenteeism varied between years. In general absences were higher in the winter months, as would be expected, but there were no other observable correlations across the timespan. In 2013, 2014 and 2016 the peak number of total absence hours and people taking leave aligned with the peak of the influenza season. However, this pattern was not reflected in other years across the 10-year span. Additionally, there was no correlation when these figures were plotted by month or when school and public holiday breaks were factored in.

Discussion

Statement of findings

The patterns of absenteeism were remarkably consistent for this organisation across the 10-year time span. Stable patterns were observed in both the category of leave and the amount of leave taken proportionally by employees as a group. The only exception to this was in the category of statutory declarations; an increasing proportion of staff took increasing amounts of leave in this category each year. However, statutory declarations were only a small proportion of total absences in any year.

There was no observable influence of seasonality in the aggregate pattern of leave-taking across the 10-year span. Analysis of individual patterns of leave, unlike previous studies (Magee et al, 2016), did not show the same employees consistently taking low, mid-range and high amounts of leave. Instead, individual leave patterns varied considerably each year. There was no indication that an increasing proportion of staff were taking more sickness leave over time or that the same proportion of staff were taking increasing amounts of leave.

Comparison with the literature

As a group, staff in this organisation recorded slightly lower levels of sickness absence compared to the Australian average of 9.7 days. This might be explained by the mixed sample used in this study, containing a combination of full-time employees as well as part-time staff. That said, a

previous study of a part-time and full-time Australian nurse cohort in the state of New South Wales recorded an even lower absenteeism rate, with a median of 3 days absence in the preceding 12 months compared to the median of 6–6.5 days per annum reported in the present study (Lamont et al, 2017). However, it should be noted that the study of New South Wales nurses used self-reported data which has a tendency to underreport absenteeism (Gaudine and Gregory, 2010; Johns and Miraglia, 2015).

In the present study, between 40% and 45% of hospital staff in any 1 year recorded no sickness absences, while up to 80% of staff took less than 9 days each year. This, together with the generally low level of absenteeism compared to the Australian average, may suggest that a culture of presenteeism had a significant influence on this cohort and may represent the social norm. This is in line with previous reports indicating high rates of presenteeism among healthcare workers (Rantanen and Tuominen, 2011).

Interestingly, the data collection period in the present study encompassed a number of events that could have influenced group absenteeism behavior among employees. Challenges to job security have been proposed to increase absenteeism (Blekesaune, 2012), yet neither the job vacancy rate at the hospital, the global financial crisis in 2009–2010, nor the significant growth in workforce, redevelopment and change during an active period of hospital expansion, impacted leave-taking behaviour. Similarly, the influenza outbreaks in 2009 and 2016 did not alter absence patterns. While it is not possible to determine if any of these factors had an impact on an individual level, the group's pattern of leave-taking appears to have been resistant to these internal and external influences.

Future directions and implications for healthcare management

Longitudinal evaluations of absenteeism patterns such as those shown in this study can help managers to understand the inner dynamics of their organisation's workforce. Changes to established or known organisational patterns of personal leave can be instructive, as they have been shown to correlate with attrition rates and job satisfaction (Blekesaune, 2012; Rantanen and Tuominen, 2011),This is especially useful during periods of significant organisational change.

Understanding these dynamics may also be useful for identifying or directing internal changes to job demands, workflow or culture to prevent harmful presenteeism, burnout and attrition. In addition, if established patterns of leave are known on an organisational level, this will assist with planning or rostering for additional staff to cover expected peaks in absenteeism. This may in turn maintain workflow, minimise loss of productivity and reduce strain on remaining staff during these peak periods of absence.

Strengths and limitations

This study's main strength is the use of organisational payroll records of sickness absence. Many published evaluations of absenteeism trends rely on participants recording absences retrospectively and are subject to recall bias. These methods have thus been the subject of criticism (Gaudine and Gregory, 2010; Johns and Miraglia, 2015). Additionally, studies involving longitudinal analysis enable the timespan of data collection to cover periods of significant internal and external challenge and change.

Lack of demographic data was a limitation to this study, preventing the consideration of age, gender, job description, or employment fraction on these data. However, as this study analysed a single site hospital the potential identification of employees by demographic characteristics was considered high. It was therefore necessary to anonymise absence data to protect staff

confidentiality. A further limitation was the inability to accurately determine the duration of each absence.

Conclusions

The aggregate pattern of absenteeism across the organisation was remarkably consistent over the 10 years studied, despite data collection spanning a period that included significant events such as the global financial crisis, the 2009 influenza pandemic and rapid organisational expansion. A longitudinal evaluation of absence patterns on an organisational level may therefore be useful for workforce planning.

Key points

- The data from employees of a single-site hospital demonstrated that sickness absenteeism rates were consistent across the 10-year span and may be helpful for rostering additional staff.
- Changes to organisational structure, rapid employee growth, and macro-economic factors did not affect group patterns of absenteeism.
- A large proportion of staff included in this study recorded no sickness absence each year, while the majority took less than 9 days sick leave each year, which is consistent with the national average.
- Individual leave patterns varied across the timespan; individual staff members did not tend to take the same amount of personal leave each year.
- The categories of sickness absence were consistent across the timespan, although the use of statutory declarations increased slightly.

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