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Non-surgical in-hospital mortality predictors: a multivariable regression analysis of 2,855,029 hospitalizations

Short title: Non-surgical in-hospital mortality predictors

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**What's new?**

The better understanding of hospital mortality predictors can improve outcomes of hospitalizations. This is the first study aimed to identify the predictors that are independently associated with in-hospital mortality in a large population of patients hospitalized in non-surgical units. A doctor, knowing such predictors, can identify patients with a higher risk of death and plan efficient actions aimed at improving the quality of their care. One of the evaluated predictors was the day of the admission. Previous studies have identified the “weekend effect,” whereby patients who are admitted to hospital at the weekend have an increased risk of dying. We have shown higher mortality in patients admitted not only during weekends, but also on Wednesdays, Thursdays and Fridays and on bank holidays, what was not published previously.

## **ABSTRACT**

### **INTRODUCTION:**

In-hospital mortality is an important outcome of hospital admission.

### **OBJECTIVES:**

To identify predictors that are independently associated with non-surgical units' in-hospital mortality.

### **PATIENS AND METHODS:**

The National Health Fund database provided data from 2014 on 2,855,029 hospitalizations of adults, unrelated to surgical procedures. Analyzed mortality predictors were: the patients' age and gender, diagnosis-related group category assigned to the hospitalization, length of the hospitalization, type of hospital and admission, day of week and month of admission.

### **RESULTS:**

The mean in-hospital mortality rate was 4.1%. Odds for in-hospital death increased with patients' age. The female gender was associated with a lower odds of death than the male gender. Among the diagnosis-related groups assigned to the hospitalizations, the highest mortality was found for vascular diseases (11.95%). Considering the length of hospitalization, it was found that the lowest mortality occurred during 5–7-day hospitalizations (2.63%). Compared with clinical hospital, the odds of death was 1.31-fold higher for regional hospitals, 1.35-fold higher for private hospitals and 1.48-fold higher for county/town hospitals; 92% of all in-hospital deaths occurred after urgent and emergency admissions. Hospital admissions at weekends or other non-working days (bank holidays) were statistically significant predictors of in-hospital death. There were differences in mortality between particular months, but there was no seasonal relationship.

## **CONCLUSIONS:**

Age, male gender, emergency admission, admission during the weekend or on another non-working day (bank holiday) and hospitalization in a county/town, private or regional hospital (vs teaching hospital) are factors associated with higher mortality in non-surgical units.

**Keywords:** hospitalization, in-hospital, mortality, non-surgical, predictors

## **INTRODUCTION**

In-hospital mortality (deaths that occur during hospitalization) is an important outcome of hospital admission and, like other measures of mortality (e.g. 30-day mortality), has been used to assess the quality of care. Wide variations in hospital mortality have been a consistent finding, and much of this variation remains unexplained [1, 2]. Knowledge of in-hospital mortality predictors is important for improving patients' outcomes. A better understanding of the predictors of in-hospital mortality may help to identify high-risk patients and develop strategies to reduce the mortality rates.

In-hospital mortality depends on many factors, related to patients, medications used [3] and even to environmental conditions [4] and varies between hospital units. There are no studies that evaluated in-hospital mortality in a large population of patients hospitalized in non-surgical units. In studies evaluating general, hospital mortality has been demonstrated that the most important patient-related ones are age, sex, diagnosis, comorbidities, the mode of admission (urgent vs planned), the need for transfer between hospitals, the number of previous emergency admissions and the length of stay in the hospital. Other factors, such as the organization and financing of the health care system, type of hospital, hospital volume, use of safety checklists, percentage of subjects admitted to the critical care ward, ratio of

hospital doctors to the number of beds and ratio of general practitioners to the size of the population, may also matter [2, 5, 6, 7, 8].

The population over the age of 65 is significantly and rapidly increasing, and the elderly account for a large percentage of people who die in hospitals. There are factors specifically associated with mortality in the elderly during hospitalization, for example functional and cognitive impairment, male sex, illness severity, comorbidity scores, polypharmacy, abnormal levels of routine admission tests, emergency and admission [9, 10, 11, 12].

As mentioned above, although in-hospital mortality is an important measure of health care quality, not many papers have assessed the problem, the populations examined have been relatively small [13, 14] and the articles have mostly focused on deaths related to specific causes or groups of diseases or mortality in specific units [15, 16, 17]. Therefore, this study aimed to identify the predictors that are independently associated with in-hospital mortality in a large population of patients hospitalized in non-surgical units.

## **PATIENTS AND METHODS**

Data for the year 2014 were obtained from the database of the National Health Fund (NHF), a public organization financing medical procedures in Poland. Almost all Polish citizens are insured by the NHF [18]. All health care services, if supposed to be paid for by the NHF, must be contracted with this institution. Health care providers establish and maintain a register of health care services in electronic form. The register collects data characterizing any given health care service. Data entry must be made in all hospitals in the country on the day of discharge or death. The data that must be transferred to the NHF include, among others, the patient's name, personal ID number, sex, age, period of hospitalization, type of admission (elective, urgent or emergency), type of discharge

(including death), diagnosis according to ICD-10, number of the diagnosis-related group (DRG) [18] and major diagnostic category (non-surgical procedures are divided according to the algorithm of the NHF computer system into sections of the DRG: nervous system, gastrointestinal tract, liver, pancreas and spleen, heart and circulation, vascular, respiratory system, endocrine system, bones and muscles, hematopoietic system and intoxication and infectious diseases, head and neck, skin and mammary gland, genitourinary tract and female genital tract.

This study included data regarding only non-surgical hospitalizations of adult patients (aged 18 years and over). The analysis excluded hospitalizations that took place in hospitals classified as “others.”

“In-hospital death” was defined as death during hospitalization. Such cases were identified as a type of discharge from hospital that was predefined in the NHF database as “death.” Death after discharge from a hospital was not reflected in these data. A crude mortality rate was defined as the number of hospitalizations ended by death in a specific year divided by all the hospitalizations in the specific year.

The following mortality predictors were included in the analysis: the patient’s age (the patients were divided into nine age groups: 18–24, 25–34, 35–44, 45–54, 55–64, 65–74, 75–84, 85–94 and  $\geq 95$  years) and gender, the DGR category assigned to the hospitalization, the length of the hospitalization, the type of hospital (regional, county/town, clinical or private), the type of admission (planned admission: scheduled in-hospital stay with a physician’s referral, urgent admission: the patient’s condition required quick but not immediate action, emergency admission: the patient’s condition required immediate action and the patient was referred by rescue ambulance team), month of admission, day of the week on which admission to the hospital took place and whether the admission occurred on a regular weekday or a holiday.

## **Statistical analysis**

The multivariable logistic regression model with all aforementioned predictors was used to estimate the adjusted odds ratios. In order to avoid separation issues, the Firth's correction was applied. The confirmation that approach was adequate included the following diagnostics tests (all at 5% level of significance): the LR test for joint significance of predictors, the Wald test for a single level of predictor significance, the Hosmer-Lemeshow and Osibus-Rojek goodness of fit tests.

An odds ratio statistically above 1 indicates that the risk of an in-hospital death is higher and one statistically below 1 indicates that the risk of an in-hospital death is smaller for the analyzed group than for the reference group. For the odds ratios, 95% confidence intervals were calculated. The verification that the odds ratios were significantly different from 1 was based on the Wald's test. The analysis was conducted in the SAS system [17].

## **RESULTS**

In 2014, there were 2,855,029 hospitalizations (women: 1,634,104, men: 1,220,925) and 116,971 deaths in non-surgical wards. The mean in-hospital mortality rate was 4.1%. There were 59,135 deaths in women (3.62%) and 57,836 in men (4.74%). The female gender was associated with a lower risk of death than the male gender (fully adjusted OR 0.79,  $p < 0.001$ ).

The mortality rates differed among the age groups and increased with age – there were 160 deaths (0.10%) in the 18–24 age group, 21,859 (4.15%) in the 65–74, 37,943 (6.99%) in the 75–84, 31,338 (14.04%) in the 85–94 and 2,583 (25.33%) in the 95+ age groups. The fully adjusted odds ratio for in-hospital death increased with patients' age, being 198.2-fold higher in the group aged  $\geq 95$  years than in the group aged 18–24 years. Fully adjusted odds ratios for in-hospital death in non-surgical wards for particular age groups are shown in Table 1.

The highest mortality rate occurred for vascular diseases. In those patients, there were

6,758 deaths (11.95%). The next three groups of diseases with the highest mortality rates were pulmonary – 23,433 deaths (7.30%), liver – 7,669 deaths (5.87%) and heart diseases – 29,509 deaths (5.37%).

In 2014, there were 1,479,759 urgent admissions, 391,727 emergency admissions and 983,543 planned admissions, with mean in-hospital mortality rates of 4.23%, 11.50% and 0.95%, respectively. Of all in-hospital deaths, 107,648 (92%) followed urgent and emergency admissions. Compared with planned admissions, the risk of death was 4.56-fold higher for urgent admissions and 9.16 higher for emergency admissions ( $p < 0.001$ ). Fully adjusted odds ratios of in-hospital death in non-surgical wards for specific admission types are shown in Table 1.

A total of 457,435 hospitalizations in 2014 took place in clinical (teaching) hospitals, 1,267,234 in county/town hospitals, 831,191 in regional hospitals and 299,169 in private hospitals. The mean in-hospital mortality rate in clinical hospitals was 2.18%, in county/town hospitals 4.72%, in regional hospitals 4.09% and in private hospitals 4.44%. Fully adjusted odds ratios of in-hospital deaths in non-surgical wards for particular hospital types are shown in Table 1.

There were 476,150 admissions at the weekend or on another non-working day in 2014 (the mean in-hospital mortality in this group was 6.49%). The number of hospitalizations per day on non-working days was about twice as low as that on working days (e.g. 200,486 hospitalizations on Saturdays vs 566,597 hospitalizations on Mondays). Weekend or another non-working day (bank holidays) hospital admission was a statistically significant predictor of in-hospital death. The number of deaths was also significantly higher on Wednesday, Thursday, and Friday in reference to Monday. Fully adjusted odds ratios for in-hospital death by day of admission are shown in Table 1.

The number of admissions was lowest in December (218,700) and largest in March

(258,770). The highest mortality was in December – 10,334 deaths (4.73%) and the lowest in June – 8,725 deaths (3.76%). Compared to January, the mortality was significantly lower in May (OR 0.92,  $p < 0.001$ ) and June (OR 0.91,  $p < 0.001$ ) and higher in December (OR 1.05,  $p = 0.002$ ). Fully adjusted odds ratios for in-hospital death by the month of admission (with reference to January) are presented in Table 1.

In-hospital mortality was also significantly associated with the number of days of hospitalization. The lowest mortality was observed during hospitalization lasting for 5–7 days - 17820 deaths (2.63%). Mortality was highest during very short hospitalizations – 0 days: 10,322 deaths (4.71%) and 1 day: 17,245 deaths (9.39%) and very long hospitalizations - 60+ days: 1006 deaths (26.49%) (mortality rising gradually over the eighth day). Fully adjusted odds ratios for in-hospital death in non-surgical wards by the period of hospitalization are presented in Table 1.

Among the 0–1-day hospitalizations, planned hospitalizations predominated and the in-hospital mortality in this group was low. The high in-hospital mortality was observed in patients hospitalized for 0–1 day, who were admitted urgently (especially emergency admissions). The in-hospital mortality for particular time intervals of hospitalization and particular types of admission is shown in Table 2.

## **DISCUSSION**

In this work, based on data from a database comprising a large group of hospitalizations, we present the results of an analysis of predictors of in-hospital, non-surgical mortality. To the best of our knowledge, this is the first analysis of a large national database to assess general (not associated with any specific disease or medical specialty), in-hospital, non-surgery-related mortality. It may allow clinicians to more accurately predict the death of patients hospitalized in non-surgical wards. We found that advanced age, male gender, urgent and emergency admission, admission at the weekend or on another non-working day (bank

holiday) and hospitalization in a county/town, private or regional hospital (vs a teaching hospital) were factors that were associated with greater mortality.

The prognostic importance of gender in hospitalized patients in the general population has been poorly studied. On the other hand, some papers have been published on this subject in the field of cardiology [20, 21, 22, 23, 24]. In most of these studies, being female was associated with higher in-hospital mortality. One study, evaluating in-hospital mortality after stroke, showed that gender was not an independent predictor of death [25]. On the other hand, another study presented significant differences in in-hospital mortality by gender, whereby men of working age had mortality that was twice as high as women of the same age [26]. We found only two studies comparing in-hospital death rates between men and women in the population of patients hospitalized in general, non-surgical wards. In the study by Hwang *et al.* [12] (2867 patients aged more than 75 years in a large urban teaching hospital in Taiwan), there was a negative association between female gender and in-hospital mortality in an adjusted regression model. In the second study by Gordon *et al.* [27] (89,793 patients with 6 common non-surgical diagnoses, hospitalized in 30 hospitals in northeast Ohio), after adjusting for the severity of illness, the in-hospital death rates were lower in women than in men. In a report by the Mississippi State Department of Health on in-hospital mortality in surgical and non-surgical wards, which was based on the hospital discharge data from all the reporting hospitals in Mississippi in 2010 (patients of all ages), the female in-hospital mortality rate was 2.1% while the male rate was 2.7% [28]. In a similar analysis conducted in Canada [5], men were more likely to die in hospital than women (OR 1.09). In our study, the mean in-hospital mortality rate in women was 3.62% and that in men was 4.74%. Therefore, the female gender was associated with a lower risk of death than the male gender (OR 0.79). Importantly, we analyzed only non-surgical units, only adult patients and almost all such hospitalizations occurring in the whole country during one year.

As shown in Figure 1, mortality in our study was highly dependent on age, which is consistent with the observations of others [5, 28, 29]. Such an observation is not surprising, because older patients are more likely to have multiple pre-existing conditions and, usually, are in worse condition than younger ones.

The in-hospital mortality in non-surgical wards is higher in patients admitted as a matter of urgency. In Australian hospitals in 2014–2015 (surgical and non-surgical wards together, patients of all ages), more than half (58%) of deaths in hospitals were attributed to emergency admissions, while 21% were attributed to planned admissions (the urgency status was not assigned or not reported for 21% of deaths) [30]. In Mississippi hospitals, emergency-type hospital admissions accounted for 55.4% of in-hospital deaths [28]. In our study, 92% of in-hospital deaths were associated with urgent and emergency admission. The risk of death was 4.56-fold higher for urgent admission and 9.16 higher for emergency admission compared with planned admission. The analysis performed by the Canadian Institute for Health Information on hospital mortality trends in Canada (patients admitted to Canadian acute care hospitals outside Quebec between April 2004 and March 2005) showed that only 14% of patients who died in the hospital had planned admissions [5]. The odds of dying for their counterparts who had urgent/emergent hospitalizations were 2.6 times higher. In turn, a prospective, one-year cohort study conducted in the Internal Medicine Hospitalization Unit at the Hospital in Lima (Peru) evaluated 499 adult patients with type 2 diabetes and concluded that there was no association between the type of hospital admission (outpatient service or emergency) and the in-hospital mortality [31]. In another study examining the determinants of in-hospital mortality for adult heart failure patients (a retrospective observational study using the 2010 Nebraska Hospital Discharge data, 4,319 hospitalizations and 79 hospitals in Nebraska), the type of admission was not a risk factor for in-hospital death either [32].

The relationship between hospital mortality and hospitals' characteristics (for example teaching or private) has received considerable attention. In the study performed in California (a database of all 1998 admissions to acute care hospitals), compared with non-teaching hospitals, mortality was similar among patients admitted to major and minor teaching hospitals [33]. In turn, a recently published study analyzing data from 21.5 million hospitalizations of Medicare beneficiaries at 4,483 hospitals across the US between 2012 and 2014 showed that, compared with non-teaching hospitals, major teaching hospital status was associated with lower mortality rates for common conditions [34]. In our study, clinical hospitals (vs county/town, regional and private hospitals) were also characterized by the lowest in-hospital mortality rate. An analysis performed in Chile (16,205,314 discharges for the period 2001–2010) [35] showed a lower risk of in-hospital mortality in private hospitals in comparison with public hospitals. In our study, the in-hospital, non-surgical mortality in private hospitals was higher than that in regional public hospitals and teaching hospitals but lower than that in county/town public hospitals.

Previous studies have identified the “weekend effect,” whereby patients who are admitted to hospital at the weekend have an increased risk of dying [36–39]. This may be due to the reduced number of hospital staff, less experienced staff, longer waiting times for treatment, reduced access to test results and diagnostics and the serious condition of patients (only the sickest patients are admitted at the weekend). However, not all studies have shown increased in-hospital mortality among patients admitted to the hospital during the weekend [40, 41]. In our study, hospital admissions at the weekend, as well as those on other non-working days (bank holidays), were statistically significant predictors of in-hospital death. We also observed that in reference to Monday, the number of deaths is higher on Wednesday, Thursday and Friday.

We have found only a few studies assessing seasonal variation in-hospital mortality and all these articles focused on deaths related to specific groups of diseases. In Japanese patients hospitalized with Takotsubo syndrome, in-hospital mortality ranged widely across months from 3.0% in September to 7.5% in April [42]. The Study of National Inpatient Database 2005-2014 in the United States have shown, that in patients with a primary diagnosis of bowel ischemia, the in-hospital mortality was highest in January and December. Lowest in-hospital mortality was in July and September [43]. In patients hospitalized in Cardiology Department in Spain, mortality ranged from 0.17 deaths/day in August to 0.40 deaths/day in February [44]. In our study, there was no seasonal variation in in-hospital non-surgical mortality, however, we found differences between particular months: the highest in-hospital mortality was in December (4.73%) and the lowest in June (3.76%). In reference to January, the mortality was significantly lower in May (OR 0.92) and June (OR 0.91) and higher in December (OR 1.05). These differences are difficult to explain. This does not seem to result from the employment of new, young residents or the number of hospitalized patients.

In-hospital mortality is also associated with the number of days of the hospitalization. In the US and Australia, patients who died in hospital had longer hospital stays than other patients [30, 45]. In Canadian patients, higher in-hospital mortality has been recorded for short (1 and 2 days, OR 3.70 and 1.80, respectively) and long (22 to 365 days, OR 1.53) lengths of stay compared with stays of 3 to 9 days (reference). This is consistent with the results of our study: in non-surgical wards, we have observed the highest mortality for 0-1-day (and >60-days) hospitalization and the lowest for 5-7-day hospitalizations. The higher odds ratio for 0- and 1-day hospitalizations (1 day is slightly risky) was possibly the result of high mortality in patients requiring urgent emergency admission. The mortality rate for emergency admissions was in those patients 137 times higher than for planned admissions, whereas in the group hospitalized 5-7 days, the same proportion was only 22. However, it

should be mentioned, that relationships between the length of stay and mortality may be highly complex, and in patients hospitalized >60 days in spite of very high mortality the proportion of deaths in emergency-admitted to planned patients' mortality rate was only 1.23.

In summary, this is the first analysis of a large national database to assess the prognostic factors independently associated with in-hospital mortality in patients hospitalized in non-surgical units. The strength of this study lies in the high number of analyzed hospitalizations (2,855,029), making the results more reliable than those obtained in smaller studies. On the other hand, the study has some limitations. The first one is the use of the "in-hospital mortality" concept defined as death only during hospitalization. The reason for this is that the NHF database does not contain information about deaths occurring after discharge from a hospital. In addition, there is no consensus about the time after discharge during which death could still be related to the preceding hospital stay, and the published data describe periods ranging from 30 days after the start of hospitalization to 1 year after discharge. Therefore, since death during hospitalization is a parameter that is always recorded in hospital statistics, we consider our approach to analyzing mortality data to be reliable and to generate data that can easily be compared with other studies. Another limitation is the assessment of only a few predictors of in-hospital, non-surgical mortality, but we were able to analyze only those factors that were available in the NHF database. The choice of predictors was limited to the database structure and granularity of data. For example, the type of hospital was assigned to hospitalization, but not to a particular name of the hospital. Such a limitation of a database force an assumption that all hospitals of the same type have, on average, the same mortality rate. On the one hand, this is a strong assumption, on the other expectation that hospitals on the same reference level have a physician on the same quality sound reasonable. Analyzing in-hospital death in non-surgical wards according to hospital type, we couldn't also address the clustering of the data at the hospital level, what is some limitation to treat the observation

as an independent (patients admitted at the same hospital may not be independent of each other if more of the urgent admissions happen in particular hospitals).

In conclusion, age, male gender, emergency admission, admission at a particular week day or on non-working day (bank holiday) and hospitalization in a county/town, private or regional hospital (vs a teaching hospital) are factors that are associated with greater mortality in non-surgical wards.

### **Contribution statement:**

MW and EF conceived the concept of the study. All authors contributed to the design of the research and were involved in data collection. MCh analyzed the data. EF and MPK coordinated funding for the project. MW and AT drafted the manuscript. All authors edited and approved the final version of the manuscript.

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### Tables and their captions

Table 1. Fully adjusted odds ratios for in-hospital death in non-surgical wards stratified by analyzed mortality predictors

Risk driver		DF	Estimate	StdErr	WaldChiSq	P-Value	Odds Ratios	CI
Intercept		1	-6.24	0.08	5 596.66	<0.001		
Gender	Female	1	-0.23	0.01	1 249.48	<0.001	0.79	0.78-0.80

Age	25-34	1	0.77	0.09	73.74	<0.001	2.15	1.81-2.57
	35-44	1	1.77	0.08	452.04	<0.001	5.85	4.97-6.88
	45-54	1	2.58	0.08	1 022.22	<0.001	13.23	11.30-15.15
	55-64	1	3.10	0.08	1 509.87	<0.001	22.29	19.06-26.07
	65-74	1	3.48	0.08	1 900.61	<0.001	32.43	27.73-37.92
	75-84	1	3.99	0.08	2 500.99	<0.001	53.86	46.07-62.96
	85-94	1	4.66	0.08	3 409.19	<0.001	105.69	90.38-123.6
	>=95	1	5.29	0.08	4 025.07	<0.001	198.18	168.3-233.4
Type of admission	Urgent	1	1.52	0.01	16 009.08	<0.001	4.57	4.45-4.67
	Emergency	1	2.22	0.01	30 085.42	<0.001	9.16	8.94-9.40
Type of hospital	County/town	1	0.39	0.01	1 087.93	<0.001	1.48	1.45-1.52
	Private	1	0.30	0.01	426.36	<0.001	1.35	1.31-1.39
	Regional	1	0.27	0.01	473.74	<0.001	1.31	1.28-1.34
Day of admission	Teusday	1	0.02	0.01	3.02	0.08	1.02	1.00-1.04
	Wednesday	1	0.10	0.01	68.16	<0.001	1.10	1.08-1.12
	Thursday	1	0.12	0.01	107.32	<0.001	1.13	1.10-1.15
	Friday	1	0.25	0.01	478.56	<0.001	1.29	1.26-1.31
	Saturady	1	0.33	0.01	712.57	<0.001	1.40	1.36-1.43
	Sunday	1	0.25	0.01	412.23	<0.001	1.29	1.26-1.32
Holiday	Bank holiday	1	0.22	0.02	116.73	<0.001	1.25	1.20-1.30
Month of admission	February	1	0.01	0.02	0.40	0.53	1.01	0.98-1.04
	March	1	0.00	0.02	0.01	0.93	1.00	0.97-1.03
	April	1	-0.03	0.02	2.68	0.10	0.98	0.95-1.00
	May	1	-0.08	0.02	29.22	<0.001	0.92	0.89-0.95
	June	1	-0.10	0.02	36.02	<0.001	0.91	0.88-0.94
	July	1	0.02	0.02	1.50	0.22	1.02	0.99-1.05
	August	1	-0.01	0.02	0.64	0.42	0.99	0.96-1.02
	September	1	-0.03	0.02	3.46	0.06	0.97	0.94-1.00
	October	1	0.02	0.02	1.72	0.19	1.02	0.99-1.05
	November	1	0.02	0.02	1.29	0.26	1.02	0.99-1.05
December	1	0.05	0.02	9.22	0.002	1.05	1.02-1.08	
Lenght of hospitalization (in days)	1	1	0.18	0.01	156.52	<0.001	1.20	1.17-1.24
	2-4	1	-1.53	0.01	12 838.36	<0.001	0.22	0.21-0.22
	5-7	1	-2.13	0.01	21 849.93	<0.001	0.12	0.12-0.12
	8-14	1	-1.96	0.01	19 308.49	<0.001	0.14	0.14-0.15
	15-21	1	-1.20	0.02	5 307.98	<0.001	0.30	0.29-0.31
	22-30	1	-0.61	0.02	979.23	<0.001	0.54	0.52-0.56
	31-60	1	-0.09	0.02	17.39	<0.001	0.91	0.88-0.95
	61+	1	0.48	0.04	128.58	<0.001	1.62	1.49-1.76

Table 2. In-hospital mortality in non-surgical words for particular time intervals of hospitalization and particular types of admission

Number of days of the hospitalization	Type of admission	Number of hospitalizations	Number of deaths	Mortality rate
0	Planned	155,164	454	0.3%
	Urgent	55,838	4,968	8.9%
	Emergency	12,551	5,153	41.1%
1	Planned	73,952	973	1.3%
	Urgent	89,495	8,984	10.0%
	Emergency	24,353	7,695	31.6%
2–4	Planned	391,161	1,995	0.5%
	Urgent	539,000	15,119	2.8%
	Emergency	111,589	11,354	10.2%
5–7	Planned	205,951	1,564	0.8%
	Urgent	392,474	9,915	2.5%
	Emergency	99,343	6,761	6.8%
8–14	Planned	156,418	2,110	1.3%
	Urgent	331,399	12,834	3.9%

	Emergency	109,946	8,056	7.3%
15–21	Planned	24,996	1,035	4.1%
	Urgent	66,961	5,680	8.5%
	Emergency	26,299	3,319	12.6%
22–30	Planned	7,542	677	9.0%
	Urgent	23,831	3,213	13.5%
	Emergency	10,258	1,967	19.2%
31–60	Planned	3,622	548	15.1%
	Urgent	13,112	2,630	20.1%
	Emergency	6,639	1,586	23.9%
61+	Planned	545	137	25.1%
	Urgent	2,142	525	24.5%
	Emergency	1,198	371	31.0%