# Nattlig utskrivning, en borttagen kvalitetsindikator

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IVA Gävle

Vår Gård 2019

# Consequences of discharges from intensive care at night

*C Goldfrad, K Rowan*


## Summary

**Background** It is generally believed that pressure for beds on intensive-care units (ICUs) has increased in the UK. This study used discharge at night as a proxy measure to investigate pressure.

**Methods** Night was defined in two ways: "out of office hours' from 2200 to 0659 h and "the early hours of the morning" from 0000 to 0459 h. The rate of discharge at night was compared for 21 295 adult admissions to 62 ICUs covering the period 1995–98 with 10 806 admissions to 26 ICUs covering the period 1988–90. With data solely from 1995–98, the consequences of discharge at night and premature discharge were investigated.

**Findings** Overall, 2269 (21·0%) admissions did not survive


## Introduction

It is generally believed that pressure for beds on intensive care units (ICUs) has increased. Although no rigorous research evidence exists, the increasing number of reports and correspondence related to this subject does suggest that the pressure on bed availability in ICUs may be greater now than before.

Increasing numbers of admissions with a concomitant decrease in length of stay in the ICU have been reported.[1–3] Occupancy rates have been described as very high.[4] The shortage of available ICU beds in London, UK, and elsewhere[2] has been detailed and a wide variation in provision of facilities has been recorded.[4–6] Cancelled operations due to the lack of available ICU beds[4] and high rates of refused admissions have been reported, both regionally[7] and nationally.[5,6] The transfer of patients over

Lancet 2000; 355: 1138–42

# Nattlig utskrivning

Associerat med ökad dödlighet och fler återinläggningar

En av få förändringsbara variabler

# Nattlig utskrivning i Sverige

2001-2005

Nattlig utskrivning 5.5%

Ojusterad mortalitet 9.9%  (8.6% om dagtid)

2001-2005 var nattlig utskrivning associerad med ökad 7-dagarsmortalitet med en relativ riskökning på 17% (SIR)


Excellent
Good

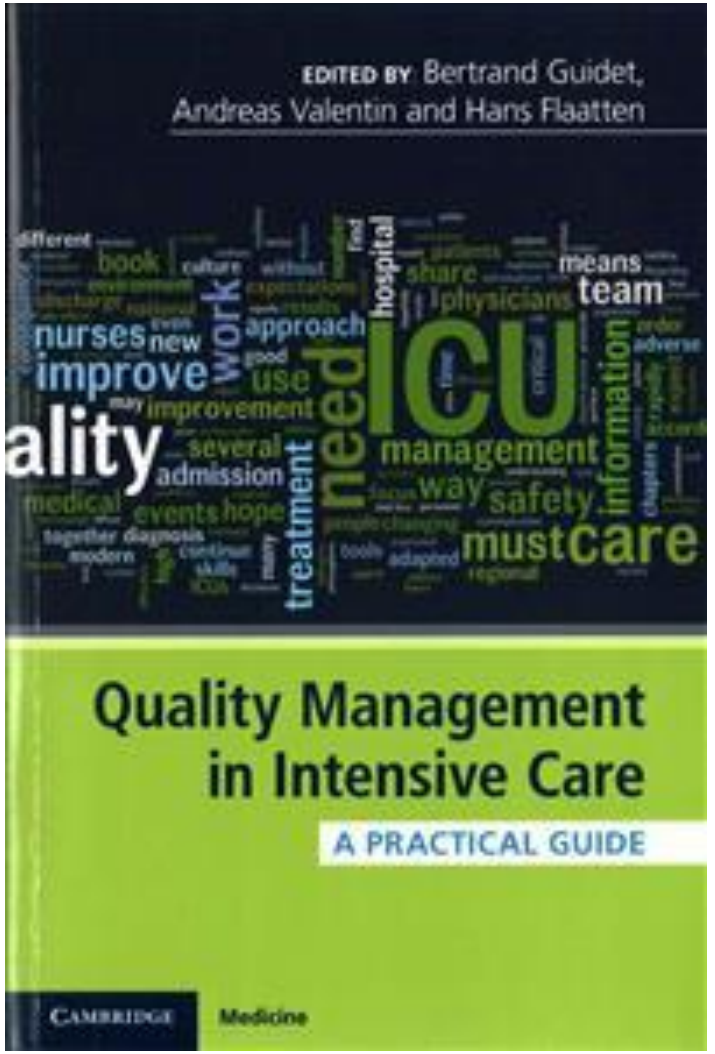
- Kvalitetsindikatorer
  -kontrollsystem
  -stärka kvalitén
  -kartlägga
  -utvärdera det dagliga arbetet.

  De är inte ett mål i sig själva.

- Indikatorerna
  -objektiva
  -accepterade av alla.

**RUMBA regeln:**

- ☑ **R**elevant to the problem
- ☑ **U**nderstandable
- ☑ **M**easurable (with high dependability and validity)
- ☑ **B**ehaviourable (changeable through behavior)
- ☑ **A**chievable and feasible



# Nattlig utskrivning

Sattes som kvalitetsindikator 2005

| ICU Discharges | | | |
|---|---|---|---|
| Number of crash calls per 1000 inpatient discharges | Number of inpatient codes / total number inpatient discharges x 1000 [IHI] | | IHI |
| Clinical deterioration of ICU discharges within 72 hours | Total number of rapid response calls to adult ICU patients within 72h of being discharged from the ICU, during the 6 month time period / Total number of adult patients discharged alive from the ICU unit, during the 6 month time period [ANZICS] | | ANZICS |
| Night time discharges | Number discharges between the hours of 2201 and 0659 / All live discharges from ICU [ICS] | Number of night time discharges to non-ICU area / live discharges to non-ICU area [CPSI(CCVSM), OCCS] | ACCCN, ICS, CPSI (CCVSM), OCCS, VA |
| Patient transport out of the ICU using two identifiers | | | ACCCN |
| ICU readmissions | Number of readmissions / live discharges to the ward [CPSI(CCVSM), OCCS] | | ACCCN, CPSI (CCVSM), OCCS |
| ICU readmissions within 48 hours | Number of readmissions within 48h / all live discharges from ICU [ICS] | | ICS, VA |
| PICU unplanned readmission rate | Total number of unplanned readmission within 24h after discharge or transfer from the PICU / 100 PICU discharges [NQF] | | NQF |

*Valiani S, Rigal R, Stelfox HT, et al. An environmental scan of quality indicators in critical care. CMAJ Open. 2017;5(2):E488-E495.*

Införandet av ”Nattlig utskrivning” som kvalitetsindikator skulle leda till minskat antal nattliga utskrivningar samt reducerad association med tidigare visad ökad risk för mortalitet.

Journal of Critical Care 49 (2019) 7–13

Contents lists available at ScienceDirect

Journal of Critical Care

journal homepage: www.journals.elsevier.com/journal-of-critical-care

# Reducing night-time discharge from intensive care. A nationwide improvement project with public display of ICU outcomes

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[f] Division of Occupational and Environmental Medicine, Department of Clinical and Experimental Medicine and forum Östergötland, Faculty of Medicine Linköping University, Linköping, Sweden
[g] Department of Cardiothoracic Anaesthesia and Intensive Care, Linköping University Hospital, Linköping, Sweden

- 163371 patienter 2006-2015

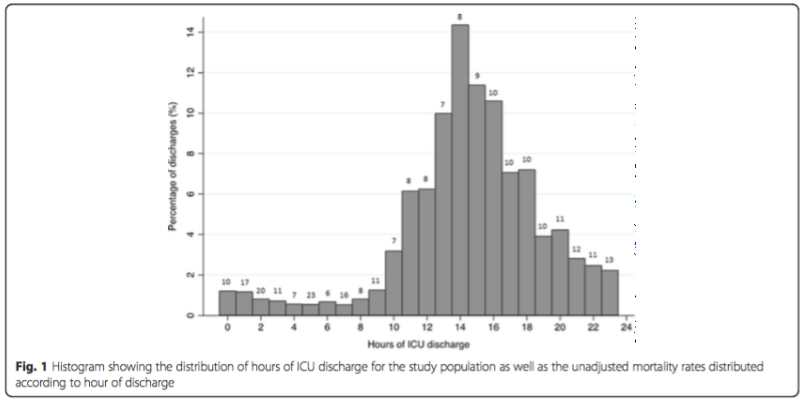
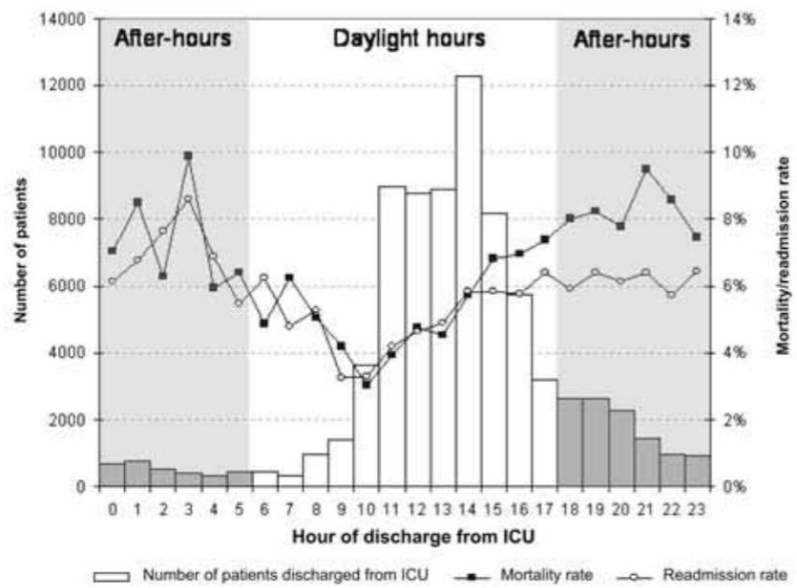


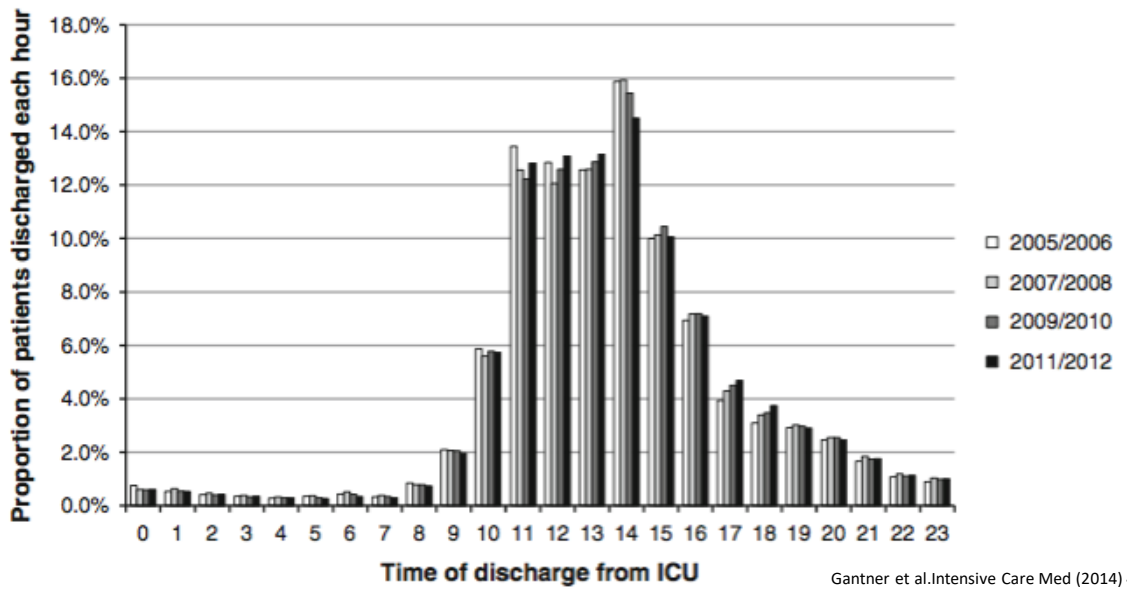

**Fig. 1** Histogram showing the distribution of hours of ICU discharge for the study population as well as the unadjusted mortality rates distributed according to hour of discharge

Azevedo et al. BMC Health Services Research (2015) 15:378 DOI 10.1186/s12913-015-1044-4




Pilcher et al. Anaesth Intensive Care 2007; **35:** 477-485

**Fig. 1** Proportion of ICU discharges at each hour, over 8 years




Gantner et al.Intensive Care Med (2014) 40:1528–1535 DOI 10.1007/s00134-014-3438-x

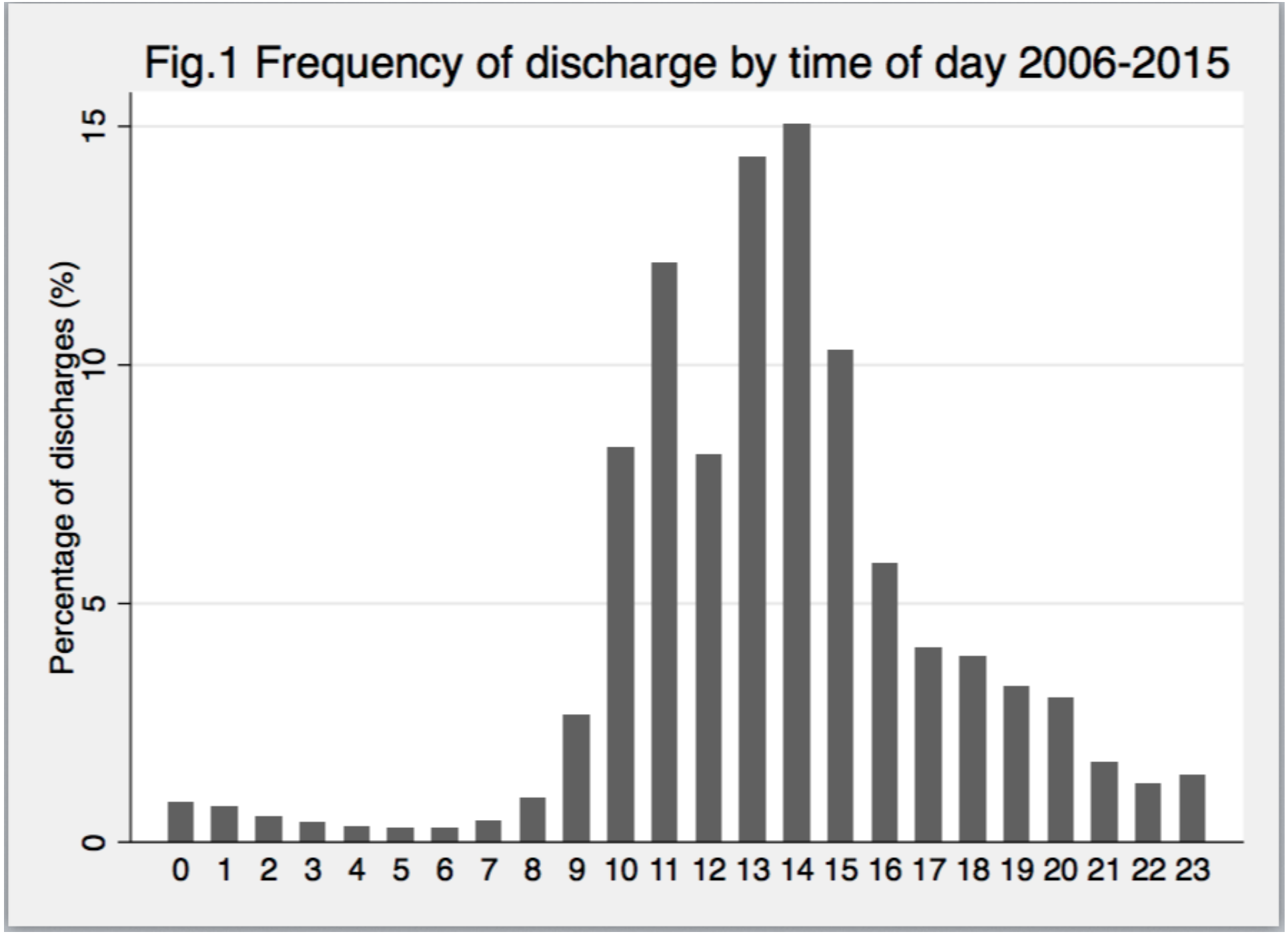
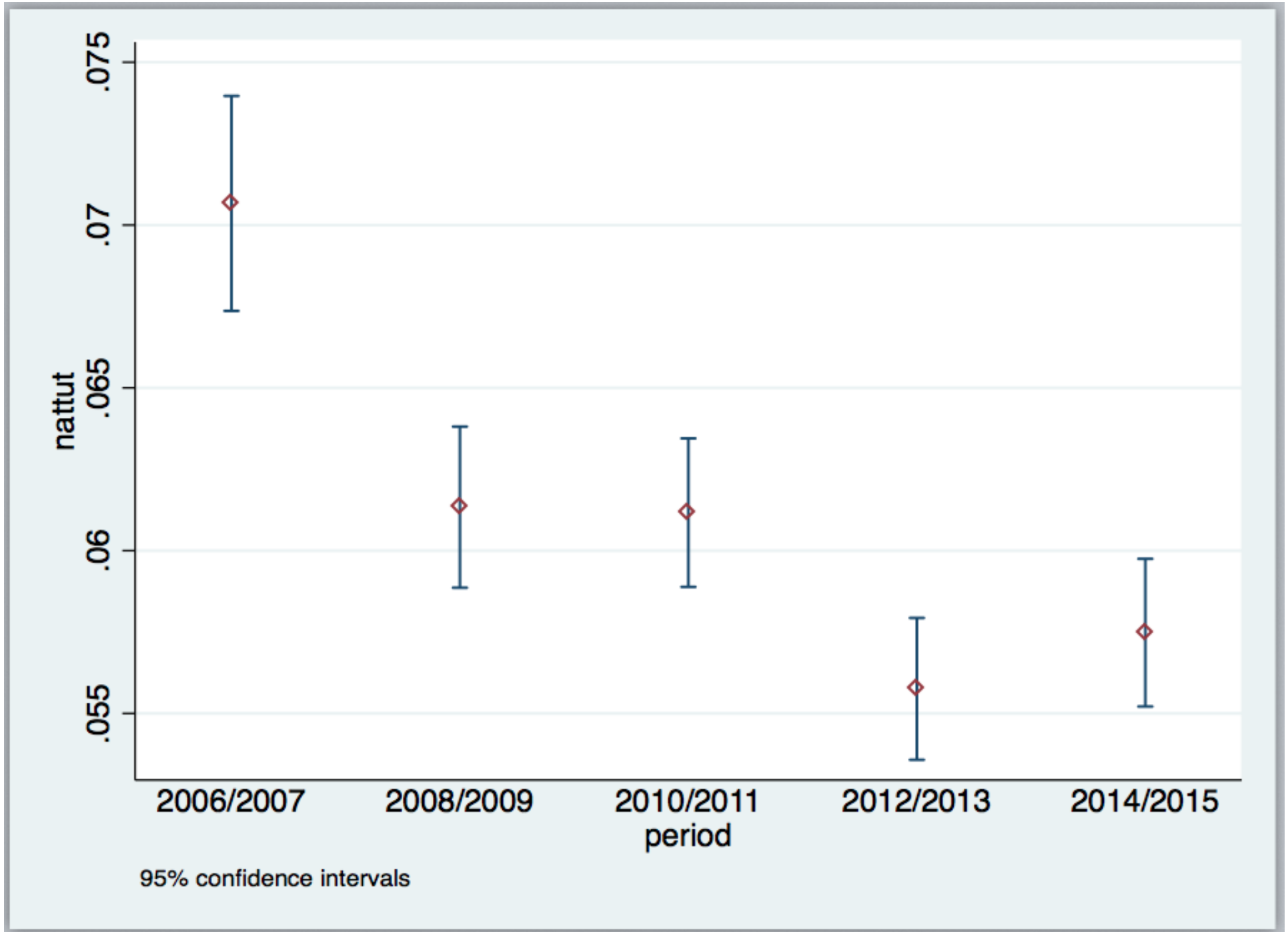
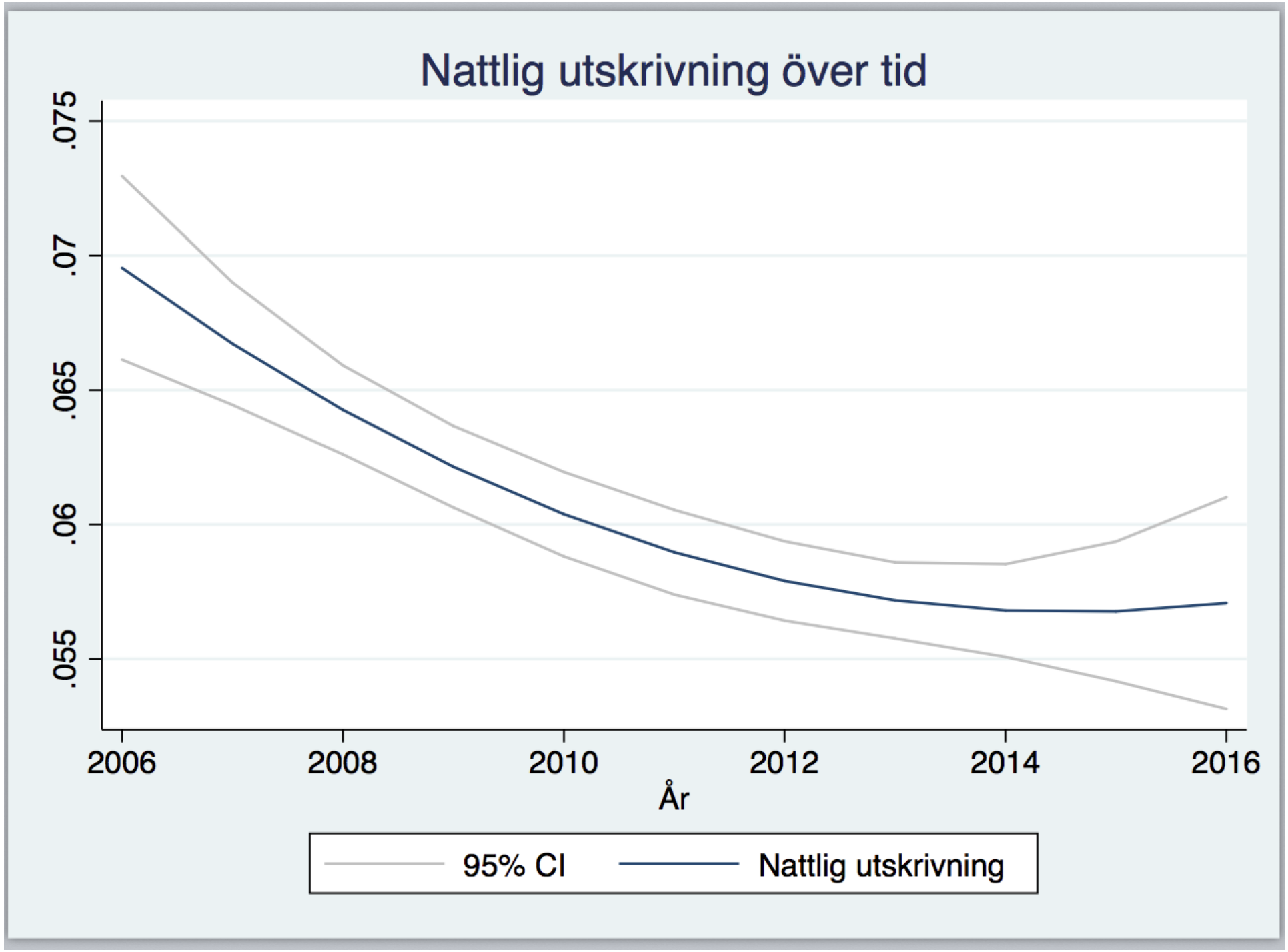


Fig.1 Frequency of discharge by time of day 2006-2015
Percentage of discharges (%)
0
5
10
15
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

- 163371 patienter 2006-2015

- Prevalensen sjönk från 7.0% (95% CI: 5.2 - 8.7%)  2006 till.4.9% (4.3 - 5.5%)  2015 (P = .035).


.075
.07
.065
.06
.055
nattut
2006/2007
2008/2009
2010/2011
2012/2013
2014/2015
period
95% confidence intervals


Nattlig utskrivning över tid
.075
.07
.065
.06
.055
2006
2008
2010
2012
2014
2016
År
95% CI
Nattlig utskrivning

- 163371 patienter 2006-2015

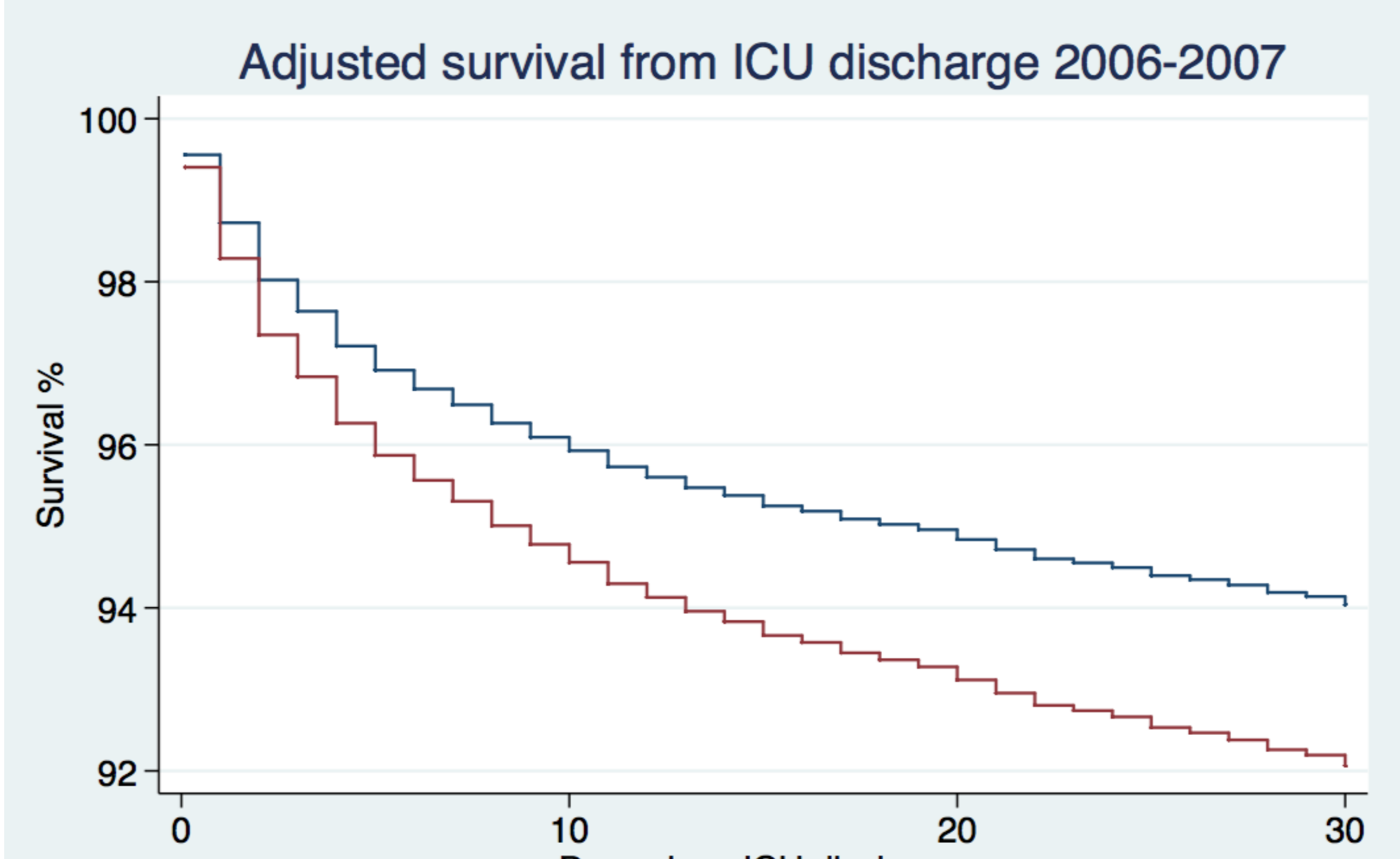
- Prevalensen sjönk från 7.0% (95% CI: 5.2 - 8.7%)  2006 till 4.9% (4.3 - 5.5%)  2015 (P = .035).

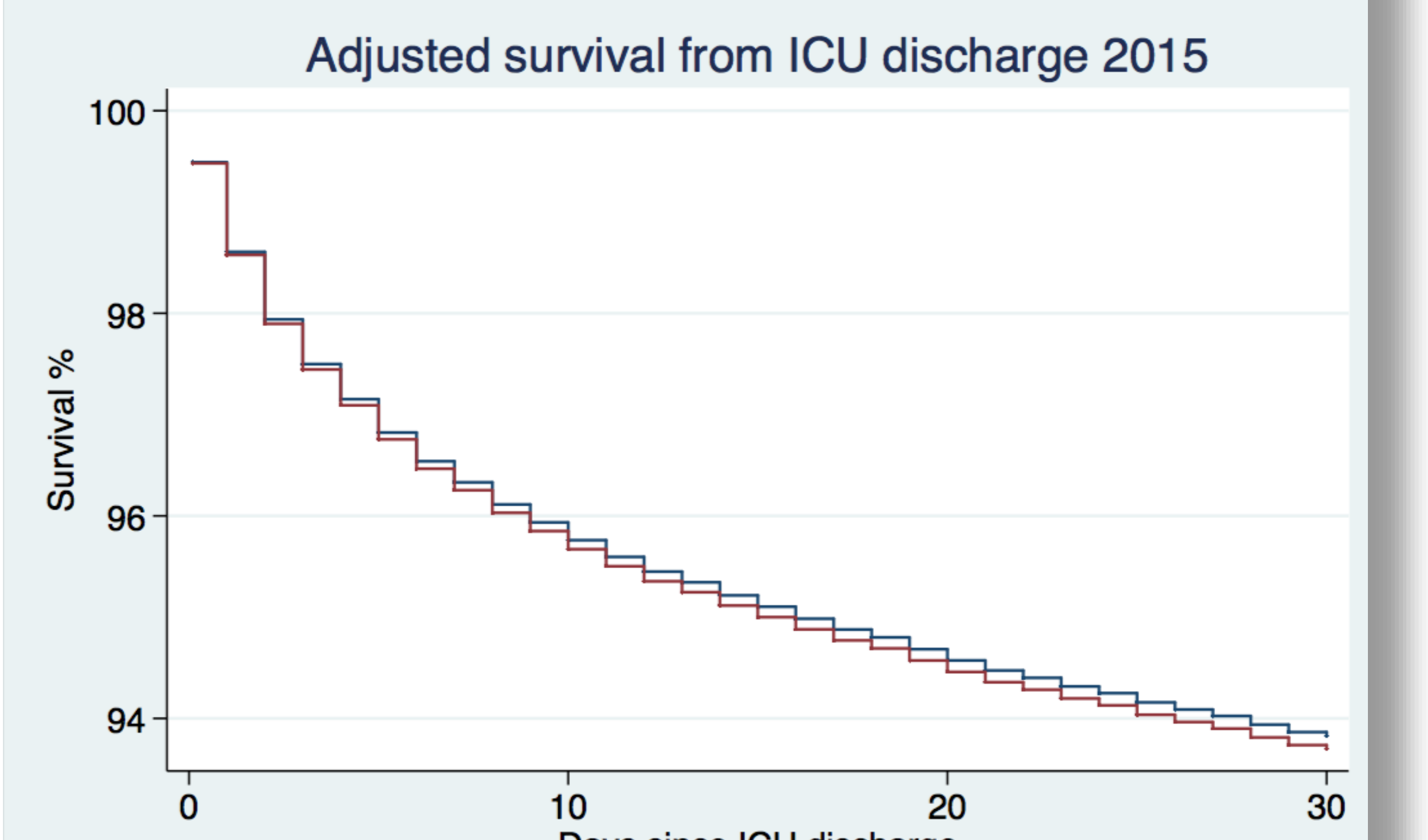
- Minskad risk för död,  2006-2010  OR 1.20 (CI 1.01-1.42)
  2011-2015  OR 1.06 (CI 0.96-1.17)

**Table 3**
Odds-ratios of risk of dying within 30 days of ICU discharge using nested two-level models with single and multiple explanatory variables. Results reported as Odds Ratio with (95% Confidence Interval).

| Model characteristic | Single explanatory variable | Multiple explanatory 2006-2010[a] | Multiple explanatory 2011–2015[b] |
|---|---|---|---|
| Number of patients (ICUs) | 163,371 (70 ICUs) | 28,738 (33 ICUs) | 99,170 (68 ICUS) |
| Time of discharge | | | |
| Daytime | Reference | Reference | Reference |
| Night time | 0.82 (0.77–0.88) | 1.20 (1.01–1.42) $p = .041$ | 1.06 (0.96–1.17) $p = .246$ |
| Age, per year | 1.06 (1.06–1.07) | 1.07 (1.06–1.07) | 1.06 (1.06–1.07) |
| Comorbidities, per point | | | |
| APACHE II model | 1.23 (1.21–1.25) | 1.12 (1.10–1.14) | Not applicable |
| SAPS3 model | 1.10 (1.09–1.11) | Not applicable | 1.08 (1.07–1.08) |
| Circumstances on admission, per point[c] | | | |
| APACHE II model | 1.10 (1.09–1.10) | 1.09 (1.08–1.10) | Not applicable |
| SAPS3 model | 1.07 (1.06–1.07) | Not applicable | 1.07 (1.07–1.07) |
| Hospital type | | | |
| Local hospital | Reference | Reference | Reference |
| District general hospital | 0.97 (0.84–1.11) | 1.24 (0.97–1.59) | 1.00 (0.87–1.14) |
| Regional hospital | 0.74 (0.64–0.87) | 1.14 (0.88–1.49) | 0.94 (0.82–1.09) |
| Calendar year, per year | 1.01 (1.00–1.02) | 0.94 (0.89–0.98) $p = .007$ | 0.99 (0.99–1.00) $p = .086$ |

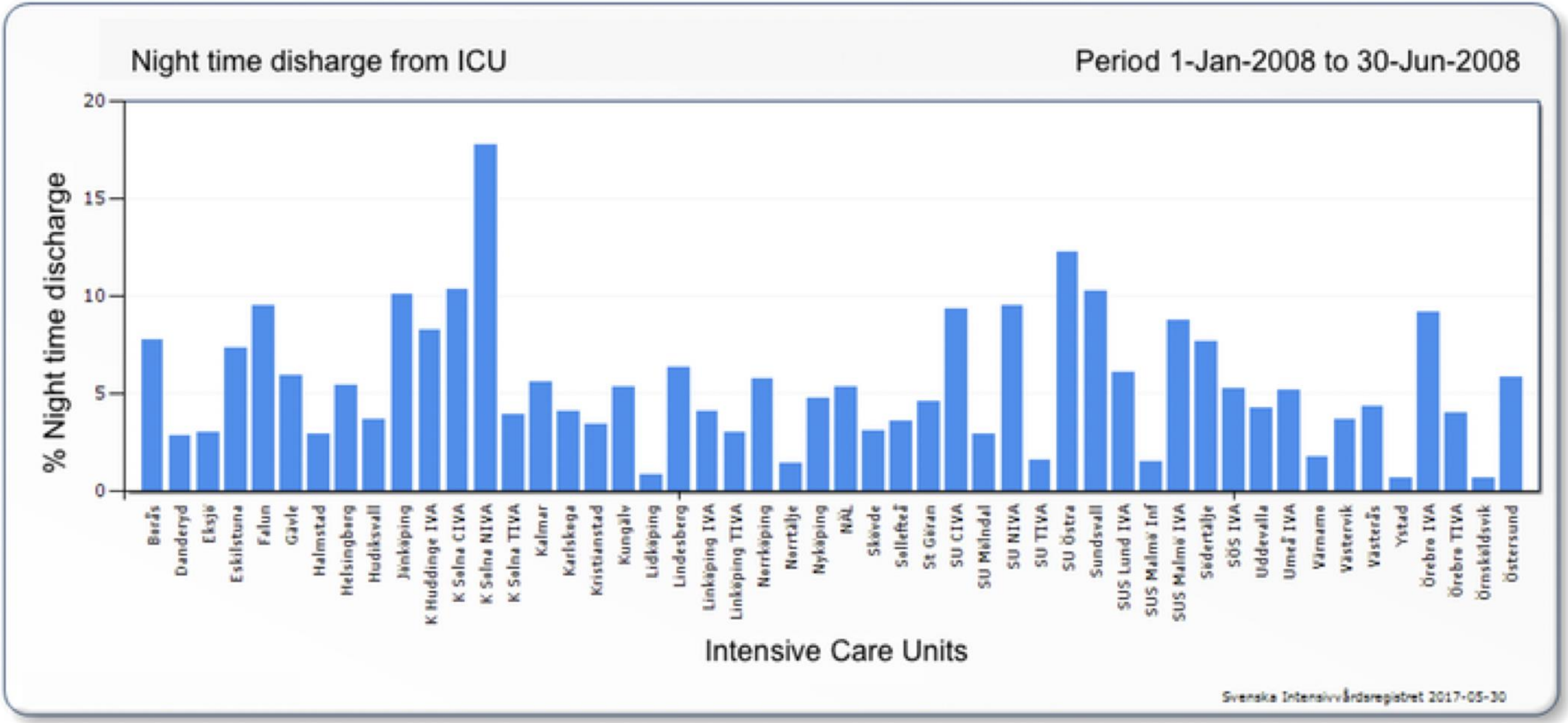
[a] APACHE II variables.
[b] SAPS3 variables.
[c] See methods for details.

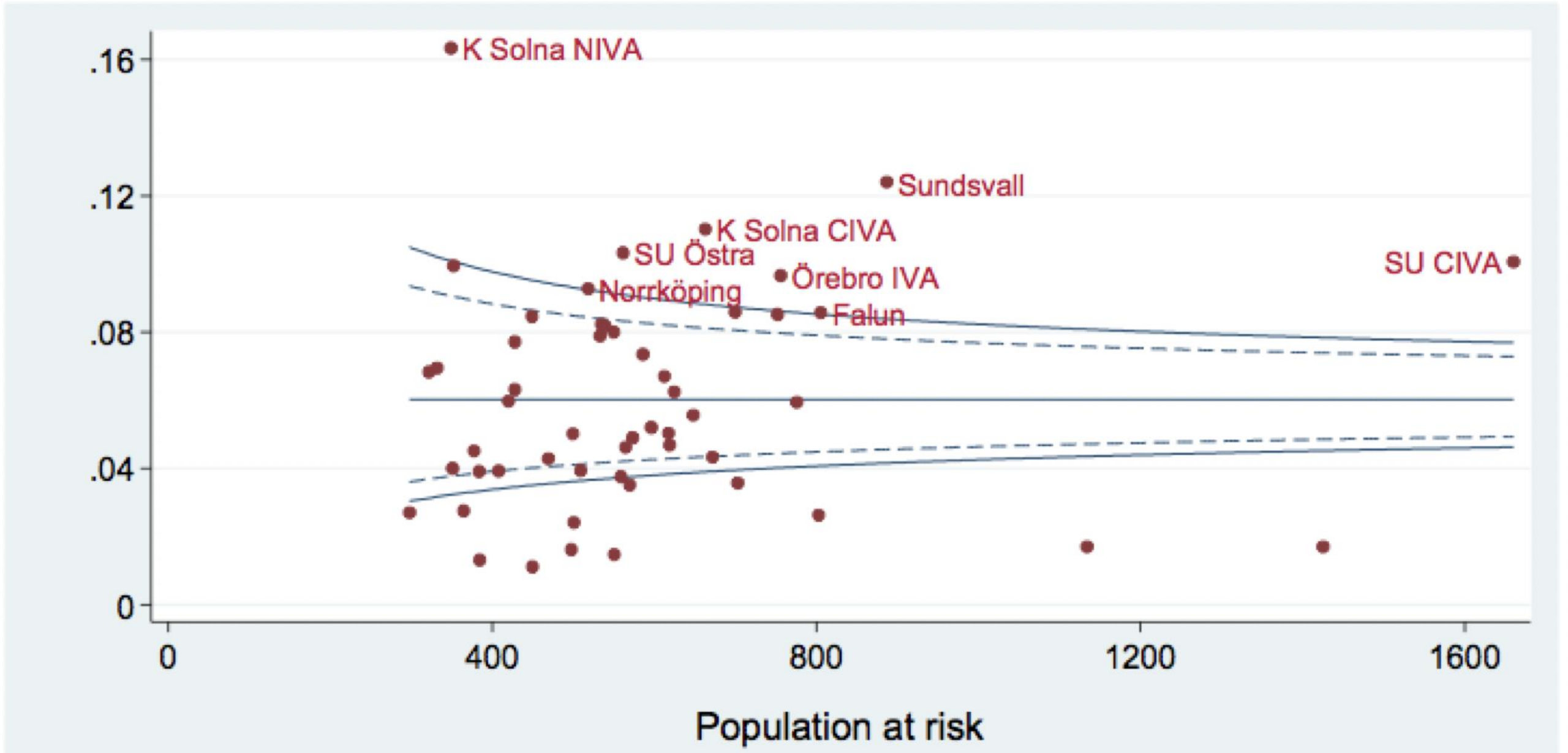

Adjusted survival from ICU discharge 2006-2007
Survival %
100
98
96
94
92
0
10
20
30


Adjusted survival from ICU discharge 2015
100
98
96
94
Survival %
0
10
20
30

# Förbättringsprojekt

# Utdataportal


Night time disharge from ICU
Period 1-Jan-2008 to 30-Jun-2008
% Night time discharge
20
15
10
5
0
Borås
Danderyd
Eksjö
Eskilstuna
Falun
Gävle
Halmstad
Helsingborg
Hudiksvall
Jönköping
K Huddinge IVA
K Solna CIVA
K Solna NIVA
K Solna TIVA
Kalmar
Karlskoga
Kristianstad
Kungälv
Lidköping
Lindesberg
Linköping IVA
Linköping TIVA
Norrköping
Norrtälje
Nyköping
NÄL
Skövde
Sollefteå
St Göran
SU CIVA
SU Mölndal
SU NIVA
SU TIVA
SU Östra
Sundsvall
SUS Lund IVA
SUS Malmö Inf
SUS Malmö IVA
Södertälje
SÖS IVA
Uddevalla
Umeå IVA
Värnamo
Västervik
Västerås
Ystad
Örebro IVA
Örebro TIVA
Örnsköldsvik
Östersund
Intensive Care Units
Svenska Intensivvårdsregistret 2017-05-30


.16
.12
.08
.04
0
K Solna NIVA
Sundsvall
K Solna CIVA
SU Östra
SU CIVA
Örebro IVA
Norrköping
Falun
0
400
800
1200
1600
Population at risk

Publika data = kvalitetsförbättrande aktiviteter.

Feedback från publik rapportering =
stimulerar kvalitetsförbättring.

Faktorer som spelar in på utfall:

Kvarvarande Organdysfunktion

Begränsningar i vård.

*Santamaria JD, Duke GJ, Pilcher DV, Cooper DJ, Moran J, Bellomo R. The timing of discharge from the intensive care unit and subsequent mortality. A prospective, multi- center study. Am J Respir Crit Care Med 2015;191(9):1033–9.*

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[c] See methods for details.

1. Reduktion av nattlig utskrivning till vårdavdelning.

2. Samband förvunnit mellan nattlig utskrivning och 30-dagarsmortalitet.

3. Efter ”kampanjen” nattlig utskrivning påbörjades.

Nattlig utskrivning kommer alltid att förekomma.

Negativa följder kan förhindras med:

- Patientselektering

- Mobila intensivvårdsgrupper (MIG, MET, CCOT), uppföljning

Quality indicators reflect adherence to specific quality measures. Continuing registration of an indicator is useless once it becomes irrelevant or adherence is 100%.

*Braun JP, Mende H, Bause H, et al. Quality indicators in intensive care medicine: why? Use or burden for the intensivist. Ger Med Sci. 2010;8:Doc22. Published 2010 Sep 28. doi:10.3205/000111*

Numbers needed to harm :

från 31 till 256 över tidsperiode

Ca 75 räddade liv per år


Där kom det en gråsparv till — och jag
som inte tittat klart på den första!

TACK!