

GEOGRAPHIC VARIATION IN HIP FRACTURE INCIDENCE AND CARE PROCESSES: A COMPARISON BETWEEN IRELAND AND DENMARK

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INTRODUCTION

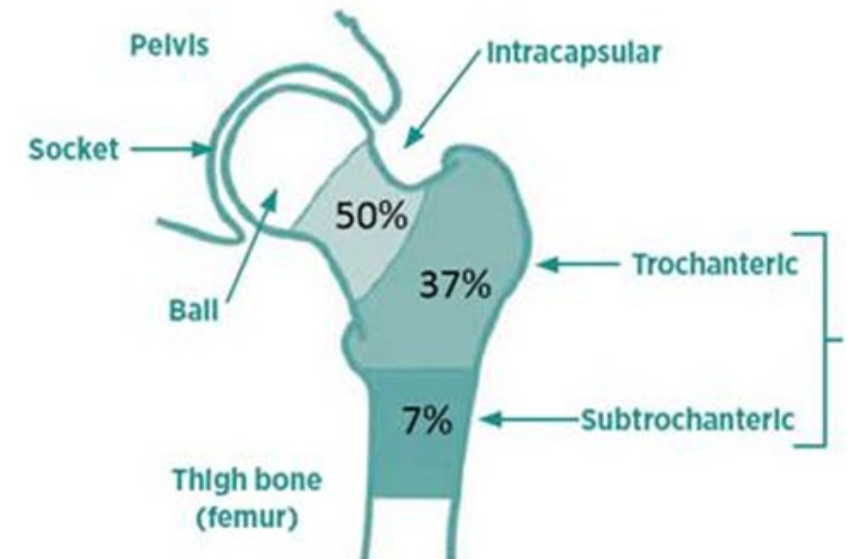
Hip fracture is common and serious - 20% mortality.

Low variation in **rate** of hip fracture internationally, but **large variation** in **care quality**.

National hip fracture audits/ registries in at least 15 countries worldwide drive quality.

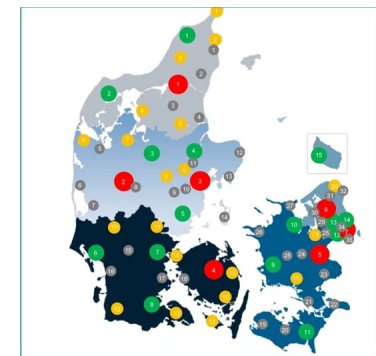
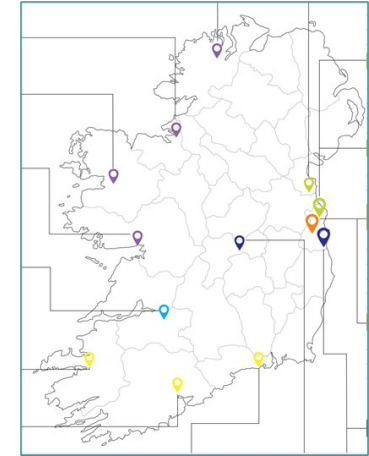
Focus on:

- Provision of early surgery
- Assessment of pain and malnutrition
- Early post-operative mobility
- Future fracture prevention



AIM

1. To compare national age and sex **standardised rates of hip fracture** surgery between Ireland and Denmark.
2. To compare national **measures of hip fracture care** (age and sex standardised) between Ireland and Denmark.
3. To quantify and **compare the within -country variation** in measures of hip fracture care.



SETTING

Ireland



- Population 4.8 million
- 13.4% over the age of 65
- No unique health identifier or registry linkage.
- 16 hospitals operate on hip fracture.
- Six "Hospital Groups" since 2014
- Emergency care is publicly-funded.
- Financial incentives for meeting hip fracture care standards.

Denmark



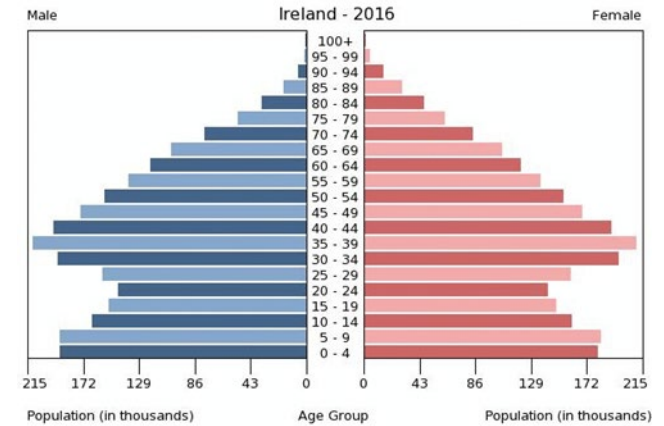
- Population 5.7 million
- 19.4% over the age of 65
- Unique civil registration number registry linkage.
- 22 hospitals operate on hip fracture
- Five distinct geographical regions since 2007
- Healthcare is publicly funded.
- No financial incentives for care standards. Hospitals are paid based on patient case-mix



METHODS

Patient selection: Aged ≥ 65 years, treated surgically for hip fracture.

Years: Ireland from 2017 to 2020, Denmark from 2016 to 2017.



Standardisation of hip fracture rates and care measures:

- Sex and 5-year age group.
- Reference: Ireland 2016 population and hip fracture data (2017-2020).

Quantification of variation (calculated separately for Ireland and Denmark):

- Systematic Component of Variation (SCV): Non-random variation, calculated with observed and expected counts. $SCV > 5$ = High variation; $SCV > 10$ = Very high variation.
- Ratios of observed to expected counts calculated and presented on dotplots.



QUALITY OF CARE MEASURES

Care-processes measures

1. Pre-morbid mobility recorded.
2. Nutritional risk assessment at admission.
3. Surgery completed within 36 hours.
4. Mobilised within one day postoperatively.
5. Pre-discharge fall-risk assessment.
6. Pre-discharge bone health assessment.
7. Pre-discharge mobility score.

} Only for patients discharged alive

Outcome measures

8. Length of stay >7 days.
9. Length of stay >12 days.
10. 7-day mortality.
11. 14-day mortality.
12. Hemiarthroplasty.
13. Total hip replacement.
14. Osteosynthesis/ Internal fixation.

} Only for patients with intracapsular fractures



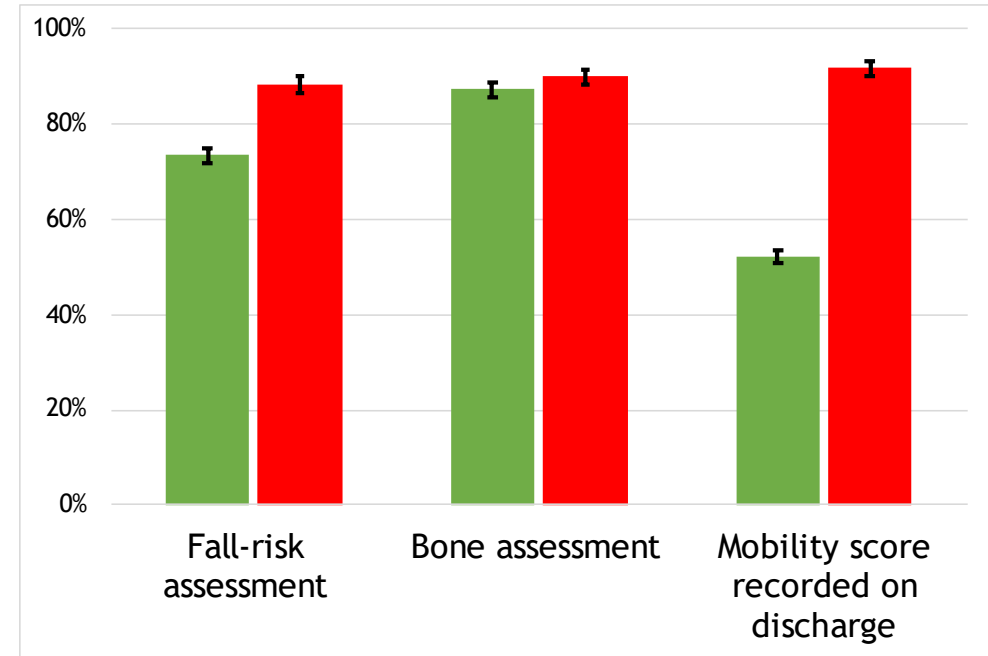
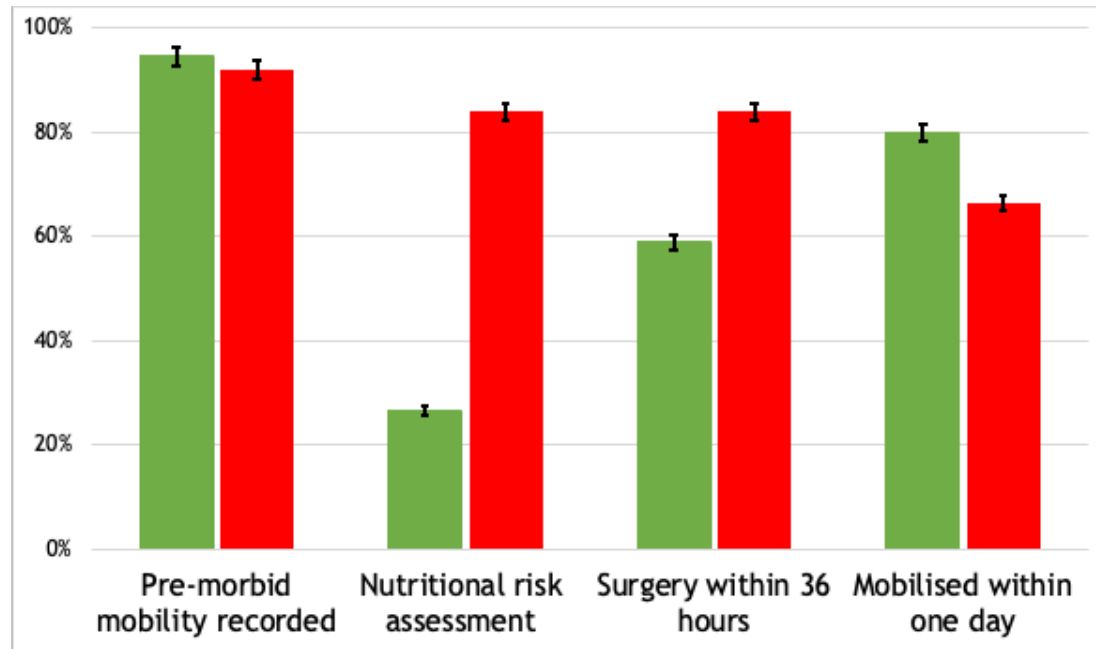
RESULTS RATES AND DEMOGRAPHICS

	Ireland	Denmark
Number included	12,904	12,924
Number per region per year	244 to 932	718 to 1772
Standardised rate 2017 (95% CI) per 1,000 older adults	5.0 (4.6 to 5.3)	5.3 (5.1 to 5.5)
Median age (IQR)	82 years (IQR 76-87)	83 years (IQR 77-89)
Sex (% female)	70.1%	68.7%
Admitted from nursing home	17.2%	17.3%



BETWEEN COUNTRY VARIATION

Differences in standardised care-process rates comparing Ireland and Denmark



■ Ireland ■ Denmark

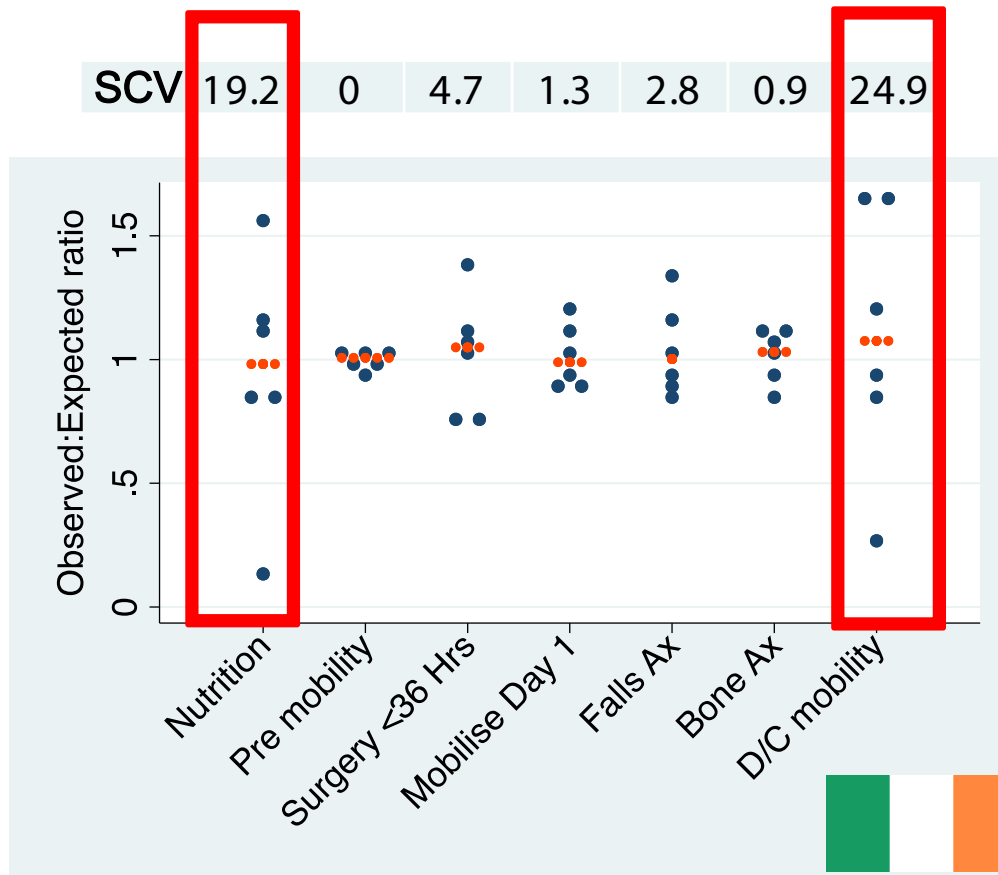


WITHIN-COUNTRY VARIATION

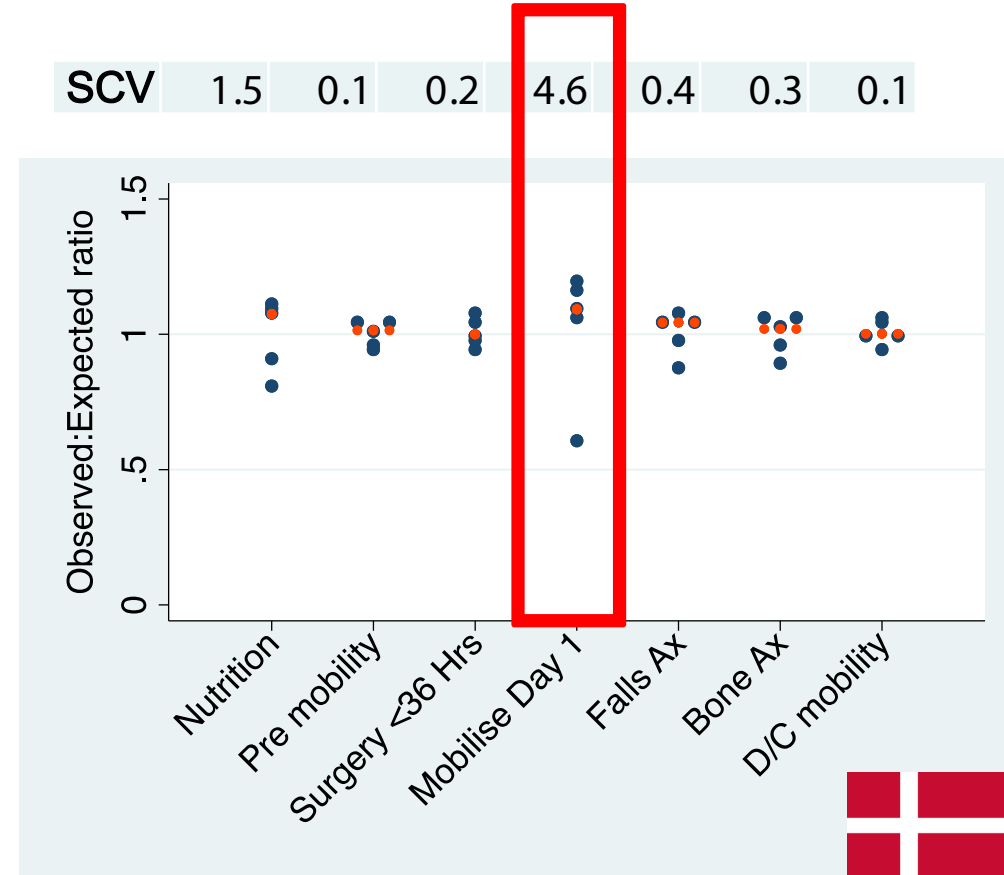
Differences in care-process

SCV >5 = High variation
SCV >10 = Very high variation

Ireland

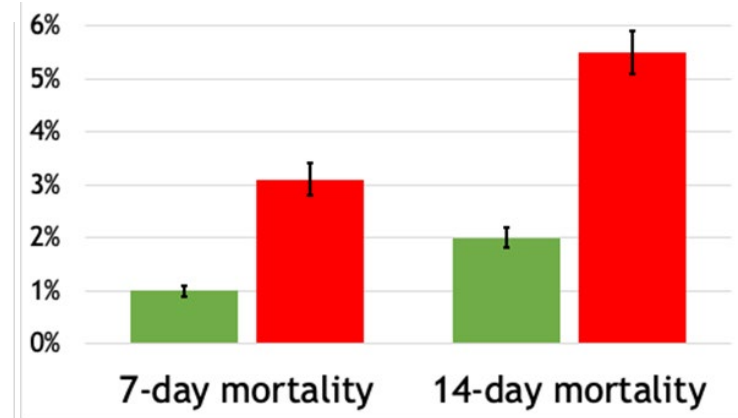
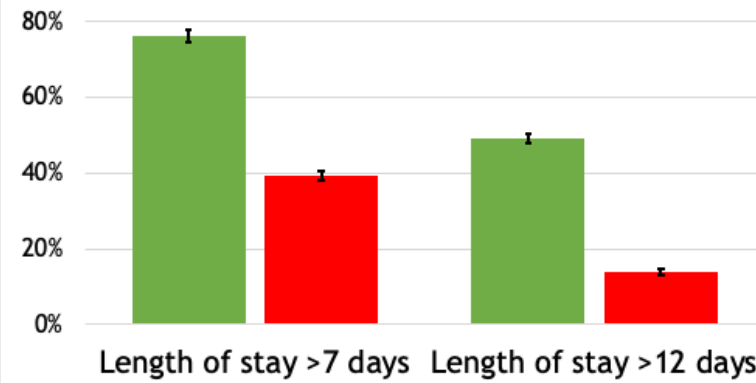
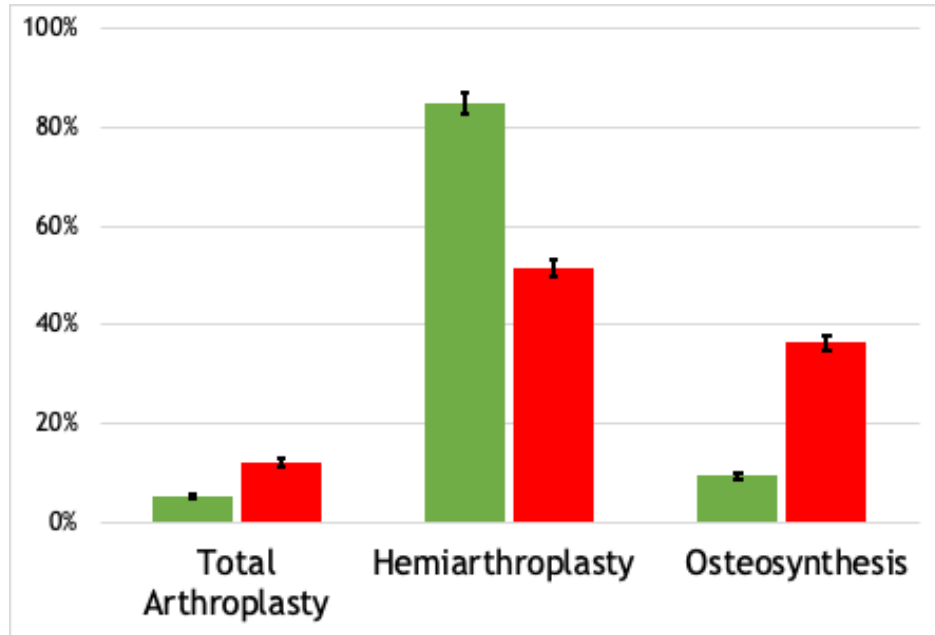


Denmark



BETWEENCOUNTRY VARIATION

Differences in standardised procedure rates and outcomes



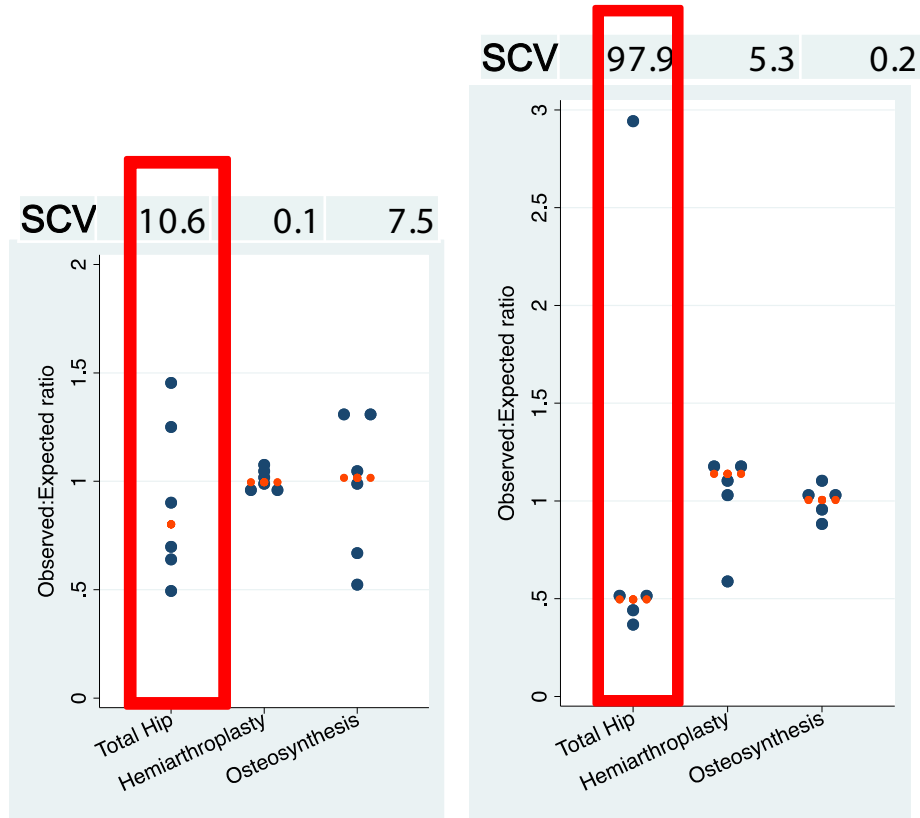
■ Ireland ■ Denmark



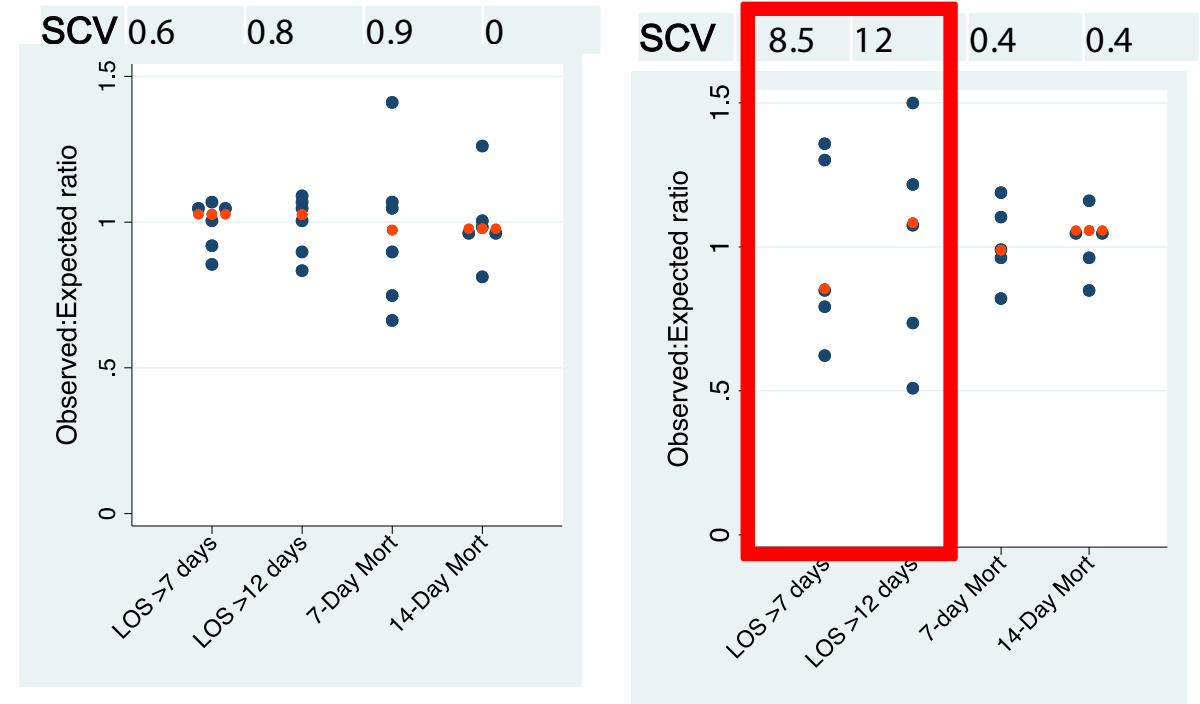
WITHIN-COUNTRY VARIATION

SCV >5 = High variation
 SCV >10 = Very high variation

Differences in procedure rates



Differences in outcomes



CONCLUSION

Areas to improve in Ireland:

Nutritional risk assessment.

Time to surgery.

Recording mobility before discharge.

Further exploration required in both countries:

Geographic variation in total hip arthroplasty rates.

Difference in hemiarthroplasty rate.

Length of stay discrepancy.

Mortality differences.

Irish Hip Fracture
Database **IHFD** 





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