Validation of OMOP-Based Secondary Healthcare Resource Use and Cost Estimates for Federated Health Economics Analyses in the UK

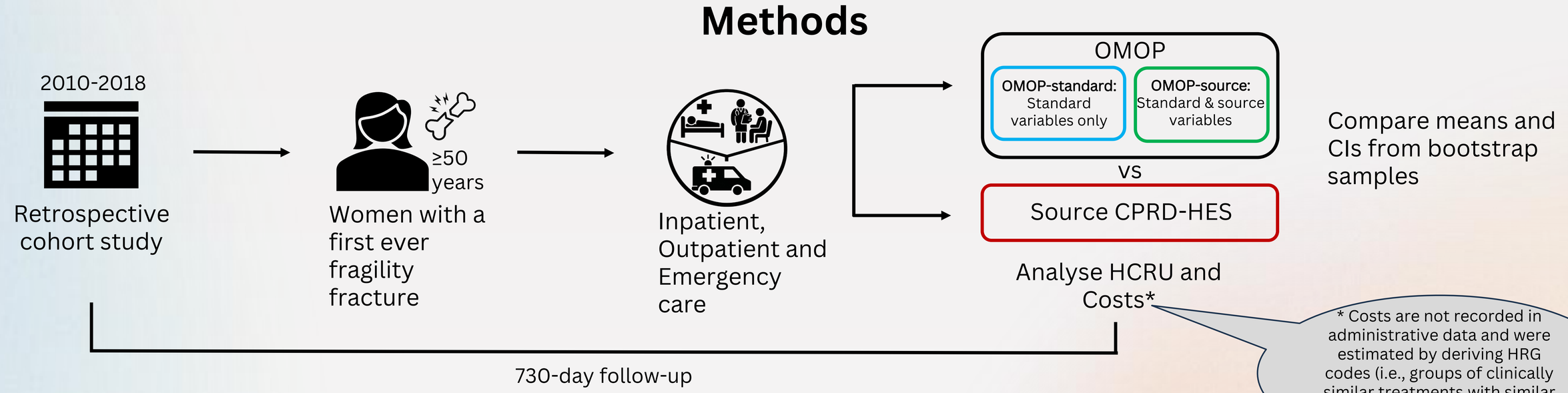
G. Fabiano, N. Njuki, A. Delmestri, R. Pinedo-Villanueva

Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, University of Oxford, Oxford, UK

Objective

To validate estimates of hospital healthcare resource use (HCRU) and costs derived from OMOP-mapped CPRD data linked to Hospital Episode Statistics (HES) vis-á-vis those generated using the source data for a cohort of postmenopausal women with fragility fractures.

Methods



Results

Table 1: Patients characteristics

	Source CPRD-HES (n=23,106)	OMOP (n=22,900)
Mean age in years (SD)	71.3 (12.2)	71.3 (12.2)
Median follow-up time in days (Q1-Q3)	577 (191-730)	578 (192-730)
Fracture site	Hip (13.9%), Vertebra (7.2%), NHNV (78.9%)	Hip (14.0%), Vertebra (7.4%), NHNV (78.6%)
Healthcare users, n (%)*		
Inpatient	12,083 (52.3%)	12,000 (52.4%)
Outpatient	20,691 (89.5%)	20,512 (89.6%)
Emergency care	15,628 (67.6%)	15,480 (67.6%)

* ≥ 1 hospitalisations, outpatient visit, or emergency admission. NHNV: non-hip non-vertebral

- **HCRU** estimates between source CPRD-HES and OMOP **were equivalent, as shown in** Figure 1.
- **OMOP hospital costs were** between 4.4% (Outpatient) and 34% (Inpatient) **lower than** those obtained from the **source CPRD-HES** data (Figure 1).
- 'OMOP-standard' resulted in 6.6% **fewer hospital admissions with musculoskeletal HRGs** (used for costing) and 12% more with HRG code not generate (and therefore not costed) compared to 'Source CPRD–HES' data (Figure 2).
- When **using source variables retained within OMOP,** HRG distributions were more aligned with those from source data and the **cost differences reduced** to -3.5% (Outpatient) and -4.8% (Inpatient).

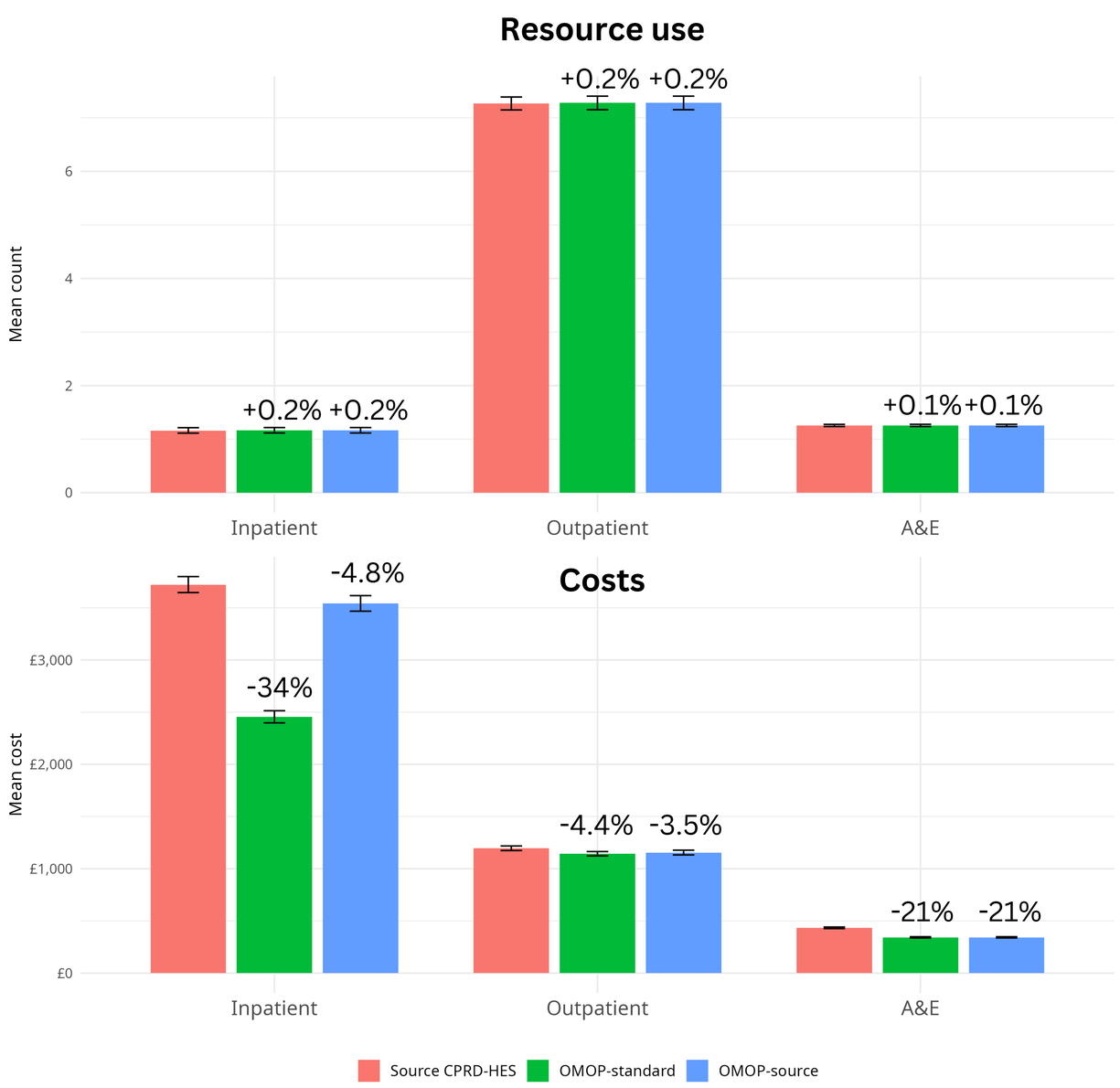


Figure 1: HCRU and Costs from Source CPRD-HES and OMOP

Percentages represent mean difference with respect to 'Source CPRD-HES'

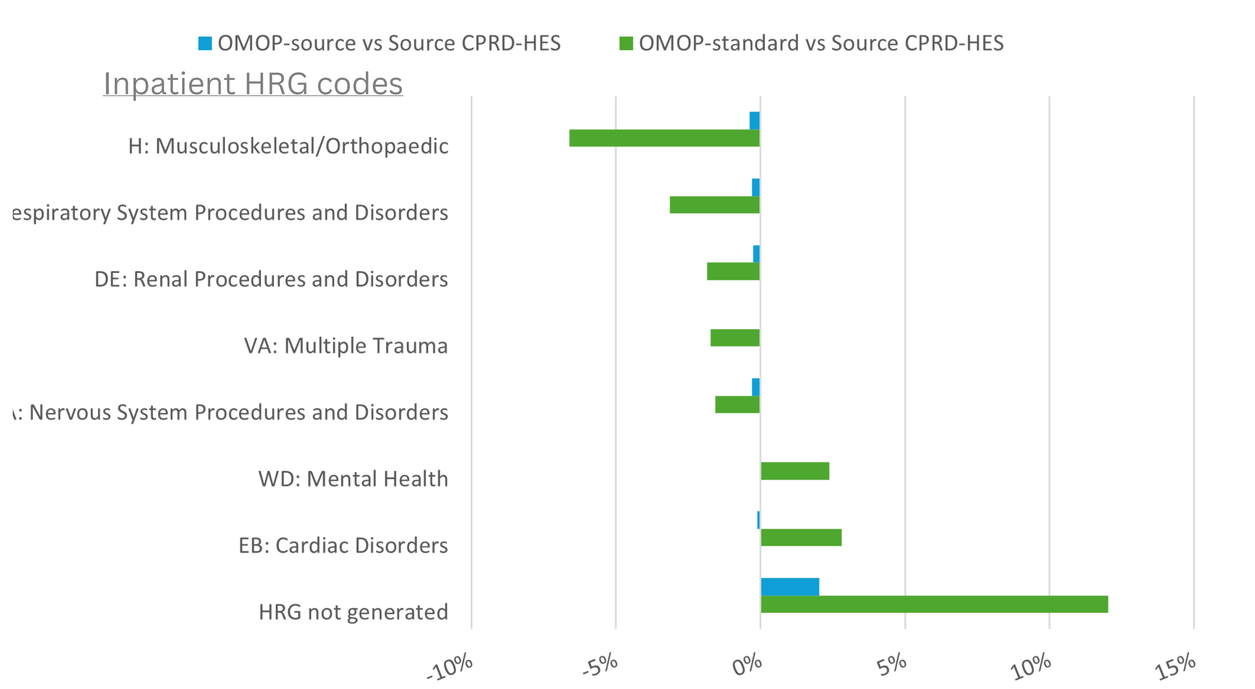


Figure 2: Differences in Inpatient HRGs, Source CPRD-HES vs. OMOP

Discussion

- Differences in hospital costs were due to lack of granularity and missing variables needed to derive HRGs and costs.
- In emergency care, HRGs could not be generated and costs were based on weighted unit costs.

Conclusions

- Further work should focus on **improving mapping** and vocabularies and creating a **common framework and guidance** for federated health economic analyses.

Contact: Gianluca.Fabiano@ndorms.ox.ac.uk