University | School of
of Glasgow | Computing Science

Mortality and Length of Stay in MIMIC III

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Lead of the Computing Technologies for Healthcare Theme

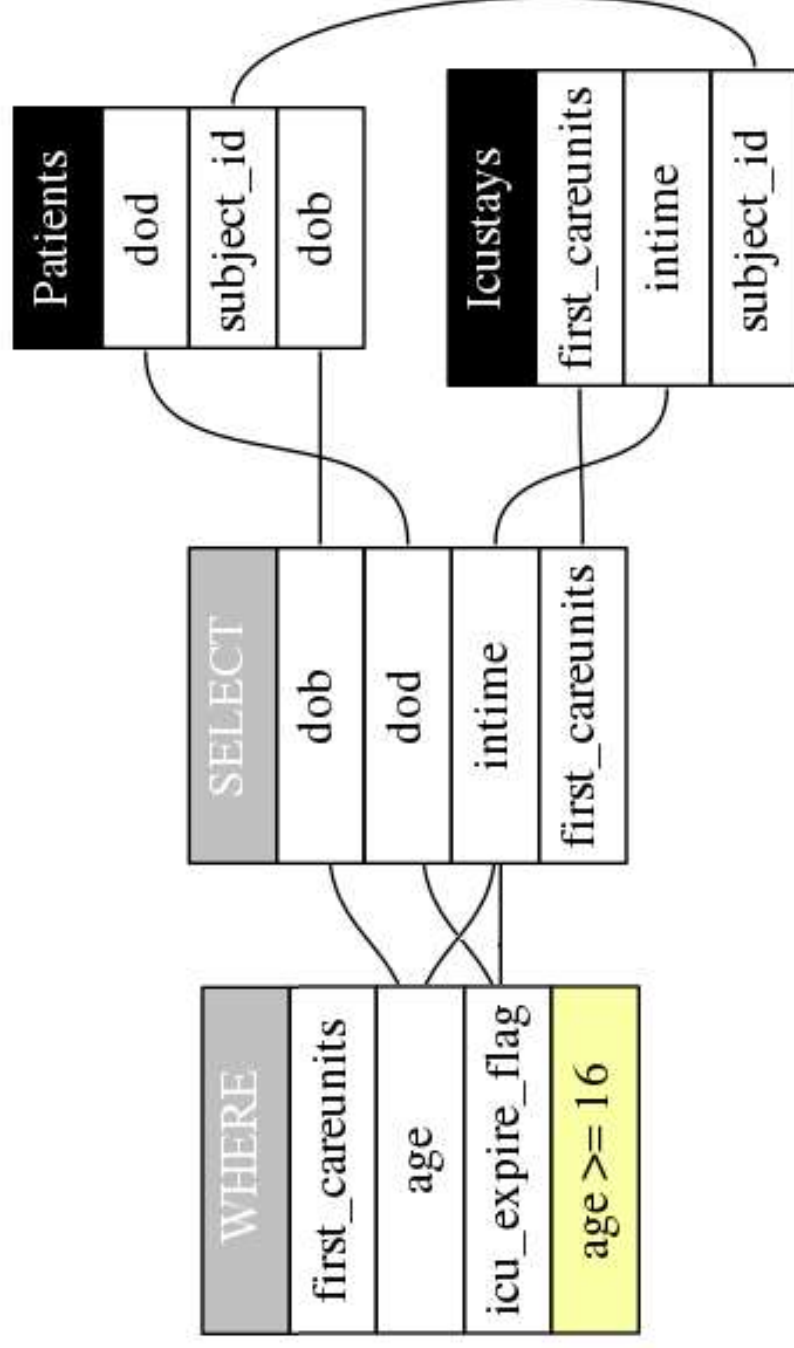**https://www.gla.ac.uk/schools/computing/staff/fanideligianni**
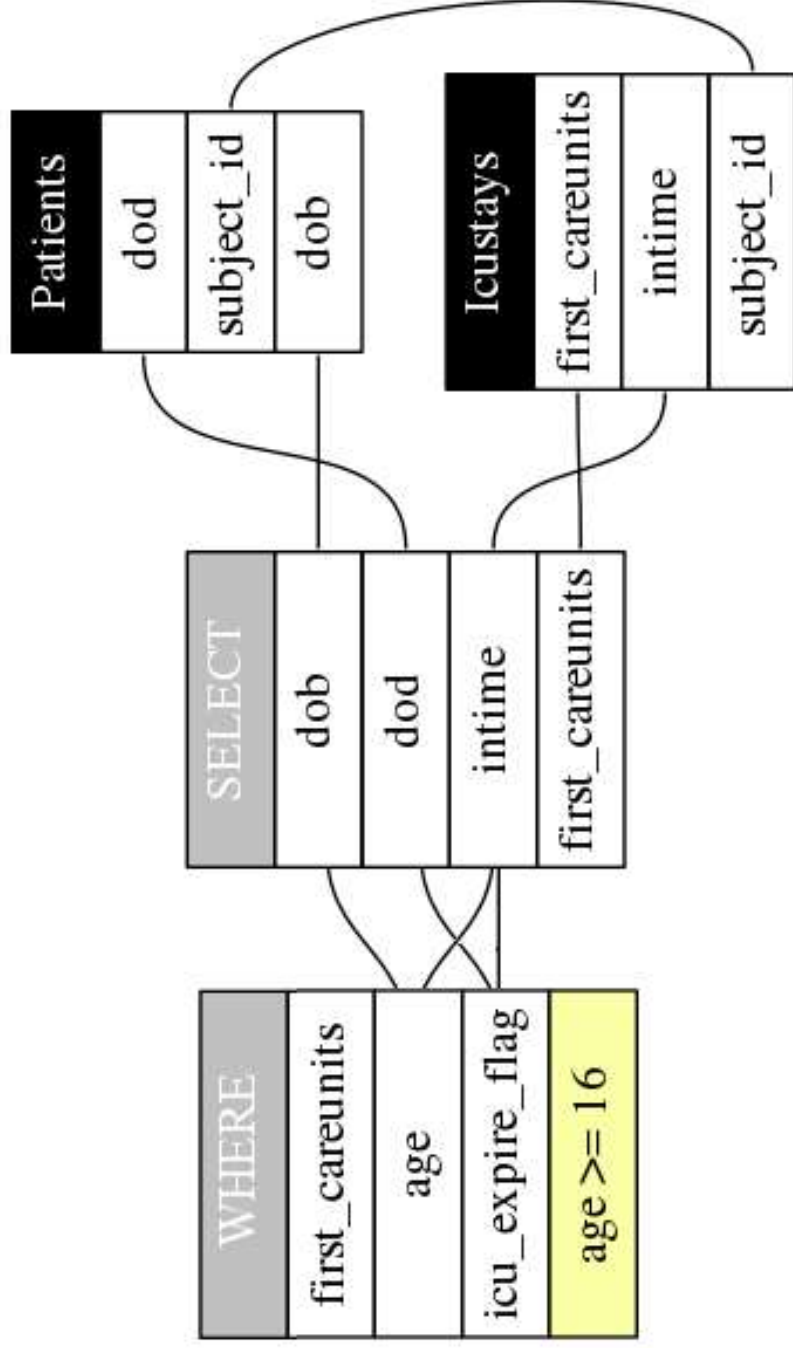
Mortality

- Most commonly used outcome in prediction studies
- Deceptively simple outcome to define
- Susceptible to selection biases
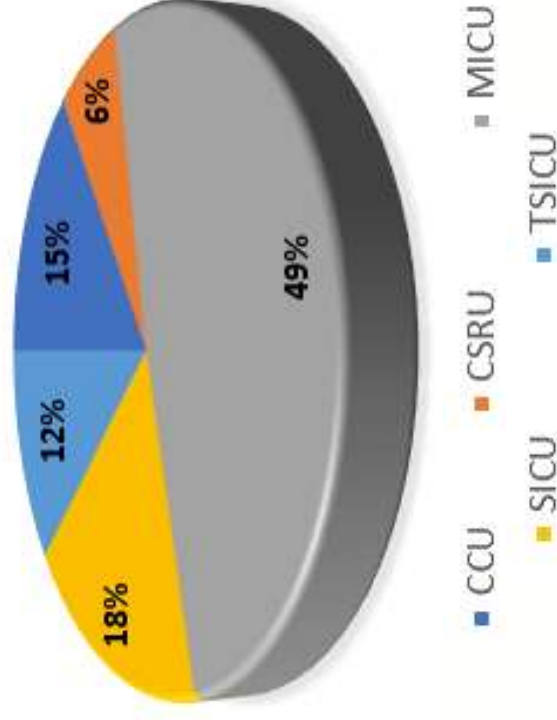- Interpretation varies according to the time window

MIMIC-III: ICU Mortality

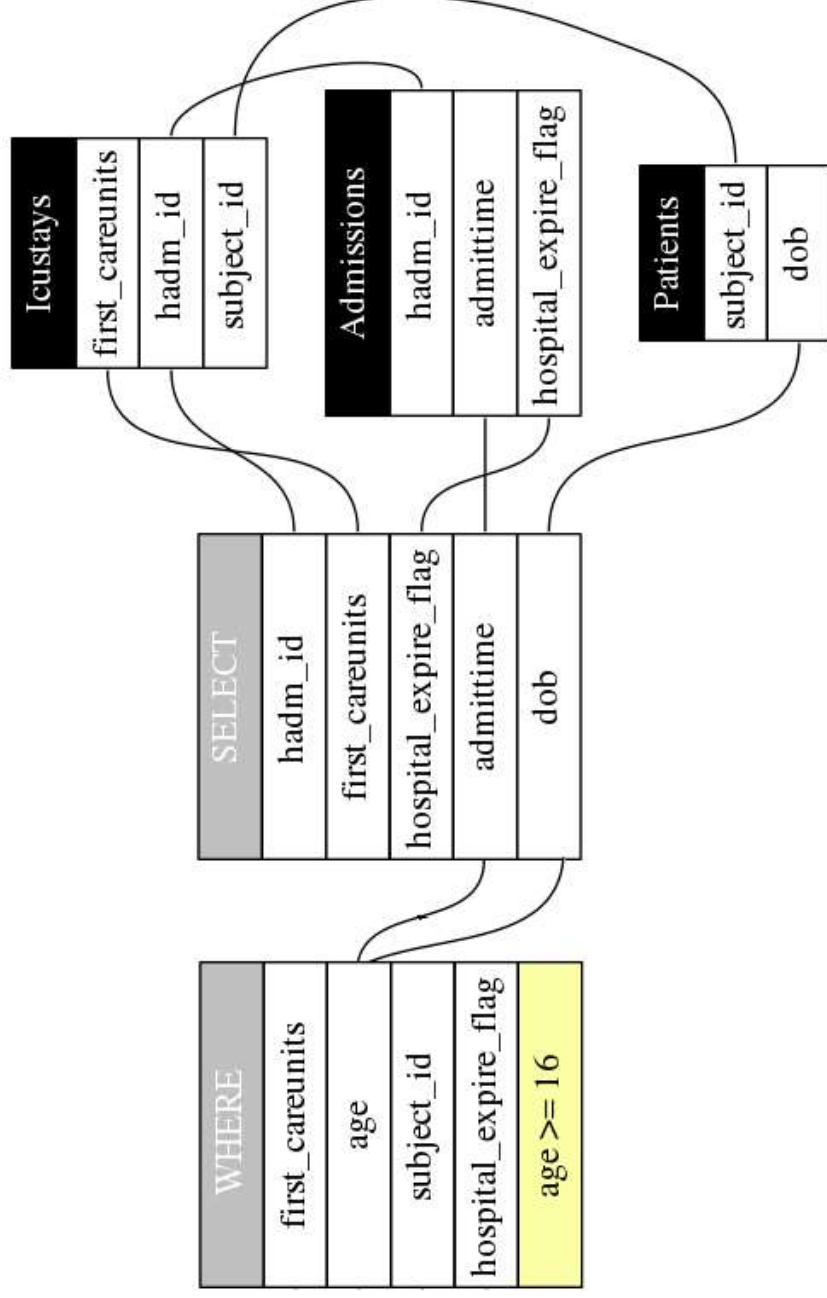| Patients	
dod	
subject_id	
dob	

Icustays	
first_careunits	
intime	
subject_id	

SELECT	
dob	
dod	
intime	
first_careunits	

WHERE	
first_careunits	
age	
icu_expire_flag	
age >= 16	

MIMIC-III: ICU Mortality

ICU MORTALITY
(PERCENT OF UNIT STAYS)

- CCU 49%
- SICU 18%
- CSRU 6%
- MICU 12%
- TSICU 15%

Total Mortality: 8.5% (4565 patients)

Patients: dod, subject_id, dob

Icustays: first_careunits, intime, subject_id

SELECT: dob, dod, intime, first_careunits

WHERE: first_careunits, age, icu_expire_flag, age >= 16

MIMIC-III: Hospital Mortality

MIMIC-III: Hospital Mortality

HOSPITAL MORTALITY
(PERCENT OF UNIT STAYS)

CCU 14%
SICU 18%
CSRU 6%
MICU 50%
TSICU 12%
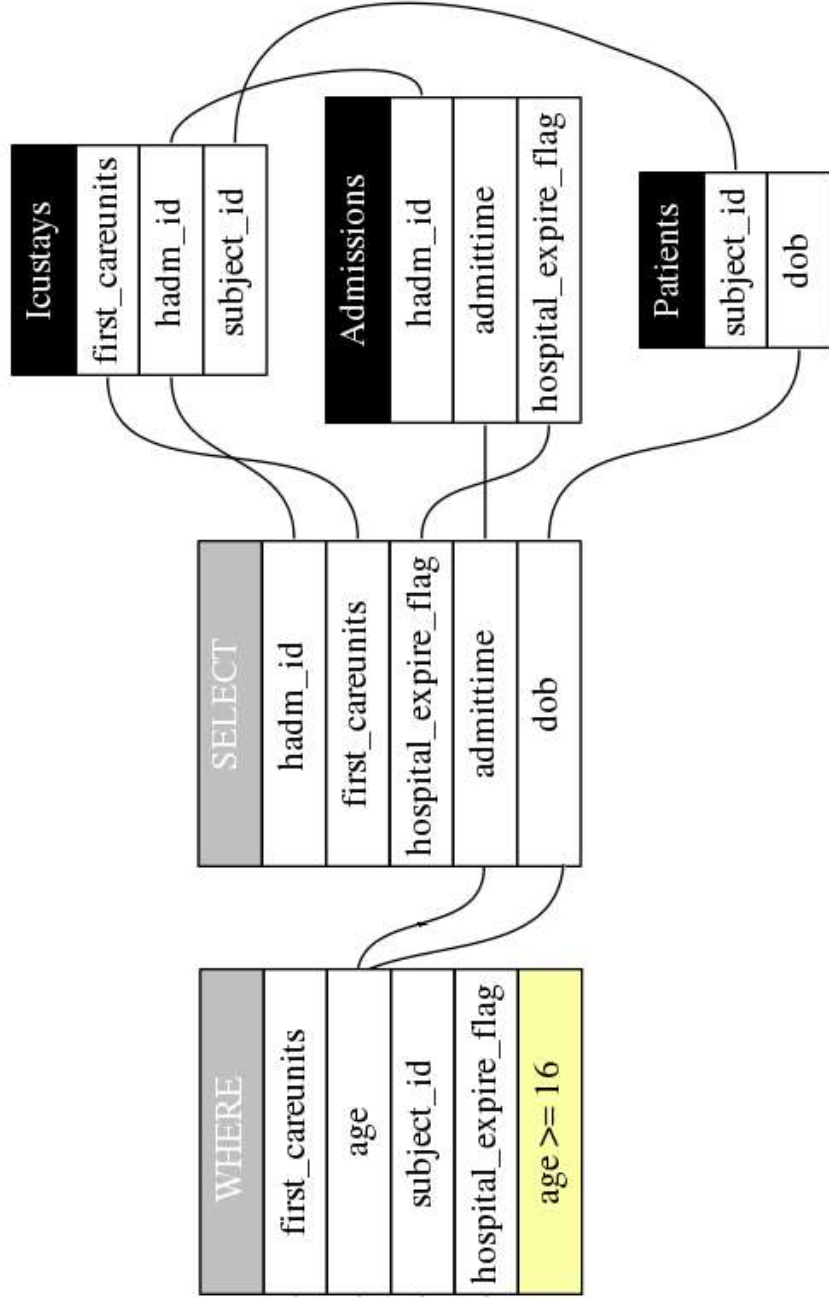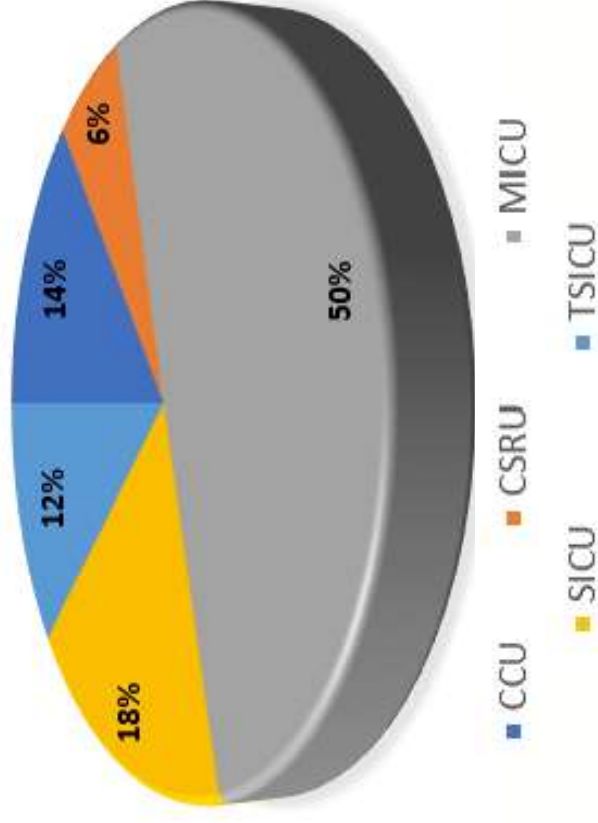
Total Mortality: 11.5% (5748 patients)

MIMIC-III: Mortality

ICU MORTALITY
(PERCENT OF UNIT STAYS)

6%
15%
12%
18%
49%
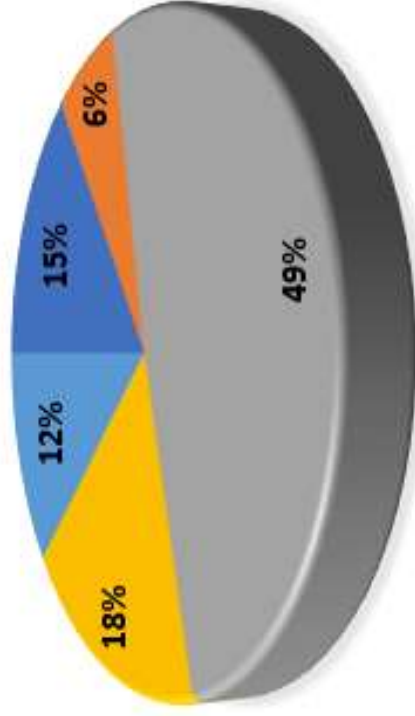
Legend: CCU, CSRU, MICU

Total Mortality: 8.5% (4565 patients)

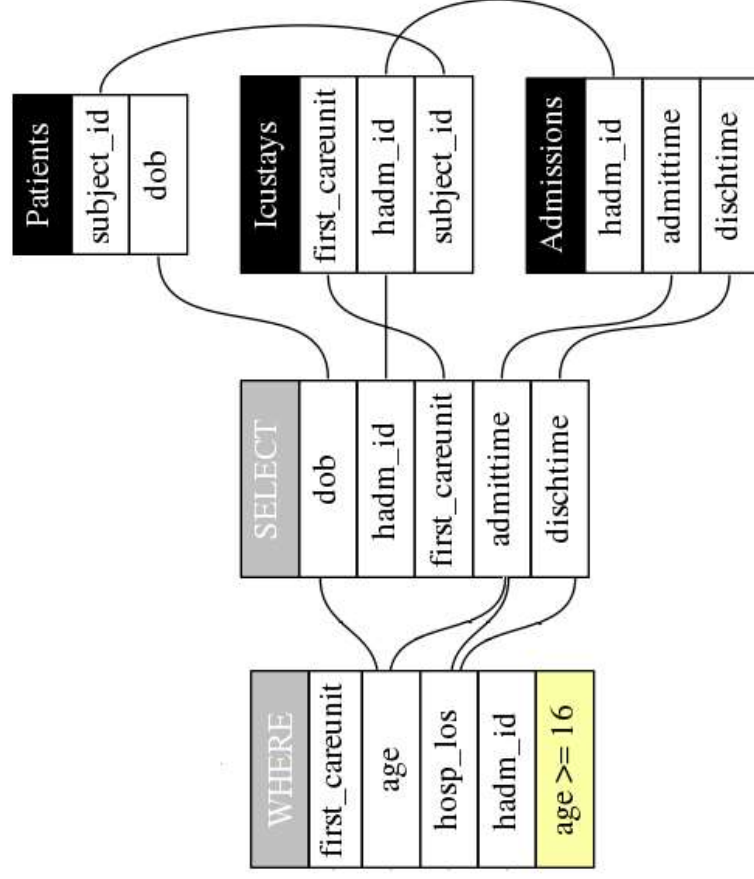## HOSPITAL MORTALITY
(PERCENT OF UNIT STAYS)

6%
14%
12%
18%
50%
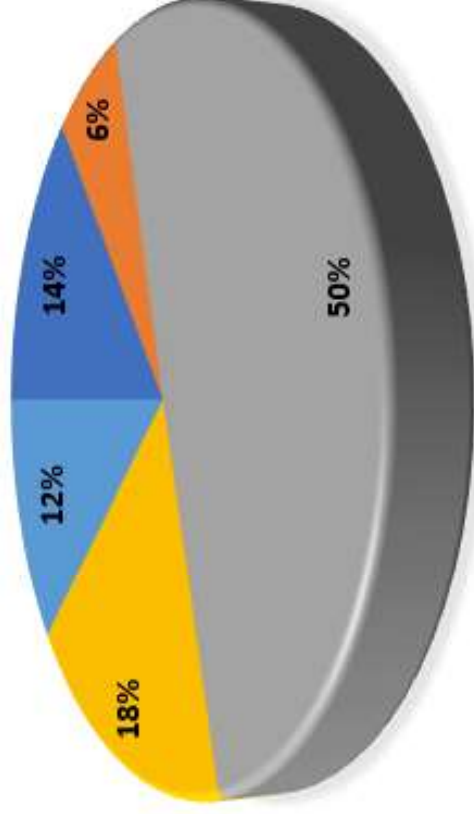
Legend: SICU, TSICU

Total Mortality: 11.5% (5748 patients)

MIMIC-III: Hospitalisation Length

MIMIC-III: Hospitalisation Length

Length of stay in hospital per intensive care unit
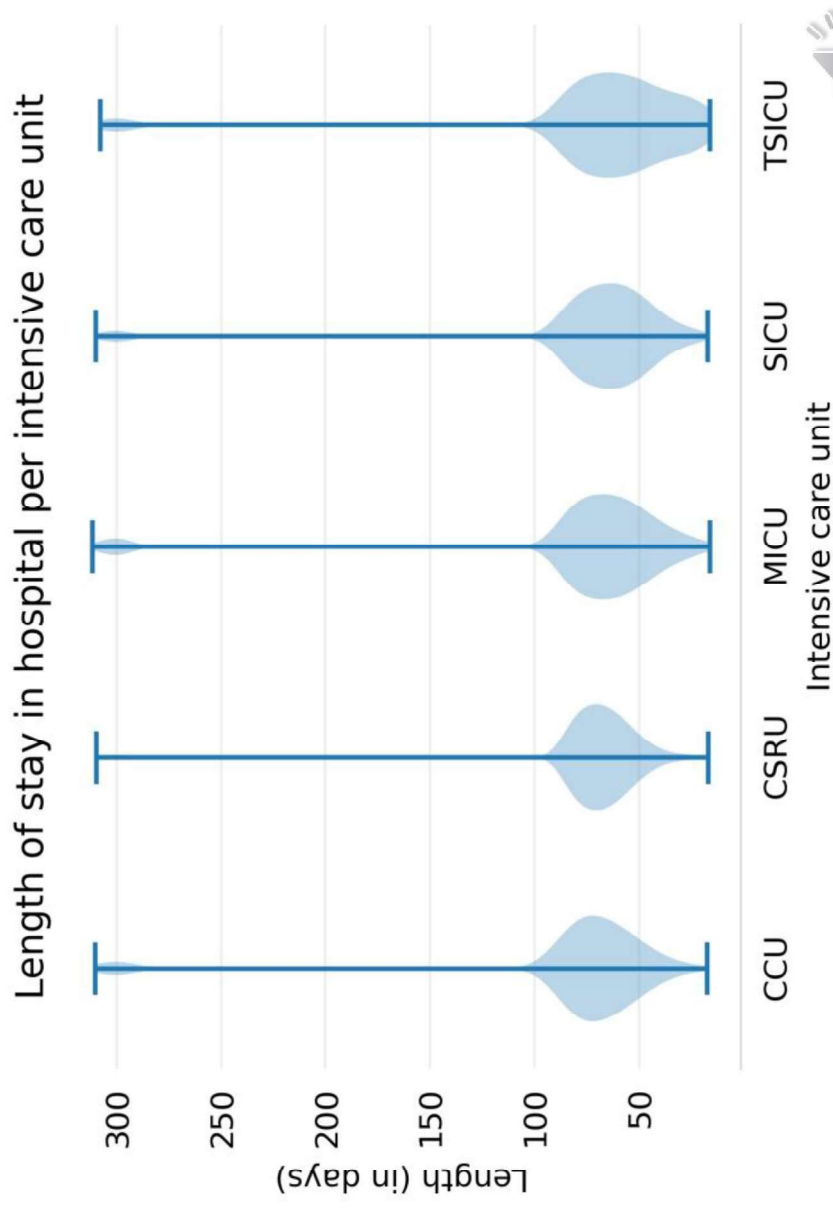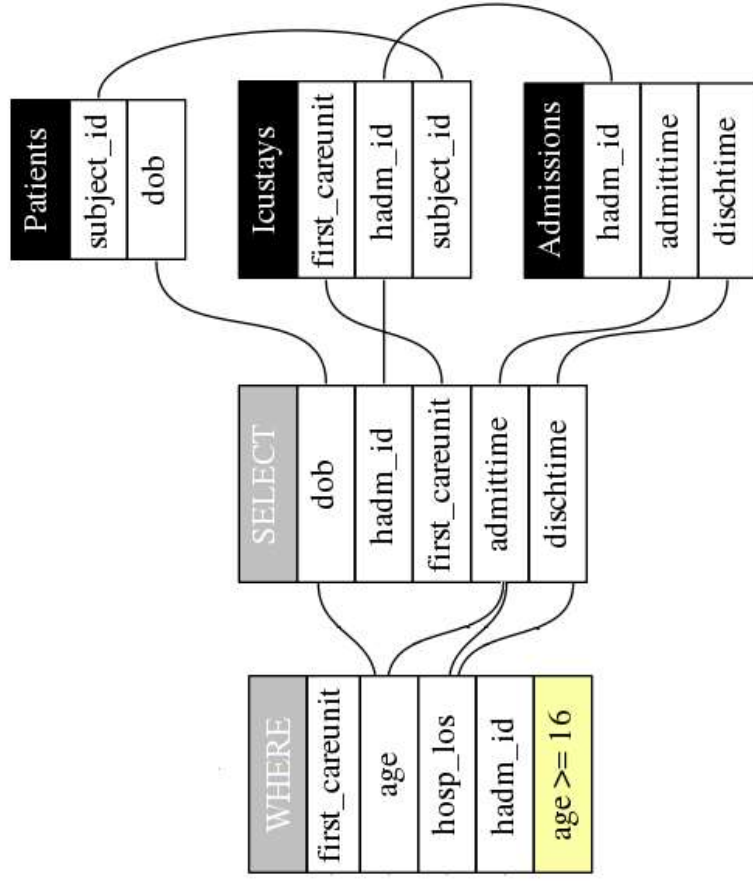
Summary

- Mortality and length of stay are common outcomes in prediction models

- They seem easy to define but small differences in their estimation can result in different conclusions

- MIMIC-III provides a useful substrate to understand how to form these queries and extract data

References

- Johnson et al. 'MIMIC-III, a freely accessible critical care database', Scientific Data, 2016.

- Gamal et al. 'Standardized electronic health record data modeling and persistence: A comparative review', Journal of Biomedical Informatics, 2020.