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Road choices of low mileage older drivers

Findings from the Ozcandrive older driver cohort study

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Maintaining safe mobility into older age

- Importance of driving for older people – maintaining independent lifestyle (WHO 2015)
- Loss of license associated with negative consequences: social isolation, depression, loss of independence, greater reliance others for mobility.



Maintaining safe mobility into older age

- Importance of driving for older people – maintaining independent lifestyle (WHO 2015)
- Loss of license associated with negative consequences: social isolation, depression, loss of independence, greater reliance others for mobility.
- Focus of Candrive/Ozcandrive: to **improve safe mobility of older drivers...** by informing strategic management of the safe mobility of current/future cohorts of older drivers, as they enter older age
- Objectives:
 - to develop a screening tool for clinicians to identify unsafe drivers, &
 - **to understand driving patterns of older drivers: how these change as drivers age & with changes in health and functional ability.**



Analysis of driving patterns: data sources

PARTICIPANTS

- Ozcandrive cohort: 257 drivers
- Age (at Y1) = 75-94 years (72% male)

FUNCTIONAL ASSESSMENTS

- Cognitive: MMSE, MOCA, Trail-Making B;
- Sensory: Visual Acuity (LogMAR), &
- Physical: Rapid Pace Walk

HEALTH AND WELLBEING

- Medications, Health conditions and symptoms
- Health and wellbeing survey

PERCEIVED DRIVING MEASURES

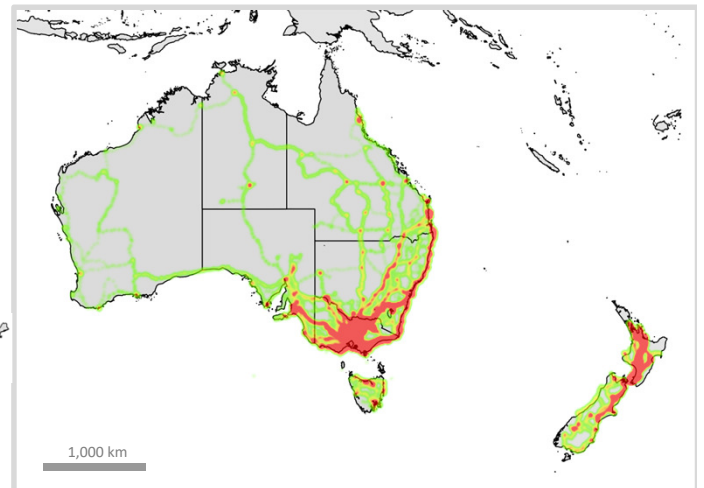
- Perceived Driving Abilities scale
- Driving Comfort Scale (Day/Night)



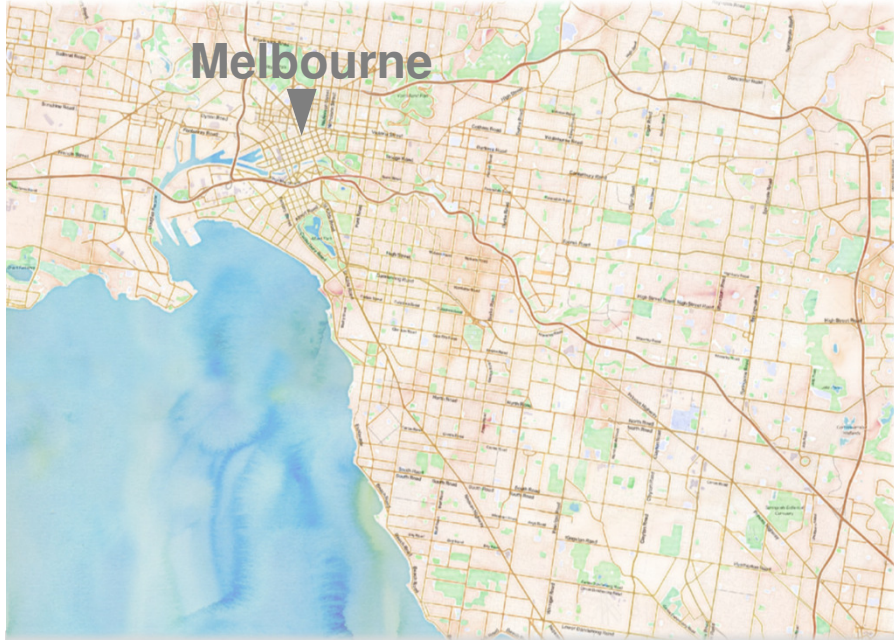
Annual update meeting
for participants

Ozdrive driving data collection to date

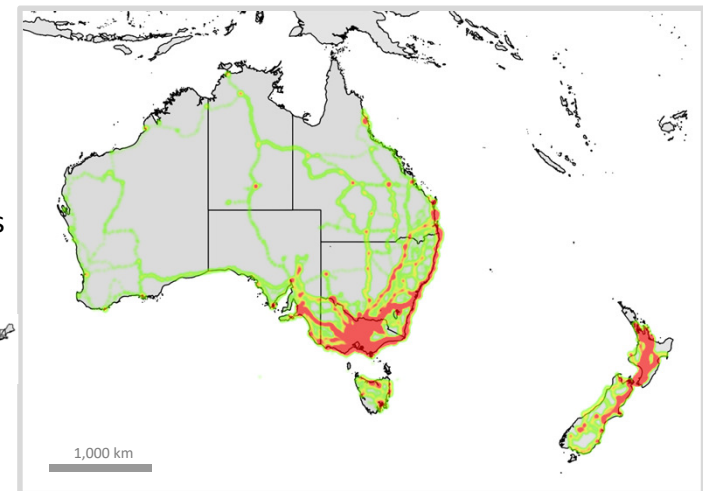
11.5 million kilometres



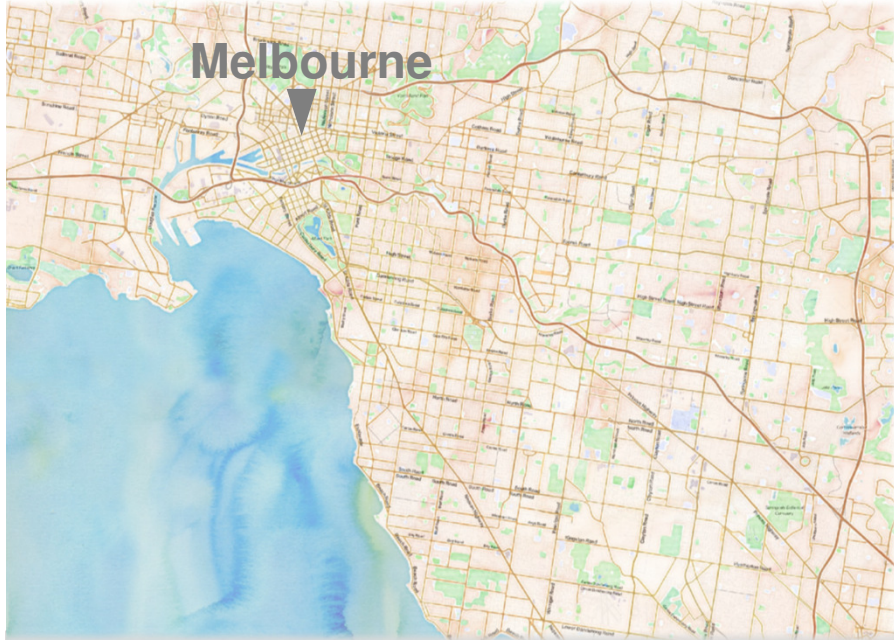
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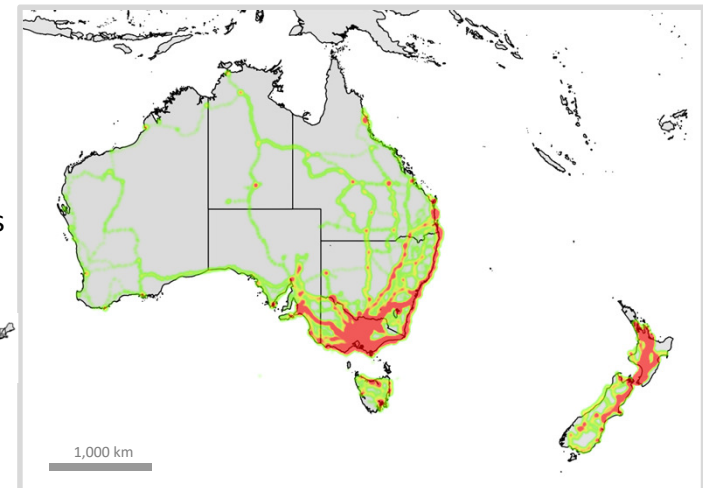
Ozdrive driving data collection to date



OpenStreetMap^[1] road types:

- **motorway:** 'M' network, freeway-like roads
- **primary:** main arterial roads, major rural city connections
- **secondary:** major through routes within a local area
- **tertiary:** minor through routes, lead into residential streets
- **residential:** residential streets

11.5 million kilometres



Problem

Older drivers with low annual mileages have an increased crash risk per kilometre driven compared with older drivers with high annual mileages.^[1,2]



Postulate

This inflated crash risk is due, at least in part, to an increased proportion of time spent on roads with increased situational complexity.

Problem

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Postulate

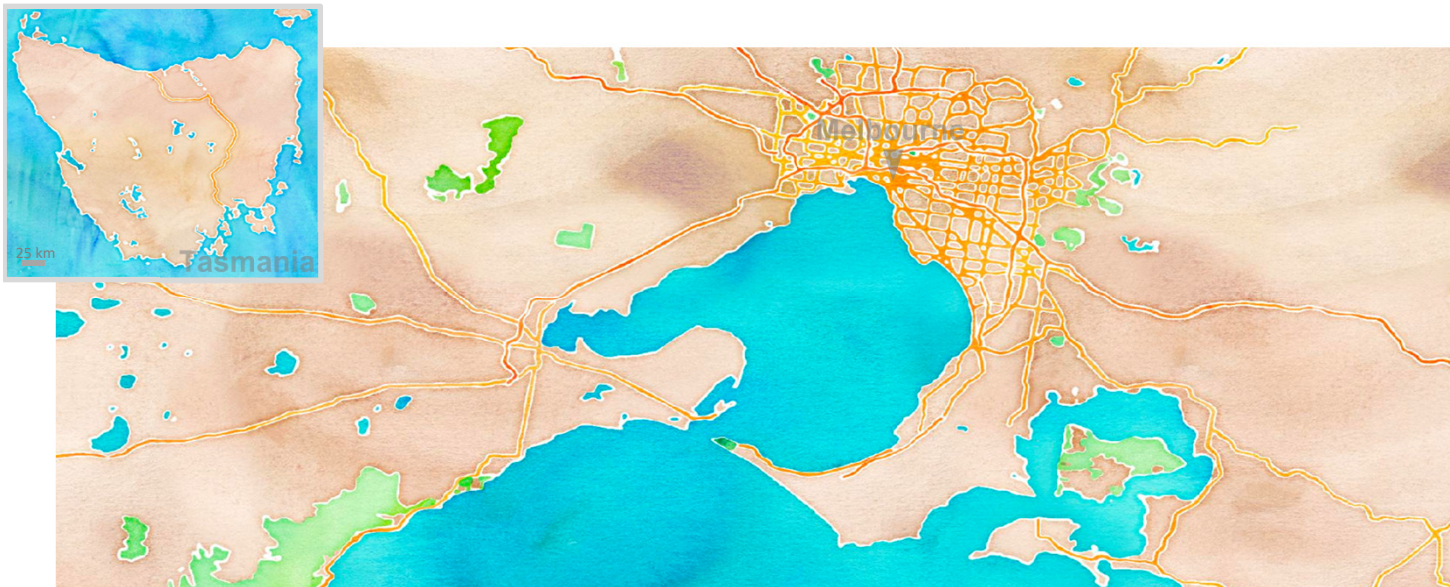
This inflated crash risk is due, at least in part, to an increased proportion of time spent on roads with increased situational complexity.

Methodology

- n=180, M age=79.7 years [SD=3.6, Range=75.0-94.0], male=71.1%,
- 1 year naturalistic driving recorded in participants cars
- Annual evaluations
- Data filtering (participant exclusion process)
- GPS outlier identification
- Map matching
- Analysis of naturalistic driving situations

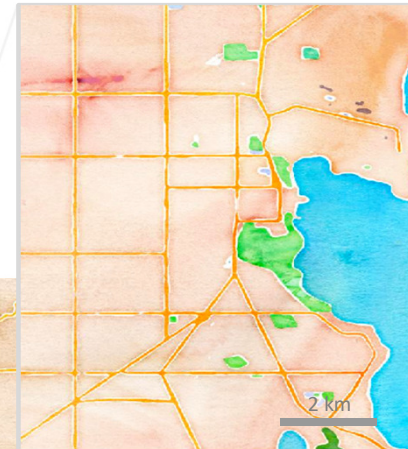


Example 1: High mileage driver (20,401 km)



- motorway
- primary
- secondary
- tertiary
- residential

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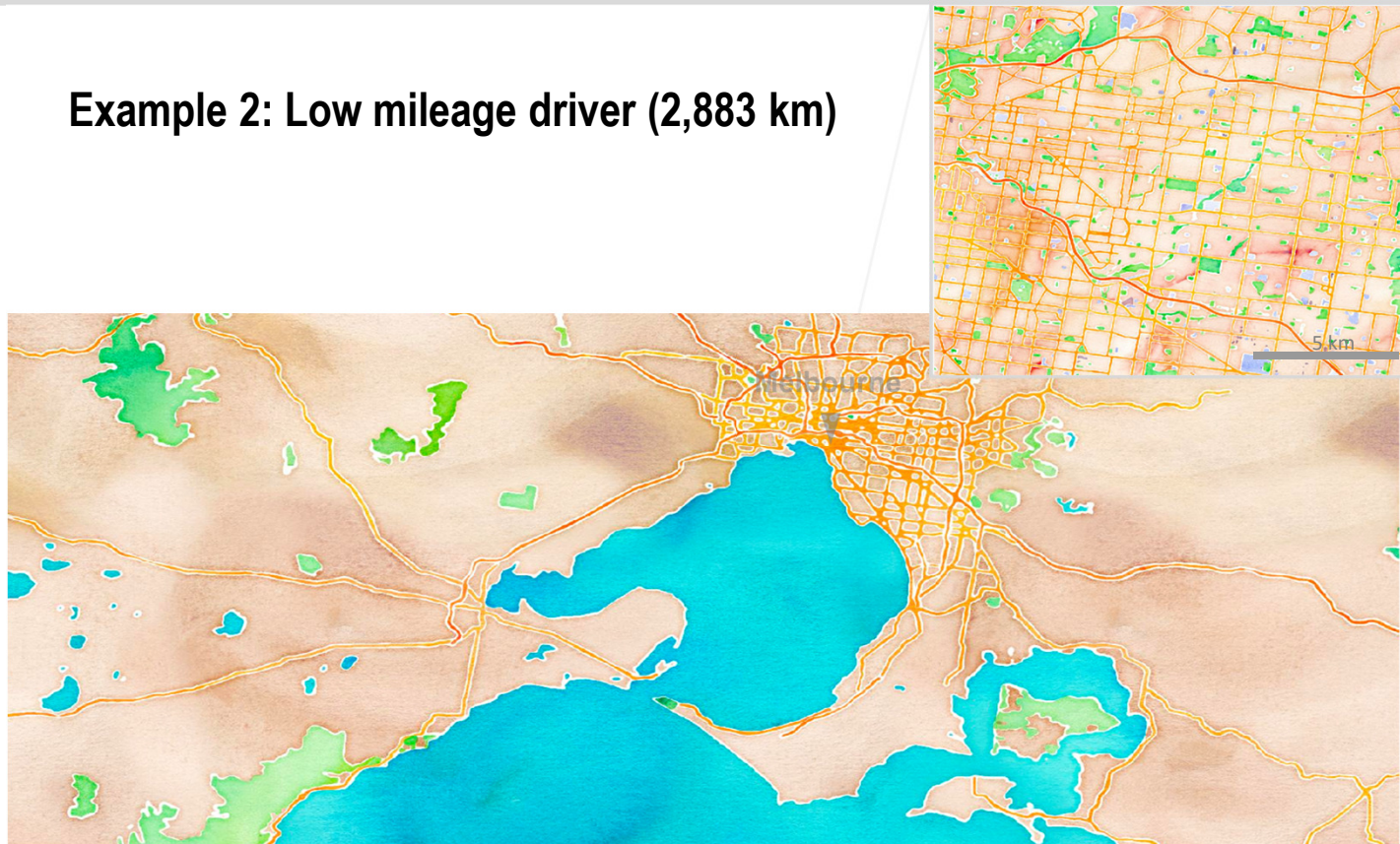
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- primary
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Example 2: Low mileage driver (2,883 km)



- motorway
- primary
- secondary
- tertiary
- residential

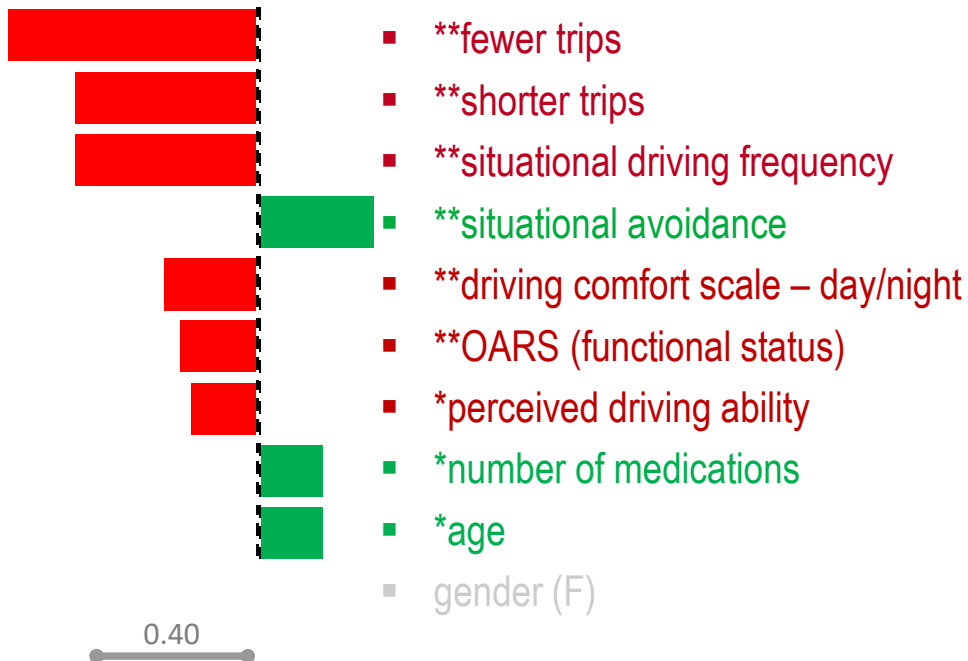
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Lower mileage older drivers – associations with annual mileage

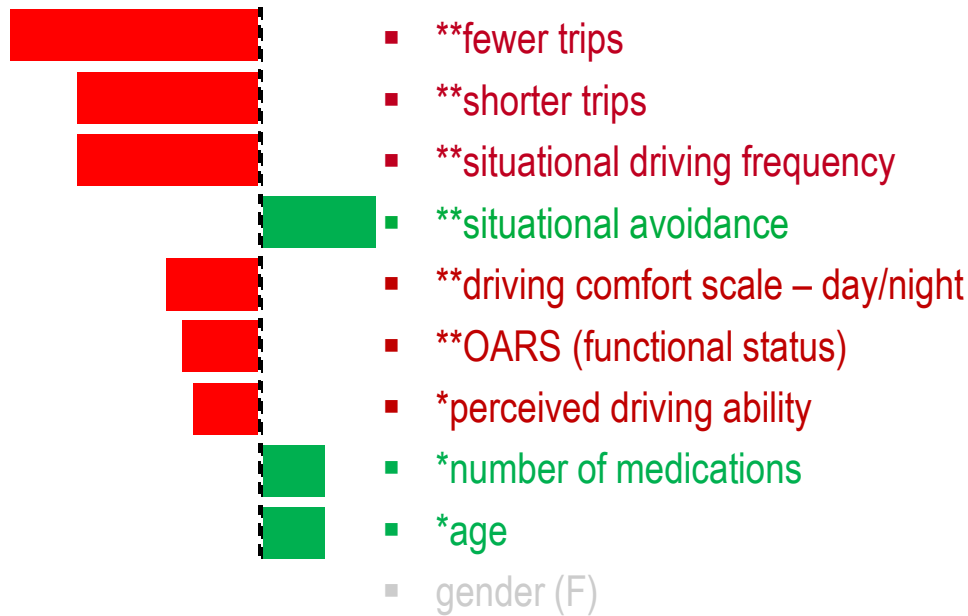
Naturalistic driving summary and self-reported measures:



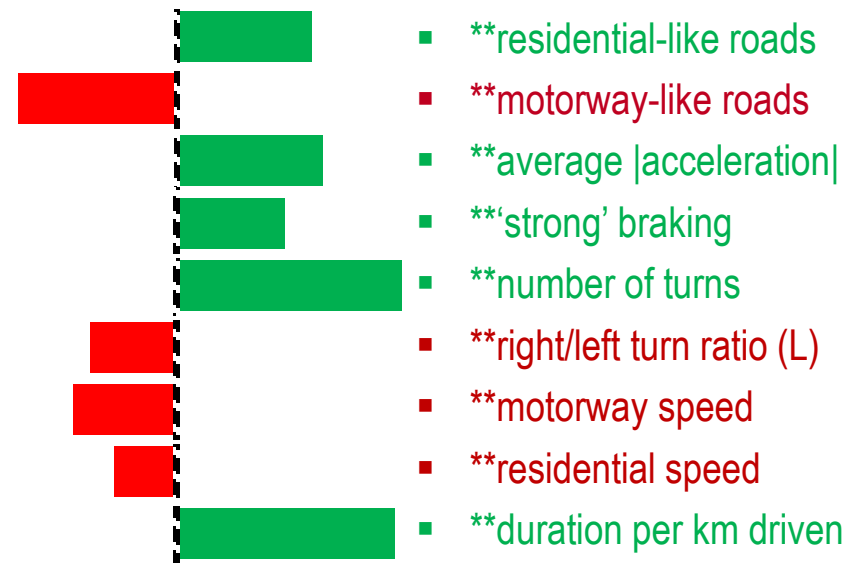
correlations - two-tailed T:
**(p<0.01), *(0.01≤p<0.05)

Lower mileage older drivers – associations with annual mileage

Naturalistic driving summary and self-reported measures:



Naturalistic driving detailed measures:



0.40

Summary

- Low mileage drivers from the Ozcandrive study appear to experience an increased driving complexity, per kilometre, in terms of road choices.
 - Increased use of residential roads
 - Less motorway driving
 - Increased number of turning manoeuvres, more acceleration and braking
 - Longer time driving per kilometre
- No significant correlations were elucidated between annual mileage and cognitive performance (mini-mental state exam), physical evaluation (rapid pace walk), visual acuity or basic activities of daily living scores.



Summary

- For year 1 of the study, there was no significant evidence of low mileage bias with mileage groups (≤ 5000 km, > 5000 and < 13000 km and ≥ 13000 km)^[1]
- Self-reported driving ability, comfort, and situational avoidance were negatively associated with annual mileage. They are older and on more medications.



Implications, limitations, recommendations

- Patterns suggestive increased situational complexity for low mileage drivers, per kilometre, and also of increased self-regulation (therefore indicative of improved safety).
- Limitations:
 - Majority of participants are based within the Metropolitan area (Melbourne region)
 - As drivers are using their own vehicle, some naturalistic driving parameters may be bias by model of vehicle. The vehicles were required to be relatively new (2006 or later)
 - Analysis is from year 1 where participants are in relatively good health, and satisfy the recruitment criteria (*e.g.* drive at least four times a week)
- Further work could investigate how driving behaviour may change over time as participants' age and potentially develop age-related declines and/or medical conditions.





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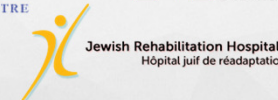


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Questions

