

# Spatial analysis of pedestrian falls in New Zealand: Summary of Results

**This report** summarises the results of a study undertaken in 2019 to examine the built environment around the location of pedestrian falls in New Zealand using existing spatial data.

## What is the problem?

Falls are a leading cause of injury and accidental death for older adults in New Zealand<sup>1</sup>. Around one third of adults aged 65 or older fall each year, and about one third of these falls occur outside in public spaces.

The risk of falling outdoors can deter some older adults from walking, and the resulting physical inactivity can lead to other health concerns. Despite this, research into pedestrian falls has been limited, partially due to the difficulty identifying the location of a fall.

## Key questions:

1. **Where** do pedestrian falls happen in New Zealand?
2. **Who** is most likely go to hospital following a pedestrian fall?
3. **Which areas** have more pedestrian falls?

## What did we do?

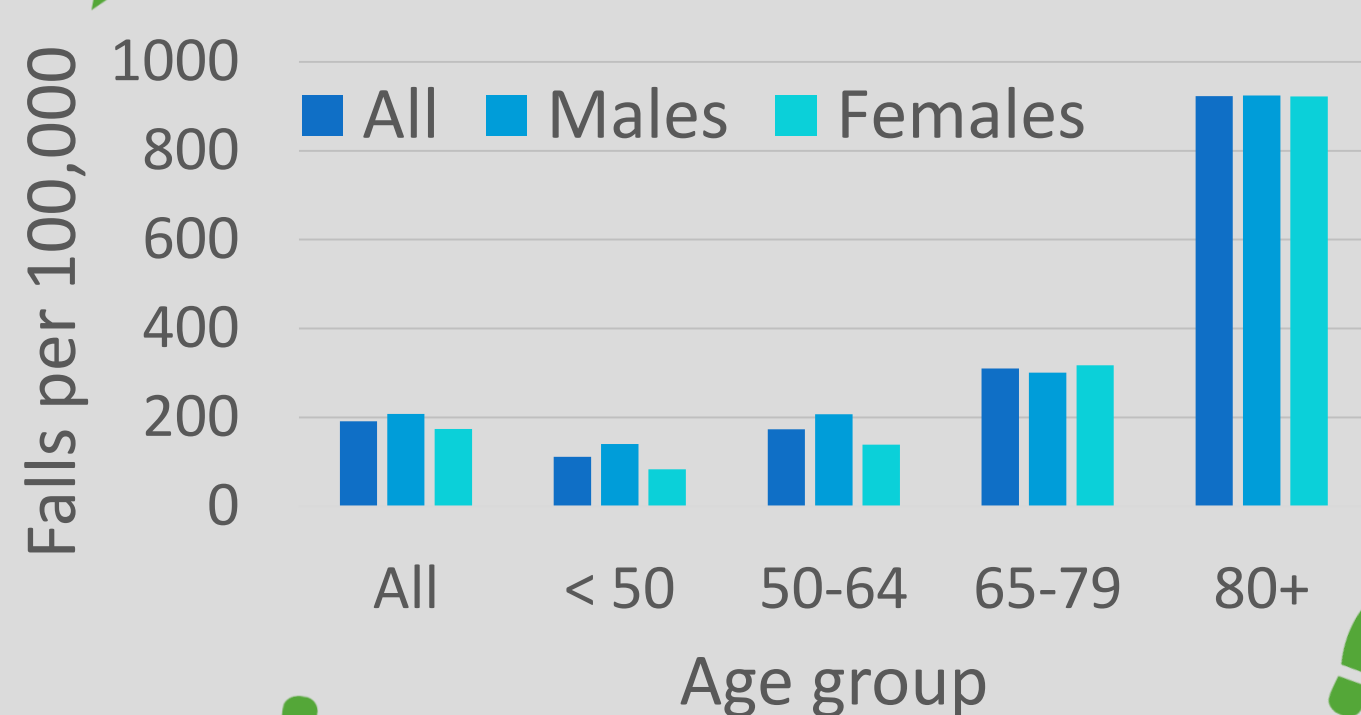
We used data from **St John** which recorded the locations of pedestrian falls that were attended by an ambulance. The data were anonymous but contained a small amount of information about the person who had fallen e.g. age, sex, home neighbourhood. We connected the fall locations to other data, such as weather, slope, social deprivation, and estimated the distance between home neighbourhood and fall location. We then used this information to look for patterns.

## What did we find?

Fall rates among men age 64 and younger are higher than among women, but fall rates are similar for both men and women in older age groups (65+).

**St John** covers all of New Zealand except the Wellington Region.

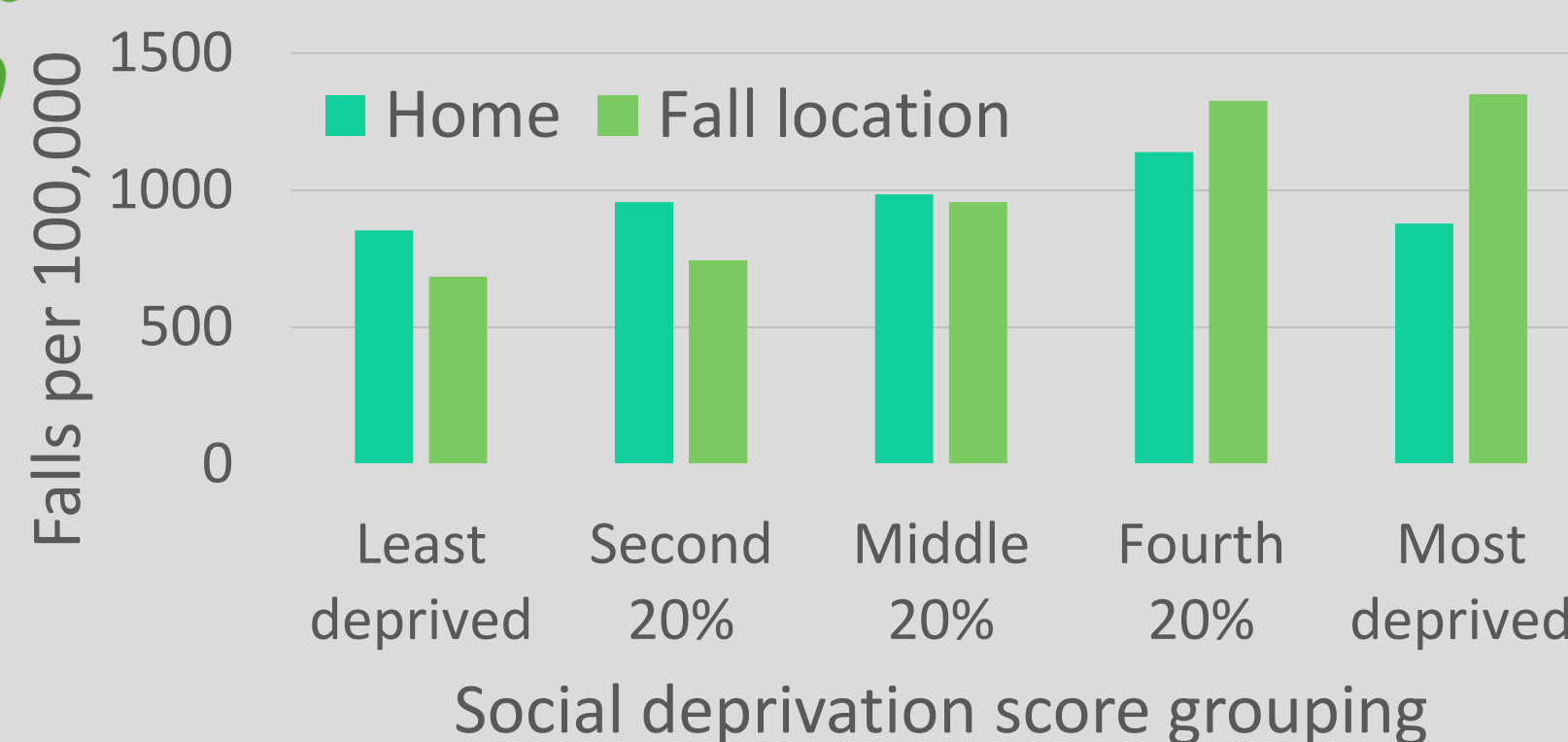
Fall rate by age and sex



Fall rates among those over 80 were highest within 400m of their home neighbourhood.

Although falls occur more often in more deprived areas, this pattern is weaker when looking at deprivation according to the home location of the person who fell. This means that while falls may happen in more deprived areas, people living in more deprived areas are not necessarily more susceptible.

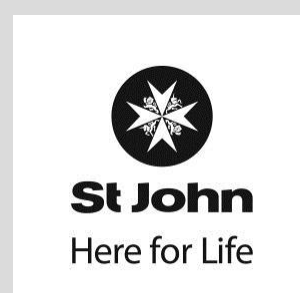
Fall rates by social deprivation among those over 80



Those of non-European ethnicity were less likely to be transported to hospital by ambulance, but the quality of our ethnicity data is poor.

## What next?

- This study was a first step towards understanding the locations in which falls occur.
- We have been looking at the locations of falls in greater detail using a 'virtual audit' tool to examine features of the built environment.
- We have also been talking to older adults about what they perceive hazards and falls risk to be in these locations.



## Want more information?

If you have any questions or suggestions, or would like further information, please email [angela.curl@otago.ac.nz](mailto:angela.curl@otago.ac.nz).

This summary is based on the following academic article: Watkins, A., Curl, A., Mavoa, S., Tomintz, M., Todd, V., & Dicker, B. (2020). A socio-spatial analysis of pedestrian falls in Aotearoa New Zealand. *Social Science & Medicine*, <https://doi.org/10.1016/j.socscimed.2020.113212>

## References

1. NIQS (2019). NZ Injury Query System. <https://psm-dm.otago.ac.nz/nigs/>

Please reference this document as: Watkins, A., Curl, A., Mavoa, S., Tomintz, M., Todd, V., & Dicker, B. (2020). Spatial analysis of pedestrian falls in New Zealand: Summary of results. Downloadable from: <http://hdl.handle.net/10523/10468>