

# New study shows vast geographic variation in hip fracture risk

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An extensive study of country-specific risk of hip fracture and 10-year probability of a major fragility fracture has revealed a remarkably large geographic variation in fracture risk. Even accounting for possible errors or limitations in the source data, there was an astonishing 10-fold variation in hip fracture risk and fracture probability between countries.

'A systematic review of [hip fracture](#) incidence and probability of fracture worldwide', authored by the International Osteoporosis Foundation (IOF) Working Group on Epidemiology and Quality of Life, has today been published in the journal *Osteoporosis International*. The aim of the study was to update the available information base on the global heterogeneity in the risk of hip fracture. Age-standardised hip fracture rates from 63 countries were compiled. Additionally, the study documents variations in major fracture probability as determined from 45 [FRAX](#) models from 40 countries.

## Hip fracture data used to determine global burden of osteoporosis:

[Fragility fractures](#), which affect approximately one in three women and one in five men over the age of fifty worldwide, represent an immense human and health-economic burden.

Hip [fractures](#) are used to determine international burden of osteoporosis because, unlike for example, [vertebral fractures](#), the majority of hip fractures are treated (and therefore recorded) in hospitals or clinics. As a result, much more is known about the epidemiology of hip fracture than about other osteoporotic fractures. Furthermore, although hip fractures account for less than 20% of all osteoporotic fractures, they account for the majority of fracture-related [medical costs](#) and mortality in individuals over the age of 50.

## Online maps to chart worldwide hip fracture

## rates and probabilities:

Data from the study is the basis for the all-new online global hip fracture incidence and 10-year fracture probability maps, which were presented today by IOF prior to opening of the European Congress on Osteoporosis & Osteoarthritis in Bordeaux, France. There will be three colour-coded maps documenting hip fracture incidence (for men, women, and both sexes) and two FRAX maps (for men and women). The maps, which will soon be finalized on the International Osteoporosis Foundation website at <http://www.iofbonehealth.org>, will be periodically revised as new data becomes available.

IOF President John A. Kanis stated, "These are the first visual, interactive, and referenced maps which depict the burden of hip fractures and FRAX-derived 10-year fracture probabilities. The maps will be a valuable resource for researchers, students, health policy officials or others who require epidemiological data and comparative statistics on osteoporotic fractures."

## The challenge: how to explain the vast variation worldwide:

The study found a marked variation in hip fracture rates between countries. In women, the lowest annual age-standardised incidences (based on recent reliable data) were found in Tunisia and Ecuador with 58 and 73 per 100,000 persons respectively. The highest incidences were in Northern European countries, with 574 and 563 per 100,000 in Denmark and Norway respectively. There was approximately a 10-fold range in hip fracture incidence worldwide.

Within countries, the age-standardised incidence of hip fracture in men was approximately half that noted in women. Where higher rates were observed in women, higher rates were generally found in men and vice versa. Geographic patterns

were similar for men and women, although there was a notable difference in Russia where women are shown as moderate risk, men as high. Generally, the highest risk countries for both genders are in North Western and Central Europe. High risk countries outside of Europe include Lebanon, Oman, Iran, Hong Kong, Singapore, and Taiwan. In the USA, ethnic-specific rates place Caucasian women at high risk, whereas Hispanic, Asian and Black populations are at low risk.

The challenge for researchers is to understand why the worldwide variation in hip fracture rates and in FRAX 10-year probability of fracture is so large - larger still than the significant variation between men and [women](#). It is hoped that improved understanding of the reasons for this heterogeneity may lead to global strategies for the prevention of fractures.

**More information:** A systematic review of hip fracture incidence and probability of fracture worldwide. Kanis J. A., Odén A., McCloskey E.V., Johansson H, Wahl D.A., Cooper C. on behalf of the IOF Working Group on Epidemiology and Quality of Life. *Osteoporos Int*  
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