Diet high in red meat—Level 3 risk

Summary In 2019, a diet high in red meat was responsible for 23·9 million (95% UI 15·6–32·0) DALYs and 896 000 deaths (536 000–1 250 000). It was the fifth-leading dietary risk factor for attributable DALYs.

Definition Diet high in red meat is defined as any intake (in grams per day) of red meat including beef, pork, lamb, and goat but excluding poultry, fish, eggs, and all processed meats.

	Total sources
Exposure	760
Relative risk	92

Table 1: Total sources used in GBD 2019 estimation

What is new in GBD 2019?

- To better characterise the dietary intake of red meat at the country level, we used data from FAO supply utilisation accounts in place of data from food balance sheets.
- The method of bias adjustment for non-dietary recall surveys was updated using MR-BRT.
- We found sufficient evidence supporting the causal relationship of red meat intake with ischaemic heart disease, breast cancer, haemorrhagic stroke, and ischaemic stroke and added these outcomes.
- We updated the dose–response curve of relative risk for red meat and all of its outcomes based on the most recent epidemiological evidence and a newly developed method for characterising the risk curve.
- The red meat TMREL changed from 22·5 to 0 grams/day.

	Deaths		YLLs		YLDs		DALYs	
	Number (millions)	Rate (per 100 000)	Number (millions)	Rate (per 100 000)	Number (millions)	Rate (per 100 000)	Number (millions)	Rate (per 100 000)
2019								
Both sexes	0·896 (0·536 to 1·25)	11·3 (6·8 to 15·9)	19·6 (12·0 to 27·1)	238·4 (145·4 to 329·8)	4·26 (2·76 to 6·02)	51·3 (33·2 to 72·5)	23·9 (15·6 to 32·0)	289·8 (189·0 to 388·9)
Females	0·411 (0·251 to 0·574)	9·4 (5·7 to 13·1)	7·96 (5·04 to 10·8)	183·4 (116·0 to 248·0)	2·20 (1·44 to 3·11)	51·0 (33·3 to 72·1)	10·2 (6·82 to 13·3)	234·4 (157·1 to 307·5)
Males	0·485 (0·282 to 0·687)	13·5 (7·9 to 19·2)	11·6 (6·83 to 16·5)	296·9 (174·0 to 420·1)	2·06 (1·33 to 2·90)	51·7 (33·3 to 73·0)	13·7 (8·67 to 18·7)	348·5 (219·4 to 478·1)
Percentage change 2010–19								
Both sexes	18·5% (10·6 to 27·6)	−9·2% (−15·1 to −2·7)	13·6% (5·2 to 23·3)	−9·7% (−16·2 to −2·1)	35·3% (31·5 to 39·5)	8·1% (5·2 to 11·4)	17·0% (9·2 to 25·6)	−7·0% (−13·0 to −0·2)
Females	17·6% (7·9 to 28·1)	−10·5% (−17·9 to −2·5)	12·9% (2·5 to 23·8)	−10·9% (−19·2 to −2·2)	34·4% (29·8 to 39·2)	7·4% (3·7 to 11·2)	16·9% (7·7 to 26·4)	−7·5% (−14·8 to 0·0)
Males	19·3% (8·0 to 32·5)	−8·2% (−16·3 to 1·2)	14·1% (2·9 to 27·5)	−8·8% (−17·6 to 1·9)	36·3% (31·6 to 41·7)	8·8% (5·0 to 13·2)	17·0% (6·6 to 29·3)	−6·6% (−14·6 to 3·2)

Numbers in parentheses are 95% uncertainty intervals.

Table 2: Attributable global deaths, YLLs, YLDs, and DALYs in counts and age-standardised rates for both sexes combined, females, and males, 2019, with percentage change between 2010 and 2019

	Deaths	YLLs	YLDs	DALYs
1990	20th	25th	27th	27th
2010	22nd	23rd	25th	26th
2019	20th	21st	21st	23rd

Table 3: Rank among attributable Level 3 risks plus most detailed Level 2 risks of global deaths, YLLs, YLDs, and DALYs in 1990, 2010, and 2019 for both sexes combined

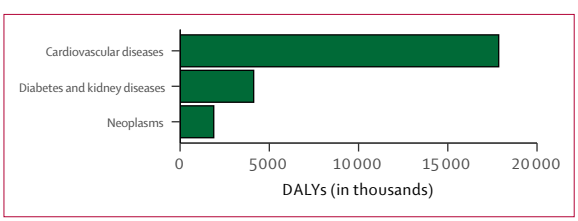

Figure 1: Composition of attributable global DALYs by constituent Level 2 causes for both sexes combined, 2019

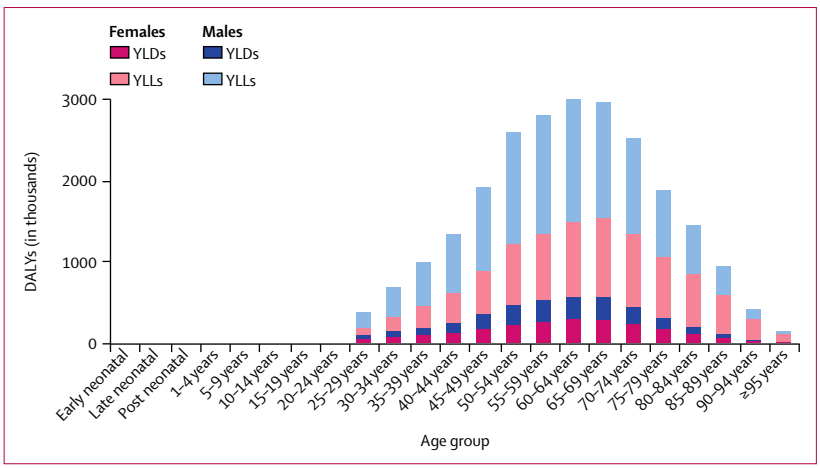

Figure 2: Composition of attributable global DALYs by YLLs and YLDs, age group, and sex, 2019

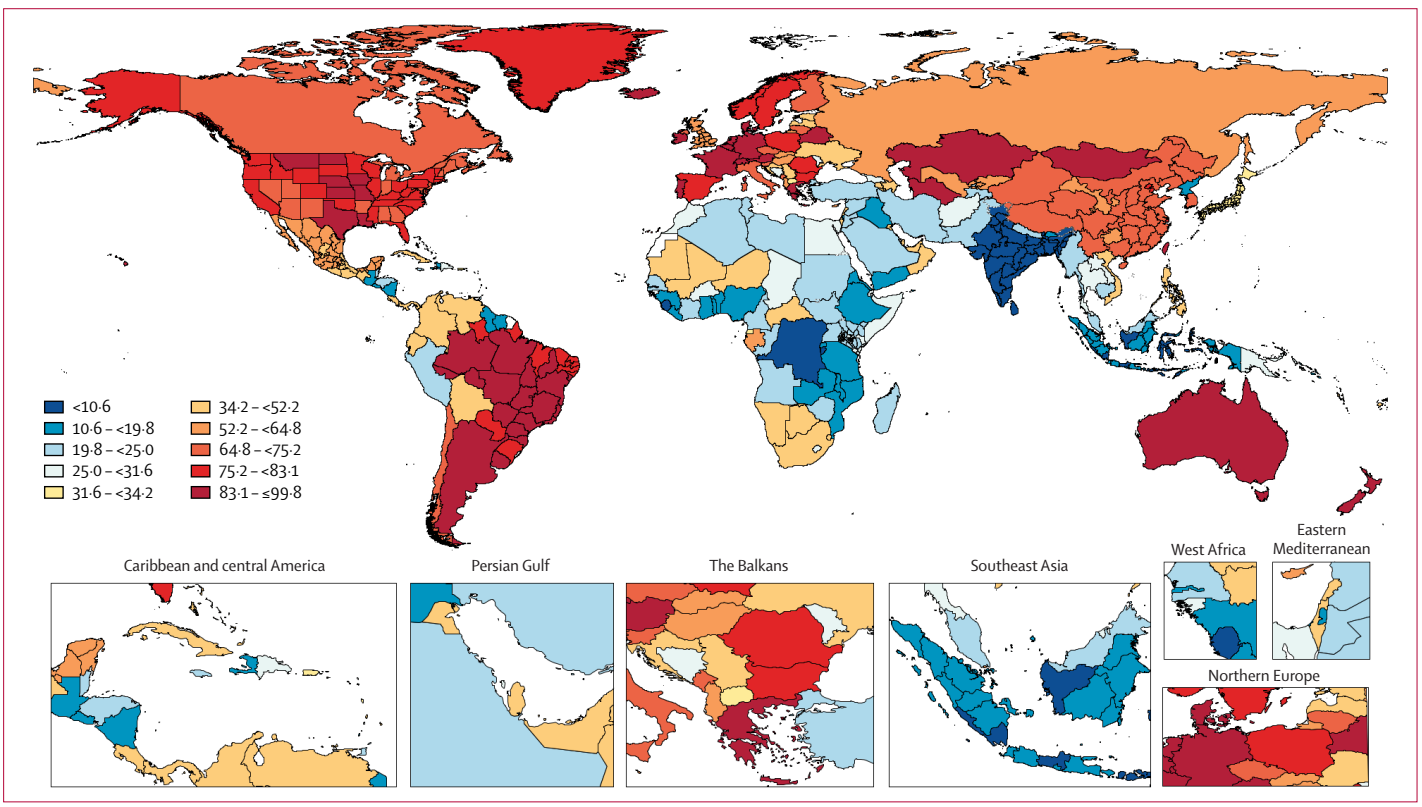

Figure 3: **Age-standardised all-cause SEV by location, both sexes combined, 2019**

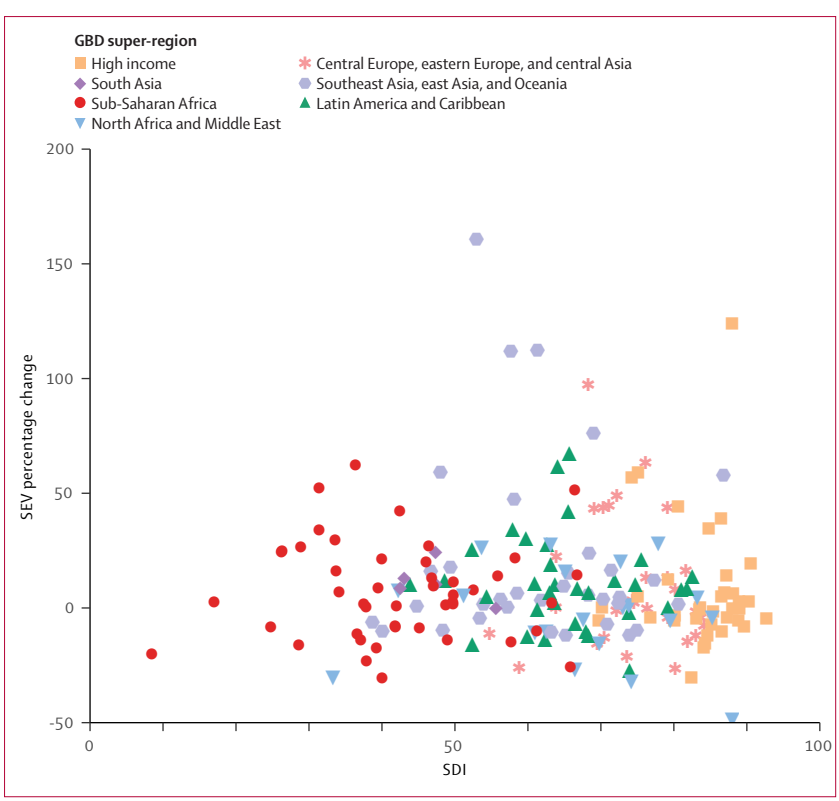

Figure 4: **Percentage change in all-cause age-standardised SEV by SDI, both sexes combined, 1990–2019**

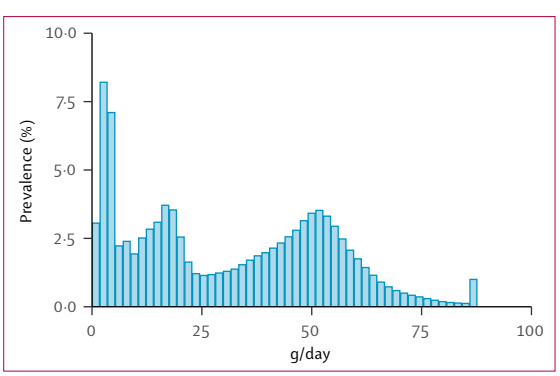

Figure 5: **Percentage of population exposed to risk factor, both sexes combined, 2019**

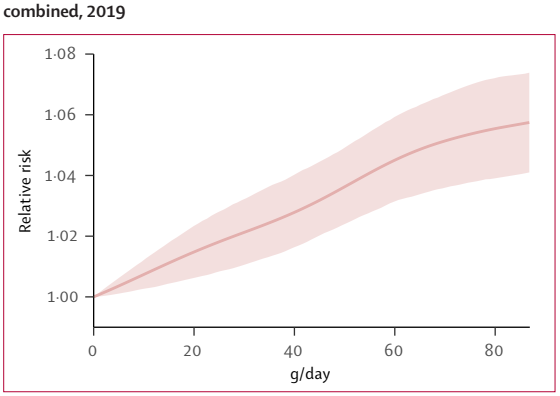

Figure 6: **All-cause mortality relative risk, both sexes combined, 2019**