

The burden of disease attributable to physical inactivity in the Austrian region of Burgenland

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Objectives

Physical inactivity is a significant public health problem, which is unlikely to be solved through classical health promotion approaches alone. Physical inactivity leads to a host of chronic degenerative conditions and premature death. In Europe, more than half of the population is not sufficiently active. The WHO estimates that in Europe, 10% or nearly a million of deaths are associated with inactivity. This represents a loss of 8.3 million disability adjusted life years (DALYs). In the Austrian region of Burgenland about 52.6% or 125,434 people of the population are physical inactive. As a risk factor for several chronic diseases like cardiovascular diseases, type 2 diabetes, osteoporosis, depression, back-pain, hypertension, breast cancer and colorectal carcinoma physical inactivity can potentially be a substantial public health burden. Furthermore, it is one of the greatest risk factors for mortality. Hence, the aim of the analysis was to estimate the direct health-care costs saved, the number of diseases and premature death saved each year attributable to a health promotion program focusing on walking (“3,000 steps” and more).

Methods

The evaluation of the health-economic impact was performed using a cost-of-illness analysis. We have used relative risk (RR) estimates from the literature to evaluate the effects of physical inactivity on the above mentioned diseases, which are known to be significantly related to physical inactivity. Mortality rates for each condition were derived from local data of Burgenland. Afterwards, the population-attributable fraction (PAF) for each illness to estimate the risk factor on the given disease was computed. The PAF for each disease was calculated as:

$$[P(RR - 1)] / [1 + P(RR - 1)]$$

P = prevalence of physical inactivity in the population
RR = relative risk for the disease in an inactive person

Tab. 1: Relative risk and population-attributable fraction due to physical inactivity

Disease	Prevalence, %	RR	Population-attributable fraction, %
Cardiovascular diseases	2.60%	1.84	21.1%
Type 2 diabetes	6.50%	1.88	23.1%
Colorectal carcinoma	0.03%	1.90	24.2%
Osteoporosis	6.40%	2	29.9%
Breast cancer	0.04%	1.39	4.5%
Depression	8.10%	3.15	39.5%
Back-pain	22.20%	1.36	3.9%
Hypertension	27.30%	1.47	6.6%

Source: Statistik Austria (2012), Smala et al. (2001), Martin et al. (2001), IPF own calculations

We have calculated effects of a reduction in inactivity level by 10,000 physical inactive people in Burgenland.

Cost calculation

Direct medical costs were considered from the health care system perspective. The costs of each disease related to physical inactivity are determined by the yearly resource utilisation associated with each disease. Resource use (e.g. the type and frequency of medical goods and services rendered to the patient) and monetary value (prices, tariffs and/or opportunity costs) for each unit of medical goods and services were used to calculate the total direct costs. Costs were calculated bottom-up for the year 2012. We have calculated effects of a reduction in inactivity level by 10,000 physical inactive people in Burgenland.

Fig. 2: Total costs broken down by its costs components

Disease	Direct costs per case and year	Total cost of illness *
Cardiovascular diseases	2,276.79	14,333,624
Type 2 diabetes	1,242.63	19,567,327
Colorectal carcinoma	53,960.00	3,530,356
Osteoporosis	1,623.53	25,207,731
Breast cancer	14,262.13	1,399,408
Depression	3,568.33	70,782,384
Back-pain	345.00	18,408,927
Hypertension	1,465.08	96,323,108
TOTAL		249,552,867

Source: IPF own calculations

* Cost of illness of the active and inactive population

Results

Results show that physical inactivity causes 27,542 cases of illness (15.6%) as well as 50 (10.6%) premature deaths in the population of Burgenland. Reducing the inactive group by 10,000 people, 2,221 cases of illness and cases of death would be reduced by four.

Fig. 1A: Reduced cases of illness

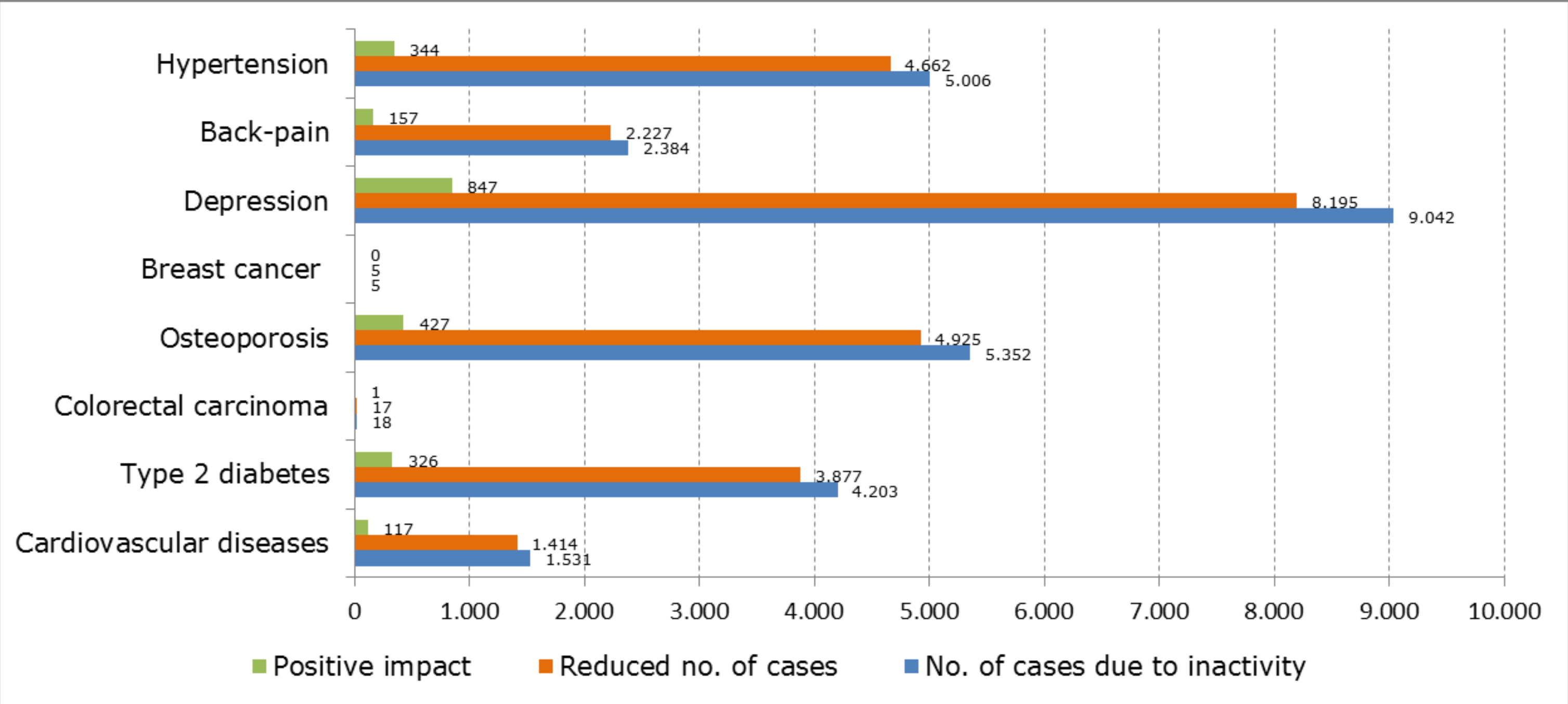
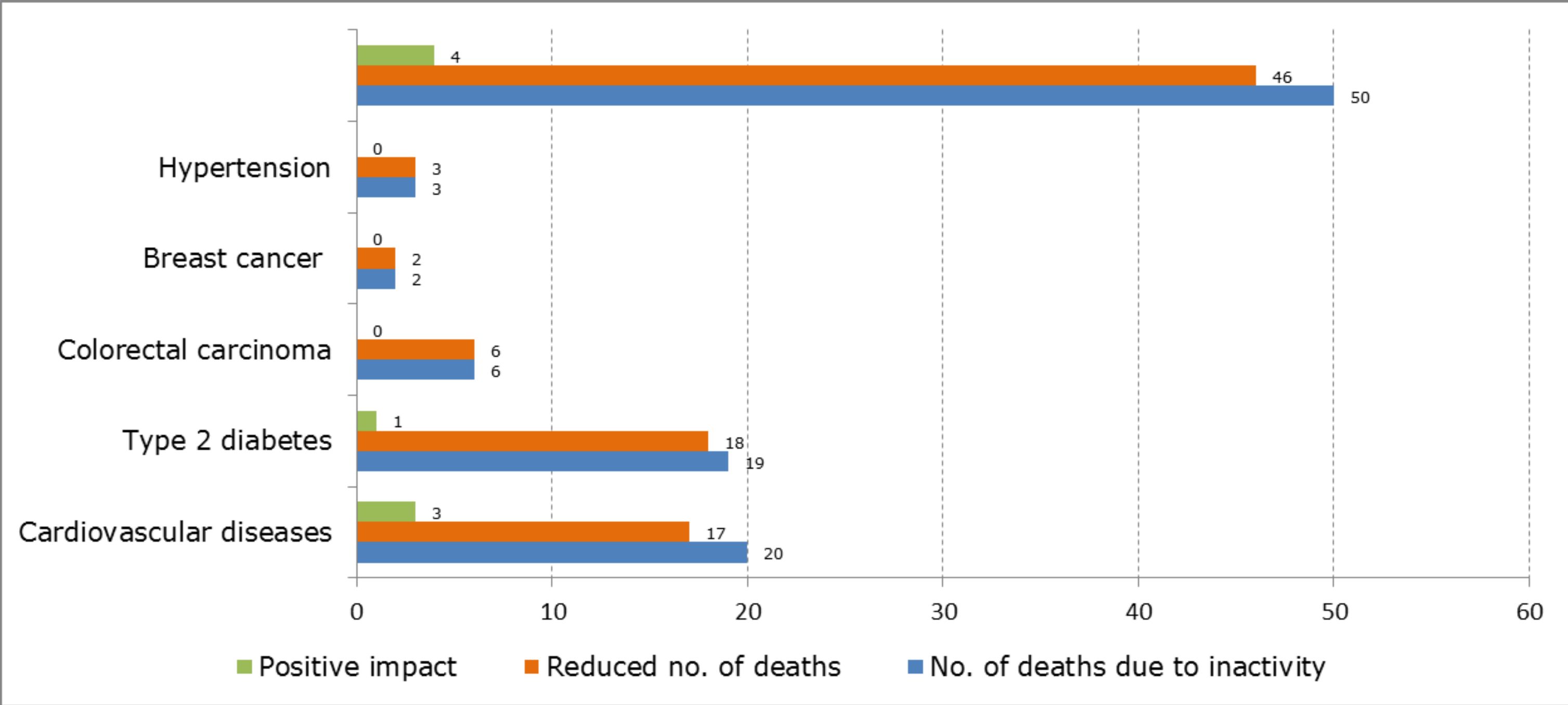


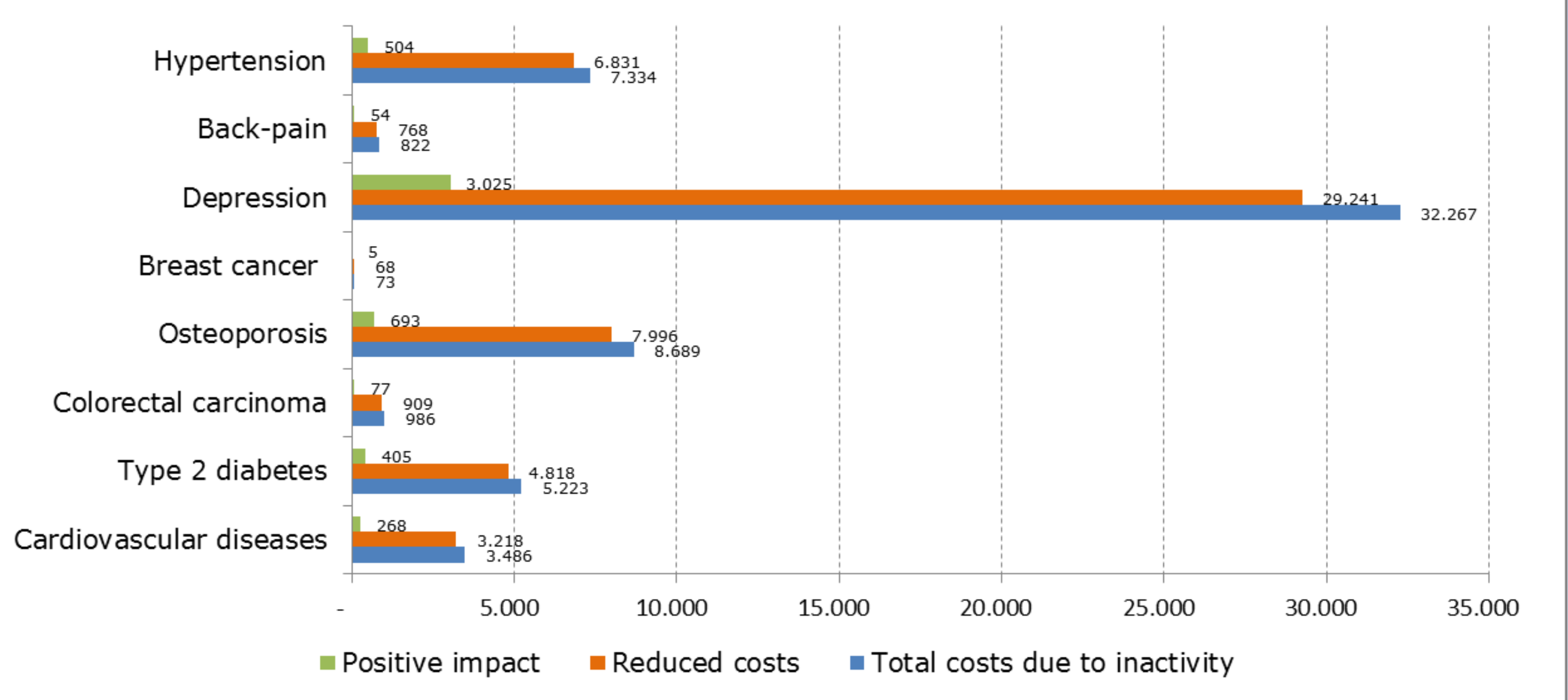
Fig. 1B: Reduced deaths



Source: IPF own calculations

Physical inactivity is leading to a total cost of illness of 58.9 million Euro, which represents 6.3% of total health expenditure. If the health promotion program is suitable to change the lifestyle of 10,000 people, cost of illness attributable to physical inactivity could be reduced by 6.40 million Euro each year of which 5.03 million Euro are directly related to diminish physical inactivity.

Fig. 2: Reduction of total costs in 1,000 Euro



Source: IPF own calculations

Conclusion

Physical inactivity represents an important public health burden in Austria. Even modest reductions in inactivity levels could result in substantial cost savings.

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Additional Literature with the author