**More methods:**

The baseline distribution of physical activity in the kingdom of Saudi Arabia was estimated from a 2019 survey of the percentage of individuals with physical activity 150 minutes and more per week by age category and sex. We estimated the distribution of this population between the moderate and high activity categories based on the proportion published in an older study to establish the baseline proportion of individuals in the low, moderate, and high physical activity risk categories.

**Table:** Baseline distribution of physical activity (%) by sex and age, 2019

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Age** | **Sex** | **Low activity (%)** | **Moderate activity (%)** | **High activity (%)** |
| 25-29 | Male | 69.3 | 17.3 | 13.4 |
| 30-34 | Male | 74.0 | 14.7 | 11.3 |
| 35-39 | Male | 76.9 | 13.1 | 10.1 |
| 40-44 | Male | 77.8 | 17.0 | 5.2 |
| 45-49 | Male | 79.3 | 15.8 | 4.9 |
| 50-54 | Male | 78.5 | 16.4 | 5.1 |
| 55-59 | Male | 76.0 | 18.3 | 5.6 |
| 60-64 | Male | 78.6 | 16.4 | 5.0 |
| 65+ | Male | 85.7 | 11.0 | 3.4 |
| 25-29 | Female | 87.5 | 6.2 | 6.2 |
| 30-34 | Female | 87.9 | 6.1 | 6.1 |
| 35-39 | Female | 87.9 | 6.0 | 6.0 |
| 40-44 | Female | 89.0 | 5.2 | 5.8 |
| 45-49 | Female | 86.8 | 6.3 | 6.9 |
| 50-54 | Female | 87.1 | 6.1 | 6.8 |
| 55-59 | Female | 89.6 | 5.0 | 5.5 |
| 60-64 | Female | 93.9 | 2.9 | 3.2 |
| 65+ | Female | 96.5 | 1.7 | 1.8 |

Intervention impact was derived from calculating the potential impact fraction (PIF) based on the different population distributions (*P*) and relative risks (*RR*) in each risk category (*i*) as follows:

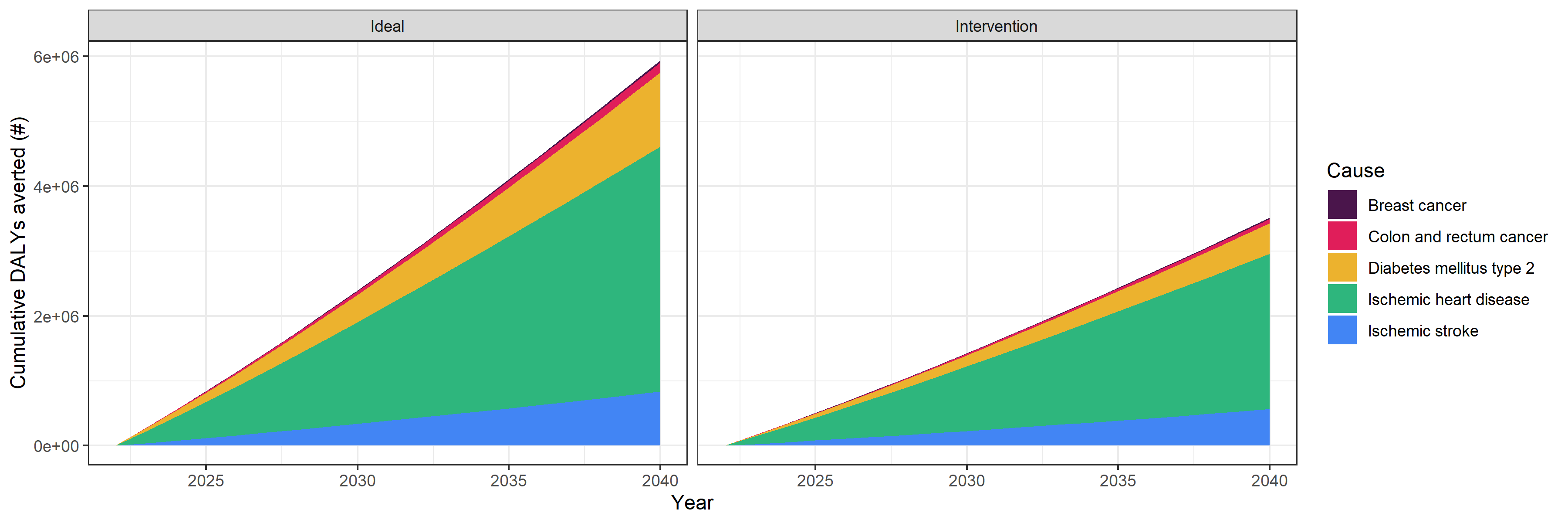
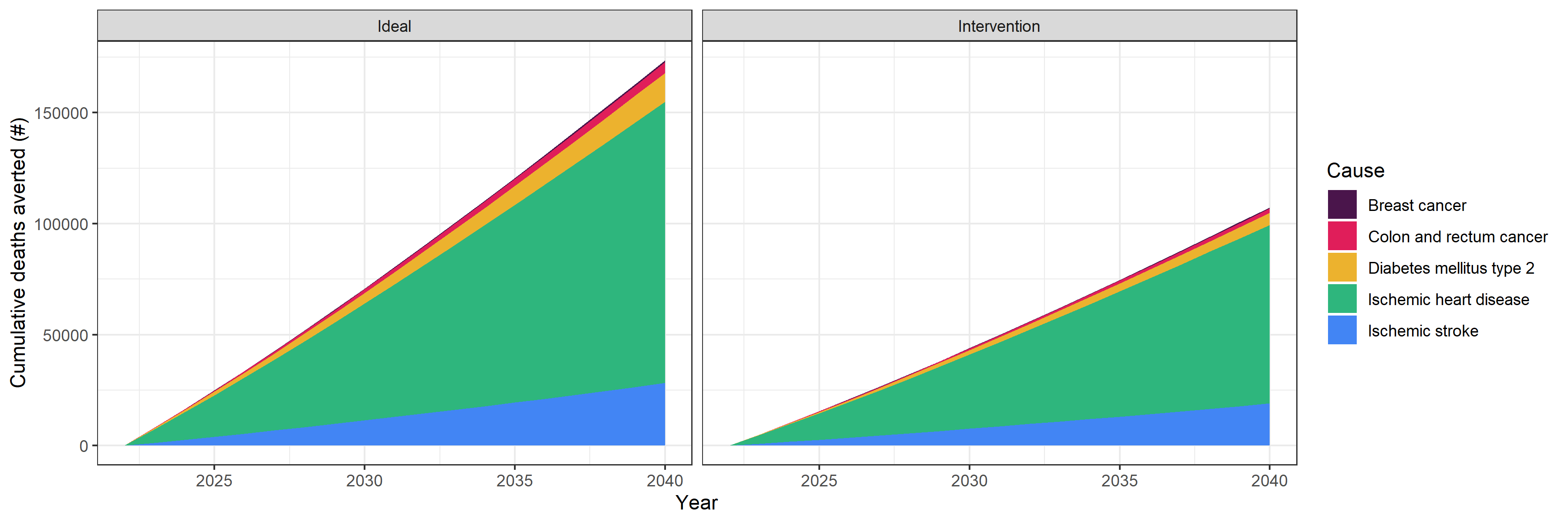
where is the baseline risk distribution and is the counterfactual risk distribution in the intervention or ideal scenarios. The PIF was then used to estimate the reduction in age-, sex-, and cause-specific incidence.

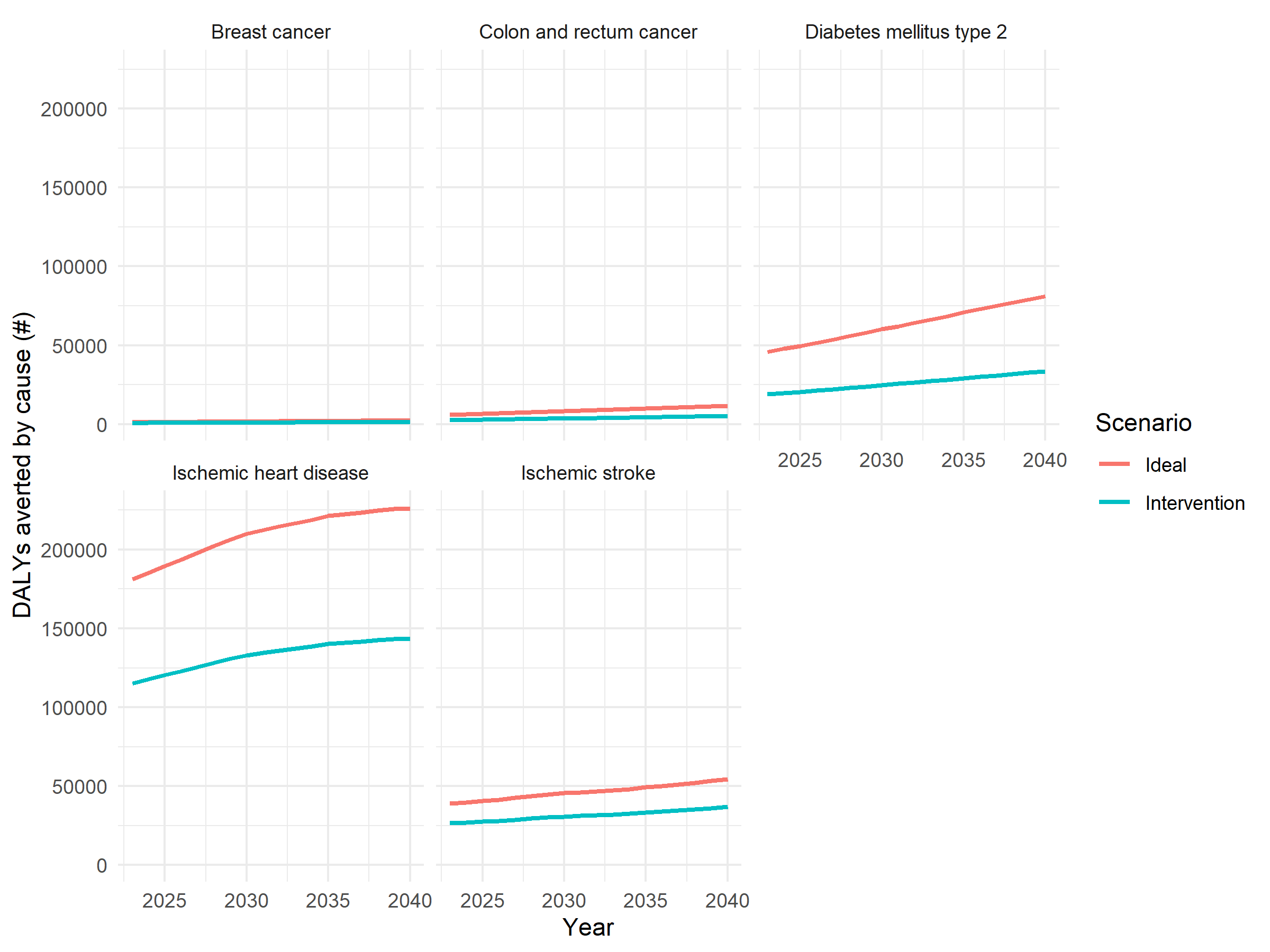
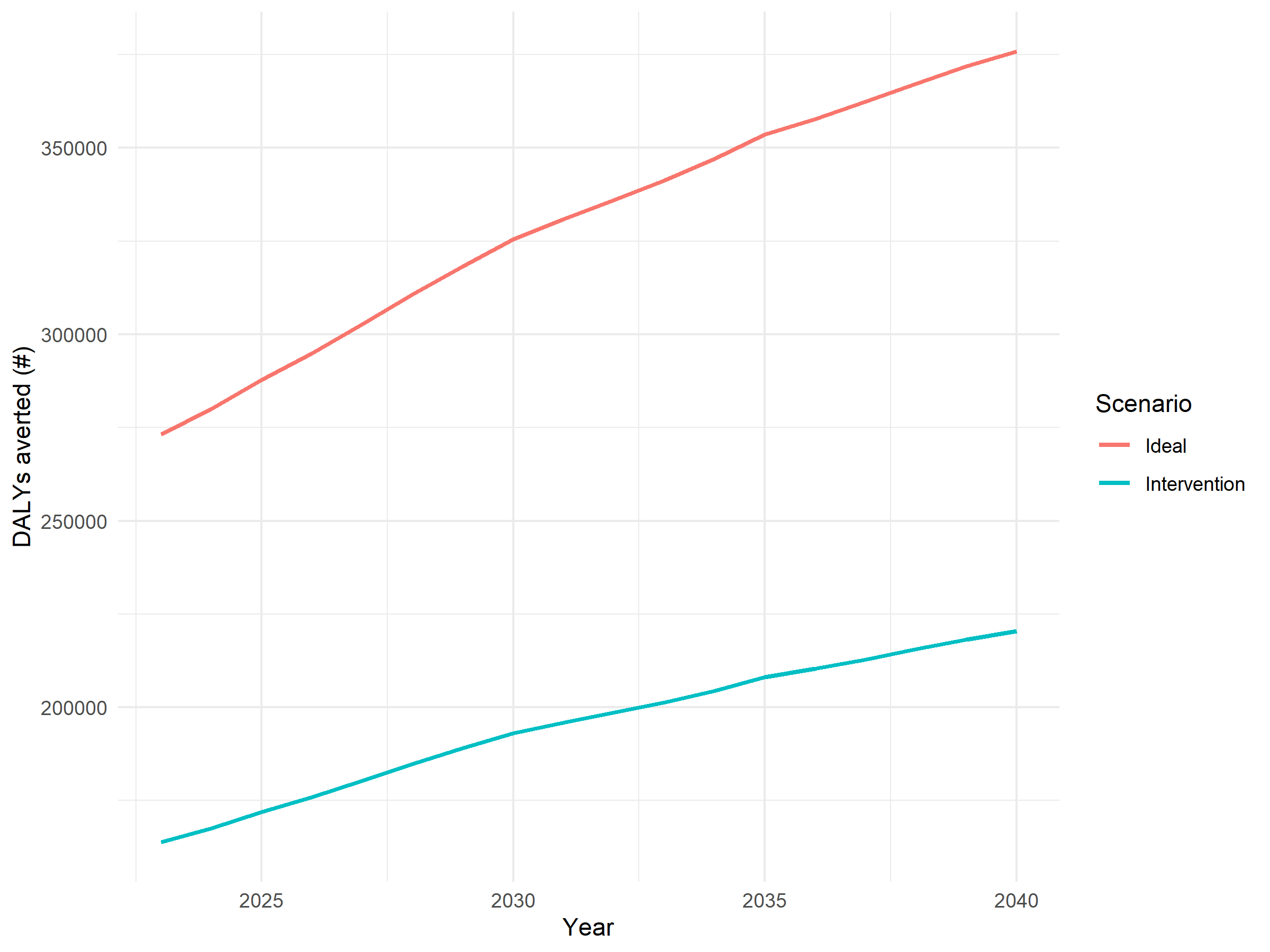
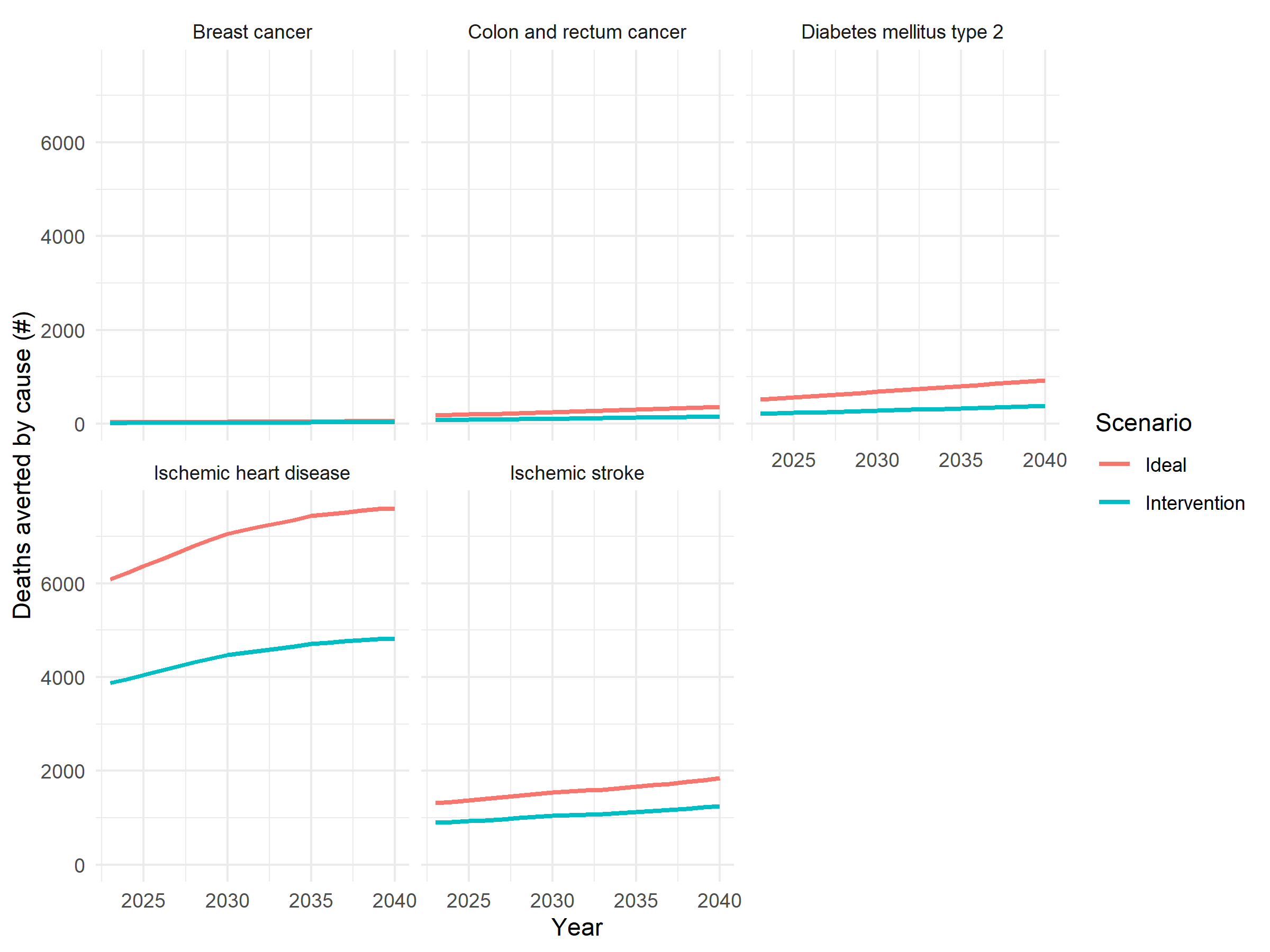
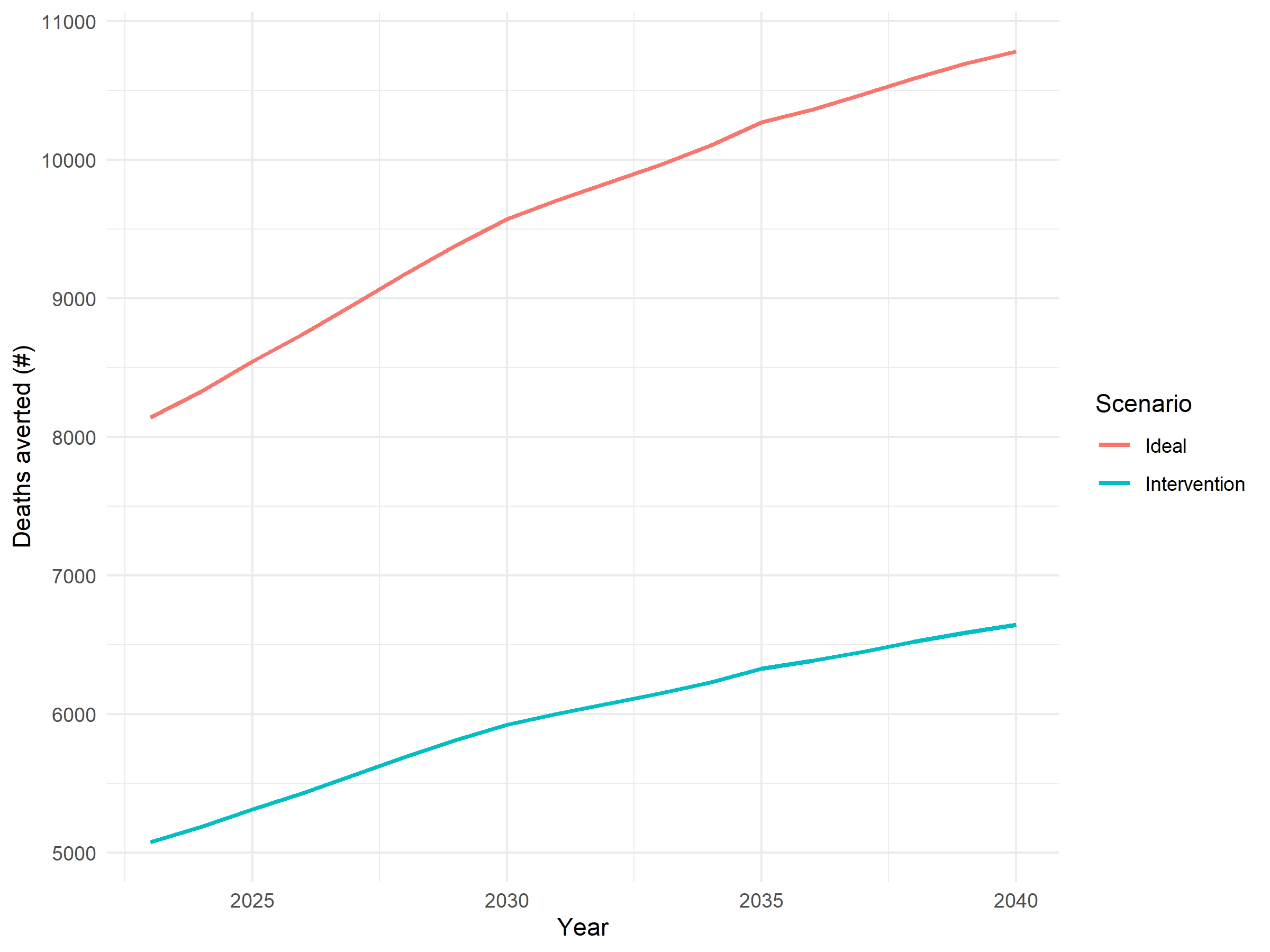
Relative risk estimates were taken from the Global Burden of Disease study 2019 (GBD) for colon and rectum cancer, breast cancer, ischemic heart disease, ischemic stroke, and diabetes mellitus type 2 for adults ages 25-80.

**Figure: Age-specific potential impact fractions of physical activity by cause and sex**

**Table: Calculation of total economic impact by scenario for the period 2023-2040**

**Figure: Deaths and DALYs averted by cause**

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