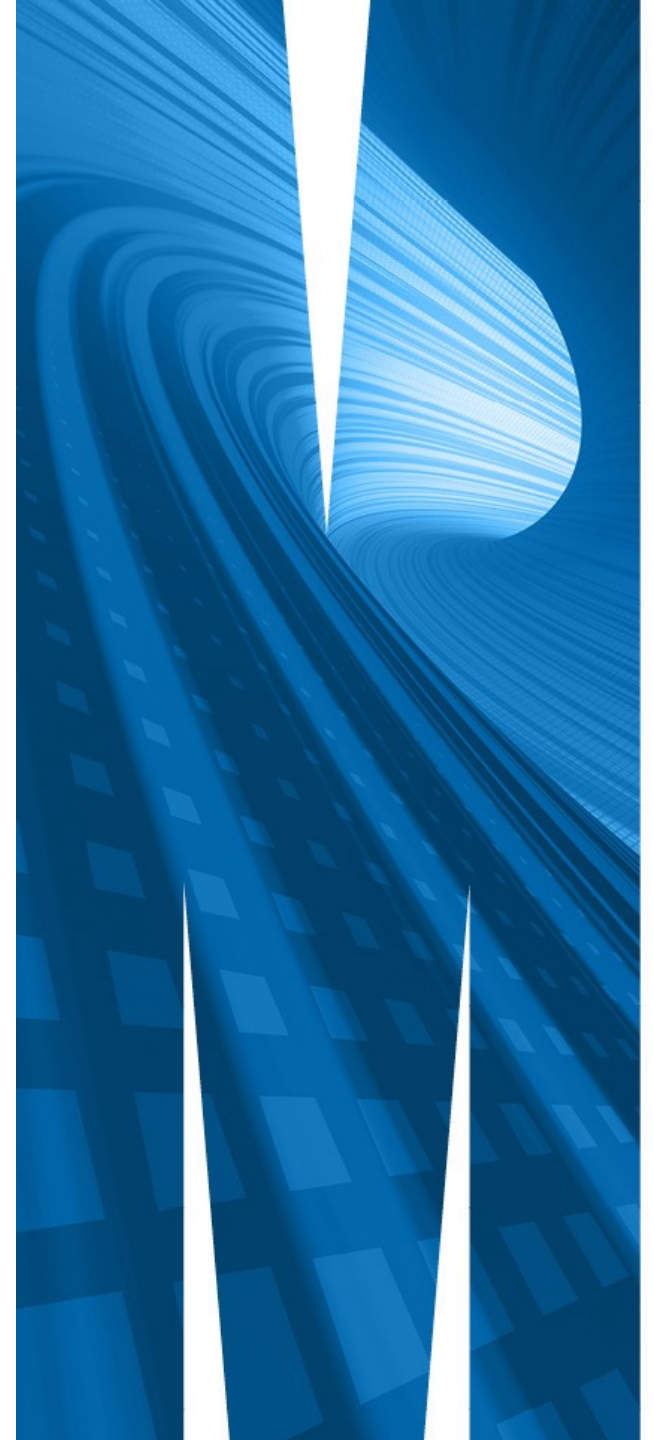


Conflict of interest statement:

No conflict of interest to declare.



P8: New Onset Cardiovascular Disease in Australia by Socioeconomic Groups: A Modelling Study

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MPharm, MPH, PhD

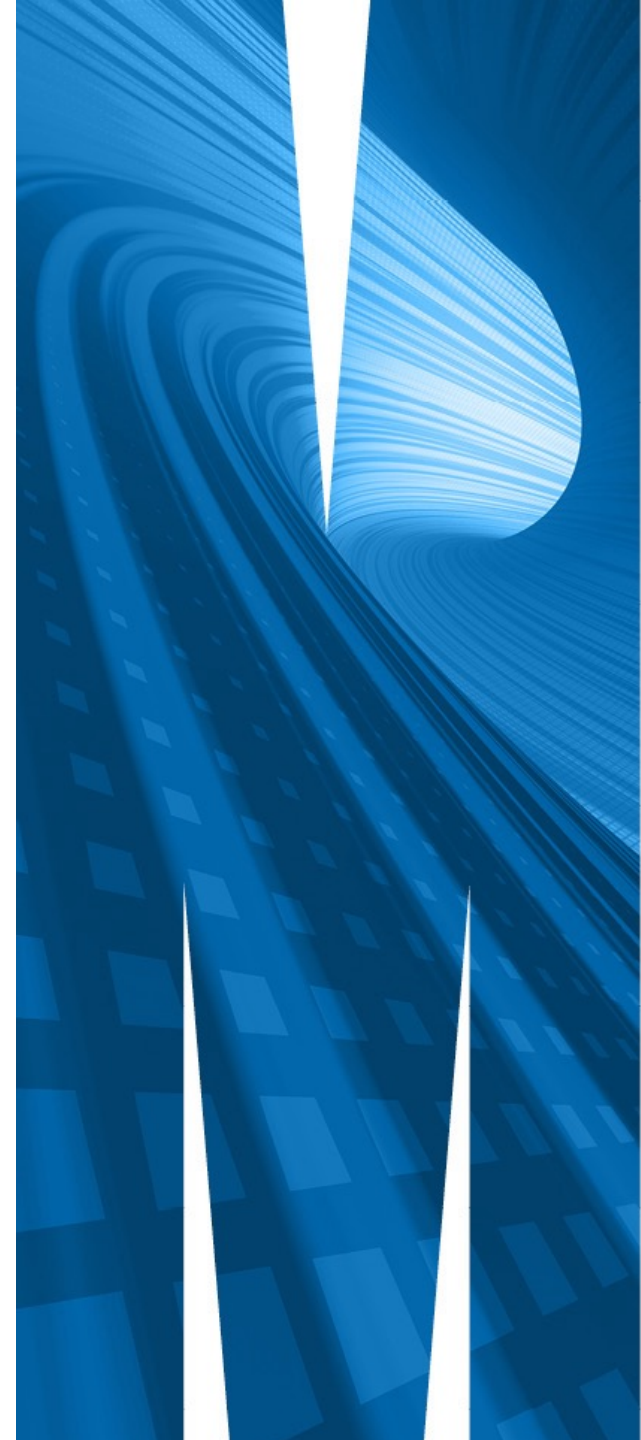
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30 November - 3 December #ISPOREurope



Outline of presentation

- Background
- Objectives of the study
- Methods
- Results
- Discussion
- Conclusion

Cardiovascular Disease

- Leading cause of morbidity and mortality globally¹
- Prevalent cases of CVD in 2019 523 million¹
- CVD deaths reached 18.6 million in 2019¹



Australia:

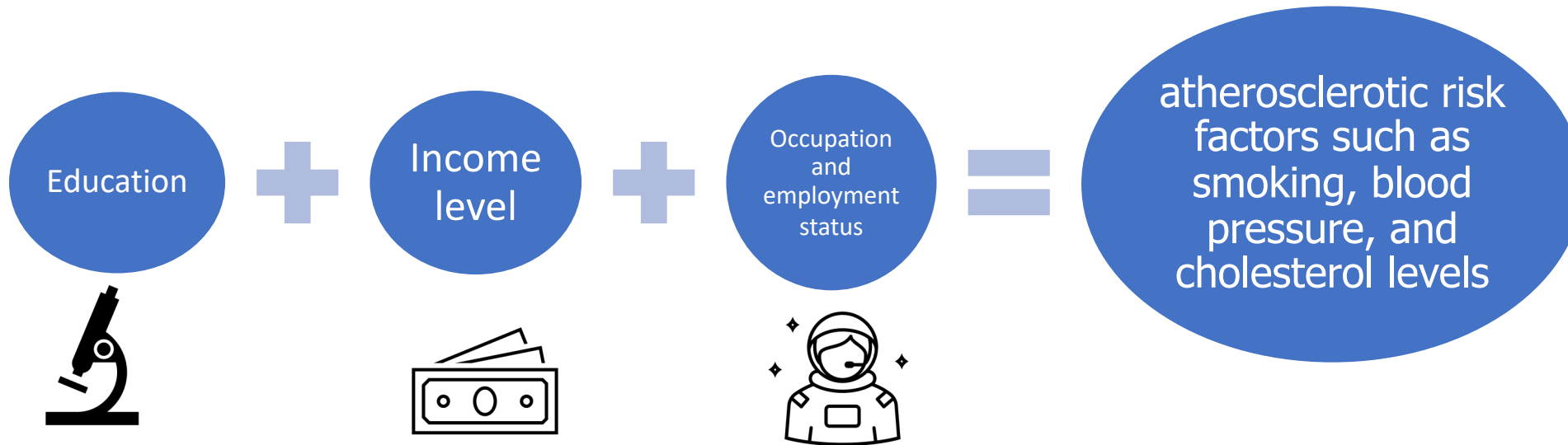
- 26% of all deaths in 2018
- 11% of all hospitalizations²
- Economic burden
 - 9% total government healthcare expenditures
 - Translated AU\$10.4 billion³

1. J Am Coll Cardiol. 2020 Dec, 76 (25) 2982–3021

2. Australian Institute of Health and Welfare. CVD

3. Australian Institute of Health and Welfare. Health Expenditure

Social determinants of health



- Health inequities is pervasive, even in countries with universal healthcare coverage^{4,5}
- In Australia, despite the theoretical universality of the healthcare system, the equity gap remains
- Data on the health economic implications of CVD by SES need to inform preventive investments

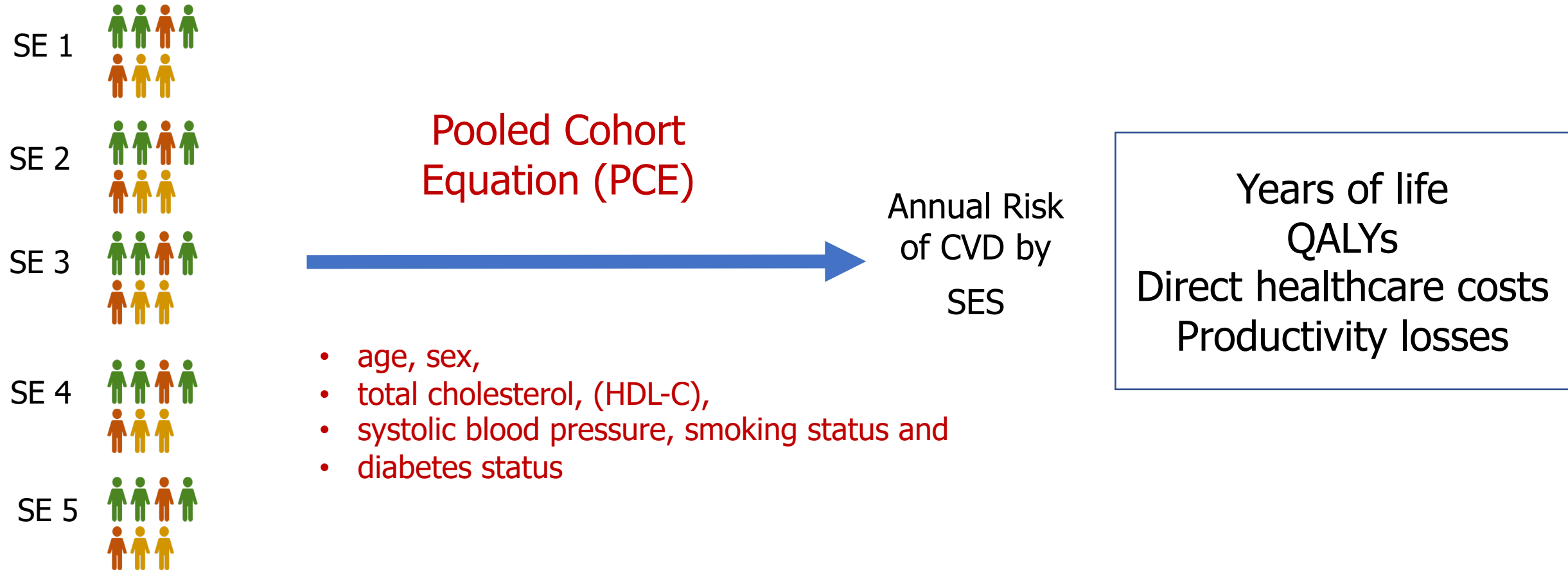
4. Journal of Hypertension. 2015;33(2):221-229

5. Eur J Epidemiol. 2013;28(2):149-157

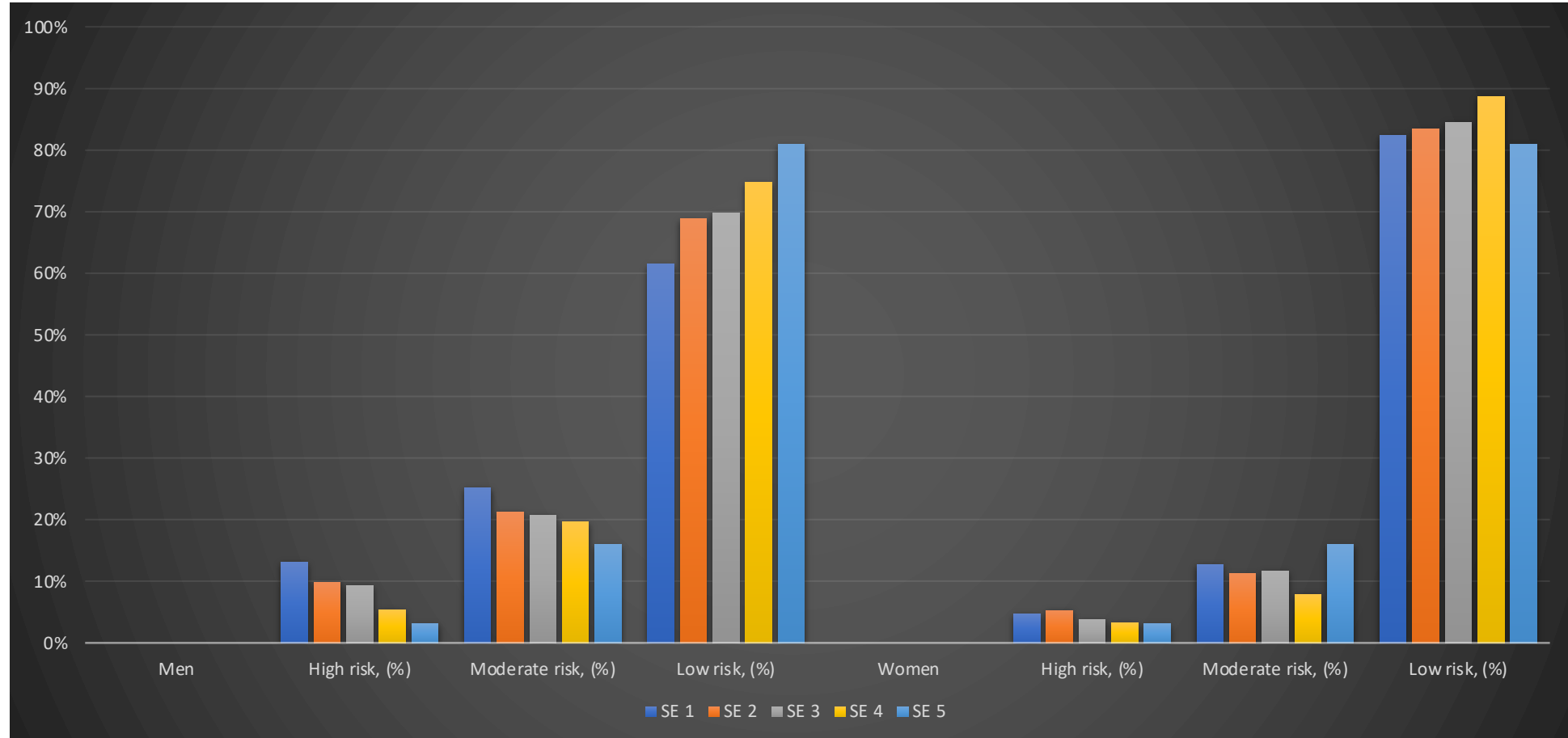
Objectives of the study

- Quantify the health (Years of Life, QALYs) and economic impact (direct and indirect) of new-onset CVD in Australia by SES disadvantage for 2021-2030 years.
- Simulate the health and economic impacts of removing the equity gap.

Methods – CVD profiling and dynamic model combination with life tables

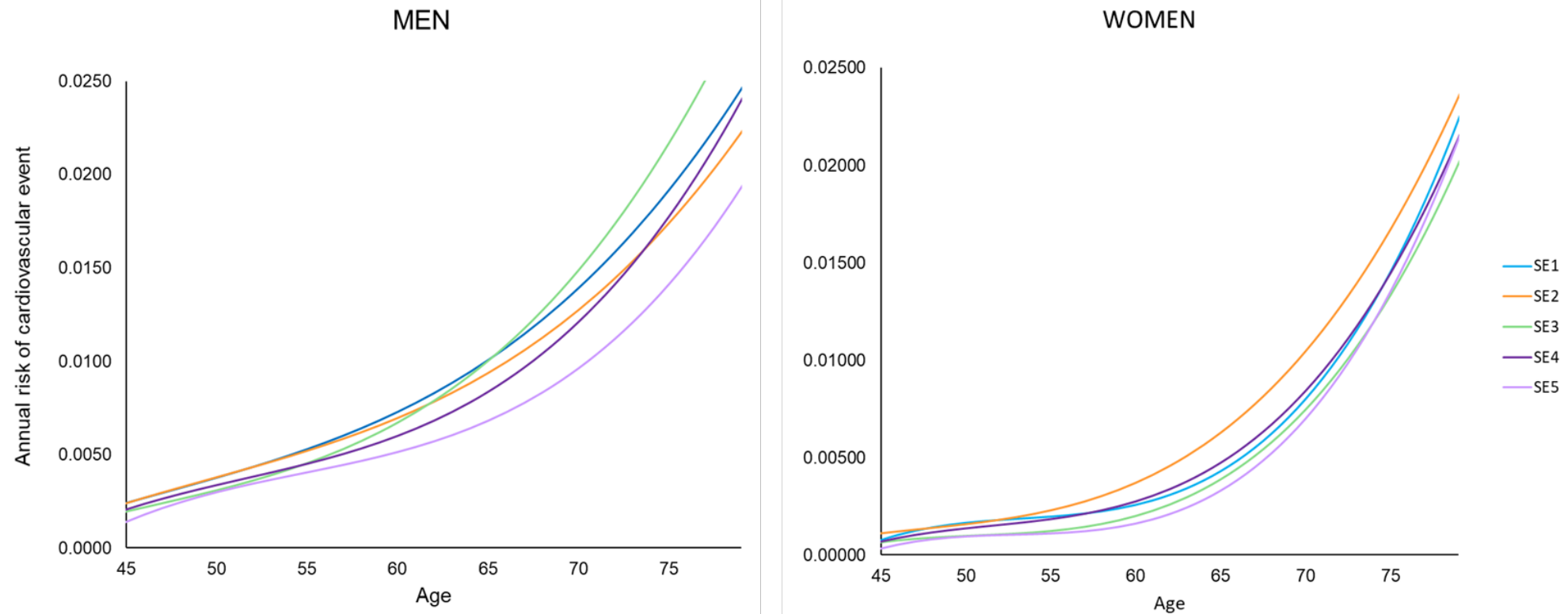


Results: Proportion of the population at different levels of cardiovascular risk for each socioeconomic group



p-value < 0.001

Results: Annual CV events derived from the PCE and extrapolated for every single year of age, stratified by SE quintile and by sex



Results: Ten-year health and economic projected outcomes, stratified by SE quintile

2021-2030	SE 1	SE 2	SE 3	SE 4	SE 5	Total	Difference SE 1 and 5
Total population							
Health outcomes							
Non-fatal CVD	97,354	102,491	92,941	89,895	73,720	456,401	23,634
Fatal CVD	29,716	31,285	28,369	27,440	22,502	139,313	7,214
All CVD (95% UI)	127,070 (119,710-135,059)	133,776 (127,985- 139,897)	121,311 (114,781-128,213)	117,335 (110,085-124,442)	96,222 (90,902-101,884)	595,714 (580,403- 612,115)	30,848
Total years of life lived	26,507,929	26,498,033	26,516,394	26,515,677	26,550,257	132,588,290	-42,328
Total QALYs (95% UI)	23,456,350 (23,437,201- 23,437,764)	23,447,375 (23,428,753- 23,465,783)	23,464,258 (23,445,162- 23,483,252)	23,463,935 (23,445,742- 23,482,072)	23,495,376 (23,477,962- 23,512,961)	117,327,294 (117,243,423- 117,410,795)	-39,026
Costs (AU\$, in millions)							
Healthcare costs (95% UI)	788.5 (132.9-2,196.0)	853.9 (146.1-2,345.1)	742.9 (125.9-2,073.5)	738.0 (126.1-2,039.3)	604.8 (102.9-1,666.7)	3,728.3 (634.0-1,029.8)	183.6
Productivity costs	3,082.0	3,234.7	2,637.2	2,675.1	2,122.3	13,751.5	959.6
Total Costs	3,870.5	4,088.7	3,380.2	3,413.2	2,727.2	17,479.9	1,143.3

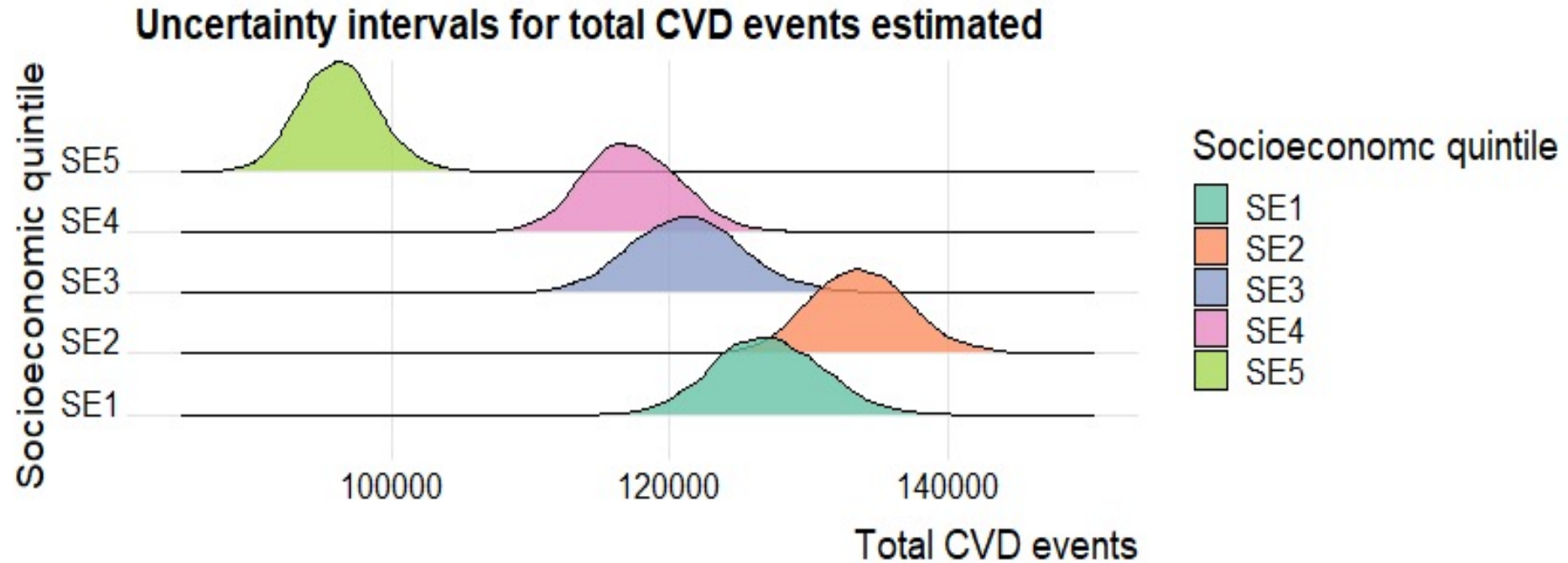
Results: Ten-year health and economic projected outcomes, stratified by SE quintile and by sex

2021-2030	SE 1	SE 2	SE 3	SE 4	SE 5	Total	Difference SE 1 and 5
Men							
All CVD	79,025	74,024	79,329	68,815	56,510	357,703	22,515
Total years of life lived	12,733,865	12,740,145	12,734,156	12,748,097	12,764,622	63,720,885	-30,757
Total QALYs	11,401,711	11,407,451	11,402,265	11,414,998	11,430,220	57,056,645	-28,509
Healthcare costs	417.8	392.8	419.2	363.7	298.7	1,892.5	119.1
Productivity costs	2,423.2	2,355.6	2,143.3	2,020.6	1,715.0	10,657.8	708.2
Total Costs	2,841.1	2,748.4	2,562.6	2,384.3	2,013.7	12,550.4	827.3
Women							
All CVD	48,045	59,752	41,982	48,520	39,713	238,011	8,332
Total years of life lived	13,774,064	13,757,888	13,782,239	13,767,579	13,785,635	68,867,404	-11,571
Total QALYs	12,054,639	12,039,924	12,061,993	12,048,937	12,065,156	60,270,649	-10,517
Healthcare costs (AU\$, in millions)	370.6	461.0	323.6	374.3	306.0	1,835.7	64.5
Productivity costs	658.7	879.1	493.8	654.5	407.3	3,093.6	251.4
Total Costs	1,029.3	1,340.2	817.5	1,028.8	713.4	4,929.4	315.9

Results: Results from risk reduction scenario analyses presented as comparison with base-case analysis

Risk reduction scenarios	Events prevented	QALYs gained	Healthcare cost savings (AU\$)	Productivity costs savings (AU\$)
10% reduction in CV risk in SE 1	12,593	15,444	78,162,524	306,869,818
10% reduction in CV risk in SE 2	13,265	16,344	84,698,255	322,413,852
10% reduction in CV risk in SE 3	12,006	14,640	73,544,159	269,215,869
10% reduction in CV risk in SE 4	11,613	14,448	73,037,421	265,503,970
10% reduction in CV risk in SE 5	9,488	11,503	59,685,149	207,117,256
Applying SE 5 CV risk to all quintiles	114,822	144,688	704,302,229	3,844,180,799

Results: The 95% uncertainty intervals of total CV events estimated for the period 2021-2030, stratified by SE quintile



Discussion

The socioeconomically disadvantaged quintile compared to least disadvantaged quintile

- 30,848 extra cardiovascular events
- 42,328 less years of life lived
- 39,026 less QALYs
- AU\$183 million direct healthcare costs
- AU\$1,143 million productivity losses.

Strength and limitations

- project new-onset CVD and health and economic outcomes by SES in Australia
- Allowed for testing of interventions aimed at different SES groups
- 2011-12 NHS data to derive cardiovascular risk estimates
- SEIFA is an area-based measure of socioeconomic status, and it does not consider discrepancies between the socioeconomic status of individuals

Conclusion



Urgent need to implement structural prevention strategies targeted at disadvantaged groups that will provide net economic benefit



This model provides a platform to incorporate socioeconomic status in cost-effectiveness analyses



To assess which interventions are likely to yield more benefits in each socioeconomic group at the population level

Thank you!

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