

## **Appendix 2 (as supplied by the authors): Ethnicity and cardiometabolic risk**

Two issues related to ethnicity arose that made regression modelling related to cardiometabolic risk using ethnicity as an independent variable challenging:

1. Some ethnic categories with few instances.
2. Some individuals have multiple ethnic categories because either the two parents had different ethnicities or because one or both parents themselves identified multiple ethnicities (or both).

This makes it difficult to classify a given individual with respect to ethnicity.

We thus decided to:

1. Assign each collapsed ethnicity to one of three ethnic-cardiovascular risk categories: elevated, average, reduced based on previous studies of ethnicity and cardiovascular risk (see References).
2. Assign each individual an ethnic-cardiovascular risk category based on the highest ethnic-cardiometabolic category of all the listed ethnic categories.

There are a various limitations of this strategy including:

1. Information about individual ethnicities is suppressed.
2. Information about the interactions of multiple ethnicities within an individual is suppressed.
3. It is challenging to assign the ethnic categories to risk categories based on available evidence.

For example, Caribbean people of African descent are at lower cardiovascular risk but it is difficult to identify them among others from the Caribbean. The time since landing can also interact with ethnicity.

## References for Appendix 2

Anand SS, Yusuf S, Vuksan V, Devanese S, Teo KK, Montague PA, Kelemen L, Yi C, Lonn E, Gerstein H, Hegele RA, McQueen M. Differences in risk factors, atherosclerosis, and cardiovascular disease between ethnic groups in Canada: the Study of Health Assessment and Risk in Ethnic groups (SHARE). *Lancet*. 2000 Jul 22;356(9226):279-84.

Balarajan R. Ethnic differences in mortality from ischaemic heart disease and cerebrovascular disease in England and Wales. *BMJ*. 1991 Mar 9;302(6776):560-4.

Chaturvedi N. Ethnic differences in cardiovascular disease. *Heart*. 2003 Jun;89(6):681-6.

Fang J, Madhavan S, Alderman MH. The association between birthplace and mortality from cardiovascular causes among black and white residents of New York City. *N Engl J Med*. 1996 Nov 21;335(21):1545-51.

Lip GY, Barnett AH, Bradbury A, Cappuccio FP, Gill PS, Hughes E, Imray C, Jolly K, Patel K. Ethnicity and cardiovascular disease prevention in the United Kingdom: a practical approach to management. *J Hum Hypertens*. 2007 Mar;21(3):183-211

Wild S, McKeigue P. Cross sectional analysis of mortality by country of birth in England and Wales, 1970-92. *BMJ*. 1997 Mar 8;314(7082):705-10.