

Is dairy product intake related to risk of type 2 diabetes? A pan-European Mendelian Randomisation study.



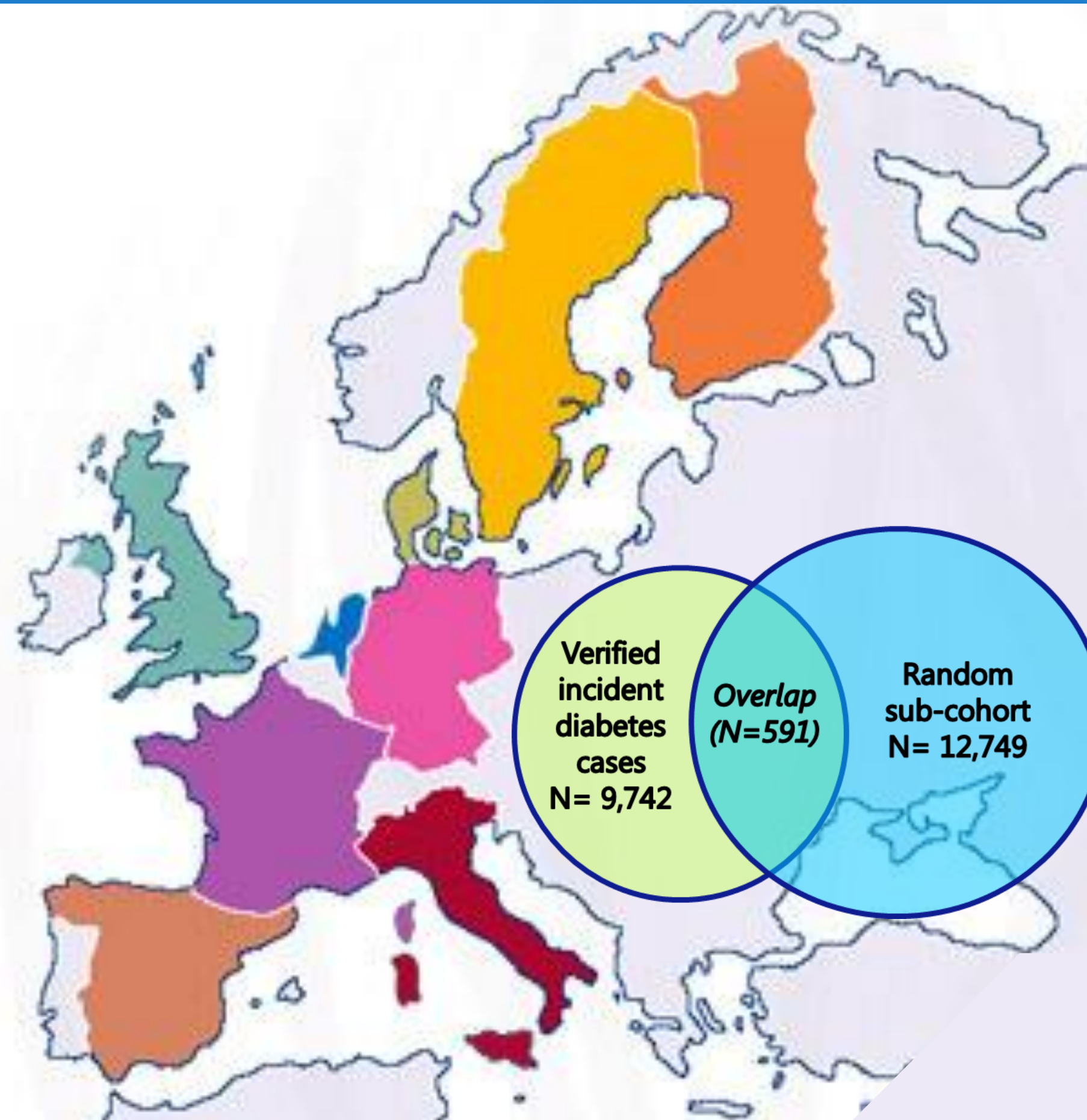
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Background

- Genetic lactase persistence (LP) enables digestion of dairy products.
- High intake of dairy products has been associated with lower risk of diabetes in observational studies.

- Can genetic lactase persistence be used as an instrumental variable for dairy product intake?
- Is there a causal relationship between dairy product intake and diabetes?



Methods

Gene-exposure

Genetic lactase persistence and dairy products (linear regression)

Gene-confounder

Genetic lactase persistence and diet, BMI, physical activity, smoking (linear or logistic regression)

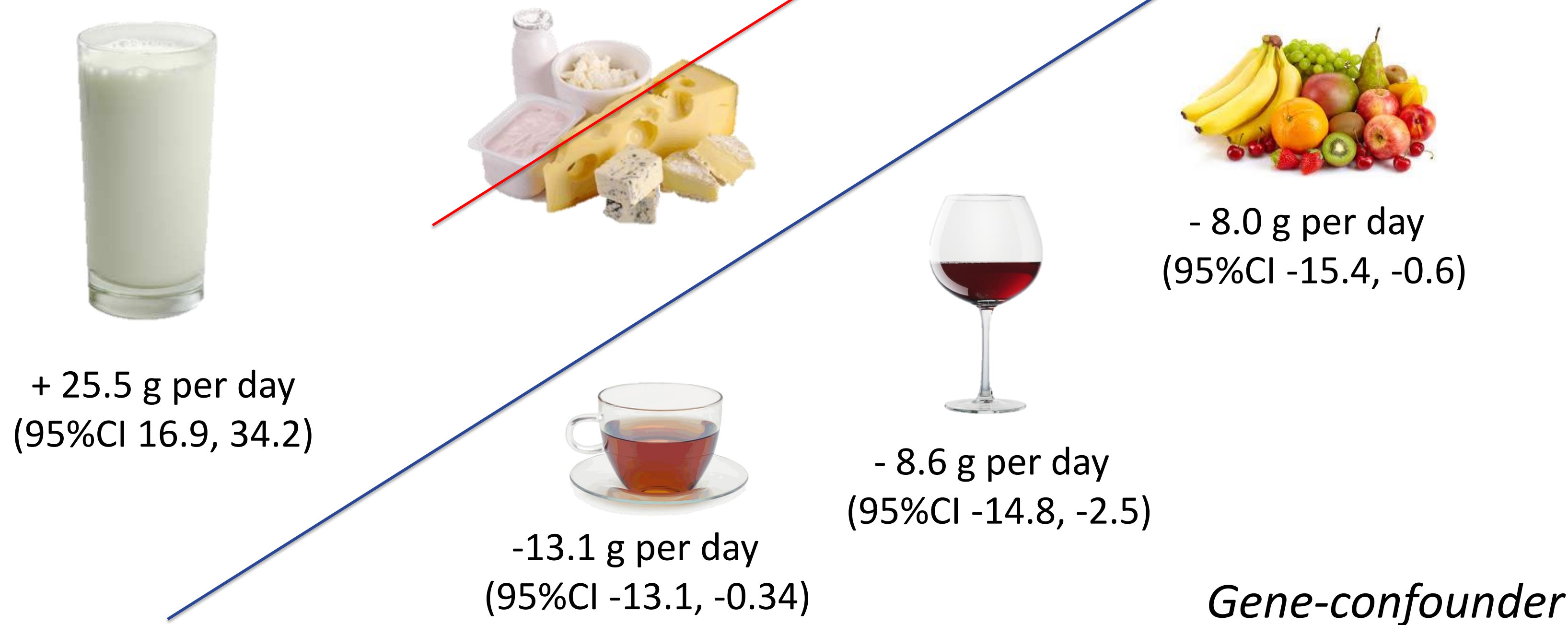
Instrumental variable analysis

Genetically predicted dairy product intake with risk of diabetes (prentice weighed cox-regression)

Results

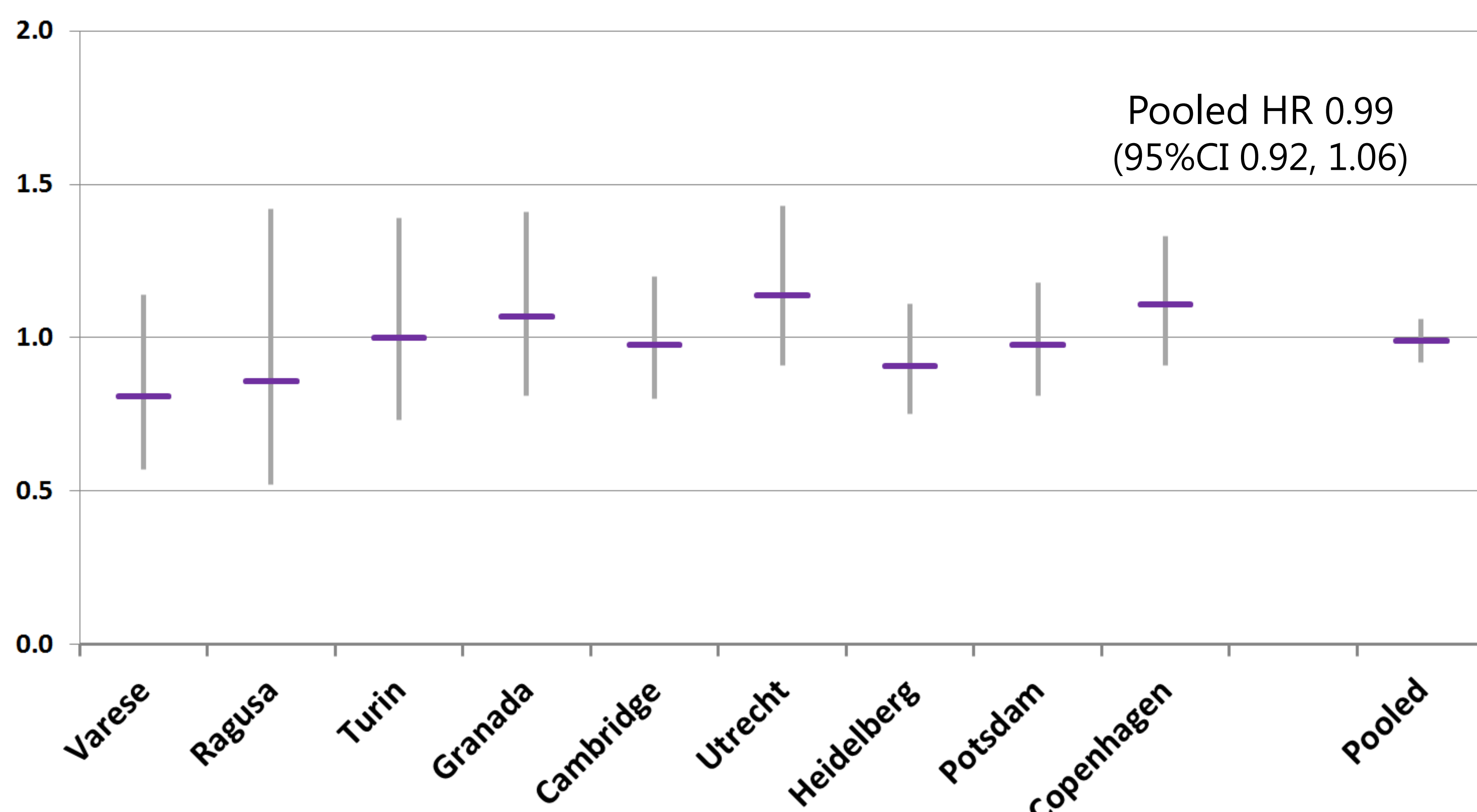
One additional LP allele is associated with an intake of..

Gene-exposure



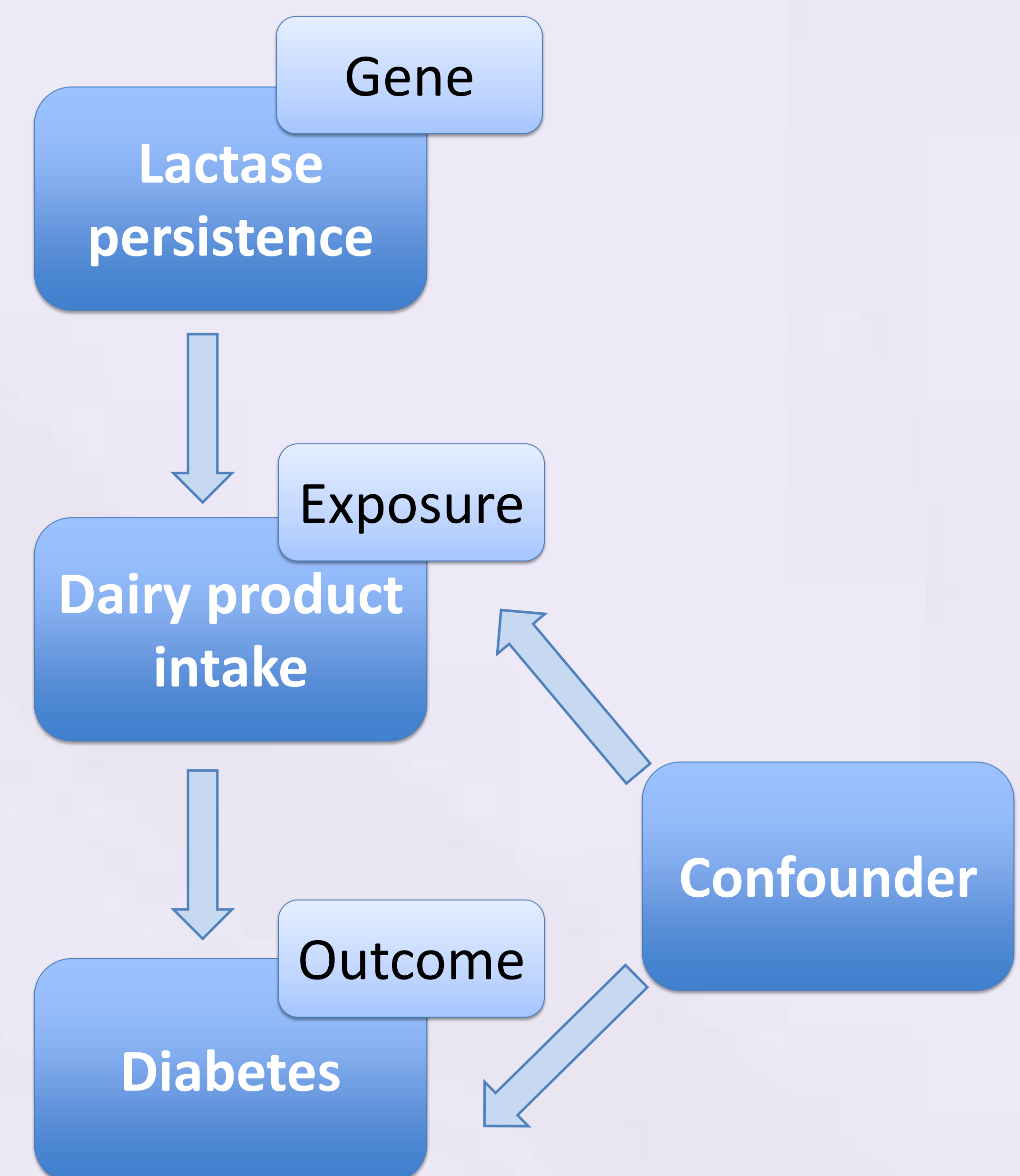
Hazard of diabetes per 25 g/day genetically predicted milk intake

Instrumental variable analysis



Using age as underlying time-scale, corrected for genetic variability and sex
Including study centres with confirmed gene-exposure association

Principle of Mendelian Randomization



Conclusion

- LP is an appropriate instrumental variable for milk intake, but not for other dairy products. LP is modestly associated with intake of wine, tea and fruit.
- No evidence for a causal relationship between milk intake and diabetes. The observed null association is unlikely to be caused by gene-confounder associations.