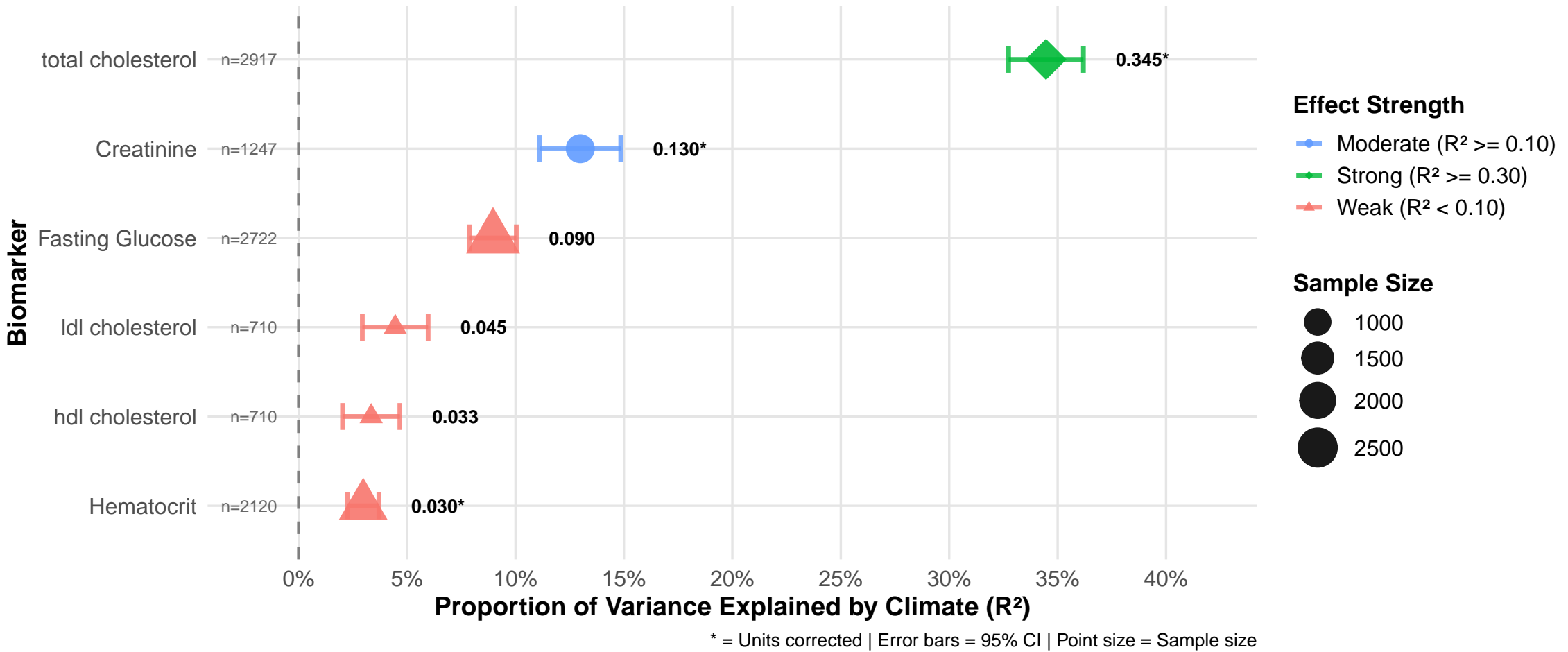# Climate–Biomarker Associations: Mixed Effects DLNM Analysis with Units Correction

A Climate–Biomarker Associations
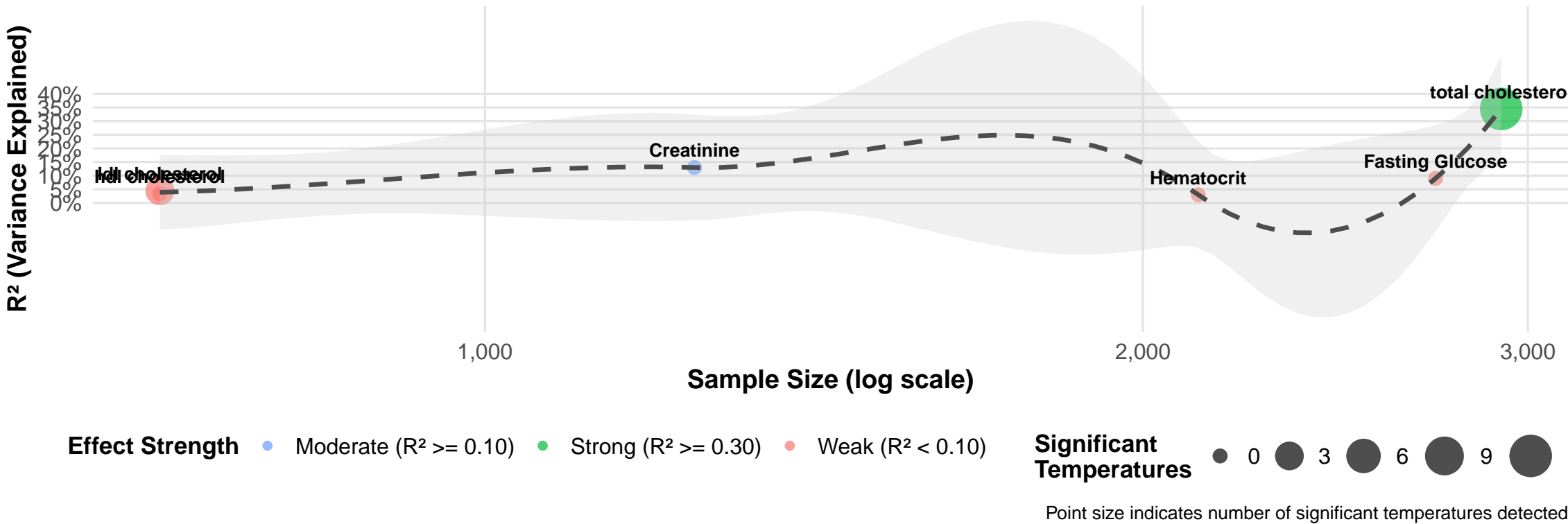
Mixed Effects DLNM Analysis (R² with 95% Confidence Intervals)

Effect Strength
- Moderate (R² >= 0.10)
- Strong (R² >= 0.30)
- Weak (R² < 0.10)

Sample Size
- 1000
- 1500
- 2000
- 2500

Biomarker	n	R²
total cholesterol	n=2917	0.345*
Creatinine	n=1247	0.130*
Fasting Glucose	n=2722	0.090
ldl cholesterol	n=710	0.045
hdl cholesterol	n=710	0.033
Hematocrit	n=2120	0.030*

Proportion of Variance Explained by Climate (R²)

* = Units corrected | Error bars = 95% CI | Point size = Sample size

B Sample Size vs Effect Size

Relationship between study size and climate–biomarker associations

R² (Variance Explained) vs Sample Size (log scale)

Effect Strength Moderate (R² >= 0.10) Strong (R² >= 0.30) Weak (R² < 0.10)

Significant Temperatures 0 3 6 9 12

Point size indicates number of significant temperatures detected

C Impact of Units Correction on R²

Change in variance explained after standardizing measurement units

R² (Variance Explained) — After Correction / Before Correction

Biomarker creatinine Hematocrit (%) total cholesterol **Status** After Correction Before Correction

Arrows show direction of change from before to after correction