

Table 2. Study Characteristics and Methodological Framework			
STUDY POPULATION			
Characteristic		Description	
Geographic Location		Johannesburg, South Africa (Urban African cohort)	
Total Sample Size		N = 18,205 participants	
Study Design		Cross-sectional analysis with temporal lag structure	
Climate Exposure		Daily temperature and apparent temperature measurements	
BIOMARKER SAMPLE SIZES			
Biomarker Category	Specific Biomarker	Sample Size (n)	Statistical Power
Cardiovascular	Systolic Blood Pressure	4,957	Excellent (>0.99)
Cardiovascular	Diastolic Blood Pressure	4,957	Excellent (>0.99)
Metabolic	Fasting Glucose	2,731	Excellent (>0.99)
Metabolic	Total Cholesterol	2,497	Good (0.80-0.95)
Immune	CD4 Cell Count	1,283	Good (0.80-0.95)
STATISTICAL METHODOLOGY			
Method		Implementation Details	
Primary Analysis		Pearson correlation coefficients for continuous climate-biomarker relationships	
Confidence Intervals		Bootstrap method with 1,000 iterations for 95% CI estimation	
Significance Testing		Permutation testing (10,000 permutations) for robust p-value estimation	
Multiple Testing Correction		Bonferroni correction (α = 0.0125) and False Discovery Rate (FDR) adjustment	
Temporal Lag Analysis		Structured lag periods: 0, 1, 2, 3, 5, 7, 10, 14, 21 days	
Validation Methods		Distributed Lag Non-linear Models (DLNM) for confirmation	
<div><div>KEY NOVELTY:</div><div>First report of 21-day cardiovascular adaptation to temperature in African urban population This extended temporal effect represents a novel finding with important implications for climate health monitoring in vulnerable populations</div></div>			