Why are city centres hotter than their surroundings?

Fictional sample · First-year geography module, 10-minute presentation

Presented by: Student name · Week 6 seminar

The argument

Urban heat islands are driven mainly by surface materials, a lack of vegetation and waste heat. The most practical responses change surfaces and add shade.

Cause 1: surface materials

- Dark roofs and asphalt absorb more sunlight than vegetated ground (Reading A)
- Stone, brick and concrete store heat during the day
- That stored heat is released slowly after sunset
- So the difference is often most noticeable at night (Reading A)

Cause 2: less vegetation

- Trees and plants cool the air as water evaporates from their leaves (Reading B)
- Tree canopy shades streets, walls and pavements
- Dense centres replace green space with buildings and paving
- Less greenery means less evaporative cooling and less shade

Cause 3: waste heat

- Traffic, air conditioning and industry release heat into the street (Week 4 lecture)
- Air conditioning moves heat outdoors, which can warm streets further
- Tall, closely packed buildings can trap warm air
- Waste heat adds to the effect; it rarely drives it alone

What cities have tried

Case 1 (Reading A): cooler roofs

A city requires light-coloured, reflective surfaces on new flat roofs, so less sunlight is absorbed and stored.

Case 2 (Reading B): more shade

A city plants street trees along its busiest walking routes to add shade and evaporative cooling.

What the evidence does not settle

Measured cooling differs between studies.

- Results depend on the local climate
- Hot, dry and humid cities respond differently

- Surface and air temperature can give different results
- Where and when sensors are placed matters

Conclusion

City centres are hotter because of what they are built from and what they lack.

Changing surfaces and adding shade are the most practical responses, but their effect varies by city.

References and AI use

References (fictional, for illustration)

Reading A: assigned module reading on urban surface materials. Reading B: assigned module reading on urban vegetation. Week 4 lecture slides: urban climate. Recommended dataset: local summer temperature records. A real deck lists full APA or MLA entries here.

AI use statement

"I used SlidesMate to turn my own outline into slide layouts and to suggest shorter wording for slides 3 to 5, which I then edited. The research, argument, case examples and conclusions are my own. All sources are listed on this slide."