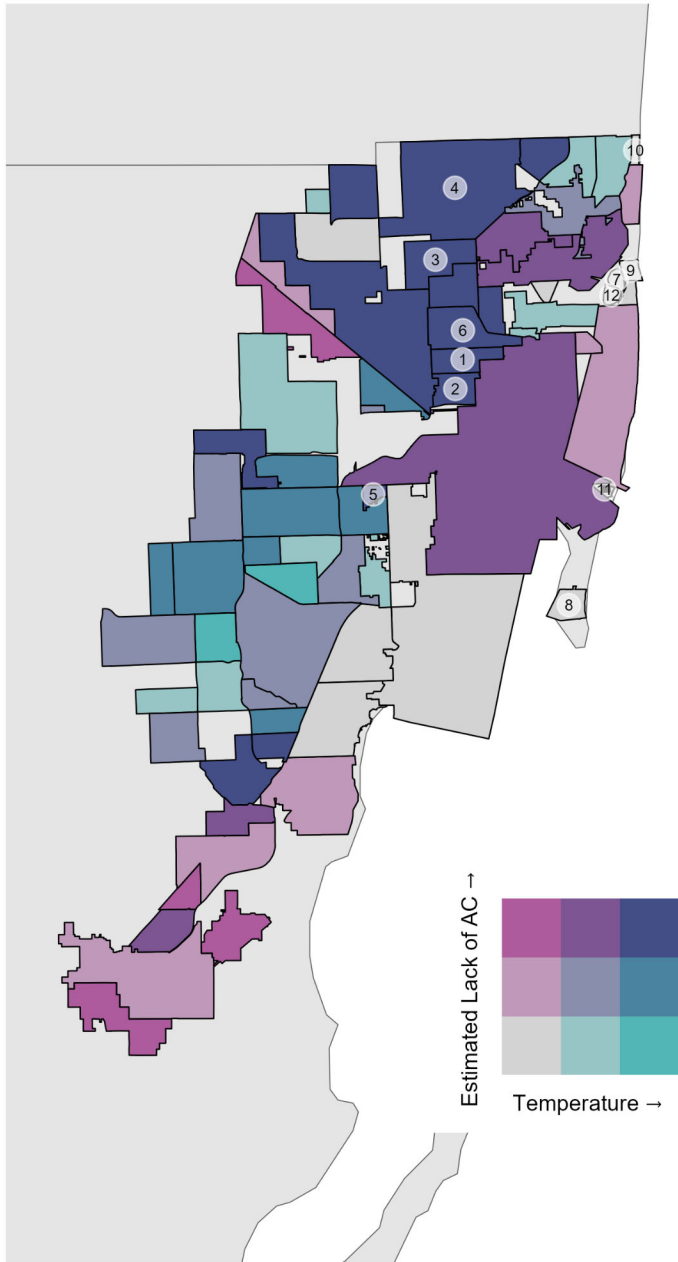


Extreme heat is a risk factor associated with hospitalization for cardiovascular diseases (see literature). Socioeconomic factors, low rates of ownership of air conditioners (AC), and extreme surface temperatures present increased risk to some Miami-Dade County neighborhoods.

## CLIMATE, HEALTH, AND EQUITY



The bivariate map illustrates the relationship between access to air conditioning and surface temperatures in Miami-Dade. Neighborhoods with both high mean surface temperatures and low ownership of AC are shaded dark blue. Of these areas, some are home to large population centers. The table shows the six neighborhoods marked by a combination of lowest AC ownership and highest temperatures and the six neighborhoods with highest AC ownership and lowest temperatures. The population within the six neighborhoods, at the top of the table, is estimated to experience the highest percentage of adverse cardiovascular outcomes.

HVAC, Temperature, and Cardiovascular Health

	Place	Estimated Relative AC Ownership <sup>1</sup>	Average Surface Temperature	% of Population with Coronary Heart Disease <sup>1,2</sup>	% of Population with Stroke <sup>1,2</sup>	% of Population with COPD <sup>1,2</sup>	% of Population with High Blood Pressure <sup>1,2</sup>
①	Gladeview	Low	High	8.2	6.4	11.0	44.3
②	Brownsville	Low	High	8.5	6.6	11.4	44.6
③	Opa-locka	Low	High	8.1	5.6	10.1	42.0
④	Miami Gardens	Low	High	6.5	4.7	7.9	39.8
⑤	West Miami	Low	High	5.4	2.5	4.6	27.3
⑥	West Little River	Low	High	7.2	4.7	8.1	37.7
	...	...	...	...	...	...	...
⑦	Bay Harbor Islands	High	Low	4.5	2.1	4.3	24.7
⑧	Key Biscayne	High	Low	3.9	1.7	3.0	22.3
⑨	Bal Harbour	High	Low	4.5	2.1	4.6	24.5
⑩	Golden Beach	High	Low	4.9	2.2	5.0	25.2
⑪	Fisher Island	High	Low	5.7	2.6	6.4	27.3
⑫	Indian Creek	High	Low	5.0	2.1	4.5	24.7

<sup>1</sup> Small geography estimates.

<sup>2</sup> Cardiovascular outcomes are percents of population above 18 years old.

### Literature

- Bunker, A., Wildenhain, J., Vandenbergh, A., Henschke, N., Rocklöv, J., Hajat, S., & Sauerborn, R. (2016). Effects of Air Temperature on Climate-Sensitive Mortality and Morbidity Outcomes in the Elderly; a Systematic Review and Meta-analysis of Epidemiological Evidence. *EBioMedicine*, 6, 258–268. <https://doi.org/10.1016/j.ebiom.2016.02.034>
- Chaseling, G. K., Iglesias-Grau, J., Juneau, M., Nigam, A., Kaiser, D., & Gagnon, D. (2021). Extreme Heat and Cardiovascular Health: What a Cardiovascular Health Professional Should Know. *Canadian Journal of Cardiology*, 37(11), 1828–1836. <https://doi.org/10.1016/j.cjca.2021.08.008>
- Cheng, J., Xu, Z., Bambrick, H., Prescott, V., Wang, N., Zhang, Y., Su, H., Tong, S., & Hu, W. (2019). Cardiorespiratory effects of heatwaves: A systematic review and meta-analysis of global epidemiological evidence. *Environmental Research*, 177, 108610. <https://doi.org/10.1016/j.envres.2019.108610>

### Data Sources

- Air Conditioning - Consumer Market Report Data from MRI Simmons. Calculated using consumption rate and counts.
- Cardiovascular Health Outcomes - CDC Places, Division of Population Health, CDC
- Surface Temperature - ESRI