Memorandum

To	Greg Nichols, Anna Nguyen (NOLA)
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The purpose of this memo is to identify relevant gaps in data for use in heat mitigation planning for the City of New Orleans. Based on existing studies and information collected by the City of New Orleans, Arup has reviewed whether data is available for quantification, assessment, and monitoring of heat impacts on the people, infrastructure, and environment of the City. Additionally, these data may provide a foundation for any metrics that the City establishes as part of the forthcoming Heat Mitigation Plan.

Approach

Arup reviewed our previously developed list of heat impacts and the evidence for those impacts (from the Task 1.1 memo), and identified a reduced list of impacts for data evaluation, according following criteria:

- Relative importance of impacts, especially for quantifying the costs of heat in New Orleans (Task 2.2)
- Clarity, completeness, and strength of evidence in demonstrating heat-related impacts
- Relevance of the impact area for informing strategies for the City's heat mitigation plan

Arup then further reviewed the completeness and usability of the related datasets, as documented in Table 1 below.

The "Potential Purpose" column in Table 1 highlights usefulness of the data for upcoming tasks, as identified by the following numerical coding:

1. Task 1.3: GIS Map Development
2. Task 2.2: Analyze and project impact of extreme urban heat and the future risks and costs
3. Task 2.3: Define indicators for successful heat adaptation and mitigation strategies

Table 1. Data Gap Identification

Impact Type	Impact*	Available Data	Data Gaps**	Potential Purpose (1, 2, 3)
Health	Increased emergency room visits, hospitalizations, and fatalities from heat-related illnesses*	2023 and 2024 New Orleans Health Department data: Heat-related NOEMS calls by zip code; heat related fatalities per month/timeframe/day of the week and related demographics. Heat-stress related hospitalizations in Orleans Parish available from 2000-2016 from the New Orleans Health Department, referenced here: Extreme Heat - NOLA Ready. Louisiana Department of Health data from 2023-2025 on heat related deaths by month, sex, ethnicity, age group, unhoused vs housed designation, and race; emergency department visits by date, time, region, and demographic Climate Health Cost Forecaster by Mercer: https://www.climate.mercer.com/?utm_campaign=CMP-07526-Q5Z6H&utm_source=mercer&utm_medium=webpage&utm_content=cta	Non-emergency phone calls and neighborhood-scale geographies of hospitalizations from heat-related illness (heat discomfort, heat stroke, heat exhaustion, etc.) Rate of emergency room visit/hospitalizations increase over time (would require analysis of Health Department data)	1, 2, 3
	Exacerbation of preexisting conditions (asthma, cardiovascular disease), pregnancy-related conditions, mental health Key health impacts by demographic/population	The state of Louisiana tracks asthma in partnership with the CDC, and the City of NOLA also tracks chronic diseases through the Population Health and Disease Prevention. Emergency Department utilization increases associated with 32.2°C heat indexes, according to Chronic Kidney Disease High Heat Exposure and Medical Utilization among the CKD Pop... : Clinical Journal of the American Society of Nephrology	Phone calls (non-emergency and emergency), emergency room visits and hospitalizations from secondary conditions, pregnancy, or mental health – *additional analysis required to demonstrate connections between preexisting conditions and heat* Emergency room visits, hospitalizations, and fatalities by occupation type – *additional analysis required to demonstrate impacts according to various occupations,*	1, 2

Impact Type	Impact*	Available Data	Data Gaps**	Potential Purpose (1, 2, 3)
			unclear whether data of occupation type is available for heat-related ER visits, hospitalizations, and occupations Ongoing work with hospitals to improve "counting" of heat-related illnesses	
	Air quality	The Louisiana Department of Environmental Quality tracks air quality (PM2.5, ozone, SO2) by region within the state. https://internet.deq.louisiana.gov/portal/DIVISIONS/AIR-MONITORING/AIR-MONITORING-DATA-WITH-INTERVAL-5-OR-10-MINUTES Local WeatherSTEM stations - https://orleans.weatherstem.com/	Analysis required to determine correlations between local air quality during heat waves Calls, ED visits, or hospitalizations related to asthma or respiratory conditions during periods of extreme heat – *likely tracked by Louisiana Public Health Institute and potentially available upon request by LPHI network members*	1, 2
	Vector-borne diseases	The Louisiana Department of Public Health has a Disease Vector Program, and collects data including levels of West Nile Virus per age group and region. Annual reports on disease. Mosquito Population Monitoring, annual reports: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://nola.gov/nola/media/Mosquito/2023annualreportFINAL.pdf	Analysis required to determine correlations with heat	2, 3
Infrastructure	Potential brown outs and blackouts during extreme heat events*	Entergy data on customer interruptions by outage type & month for 2024 ENO quarterly reports available:	Customer interruptions (generally and by geography) for prior years (2021, 2022, 2023) and by neighborhood – *Entergy may monitor this data.*	1, 2, 3

Impact Type	Impact*	Available Data	Data Gaps**	Potential Purpose (1, 2, 3)
		UD-17-04 - AAE - Alliance for Affordable Energy : AAE – Alliance for Affordable Energy (not available by geography, seems to cover entire New Orleans service area)	Customer interruptions associated with heatwave or PSPS events (generally and by geography) – *Entergy may have access to this information, or outage by location and time can be overlayed with heatwave data; annual outage summary reports from Entergy or EnergySMART* HVAC losses during outages and more specifically, heatwaves (generally and by geography) –*Property Management may have this data.*	
	Increases in energy demand*	The City of NOLA tracks municipal energy use through a public data dashboard. The EIA has broad energy demand and supply information for the state of Louisiana. Woodwell Climate Risk Assessment – City: Daily maximum temperatures and heat danger days, baseline, near-term, and end of century time horizons	Utility data on energy using during heatwaves and energy use Baseline and near-term/end-of-century projections for Cooling Degree Days	2, 3
	Reduced grid capacity from increased demand	N/A	*There may be external assessments by Entergy or Midcontinent Independent System Operator (MISO).*	2
	Contribution of impervious surfaces to urban heat island	USGS has a National Land Cover database that shows impervious surfaces in GIS NOAA also provides statewide high resolution land cover data.	% of impervious surfaces	1, 3
Economic	Food and water spoilage	In severe cases i.e. Hurricane Ida, City can assume that every one of 160,000 households lost whatever was in their fridge/freeze.	Analysis of food loss resulting from heat or energy failures, based on	2

Impact Type	Impact*	Available Data	Data Gaps**	Potential Purpose (1, 2, 3)
		The New Orleans Health Department's Population Health and Disease Prevention Team Food Security and Nutrition Access program tracks food insecurity and cost of food and data.	reports of losses or duration of blackouts during heat waves	
	Reduced productivity*	Woodwell Climate Risk Assessment – City: Daily maximum temperatures and heat danger days, includes baseline, near-term, and end of century time horizons SCIPP Louisiana Climate Data Portal tracks climate data and trends, storm reports, and temperature trends. The EPA publishes dynamically downscaled large ensemble climate model data, that can be used to explore historical and future temperature changes regionally. Similarly, NOAA publishes future climate projections from CMIP5 (Coupled Model Intercomparison Project Phase 5) that show number of days when afternoon temperatures climb above 100°F per county.	Labor-hour losses annually and during a heatwave, requires estimates of high risk-industry workforce (ideally projected over time) Number of days over 100°F (historical / projected)	2, 3
Environmental	Heat exposure / reduced outdoor thermal comfort due to low shade and canopy coverage*	Climate Central Urban Heat Islands City Rankings - citywide urban heat island effect (rolled-up from census tract data, weighted by area, in degrees F) City of NOLA Open Data contains layers for tree location (for canopy) and open greenspace. Cost benefit ratios of tree planting: https://www.itreetools.org/about	Shade coverage across the city (i.e. shade from buildings, shaded bus stops, shaded walkways, etc.)	1

Impact Type	Impact*	Available Data	Data Gaps**	Potential Purpose (1, 2, 3)
		Tree equity score from Woodwell City Climate Risk Assessment- City Trust of Public Land Climate Smart Communities Tool - Surface Temperature/Heat Severity		
	Limited use of public transit and active transportation modes	Ride NOLA has a transit open data portal with more detailed monthly ridership data, RTA Transit stops, and shelters.	Changes to ridership during heatwaves	3
Social	Increased health risk to those who live in homes without air conditioning, as they don't have the means to cool themselves safely	AC complaints by weather alert and zip code; type of AC complaint; window electrical complaints. Healthy Homes ordinance (bedroom cooling standard)- https://library.municode.com/la/new_orleans/codes/code_of_ordinances?nodeId=PTIICO_CH26BUBUREHOST_ARTXIIIHEHOPR	Penetration of air conditioning (%) – sometimes available through Census	2, 3
	Cooling center locations & utilization*	Cooling center locations Pool locations + hours in NOLA NORDC splash pad locations: Splash pads in New Orleans, surrounding areas - NOLA Now	Cooling center services/hours; number of people who have used cooling centers and who have been transported to cooling centers	1, 3
	Disparities by neighborhood*	WeatherStem data on heat indices by neighborhood (2023-2025) UHI by census tract from Climate Central as of 2023 (2020 study by CAPA Strategies also available)	Ongoing measurement of UHI disparities by census tract (i.e., data for 2024, 2025)	1, 3

Impact Type	Impact*	Available Data	Data Gaps**	Potential Purpose (1, 2, 3)
		CDC Places Data for health disparities, income, and other social characteristics Climate-Smart Cities New Orleans tool – climate equity priority areas New Orleans LA Climate Risk Analysis highlights distribution of income, tree equity, people of color, extreme rainfall frequency, to assess vulnerability State of LA NREL energy burden before and after retrofit upgrades Energy burden building stock data for Orleans parish via Department of Energy's LEAD (Low-Income Energy Affordability Data Tool)		

*Priority heat-related impact
** Leads for potential data in *italics*

Conclusions & Recommendations

City and state agencies are already tracking several critical data points for extreme heat. Arup will leverage these datasets for upcoming project tasks. These include:

- Heat-related calls, emergency room visits, and deaths
- Utility outages by month and type
- UHI effect by neighborhood/census tract
- Disparities in heat and other social vulnerabilities by neighborhood/census tract

Based on this review, the most essential data gaps to address in the near-term include:

- Hospitalizations for extreme heat by location and demographic, to further assess health impacts
- Historical data on the number and duration of blackouts and brownouts occurring during excessive heat or heat waves
- Number of workers in high-risk industries to calculate lost labor hours
- Shade coverage (mechanical shade)
- UHI effect (on an ongoing basis), to supplement understanding of outdoor thermal comfort

Some datasets that are available have not yet been applied to measuring heat impacts. In the long term, the City or its partners can perform analyses with the following datasets to enhance its understanding of heat impacts:

- Additional data tracked by the local and state to study the correlation between heat and other health conditions (heart disease, respiratory conditions, pregnancy, mental health)
- Air quality data, which is impacted by heat and increases incidences of respiratory conditions
- Municipal energy use, to track increases to energy demand
- USGS data on impervious surfaces to inform changes to Urban Heat Island and outdoor thermal comfort
- RTA ridership data, which can be overlayed onto extreme heat events, to assess correlations between extreme heat and ridership

Appendix: Summary of Data in Hand

Dataset	Source	Geographic Boundary*	Year	Metrics*	Related Impact
Energy Failure Data	Entergy New Orleans (Utility)	City of New Orleans	2024 (includes 2023, 2022, 2021)	Number of distribution customer interruptions (by month, by cause); number of transmission customer interruption (by month, by cause)	Increased blackouts
LDH Heat-related Morbidity and Mortality Dashboard	Louisiana Department of Health	Regional and State	2025, 2024, 2023	Heat related deaths by month, sex, ethnicity, age group, and race; emergency department visits by date, time, area, and demographic	Heat-related fatalities & heat-related emergency department visits
2024 Filtered Healthy Homes Data	City of New Orleans	City of New Orleans	2024	AC complaints by weather alert and zip code; type of AC complaint; window electrical complaints	Access to air conditioning
2023 Heat and Health Review Data	New Orleans Health Department	City of New Orleans	2023 (references 2022, 2021 and 2015)	Heat advisory alert type; number of heat advisories; heat index data by neighborhood (and comparison of WeatherStem station readings); hours of heat index sustained at varying temperatures; averages of daily minimum heat index on excessive heat days by neighborhood; averages of daily maximum heat index on excessive heat days by neighborhood; heat-related NOEMS calls by zip code; heat related fatalities per month/timeframe/day of the week and related demographics	Heatwave metrics; heat-related fatalities & heat-related emergency department visits

Dataset	Source	Geographic Boundary*	Year	Metrics*	Related Impact
2024 Heat and Health Review Data	New Orleans Health Department	City of New Orleans	2024 (includes 2023, 2022, 2021, 2020, 2019)	Heat advisory alert type; number of heat advisories; heat related fatalities by zip code, date, time, and related demographics; time frame heat-related decedent was last seen alive; person who promoted descendant discovery; heat related calls for service; heat related calls for service and weather alerts by month, zip code, day of the week (summer week) by patient acuity, unhoused vs. not; AC-related Healthy Homes Complaints by Zip Code, date, and characteristics	Heatwave metrics; heat-related fatalities & heat-related emergency department visits
UHI Ranking by City and census tract	Climate Central	City of New Orleans	As of 2023	Total population (2020 U.S. Census); population in census tracts with >8, 9, 10, or 12° F urban heat island effect; citywide urban heat island effect (rolled up from census tract data, weighted by area, in degrees F)	Urban heat island effect
Water Cooling Distribution Network	City of NOLA	City of New Orleans	Unknown	*Hypothesis: shifts to distribute water in the City*	Heat health impacts
WeatherStem Station Data (raw)	City of New Orleans	City of New Orleans	2022-2024	Neighborhood level data during summer months (June-August) on hourly daytime heat index (temperature and humidity); wet-bulb temperature; time a Heat Advisory was reached and sustained (hrs); time Heat Warning was reached and	Heatwave impacts; urban heat island effect

Dataset	Source	Geographic Boundary*	Year	Metrics*	Related Impact
				sustained (hrs); maximum and minimum heat index	

* City to advise on interpretation of geographic boundary/key metrics