

## POSTER #3

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### **Urban Forest Health and Mortality in the Oklahoma City Metro Region**

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Many cities wish to increase tree cover and/or improve the quality of the existing forest by promoting large, healthy trees that provide high levels of services. Although urban trees may benefit from reduced competition and increased resource availability, urban trees are generally assumed to face high stress conditions and have reduced lifespans compared to natural trees. However, the role of natural stresses or disturbances, such as droughts and storms, compared to human causes is uncertain. Using ground- and aerial-image-based surveys, we investigated urban tree health and mortality in the Oklahoma City, Oklahoma metro area. Our objectives were to assess patterns in urban forest health and mortality, specifically 1) what factors are associated with poor tree condition (i.e. native status, size)? and 2) how much can poor tree condition can be attributed to natural factors versus human causes? Assessments of recently planted trees reveal an average mortality rate (within 2 years of planting) of 40%. Although there is great spatial variability in condition, a majority (83%) of surveyed trees were in good to fair condition. Notably, human-induced damage – such as root girdling, trunk wounds, and improper pruning – were much more commonly observed than storm damage or canopy dieback. The smallest and largest trees were most likely to be in poor condition, and trees native to central Oklahoma were not in better condition than those native to other regions. These results suggest that human stressors, rather than inappropriate species selection, is the biggest factor in poor tree health. High mortality rates and poor tree health result in diminished return on financial investments, the lack of realization of the full extent of services that can be provided by urban forests, and challenges to human management efforts to mitigate urban heat island effects, CO<sub>2</sub> emissions, and other climate change-related stressors impacting cities.