

Risk and Storm Management Operations in the United States: How Does Your City Compare?

By Andrew K. Koeser, Richard J. Hauer, Andrew Hillman, and Ward Peterson

Editor's Note: This is the second in a series of articles we'll be publishing 2016 focusing on trends and best practices in municipal arboriculture and urban forest management based on findings from the research project, Municipal Tree Care and Management in the United States.

Controlling tree failures and tree risk are our primary objectives as arborists and urban forest managers. Recognizing this, just how are we managing tree risk and its linked, relative storm preparedness/response? In a recent comprehensive survey of urban and community forestry activities in the United States, researchers asked respondents, from the largest cities to some of the smallest towns, how they manage trees to reduce risk and prepare for larger-scale storm events. A total of 667 communities responded, providing a wealth of data on their current operations. Their responses and some key insights are detailed here—offering an overview of the current state of urban forest management in the United States. This information should be insightful to municipal arborists and urban foresters to compare how their communities stack up with those surveyed.

The Growth of Tree Risk Management

Tree risk assessment has received considerable attention in the last decade. The International Society of Arboriculture, along with the United States Forest Service, The TREE Fund, and major commercial tree care companies (e.g., The Davey Tree Expert Company, Bartlett Tree Experts) have hosted a pair of summits related to risk (see: Koeser, “Tree Risk & Researcher Summit Whitepaper”) and tree biomechanics (Dahle et al. 2014). In addition, ISA and The Davey Tree Expert Company have held a recurring event, Biomechanics Week of Research, supporting scientists and practicing arborists’ work at a Davey research facility in Ohio, U.S., to answer questions regarding tree failure potential.

Beyond research, ISA and other industry entities worked to create the first American National Standards Institute

(ANSI) standard for tree risk assessment (*ANSI A300 Part 9 – Tree Risk Assessment*) in 2011. Coinciding with the release of the standard was publication of ISA’s *Tree Risk Assessment Best Management Practices* (BMP)—a notable departure from the preceding ISA risk assessment method developed by Matheny and Clark (1994). Two years later, ISA initiated its first qualification—Tree Risk Assessment Qualification (TRAQ)—adapted from the ISA Pacific Northwest Chapter’s TRACE program and the tree risk assessment BMP.

With all of this attention among the research community, and all of the changes occurring within the tree care industry, how many cities actively and regularly perform risk assessment? Are these efforts tied to strategic planning to prepare for severe weather events and emergencies? The findings below offer a snapshot of the current state of urban forest risk assessment and storm preparation.

Tree Risk Assessment

Knowing which trees have an unacceptable level of risk, and taking action, is paramount for providing a safe and reliable urban forest. While all risk can never be eliminated, identifying risk is a start. Removing the risk is the endgame.

Does your community regularly conduct tree risk management?

Overall, 57% of the responding municipalities said that they conduct tree risk management. Smaller communities (population <10,000) were less likely (36%) to actively conduct risk assessment (Figure 1). Our data show that medium-sized cities were most likely to perform regular risk management, with 75% of cities with populations between 250,000 to 499,000, and 70% of cities with populations of 100,000 to 249,000 indicating risk

management was part of their normal operations (Figure 1). While a broad range of activities could be considered tree risk management, more specific questions and responses follow.

Does your community have a risk/hazard abatement ordinance? A strategic tree risk management plan? A written risk management policy?

Tree risk management is established in a community through ordinance, plans, policy, and other enabling mechanisms that require action. A tree ordinance of some type exists (89%) or one is in development (2%) in 91% of responding communities. Of these, 59% noted that their ordinance(s) had some language that addressed the abatement of hazardous or public nuisance trees.

Compared to ordinances, strategic plans were less common among the communities surveyed. Half of the respondents affirmed they had a written strategic plan that includes trees. Of the respondents with strategic plans, 35% had a tree risk management plan and 9% were in the process of developing such. Thus, only 22% of all communities had plans related to tree risk management. Not coincidentally, only 14% of communities noted they had internal, written policies related to tree risk management. Thirty percent of communities with populations of 25,000 or more had written policies.

What is the overall tactic used by your community for risk inspection?

While the question above implies a single approach, responses indicated that multiple tactics are being used in their communities. A citizen complaint is a common way of reporting a suspected tree risk, with 90% of the respondents indicating such. A formal tree risk inspection program was less common, with 35% of communities conducting risk assessments as part of a routine inspection process. The data shows these communities rely regularly on limited visual assessments, with 62% of those surveyed acknowledging their use of windshield surveys when assessing trees for risk. A majority of respondents (59%) noted they conducted tree risk assessments in conjunction with other tree maintenance practices. While no one approach is best, proactive urban tree risk management supported by tree risk assessment, as part of regular maintenance operations and notifications by citizens, will lead to safer urban trees and forests.

What Risk Rating System do you use?

The ANSI A300 Standard does not identify a preferred risk rating system. Rather, it defines what constitutes limited visual, basic, and advanced assessments. This openness was reflected in the variety of risk rating systems used (Figure 2).

Despite its relative newness, the ISA BMP was the most common rating system used by 22% of communities that had adopted a formal rating system. While this may indicate that communities conducting risk are readily adopting the approach and its newer risk-matrix structure, the proportion of people using the ISA BMP likely

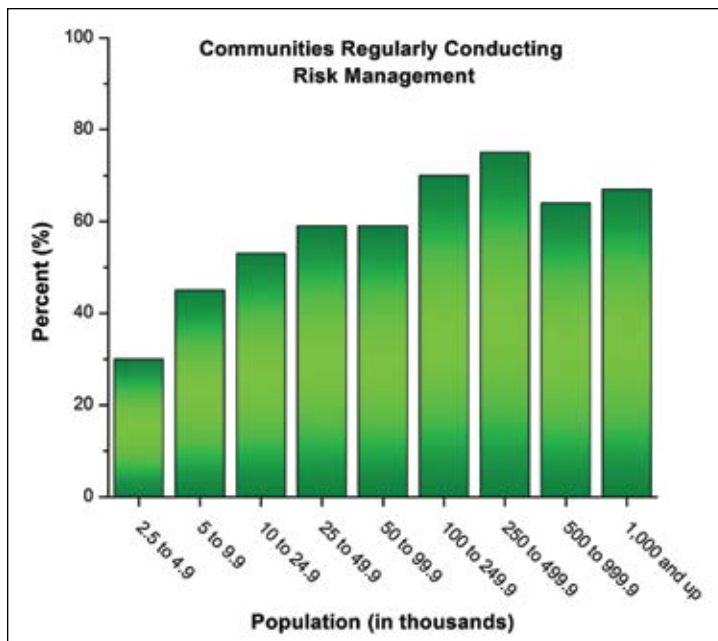


Figure 1. Communities regularly conducting tree risk management.

includes communities that are newcomers to risk assessment; given the numerous recent industry advancements listed in the introduction (e.g., ANSI Standard, ISA BMP, TRAQ).

An in-house risk assessment system was used by 16%, making it second to the ISA BMP. From personal experience, these types of systems often adopt elements from the established rating systems developed by ISA, the USDA Forest Service, the Council of Tree and Landscape Appraisers (i.e., tree condition rating), and other sources, eliminating elements that may be too onerous to perform quickly while adding ways to account for regional/local concerns, such as wildfire. Likely included among the in-house rating systems are a range of quick, limited-visual rating approaches developed by the practitioners who rely on windshield surveys as part of their inspection process (Figure 3).

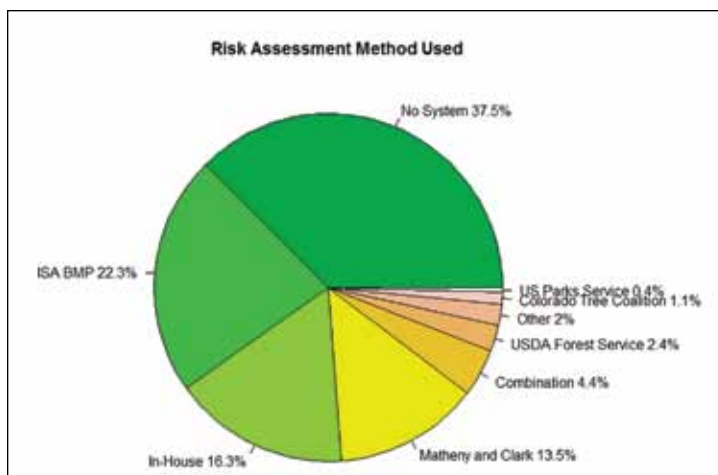


Figure 2. Risk assessment methods used by respondents.



Figure 3. The communities surveyed relied on a range of limited visual and basic risk assessment methods.

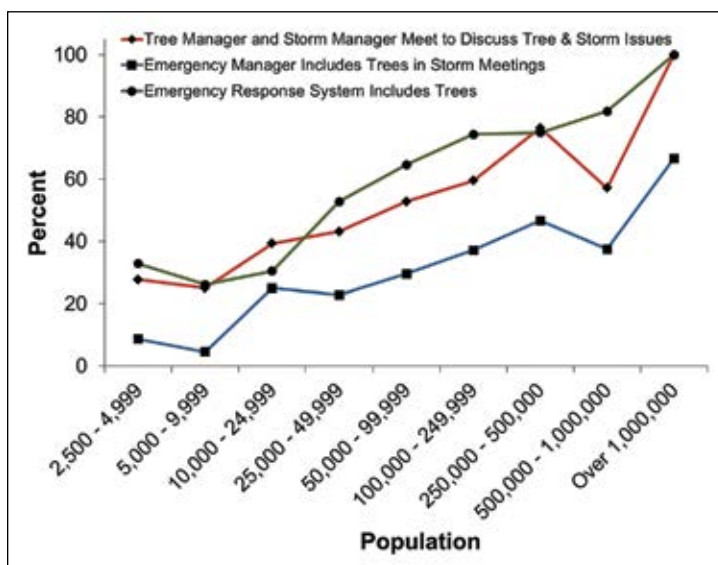


Figure 4. Percentage of respondents conducting emergency response activities by population.

The previous ISA risk assessment system, developed by Matheny and Clark, remains the third most common type of system, used among 13% of our respondents. This system offers a twelve-level numerical rating, which is used to prioritize risk abatement efforts for populations of trees. While a potential advantage, for assessing larger populations, this method by Matheny and Clark has often been misused in assessing single trees (with practitioners using the rating as a concrete justification for mitigation measures, such as removal). Depending on the number and condition of trees assessed, the courser ISA BMP method (with four levels of classification) may make it hard to prioritize mitigation efforts for a large population of trees—a common strategy among urban foresters.

Storm Preparation and Response

Storms happen. They can't be prevented. Advanced preparation is the best way to deal with them. A storm-emergency/preparation and response plan will minimize the effects of storms on the community and the urban forest, especially when coupled with tree risk management. Identifying trees with defects and taking corrective action helps to reduce the impact of storms. Certainly, catastrophic events will damage even structurally sound trees; however, most storms are lesser in intensity.

Does your community have a written strategic plan for storm/emergency response? Does your community have an emergency-response system that includes trees?

Including trees within a community emergency management plan is good practice. Over half (55%) of communities responded that trees were part of an overall storm/emergency plan. The frequency became more common as community size increased (Figure 4). As noted earlier, half of communities have a written plan that includes trees, and of these nearly 60% also have a storm response (53%) plan or are developing (6%) one. Thus, nearly 30% of responding places have a storm/emergency response plan. A plan allows a community to track its progress toward its goals by clearly defining objectives or performance criteria. This monitoring process can provide evidence in support of current operations or highlight a need to reevaluate or strengthen management efforts.

Does your community have an emergency response system that includes trees?

Communicating with other emergency and storm managers is important, especially since trees are a common part of first response and storm recovery. This communication and coordination is more common in larger versus smaller communities (Figure 4). The necessity is important in all places.

The majority of respondents (55%) reported having some sort of emergency response system in place that included trees. Nearly half (49%) of responding communities had

personnel trained in Incident Command Systems (NIC), and 41% had personnel trained in National Incident Management Systems (NIMS). The NIC and NIMS systems are standard approaches with online training modules (<https://training.fema.gov/nims>) to encourage proficiency. Additionally, 48% of respondents indicated they had met with emergency managers within their community to discuss tree issues during storms. For 26% of respondents, emergency managers went as far as to hold storm meetings to discuss trees along public roads and their required maintenance. Occasional meetings, and taking prevention and preparedness action, will likely lessen the impact of storms.

Conclusion

What does the future hold for making the urban forest a safe and resilient place in our communities? Developing plans and policies, putting these into action, and assessing the end results are central to safe and resilient urban forests that bring enjoyment and benefits to members of the community. While other assessments of urban forest management practices have been conducted, this is the first time questions regarding risk assessment and storm preparation were asked nationally in the United States. Future surveys will reveal if U.S. communities advance their risk management efforts, remain stagnant in their approaches, or regress.

Additional Reading

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Andrew Koeser is an assistant professor of landscape management at the University of Florida Gulf Coast Research and Education Center in Wimauma, Florida.

Richard Hauer is a professor of urban forestry with the College of Natural Resources at the University of Wisconsin–Stevens Point.

Andrew Hillman is the northeast regional business developer for Davey Resource Group. He is an instructor at the Municipal Forestry Institute and is the immediate Past President of the New York State Urban Forestry Council.

Ward Peterson is the manager of utility and urban resources with the Davey Resource Group.

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