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## Review of Sixty U.S. Environmental Community Noise Ordinances

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The Noise Control Act of 1972<sup>1</sup> directed the Environmental Protection Agency (EPA) to protect the health and welfare of Americans from unregulated noise and formed the EPA Office of Noise Abatement and Control (ONAC). In 1974, ONAC recommended an equivalent sound exposure level of 70 decibels over a 24-hour period to protect the public from hearing loss.<sup>2</sup> At that time, ONAC also recommended levels regarding interference or annoyance of 55 and 45 decibels for outside and inside activities, respectively. In 1982, ONAC was defunded, transferring the primary responsibility of regulating noise to state and local governments. An analysis of 491 U.S. noise ordinances in 2016<sup>3</sup> revealed most communities used multiple standards to regulate noise exposure including nuisance, zoning, audibility decibel levels, time of day and distance.

## METHODS

Investigators reviewed and classified 60 existing community noise ordinances. Searches were conducted on local government webpages or via legal code databases. The 10 most populated U.S. cities were analyzed as well as 50 community noise ordinances randomly chosen from across the nation. Ordinances were specifically reviewed to identify 22 key aspects of noise ordinances. These included five key noise control measures: audibility, time of day, decibel level, zoning, and specified quiet zones to protect vulnerable communities (e.g. hospitals, schools). Ordinances were also reviewed for legal language identifying the entity or agency responsible for enforcement and the penalties, if any.

## RESULTS

Of the 60 jurisdictions reviewed, 32 (53.3%) were small, 16 (26.7%) were medium, and 12 (20.0%) were large. Sound sources that were specified by law were identified in all but two (96.7%) of the ordinances. Time-of-day restrictions were found in 55 (91.7%). Zoning restrictions were used in 53 (88.3%) jurisdictions. Activities deemed to be noise

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disturbances were specified in 46 (76.7%) ordinances. Disturbing the peace was identified in 50 (75.0%), nuisance/annoyance in 42 (70.0%). Audibility, decibel level, and quiet zones were included in 37 (61.7%), 35 (58.3%), and 29 (48.3%) of the ordinances, respectively. Restrictions on vehicles were found in 52 (86.7%) and noisy animals in 31 (51.7%) of the ordinances.

Law enforcement, e.g., the police or sheriff, was identified as at least one of the designated authorities in charge of the noise ordinance in 31 of the reviewed ordinances. Officials in charge of codes, inspections, and other types of regulations were identified in 12 (20.0%) of the ordinances. Health agencies were listed as having authority in 10 (16.7%). Noise control authorities were clearly specified in 4 (6.7%) ordinances. Jurisdictional administration, such as the city council, and other administrative offices, e.g., housing, animal control, public safety, had authority in 20 (33.3%). In 14 (23.3%) ordinances, the authority of regulation was not identified or unclear.

Among the 60 communities, 40 (66.7%) included fines in their ordinances. Civil penalties or infractions were found in 21 (35.0%). Charges of misdemeanor were listed as penalties in 18 (30.0%), and 6 (10.0%) stated violation could result in imprisonment. In 21 (35.0%) jurisdictions, local ordinances specified that infractions constituted a civil violation. As shown in Figure 1, seven communities (11.7%) had no penalty and no enforcement clauses in their noise codes, two (3.3%) had enforcement but no penalties, six (10.0%) had penalties but no enforcement, and 45 had both written enforcement and penalties. Among the ordinances reviewed, communities with enforcement and penalties written into their noise ordinances were mostly in the South and coastal States. It should be noted that community noise ordinance might not have penalties or enforcement if a superseding chapter for penalties and enforcement supplants multiple ordinances in the code. Some of the ordinances reference a superseding chapter, others do not. Because only ordinances with the word “noise” in the title were reviewed, cross-referenced penalties and enforcement were not identified. Figure 2 shows the number of key noise control measures identified within the jurisdiction’s ordinance. All five of the measures were identified in 14 (23.3%) communities, 17 (28.7%) communities had four of the five, and 29 (48.3%) had three categories or fewer.

## DISCUSSION

Exposure to loud sounds puts millions of people in the United States and across the globe at risk not only of hearing loss, but several highly prevalent health effects including ischemic heart disease, hypertension, injuries, anxiety, sleep disruption, stress, and cognitive impairments.<sup>4,5,6</sup> While three of four of the jurisdictions reviewed cited annoyance, nuisance, or disturbance as a primary purpose for the noise control ordinance, only slightly more than half cited health as a primary purpose.

Almost all jurisdictional noise ordinances reviewed included time-of-day restrictions, demonstrating that communities recognize excessive noise at certain hours can be more problematic. Half of the jurisdictions listed the police or sheriff’s department as the enforcement authority. Only four communities had a noise control officer, or a specific noise

control authority identified. As a result, noise enforcement relegated to the responsibility of police departments may not be prioritized as a violation. Of concern is the finding that nearly one fourth of noise ordinances did not have an enforcement body identified, although a general enforcement statute may be listed elsewhere in the local code. If a community has a noise ordinance and a disturbing the peace ordinance, it may be easier for law enforcement to cite disturbance of the peace, which is likely more subjective and has less stringent legal requirements.

Although the number of key noise control measures in a jurisdiction reveals the variety of methods used, it is not necessarily a measurement of its effectiveness. A community could potentially include all five of the controls but find them ineffective, confusing, and difficult to enforce. Objective measurements might not be available for noise monitoring, or enforcement officials may not have the necessary training to properly utilize noise measurement equipment. In such situations, enforcement officers might be more likely to cite a more subjective ordinance, such as disturbing the peace. This review did not account for noise regulations included in ordinances related to disturbance of the peace, land use or zoning, and in other parts of local code. These regulations are not always cross-referenced in the noise ordinance.

To help offset the harmful effects noise may have on health, ordinances can incorporate quiet zones into communities. Quiet zones, or noise-sensitive zones, can be designated in areas that should have a lower threshold for noise, such as areas with hospitals or elderly care homes. Issues such as sleep disturbance affect the elderly and persons with chronic illness.<sup>7</sup> Schools and day care centers should also be in quiet zones, as even moderate traffic noise does not detract from academic performance.<sup>8</sup>

## PUBLIC HEALTH IMPLICATIONS

Because local jurisdictions do not have up-to-date federal noise guidelines to follow, local noise ordinances reviewed in this article are varied in terms of their noise control strategies, enforcement, and penalties. With up-to-date guidelines that consider the health implications of noise and recent noise monitoring technology, jurisdictions might be better informed and could follow a set of common standards. State and local governments might consider using the World Health Organization's Environmental Noise Guidelines for the European Region<sup>9</sup> as a framework when crafting their legislation to protect health from exposures of environmental noise.

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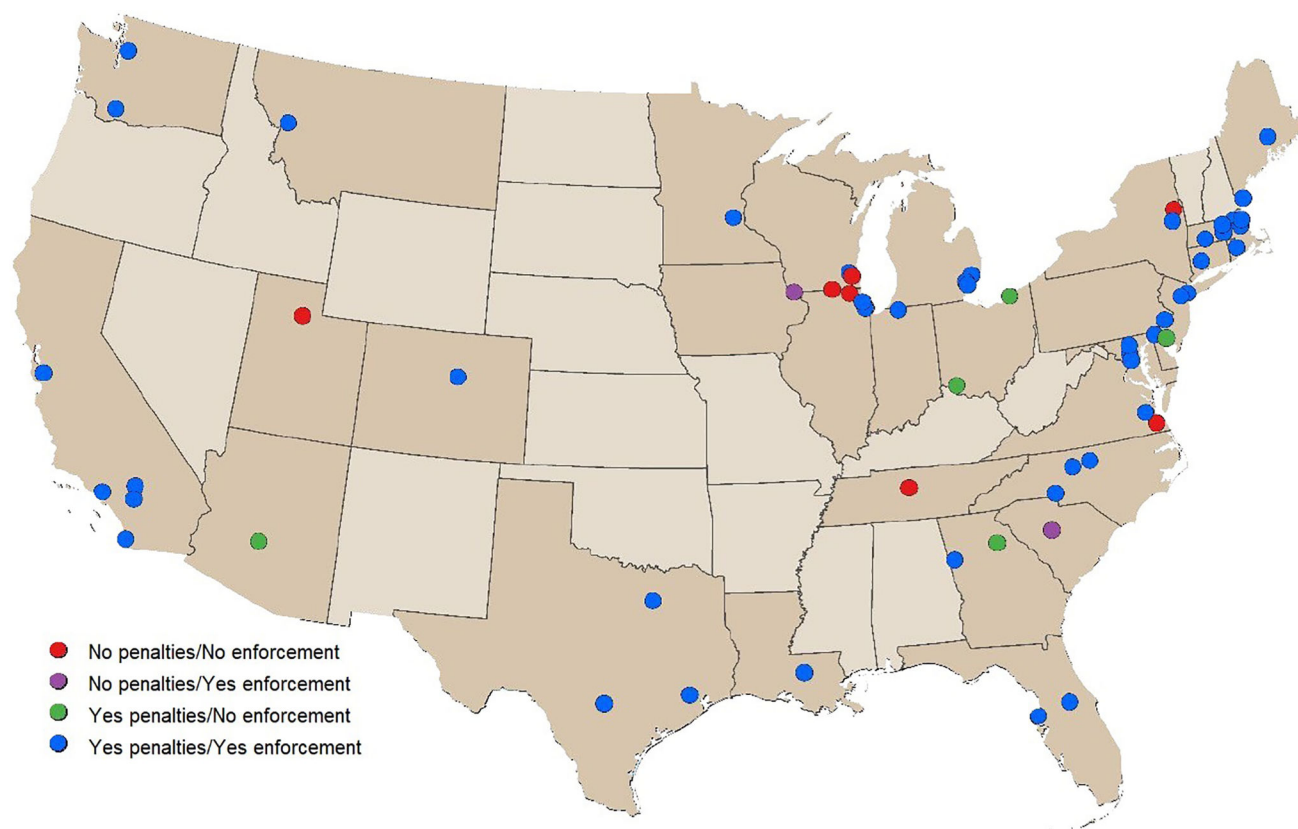
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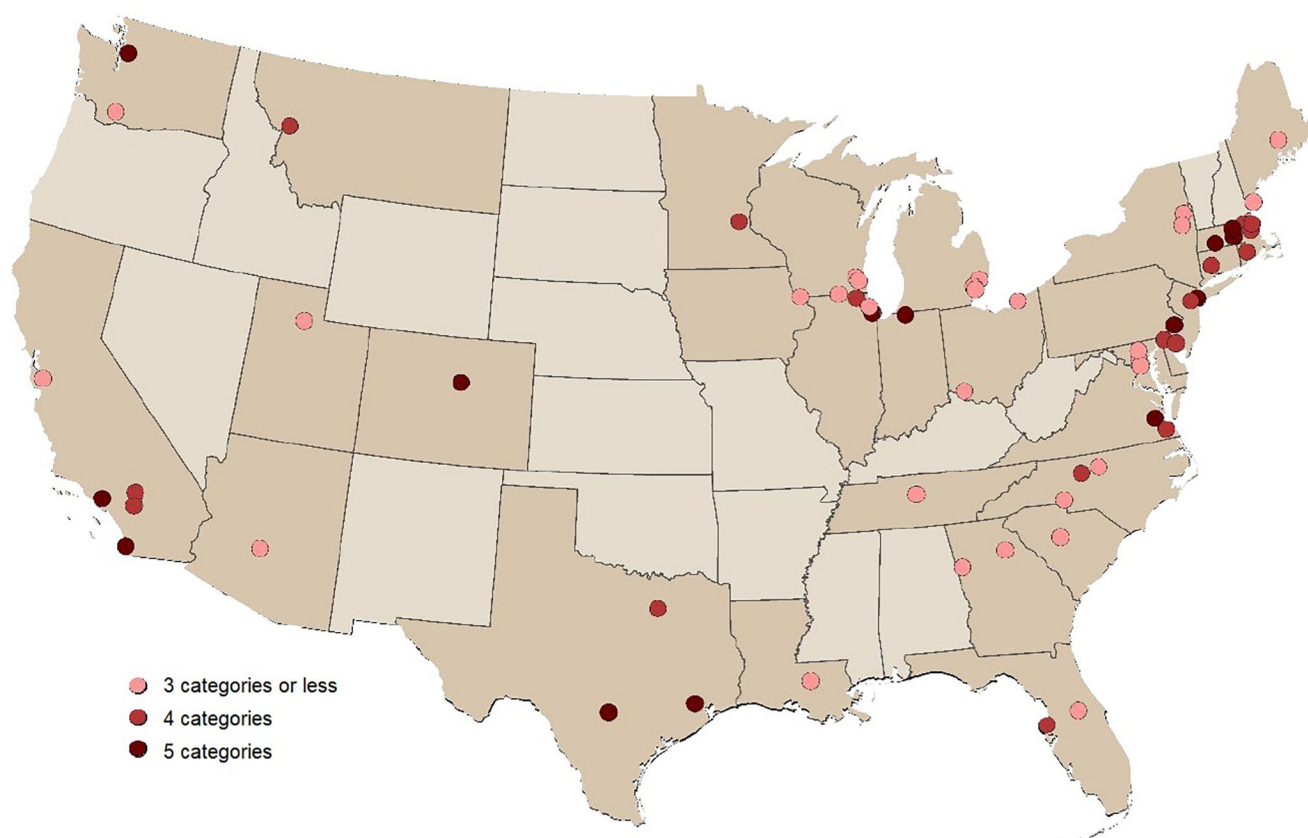
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**Figure 1.**  
Penalties and enforcement identified in community noise ordinances.



**Figure 2.** Number of key noise control measures (pink = 3, red = 4, and maroon = 5). Noise control measures: plainly audible, time of day, decibel levels, zoning, and quiet zones (e.g. hospital or school).