

Smoke-free policies associated with lower blood pressure

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Smoke-free policies have been associated with lower systolic (top number) blood pressure readings among non-smokers, according to new research in *Journal of the American Heart Association*, the Open Access

Journal of the American Heart Association/American Stroke Association.

While smoke-free policies—laws that prohibit smoking in public places like bars and restaurants—have been associated with reduced rates of hospitalization for heart disease, previous studies have not examined changes in blood pressure. In this new analysis, researchers linked data from the Coronary Artery Risk Development in Young Adults (CARDIA, 1995-2011) study to state, county and local smoke-free policies in restaurants, bars and workplaces.

"We found that nonsmoking adults in the study who lived in areas with smoke-free laws in restaurants, bars or workplaces had lower [systolic blood pressure](#) by the end of the follow-up period compared to those who lived in areas without smoke-free laws," said Stephanie Mayne, Ph.D., study lead author and research scientist at PolicyLab and the Center for Pediatric Clinical Effectiveness at Children's Hospital of Philadelphia. The study was conducted while she was a postdoctoral fellow at Northwestern University's Feinberg School of Medicine.

"Smoke-free laws were associated with reduced systolic blood pressure, but surprisingly not with reductions in [diastolic blood pressure](#) or [high blood pressure](#). It's not entirely certain why this was the case, but it's possible that we are detecting effects on systolic blood pressure that are below the threshold for hypertension," Mayne said.

Higher systolic blood pressure increases the risk of cardiovascular disease even when they are below the hypertension threshold, so the reductions in systolic blood pressure seen in this study suggest a potentially meaningful effect on population-level risk, she said.

"Also, when we looked at differences in blood pressure over time within individuals, comparing years when they lived in an area with a smoke-

free law to years when they didn't, systolic blood pressure was lower on average when they lived in an area with smoke-free laws, after accounting for overall trends in blood pressure and for how people's levels of risk factors like diet and physical activity changed over the study period," Mayne said.

While the magnitude of associations was small at the individual level, researchers said the results point to a potential mechanism through which reductions in secondhand smoke due to smoke-free policies may improve population level heart health.

The CARDIA study enrolled 5,115 black and white adults (age 18 to 30) in 1985-86 from four U.S. cities: Birmingham, Alabama, Chicago, Minneapolis and Oakland, California.

Follow-up exams were conducted up to 30 years later. Researchers analyzed data drawn from years 10-25 (1995-2011) to align with the timing of smoke-free policies and excluded participants who didn't have at least two [blood pressure readings](#) during that period.

A total of 2,606 CARDIA participants were used for this study. At each exam, participants living in areas with smoke-free policies affecting public places had lower systolic blood pressure on average than those in areas without smoke-free policies, and the difference increased over time. By year 25, participants in smoke-free areas had systolic [blood pressure](#) values on average 1.14 mm Hg to 1.52 mm Hg lower than those in areas without smoke-free environments, depending on the locations covered by the law (restaurants, bars, or workplaces).

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