

Dense human populations linked to longer urban coyote lifespans

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Tracking coyote movement in metropolitan areas shows the animals spend lots of time in natural settings, but a new study suggests the human element of city life has a bigger impact than the environment on urban

coyote survival.

Researchers monitoring coyotes in Chicago found that habitat—areas with relatively high levels of vegetation cover and low levels of human infrastructure—did not influence coyote survival in positive or negative ways. Instead, areas densely populated with humans were associated with longer coyote lifespans.

"What we found was really interesting, in that the societal characteristics seem to play a much more important role in predicting coyote survival time than the environmental characteristics," said Emily Zepeda, first author of the study and a postdoctoral scholar in the School of Environment and Natural Resources at The Ohio State University.

"And then we found this positive effect of human population density on survival time. Both of those things are unexpected because we usually associate human activity with detrimental effects on wildlife."

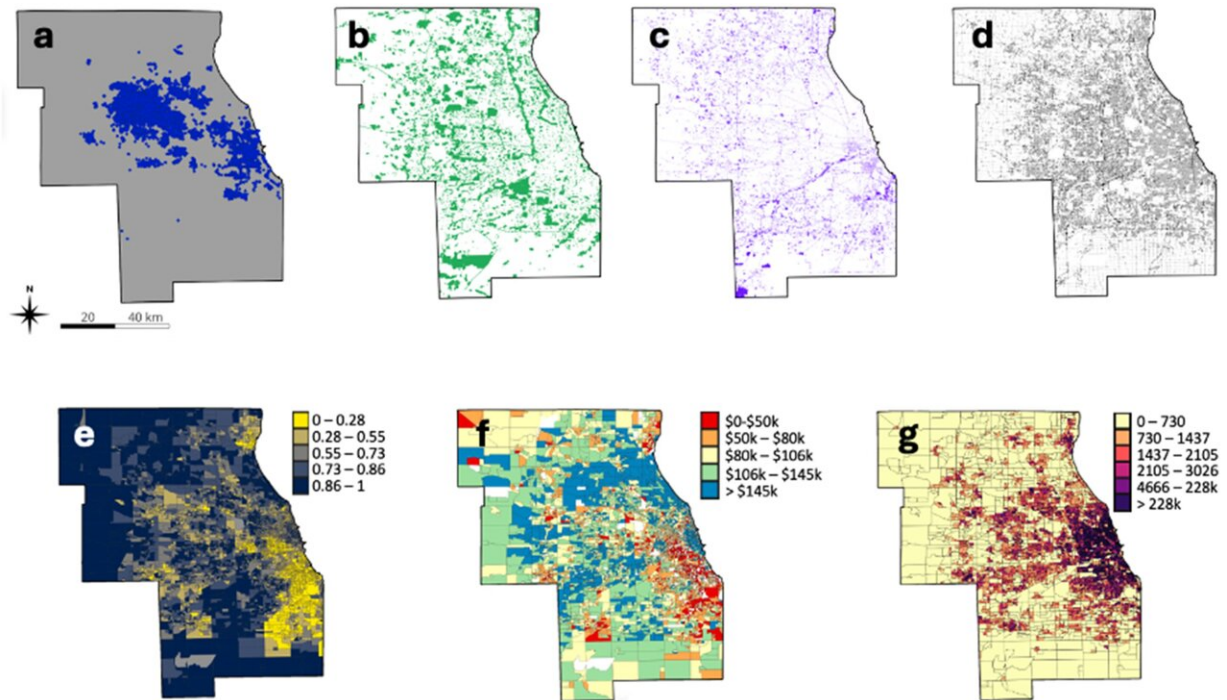
The study was published in the journal [*Urban Ecosystems*](#).

The data comes from the Urban Coyote Research Project, a long-term study of coyote ecology in the Chicago Metropolitan Area led by Stan Gehrt, a wildlife ecologist at Ohio State and senior author of the new paper.

Gehrt and colleagues estimate that 4,000 coyotes live in Chicago, one of the largest metropolitan areas in North America. Gehrt's previous [behavioral](#), genetics and [biological](#) studies offer hints at how coyotes have adjusted to life in the city. This new work sought to identify the diverse urban factors that help or hinder their ability to survive.

Tracking data on the movement of 214 coyotes living in the Chicago area between 2013 and 2021 was used for the study. The duration of

each coyote's tracking period served as a proxy of its survival time.



Spatial distributions of environmental and societal characteristics in the CMA. Recorded locations (a) show where collared coyotes were tracked. Natural habitat (b), disturbed habitat (c), and roads (d) geospatial data were collected from the CMAP (2015). The proportion of white residents (e), median household income (f), and population density (residents per km²) (g) in Census block groups were collected from the American Community Survey (United States Census Bureau 2017). Credit: *Urban Ecosystems* (2024). DOI: 10.1007/s11252-024-01643-w

Potential factors the researchers predicted would affect urban coyote survival included a mix of societal and environmental characteristics: neighborhood median income, human density and demographics; and road density, parks and golf courses, and "disturbed" regions dominated

by infrastructure and vacant land. These factors were analyzed alongside the coyote monitoring data in a statistical model to determine their relationships with survival time.

The results showed a positive relationship between survival rate and human population density—at low human densities, [coyote](#) survival was generally low. The data also revealed an interaction between neighborhood income and density: In areas with low human density, median income was not significantly associated with survival, likely due to the absence of humans. However, at moderate and high levels of human density, coyotes in lower-income areas were 1 1/2 times more likely to survive to age 2 than coyotes in high-income areas.

"We've hypothesized that population [density](#) may have a positive effect because it's actually providing resources like human-related structures or food that allow coyotes to weather the harsh conditions of the winter, which is a major mortality factor for Chicago coyotes," Zepeda said.

Plentiful resources might become problematic, she said, when the food and shelter, combined with more vegetation and less pollution in high-income areas, draws a crowd of coyotes—which leads to higher disease transmission and fighting over territory.

"There might be more individuals in those areas, but survival time may be shorter there," she said. "You might die younger in an area where there are a lot of competitors."

The findings build on growing evidence that societal processes that benefit and marginalize human populations trickle down to urban ecosystems—suggesting that the presence, or lack, of humans, and the conditions in which they live, has potential to override natural influences on urban wildlife.

And yet, it was surprising not to find a connection between [natural habitats](#) and longer survival, Zepeda said, because "anecdotally, we see really high densities of coyotes in nature preserves and urban parks. That's often where you see coyotes in the city if you see them at all."

Researchers can only speculate, but Zepeda said it could mean the habitat categories on city maps aren't specific enough or that hunting and trapping is more common in [natural settings](#). Or it could simply be a sign of how crafty coyotes are.

"It could speak to how adaptable they are that they might prefer natural habitat, but at least in terms of survival, they can do just as well in more urbanized areas," she said.

More information: Emily Zepeda et al, Impacts of urban heterogeneity in environmental and societal characteristics on coyote survival, *Urban Ecosystems* (2024). [DOI: 10.1007/s11252-024-01643-w](https://doi.org/10.1007/s11252-024-01643-w)

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