

Supplementary Online Content

Nesoff ED, Branas CC, Martins SS. Association of neighborhood characteristics and travel patterns with fatal drug overdoses. *JAMA Intern Med*. Published online November 23, 2020. doi:10.1001/jamainternmed.2020.3823

eMethods. Supplementary Methods

eFigure. Example of Distance Calculation for Far Travel From Zip Code of Home Residence to Location of Fatal Overdose

eReferences.

This supplementary material has been provided to give readers additional information about their work.

eMethods. Supplementary Methods

Identifying Fatal Drug Overdoses and Substances Involved in Fatal Overdoses, Cook County, Illinois, August 1, 2014, to December 31, 2018¹

We used text-based identification of fatal drug overdose; ICD-10 codes were unavailable.² We included fatal overdoses related to non-opioids (e.g. cocaine, methamphetamine) (n=333) in our analyses because these substances are increasingly combined with fentanyl.³ Future overdoses involving these substances may increasingly become opioid overdoses even if people who use drugs are not intentionally seeking opioids.^{4,5}

Substances involved in fatal drug overdoses:

Fentanyl (Fentanyl and fentanyl metabolites, Carfentanil, 4-ANPP, U-47700)

Heroin

Nonprescription opioids (Buprenorphine, Codeine, Hydrocodone, Hydromorphone, Methadone, Morphine, Tramadol, Oxycodone, Oxymorphone, Mitragynine, opioid, opiate)

Cocaine/Crack-cocaine

Methamphetamine/Amphetamines

Benzodiazepines (7-Aminoclonazepam; Clonazepam, (Klonopin); Delorazepam;

Diazepam (Valium); Diclazepam; Etizolam; Lorazepam (Ativan); Midazolam (Versed);

Nordiazepam; Temazepam (Restoril))

Cook County, Illinois, and Generalizability of Findings

Cook County is the second most populous county in the United States (population: 5,180,493) and includes Chicago and the surrounding suburbs.⁶ In 2018, Cook County's opioid overdose rate was 22.9 deaths per 100,000 residents ages 18 or older, higher than the state overdose death rate of 20.0 per 100,000 and the national rate of 20.7 per 100,000.^{7,8}

eFigure. Example of Distance Calculation for Far Travel From Zip Code of Home Residence to Location of Fatal Overdose



Methodological Note: We assigned the centroid of the ZIP code as the location of residence for each overdose and calculated the Euclidean distance from the ZIP code centroid to the GPS coordinates of the overdose location in R 3.4.1 (R Foundation for Statistical Computing, Vienna, Austria). All overdoses that occurred in the same ZIP code as home ZIP code were labeled the non-traveling group (n=2,392). Because urban ZIP codes tend to be compact and divided along lines that do not necessarily correspond with residents' versions of their neighborhood,⁹ we designated all subjects where the location of the overdose and home ZIP code were in contiguous ZIP codes as non-traveling (n=364). Subjects that traveled two or more adjacent ZIP codes away were designated the far travel group (n=1,171). Only 150 fatal overdose records were missing home ZIP code, and these individuals were excluded from analyses for a total n=3,927.

eReferences.

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