



ELSEVIER

Contents lists available at ScienceDirect

Data in Brief

journal homepage: www.elsevier.com/locate/dib



Data Article

Chicago supermarket data and food access analytics in census tract shapefiles for 2007–2014



Marynia Kolak^{a,b,*}, Michelle Bradley^a, Daniel Block^c,
Lindsay Pool^a, Gaurang Garg^a, Chrissy Kelly Toman^a,
Kyle Boatright^{a,1}, Dawid Lipiszko^a, Julia Koschinsky^b,
Kiarri Kershaw^d, Mercedes Carnethon^d, Tamara Isakova^a,
Myles Wolf^{a,2}

^a Center for Translational Metabolism and Health, Institute of Public Health & Medicine, Northwestern University, 633N. St. Clair, 18th Floor, Chicago, IL 60611, USA

^b Center for Spatial Data Science, Division of Social Sciences, University of Chicago, 5735 S Ellis Ave, Room 232, Chicago, IL 60637, USA

^c Geography Program, Chicago State University, 9501S. King Drive, Chicago, IL 60628, USA

^d Division of Nephrology and Hypertension, Feinberg School of Medicine, Northwestern University, 251 East Huron Street, Galter Suite 3-150, Chicago, IL 60611, USA

ARTICLE INFO

Article history:

Received 12 June 2018

Received in revised form

1 November 2018

Accepted 2 November 2018

Available online 6 November 2018

ABSTRACT

Longitudinal analysis of supermarkets over time is essential to understanding the dynamics of foodscape environments for healthy living. Supermarkets for 2007, 2011, and 2014 for the City of Chicago were curated and further validated. The average distance to all supermarkets along the street network was constructed for each resident-populated census tract. These analytic results were generated with GIS software and stored as spatially enabled data files, facilitating further research and analysis. The data presented in this article are related to the research article entitled “Urban foodscape trends: Disparities in healthy food access in Chicago, 2007–2014” (Kolak et al., 2018).

© 2018 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

DOI of original article: <https://doi.org/10.1016/j.healthplace.2018.06.003>

* Corresponding author at: Center for Spatial Data Science, Division of Social Sciences, University of Chicago, 5735 S Ellis Ave, Room 232, Chicago IL 60637, USA.

E-mail address: mkolak@uchicago.edu (M. Kolak).

¹ Present address: Burns and McDonnell Engineering, AT&T Center, 200W Adams St #1600, Chicago, IL 60606, USA.

² Present address: Division of Nephrology, Duke University, 2 Genome Court, Durham, NC 27710, USA.

<https://doi.org/10.1016/j.dib.2018.11.014>

2352-3409/© 2018 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

Specifications table

Subject area	Social Science
More specific subject area	Public Health, Geography
Type of data	Spatial data files (ESRI shapefile) and supporting figures
How data was acquired	ArcMap was used to generate the shapefiles and associated results
Data format	Raw, analyzed
Experimental factors	Supermarket data for the City of Chicago was curated and validated for 2007, 2011, and 2014. A cost distance analysis was implemented to calculate food market accessibility for each corresponding year. Raw and adjusted access measures are reported by census tract.
Experimental features	The average distance along the street network of residential areas to nearest supermarkets was calculated and averaged for each resident-populated census tract for each year. An adjusted food access measure accounts for underlying tract population.
Data source location	Chicago, Illinois
Data accessibility	Data is made available with this article.
Related research article	Kolak M, Bradley M, Block DR, Pool L, Garg G, Toman CK, Boatright K, Lipiszko D, Koschinsky J, Kershaw K, Carnethon M. Urban foodscape trends: Disparities in healthy food access in Chicago, 2007–2014. <i>Health and Place</i> . 2018 Jul 1;52:231–239 [1]

Value of the data

- This series of food access data is unique in providing only validated supermarkets that met both classification requirements and confirmed field verification for three time periods.
- Datasets provided showing supermarkets in Chicago over time are invaluable for researchers seeking to better understand impacts from changes in food access.
- Data tracking mean network distance to supermarkets for each census tract in Chicago serves as a new benchmark to measure localized food access for research and health workers.

1. Data

The supermarket dataset details locations of chain and independent supermarkets in the Chicago area in 2007, 2011, and 2014. This dataset is a collection comprised of four ESRI shapefiles: first, three files that contain point locations for each supermarket, for each year. The tract-level dataset is a single ESRI shapefile of polygon data corresponding to Chicago census tract boundaries, with additional details for each of the 791 tracts used in the original study. Details include: (1) Mean Distance to all Supermarkets for each tract, and (2) Population in 2012, used for calculation of an adjusted measure. The data view, without spatial information, can likewise be extracted from the [associated.dbf file](#).

2. Experimental design, materials and methods

The supermarket dataset was curated from public and private sources, cross-referenced, and further validated with in-person field verification. More details on the data process, decision tree used to classify stores, and data design are available in Kolak et al. [1]. Data collection and auditing was

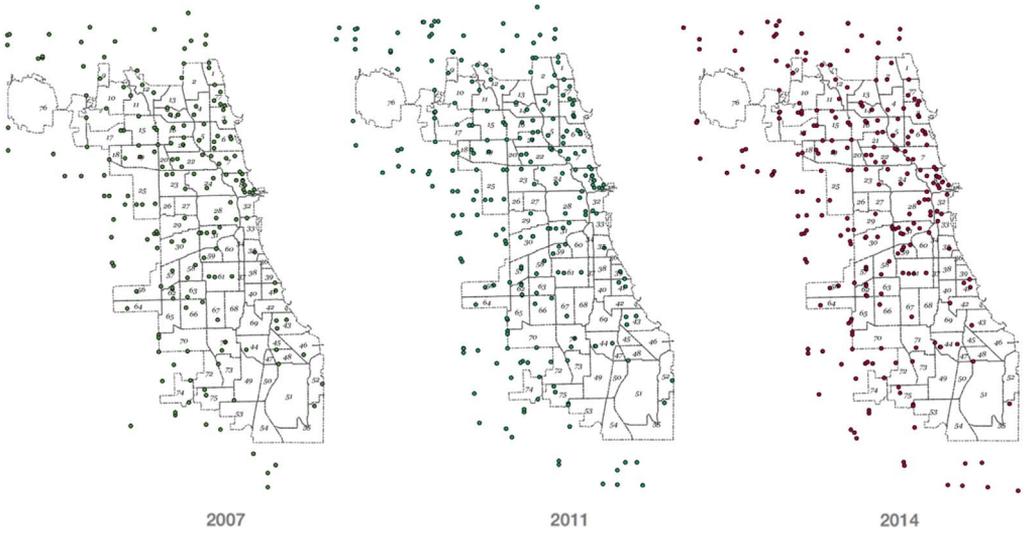


Fig. 1. Supermarket Locations across Chicago for years 2007, 2011, and 2014. Locations bordering Chicago included. Chicago community area boundaries shown with community area identification number.

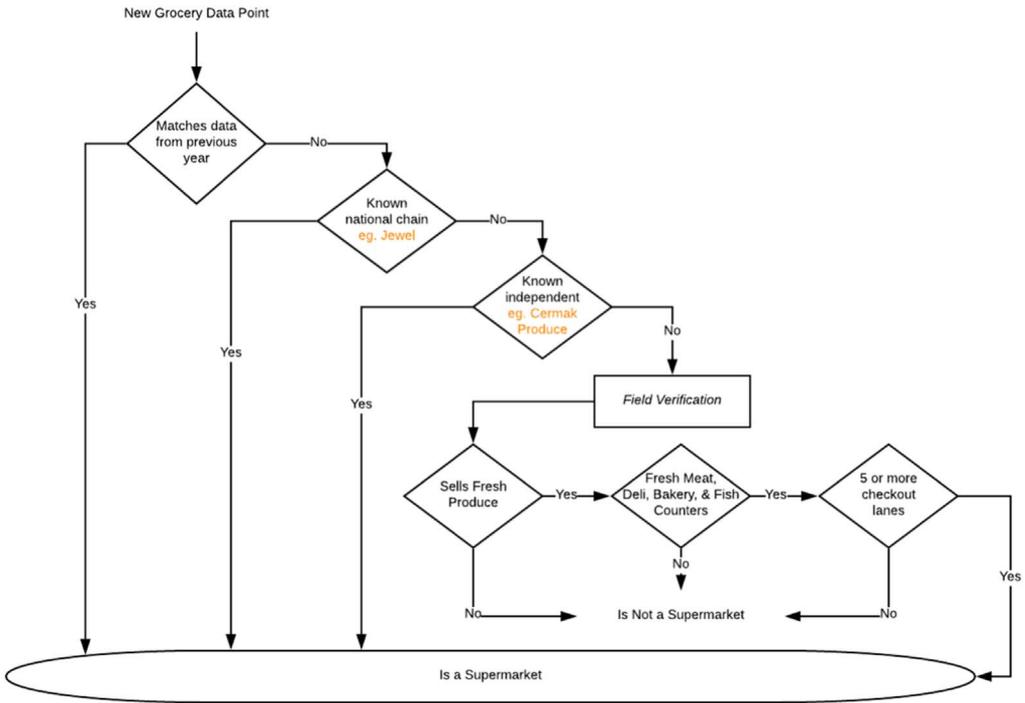


Fig. 2. Supermarket Locations across Chicago for years 2007, 2011, and 2014. Locations bordering Chicago included. Chicago community area boundaries shown with community area identification number.

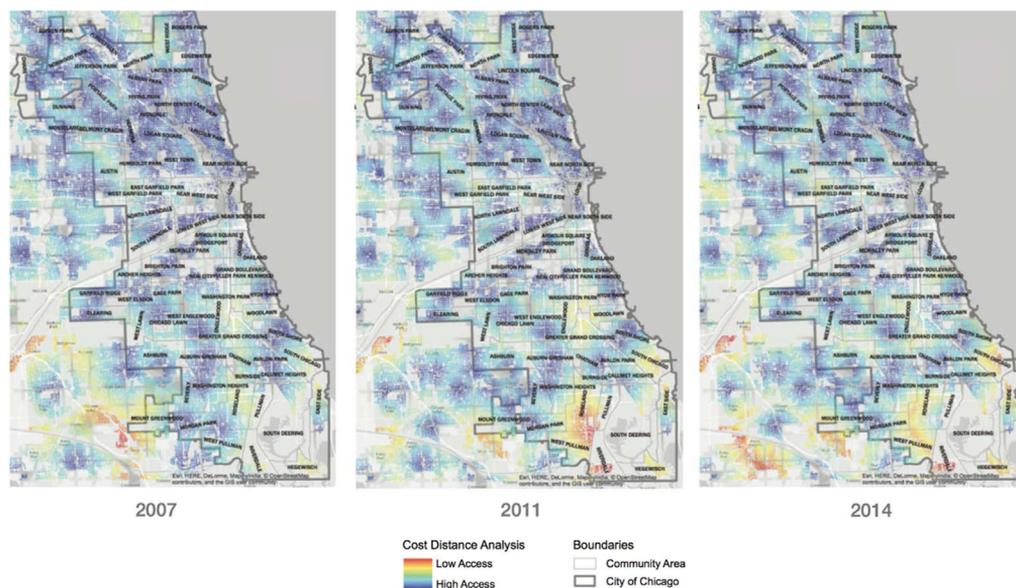


Fig. 3. Cost distance calculations on residential and mixed-use street networks for each year of analysis.

performed during each of the three study years using Block and Kouba field methodology [2], building on the original data [7]. Supermarket locations for each year in the Chicago area are visible in Fig. 1. A flow diagram of the process we used to define supermarket status is provided in Fig. 2.

The average distance from residential areas to the nearest supermarket, along the street network, was calculated for the study area using potential access or cost distance methodology [2–6]. To accomplish this, we converted the street network of Chicago and surrounding counties from vector (graph representation) to raster (pixelated representation) format to generate a fine-resolution grid map accurate to the nearest ten feet (see Fig. 3). Non-residential locations were removed based on zoning information provided by the Chicago Metropolitan Association.

The average network distance to supermarkets was then averaged for each census tract in the Chicago area that had a residential population ($n = 791$). The distributions of the average raw food access index of the 791 resident-populated census tracts are presented in Fig. 4 for each year of analysis. This raw measure is recorded in the tract shapefile in both feet and miles. An adjusted measure represents the standardized average by population, per tract.

To evaluate food access between segregated residents in Chicago, we categorized census tracts as having or not having a majority ($> 50\%$) population of Black residents and compared the raw food access index between these census tracts in each year, using a comparison of means in GeoDa open source software (Fig. 5). Additional analysis was presented in Kolak et al. [1].

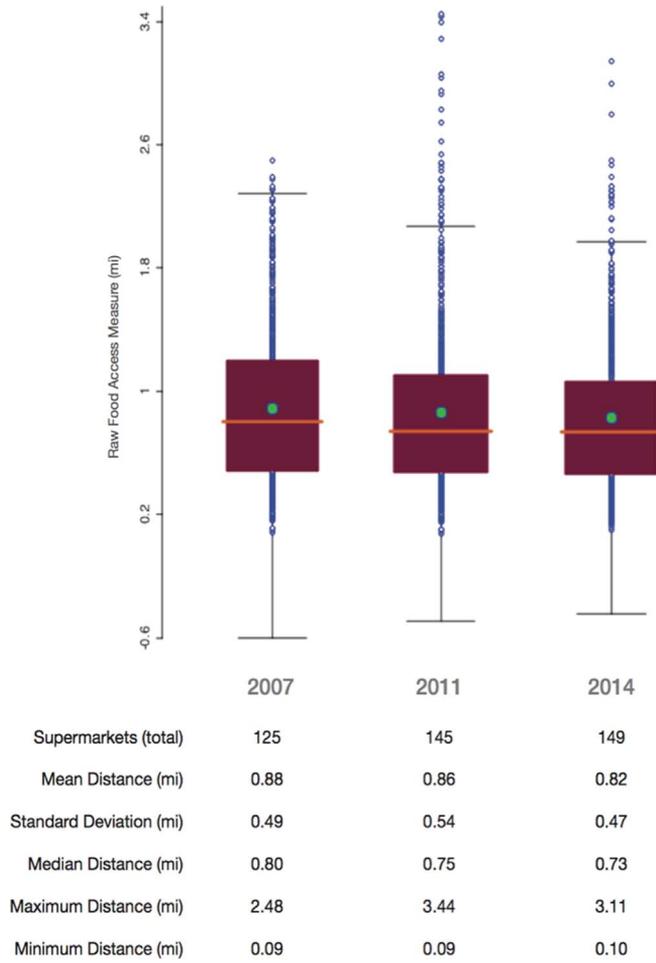


Fig. 4. Box plot representation of the distribution of the average raw food access index by each year of analysis.

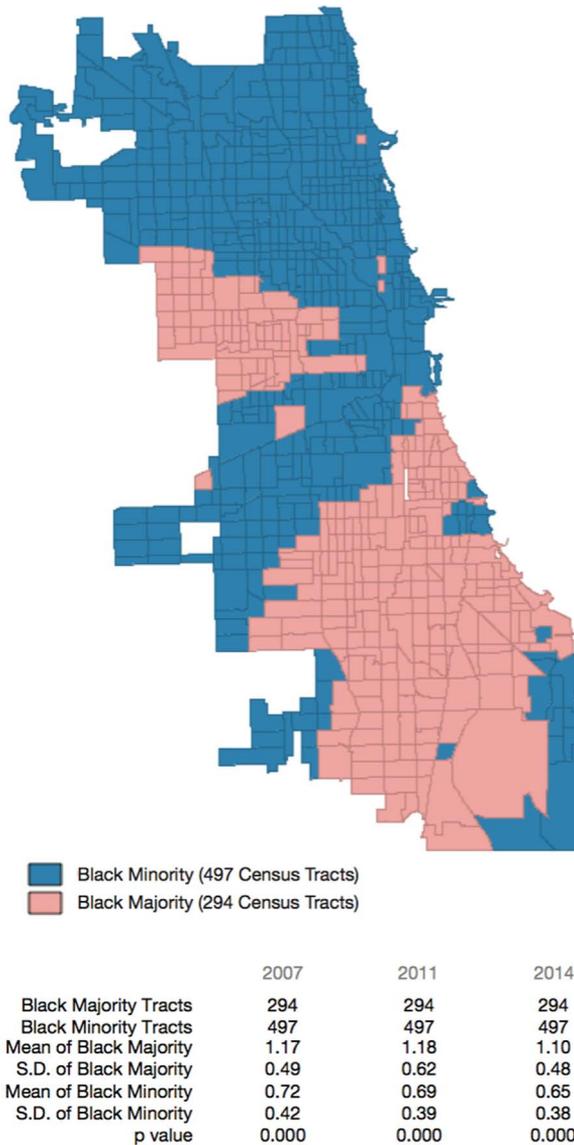


Fig. 5. Map of the City of Chicago that color codes census tracts according to whether or not they include a majority black population. Statistics comparing the average raw food access index between black majority and minority census tracts are inset.

Acknowledgements

The 2007 data collection was supported by the Searle Funds at the Chicago Community Trust as part of the Northeastern Illinois Community Food Security Assessment (Principal Investigators: Daniel Block, Judy Birgen, and Noel Chávez). The 2011 data collection was supported by the Chicago Metropolitan Agency for Planning through a contract with the Chicago State University Neighborhood Assistance Center. The 2014 data collection was supported by the Center for Translational Metabolism and Health, Institute for Public Health and Medicine, Northwestern University Feinberg School of Medicine, Chicago, IL. The authors thank the students who assisted with the 2007 and 2011 data

collections, including Kristin Bowen, Daniel DeRolf, Sarah Dircks, Jennifer Hampton, Felicia Hooks, Elizabeth McLennan, John Owens, and Veronica Turner.

Transparency document. Supporting information

Transparency data associated with this article can be found in the online version at <https://doi.org/10.1016/j.dib.2018.11.014>.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at <https://doi.org/10.1016/j.dib.2018.11.014>.

References

- [1] M. Kolak, M. Bradley, D.R. Block, L. Pool, G. Garg, C.K. Toman, K. Boatright, D. Lipiszko, J. Koschinsky, K. Kershaw, M. Carnethon, Urban foodscape trends: disparities in healthy food access in Chicago, 2007–2014, *Health Place* 52 (2018) 231–239.
- [2] D.R. Block, J. Kouba, A comparison of the availability and affordability of a market basket in two communities in the Chicago area, *Public Health Nutr.* 9 (7) (2006) 837–845.
- [3] C. Burns, A. Inglis, The relationship between the availability of healthy and fast food and neighbourhood level socio-economic deprivation: a case study from Melbourne, Australia, *Obes. Rev.* 7s2 (2006) 39.
- [4] M. Langford, G. Higgs, Measuring potential access to primary healthcare services: the influence of alternative spatial representations of population, *Prof. Geogr.* 58 (2006) 294–306.
- [5] K.E. Smoyer-Tomic, J.C. Spence, C. Amrhein, Food deserts in the prairies? Supermarket accessibility and neighborhood need in Edmonton, Canada, *Prof. Geogr.* 58 (3) (2006) 307–326.
- [6] E. Talen, Neighborhoods as service providers: a methodology for evaluating pedestrian access, *Environ. Plan. B: Plan. Des.* 30 (2) (2003) 181–200.
- [7] D.R. Block, N. Chavez, J. Birgen, Finding Food in Chicago and the Suburbs: The Report of the Northeastern Illinois Community Food Security Assessment Report to the Public, Chicago State University, Chicago (IL), 2008.