## **Geographic Access to New Mexico Health Care Providers and Facilities**

https://www.unm.edu/~lspear/health\_stuff\_update.html

Independent Study (Geography, 691), Spring 2023
Larry Spear, (Ispear@unm.edu https://www.unm.edu/~Ispear)

## **Selected References: (**Version 2, 2/19/2023**)**

Apparicio, P., J. Gelb, A.-S. Dubé, S. Kingham, L. Gauvin, and É. Robitaille. 2017. The approaches to measuring the potential spatial access to urban health services revisited: Distance types and aggregation-error issues. *International journal of health geographics* 16 (1):32.

Box, G. E. P. 1976. Science and Statistics. *Journal of the American Statistical Association* 71(356) 791-799.

Brunsdon, Chris, A. Stewart Fotheringham, and Martin E. Charlton. 2010. "Geographically Weighted Regression: A Method for Exploring Spatial Nonstationarity." *Geographical Analysis* 28 (4): 281–98.

Bunge, W. W. 1962. Theoretical Geography, Lund, Royal University.

Carrothers, G. A. P. 1956. An Historical Review of the Gravity and Potential Concepts of Human Interaction. *Journal of the American Institute of Planners* 22 (2):94–102.

Chen, X., and P. Jia. 2019. A comparative analysis of accessibility measures by the two-step floating catchment area (2SFCA) method. *International journal of geographical information science* 33 (9):1739–1758.

Connor, R. A., J. E. Kralewski, and S. D. Hillson. 1994. Measuring Geographic Access to Health Care in Rural Areas. *Medical Care Review* 51 (3):337–377. http://dx.doi.org/10.1177/107755879405100304.

Cresswell, T. 2013. *Geographic thought: a critical introduction*. 1st ed. Chichester, UK: Wiley-Blackwell.

Cromley E. K., and S. L. McLafferty. 2012. *GIS and Public Health*. 2<sup>nd</sup> ed. New York: Guilford Press.

Daly, M. R., and Others. 2019. Defining Primary Care Shortage Areas: Do GIS-based Measures Yield Different Results? *The Journal of Rural Health* 35, 22-34.

DeWulf B., and Others. 2013. Accessibility to primary health care in Belgium: an evaluation of policies awarding financial assistance in shortage areas. *BMC Family Practice* 14:22. <a href="http://www.biomedcentral.com/1471-2296/14/122">http://www.biomedcentral.com/1471-2296/14/122</a>.

DHHS (Department of Health and Human Services). 1998. Designation of medically underserviced populations and health professional shortage areas: proposed rule. Federal Register 63 (169): 46537-46555.

Esri (ArcGIS Pro) 2022. https://www.esri.com/en/arcgis/products/arcgis-pro/overview.

Fotheringham, A. S. 2001. Spatial Interaction Models. *International Encyclopedia of the Social & Behavioral Sciences*:14794–14800. <a href="http://dx.doi.org/10.1016/b0-08-043076-7/02519-5">http://dx.doi.org/10.1016/b0-08-043076-7/02519-5</a>.

Fotheringham, S. A., C. Brunsdon, and M. Charlton. 2003. *Geographically Weighted Regression: The Analysis of Spatially Varying Relationships*. John Wiley & Sons.

Gesler, W. 1986. The uses of spatial analysis in medical geography: A review. *Social science & medicine* 23 (10):963–973.

GMENAC (Graduate Medical Education National Advisory Committee). 1980. Summary Report. DHHS Pub. No. (HRA) 81-651. Washington, DC: DHHS.

Goodchild, M. 1998. GIS and Geography: Elements of a Debate. *Yearbook of the Association of Pacific Coast Geographers* 60 (1):150-57.

Griffith, D. A. 2018. Uncertainty and Context in Geography and GIScience: Reflections on Spatial Autocorrelation, Spatial Sampling, and Health Data. *Annals of the American Association of Geographers* 108 (6):1499-1505.

Guptill, S. C. 1975. The spatial availability of physicians. In *Proceedings of the association of American Geographers*, 80–84.

Hansen, W. G. 1959. How accessibility shapes land use. *Journal of the American Institute of Planners* 25, 73-76.

Harvey, D. 1969. Explanation in Geography. London. Edward Arnold.

Haynes, K. E., and A. Stewart Fotheringham. 1984. *Gravity and Spatial Interaction Models*. SAGE Publications, Incorporated.

Hayward, P. M. 2009. *The Modifiable Areal Unit Problem (maup) and Health Disparities*. University of Connecticut.

Huff, D. L. 1963. A Probabilistic Analysis of Shopping Center Trade Areas. *Land economics* 39 (1):81–90.

Joseph, A. E., and P. R. Bantock. 1982. Measuring potential physical accessibility to general practitioners in rural areas: A method and case study. *Social science & medicine* 16 (1):85–90.

Joseph, A. E., and D. R. Phillips. 1984. *Accessibility and Utilization: Geographical Perspectives on Health Care Delivery*. SAGE Publications.

Khan, A. A. 1992. An integrated approach to measuring potential spatial access to health care services. *Socio-economic planning sciences* 26 (4):275–287.

Kleinman, J.C., and D. Makuc. 1983. Travel for Ambulatory Medical Care. Medical Care 21, no. 5: 543-557.

Lin, Y., N. Wan, S. Sheets, X. Gong, and A. Davies. 2018. A multi-modal relative spatial access assessment approach to measure spatial accessibility to primary care providers. *International journal of health geographics* 17 (1):33.

Lin, Y., C. Lippitt, D. Beene, and J. Hoover. 2021. Impact of travel time uncertainties on modeling of spatial accessibility: a comparison of street data sources. *Cartography and Geographic Information Science* 48 (6) 471-490. DOI:10.1080/15230406.2021.1960609

Luo, W., and Y. Qi. 2009. An enhanced two-step floating catchment area (E2SFCA) method for measuring spatial accessibility to primary care physicians. *Health & place* 15 (4):1100–1107.

Luo, W., and F. Wang. 2003. Measures of Spatial Accessibility to Health Care in a GIS Environment: Synthesis and a Case Study in the Chicago Region. *Environment and planning. B, Planning & design* 30 (6):865–884.

Luo, W., and T. Whippo. 2012. Variable catchment sizes for the two-step floating catchment area (2SFCA) method. *Health & place* 18 (4):789–795.

McGlashan, N. D., and J. Blunden. 1983. *Geographical aspects of health: Essays in honour of Andrew Learmonth*. Academic Press.

McGrail, M. R., and J. S. Humphreys. 2009. Measuring spatial accessibility to primary care in rural areas: Improving the effectiveness of the two-step floating catchment area method. *Applied geography* 29 (4):533–541.

Ni, J., M. Liang, Y. Lin, Y. Wu, and C. Wang. 2019. Multi-Mode Two-Step Floating Catchment Area (2SFCA) Method to Measure the Potential Spatial Accessibility of Healthcare Services. *ISPRS International Journal of Geo-Information* 8 (5):236.

Openshaw, S. 1984. *The modifiable areal unit problem*. Concepts and Techniques in Modern Geography, No. 38, Norwich. *UK: Geo Books*.

Park, J. and D. W. Goldberg. A Review of Recent Spatial Accessibility Studies That Benefitted from Advanced Geospatial Information Multimodal Transportation and Spatiotemporal Disaggregation. 2021. *ISPRS International Journal of Geo-Information* (10):532. https://doi.org/10.3390/ijgi10080532.

Phillips, D. R., and Others. 1990. *Health and health care in the Third World*. Longman Scientific and Technical.

Pietrzak, M. B. 2014. The Modifiable Areal Unit Problem – Analysis of Correlation and Regression. *Equilibrium* 9 (4):113–131. http://dx.doi.org/10.12775/equil.2014.028.

Pyle, G. F. 1979. Applied medical geography. In Applied medical geography, 282–282.

Reilly, W. J., and Others. 1929. Methods for the study of retail relationships. <a href="https://repositories.lib.utexas.edu/bitstream/handle/2152/60544/2013-X-0728-RascoeElder.pdf?sequence=1">https://repositories.lib.utexas.edu/bitstream/handle/2152/60544/2013-X-0728-RascoeElder.pdf?sequence=1</a>.

Shannon, G. W., and G. E A. Dever. 1974. Health Care Delivery: Spatial Perspectives. McGraw-Hill. New York.

SJM 36 (New Mexico Senate Joint Memorial 36). 1996. 42<sup>ND</sup> New Mexico Legislature.

Thouez, J. P., P. Bodson, and A. E. Joseph. 1988. Some methods for measuring the geographic accessibility of medical services in rural regions. *Medical care* 26 (1):34–44.

Ullman, E. E. 1956. The role of transportation and the basis for interaction. In Man's Role in Changing the Face of the Earth. W.L. Thomas Ed. Chicago. University of Chicago Press: 862-880.

Wan, N., F. B. Zhan, B. Zou, and E. Chow. 2012. A relative spatial access assessment approach for analyzing potential spatial access to colorectal cancer services in Texas. *Applied geography* 32 (2):291–299.

Wang F. 2021. From 2SFCA to i2SFCA: integration, derivation and validation. 2021. *Int J Geogr Inf Sci.* 35(3): 628-638: doi:10.1080/13658816.2020.1811868.

Wang, F. 2020. Why Public Health Needs GIS: A Methodological Overview. *Ann GIS* 26(1): 1-12. doi: 10.1080/19475683.2019.1702099.

Wang, F. 2017. *Quantitative Methods and Socio-Economic Applications in GIS* (2<sup>nd</sup> ed.). CRC Press.

Wang, F. 2012. Measurment, Optimization, and Impact of Health Care Accessibility: A Methodological Review. *Annals of the Association of American Geographers* 102(5): 1104-1112. DOI: 10.1080/00045608.2012.657146.

Ward, M. D., and K. S. Gleditsch. 2018. Spatial Regression Models. SAGE Publications.

Wing, P., and C. Reynolds. 1988. The Availability of Physician Services: A Geographic Analysis. Health Services Research 23, no, 5: 649-667.