

# Food Deserts

Subjects: Social Issues

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Food deserts means parts of the city where poor accessibility has been identified.

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## 1. Introduction

The crushing entry of foreign chains into Slovakia's retail market created a highly competitive environment, bringing the process of concentration to the forefront. This development was reflected externally mainly in the location of large sales units near important transport routes, respectively their intersections <sup>[1]</sup>. The exponential growth of supermarkets and the disappearance of midsized and small grocery stores has contributed to limited access to food. The urban dwellers (and, to a greater extent, those living rurally) live in relatively disadvantaged areas, where socio-economic conditions are deteriorating due to a lack of food sources.

The term "food desert" can mean a literal absence of groceries in a defined area. The older one of theories is associated with both the development and closure of stores <sup>[2]</sup>. Other authors have defined the food desert as an area, where food is expensive <sup>[3]</sup>, relatively unhealthy and unaffordable <sup>[4][5]</sup>, or areas of poor access to the provision of healthy affordable food, usually related to the lack of large retailers <sup>[6][7][8][9]</sup>.

While there is no universally agreed upon definition <sup>[10]</sup>, early definitions included those put forward by government ministers, like UK health minister Tessa Jowell in 1997, who identified food desert as areas "where people do not have easy access to health, fresh foods, particularly if they are poor and limited mobility" <sup>[11][12]</sup>.

The principles of the so-called food deserts in the cities of our geopolitical area in CEE Europe started to be researched in the first decade of the 21<sup>st</sup> century. The issue of availability of geospatial access food stores has been addressed in several studies <sup>[13][14][15][16]</sup>.

Some geographical studies considered all types of food retailers <sup>[17]</sup>, while others dealt only with supermarkets <sup>[18][19][20][21][22]</sup>. Recent conceptualizations of "food deserts" have expanded from a single focus on access to supermarkets, grocery stores, and all household food sources <sup>[23]</sup>. A different concept was used by <sup>[12][24][25]</sup>, whose studies of food deserts looked at the situation in residential areas of the city with limited access to fresh food.

## 2. Spreading of Food Deserts in Time and Space: The Case of the City of Nitra (Slovakia)

Food stores, which in the current pandemic belong to the critical infrastructure, should have the highest possible population with an acceptable walking distance. Due to economic progress and the improving economic situation in our geo-space, there is a higher mobility of customers due to the increase in individual car transport.

Until recently most food desert research (e.g., <sup>[20][22][26][27]</sup>, was restricted to a single timestamp, this study compares two years (twelve-year interval), with density and accessibility calculated each year against the current housing structure in 2008 and 2019. A chosen 2008 was the initial year of the financial and economic global crisis, 2019 had not been affected by the ongoing pandemic SARS-CoV-2.

The entry of multinational trade chains into the Slovak market was a significant milestone. Because the food trade is very competitive <sup>[28]</sup>, it quickly creates a strong competitive environment in which many smaller food stores fail.

The accessibility indicators were computed along the street network (e.g., <sup>[22]</sup>), which is an improvement compared to <sup>[29]</sup>, who simply used Euclidean distances <sup>[4]</sup>. We agree that local variations in food accessibility within a spatial unit call for

micro-geographic analyses at street network level. We agree with the authors of several studies <sup>[24][25]</sup> that there are methodological flaws in most desert food studies as there was no consensus for unifying the methodologies for the identification of food deserts. The fact that the concept was first articulated by community activists and not academics or policymakers is important; perhaps it explains why there is no single agreed-upon definition of food deserts in an academic context. It also satisfies the identification of the problem as community-driven <sup>[30]</sup>. The authors of <sup>[21]</sup> questioned the usefulness of the food desert concept, suggesting we should retire the term to enable a new focus on more nuanced forms; however, there have been few food environment studies in the food retail environment of post-socialist countries. These developments differ diametrically from the Western European retail environment. This study is unique in that it determined accessibility to all grocery stores and did not solely consider supermarkets. The authors of <sup>[22]</sup> (p. 11) write: “We focused only on supermarkets. Particularly in Amsterdam, small stores selling ethnic groceries are important sources of healthy food. As such, the results may underestimate the overall exposure to healthy food, but also allow better comparability with other studies”. These authors identified the fact that they only worked with supermarkets as a weakness of their study.

Traditional food access measures identify spatial-only food provision gaps <sup>[31]</sup>. In our study we provide time as a new measure of access. The paper belongs to the group of spatiotemporal food research through micro-geographic analysis at the street network level. A prime contribution of the research is an expression of the number of inhabitants endangered by the food deserts. Micro-level population density data by housing units made it possible to express the set of vulnerable inhabitants with difficult access to food. In recent times the customers have become more mobile, but they are still shopping in small grocery stores near their homes or workplaces.

Based on a comparison of the results of geo-spatial and socio-economic analysis of food deserts and their residents, problems with access to food in two areas of the city are most likely to occur. The first—the southern periphery, represented by the TTU Dolné Krškany I and Veľké Janíkovce, showed in both analyses the largest increase in food deserts, with the highest number of endangered inhabitants (**Table 2**). The second problem area in relation to the phenomenon of food deserts was profiled in the eastern background of the city center, in the TTU Chrenová. In the 1970s, it was called the “most beautiful settlement” of the socialist bloc towns. It is currently undergoing a process of gentrification, in which middle-class representatives occupy the older inner-city districts originally occupied by the lower-income population <sup>[32][33]</sup>. This creates new renovated neighborhoods. Sometimes this change means that previous inhabitants can no longer afford to live in these localities, the population is displaced, which is one of the disadvantages of the gentrification process. Elements of gentrification also initiate the observed average monthly income per 1 member of households, which increased by 47% (from 248 € in 2008 to 365 € in 2019). The food deserts increased spatially by 0.91%, but the risk to residents increased by 176%. Studies from 2008 and 2014 confirmed <sup>[34][35]</sup> the change in the mode of transport after purchases. While in 2008 14% of respondents were transported by car, in 2014 this figure increased by 50% to 21%.

**Table 2.** Selected characteristics of food desert at TTU level.

Territorial Technical Unit (TTU)	Area TTU (ha)	Built-Up Area (ha)		Area (ha) of Food Deserts		Food Desert/Built-Up Area %		I/D %	Inhabitants in Food Desert		I/D %
	2008/19	2008	2019	2008	2019	2008	2019		2008	2019	
D. Krškany I	1083.32	125.89	130.73	22.55	64.21	17.91	49.12	+31.21	311	1011	+225
D. Krškany II	63.45	10.45	18.58	3.13	6.73	29.95	36.22	+6.27	28	39	+39
H. Krškany	567.41	35.48	43.74	28.56	5.60	80.50	12.8	−67.7	1051	371	−65
Dražovce	1344.01	22.45	89.94	15.40	16.34	67.35	18.17	−49.18	217	246	+13
Zobor	863.32	182.63	141.63	30.30	31.16	16.50	22.10	+5.51	971	981	+1
Nitra I	970.69	61.69	119.37	11.83	12.67	19.18	10.63	−8.55	388	295	−24
Nitra II	1349.41	29.46	114.40	17.20	75.84	57.77	66.29	+8.52	697	769	+10
Mlynárce	531.21	31.23	43.42	10.30	0.42	32.12	0.97	−31.15	11	57	+418
Kynek	441.97	18.73	44.81	18.27	34.37	97.54	76.70	−20.84	658	517	−21
Chrenová	901.08	79.35	123.31	14.64	21.63	18.45	17.54	−0.91	142	392	+176
V. Janíkovce	1896.82	63.20	80.38	4.83	27.93	7.64	34.75	+27.11	128	1024	+700

Territorial Technical Unit (TTU)	Area TTU (ha)	Built-Up Area (ha)		Area (ha) of Food Deserts		Food Desert/Built-Up Area %		I/D %	Inhabitants in Food Desert		I/D %
	2008/19	2008	2019	2008	2019	2008	2019		2008	2019	
Nitra	10012.69	660.56	950.31	175.9	296.84	26.63	31.24	+4.61	4602	5702	+23.9

I/D: increase/decrease %; D. Krškany: Dolné Krškany; H. Krškany: Horné Krškany; V. Janíkovce: Veľké Janíkovce.

### 3. Conclusions

As the Nitra population ages, it is necessary to identify a deterioration in the availability of basic foodstuffs as a priority for parts of the city with an older population. New residential parts of the city do not have civic amenities and public transit, which forces these residents to use the private means of transport.

Both hypotheses as listed below were confirmed. Food deserts have been present in the city of Nitra since 2008. Residents identify with this and are moving to new residential zones, despite the fact that they will have reduced accessibility to grocery stores. During the years 2008–2019, the residential zone of the city of Nitra increased by 43.86%, the area of food deserts by up to 68.78% and the number of inhabitants endangered by the food desert increased by 1100 residents, i.e., 23.9%. In 2008, 5.51% of Nitra's residents lived in a food desert, and in approximately twelve years this percentage increased to 7.45% of the population (2019). The proximity to the nearest groceries in Nitra was 2008 median 504 m, in 2019 median 623 m. Current data on the accessibility of grocery and the occurrence of food deserts in Nitra are an important basis for the decision of the municipality in regard to the construction of new residential housing, roadways or other commercial establishments. This kind of information can be relevant not only for the city's residents, but also for the business community, especially for potential developers. It can also be used effectively in the spatial planning process, in the rational management of complex territorial development, as well as in local politics. Given the character of the city of Nitra, it can be assumed that the acquired knowledge can be extrapolated to other post-socialist cities of a similar size and hierarchical level.

#### Hypothesis 1.

*Food deserts will be present in Nitra, even though our assessment included all accessible food stores;*

#### Hypothesis 2.

*We assume that the number of food deserts increases due to the concentration of food stores.*

### References

1. Trembošová, M.; Dubcová, A.; Nagyová, L.; Cagáňová, D. Development of retail network on the example of three regional towns comparison in West Slovakia. *Wirel. Netw.* 2020, 26, 1–11.
2. Guy, C.; Clarke, G.; Eyre, H. Food retail change and the growth of food deserts: A case study of Cardiff. *Int. J. Retail. Distrib. Manag.* 2004, 32, 72–88.
3. Cummins, S.; Macintyre, S. "Food deserts" evidence and assumption in health policy making. *BMJ* 2002, 325, 436–438.
4. Apparicio, P.; Cloutier, M.S.; Shearmur, R. The case of Montreal's missing food deserts: Evaluation of accessibility to food supermarkets. *Int. J. Health Geogr.* 2007, 6, 4.
5. Jiao, J.; Moudon, A.V.; Ulmer, J.; Hurvitz, P.M.; Drewnowski, A. How to identify food deserts: Measuring physical and economic access to supermarkets in King County, Washington. *Am. J. Public Health* 2012, 102, e32–e39.
6. Gregory, D.; Johnston, R.; Pratt, G.; Watts, M.J. *The Dictionary of Human Geography*, 5th ed.; Wiley-Blackwell: West Sussex, UK, 2009.
7. Beaulac, J.; Kristjansson, E.; Cummins, S. A systematic review of food deserts, 1966–2007. *Prev. Chronic Dis.* 2009, 6, 105.
8. Križan, F.; Bilková, K.; Kita, P.; Horňák, M. Potential food deserts and food oases in a post-communist city: Access, quality, variability and price of food in Bratislava-Petržalka. *Appl. Geogr.* 2015, 62, 8–18.

9. Wiśniewski, S. Dostępność mieszkańców województwa Łódzkiego do sklepów wielkopowierzchniowych. *Acta Univ. Lodz. Folia Geogr. Socio Oeconomica* 2016, 23, 25–38.
10. Widener, M.J. Spatial access to food: Retiring the food desert metaphor. *Physiol. Behav.* 2018, 193, 257–260.
11. Furey, S.; Farley, H.; Strugnelli, C.H. An investigation into the availability and economic accessibility of food items in rural and urban areas of Northern Ireland. *Int. J. Consum. Stud.* 2002, 26, 313–321.
12. Shaw, H. "Food Deserts" Depriving Towns of Fresh Fruit and Vegetables; Hickman, M., Ed.; The Independent Print Ltd.: London, UK, 2007.
13. Fertaľová, J.; Szczyrba, Z. Globalization in Czech and Slovak retail: Common and specific features. In *Globalization and Its Impact on Society, Regions and States*; Baar, V., Ed.; University of Ostrava: Ostrava, Czech Republic, 2006; pp. 164–172.
14. Križan, F.; Tolmáči, L.; Lauko, V. Identification of food deserts in Bratislava city by application of accessibility measures. *J. Econ.* 2008, 56, 959–972.
15. Spilková, J.; Syrovátková, M.; Šifta, M.; Strnadel, Š.; Vágner, J.; Fialová, D. *Alternativní Potravinové Sítě: Česká Cesta*, 1st ed.; Karolinum: Praha, Czech Republic, 2016; pp. 72–73.
16. Trembošová, M.; Vlačuhová, V.; Jakab, I. Accessibility of retail stores in the Nitra self-governing region. In *20. Mezinárodní Kolokvium o Regionálních Vědách*; Masarykova Univerzita: Brno, Czech Republic, 2017; pp. 582–589.
17. Inagami, S.; Cohen, D.A.; Finch, B.K.; Asch, S.M. You are where you shop: Grocery store location, weight and neighborhoods. *Am. J. Prev. Med.* 2006, 31, 10–17.
18. Russel, S.E.; Heidkamp, C.P. "Food desertification": The loss of a major supermarket in New Haven, Connecticut. *Appl. Geogr.* 2011, 31, 1197–1209.
19. Charreire, H.; Casey, R.; Salze, P.; Simon, C.; Chaix, B.; Banos, A.; Badariotti, D.; Weber, C.; Oppert, J.M. Measuring the food environment using geographical information systems: A methodological review. *Public Health Nutr.* 2010, 13, 1773–1785.
20. Bilková, K.; Križan, F.; Horňák, M.; Barlík, P.; Kita, P. Comparing two distance measures in the spatial mapping of food deserts: The case of Petržalka, Slovakia. *Morav. Geogr. Rep.* 2015, 5, 95–103.
21. Widener, M.J.; Farber, T.; Tijs, N.; Horner, M. Spatiotemporal accessibility to supermarkets using public transit: An interaction potential approach in Cincinnati, Ohio. *J. Transp. Geogr.* 2015, 42, 72–83.
22. Helbich, M.; Schadenberg, B.; Hagenauer, J.; Poelman, M. Food deserts? Healthy food access in Amsterdam. *Appl. Geogr.* 2017, 83, 1–12.
23. Wagner, J.; Hinton, L.; McCordic, C.; Owour, S.; Capron, G.; Arellano, S.G. Do Urban Food Deserts Exist in the Global South? An Analysis of Nairobi and Mexico City. *Sustainability* 2019, 11, 1963.
24. Lamb, K.; Thornton, L.E.; Cerin, E.; Ball, K. Statistical approaches used to assess the equity of access to food outlets: A systematic review. *AIMS Public Health* 2015, 2, 358–401.
25. Wang, H.; Tao, L.; Qiu, F.; Lu, W. The role of socio-economic status and spatial effects on fresh food access: Two case studies in Canada. *Appl. Geogr.* 2016, 67, 27–38.
26. Lu, W.; Qiu, W. Do food deserts exist in Calgary, Canada? *Can. Geogr.* 2015, 59, 267–282.
27. Zenk, S.; Schulz, A.; Israel, B.; James, S.; Bao, S.; Wilson, M. Neighborhood racial composition, neighborhood poverty and the spatial accessibility of supermarkets in metropolitan Detroit. *Am. J. Public Health* 2005, 95, 660–667.
28. Huddleston, P.; Whipple, J.; Natick, R.J.; Lee, S.J. Customer satisfaction in food retailing: Comparing specialty and conventional grocery stores. *Int. J. Retail. Distrib. Manag.* 2009, 37, 63–80.
29. Cushon, J.; Creighton, T.; Kershaw, T.; Marko, J.; Markham, T. Deprivation and food access and balance in Saskatoon, Saskatchewan. *Chronic Dis. Inj. Can.* 2013, 33, 146–159.
30. Battersby, J. The Food Desert as a Concept and Policy Tool in African Cities: An Opportunity and a Risk. *Sustainability* 2019, 11, 458.
31. Chen, X.; Clark, J. Measuring space-time access to food retailers: A case of temporal access disparity in Franklin county, Ohio. *Prof. Geogr.* 2016, 68, 175–188.
32. Granath, H. *Gentrifiering Bortom Staden: En Undersökning av ett Fiskeläge Statt i Förändring*; Lunds Universitet: Lund, Sweden, 2014; pp. 49–71. Available online: (accessed on 21 April 2021).
33. Featherstone, M. *Consumer Culture and Postmodernism*, 2nd ed.; SAGE Publications Ltd.: London, UK, 2007; pp. 51–52. Available online: (accessed on 21 April 2021).

34. Trembošová, M.; Dubcová, A. Vývoj maloobchodu v Nitre v nových trhových podmienkach. *Acta Geogr. Univ. Comen.* 2013, 57, 213–230.
  35. Trembošová, M.; Dubcová, A.; Kramáreková, H. Consumer shopping behaviour in the Nitra city. In *International Scientific Days 2016: The Agri-Food Value Chain: Challenges for Natural Resources Management and Society*; SPU: Nitra, Slovakia, 2016; pp. 836–849.
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