

(Re)Defining Food Deserts

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Conceptualizations of Food Deserts

First appearance of term:¹

- Writing about public housing in Scotland in the 1990s
- “poor urban areas, where residents cannot buy affordable, healthy food”

Subsequent major conceptual frames:²

1. Access to supermarkets
2. Differences chain & non-chain grocery stores
3. Racial/ethnic disparities
4. Socio-economic disparities

1. Cummins, S., Macintyre, S., 2002. Food deserts—evidence and assumption in health policy making. *BMJ* 325, 436–438.

2. Walker, R. E., Keane, C. R., & Burke, J. G. (2010). Disparities and access to healthy food in the United States: A review of food deserts literature. *Health & place*, 16(5), 876-884.

Current USDA Definition (mid 2000s)

By Census Tract (~4000 people):

1. Low income (LI)

- $\geq 20\%$ poverty OR median family income (MFI) $\leq 80\%$ of state or metro MFI

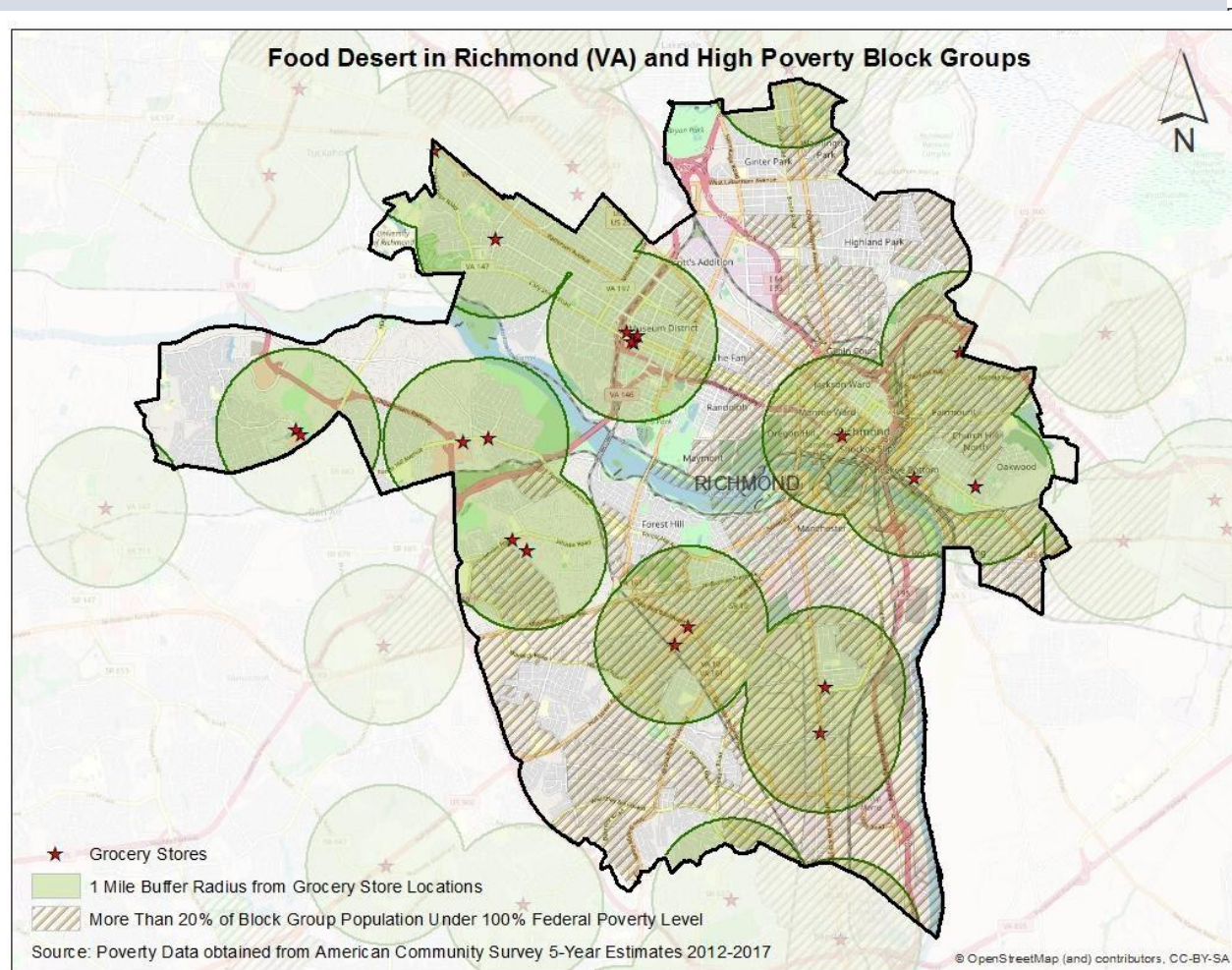
2. Low access (LA)

- At least 500 persons and/or at least 33 percent of the population lives
- Euclidian distance (as bird flies) to **full-service grocery store**
 - Green ≥ 1 mile
 - Orange $\geq \frac{1}{2}$ mile

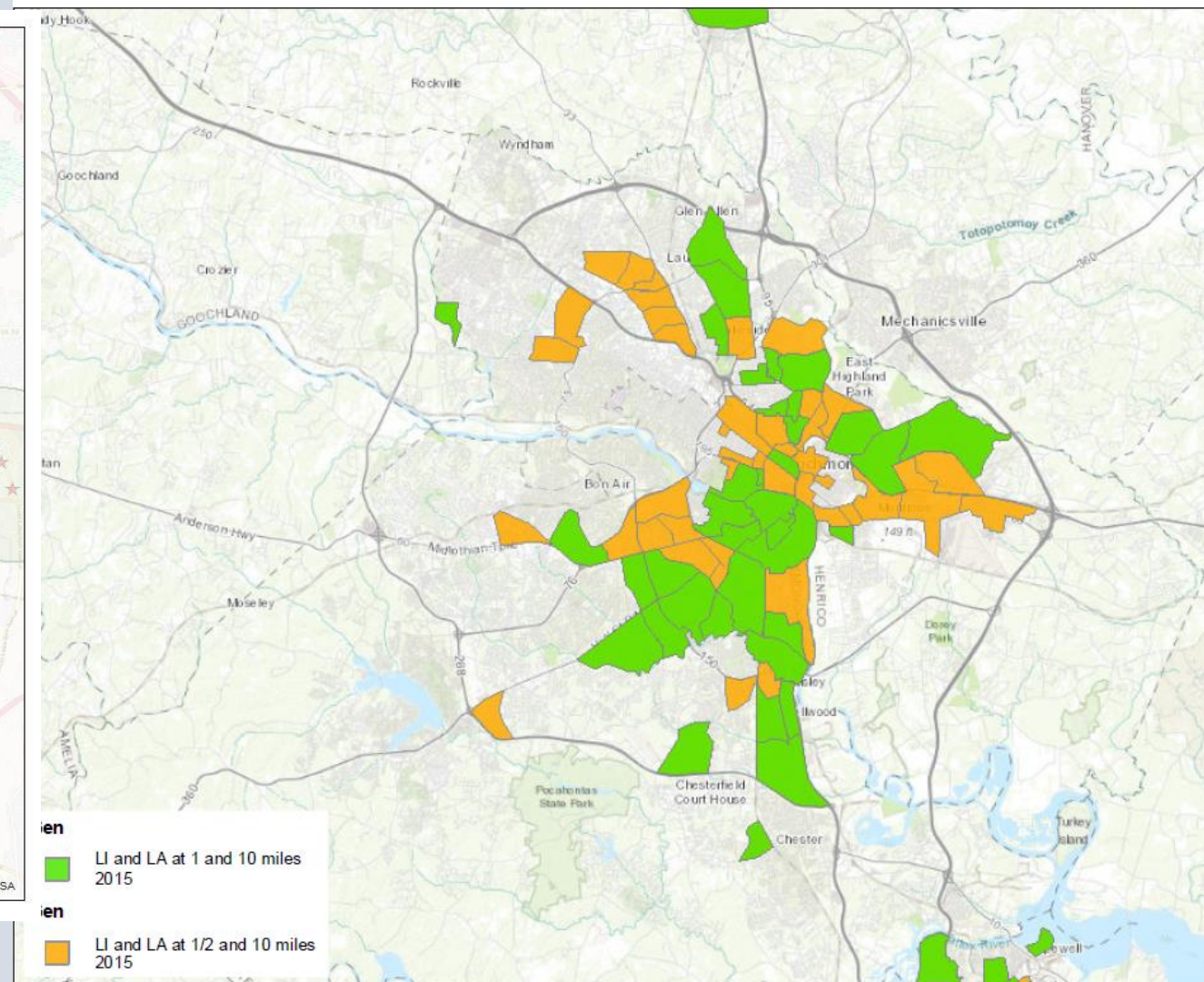
Grocery store

- Proxy for sources of healthy and affordable food
- $> \$2$ million in annual sales
- Containing all the major food departments

VCU Food Desert Map



USDA Food Desert Map



Richmond Food

A Administrative Area

- Exposure defined by geopolitical, census, or other administrative boundary
- Inherent administrative borders or “edges”
- Ignores barriers to travel like rivers, railroads
- Ignores some food sources^a



2 “healthy” typical food sources
 2 “unhealthy” typical food sources
 (2 uncounted street vendors)
 (4 uncounted non-intuitive food sources)
2 “healthy” vs. 2 “unhealthy”

B Euclidean distance/Circle area

- Exposure defined by linear distance “as the crow flies” from a central point
- Respects administrative “edge” of study area^a
- Ignores barriers to travel like rivers, railroads
- Ignores some food sources^a



3 “healthy” typical food sources
 0 “unhealthy” typical food sources
 (1 uncounted street vendor)
 (3 uncounted non-intuitive food sources)
3 “healthy” vs. 0 “unhealthy”

C Street-network area

- Exposure defined in terms of travel along existing paths like road networks
- Ignores administrative borders or “edges”^a
- Respects barriers to travel like rivers, railroads
- Counts all food sources^a



0 “healthy” typical food sources
 3 “unhealthy” typical food sources
 1 “unhealthy” street vendor
 4 “unhealthy” non-intuitive food sources
0 “healthy” vs. 8 “unhealthy”

Geo-spatial features:			Food sources:	
Home, school, or job	River	“Edge” or admin. border	“healthy” typical	Counted/uncounted “unhealthy” street vendor
City street	Railroad	Other admin. border	“unhealthy” typical	Counted/uncounted “unhealthy” non-intuitive

Lucan, S. C. (2015). Concerning limitations of food-environment research: a narrative review and commentary framed around obesity and diet-related diseases in youth. *J Acad Nutr Diet*, 115(2), 205-212

Food Brownfields & Swamps



NEEDS TO IMPROVE

The restaurant was either closed by Public Health – Seattle & King County within the last year or the restaurant needed multiple return inspections to fix food safety practices.



OKAY

The restaurant has had: **MANY** red critical violations over the last four inspections.



GOOD

The restaurant has had: **SOME** red critical violations over the last four inspections.



EXCELLENT

The restaurant has had: **NO** or **FEW** red critical violations over the last four inspections.

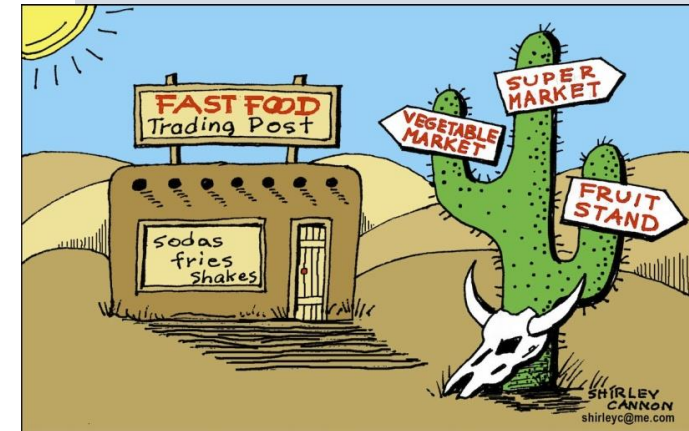
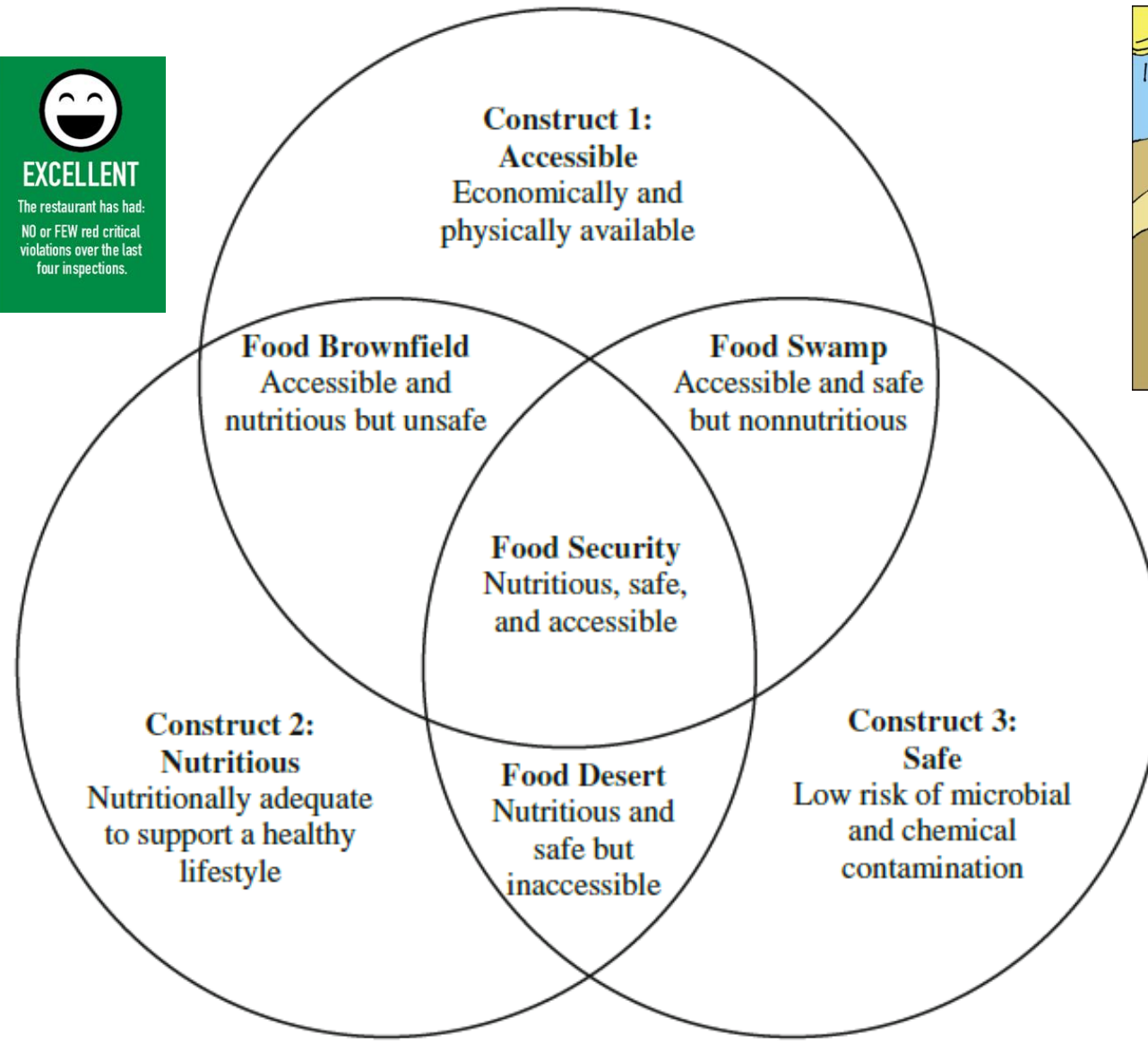


Image source: Nestle, M. (2015). Eat Drink Vote

Implications

Food deserts as a concept are problematic.

Can overstate causal relationship between physical access to grocery stores and health outcomes

- Original proponents of term urge caution³

Better to view food deserts as one puzzle piece in the larger problems of food insecurity, poverty, and racism



3. Cummins, S., & Macintyre, S. (2006). Food environments and obesity—neighbourhood or nation?. *International journal of epidemiology*, 35(1), 100-104.