Access to Affordable & Nutritious Food: Understanding Food Deserts

Definitions & Concepts

Lois Wright Morton, Ph.D.
Rural Sociologist
Iowa State University

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Consumer food sources are not evenly distributed leading to areas of concentration and places where access to choices of foods are limited or non-existent.

Food deserts are places where few or no retail food stores are available (Lang & Caraher 1998; Whitehead 1998; Furey et al. 2001; Land & Rayner 2002).

The retail consumer food environment is complex: How is the concept food desert operationalized?

**Daily supply** [food at home; food away from home]

**Affordable** [affordable to whom? relative to income?]

**Nutritious** [which foods? whose diet objectives?]

Should we use some proportion of retail food sales that are nutritious to select which establishments to include? Should we use the list of items food stamp eligible? Should convenience stores be included?
One way to define consumer food sources and retail food stores (food at home)

SIC (Standard Industrial Codes) 1997
NAICS (North American Industry Classification System)

[www.naics.com](http://www.naics.com)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>445110</td>
<td>Supermarkets and Other Grocery</td>
</tr>
<tr>
<td></td>
<td>(except Convenience) Stores</td>
</tr>
<tr>
<td>445120</td>
<td>Convenience Stores</td>
</tr>
<tr>
<td>445210</td>
<td>Meat Markets</td>
</tr>
<tr>
<td>445220</td>
<td>Fish and Seafood Markets</td>
</tr>
<tr>
<td>445230</td>
<td>Fruit and Vegetable Markets</td>
</tr>
<tr>
<td>445291</td>
<td>Baked Goods Stores</td>
</tr>
<tr>
<td>445292</td>
<td>Confectionery and Nut Stores</td>
</tr>
<tr>
<td>445299</td>
<td>All Other Specialty Food Stores</td>
</tr>
<tr>
<td>452910</td>
<td>Warehouse Clubs &amp; Supercenters</td>
</tr>
</tbody>
</table>
Low Access: Proximity to large supermarket or supercenter. Half of the county population lives more than 10 miles from large food stores.

Food desert: Counties where all residents have low access to large food retailers (e.g. live more than 10 miles away)

Availability of affordable foods is a structural issue
Market economies are based on a concentration of people with ability to purchase foods…
food stores locate where it is profitable

Food desert counties tend to have

* higher % individuals without HS degree/GED
* higher individual & family poverty rates
* higher % individuals living in sparsely populated open country outside of towns/cities
* higher numbers of small grocers & convenience stores per capita
So why does the consumer food environment matter? Is it a problem if you live in a food desert?

It depends on who you are

* At risk are low income households that must use limited dollars to own/operate a working vehicle and purchase gas to travel to a food store

* At risk are elderly who can not/should not drive and don’t have access to public transportation or personal networks

* At risk are time limited households who may take nutritional shortcuts (eat out frequently, use vending machines & convenience stores as main food source)
Access and distance to food stores
In two high poverty Iowa counties (random sample)

Most use their own car to travel to the grocery store
3% are dependent on others for transportation

50% are 10-12 minutes from their regular store
25% are 12-25 minutes from their regular store
25% are more than 25 minutes from their regular store
[travel time range up to 80 minutes]

HOWEVER,
11% of those aged 70 years and older
do not use their own car but depend on others
to get to the grocery store
Access to affordable & nutritious food is a structural issue
Low access to food has impacts on

Food security
Diet
Health and well-being
Food security: access by all people at all times to enough food for an active, healthy life.

It includes at minimum:

1) available nutritionally adequate & safe foods
2) ability to acquire foods in socially acceptable ways

(Anderson 1990)
### Table 4. Food Insecurity

<table>
<thead>
<tr>
<th></th>
<th>Rural Users of Food Safety Net Services&lt;sup&gt;a&lt;/sup&gt;</th>
<th>General Rural Population&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>County A, MN N=198</td>
<td>County B, MN N=197</td>
</tr>
<tr>
<td>1. Percent food secure (0-1)</td>
<td>65.2</td>
<td>46.7</td>
</tr>
<tr>
<td>2. Percent food insecure (2-6)</td>
<td>34.8</td>
<td>53.3</td>
</tr>
<tr>
<td>3. Percent food insecure with no hunger (2-4)</td>
<td>28.2</td>
<td>34.5</td>
</tr>
<tr>
<td>4. Percent food insecure with hunger (5,6)</td>
<td>6.6</td>
<td>18.8</td>
</tr>
</tbody>
</table>

<sup>a</sup> Purposeful sample of rural food safety net services.

<sup>b</sup> Random sample of general county population.


Morton and Smith (forthcoming) “Accessing Food in Rural Food Deserts in Iowa and Minnesota”

*Great Plains Sociologist*
Diet, health and well-being

“underlying factors that influence susceptibility to a whole range of diseases” suggest general rather than specific risk factors (Evans, Barer, and Marmor 1994)

Is access to affordable, nutritious foods an underlying factor in health?

Figure 1: Average Proportion of Residents Across Four Food Deserts in Iowa who...
Body Mass Index (BMI)

28% normal weight  
(18.5-24.9 BMI)

38% overweight  
(25-29.9 BMI)

33% Obese  
(over 30 BMI)

Those 70 years of age & older are more likely to weigh less than younger people however both groups are, on average, overweight.

Diet related diseases

Has the doctor ever told you that you have/had

- Stroke
- Cancer
- Osteoporosis
- Heart Disease
- Diabetes/High Blood Sugar
- High Blood Cholesterol
- High Blood Pressure

Rural Iowa counties 2008
Access to food can come from market based systems (e.g. “normal” food systems) (Campbell 1991) and non-market food systems (socially acceptable?)

**Non-market food economy**

**Redistribution** (current public safety net system)
- food stamps, WIC, food banks, pantries, soup kitchens, senior meal sites, subsidized school breakfast, lunch and summer programs

**Reciprocity** (exchange of food resources between members of society based on social networks civic structure of place) garden produce, meat, fishing

Morton et al. 2008 Agriculture & Human Values 25:107-119
Food acquired from:

- Food Pantry/Shelf: 2.6
- Meal Site: 2.9
- Senior Meal Program: 4.9
- Meat From Friends/Family: 5.2
- Friends/Family: 6.9
- WIC Program: 24.9
- Food Stamps: 26.5
- Fish From Friends/Family: 28.3
- Farmers Market: 29.9
- Friend/Family Garden: 39.6
- Personal Garden: 49.1
- Grocery Store: 97.1

Rural Iowa counties 2003
Connections and relationships of trust among individuals that help solve personal food problems [Social capital]

Giving food to others

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>6.6</td>
</tr>
<tr>
<td>Senior Meal Program</td>
<td>6.8</td>
</tr>
<tr>
<td>People You Don't Know</td>
<td>18.8</td>
</tr>
<tr>
<td>Food Pantry/Bank</td>
<td>39.6</td>
</tr>
<tr>
<td>Food Drive</td>
<td>43.2</td>
</tr>
<tr>
<td>Neighbors</td>
<td>51.2</td>
</tr>
<tr>
<td>Friends</td>
<td>67.9</td>
</tr>
<tr>
<td>Family</td>
<td>74.1</td>
</tr>
</tbody>
</table>

Rural Iowa counties 2003
Social capital gives individuals and groups the capacity to solve individual food problems.

Civic structure gives communities the capacity to solve food problems that are larger than one individual or group… such as problems of the food infrastructure.

Both are necessary to solve food insecurity and diet related health problems.
Public-private partnerships to solve food problems

Government food programs like food stamps and WIC work together with churches & nonprofit organizations to coordinate efforts to meet food needs of people

Don’t seem to work together 9 %
Work together a little 13 %
Work together/work together a lot 30 %
Don’t know 49 %

Elected officials are aware of food access & affordability problems in your community

Not at all aware 5 %
A little aware 16 %
Aware, but not doing anything 12 %
Aware, trying to do something 13 %
Don’t know 55 %
Where does the **leadership** for solving food problems in your community come from?

<table>
<thead>
<tr>
<th>Organization</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>74 %</td>
</tr>
<tr>
<td>Churches</td>
<td>56 %</td>
</tr>
<tr>
<td>Volunteer citizens</td>
<td>46 %</td>
</tr>
<tr>
<td>Nonprofit groups</td>
<td>37 %</td>
</tr>
<tr>
<td>(farmer markets, community center, etc)</td>
<td></td>
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<tr>
<td>Schools</td>
<td>31 %</td>
</tr>
<tr>
<td>Local businesses</td>
<td>20 %</td>
</tr>
<tr>
<td>ISU Cooperative Extension</td>
<td>19 %</td>
</tr>
</tbody>
</table>
It appears that rural populations in these two sites are solving their food problems through personal networks of trust and community networks which have an interest in solving rural food infrastructure problems

**Personal networks**

Almost 3/4 of the sample give food to other family members and 68% give food to friends

There is a lot of sharing going on

50% have a garden and 40% report receiving food from family and friends gardens;

1/4 of the sample exchanged meat and fish from family/friends

19% gave food to others they didn’t know

Over 40% gave food to the food pantry and food drives
Unanswered questions

Those that are connected seem to be accessing food. What happens to those who live in food deserts and don’t have a good network of friends or live in a high civic structure place?

Is civic structure enough to assure food access, adequate diets and reduce chronic diet related diseases?

Many people in rural areas are unaware of local food issues. How can we mobilize local resources to solve food access issues?

What are the implications of government as the “leader” in solving food problems?
Conclusion

To solve the problem of access to affordable and nutritious food we need to define, measure and track the following concepts:

**Food deserts.** How is the normal food system distributed?

**At-risk populations.** Who has limited access to the normal food system?

**Non-market food systems: Redistribution and reciprocity.** Complements and/or substitutes for the normal food system?

**Food insecurity.** Individual and community/regional levels

**Civic structure.** What is the capacity of communities to define their food access problems and act on them?