A Pedagogical Approach for “Wicked Problems”

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Traditional Counties of the Alabama Black Belt

Source: Center for Business and Economic Research, The University of Alabama
Food, Agriculture & Society (RSOC 3190)

- Wicked Problems
  - Food Security
- Class Project
  - Background
  - Goals
  - Steps
  - Support
  - Assessment

“Fresh Food” at a Dollar General in Alabama (Student Photographer: Woodland, J., 2015).
**Wicked Problems**


<table>
<thead>
<tr>
<th>Characteristic</th>
<th>“Wickedness”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem</td>
<td>• No clear definition</td>
</tr>
<tr>
<td></td>
<td>• Solutions may change problem</td>
</tr>
<tr>
<td>Stakeholders</td>
<td>• Many with different ideas of the and real problem and/or causes</td>
</tr>
<tr>
<td>Stopping intervention</td>
<td>• Determined by stakeholders, political forces, and/or resources</td>
</tr>
<tr>
<td>Assessment</td>
<td>• Better or worse vs. good enough</td>
</tr>
</tbody>
</table>
Definition of Food Security (USDA ERS)

- “Secure” if **access** to enough readily **available** food for an active life that is
  - Culturally appropriate, nutritionally adequate, and safe
  - Obtainable in socially acceptable ways

- Classification
  - **Low** security
    - Reduced quality, variety, or desirability
    - Little or no reduced intake
  - **Very low** security
    - Multiple indicators of disrupted eating
    - Reduced intake
Prevalence rates for 1996 and 1997 were adjusted for the estimated effects of differences in data collection screening protocols used in those years.

Prevalence of food insecurity, average 2012-14

- Food insecurity below U.S. average
- Food insecurity near U.S. average
- Food insecurity above U.S. average

Feeding America (2014)
Mapping the Meal Gap

B = Traditional Black Belt
O = Often considered Black Belt
Alabama Possible (2016)  
Alabama Poverty Data Sheet
Assigned readings

- Problems of Plenty
- The Omnivore's Dilemma
- Civic Agriculture
- Food & Society
- The Sociology Student Writer's Manual
- The Atlas of Food

Food, Agriculture & Society
RSOC 3190
Course Organization

1. Historical development
   - Topics included: farm and rural development policies, transformation of southern agriculture, labor, science and technological change.

2. Outcomes and impacts
   - Topics included: vertical and horizontal concentration, environment, labor, globalization, privatization of science, consumption, food safety.

3. Current trends
   - Topics included: bi-furcation, scale, production-consumption alternatives, quality, community.
In-class exercise (09Nov15) in which students responded to the question, “what do you expect to see when visiting your county?”

**Barbour**
- lots of convenience & dollar stores
- many fast food options
- lack of variety
- rural
- lower socioeconomic demographic
- highly processed, low quality foods
- preserved foods
- farming/timber community

**Bullock**
- RURAL AREA
- SMALL FARMING
- PIGGLY-WIGGLY GROCERY STORES
- FAST-FOOD RESTAURANTS
- HOME GARDENS
- LESS DIVERSITY & LIMITED AVAILABILITY
- IFFY SCHOOL LUNCH PROGRAMS

**Black Non-Hisp. (%Pop)**
- Alabama: 26.0
- Russell County: 41.4
- Barbour County: 46.7
- Bullock County: 70.0
“Collection of various types of data to provide answers to questions about the ability of existing community resources to provide sufficient and nutritionally sound amounts of culturally acceptable foods to households in the community” (pg8).
Approaching “Wickedness”

Key Objectives
- Experience evaluating and synthesizing data
- Use data to describe case and make empirically-based arguments
- Engage with lecture content and assigned texts
- Practice “soft skills” associated with team-based project

Sub-Objectives
- Improve information literacy
- Collect relevant statistics and build useful datasets
- Visually represent data in meaningful ways
- Use sociological concepts to explain findings
- Complete long-term assessment project
Project

Community Food Security Assessment of an Alabama Black Belt County

In-class group collaboration.
I. County

COMMUNITY FOOD SECURITY ASSESSMENT

Students working with resources at the library.
Black Belt Region in Alabama

Terance L. Winemiller, Auburn University at Montgomery

Depending on the criteria employed to characterize the area, the Black Belt of Alabama, named for its dark, rich soils, contains roughly between 12 and 21 counties in the central part of the state. Geographically, Alabama’s Black Belt is part of a larger crescent-shaped area known as the Southern Black Belt, which extends from Maryland to Texas. The region’s identity is rooted in both its physical and cultural geography and its historical development. During the twentieth century, Alabama’s Black Belt became a hub of activity for the civil rights movement in the South. In Macon County, Tuskegee Airmen trained at Tuskegee Army Airfield from 1941 through 1945. Montgomery County witnessed the Bus Boycott from 1955 to 1956. Highway 80 in Dallas, Lowndes, and Montgomery counties shaped the route taken by participants from the Black Belt and beyond during the historic march for equal rights from Selma to Montgomery in 1965. And the Lowndes County Freedom Organization (later the Black Panther Party) was an outgrowth of that march.
### Background

- **General**
  - History
  - Location
  - Economy
  - Sociodems

#### Demographics

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2000</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>46,860</td>
<td>49,756</td>
<td>52,947</td>
</tr>
<tr>
<td>White Non-Hispanic (%Pop)</td>
<td>60.4</td>
<td>56.1</td>
<td>52.1</td>
</tr>
<tr>
<td>Black Non-Hispanic (%Pop)</td>
<td>38.5</td>
<td>40.6</td>
<td>41.4</td>
</tr>
<tr>
<td>Hispanic (%Pop)</td>
<td>0.6</td>
<td>1.5</td>
<td>3.7</td>
</tr>
<tr>
<td>0-24 Yrs (%Pop)</td>
<td>37.2</td>
<td>35.7</td>
<td>35.2</td>
</tr>
<tr>
<td>25-64 Yrs (%Pop)</td>
<td>50.1</td>
<td>51.2</td>
<td>52.1</td>
</tr>
<tr>
<td>65+ Yrs (%Pop)</td>
<td>12.7</td>
<td>13.1</td>
<td>12.7</td>
</tr>
</tbody>
</table>

##### Components of Population Change

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural (Births minus Deaths)</td>
<td>39</td>
<td>128</td>
</tr>
<tr>
<td>Domestic</td>
<td>-107</td>
<td>383</td>
</tr>
<tr>
<td>International</td>
<td>7</td>
<td>50</td>
</tr>
<tr>
<td>Net Migration</td>
<td>-100</td>
<td>433</td>
</tr>
</tbody>
</table>

##### Education

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2000</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than H.S. (%Pop 25+)</td>
<td>43</td>
<td>33.5</td>
<td>23.4</td>
</tr>
<tr>
<td>High School Grad. (%Pop 25+)</td>
<td>30.8</td>
<td>33</td>
<td>33.4</td>
</tr>
<tr>
<td>Some College (% Pop 25+)</td>
<td>18</td>
<td>23.8</td>
<td>29.7</td>
</tr>
<tr>
<td>Bachelor’s or more (% Pop 25+)</td>
<td>8.2</td>
<td>9.7</td>
<td>13.5</td>
</tr>
</tbody>
</table>

##### Housing

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2000</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing Units</td>
<td>19,633</td>
<td>22,831</td>
<td>26,607</td>
</tr>
<tr>
<td>Building Permits</td>
<td>151</td>
<td>358</td>
<td>745</td>
</tr>
<tr>
<td>Avg. Bldg. Permit Value</td>
<td>$42,788</td>
<td>$60,913</td>
<td>$141,118</td>
</tr>
</tbody>
</table>

##### Poverty & Unemployment Rate

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2000</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Background

- General
  - History
  - Location
  - Economy
  - Sociodems

- Agrifood production
  - Who
  - What
  - How much

Research librarians searching for missing, historical, Census of Agriculture data.
In-class exercise that asked groups to list the factors that might impact food access.

II. Access and Availability

COMMUNITY FOOD SECURITY ASSESSMENT
Food Access

- Outlets
- Transportation
- Food assistance
Documentation and raw data from the USDA ERS Food Environment Atlas.
### Thrifty Food Plan Market Basket

<table>
<thead>
<tr>
<th>Item</th>
<th>Availability</th>
<th>Quality</th>
<th>Container sold</th>
<th>Volume sold</th>
<th>Price / container</th>
<th>USDA FNS Authorised Subst (indicate which used)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fresh Fruits and Vegetables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apples, any variety</td>
<td>1</td>
<td>2</td>
<td>$.8/lb</td>
<td>-</td>
<td>1.19-2.39</td>
<td>Plantains</td>
</tr>
<tr>
<td>Bananas</td>
<td>1</td>
<td>2</td>
<td>$.79/lb</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grapes (green/red)</td>
<td>1</td>
<td>2</td>
<td>pre-weighted</td>
<td>0.5 lb</td>
<td>~1.49</td>
<td></td>
</tr>
<tr>
<td>Melon (cantaloupe, honeydew, watermelon, cantaloup)</td>
<td>1</td>
<td>2</td>
<td>each</td>
<td>-</td>
<td>3.69</td>
<td></td>
</tr>
<tr>
<td>Oranges</td>
<td>1</td>
<td>1</td>
<td>each</td>
<td>-</td>
<td>0.79</td>
<td>Grapefruit</td>
</tr>
<tr>
<td>Carrots</td>
<td>1</td>
<td>1</td>
<td>bagged</td>
<td>1 stalk</td>
<td>1.50</td>
<td></td>
</tr>
<tr>
<td>Celery</td>
<td>1</td>
<td>1</td>
<td>bagged</td>
<td>9 oz</td>
<td>1.99</td>
<td>Any variety</td>
</tr>
<tr>
<td>Green pepper</td>
<td>1</td>
<td>2</td>
<td>each</td>
<td>-</td>
<td>0.79</td>
<td></td>
</tr>
<tr>
<td>Lettuce, loose-leaf (green/red)</td>
<td>1</td>
<td>2</td>
<td>bagged</td>
<td>9 oz</td>
<td>1.99</td>
<td>Any variety</td>
</tr>
<tr>
<td>Onions, yellow</td>
<td>1</td>
<td>1</td>
<td>$.79/lb</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potato, any variety</td>
<td>1</td>
<td>1</td>
<td>$.39/lb</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tomatoes, any variety</td>
<td>1</td>
<td>1</td>
<td>$.19/lb</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Canned Fruits and Vegetables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oranges, mandarin, juice or light syrup</td>
<td>1</td>
<td>2</td>
<td>each</td>
<td>15 oz</td>
<td>1.97</td>
<td>Canned pears</td>
</tr>
<tr>
<td>Peaches, juice or light syrup</td>
<td>1</td>
<td>1</td>
<td>each</td>
<td>15 oz</td>
<td>1.97</td>
<td>Canned pears</td>
</tr>
<tr>
<td>Mushrooms, pieces</td>
<td>1</td>
<td>1</td>
<td>each</td>
<td>8 oz</td>
<td>1.69</td>
<td>Mushrooms, whole</td>
</tr>
<tr>
<td>Spaghetti sauce</td>
<td>1</td>
<td>1</td>
<td>each</td>
<td>14 oz</td>
<td>2.00</td>
<td>Salsa</td>
</tr>
<tr>
<td>Tomato sauce</td>
<td>1</td>
<td>1</td>
<td>each</td>
<td>15 oz</td>
<td>0.83</td>
<td>Salsa</td>
</tr>
<tr>
<td><strong>Frozen Fruits and Vegetables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orange juice, concentrate</td>
<td>1</td>
<td>1</td>
<td>can</td>
<td>12 oz</td>
<td>2.15</td>
<td></td>
</tr>
<tr>
<td>Broccoli, chopped</td>
<td>1</td>
<td>1</td>
<td>bag</td>
<td>24 oz</td>
<td>3.59</td>
<td>Chopped greens</td>
</tr>
<tr>
<td>Green beans, any variety</td>
<td>1</td>
<td>1</td>
<td>bag</td>
<td>12 oz</td>
<td>2.00</td>
<td>Corn, okra, snow peas</td>
</tr>
<tr>
<td>Green peas, any variety</td>
<td>1</td>
<td>1</td>
<td>bag</td>
<td>12 oz</td>
<td>2.00</td>
<td>Corn, okra, snow peas</td>
</tr>
<tr>
<td>French fries, any variety</td>
<td>1</td>
<td>1</td>
<td>bag</td>
<td>28 oz</td>
<td>1.98</td>
<td></td>
</tr>
<tr>
<td><strong>Dairy Products</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milk, 1% lowfat</td>
<td>1</td>
<td>1</td>
<td>each</td>
<td>gallon</td>
<td>3.88</td>
<td>Milk, skim</td>
</tr>
<tr>
<td>Milk, whole</td>
<td>1</td>
<td>1</td>
<td>each</td>
<td>gallon</td>
<td>3.88</td>
<td>Milk, 2% reduced fat</td>
</tr>
<tr>
<td>Cheese, cheddar, any variety</td>
<td>1</td>
<td>1</td>
<td>each</td>
<td>8 oz</td>
<td>3.83</td>
<td></td>
</tr>
<tr>
<td>Cheese, cottage, lowfat</td>
<td>1</td>
<td>1</td>
<td>each</td>
<td>16 oz</td>
<td>2.99</td>
<td></td>
</tr>
</tbody>
</table>
Home Town Food, the only food retailer in the town. Its entrance is on the side of building in an alley (Student Photographer: Vaughn, B. 2015).
Personal Consumption

- Cost
- Source
- Quality
- Nutrition
- Waste

In-class, team, response to the question “what surprised you about your own consumption?”
III. Findings

COMMUNITY FOOD SECURITY ASSESSMENT

Team responding to an audience question about their findings.
LIMITED ACCESS TO PUBLIC TRANSPORTATION

Eufaula Barbour Transit Authority
- only public transportation in Barbour County
- M-F 6am-5pm
- must make appointment 24 hours in advance
- $2/one-way travel
  (City of Eufaula, 2011)

10.6% of households in Barbour County do not have access to a car
(The Office of Primary Care, 2013)

Access to Stores: Barbour County

- % of population with low access to stores, 2010
- % of population with low income and low access to stores, 2010
- % of children with very low access to stores, 2010
- % of households with no car and low access to stores, 2010
- % of household with adequate access to stores, 2010

(USDA ERS 2015)
Project Support

Training & Guidance

Showing students how to retrieve online data and codebook from the USDA ERS Food Environment Atlas.

Challenging project team on their data use assumptions.
Project Support

Practice & Feedback

In-class, team, practice using key concepts from lecture and assigned readings to explain their findings.

Instructor comments and suggested revisions posted to course Canvas site.
Initial Assessment

Indirect Measures

- Student response
  - “Emphasis on sustainability and fairness really inspired me.”
  - “Especially loved the field trip and project . . . got to see many of concepts we discussed in class first hand.”
  - “Learned more than I ever thought I would about food security.”
  - “Food security assessment was cool to learn from.”
Initial Assessment

Indirect Measures
▶ Student response
  ✷ “Emphasis on sustainability and fairness really inspired me.”

Direct Measures
▶ Specialist response
  ✷ “Got a lot out of ‘em’.”
  ✷ “Every student should take this class.”
Initial Assessment

Indirect Measures

- Student response
  - “Emphasis on sustainability and fairness really inspired me.”
  - “Grading was very harsh and difficult.”

Direct Measures

- Specialist response
  - “Got a lot out of ‘em’.”
  - “Every student should take this class.”
  - “This class was by no means easy.”
  - “The workload was kind of a lot.”
  - “Hard at times.”
  - “Lots of reading.”
Initial Assessment

Indirect Measures

- Student response
  - “Emphasis on sustainability and fairness really inspired me.”
  - “Grading was very harsh and difficult.”

Direct Measures

- Specialist response
  - “Got a lot out of ‘em’.”
  - “Every student should take this class.”

- Pre- and Post-test
  - Race and class
    - Empathy
    - Diversity
    - Entitlement
A PEDAGOGICAL APPROACH FOR "WICKED PROBLEMS"

MICHELLE R. WOROSZ
ASSOCIATE PROFESSOR