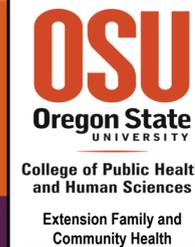




# Preventing Obesity in the Rural Populations: Visualizing the Need for Cross-Program Collaborations in Research, Education, and Extension to Address the Local Food and Physical Activity Systems

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The goal of the GROW Healthy Kids and Communities project is to prevent obesity in rural children.



## Program Description

### Generating Rural Options for Weight (GROW) Healthy Kids and Communities

- USDA NIFA funded, integrated research, education, and Extension program aimed to address the childhood obesity prevention challenge.

Background: Many risk factors have been associated with being obese, including rural residency. Conversely, environmental strategies to prevent obesity have focused on urban settings (and are likely not applicable to rural areas). Rural residents report different lived experiences of local food and physical activity resources, which relate with obesity risk. GROW uses community based participatory research approaches and asset evaluation to assure that intervention strategies applied to rural settings are locally relevant and adequately resourced.

## Research Methods

### Participatory research approach, multiple case study (n=6) design using mixed methods

Community members are provided a Garmin OR 550 (camera-enabled GPS unit) and trained to map features of their community. On their own or with a partner, they photograph (and map) the food and/or physical activity resources in their assigned sectors of the community. They record details about the resources on the sheets of the audit tool, which are then used to create maps for the community. Survey of the locally available food and physical activity resources were conducted using camera enabled GPS units.

### Defining Community

Community can be defined in a number of ways – by physical, political or socio-cultural features. The nature of rural communities is one of spatial dispersal: populations are often widely distributed as are resources. Access to resources is often dictated by access to transportation, and access to transportation without a personal vehicle is often limited.

We began our definition of community by using the school district boundaries – often a large area = >700 mi<sup>2</sup> in our most rural communities. A study area of this size makes it very time and personnel expensive to collect data, and may inadvertently collect data that is not relevant to our population.

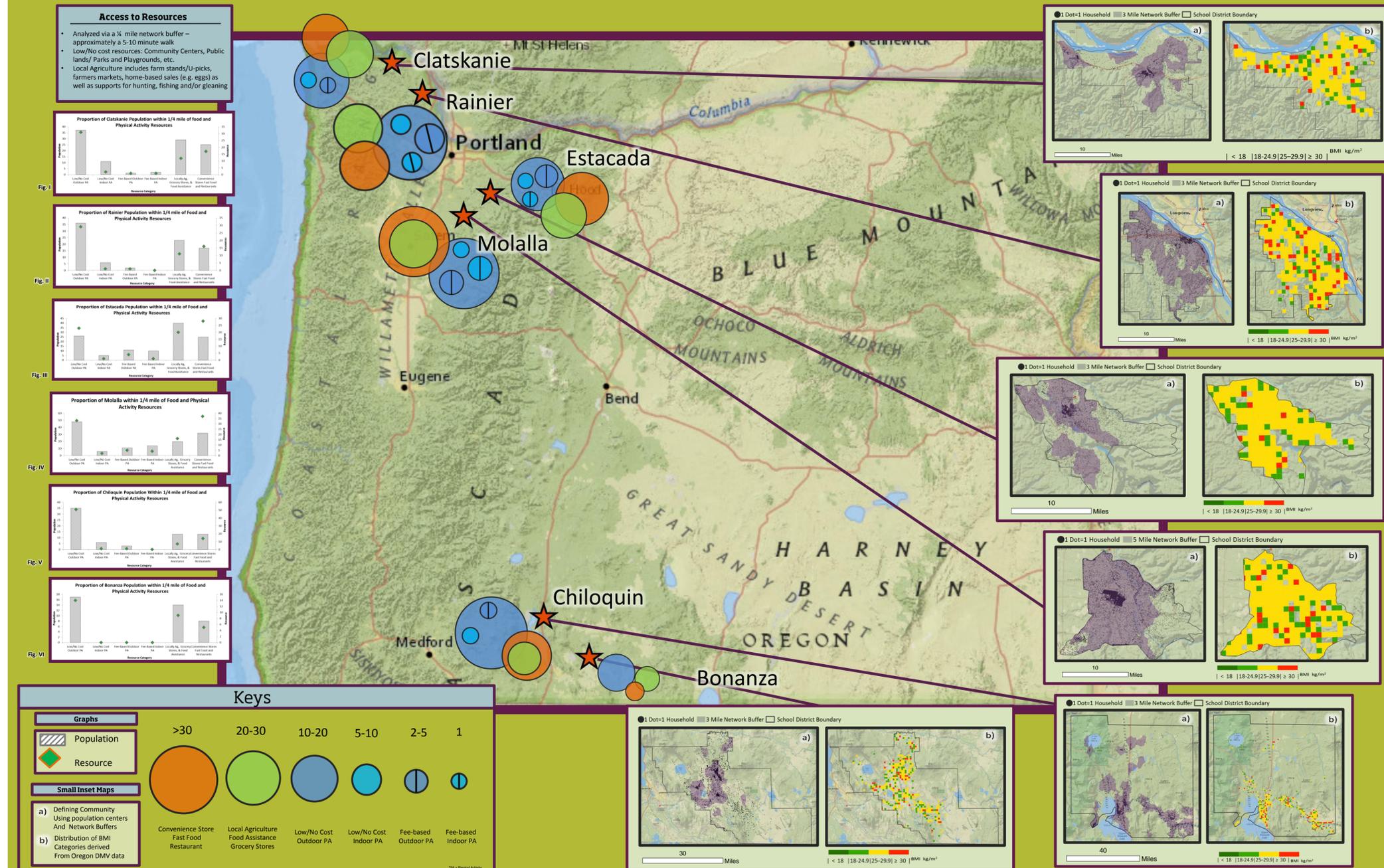
To ensure we captured resources that were spatially relevant to the majority of people in the community, we defined our community using population density. The extent of which is defined as the “network buffer” encompassing at least 90% of the households spatially distributed around population weighted centers (Inset maps A).

### Spatial Analysis

Spatial data from GPS units were transferred from community sites to campus using a data-transfer application<sup>1</sup>, then attributed according to survey responses provided by community residents.

Spatial characteristics were examined in a GIS<sup>2</sup>, including: (1) where people live and proximity to food and activity assets; and (2) food and activity assets and adult obesity prevalence (BMI) for each community, using the Oregon DMV derived BMI data created by the Oregon Environmental Public Health Tracking Program<sup>3</sup> (Inset maps B).

## Results



## Results

### Resources and Access

Access was analyzed via distance using a number of measures: ¼ mile and ½ mile distances and 5 minute drive-time. The results from the ¼ mile analysis are shown (Figures I-VI); ½ mile analysis revealed similar patterns.

- Rural communities differed in the number, type, and spatial distribution of locally available food and physical activity resources. Based on distance to resources (¼ mile), less than 50% of the population in all communities has access to any of the resource categories.
- Across communities, there is a lack of Indoor Physical Activity resources in both the Low/No cost and Fee-based category. The large majority of the Low/No cost Outdoor Physical Activity resources are trails which are located on private forestry or public lands.
- All communities have some kind of seasonal local agriculture: all but one have a seasonal farmers market. The majority of these resources are home-based operations that sell items like eggs, milk, and vegetables, and most lie well outside of city limits.
- There are grocery stores located in each of the communities and each community has access to food assistance in the form of food banks/pantries or community meals.

### BMI

Most communities differed significantly from each other in terms of proportion of adults (ages 18-84) in all BMI categories ( $p < 0.05$ ); the most rural communities differed the most. Bonanza had a significantly higher proportion of adults in the healthy category than all other communities, while Chiloquin had a significantly higher proportion of adults in the obese category than all other communities. Across all communities, from 7 to 9 of every 10 adults were overweight and only 1 to 2 of every 10 adults were of healthy weight.

Table 1. Proportion of population that falls within 3 BMI categories

| Community  | Healthy 18-24.9 | Overweight 25-29.9 | Obese ≥ 30 |
|------------|-----------------|--------------------|------------|
| Estacada   | 12              | 88                 | < 1        |
| Molalla    | 3               | 96                 | 1          |
| Clatskanie | 11              | 82                 | 7          |
| Rainier    | 7               | 84                 | 9          |
| Bonanza    | 25              | 67                 | 8          |
| Chiloquin  | 10              | 72                 | 18         |

## Discussion/Implications

In rural communities, a lack of available resources and accessibility to existing resources may make developing and maintaining healthy dietary and activity habits difficult.

- Local food and activity resources, like farm stands, u-picks or home based food retailers, and parks and playgrounds, while available in all of our communities, were often spread out and located far from the town center, making them essentially inaccessible to those without a means of transportation.
- In order for communities to make it easier for residents to be physically active and eat healthy most every day, the supports necessary to maintain weight health, namely low/no cost physical activity and healthy food resources, need to be readily available and accessible.
- Communities can use results from the audit tool as evidence of the need for (1) better access to healthy food options, (2) addition of, or increases in, Indoor Physical Activity resources.

It is critical for Extension programs to consider the unique characteristics of rural populations and their environments in all activities aimed at community impacts. There is an opportunity to optimize the local, community and/or regional food, built and natural environment resource systems to reduce obesity and improve rural health

End Notes  
 1. GeoMobile Field Transfer Tool, GeoMobile Innovations, Inc., Corvallis, Oregon  
 2. ESRI 2014. ArcMap 10.1. ESRI, Redlands, California  
 3. Oregon Environmental Public Health Tracking Program. Body Mass Index in Oregon: Findings from DMV records. Portland, Oregon: Oregon Health Authority, Oregon Public Health Division, 2013.