

Gardening in Wind River Reservation for Growing Resilience and Food Dignity

University of Wyoming (UW)

Dr. Christine M. Porter
Melvin Arthur
Alyssa Wechsler

Blue Mountain Associates (BMA)

Dr. Virginia Sutter
James (Jim) Sutter
Etheleen Potter

Potter is also with [Wind River Development Fund - WRDF](#)

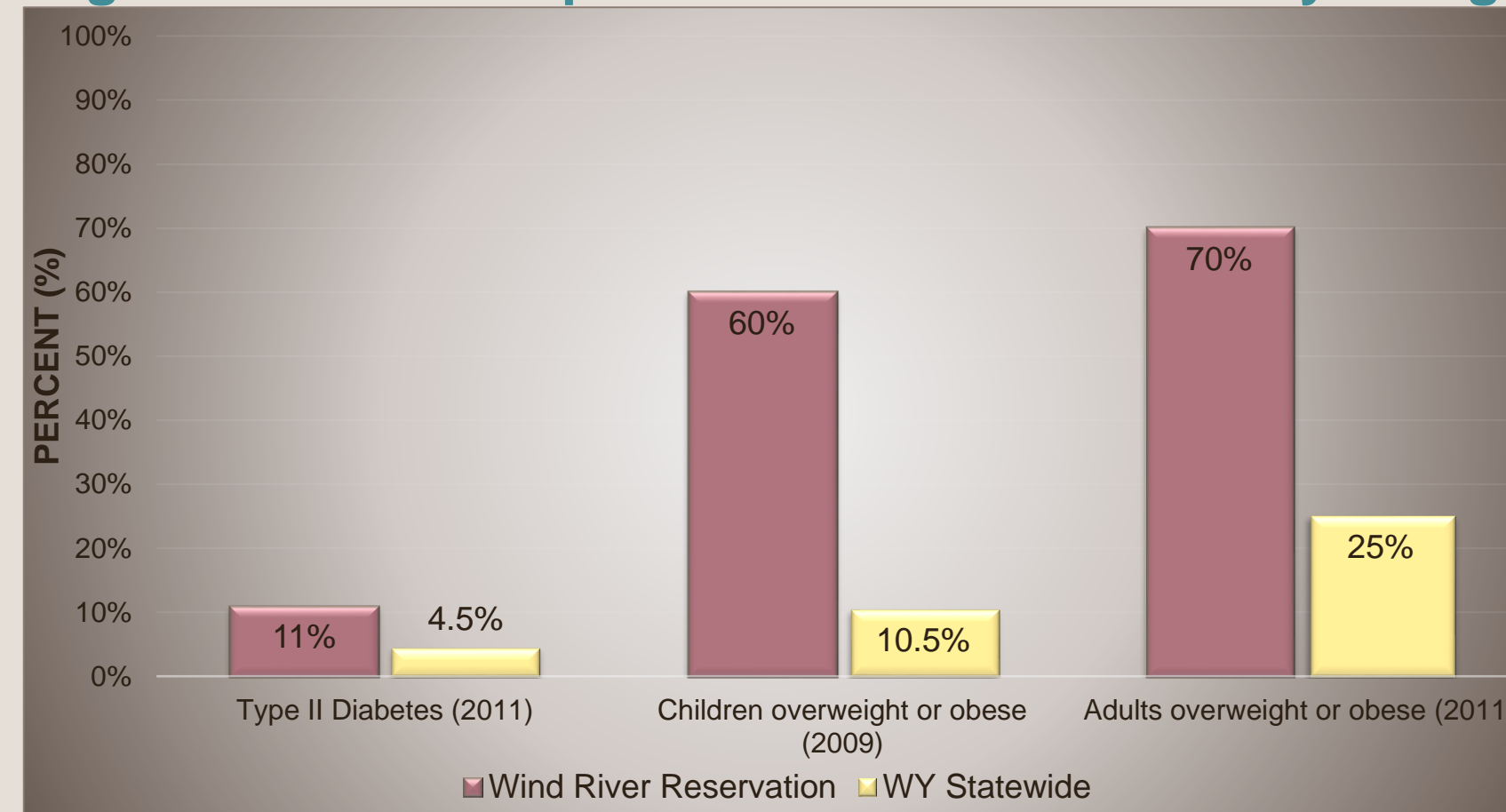
Eastern Shoshone Tribal Health (ESTH)

Naomi Harris
David Meyers

Introduction

In the late 1800s, the US government sponsored the slaughter of millions of bison in an attempt to starve the indigenous nations of the Great Plains into submission and death. Today, about 10,000 Northern Arapaho and Eastern Shoshone descendants of survivors live in Wind River Indian Reservation (WRIR). Many suffer from being stuffed with commodities and starved of sufficient, appropriate, and nutritious foods (see Figure 1). However, like all reservation-based tribal communities, WRIR has many assets, including land and water, strong family ties, cultural and spiritual resilience, and community health organizations.

Figure 1: Health disparities between WRIR & Wyoming



¹ ARDD. (2011). "Reducing Diabetes Disparities in American Indian Communities (Wind River Reservation)." Retrieved 11/21/14, from http://ardd.sph.umich.edu/eastern_shoshone_tribe.html.
² Smith, B.W., Wiggins, K., Tooley, E., Christopher, P., and Bernard, J. (2008) "The brief resilience scale: assessing the ability to bounce back." International journal of behavioral medicine. 15(3): 194-200
³ Robert Wood Johnson Foundation (2014) "The State of Obesity in Wyoming." Retrieved 3/1/16 from <http://stateofobesity.org/states/wy/>

Since 2011, Blue Mountain Associates (BMA) has been facilitating food system change to regain food sovereignty as a partner in the national *Food Dignity* project with the University of Wyoming (UW). BMA identified extensive community interest in starting more home gardens which led to *Growing Resilience* – a project to provide 100 families with home gardens and measure the health impacts using a randomized controlled trial (RCT) design. BMA, UW and other partners (including ESTH) designed the study together in 2013-2014. We now have NIH funding for the full study, 2016-2020.



BMA's Food Dignity work in WRIR (left to right): Jim Sutter admiring a gardener's produce; Indian Corn seeds Tim Thomas grew and shares; the tribal market BMA founded; Dr. Sutter sampling a tomato from a garden BMA helped support.

Growing Resilience Methods

To identify the health impacts of home food gardening, we are:

1. Recruiting 100 families in WRIR who wish to garden in 3 waves over 3 years. ESTH and WRDF lead this effort.
2. Randomly assigning each family to receive two years of gardening support immediately (intervention) or in two years from now (control with delayed intervention). UW leads this.
3. Measuring health indicators with each family (Table 1) four times – before and at the peak of each garden season – over two years. Wyoming Health Fairs and UW do this. Stipends each time are \$40 for adults, \$15 for children & \$20 for drivers (if they don't request a ride from WRDF or ESTH). Each person also receives their results.

Table 1: Health indicator data collected

	Biometric	Blood-Based	Survey-Based
Adults	<ul style="list-style-type: none"> BMI (height & weight) Waist circumference Blood pressure Hand strength 	<ul style="list-style-type: none"> Full 32-level chemistry profile Hemoglobin A1C (diabetes) Vitamin D (sun exposure) Serum beta carotene (vegetable consumption) 	<ul style="list-style-type: none"> Food security Physical & mental wellness (SF-12) Health management Physical activity Vegetable intake management Medications and supplements
Children	<ul style="list-style-type: none"> BMI (height & weight) Waist circumference 	<ul style="list-style-type: none"> Hemoglobin A1C via finger prick 	N/A

4. Providing and supporting home gardens and gardeners. BMA leads this.
5. Assessing and guiding the project to best serve WRIR and family interests. A community advisory board does this.
6. Crunching the data. UW does this with the Wyoming Survey and Analysis center and an economics professor.
7. Celebrating and sharing. We have hosted two open houses in WRIR so far.



Growing Resilience (left to right): Alyssa unrolling a timeline to plan the 1st year and Jim commenting we instead need a circle; two gardens and gardeners BMA is supporting in 2016 & 2017.



GROWING RESILIENCE

Funding for **Growing Resilience** comes from NHLBI and NIGMS of the National Institutes of Health (grant no. R01 HL126666-01). (www.growingresilience.org)

The **Growing Resilience** pilot was supported by grants from NCR (5p20RR016474-12) and NIGMS (8 P20 GM103432-12) of the National Institutes of Health.

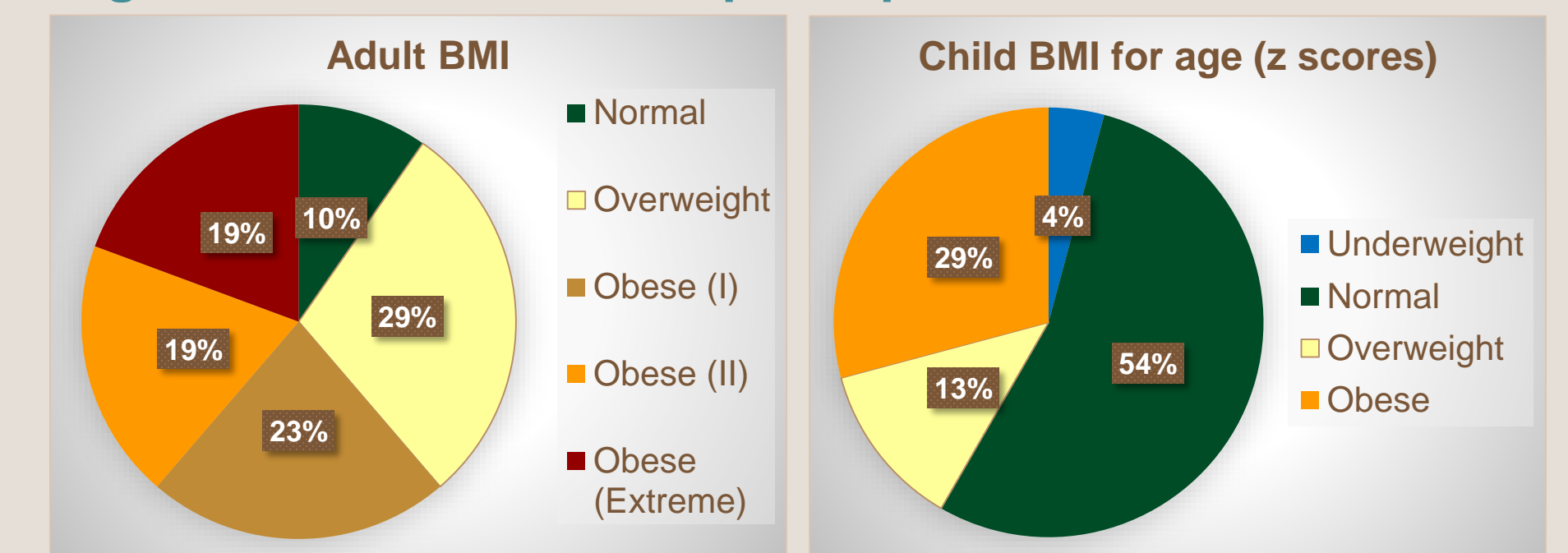
Food Dignity is supported by Agriculture and Food Research Initiative Competitive Grant no. 2011-68004-30074 from the USDA National Institute of Food and Agriculture. (www.fooddignity.org)

Preliminary Results

Our first "wave" of 18 families participating in Growing Resilience includes a total of 34 adults and 24 children. Health indicators for participants in the baseline data collection in January 2016 are similar or worse than the average for WRIR.

- About 20% of adult participants said they have **diabetes** (vs. about 12% for WRIR as a whole). Blood sugar and hemoglobin A1C (a 3-month measure of blood sugar control) results suggest that about half of those have their diabetes under control.
- **BMI** results suggest that about 9% of the adults are at a healthy weight, with another 26% who are overweight. The remaining 65% are at unhealthy weights (Figure 2).
- Results of the SF-12 survey suggest that, compared to US averages, adult **physical health** status overall was above average for 16% of the participating adults, at average for 42%, and below average for another 42%. **Mental/emotional health** results were 21% above average, 42% average, and 36% below national average.

Figure 2: Baseline BMI for participants in Year 1



Next...

All 18 participating families came back for the 2nd data collection in August 2016. ESTH and WRDF are now recruiting the next 40-46 families for the next wave who will start in 2017.

We will host a **national workshop in WRIR in 2020** to share and learn with other sovereign nations. **Please give us your email on the sheet nearby if you would like to stay informed about that event.**

