



# Quantitative Analysis of InSHAPE® Program Outcomes

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## What we know about individuals with serious mental illness:

- Lower life expectancy than general population
- Cardiovascular disease (CVD) largest contributor to early death
- Sedentary living and poor diet contribute to declining health
- Lifestyle interventions provided by community mental health (CMH) agencies hold promise

## Background:



Physical fitness and nutrition health program

- Originated in 2002 at Monadnock Family Services, Keene NH; replicated in many CMH agencies in New Hampshire, Rhode Island, Massachusetts and Michigan
- Consists of individualized physical fitness training and nutrition counseling during one-on-one sessions between the participant and a “health mentor/trainer”
- Year-long program with decreasing frequency of training sessions
- Local program metrics: (CMH agency in Michigan)
  - Objective measure of fitness: 6 minute walk test
  - Health indicators: weight loss, body mass index, pre-post exercise heart rate, BP
  - Psychological functioning: depressive symptoms, perceived stress, quality of sleep
  - Social support

## Research questions:

What changes occur in body weight and walking distance at 3, 6, 9, & 12 months of participation in InSHAPE?

Is the year-long InSHAPE program clinically effective in reducing cardiovascular risk (weight loss  $\geq 5\%$  or increase of 164 ft. on 6-minute walk test)?

**Method:** Analysis of existing data (collected between 2010-2015) using SAS

Statistical procedures: Paired samples t-tests showing unadjusted changes in body weight (in lbs.) and change in distance (in ft.) covered in 6 minutes; Generalized estimating equation models

## Results:

Baseline: 57% morbidly obese; 32% overweight or obese

Attrition Rate					
	Baseline	3 mo's	6 mo's	9 mo's	12 mo's
N (%)	81 (100%)	56 (69.1 %)	42 (51.9 %)	32 (39.5%)	31 (38.3 %)

## Paired T-Test Results for Weight Loss

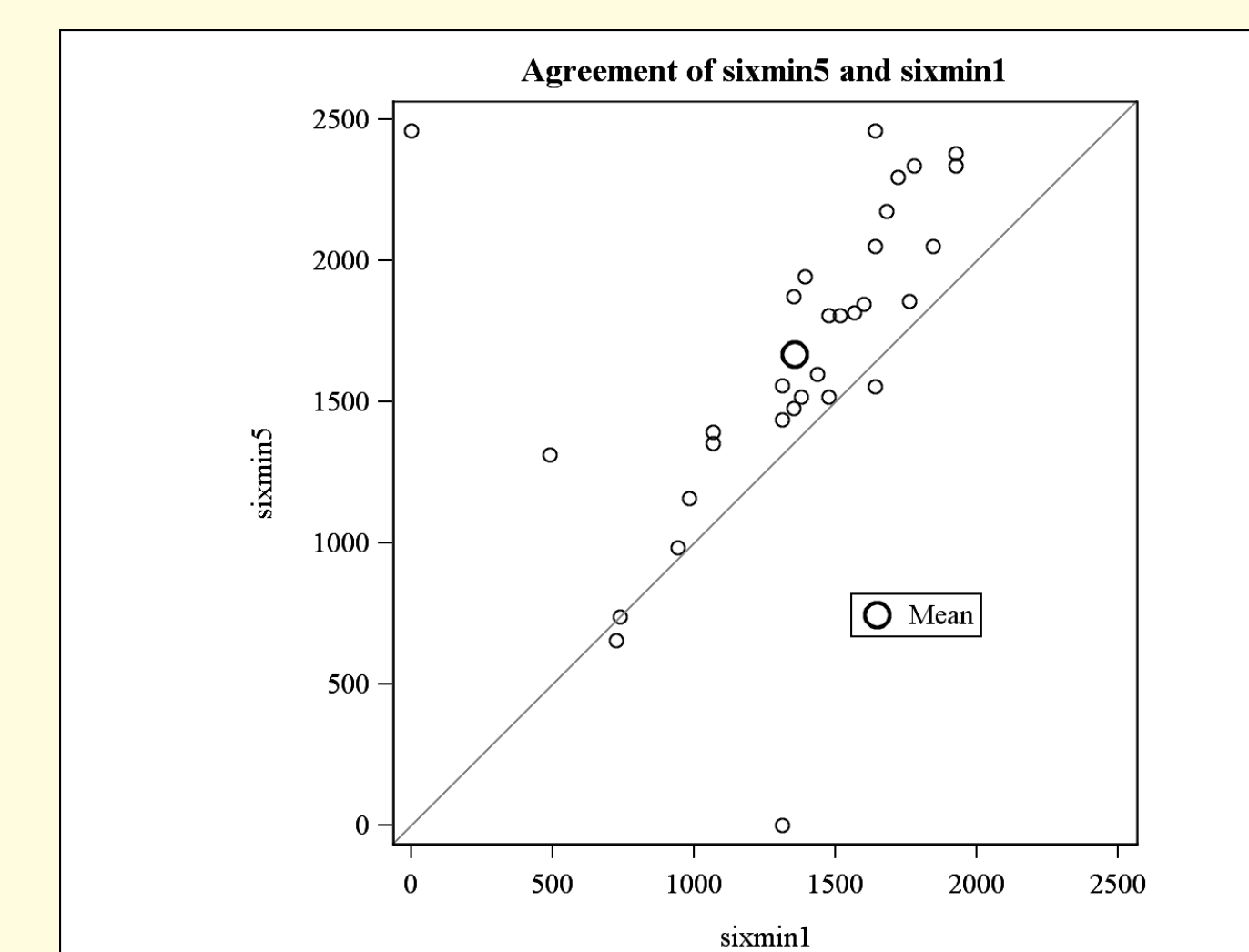
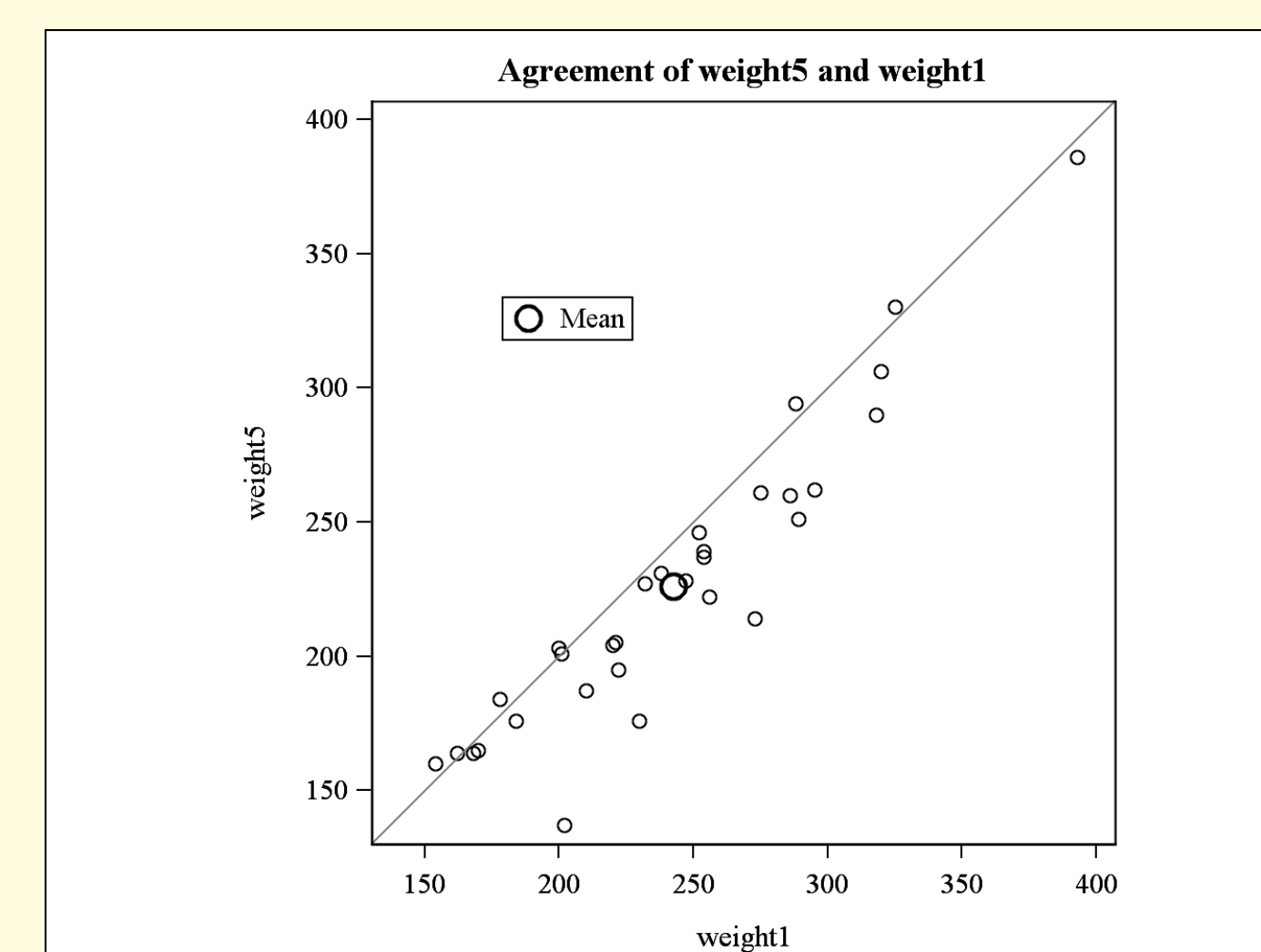
Time Period	N	Mean loss (SD) in lbs.	P
3 mo's	56	-6.41 (13.20)	<0.01
6 mo's	42	-9.76 (12.73)	<0.01
9 mo's	32	-15.31 (15.64)	<0.01
12mo's	31	-16.52 (18.94)	<0.01

Weight differences for follow-up periods were compared to weight at baseline

## Paired T-Test Results for 6-Minute Walk Test

Time Period	N	Mean gain (SD) in ft.	P
3 mo's	56	158.10 (522.20)	0.03
6 mo's	42	34.81 (774.00)	0.77
9 mo's	32	189.50 (432.50)	0.02
12mo's	31	311.80 ( 542.60)	<0.01

Distance differences for follow-up periods were compared to distance at baseline



## Analysis of GEE Parameter Estimates: Empirical Standard Error Estimates

Parameter	Estimate	SE	95% CL		Z	PR>  Z
Intercept	1415.413	47.88	1321.57	1509.26	29.56	<.0001
elapsed	<b>0.5664</b>	0.221	0.1331	0.9996	2.56	0.0104

Explanation: the model using generalized estimating equations indicated that there was a significant change in distance walked as a function of time. For each additional day of participation in the program, there was a 0.5664 unit increase in distance walked in six minutes.

## Implications:

The mean gain in walking distance was greater than 164 ft. at 9 & 12 months suggesting clinically significant reduction in CVD risk for a subset of the sample.

Exploration of relationships between physical fitness and indicators of mental health is indicated.

## Comparison with previous studies:

Bartels et al. (2013) & Bartels et al. (2015): Clinically significant reduction in CVD risk achieved in half of overweight InSHAPE study participants from northeastern U.S.

## Qualitative study with subset of InSHAPE participants:

Lesley, M., & Livingood, K. (2015). A qualitative study to assess sustainability of InSHAPE participants' fitness activities. *Journal of Psychosocial Nursing and Mental Health Services*, 53(2), 46-53.

## Major findings:

- Strong structural support needed to sustain new health habits
- One year may not be sufficient to support permanent behavior changes

## Relevance to nursing:

Programs exist that help individuals with serious mental illness improve physical fitness and overall health.

Nurses can partner with fitness trainers and other members of health care team to provide integrated focus on both physical and mental health.