

A Simple Graphic Result from Complex Longitudinal Model of Patient Change over Time

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Additional material related to this presentation
can be viewed at www.clinical-informatics.com

Description of sample

- 10,843 adults with repeated assessments
 - Depression 53%
 - Adjustment 26
 - Anxiety 11%
 - Bipolar 5%
- Commercially insured with managed care plan (PacifiCare Behavioral Health, Inc.)
- Over 2000 providers, including 45 multidisciplinary group practices

Outcome measure

- Life Status Questionnaire
 - 30 item version of OQ45
 - Self report measure
- Suggested frequency of administration:
1st, 3rd, 5th and every subsequent 5th session
- All cases in sample have protocol at session 1
- Average # protocols per case: 2.7
- Mean time to last assessment: 22 weeks

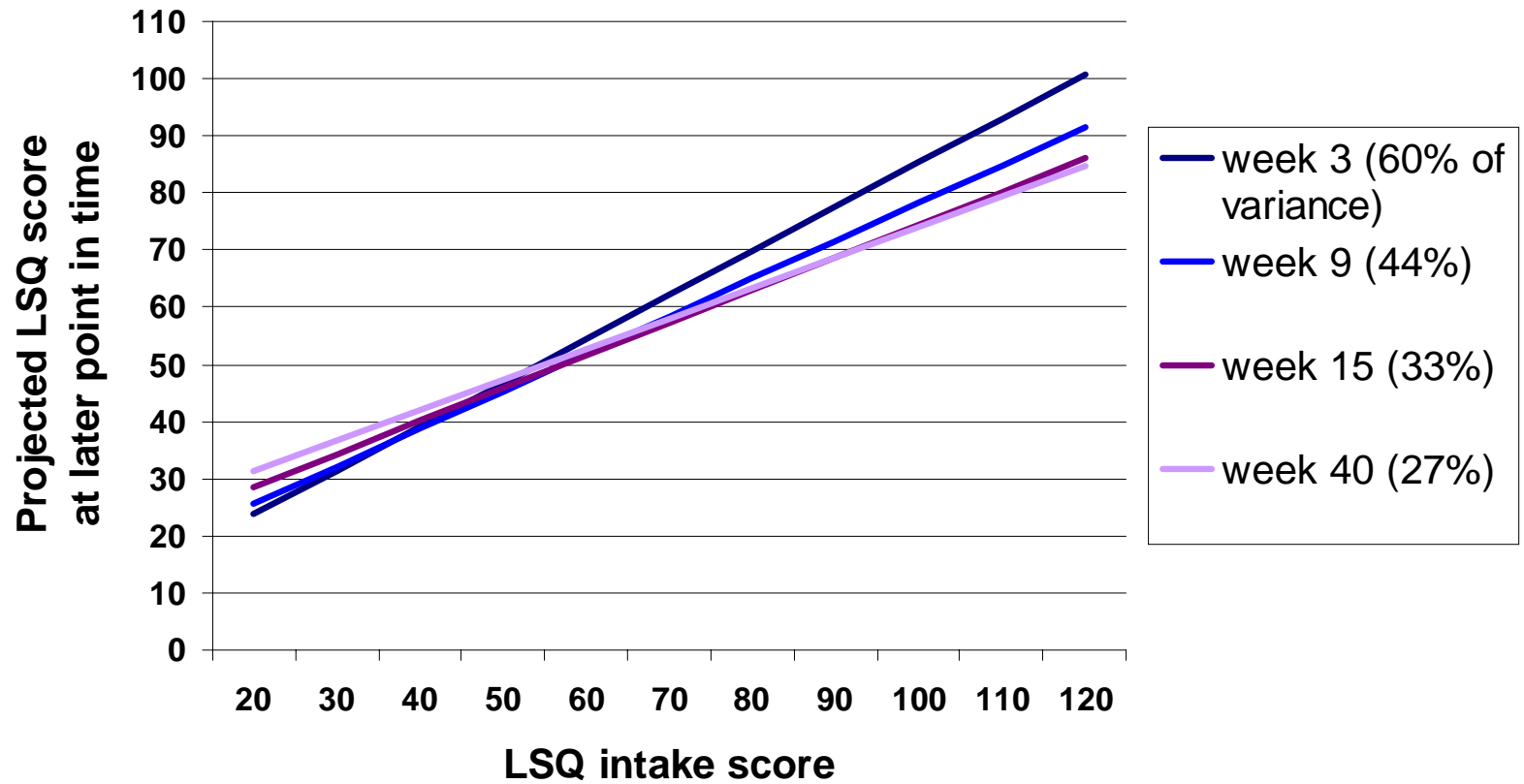
Problem

- Pre-post assessment provides no information of when change occurs
- Spacing of assessments may not be constant; missing data common
- Rate of change is a function of both severity and time
- Trajectory of change is not linear
- How can we display these results simply?

Solution: modeling change

- Change is a function of severity – high scores show more change than low scores
- Numerous analyses of large datasets consistently reveal a linear relationship between scores at two points in time
- Simple linear regression (can be performed in Excel) reveals the formula
- % of variance accounted for decreases as time between measurement increases

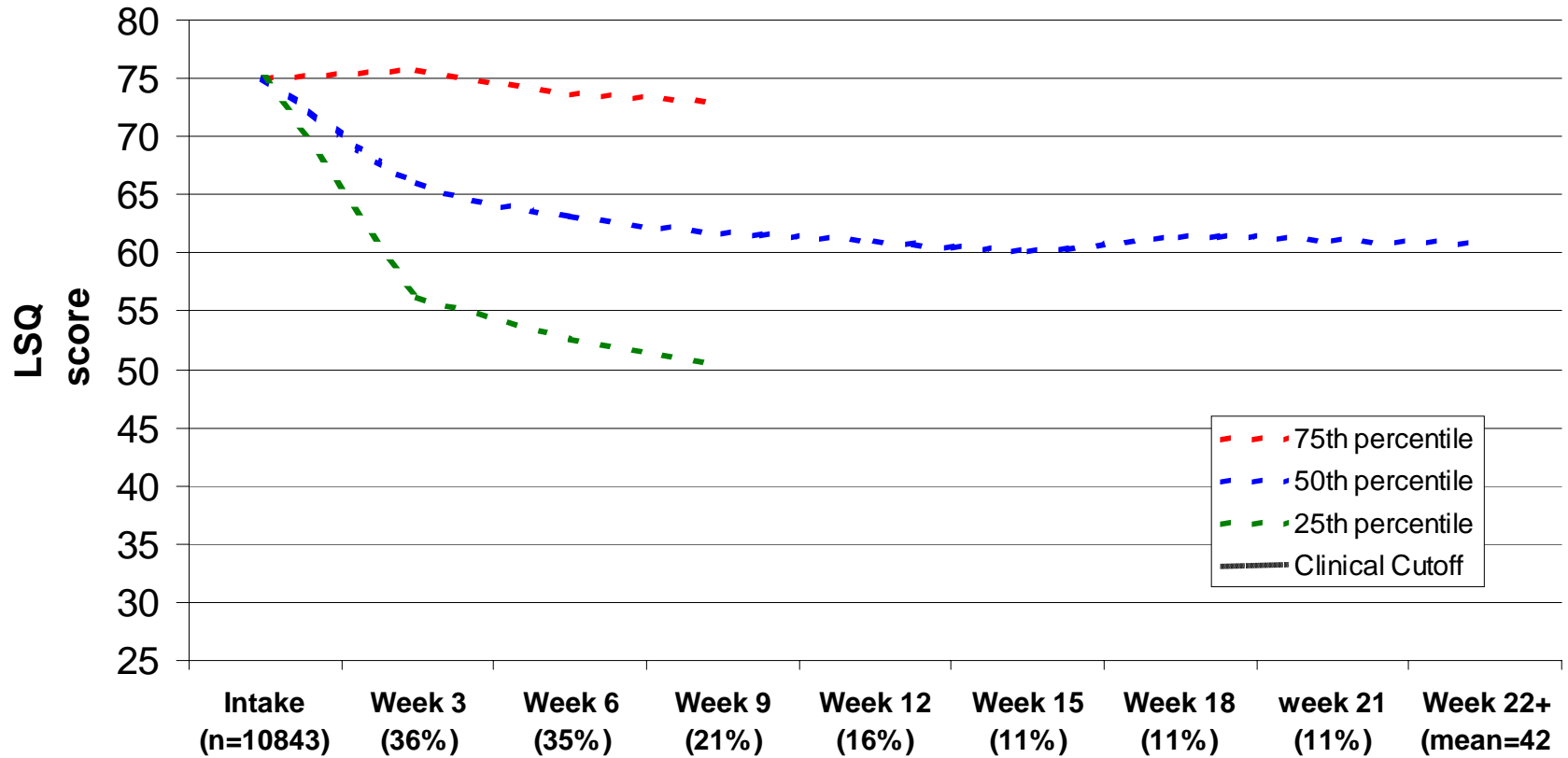
Regression lines



Creating time/change graph

- Use regression formulas to project scores at each measurement interval
- Changing the intake score will change projected scores at each subsequent point
- Distribution around projected scores can be estimated by calculating the standard deviation of the residualized scores
- Connect the projected scores to create a trajectory of change graph

Trajectory of change graph

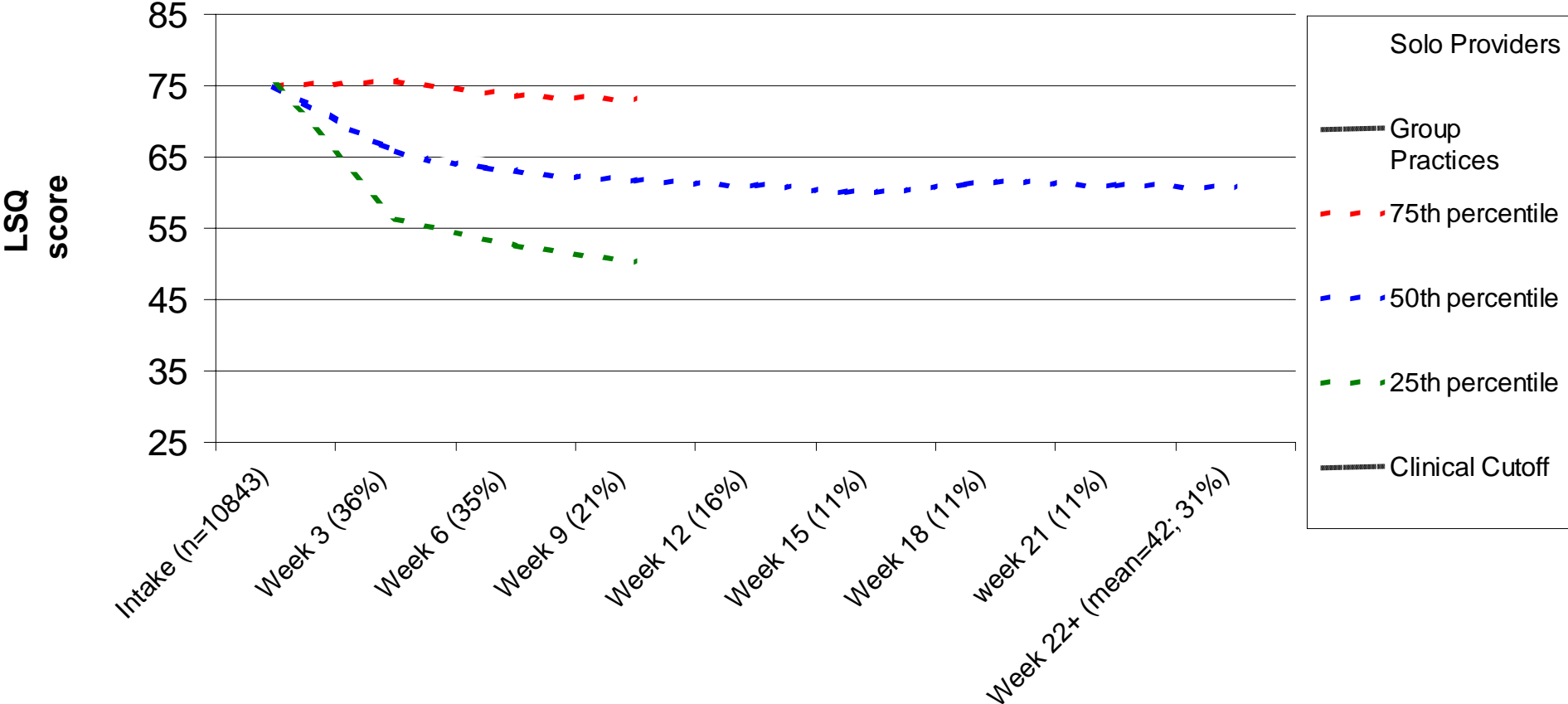


Using graph to report outcomes

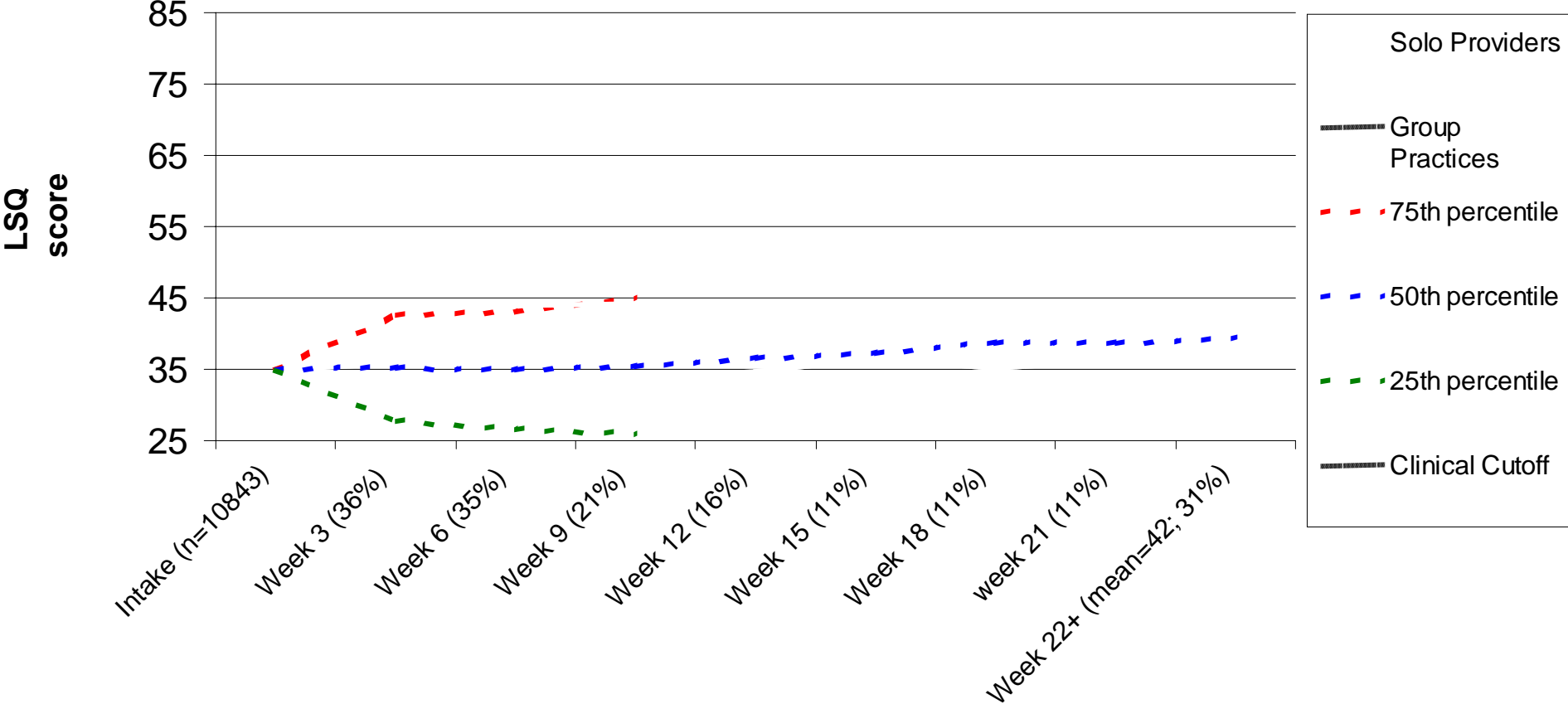
Example: Comparing outcomes for solo practitioners versus multidisciplinary group practices

- 38% of the sample treated at a group practice
- Groups averaged .61 effect size compared to .37 for solo providers ($p < .00000000001$)
- When does this difference in outcome occur?
- Does it vary with severity?

Change for patients with severe symptoms



Change for patients with mild symptoms



Graphing method reveals:

- Higher scores = greater change
- Most change occurs in first few weeks of treatment
- Difference between groups and solo providers evident by 6 weeks and remains relatively constant over time
- Difference in effect size between groups and solo providers is similar for severe and mild cases

About the presenter

G.S. (Jeb) Brown is a licensed psychologist with a Ph.D. from Duke University. His twenty plus year career he has taken him from full time clinician to clinician/administrator/researcher and finally to full time researcher and consultant.

He served as the Executive Director of the Center for Family Development from 1982 to 1987. He then joined United Behavioral Systems (an United Health Care subsidiary) as the Executive Director for of Utah, a position he held for almost six years. In 1993 he accepted a position as the Corporate Clinical Director for Human Affairs International (HAI), at that time one of the largest managed behavioral healthcare companies in the country with 23,000,000 covered lives.

Dr. Brown was the primary driver behind HAI's successful outcomes management initiative, and in 1996 his title was changed to Director of Clinical Informatics. In 1998 he left HAI (then part of Magellan Health Services family of companies) to found the Center for Clinical Informatics.

His present projects include the development of the ALERT outcomes management system for PacifiCare Behavioral Health (4,000,000 covered lives). Dr. Brown continues to provide direct clinical care a few hours per week in a behavioral health clinic in Salt Lake City, Utah.

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