



Opportunities for Ohioans with Disabilities

John R. Kasich
Governor
Kevin L. Miller
Executive Director

Bureau of Services for the Visually Impaired
Bureau of Vocational Rehabilitation
Division of Disability Determination

Lean Six Sigma Project Report Out

Raivo Murnieks

Opportunities for Ohioans with Disabilities

July 21, 2016

Investing in Quality Outcomes



Project Background

*In most businesses today, managers are hostages to two types of information: **average data & anecdotal data.***

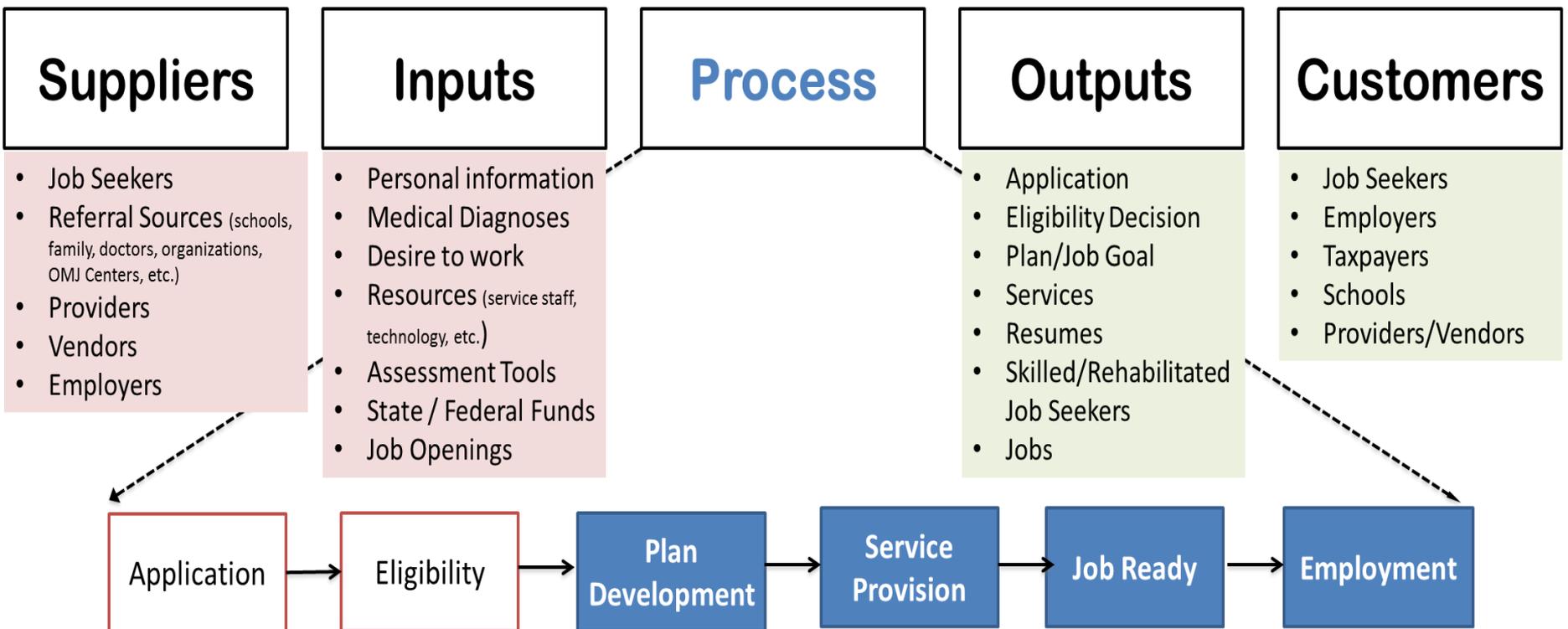
Problem: Evaluate the hypothesis that more **time** and more **money** spent results in **better/quality** employment outcomes for OOD jobseekers.

Opportunity: Identify approaches to make better use of the time and money it takes to get an individual into a job.

I.E. A REAL GAME CHANGER

High Level Process - SIPOC

Vocational Rehabilitation SIPOC



Key Operational Definitions

Time: Calendar Days from First Plan for Employment to Case Closure (*90 days added for successful outcomes*)

Money: Cost of Purchased Services

Quality Outcome: Ohio Wages

Most Significantly Disabled (MSD): Three or more serious functional capacity limitations to employment

Significantly Disabled (SD): One or two serious functional capacity limitations to employment

Job Related Services: Placement Assistance, Development, Readiness, Search Assistance, Coaching and Retention.

OOD Background

- Vocational Rehabilitation (VR) assists individuals with disabilities to find and/or retain a job.
- Successful **Employment Outcomes up 80%** annually.
- **No more wait list for services – first time since 1991.**
 - Applications - Up 10%
 - Most Significantly Disabled (from 70% to 50% of caseload)
 - Significantly Disabled (from 25% to 45% of caseload)
 - Job Saves – expanded opportunities with employers
- Workforce Innovation Opportunity Act (**WIOA**) – July 1, 2016
.....**focus on retention and median earnings** (future negotiated standards).

Tools Used

- Data Collection Plan
- Survey
- DMAIC
- SIPOC
- Stat – Basic Stat – Graphical Summary
- Hypothesis Test
- Linear Regression Analysis
- Probability Plot
- Includes/Excludes
- Operational Definitions
- Data Stratification

Graphical Displays

- Control Charts
- Capability Charts
- Histogram
- Box Plots
- Interval Plots

Current State – Application to Rehab

Current Target ALL VR Cases = 20 Months Average (Application to Closed with Employment)



Voice of the Customer

OOD 2015 Participant Survey: *1,016 Responses*

How important is it to get into a job as quickly as possible?

- **62.1% Very Important**
- **29.3% Somewhat Important**
- **8.6% Somewhat Unimportant/Not Important at All** (4.8% Somewhat /3.7% Not at All)



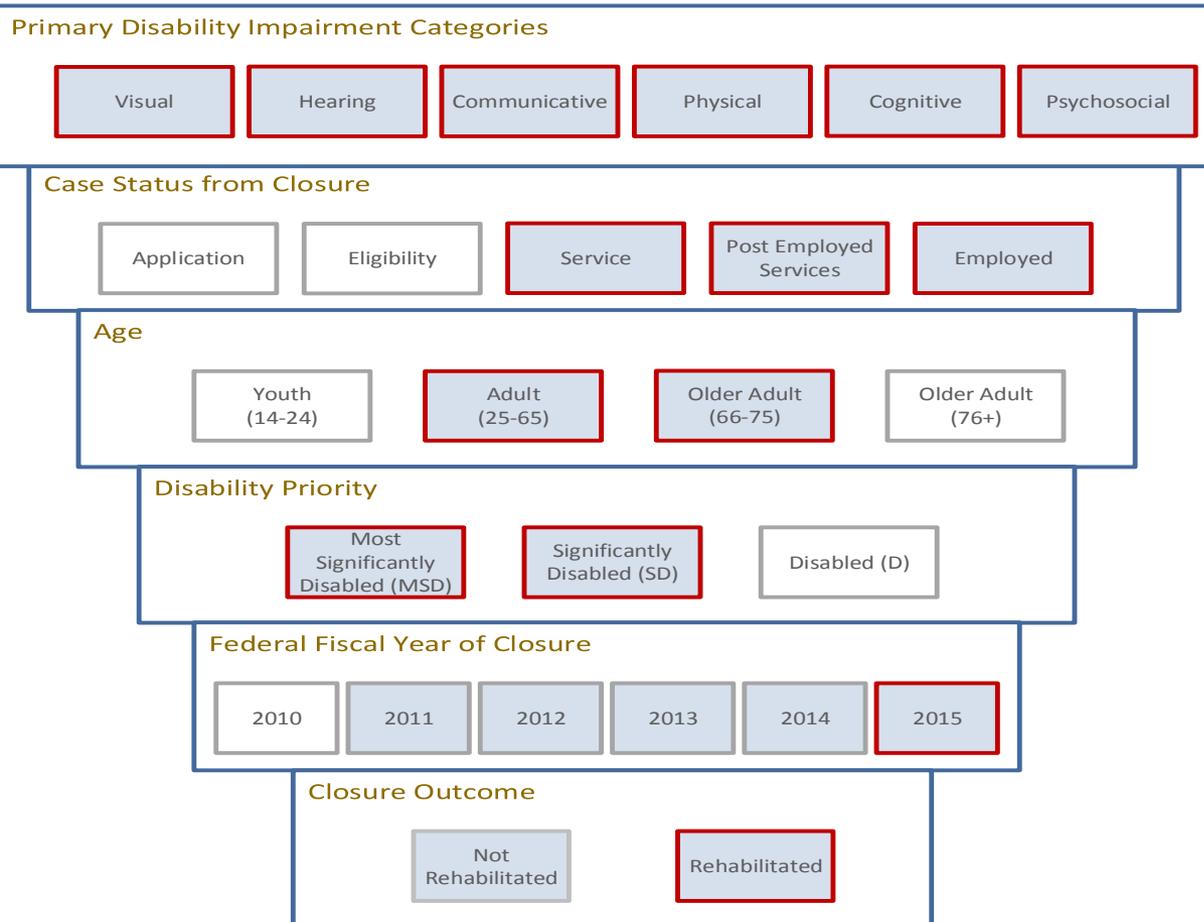
Mathematica 2015 Survey of Disability and Employment: *1,016 OOD Responses*

How important is it to you that you work?

- **81.0% Extremely/Very Important** (43.4% Extremely /37.6% Very)
- **15.6% Somewhat Important**
- **3.3% Not Important at All**

Critical to Quality

OOD Vocational Rehabilitation Closed Cases



Includes – Excludes Matrix

*Original
128,549 Cases*

Factors	Includes	# Cases	Excludes	# Cases
Case Status at Closure	Service, Employed, Post-Employment Services (PES)	61,181	Application, Eligibility, Delayed	67,368
Age at Application	Ages 25-75	40,511	Under 25 and Over 75	20,670
Disability Priority	Most Significantly Disabled (MSD), Significantly Disabled (SD)	40,367	Other Eligible	144
Time	Days from Plan (First and Last)		Days from Application, Eligibility	
Disability Type	Primary (All)		Secondary (All)	
FFY Closure	2011-2015	32,209	2010	8158
Status at Application	All excluding Homemaker	31,866	Homemaker	343
Employer Wages	Ohio		Federal and Out of State	

Mantras Into Action

If the P is Low the Ho Must Go

Y is a function of X

Making the Invisible Visible

Variation is Evil

Bring Home the Bacon

*Do Not Manage to the Extremes...but Extremes
Must be Managed*

Testing the Hypothesis

- Null Hypothesis (H_0)
 - Time does not impact quality employment outcomes $P = .278$ (Fail to Reject)
 - Money does not impact quality employment outcomes $P = .000$ (Rejected)
- Alternative Hypothesis (H_a)
 - Time does impact quality employment outcomes $P = .278$ (Rejected)
 - Money does impact quality employment outcomes $P = .000$ (Fail to Reject)

Regression - Time

Regression for Average JFS Quarterly Wage vs Days From First Plan to Closure 2015 Closures Summary Report - Rehabs and Non-Rehabs

Y: Average JFS Quarterly Wage
X: Days From First Plan to Closure

Is there a relationship between Y and X?



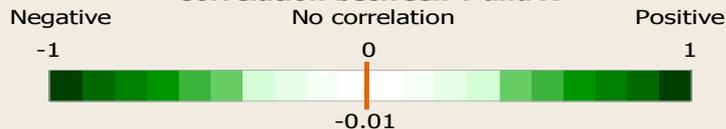
The relationship between Average JFS Quarterly Wage and Days From First Plan to Closure is not statistically significant ($p > 0.01$).

% of variation accounted for by model



0.00% of the variation in Average JFS Quarterly Wage can be accounted for by the regression model.

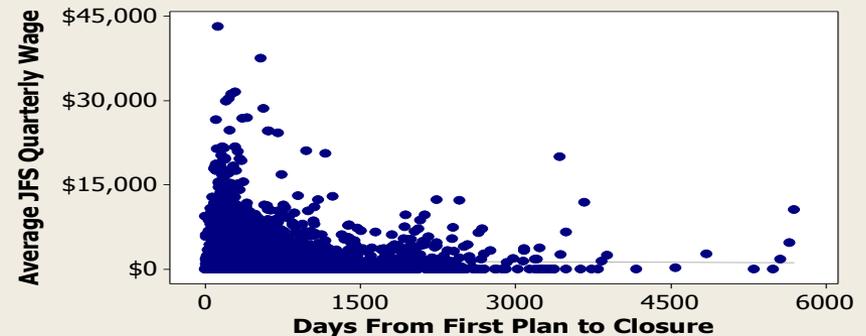
Correlation between Y and X



The correlation between Average JFS Quarterly Wage and Days From First Plan to Closure is not statistically significant ($p > 0.01$).

Fitted Line Plot for Linear Model

$$Y = 1584 - 0.06782 X$$



Comments

The fitted equation for the linear model that describes the relationship between Y and X is:

$$Y = 1584 - 0.06782 X$$

If the model fits the data well, this equation can be used to predict Average JFS Quarterly Wage for a value of Days From First Plan to Closure, or find the settings for Days From First Plan to Closure that correspond to a desired value or range of values for Average JFS Quarterly Wage.

A statistically significant relationship does not imply that X causes Y.

Regression - Money

Regression for Average JFS Quarterly Wage vs Sum Detail Paid Amt Summary Report - 2015 - Rehabs and Non Rehabs

Y: Average JFS Quarterly Wage
X: Sum Detail Paid Amt

Is there a relationship between Y and X?



P = 0.000

The relationship between Average JFS Quarterly Wage and Sum Detail Paid Amt is statistically significant ($p < 0.05$).

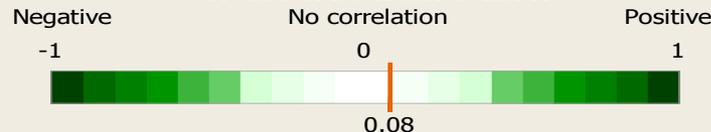
% of variation accounted for by model



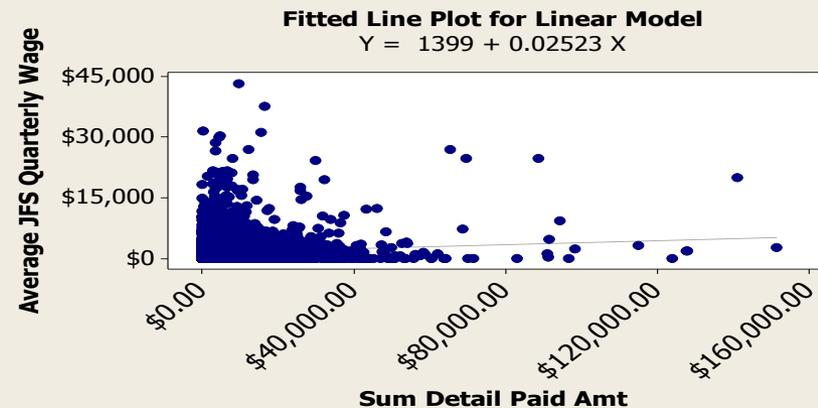
R-sq (adj) = 0.62%

0.62% of the variation in Average JFS Quarterly Wage can be accounted for by the regression model.

Correlation between Y and X



The positive correlation ($r = 0.08$) indicates that when Sum Detail Paid Amt increases, Average JFS Quarterly Wage also tends to increase.



Comments

The fitted equation for the linear model that describes the relationship between Y and X is:

$$Y = 1399 + 0.02523 X$$

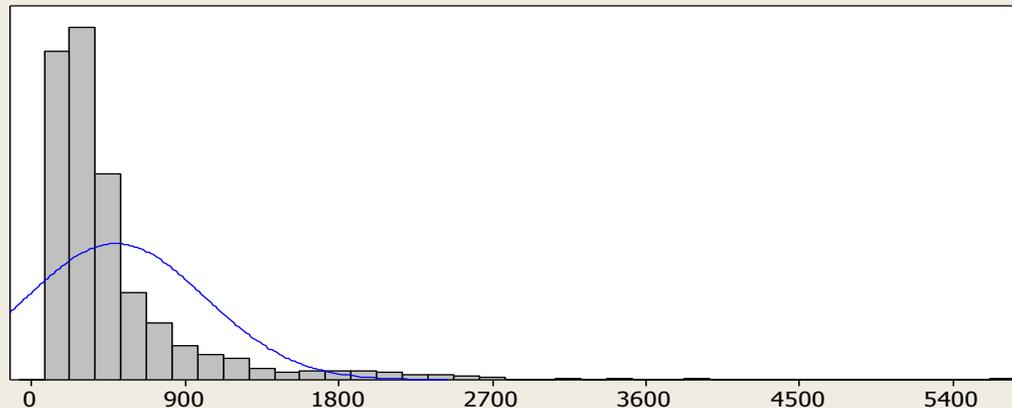
If the model fits the data well, this equation can be used to predict Average JFS Quarterly Wage for a value of Sum Detail Paid Amt, or find the settings for Sum Detail Paid Amt that correspond to a desired value or range of values for Average JFS Quarterly Wage.

A statistically significant relationship does not imply that X causes Y.

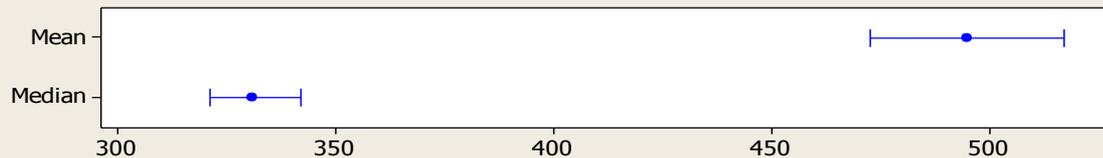
Graphical Summary - MSD

Summary for Days From First Plan to Closure - 2015 Closures

Disability Priority = Most Significantly Disabled, Closure Outcome = Rehabilitated



95% Confidence Intervals



Anderson-Darling Normality Test

A-Squared 224.80
P-Value < 0.005

Mean 495.18
StDev 523.87
Variance 274442.23
Skewness 3.6618
Kurtosis 19.7166
N 2139

Minimum 90.00
1st Quartile 216.00
Median 331.00
3rd Quartile 533.00
Maximum 5698.00

95% Confidence Interval for Mean

472.97 517.40

95% Confidence Interval for Median

321.00 342.00

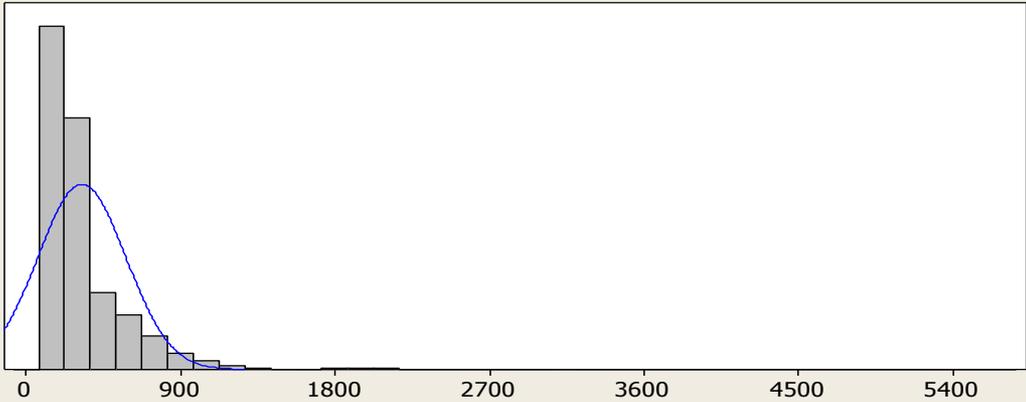
95% Confidence Interval for StDev

508.63 540.06

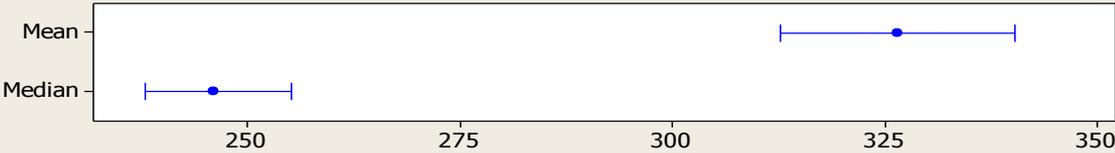
Graphical Summary - SD

Summary for Days From First Plan to Closure - 2015 Closures

Disability Priority = Significantly Disabled, Closure Outcome = Rehabilitated



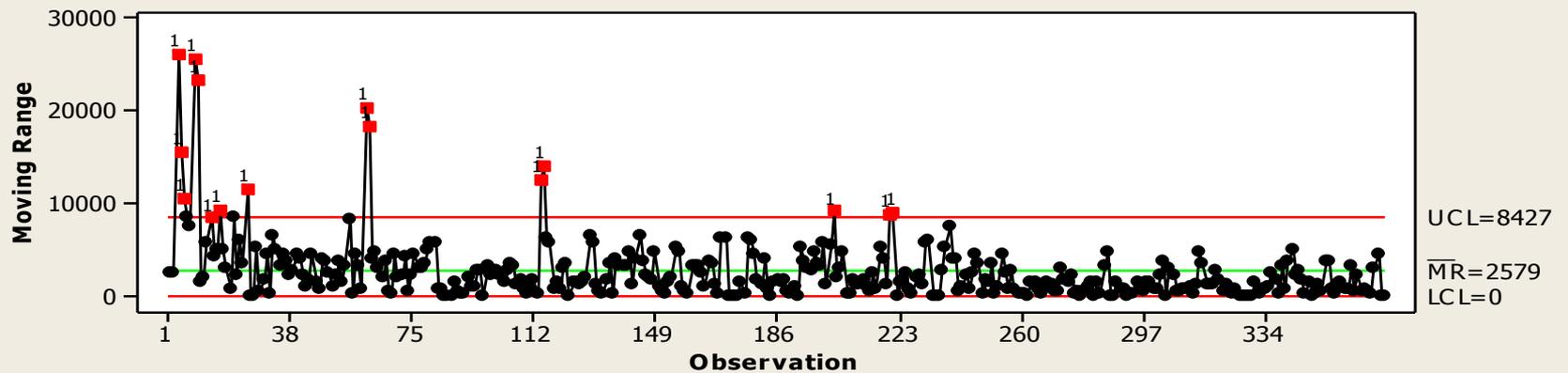
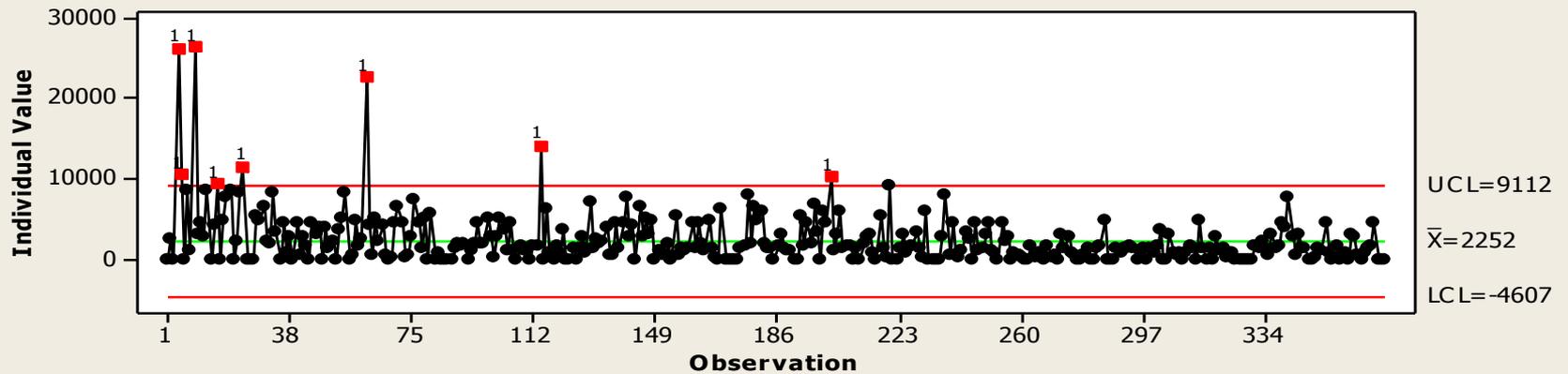
95% Confidence Intervals



Anderson-Darling Normality Test	
A-Squared	94.52
P-Value <	0.005
Mean	326.61
StDev	256.97
Variance	66032.78
Skewness	3.4729
Kurtosis	21.4853
N	1324
Minimum	90.00
1st Quartile	177.25
Median	246.00
3rd Quartile	377.00
Maximum	3199.00
95% Confidence Interval for Mean	
	312.76 340.47
95% Confidence Interval for Median	
	238.00 255.15
95% Confidence Interval for StDev	
	247.54 267.15

Control Charts

I-MR Chart of Job Related Sum Total 2015 Random by App Date



Days from Plan to Closure

Interval Plot of Days From First Plan to Closure

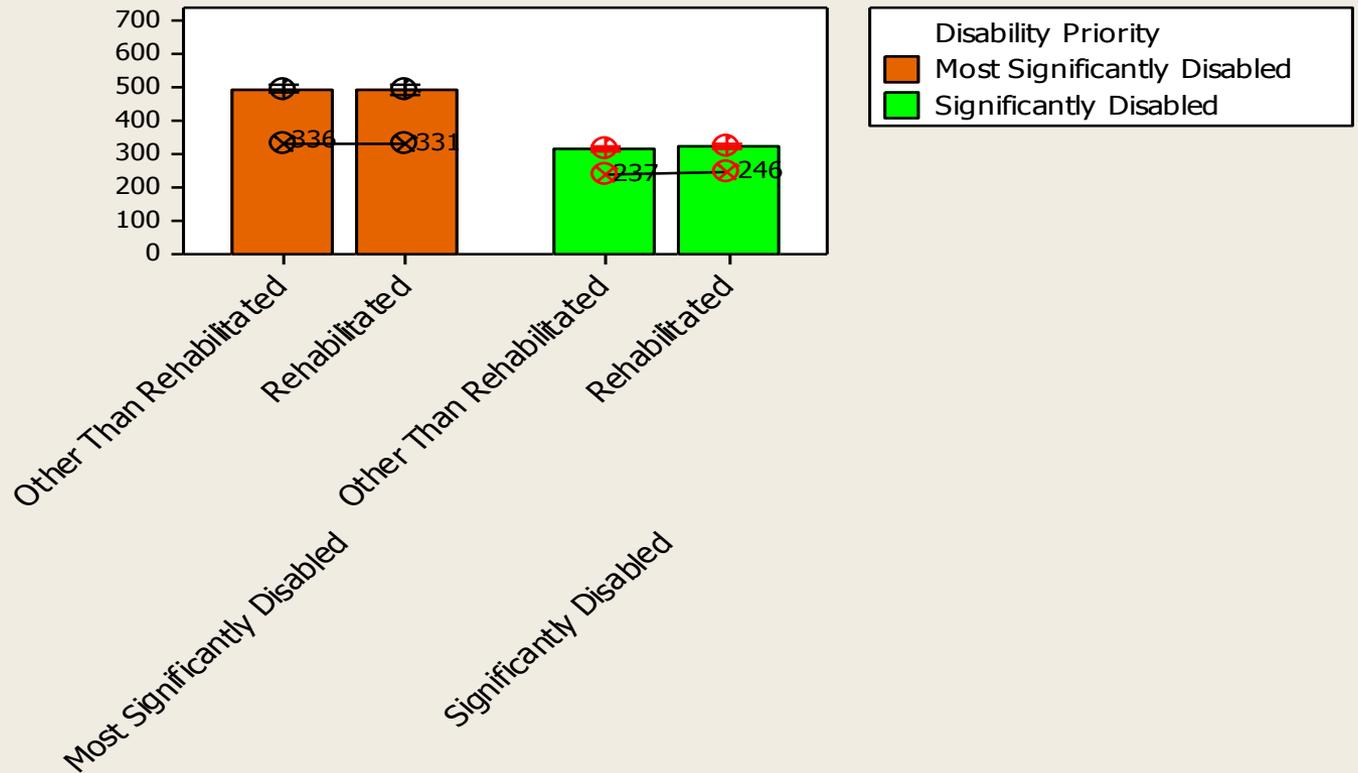
95% CI for the Mean

FY Closure = 2015

Days From First Plan to Closure

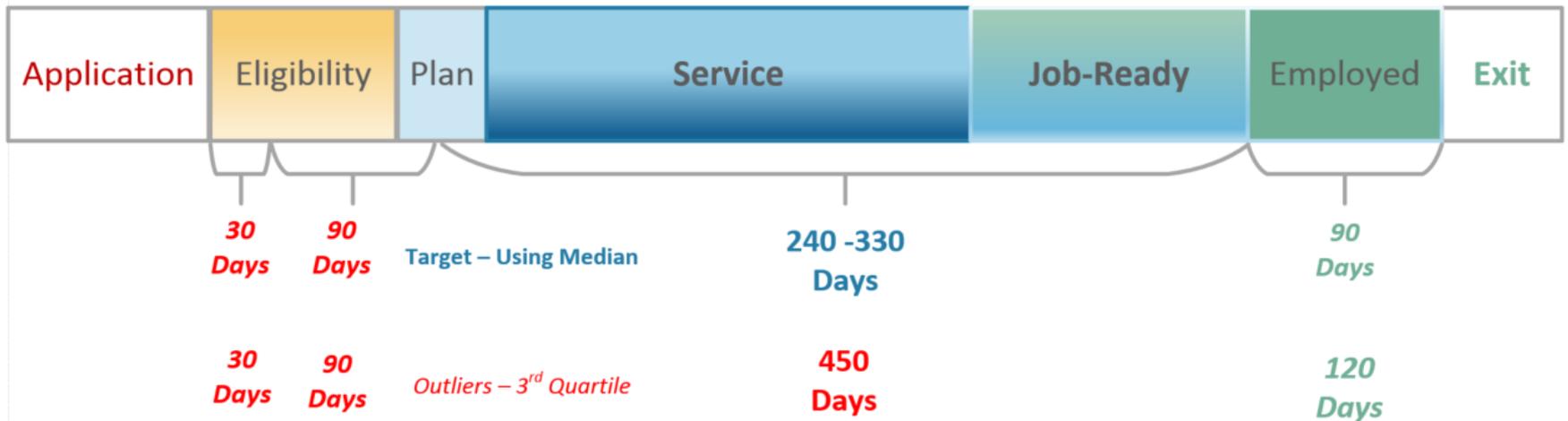
Closure Outcome

Disability Priority



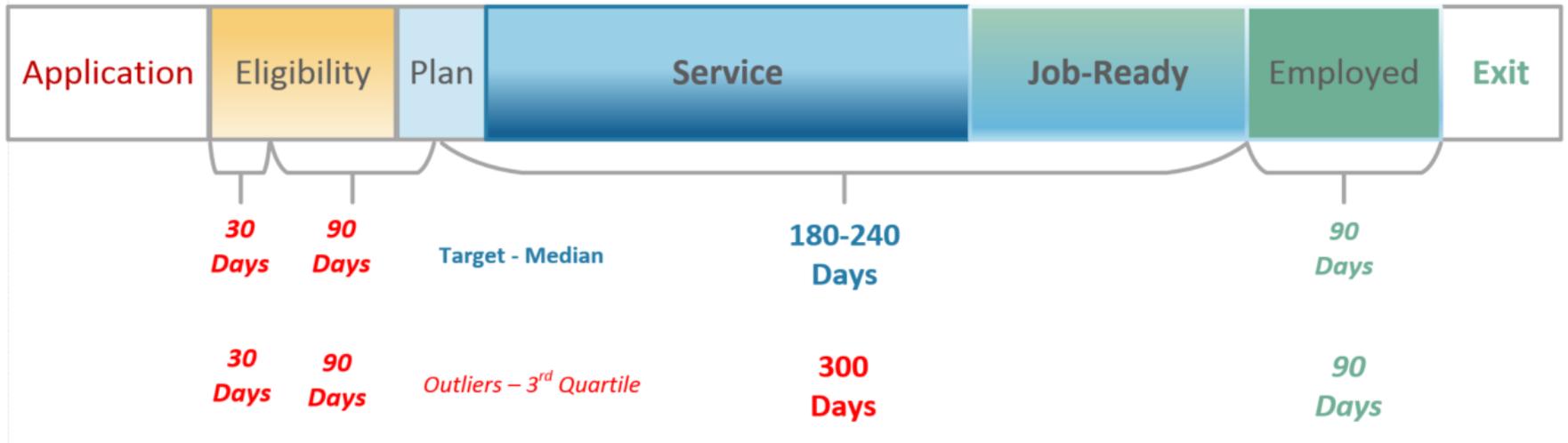
MSD Future State

VR Cases Most Significantly Disabled (MSD) Target = ?? Months (Application to Closed with Employment)



SD Future State

VR Cases Significantly Disabled (SD) Target = ?? Months (Application to Closed with Employment)



Job Related Expenditures

Interval Plot of Job Related Sum Total

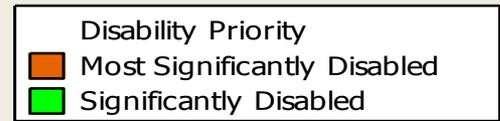
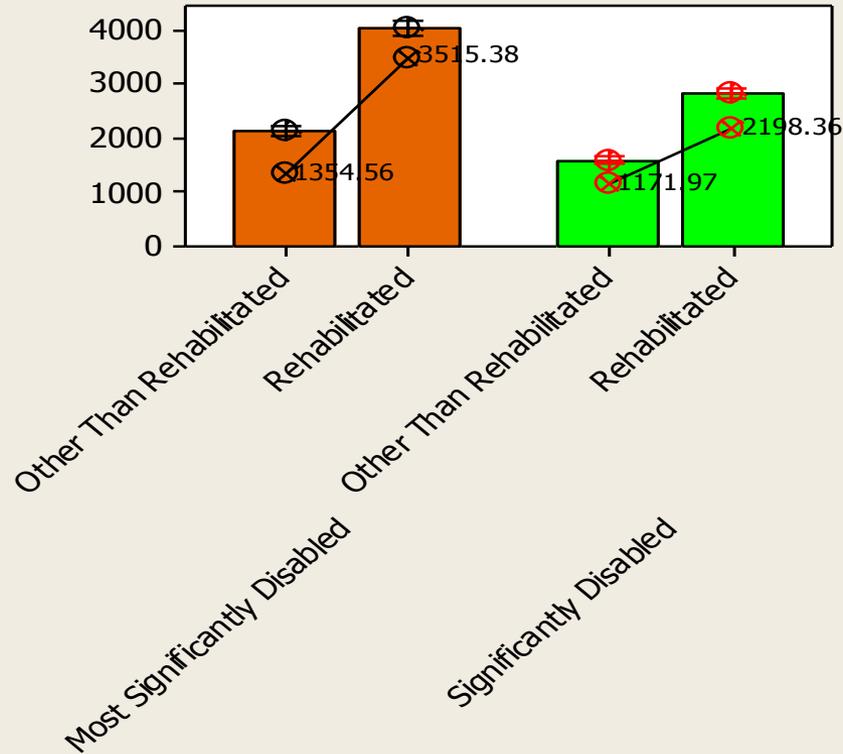
95% CI for the Mean

FY Closure = 2015

Job Related Sum Total

Closure Outcome

Disability Priority



Digging Deeper

2015 Non-Rehabs w/ Wages (n=1,264 or 53%)

Closure Reasons: Declined Services, No Longer Interested, Refused Services, Unable to Locate/Contact

- **Wage Earnings Significantly Less** (-48% avg. / -60% med.)
- **Job Related Services Significantly Less** (-52% avg. / -60% med.)
- **Days from First Plan to Closure - Occur w/in Proposed Ranges** (MSD 393/**287**; SD 264/**197**)

**VR SERVICES DO MATTER
& MAKE A HUGE DIFFERENCE!!**

Bring Home The Bacon

- Changing Case Dynamics = Changing Targets and Strategies
- VR Job Related Services Do Matter
- Meet Rehabilitation Service Needs ASAP
 - To keep individuals engaged in job related services
 - Increased earnings and path to independence
- Clearly Define Job-Ready to Placement Process

Summary

Current Key Issues



Expectations based on
Average & Historical Performance



Targets and Outliers
Management based on MSD



Job Ready to Placement Variation

Improvement



Reset Expectations Weighing in
Median Performance



Manage SD and MSD



Define and Standardize

OOD's Lean Milestone Journey

- ✓ Application to Eligibility – Kaizen (2011 -2012)
- ✓ Business Engagement – 3P (2013 - 2014)
- ✓ Case Balancing and Assignment – Green Belt (2015)
- ✓ Actual Services Tracking – Green Belt (2015-2016)
- **Quality Outcomes – Black Belt (2016)**
 - ☐ Job Ready to Placement – Lean Routine (2016-2017)
 - ☐ Fast Track – Kaizen (2016-2017)

Special Thanks

- Director Kevin L. Miller (Sponsor)
- Assistant Director Bill Bishilany
- Steve Trammell – Planner
- Casey Cannon – Department of Taxation (Mentor)
- LeanOhio