



Lean 6-Sigma Program

Employment Development Department



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OES Electronic Data Collection

- ❖ **Problem Statement:** *Increasing backlog of electronic survey responses due to program changes have led to unacceptable processing times.*
- ❖ **Objective:** *To reduce the time to process an electronic survey so that 95% of surveys exit the Total Days in Pending within 10 days.*
- ❖ **Project Team:**
 - ❖ *David Garcia, RM I – Project lead*
 - ❖ *Marcel Wong, RPS I – Industry analyst, VBA coder*
 - ❖ *Sarah Wong-Sen, RA II – Industry analyst, Macro tester*
 - ❖ *Tom Stassi, RPS II – OES Program Expert, SQL coder*

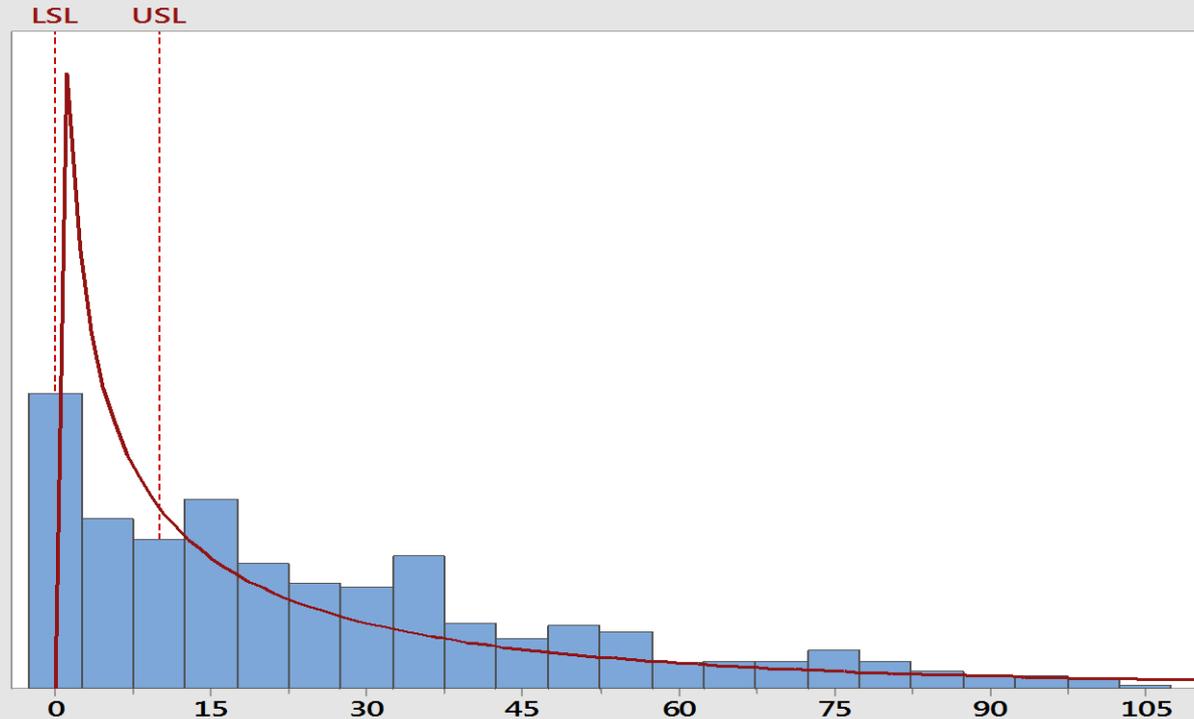


Baseline Capability

Capability Report for Baseline Process Calculations Based on Weibull Distribution Model

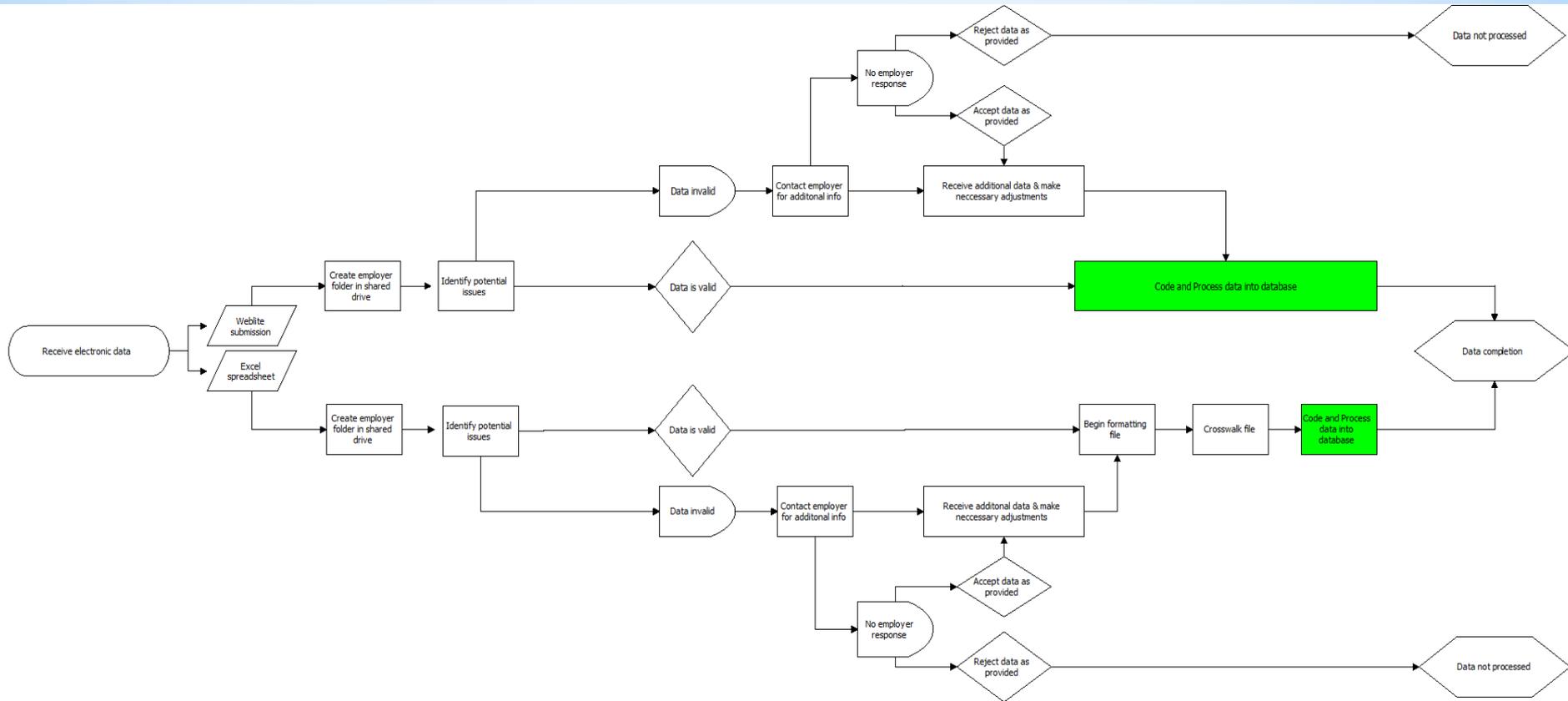
Process Data	
LSL	0
Target	*
USL	10
Sample Mean	26.1613
Sample N	1057
Shape	0.642073
Scale	21.6568
Threshold	-0.000585145

Observed Performance	
% < LSL	0.00
% > USL	65.75
% Total	65.75



- ❖ Baseline capability average is 26.1 days and ranges to over 100 days.
- ❖ 65.7% of observed work takes longer than 10 days.
- ❖ Sample size of 1057 between December 2015 - March 2016.

Initial Process Map



- ❖ According to analysis, only 1 step considered Value Added.
- ❖ 22 Non-Value Added steps.



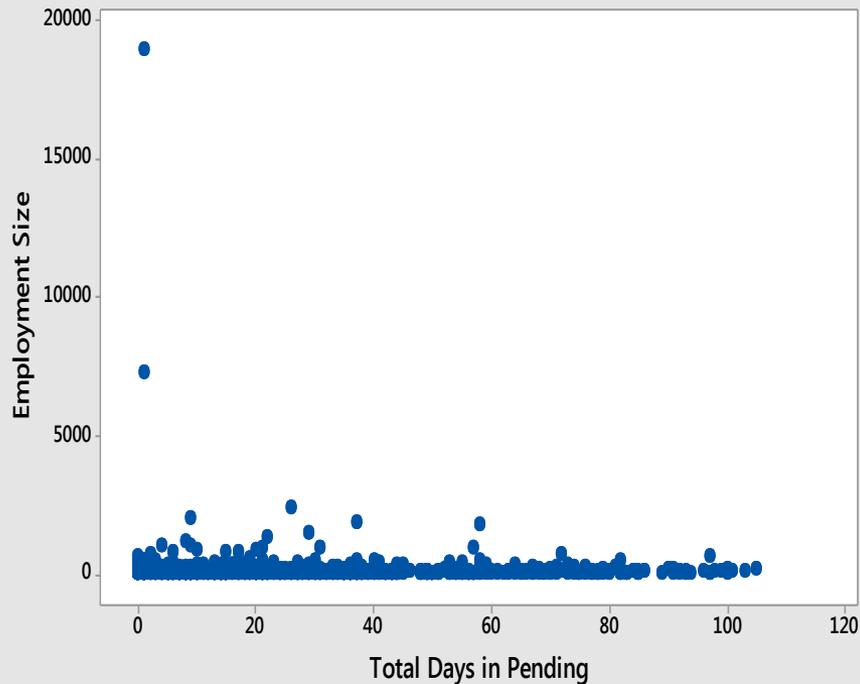
Analysis Tools

- ❖ Process Map (3)
- ❖ Capability Analysis (3)
- ❖ Fishbone Diagram
- ❖ Boxplot (2)
- ❖ Dotplot
- ❖ Time Series Plot (2)
- ❖ Scatterplot (2)
- ❖ FMEAs (Failure Mode and Effects)
- ❖ Mult-Vari Chart (4)
- ❖ Mood Median Test (4)
- ❖ WIP Analysis (Work in Progress)

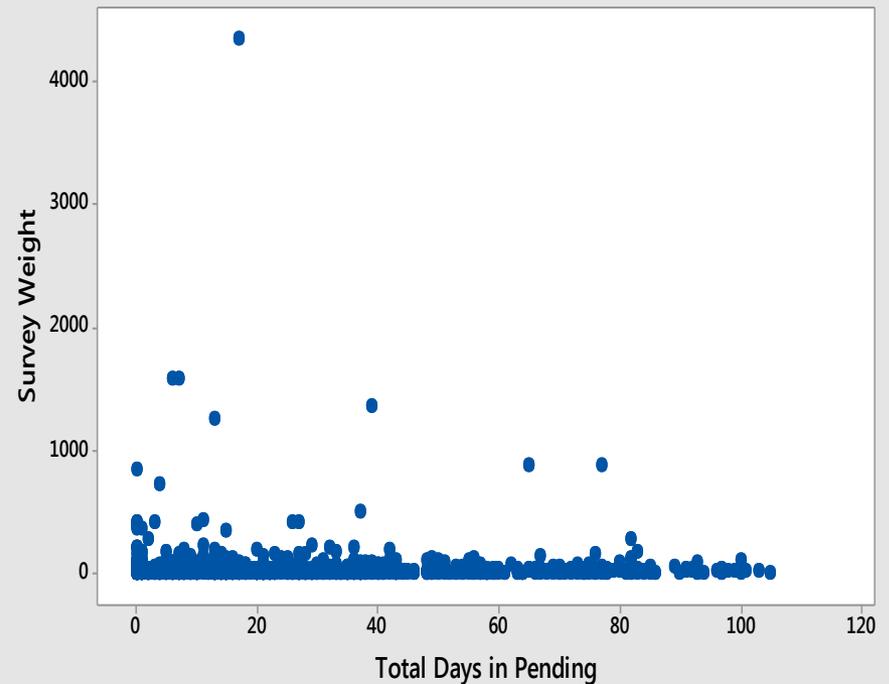


Key Analytical Finding 1

Scatterplot of Employment Size vs Total Days in Pending



Scatterplot of Survey Weight vs Total Days in Pending



- ❖ Scatterplot of employer size and survey weight disproved initial hypothesis that size and survey weight affected Total Days in Pending.

Key Analytical Finding 2

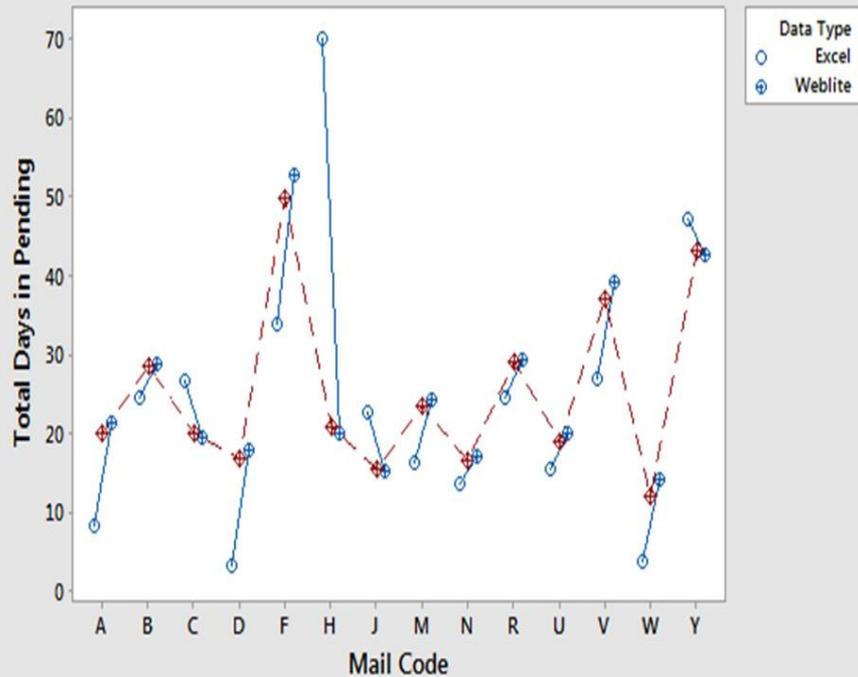
Step#	Process Map - Activity	Key Process Input	Potential Failure Mode	Potential Failure Effects	SEV	Potential Causes	OCC	Current Controls	DET	RPN
7b	Process Map - Crosswalk file	Accurate crosswalk files	not matching titles	longer to code file	10	time consuming to compile	10	analyst experience	4	400
6b	Process Map - Begin formatting f	Utilize appropriate macros/excel functions	format manually	delayed processing	8	inexperience with Excel	7	analyst experience	3	168
1b	Process Map - Excel submission	Log in from IDCF	Forget to log in	Data not pending	10	analyst oversight	5	3 specific staff assigned to work	2	100
1a	Process Map - Weblite submissio	Log in from IDCF	Forget to log in	Data not pending	10	analyst oversight	5	3 specific staff assigned to work	2	100
8ab	Process Map - Code and Process	SOC Code file	coding incomplete	unable to process	10	lack of time	8	workload capability	1	80
8ab		Autobatch file	manually key into SPAM	delayed processing	8	lack of experience in autobatch	7	analyst experience	1	56
6b	Process Map - Begin formatting f	Identify needed formatting	data unformatted	not autobatchable into SPAM	9	inexperience with Excel	6	analyst experience	1	54
1b	Process Map - Excel submission	Update status in SPAM	Forget to update Status	Data not pending	9	analyst oversight	5	3 specific staff assigned to work	1	45
1a	Process Map - Weblite submissio	Update status in SPAM	Forget to update Status	Data not pending	9	analyst oversight	5	3 specific staff assigned to work	1	45
7b	Process Map - Crosswalk file	Prepare file for crosswalk	data unformatted	unable to crosswalk	6	crosswalk function too complex	7	analyst experience	1	42
7b		Load file into Autobatch	file not loaded into Autobatch	unable to crosswalk	6	crosswalk function too complex	7	analyst experience	1	42
7b		Load crosswalk into Autobatch	file not loaded into Autobatch	unable to crosswalk	6	crosswalk function too complex	7	analyst experience	1	42
5	Process Map - Receive additional	Verify corrections made	corrections not made	delayed processing	7	confusion of addnl data	6	direct & detailed contact	1	42
4	Process Map - Contact employer	Correspond with contact	Contact does not respond	delayed processing	6	lack of cooperation	7	Constant follow up	1	42

❖ Critical X's were identified to shift focus of subsequent analysis, on specific staff assignments and work processes.

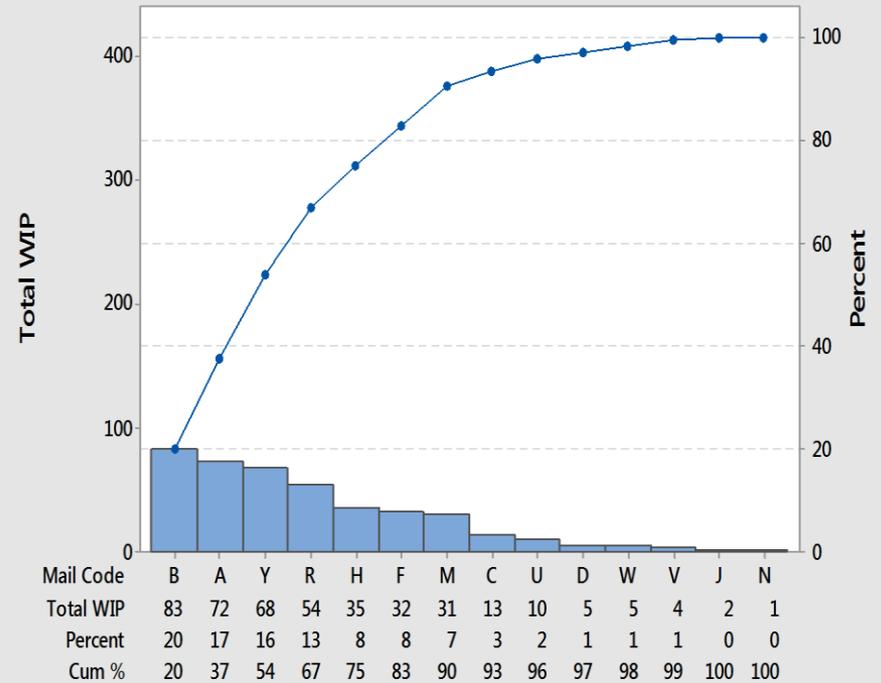


Key Analytical Finding 3

Multi-Vari Chart for Total Days in Pending by Data Type - Mail Code



Pareto Chart of Mail Code



- ❖ Multi-Vari Chart pointed to specific assignments initially attributing to high Total Days in Pending average.
- ❖ WIP Analysis indicated shift in Total Days in Pending due to staffing changes and short-term projects.

Critical X's (root causes of problems)

- ❖ Inconsistent formatting procedures between staff.
- ❖ Staff required to manually code files more often than necessary.
- ❖ Data validation from respondents is unreliable.
- ❖ Automated coding function not utilized due to complexity, number of steps.
- ❖ Initial data reception/log in too time consuming.



Improvement Techniques

Implemented

❖ **Standardized data handling & organization.**

- Train staff on proper procedures to maintain consistency, minimize missing data.

❖ **Immediate formatting using Excel macros.**

- Develop standardized macros & provide formal training to staff.
- Immediate attention to data responses eliminates delay & potential issues are addressed sooner.

Planned

❖ **Expedited coding using standardized & automated function.**

- Minimizes manual coding by staff which expedites processing speed.

❖ **Interactive Excel based data collection tool.**

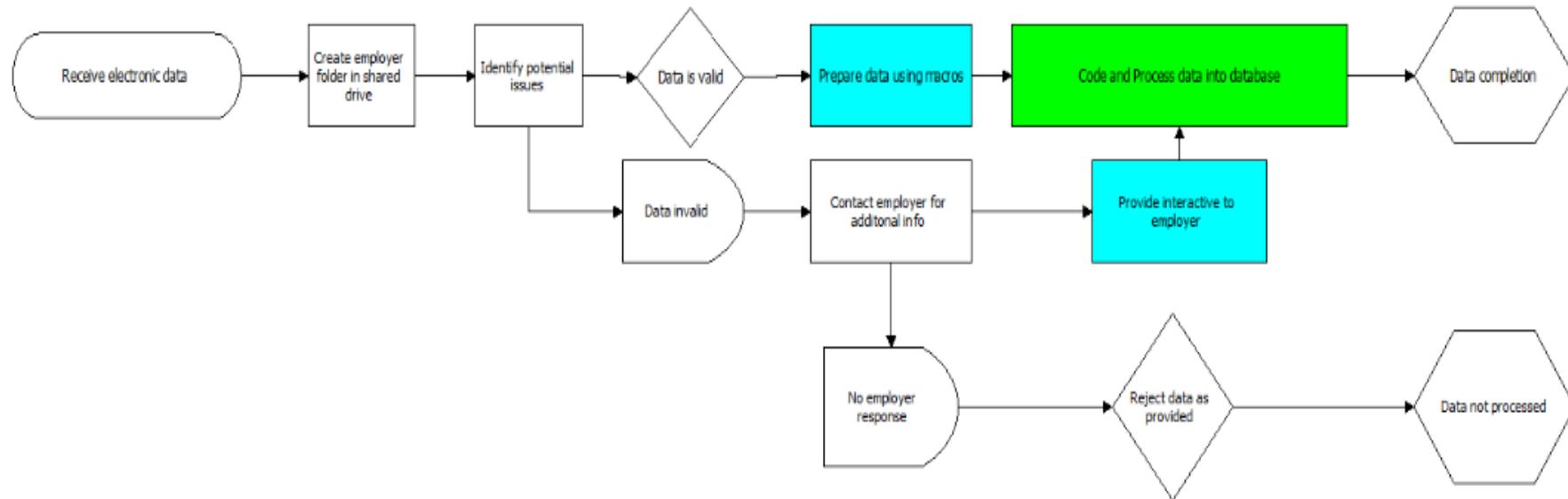
- Mistake proof data collection to eliminate as much respondent errors as possible, reducing the amount of additional rework.

❖ **Round robin approach to workload.**

- Processing not delayed by missing staff or short-term projects/assignments.



New Process Map



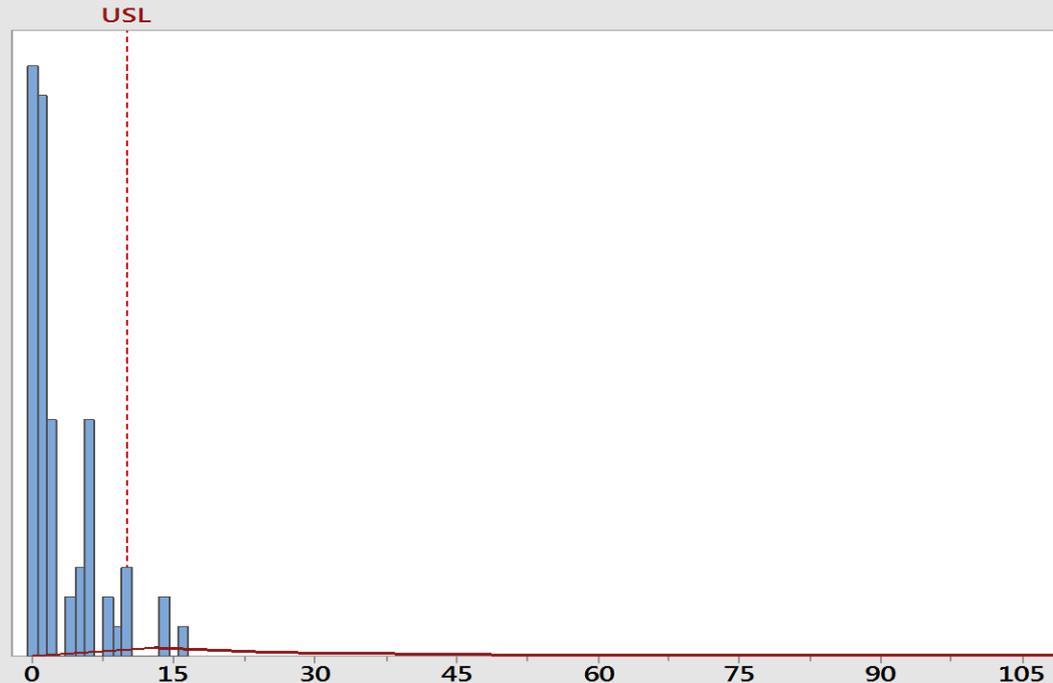
- ❖ Data types handled in the same manner vs separate in baseline process.
- ❖ Use of macros and automated coding minimizes staff efforts.
- ❖ Use of interactive form expedites data correction/validation process step.

New Capability Analysis

Capability Report for Improved Process Calculations Based on Weibull Distribution Model

Process Data	
LSL	*
Target	*
USL	10
Sample Mean	2.97101 ←
Sample N	69
Shape	0.176709
Scale	0.452351
Threshold	-6.81318e-009

Observed Performance	
% < LSL	*
% > USL	4.35
% Total	4.35



- ❖ With only 2 of the 5 improvements techniques implemented, 95.65% of surveys processed in less than 10 days.
- ❖ Average of 2.97 days.
- ❖ Sample size of 69, based on analysis of surveys processed over 16 day period.



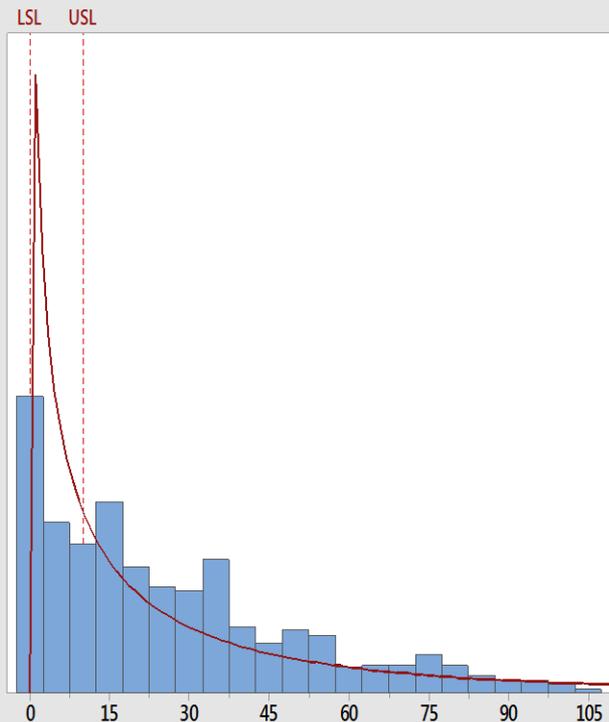
Capability Analysis Comparison

Capability Report for Baseline Process

Calculations Based on Weibull Distribution Model

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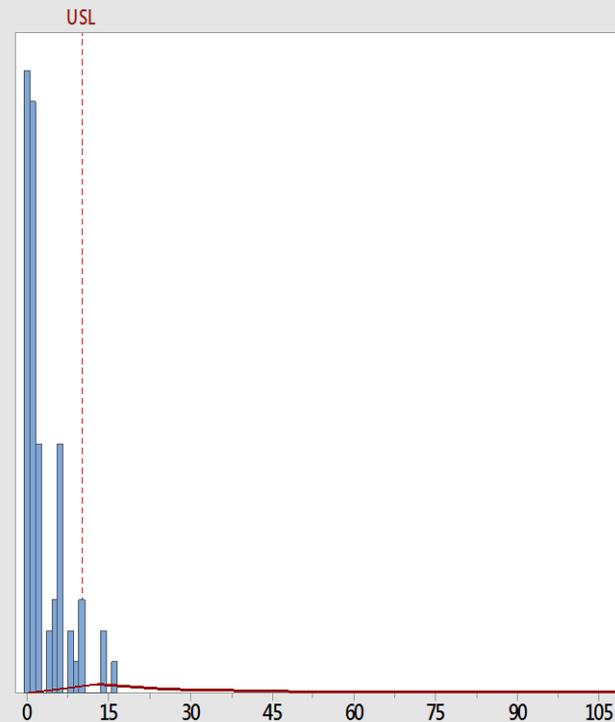


Capability Report for Improved Process

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- ❖ Improvement from 34% to greater than 95% surveys processing in less than 10 days.
- ❖ Old Process average: 26.1 days
- ❖ Improved Process average: 2.9 days



Control Plan

- ❖ Control Methods utilized for Critical X's:
 - ❖ Process Redesign of electronic data organization and management.
 - ❖ Mistake proofing of responses during data correction/validation efforts using interactive form.
 - ❖ Training plan developed and employed to prepare staff for macro usage, automated coding function and other best practices tested during Lean Six Sigma project.
 - ❖ 5S- Standardization of data handling and management, macro utilization, automated coding function and interactive form for data validation.

- ❖ To be monitored by SPAM database query and Non-normal Capability Analysis in Minitab software.



Additional Benefits

Due to Improved process, staff spend between **19%** and **40%** less time processing electronic files, which is equivalent to **2 – 4** PY being freed up to perform other critical tasks of OES including:

- ❖ Phone solicitation and email correspondence to improve survey response rates.
- ❖ Data validation for problematic survey responses, resulting in higher quality estimates.
- ❖ Preparing data requests using OES estimates and other short-term assignments involving other LMID products and services.



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