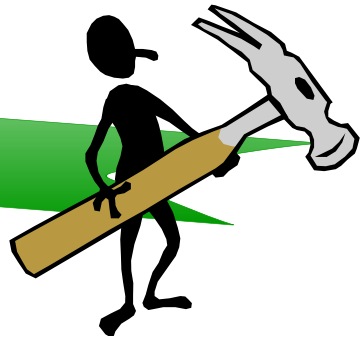
Six Sigma DMAIC Improvement Story

Green Belt **Project Objective:**

Reduce the Backlog of Parks Maintenance and Repair Work Orders

Last Updated: 8-1-13



Team: ***The Faster Fixer-uppers***

Michael Ruiz (Team Leader) **Ray Scher (Team Leader)**

Robert Zubieta **Jorge Mora** **Rosie Abreu**

Carol Kruse **Amalia Hurtado** **Cesar Rivero** **Juan Armas**

Jack Kardys (Sponsor)

Active Strategy

Six Sigma Problem Solving Process

The team utilized the 5-Step DMAIC problem solving process.

DMAIC Performance Improvement Process

Process Step		Description of Team Activities
Number	**Name**	
1	DEFINE	• Select Problem • Identify Project Charter • Develop Project Timeline • Establish Method to Monitor Team Progress • Construct Process Flowchart • Develop Data Collection Plan • Display Indicator Performance “Gap”
2	MEASURE	• Stratify Problem (i.e.“Gap”) • Identify Problem Statement
3	ANALYZE	• Identify Potential Root Cause(s) • Verify Root Cause(s)
4	IMPROVE	• Identify and Select Improvement(s) • Identify Barriers and Aids • Develop and Implement Improvement Plan • Confirm Improvement Results
5	CONTROL	• Standardize Improvements within Operations • Implement Process Control System (PCS) • Document Lessons Learned • Identify Future Plans

Identify Project Charter

The team (chartered by management) completed their Project Charter.

Project Charter		
Business Case	*Project Name:*	Reduce the Backlog of Parks Maintenance and Repair Work Orders
	Problem/Impact:	Too many work orders taking too long to complete resulting in large backlog of work orders. As a result, parks wait too long for required repairs. Impacts include customer dissatisfaction with the aesthetic and fuctional value of our parks, potential safety issues, and inefficient use of limited resources.
	Expected Benefits:	Improvement will result in more work orders being completed on time, fewer safety issues, greater customer satisfaction of park patrons.
Objectives	*Outcome Indicator(s)*	Q3- % of Work Orders Completed On Time
	Proposed Target(s)	Target= 90 % completed in 7 calendar days
	Time Frame:	March 2013 through July 2013
	Strategic Alignment:	Supports the County's Business Plan
Scope	*In Scope:*	All Facility Maintenance/Repair Work Orders
	Out-of-Scope:	Capital Construction and special projects (e.g. Mayoral and/or Commissioner Requests)
	Authorized by:	Ray Scher; Jack Kardys
Team	*Sponsor:*	Jack Kardys, Ray Scher
	Team Leader:	Michael Ruiz, Ray Scher
	Team Members:	Jorge Mora, Robert Zubieta, Rosie Abreu, Cesar Rivero, Amalia Hurtado, Carol Kruse
	Process Owner(s):	Jorge Mora
	Mgmt Review Team:	Jack Kardys, Ray Scher
Schedule	*Completion Date:*	31-Jul-13
	Review Dates:	Monthly and Final Review in July 2013
	Key Milestone Dates:	See Action Plan

2. ☑

1. ☑

Develop Project Timeline Plan

The team developed a timeline plan to complete the Project. 4.

Legend:
= Actual
= Proposed

WHAT: Complete DMAIC Story Project by July 31, 2013

DMAIC Story Process Step	WHEN (2013)
1. Define	Completed 4/12/13
2. Measure	Completed 4/23/13
3. Analyze	Completed 6/13/13
4. Improve	Completed 7/9/13
5. Control	7/31/13

Monitor Team Progress

The Team and Management used a Checklist to monitor team progress.

DMAIC Story Checkpoints

PLAN	Step 1 Define	**Objective: Demonstrate the importance of improvement needs in measurable terms.**	
		1. The stakeholders' need(s) were identified.	✓
		2. The problem can be described as an "object" with a "defect" with unknown cause(s) that need to be identified.	✓
		3. A line graph outcome indicator was constructed that appropriately measures the problem (or gap).	✓
		4. A schedule for completing the five DMAIC Story steps was developed.	✓
	Step 2 Measure	**Objective: Investigate the features of the indicator, stratify the problem and set a target for improvement.**	
		5. Data contained or directly linked to the indicator were stratified from various viewpoints (i.e., what, where, when and who) and a significant dataset was chosen.	✓
		6. A target for improvement was established based on the stakeholders' need.	✓
		7. The impact of the target on the indicator was determined.	✓
		8. A problem statement that describes the "remaining dataset" was developed.	✓
	Step 3 Analyze	**Objective: Analyze the stratified data to identify and verify the root causes.**	
		9. Cause and effect analysis was taken to the root level.	✓
		10. Potential causes most likely to have the greatest impact on the problem were selected.	✓
		11. A relationship between the root causes and the problem was verified with data.	✓
		12. The impact of each root cause on the gap was determined.	✓
DO	Step 4 Improve	**Objective: Develop and implement countermeasures to eliminate the verified root causes of the problem.**	
		13. Countermeasures were selected to address verified root causes.	✓
		14. The method for selecting the appropriate countermeasures was clear and considered effectiveness and feasibility.	✓
		15. Barriers and aids were determined for countermeasures worth implementing.	✓
		16. The action plan reflected accountability and schedule.	✓
CHECK		**Objective: Confirm that the countermeasures taken impacted the root causes and the problem; and that the target has been met.**	
		17. The effect of countermeasures on the root causes was demonstrated.	✓
		18. The effect of countermeasures on the problem (or indicator) was demonstrated.	✓
		19. The improvement target was achieved and causes of significant variation were addressed.	✓
		20. The effect of countermeasures on the indicator representing the stakeholders' need was demonstrated.	✓
ACT	Step 5 Control	**Objective: Prevent the problem and its root causes from recurring. Maintain and share the gains.**	
		21. A method was established to document, permanently change, and communicate the revised process or standard.	✓
		22. Responsibility was assigned and periodic checks scheduled to ensure compliance with the revised process or standard.	✓
		23. Specific areas for replication were identified.	✓
		Objective: Evaluate the team's effectiveness and plan future activities.	
		24. Any remaining problems (or gaps) were addressed.	✓
		25. Lessons learned, P-D-C-A of the Story process, & team growth were assessed & documented.	✓

- Team identified an indicator; developed a Flowchart and a Spreadsheet
- Paretos , Histograms, SIPOC and Customer Requirements Matrix
- Single Case Bore; Fishbone ; RC Verification Matrix
- Countermeasures Matrix; Barriers and Aids; Action Plan
- Line Graph
- Process Flowchart; Process Control Chart
- Lessons Learned

Hidden Costs of Late Work Order Completion

The team collected info on costs of late work order completion.

Annual Cost

1. Handling Costs for Inquiries/Complaints & asking about late work orders (decreased customer satisfaction)

a. Trades Management
[45 staff hours per week] X [52 weeks]
X [average estimated $45 per staff hr]..... $ 105,300

b. Operations Management
[6 staff hours per week] X [52 weeks]
X [average estimated $40 per staff hr]..... $ 12,480

2. Increased risk of safety issues

a. Settlement Costs (from previous 12 months) ..... $ 22,000

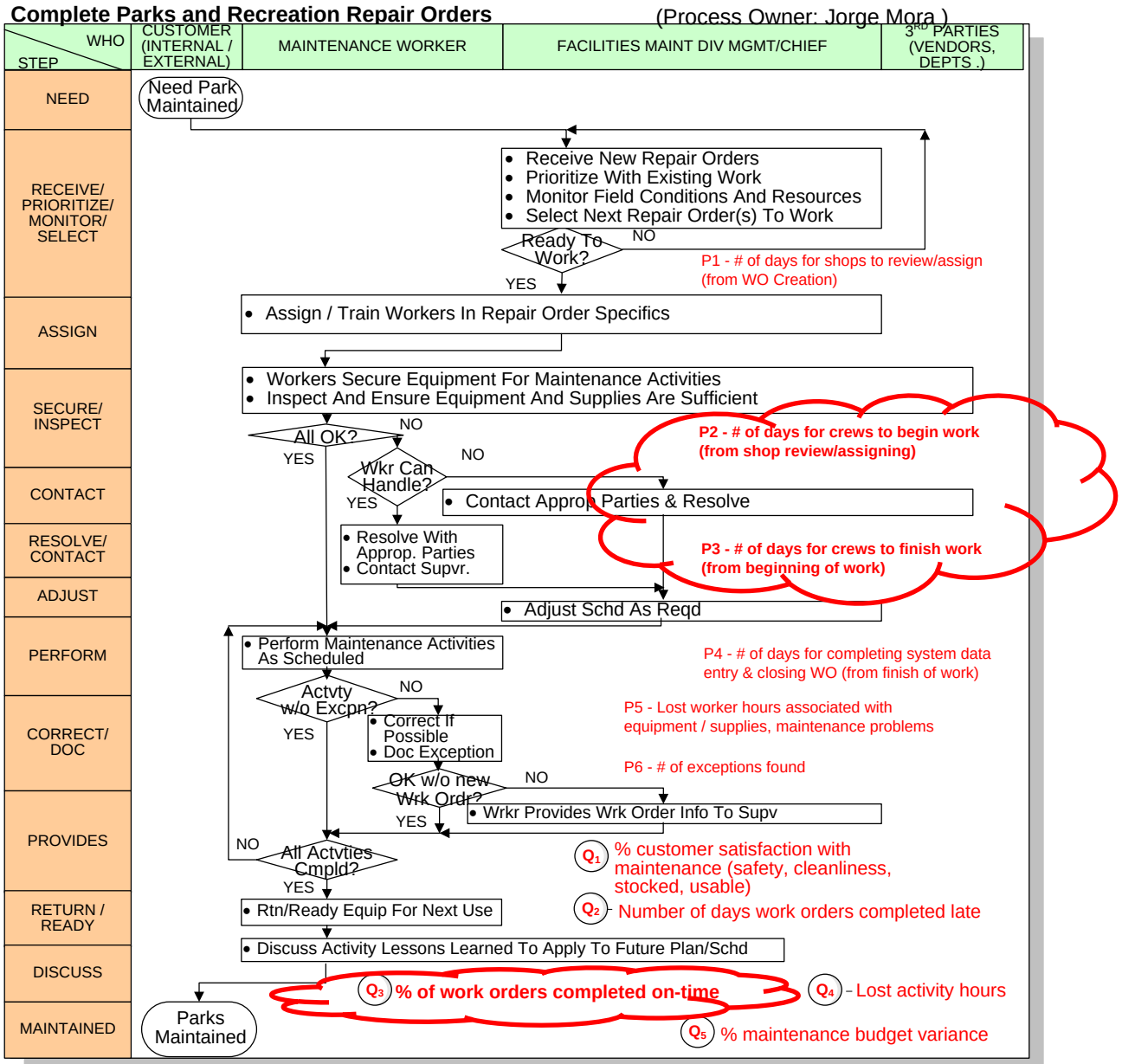
b. Est. Processing Costs (incl. attorney/investigator/manager)..... $ 15,000

Annual Costs = $ 154,780

Review Process Flow Chart

The team constructed a flowchart for the Work Order Process.

The team developed Outcome Indicators from **SIPOC** and **Customer Rqmts analysis** (see Appendix)

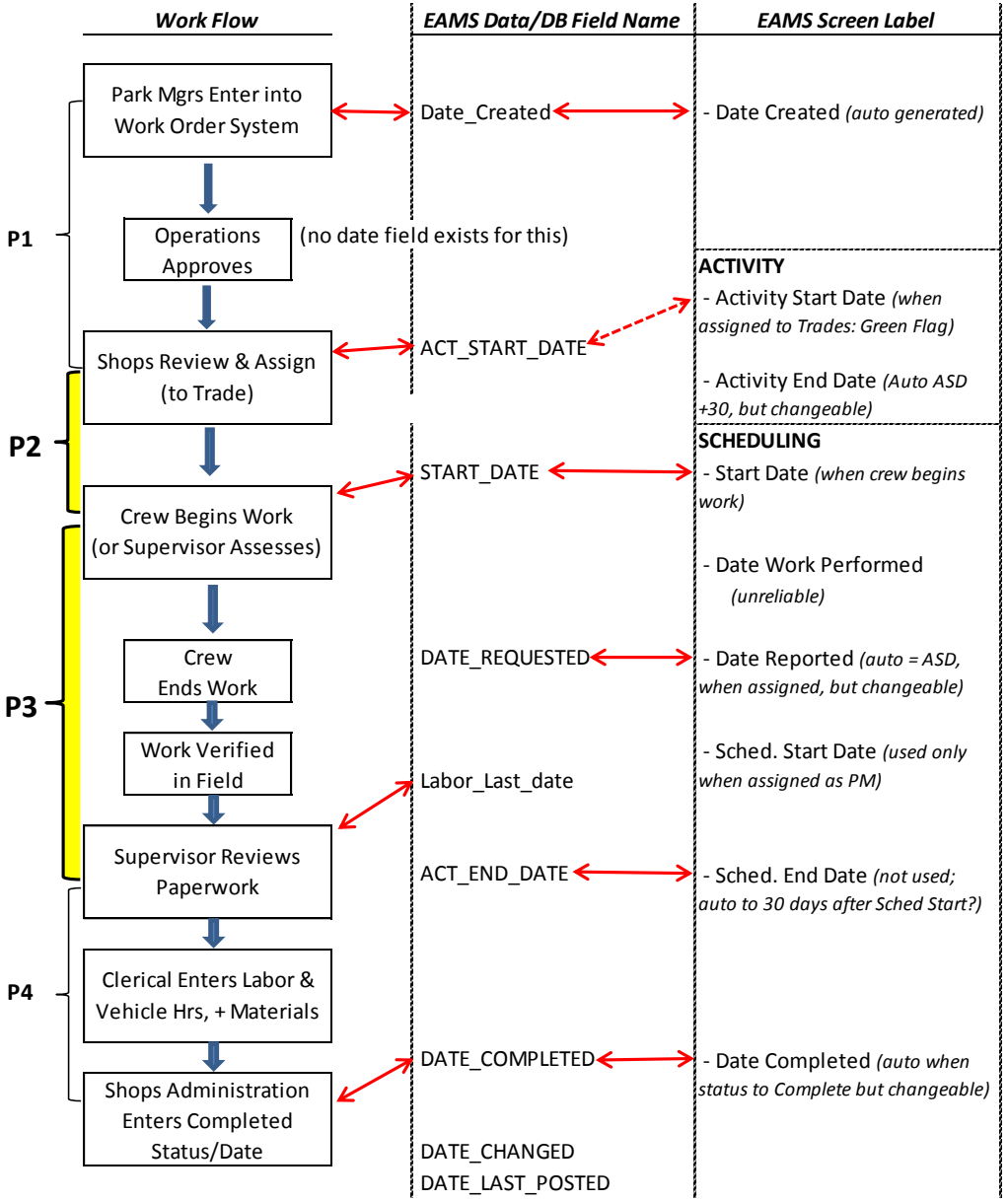


DMAIC_Story_Miami Dade_Complete P&R Repair Orders_5-1-13.vsd 6/28/13

Review Process Flow Chart

The team constructed a crosswalk of data fields from the system to the processes.

The team was especially interested in the P2 and P3 process indicators that represent a large portion of the overall process time



Identify Data Collection Needs

The team developed a data collection spreadsheet to collect indicator and demographic data…

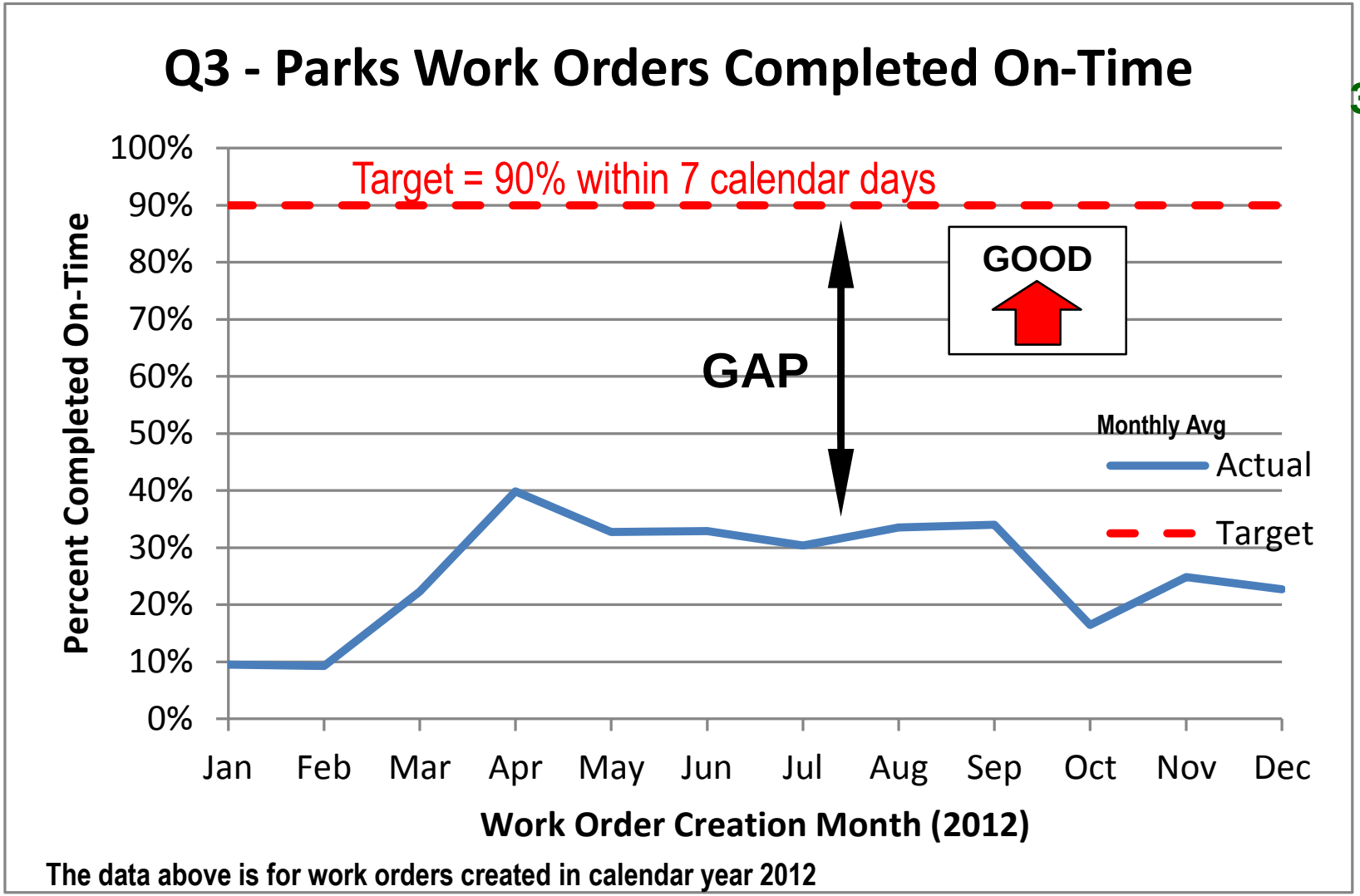
Parks Work Orders Process Status Summary

Line #	DEMOGRAPHICS																				
	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
	Work Order Number	Type	WO TYPE	Description	Asset	Location	Comm District	Contact	Created By	Index Code	Shop Assigned	Trade	Supervisor	Assigned to	Labor Hrs	Budget	Total Expense	Labor Expense	Parts Expense	Tool Expense	Status
														Total	55,522	$2,510,242	$6,361,532	$3,868,863	$2,275,287	$217,382	
1	91646	BRKD	Routine R	REPAIR BRC	MEDIUM SH	A D DOUG	6	Jovany Fi	KESHA	PRECNS327548	T-KENDALL	CARPENTER	ERVIN	196756	5	$0	$523	$334	$157	$32	Completed
2	91768	TECH	Technicia	(UMSA) BAC	BIRD LAKES	BIRD LAKE	11	DENNIS E	A070474	PRECNS327565	T-SOUTH	PLUMBER	BLALOCK			$1,000	$0	$0	$0	$0	Cancelled
3	91767	TECH	Technicia	(AW) BACKF	AFRICAN HE	AFRICAN H	3	DENISE E	A070474	PRECNS327565	T-SOUTH	PLUMBER	BLALOCK			$2,500	$0	$0	$0	$0	Cancelled
4	92055	BRKD	Routine R	Sewer in sho	BATHHOUSE	LARRY AN	9	Johnnie J	ASERGIO	PRECNS327548	T-KENDALL					$0	$0	$0	$0	$0	Cancelled

MILESTONE DATES										DURATION						OUTCOMES		BB
AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL= AD-AB	AM= AF-AD	AN= AH-AF	AO= AJ-AH	AQ= AJ-AB	AR	AV= AQ-AR	AW='Y' if AV<=0	
Date Created		Shops Assign		Begin Labor		End Labor		Finalized (Complete)		Date Created TO Shops Assigned	Shops Assigned TO Begin Labor	Begin Labor TO End Labor	End Labor TO Finalized (Cmpl)	Date Created TO End Labor	Estimated Number of Days to Complete	# of Days Work Order Cmpltd Late	Work Order Cmpltd On-Time?	Comments
Date	Day	Date	Day	Date	Day	Date	Day	Date	Day									
	% Mo		% Mo		% Mo		% Mo		% Mo	Avg # of Days							%Y	
	21.2		18.7		15.7		14.5		9.4	-2603.6	102.3	36.9	90.6	52.3	7.0	45.3	25.9	
										P1	P2	P3	P4	P1+P2+P3		Q2	Q3	
1/4/12	We	1/4/12	We	1/4/12	We	2/17/12	Fr	1/9/12	Mo	0	0	44	-38	44	7	37	N	
1/10/12	Tu	1/10/12	Tu					1/10/12	Tu	0					7			
1/10/12	Tu	1/10/12	Tu					1/10/12	Tu	0					7			
1/23/12	Mo	1/23/12	Mo					1/25/12	We	0					7			

Review Selected Indicator

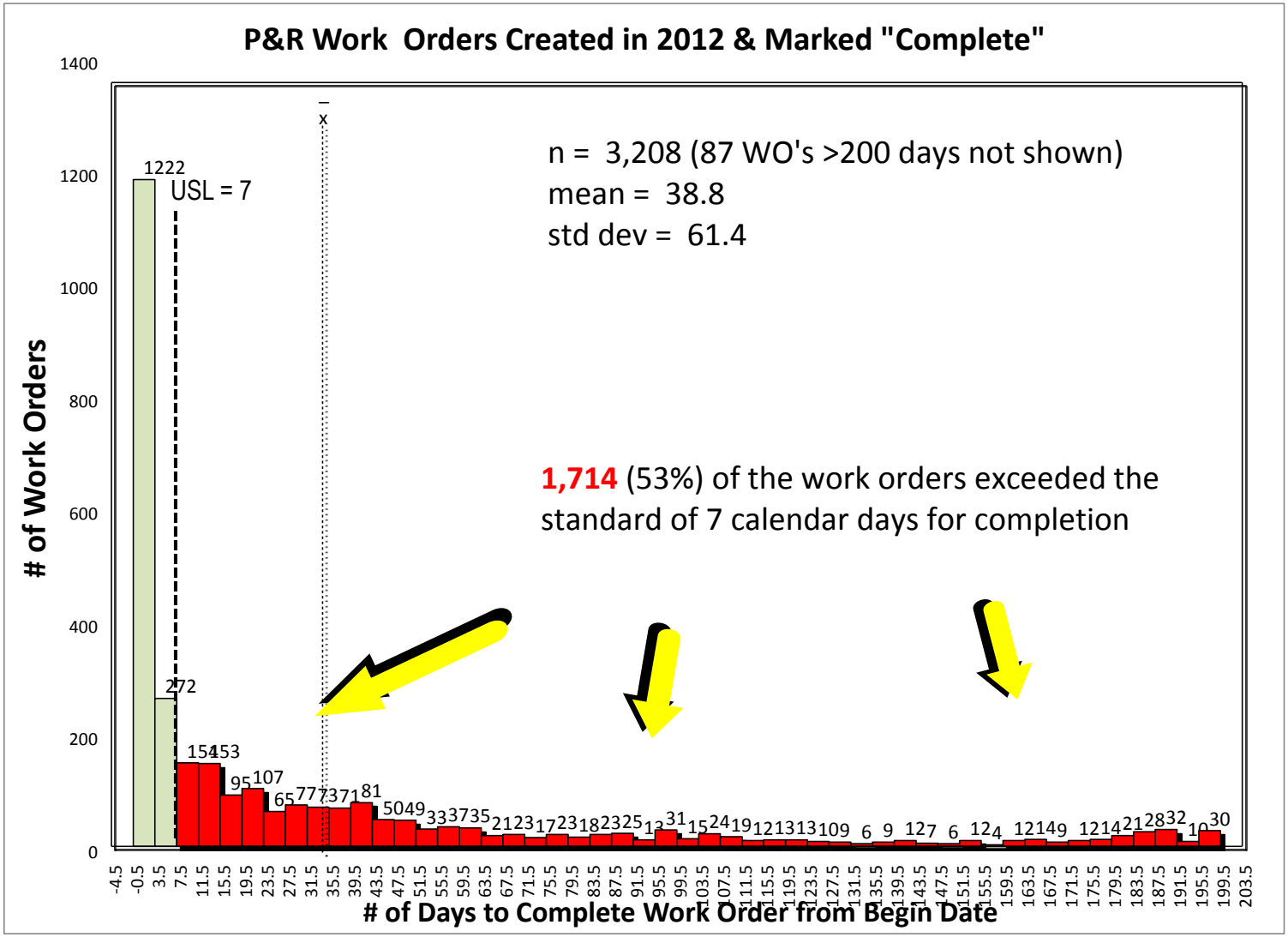
The team collected indicator data and reviewed performance trends:



3.

Stratify the Problem

The team stratified 2012 Work Order Data using a histogram and found…

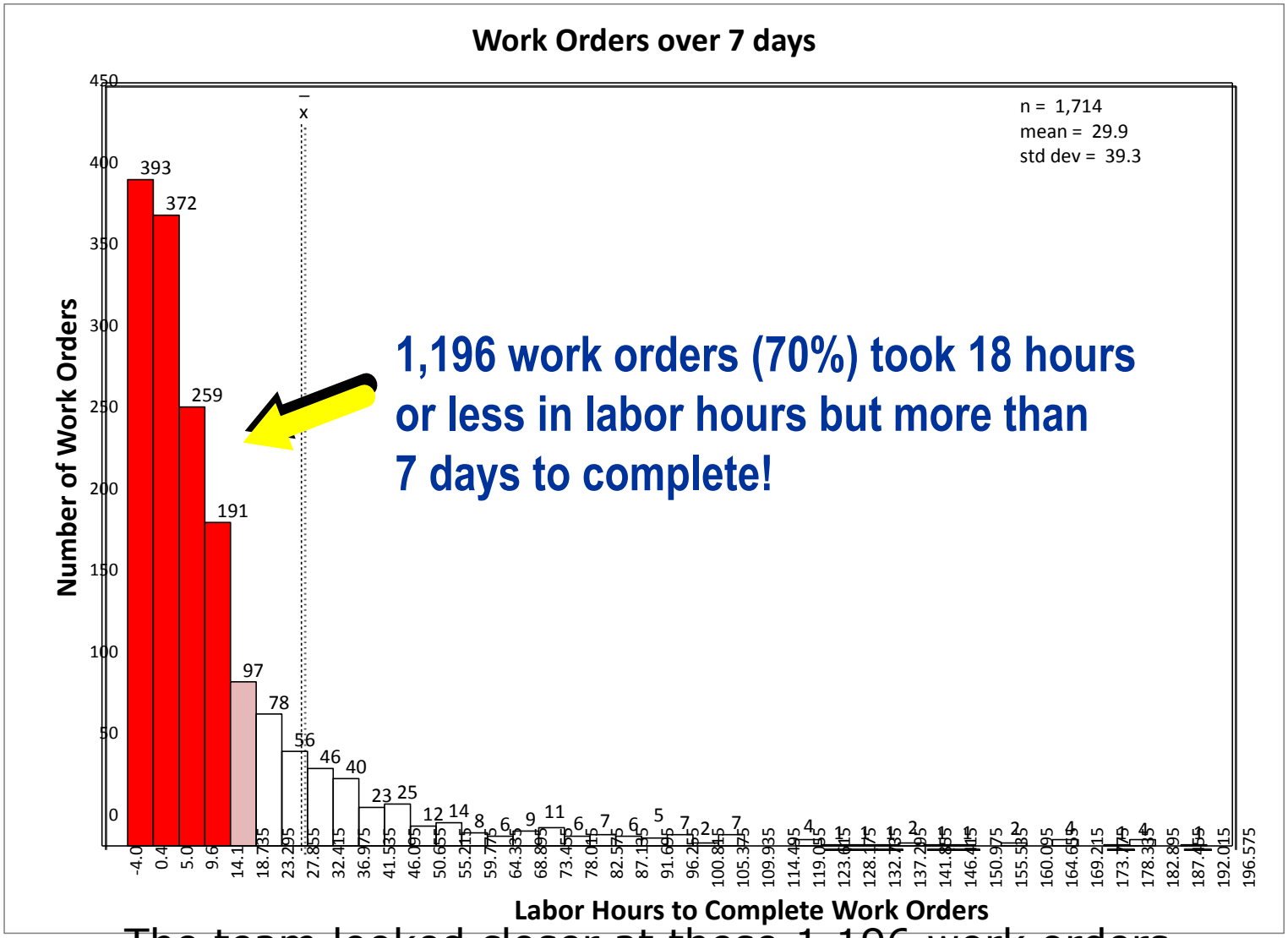


The team looked closer at the 1,714 work orders that exceeded the 7 day standard...

Stratify the Problem

5.

The team stratified the 1,714 work orders by labor hours and found…

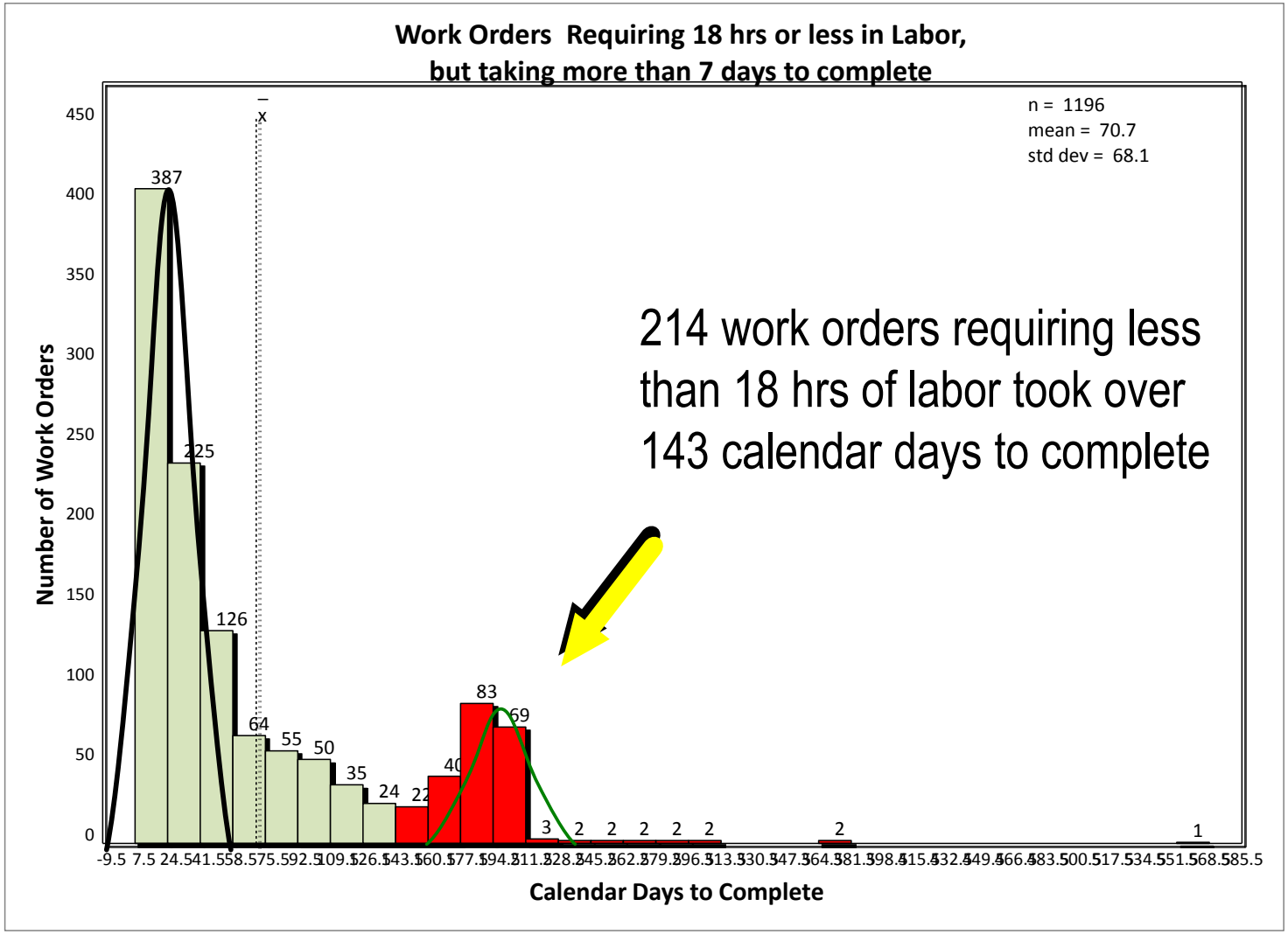


The team looked closer at these 1,196 work orders.

Stratify the Problem (Continued)

The team stratified the 1,196 work orders and found…

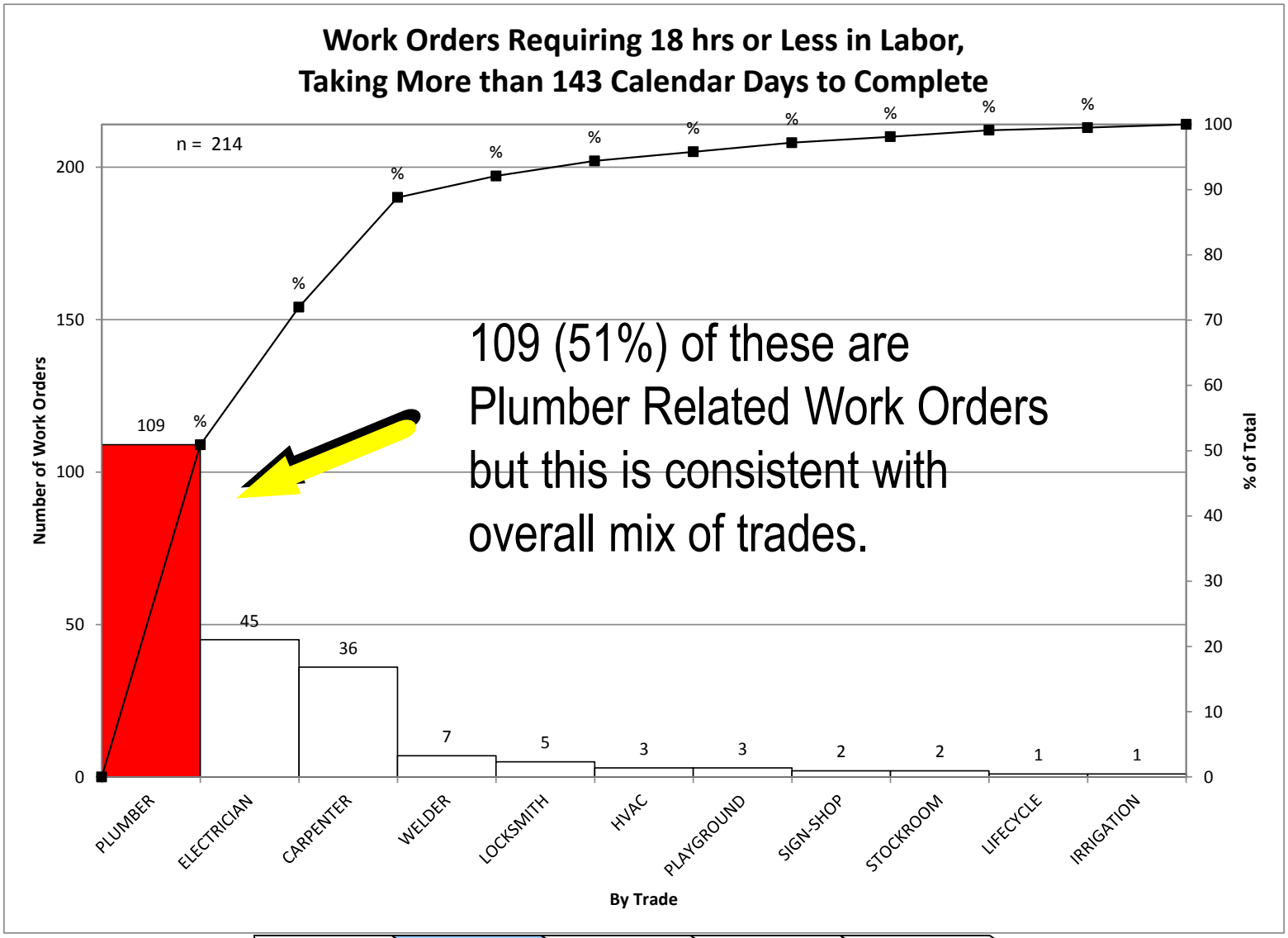
5.,6.,7.,8.



Stratify the Problem (Continued)

The team stratified those 214 work orders and found…

5.,6.,7.,8.



Define | Measure | Analyze | Improve | Control

Identify Potential Root Causes

9.

The team sampled 25 of the Late Work Orders to help determine root cause analysis …

Single Case Bore Analysis

Problem Statement: ***"109 Park and Recreation Plumbing Related Work Orders taking less than 18 hours to work but took more than 143 calendar days to complete"***

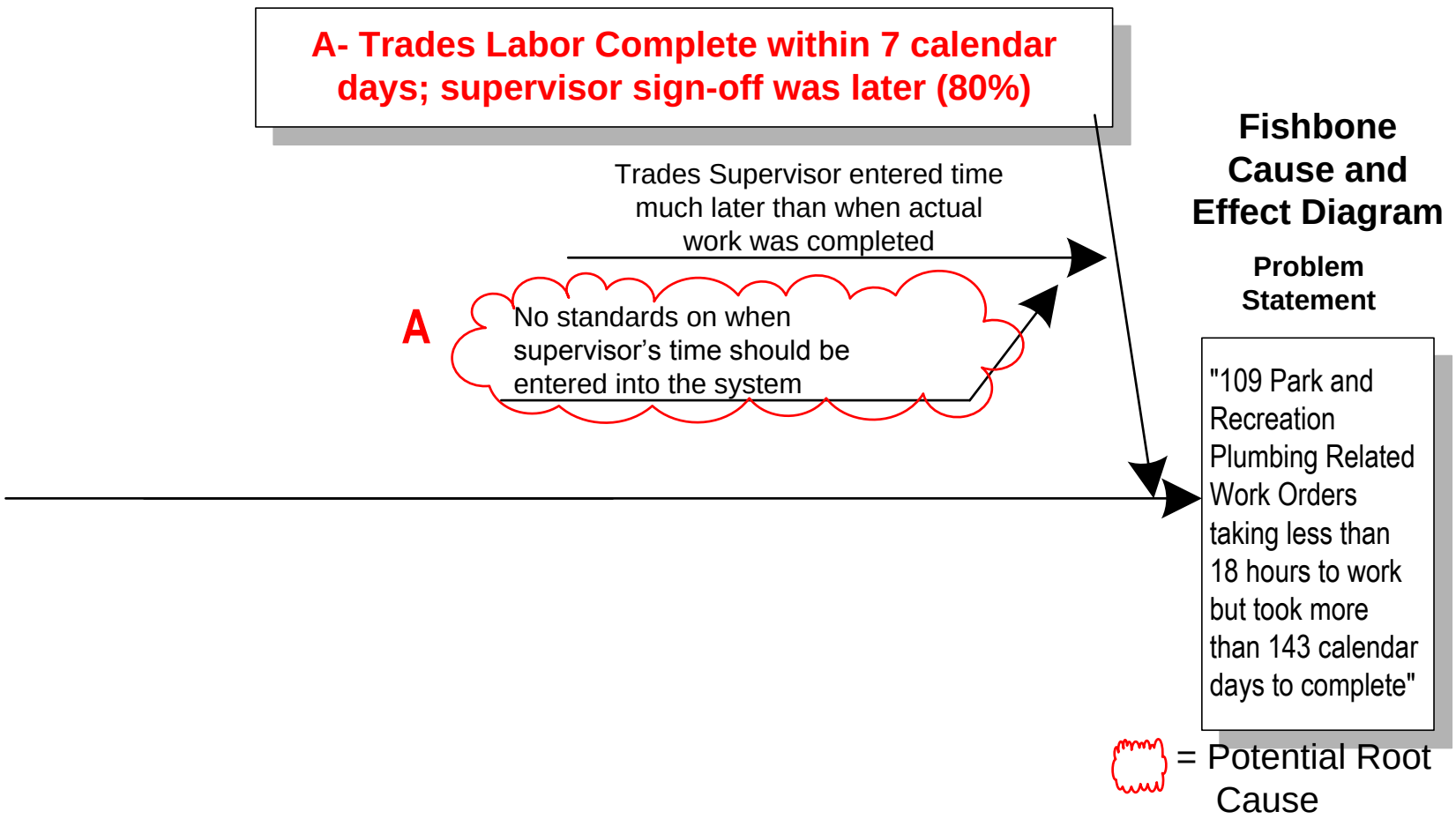
Reasons or Factors *(That possibly contributed to delays from Work Order Creation to End of Labor)*	Sampled 25 of the 214 Late Work Orders																									Total	Percentage
	91735	91821	91913	91947	91959	92015	92084	92136	92196	92205	92230	92247	92269	92403	92501	92503	92506	92577	92788	92829	92928	93102	93420	93446	94585		
1) Trades Labor Complete within 7 days; supervisor sign-off was later	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X			20	80%
2) Labor charged to wrong WO#				X																						1	4%
3) Initial problem diagnosis incorrect							X																			1	4%
4) Materials Backordered							X																	X		2	8%
5) Similar/duplicate work req'd																			X							1	4%
6) Lower Priority WO																									X	1	4%
7)																										0	0%
8)																										0	0%
9)																										0	0%
10)																										0	0%
11)																										0	0%
																										0	0%
																										0	0%

A

Identify Potential Root Causes

9.,10.

The team completed Cause and Effect Analysis and found…



The team next looked to verify these Potential Root Causes.

Define | Measure | Analyze | Improve | Control

MIAMI-DADE COUNTY

Verify Root Causes

The team collected data to verify the root cause and found…. 11.,12. ☑

	Root Cause Verification Matrix		
	Potential Root Cause	**How Verified?**	**Root Cause or Symptom**
A	No standards on when supervisor's time should be entered into the system	Reviewed systems and operational manual and procedures; no standard exists.	Root Cause

…it was validated as a root cause.

Identify and Select Countermeasures

13.,14.

The team brainstormed many countermeasures and narrowed them down to these for evaluation:

Countermeasures Matrix

Problem Statement	Verified Root Causes	Countermeasures	Effectiveness	Feasibility	Overall	Take Action? Yes/No
			Legend: 5=Extremely, 4=Very, 3=Moderately, 2=Somewhat, 1=Little or None		Ratings	
"109 Park and Recreation Plumbing Related Work Orders taking less than 18 hours to work but took more than 143 calendar days to complete"	A - No standards on when supervisor's time could be entered into the system	A1 - Create standard for when supervisor should enter data	4	5	20	Y
		A2 - Research feasibility for including supervisory time as part of overhead so no supervisory data needs to be entered	5	4	20	Y

The team selected the above countermeasures for immediate implementation.

Define | Measure | Analyze | Improve | Control

MIAMI-DADE COUNTY

Refocusing the Analysis

- Because of the data misrepresentation for the true time for a crew to complete a job, the project team decided to look at other process indicators as well.

MIAMI-DADE COUNTY

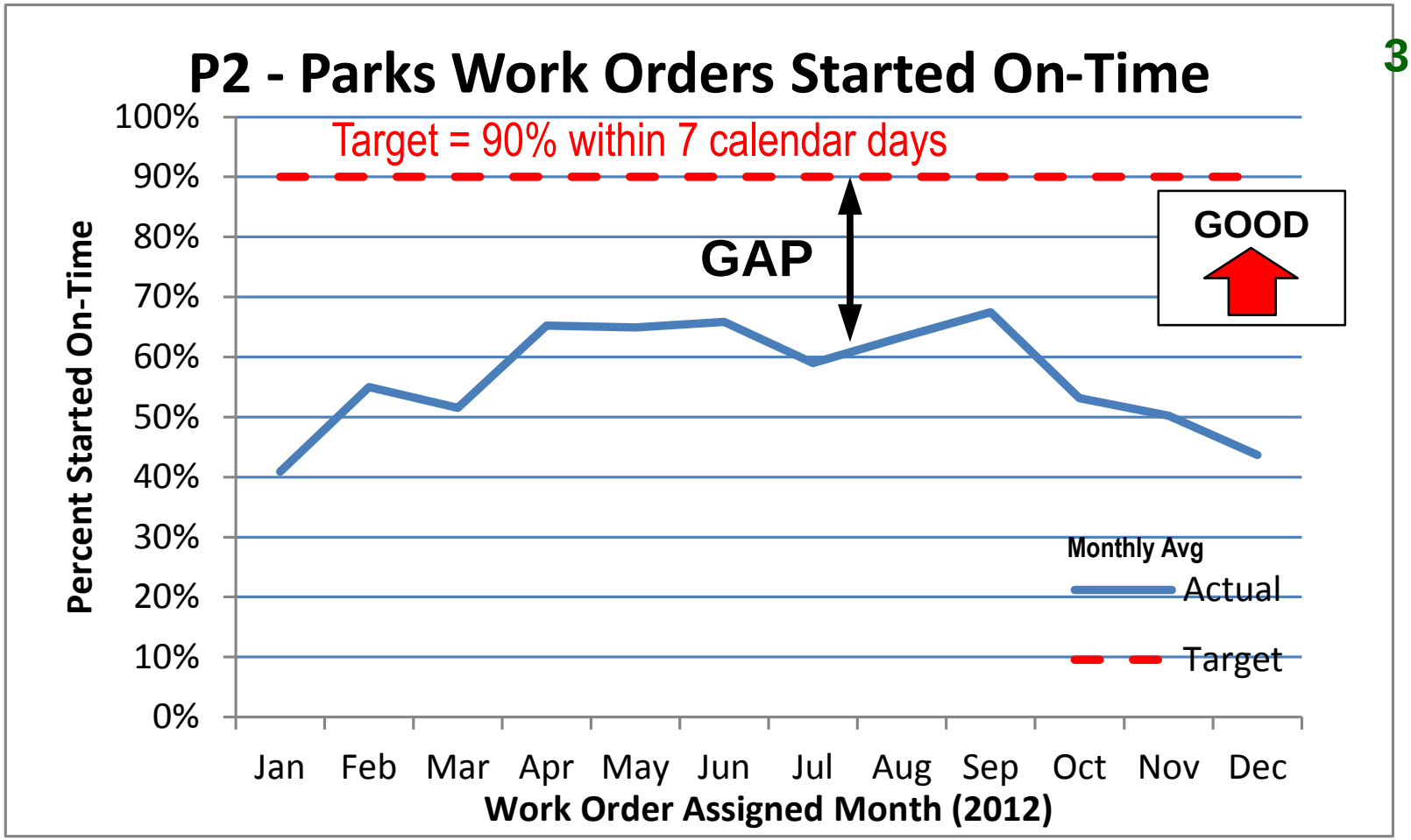
Refocusing the Analysis (cont)

After some deliberation, the team decided that the P2 indicator (time from the "Shops Review and Assign to Trades" to when the "Crew Begins Work") consisted of reliable data and was a good overall indicator for delays in work order completion.

		DURATION						OUTCOMES	
AJ	AK	AL= AD-AB	AM= AF-AD	AN= AH-AF	AO= AJ-AH	AQ= AJ-AB	AR	AV= AQ-AR	AW='Y' if AV<=0
Finalized (Complete) Date	Day	Date Created TO Shops Assigned	Shops Assigned TO Begin Labor	Begin Labor TO End Labor	End Labor TO Finalized (Cmpl)	Date Created TO End Labor	Estimated Number of Days to Complete	# of Days Work Order Cmpltd Late	Work Order Cmpltd On-Time?
	% Mo	Avg # of Days							%Y
	9.4	-2603.6	102.3	36.9	87.2	52.3	7.0	45.3	25.9
		P1	**P2**	**P3**	**P4**	**P1+P2+P3**		**Q2**	**Q3**
9/6/12	Th	0	23	22	209	45	7	38	N
9/11/12	Tu	0	23	22	209	45	7	38	N
9/11/12	Tu	0	38	8	203	46	7	39	N

Review Selected Indicator

The team collected indicator data and reviewed performance trends:

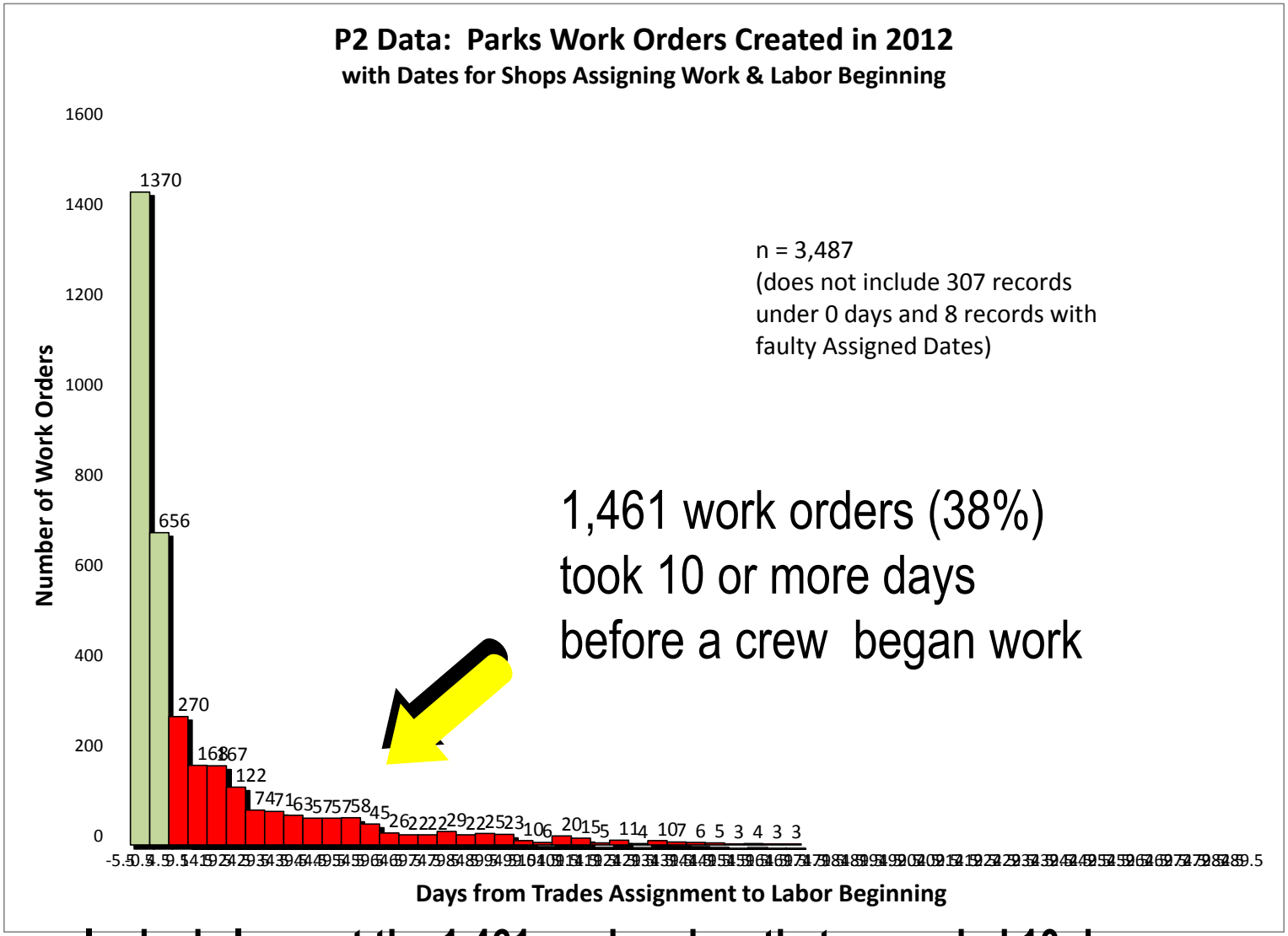


3.

The data above is for work orders created in calendar year 2012

Additional Stratification of the Problem

The team again stratified 2012 Work Order Data using a histogram and found…

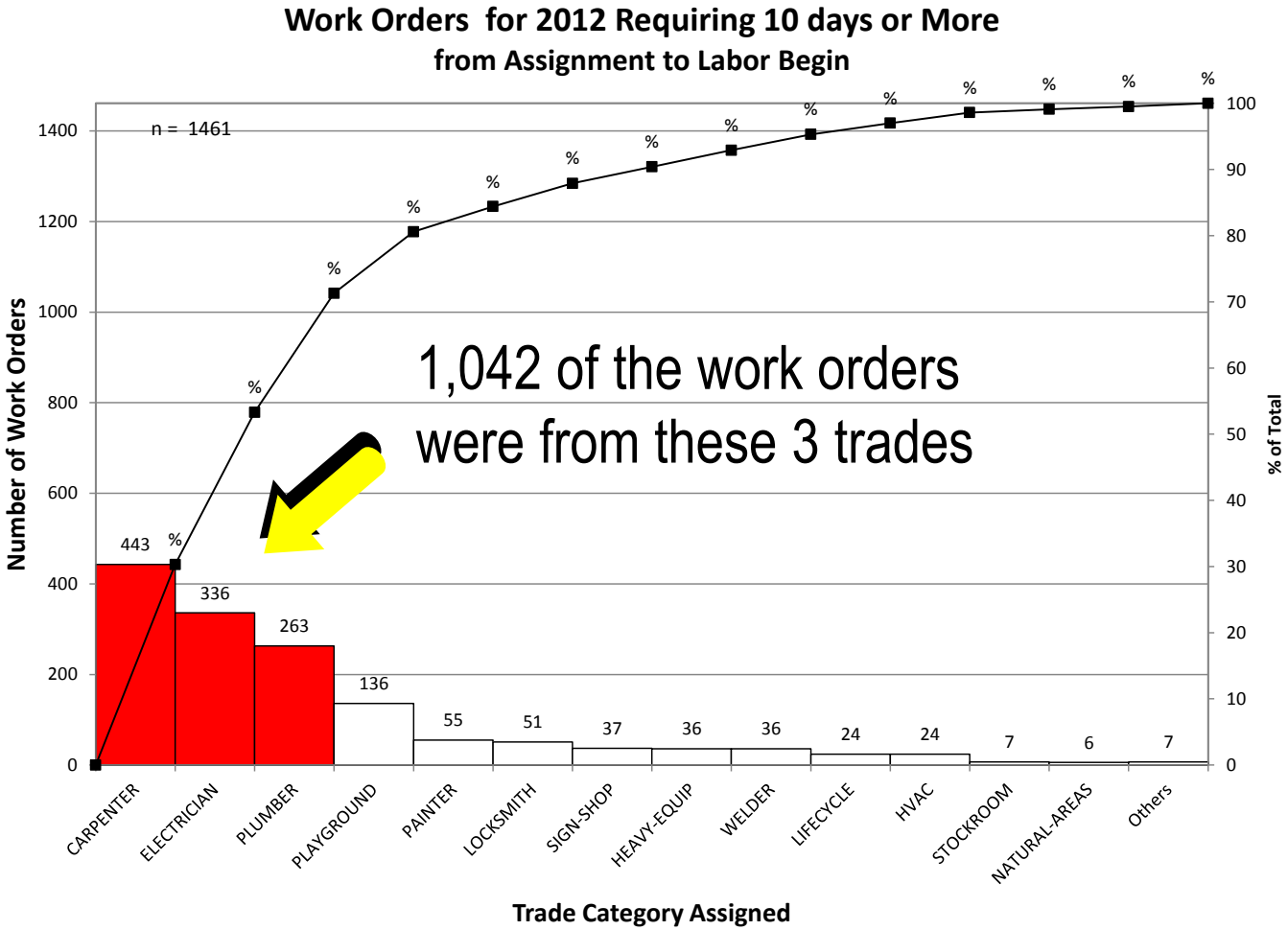


The team looked closer at the 1,461 work orders that exceeded 10 days...

Stratify the Problem (Continued)

The team stratified those 1,461 work orders many ways and found…

5.,6.,7.,8. ☑



Problem Statement: "1,042 of Carpenter, Electrician, and Plumber Park and Recreation Work Orders took more than 10 days for a crew to respond in 2012"

Identify Potential Root Causes

9.

The team sampled 25 of the 1,042 Late Work Orders to help determine root cause analysis …

Single Case Bore Analysis

Problem Statement: ***"1,042 of Carpenter, Electrician, and Plumber Park and Recreation Work Orders took more than 10 days for a crew to respond in 2012"***

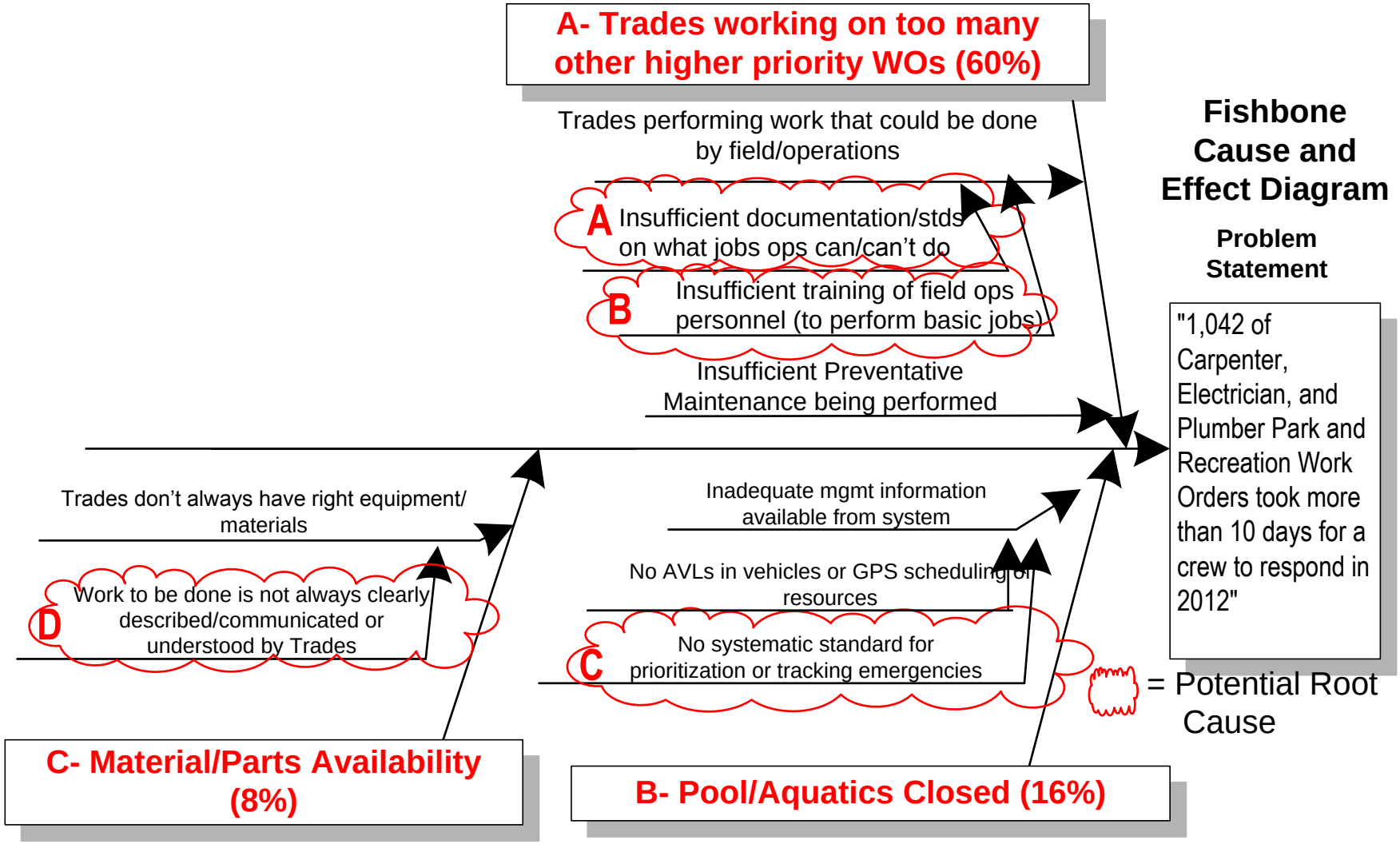
Reasons or Factors *(That possibly contributed to delays for a Crew to respond)*	Sampled 25 of the 1,042 Late Work Orders																									Total	Percentage
	92356	97769	94632	92405	99813	99859	100716	93768	95764	92526	96373	92147	100634	93727	95189	92929	93105	97438	93599	92072	96887	97802	97615	98389	91685		
1) Too many higher priority WOs (work requested not high priority)	X	X	X	X	X	X	A		X	X	X	X	X			X	X		X		X					15	60%
2) Material/Parts Availablity (Procurement Time)		X						C							X											2	8%
3) Required Welding (scarce resources)					X	X																				2	8%
4) Backlog of Sidewalk Requests								X	X																	2	8%
5) Pool/Aquatics Closed at Time	B											X					X			X				X		4	16%
6) Inaccurate WO Request (initial problem diagnosis incorrect)															X											1	4%
7) Vendor Called to Perform Work																			X					X		2	8%
8) Req'd Coordination with WASD leak detection																					X					1	4%
9) Potential Warranty Issue Delayed Start of Labor																						X				1	4%
10) Unknown							X																		X	2	8%

The team looked closer at the above factors; factor C was chosen because the team felt that they could likely influence/control this factor more so than other similarly occurring factors.

Identify Potential Root Causes

9.,10.

The team completed Cause and Effect Analysis and found…



The team next looked to verify these Potential Root Causes.

Define | Measure | Analyze | Improve | Control

MIAMI-DADE COUNTY

Verify Root Causes

The team collected data to verify the root causes and found…. 11.,12. ☑

Root Cause Verification Matrix

	Potential Root Cause	How Verified?	Root Cause or Symptom
A	Insufficient documentation/stds on what jobs operations personnel can/can't do	Reviewed standards and found some work that op's may be able to perform (e.g. some basic plumbing jobs not listed on standards)	Root Cause
B	Insufficient training of field operations personnel (to perform basic jobs)	Work orders found where staff has created unnecessary work orders; knowledge level of ops staff varies throughout the workforce.	Root Cause
C	No systematic standard for prioritization or tracking emergencies	Reviewed work orders - no priority field exists or is being used. There is no ability for the system to sort or isolate by priority.	Root Cause
D	Work to be done is not always clearly described/communicated or understood by Trades	At least one work order in the sample was inaccurate due to poor description or commnication.	Root Cause

…all were validated as root causes.

Identify and Select Countermeasures

13.,14.

The team brainstormed many countermeasures and narrowed them down to these for evaluation:

Countermeasures Matrix

Legend: 5=Extremely, 4=Very, 3=Moderately, 2=Somewhat, 1=Little or None

Problem Statement	Verified Root Causes	Countermeasures	Ratings: Effectiveness	Feasibility	Overall	Take Action? Yes/No
"1,042 of Carpenter, Electrician, and Plumber Park and Recreation Work Orders took more than 10 days for a crew to respond in 2012"	A - Insufficient documentation/stds on what jobs operations personnel can/can't do	A1 - Review current documentation and standards and identify shortcomings	3	5	15	Y
		A2 - Enhance current documentation and standards for jobs to be performed by op's	3	4	12	Y
	B - Insufficient training of field operations personnel (to perform basic jobs)	B1 - Review existing training materials/approach	3	5	15	Y
		B2 - Develop and write up enhancements to training	3	4	12	Y
		B3 - Deliver enhanced training to operations staff	3	4	12	Y
	C - No systematic standard for prioritization including tracking emergencies	C1- Develop & Implement priority ranking system (e.g. 1-Emerg, 2-Important, etc.)	4	3	12	Y
	D - Work to be done is not always clearly described/communicated or understood by Trades	D1- Develop and implement plan to use photographs with certain (e.g. emergency) work orders	3	4	12	Y
		D2 - Train operations personnel to improve work order information (in coordination with B2)	3	4	12	Y
		D3- Evaluate expanded use of photographs for work orders	3	3	9	Later

The team selected several countermeasures for immediate implementation.

Identify Barriers and Aids

15.

The team performed Barriers and Aids analysis on the selected Countermeasures.

Countermeasure(s): Implement 8 Countermeasues to Improve Timeliness of Work Orders

Barriers		Aids	
Impact (H, M, L)	**Forces against Implementation**		**Forces For Implementation**
M	1) Will require coordination of limited resources (staff) *(Supported by Aid: A, B, C)*	A)	Strong management support and commitment
M	2) Will require some level of culture change *(Supported by Aid: A & B)*	B)	All levels throughout dept share strong camaraderie and desire for Project Benefits
H	3) Any database modifications could be costly or unfeasible *(Supported by Aid: A)*	C)	Many of the Countermeasures are not costly and can be done in-house

The team next sought to incorporate this analysis into the team's Action Plan.

Develop and Implement Action Plan

Legend:
■ = Actual
□ = Proposed

The team implemented an Action Plan for the team's Countermeasures.

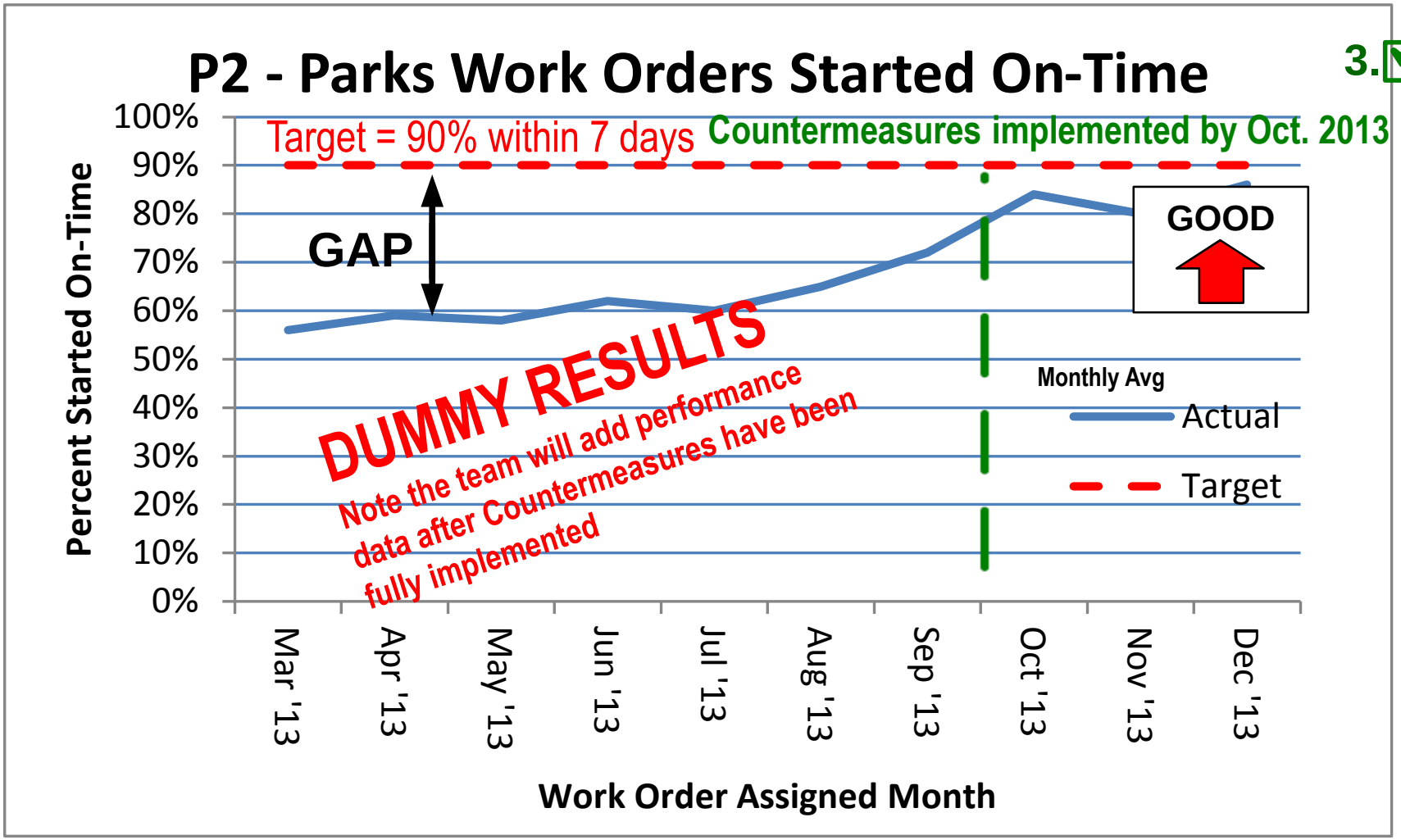
16.

WHAT: Implement Countermeasures to Reduce Time to Complete Parks Work Orders

HOW	WHO	WHEN (2013: Jun, Jul, Aug, Sep, Oct, Nov, Dec; 2014: Jan)
1. **Develop Countermeasures:**		
A1 - Review current documentation and standards and identify shortcomings	Maint Div	7/23/13
A2 - Enhance current documentation and standards for jobs to be performed by op's	Maint Div	8/2/13
B1 - Review existing training materials/approach	Maint/Ops Div	8/9/13
B2 - Develop and write up enhancements to training	Maint/Ops Div	8/23/13
B3 - Deliver enhanced training to operations staff	Maint/Trg	9/20/13
C1 - Develop & Implement priority ranking system (e.g. 1-Emerg, 2-Important, etc.)	Project Team	8/30/13
D1 - Develop and implement plan to use photographs with certain (e.g. emergency) work orders	Maint/Ops Div	7/31/13
D2 - Train operations personnel to improve work order information (in coordination with B2)	Maint/Trg	8/23/13
D3 - Evaluate expanded use of photographs for work orders	?	12/6/13
2. **Secure Management Approval of Countermeasures (share benefits and cost savings)**	Team	8/6/13
3. **Communicate/Train Parks Staff in Countermeasures and related policies/procedures (share benefits and cost savings)**	Team	9/6/13
4. **Implement Countermeasures and Pilot Countermeasures**	Team	10/2/13
5. **Review Pilot and determine Benefits and adjust as necessary and present results to management**	Team	12/13/13
6. **Establish On-going responsibilities and standardize countermeasures into operations**	Process Owner	On-going

Review Results

The team collected indicator data and reviewed results of its countermeasures:



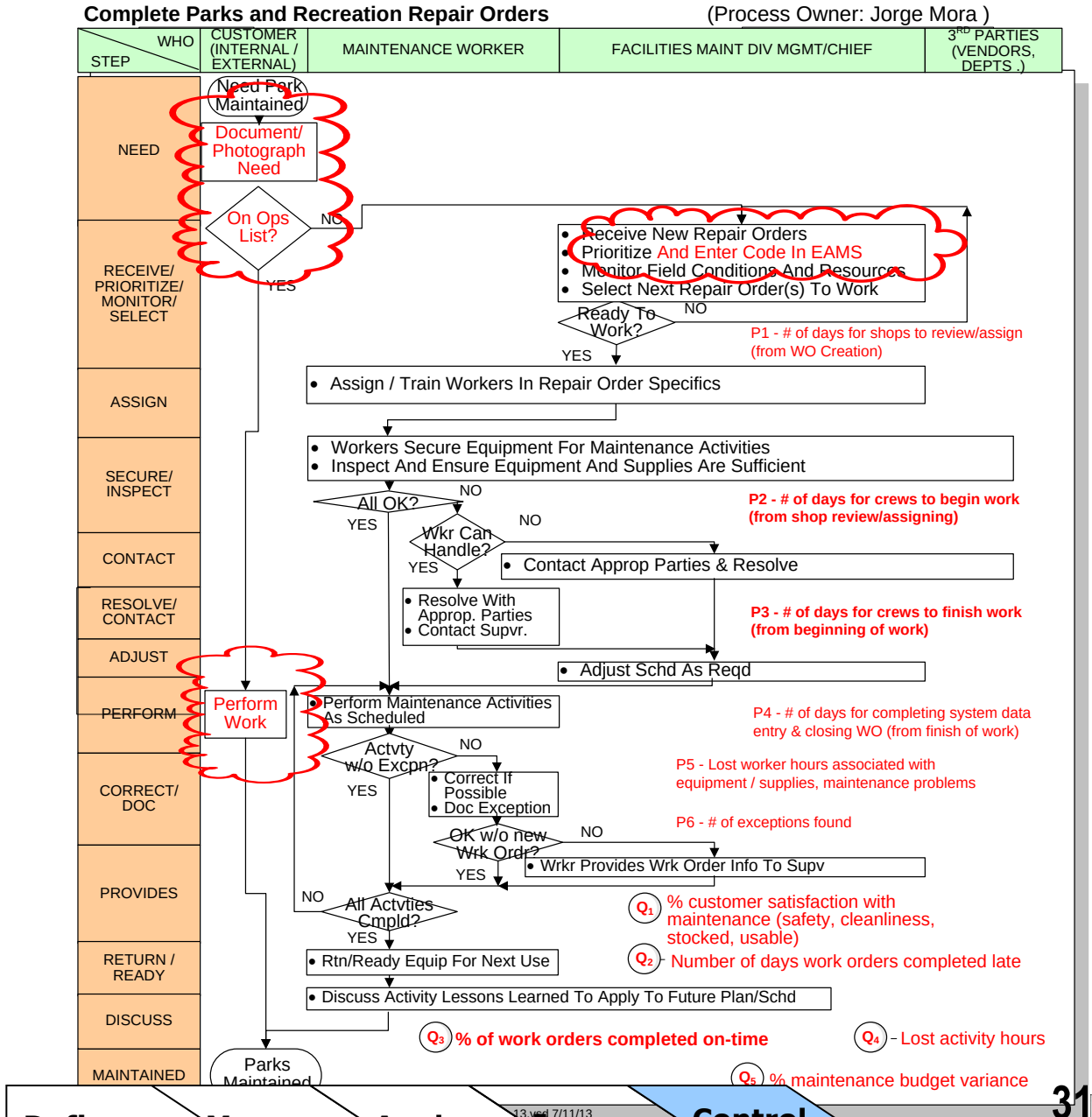
The team was encouraged by the results and will continue to monitor the countermeasures

Standardize Countermeasures

21.,22.,23. ☑

The team revised indicators and incorporated the improvements into the Process flowchart.

The team looked to standardize the Indicator monitoring



Identify Lessons Learned

24.,25.

Lessons Learned

1) The current work order system is used primarily to allocate costs to the appropriate work order (asset) and is weak in providing useful management tracking information
2) The current work order system has the capacity, with perhaps minor modification, to provide management tracking information if appropriate standards are developed and implemented
3) Graphs (Paretos, Histograms, etc.) are powerful analysis tools and were very helpful to the team in analyzing the data
4) Identifying Root Cause(s) examining the data using the tools and techniques is better that guessing at what you think are the causes
5) The Single Case Bore was useful in validating (and invalidating) initial assumptions

Next Steps

1) Continue to monitor the countermeasures and performance results.

Appendix –SIPOC Analysis (support for slide 7)

S.I.P.O.C. Analysis

Process: *Parks and Recreation Repair & Maintenance Work Orders*

Process Owner: *George N?* Date Approved:

Suppliers	Inputs	Process	Outputs*	Customers
Operations Fac. Maint Div?	Broken item Maintenance Reqm't	1. Identify need for repair or maintentance 2. Prepare & submit Work Order	Work Orders	Facility Maintenance
Operations Fac. Maint Div?	Workorder	3. Evaluate and Prioritize Work Order OK to assign? No → 4. Hold/Resolve Yes 5. Assign Work to Crew	Crew Task Assignment	Crew
Facility Maint Div	Work Assignment	6. Perform Work	Completed Work Order	Faciltiy Maint Operations
Work Crew	Completed Work Order	7. Verify Work Completed & Close Out Work Order	Closed Out Work Order Repaired item	Faciltiy Maint Operations Public

* Outputs used to Identify Outcomes

Note: See next Appendix Page for derived Indicators from SIPOC Outputs

Appendix – Data Fields to Process Crosswalk