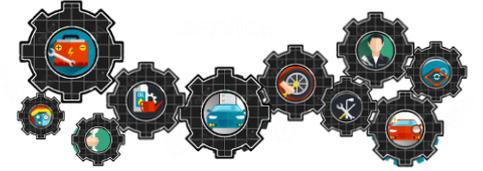


Lean Six Sigma DMAIC Improvement Story



Green Belt Project Objective:
**To Increase the Percentage of Vehicle Preventive
Maintenance performed on Time**

Last Updated: 5-25-21

Team: “The A-PM Team”

Pete Moolah (Co-Team Leader) Scott Stephens (Co-Team Leader)

Yoamel Zequeira Glorimar Abreu

Bianca Caviglia Manuel Morera

Alex Muñoz (Sponsor) Alex Alfonso (Process Owner)

Lean Six Sigma Problem Solving Process

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

Process Step		Description of Key Team Activities
Number	Name	
1	DEFINE	<ul style="list-style-type: none"> • Monitor Team Progress • Select Problem and Identify Project Charter and Timeline • Display Process Indicator Performance “Gap” • Construct Process Flowchart • Identify Stakeholder Needs • Identify Cost of Poor Quality
2	MEASURE	<ul style="list-style-type: none"> • Develop Data Collection Plan • Stratify Problem (i.e. “Gap”) • Develop Problem Statement from remaining data set and finalize target
3	ANALYZE	<ul style="list-style-type: none"> • Identify Potential Root Causes (s) • Verify Root Cause(s)
4	IMPROVE	<ul style="list-style-type: none"> • Identify and Select Countermeasure(s) • Identify Barriers and Aids • Develop and Implement Action Plan • Estimate Countermeasures Cost / Benefits / ROI
5	CONTROL	<ul style="list-style-type: none"> • Review Results • Standardize Countermeasures • Document Lessons Learned

Measure



Monitor Team Progress

The team and management used a Checklist to monitor team progress.

DMAIC/ QIC STORY CHECKLIST

A P D C	Process Step		Process Step Objectives and Checkpoints	Check ✓	Key Tools
	DMAIC	QIC Story			
Plan	Step 1		Objective: Demonstrate the importance of improvement needs in measurable terms.		
	DEFINE	Reason for Improvement	1. The stakeholders' needs were identified and a significant related problem was selected.	✓	Selection Matrix
			2. The selected problem is an "object" with a "defect" with unknown cause(s) that need identification.	✓	Situation Appraisal
			3. A project charter, including a project timeline, was developed and approved by the sponsor(s).	✓	Project Charter
			4. A trend indicator was constructed with an appropriate target that measures the performance gap.	✓	Line Graph, SIPOC, Cust Rqmts
			5. When the process is known, a flowchart was constructed with in-process and end-of-process indicators.	✓	Matrix, "Current State" Process
			6. The Cost of Poor Quality (COPQ) impact of the indicator performance gap was identified.	✓	Flowchart, Cost of Poor Quality Matrix
	Step 2		Objective: Stratify indicator related data and finalize an improvement target.		
	MEASURE	Current Situation	7. The data collection plan developed included indicator related demographics and process milestones.	✓	Spreadsheet
			8. Data were stratified from "what, where, when and who" viewpoints and a significant data set was chosen.	✓	Pareto, Histograms, Bar or Pie Chart
9. A problem statement that describes the stratified "remaining data" was developed.			✓	Problem Statement	
10. The target for improvement was finalized based on the most appropriate target setting methodology.			✓	Target Setting Methodologies	
Step 3		Objective: Analyze stratified data to identify and verify root cause(s).			
ANALYZE	Analysis	11. Cause and effect analysis was conducted on problem statement factors asking "why?" toward related organization standards until either a "Failed Standard" or "People Failing Standards" was identified.	✓	Single Case Bore Analysis, Fishbone	
		12. Potential root cause(s) with the greatest impact on the problem statement were selected.	✓	Sources of All Root Causes	
		13. Root cause(s) effecting the problem were verified (when possible using cause and effect data analysis).	✓	Root Cause Verification Matrix	
Do	Step 4		Objective: Develop and implement countermeasures to eliminate verified root cause(s).		
	IMPROVE	Counter-Measures	14. Countermeasures were selected to address verified root cause(s).	✓	Brainstorming, Multivoting
			15. The method for selecting countermeasures considered both effectiveness and feasibility.	✓	Countermeasures Matrix
			16. "Barriers and Aids" were determined for countermeasures worth implementing.	✓	Barriers and Aids Analysis
			17. An action plan incorporating the identified "Aids" reflected both accountability and schedule.	✓	Gantt Chart
Check	Step 5		Objective: Confirm countermeasures impacted root causes, indicator, costs and achieved target.		
	Results		18. Countermeasures' effects on root causes were demonstrated with "before and after" summary graphs.		Before & After Paretos, Histograms, Bar, Pie & Radar Charts, 'Before and After Line Graph, COPQ Matrix, ROI Matrix
			19. Countermeasure effects on the indicator were demonstrated with a "before and after" trend graph.		
			20. The countermeasures' estimated costs and annualized benefits were determined.		
21. The target was achieved or cause(s) of significant variation were determined and addressed.					
Act	Step 5		Objective: Maintain gains and prevent root cause(s) from recurring.		
	CONTROL	Standardization	22. The process flowchart was revised to incorporate the new countermeasure standards and/or training.		"Future State" Process Flowchart
			23. A Process Control System (PCS) was developed to monitor the revised process indicators on-going.		Process Control System (PCS)
		Step 7		Objective: Evaluate the team's effectiveness and plan for future activities.	
	Future Plans		24. Lessons learned documented replication opportunities, effective techniques and team success factors.		Brainstorming
25. Next steps were identified to monitor the process and address any remaining problems or gaps.				Process Control System (PCS)	

Select Problem

The team evaluated three possible projects using a Project Selection Matrix.

Project		Selection Criteria				
		A Impact on Customer	B Need to Improve	C= A x B Overall	Select Y/N	
1)	PM on Vehicles are not Completed Timely	Vehicle Users Internal/External	5	4	20	Y
2)	Parts Purchase Orders are Issued after parts Purchased	Vehicle Users Internal/External	5	4	20	N
3)	Decide best method to locate Fleet facilities	Decision Analysis	4	4	16	N
		Rating Scores:	5= Extreme	3= Moderate		
			4= High	2= Low 1=None		

The team selected PM on Vehicles are not completed Timely project.



Identify Project Charter

The team developed a team Project Charter and secured signed off from sponsor.

Project Charter

Business Case	Project Name:	To Increase the Percentage of Vehicle Preventive Maintenance performed on Time
	Problem/Impact:	The Fleet Management Division (FMD) Preventative Maintenance (PM) Program fails to meet the Government Fleet Management Alliance (GFMA) requirement of completing 95% of scheduled PMs on time and remaining 5% accounted for. GFMA is an industry leader in best practices. Failing to do PMs timely can result in increased vehicle downtime and repair costs, reduce life of Vehicle, and loss of revenue.
	Expected Benefits:	Reduced Cost, Decreased Downtime, Long vehicle Life
Objectives	Outcome Indicator(s)	Q1-% of Vehicles' PM Completed on time
	Proposed Target(s)	Target= 95%
	Time Frame:	Feb 8 thru June 2021
	Strategic Alignment:	Supports MDC Strategic Plan Objective GG3-3, PS3-1 and PS3-2
Scope	In Scope:	PM WOs for Light and Heavy Duty Fleet
	Out-of-Scope:	Non Scheduled PMs and Repairs
	Authorized by:	Alex Muñoz
Team	Sponsor:	Alex Muñoz
	Team Leader:	Pete Moolah, Scott Stephens
	Team Members:	Yoamel Zequeira, Glorimar Abreu, Bianca Caviglia, Manuel Morera
	Process Owner(s):	Alex Alfonso
	Mgmt Review Team:	Internal Fleet Leadership
Schedule	Completion Date:	June 2021
	Review Dates:	Monthly and Final Review in June 2021
	Key Milestone Dates:	See Action Plan

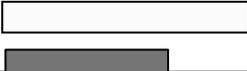
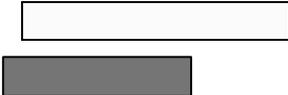
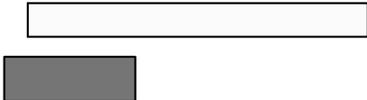


Identify Project Timeline

The team developed a Timeline Plan to complete their Project.

Legend:	
	= Actual
	= Proposed

WHAT: To increase Timeliness of Vehicle Preventive Maintenance Work Orders

HOW	WHEN						
	Month						
	Feb	Mar	Apr	May	Jun	Jul	Aug
1. DEFINE							
2. MEASURE							
3. ANALYZE							
4. IMPROVE							
5. CONTROL							



Background

The Internal Services Department (ISD) Fleet Management Division (FMD)

- 261 employees with an annual budget of \$86 million
 - Provides repair maintenance and fuel services to 25 County departments and external customers
 - 20 repair facilities and 29 fuel stations throughout Miami-Dade County
- **Types of Vehicles Serviced**
 - Sedans, light trucks, vans, SUVs, & police vehicles
 - Garbage trucks, tractor/trailers, dump trucks
 - Construction equipment

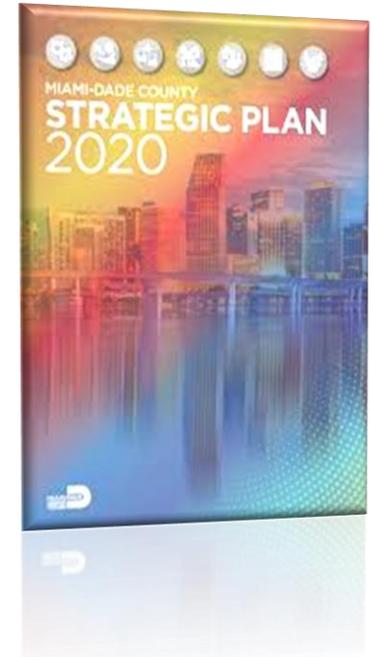


Project Alignment to Strategy

ISD Fleet Management Division (FMD) directly supports MDC Strategic Plan under the General Government strategic area by supporting the following goals:

Optimal internal Miami-Dade County operations and service delivery:

- GG3-3 - Acquire “best value” goods and services in a timely manner



Public Safety strategic area:

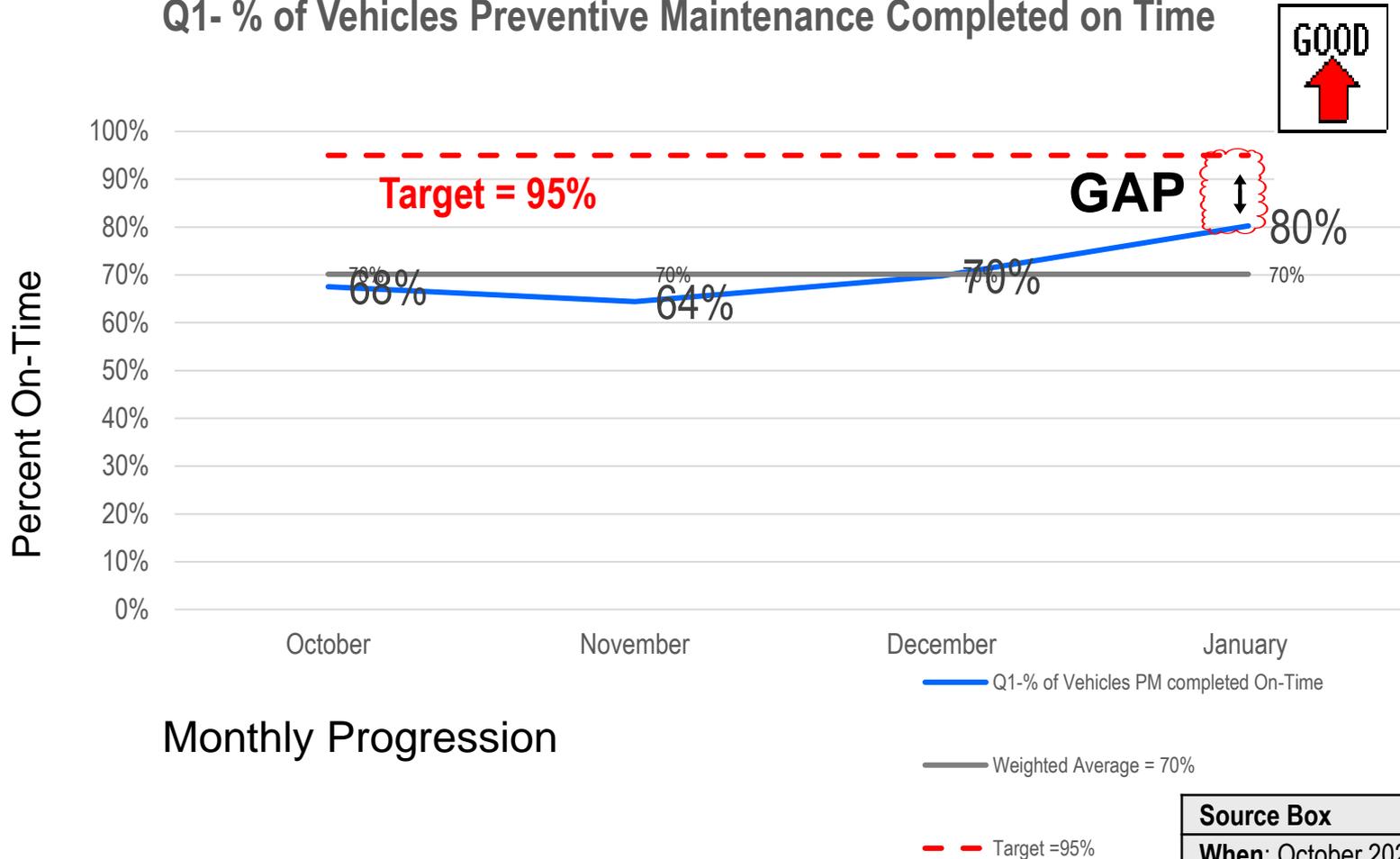
- PS3-1 – Increase countywide preparedness
- PS3-2 – Ensure recovery after community and countywide shocks and stresses



Display Indicator Performance "Gap"

The team collected Q1 indicator data and reviewed performance trends:

Q1- % of Vehicles Preventive Maintenance Completed on Time



Monthly Progression

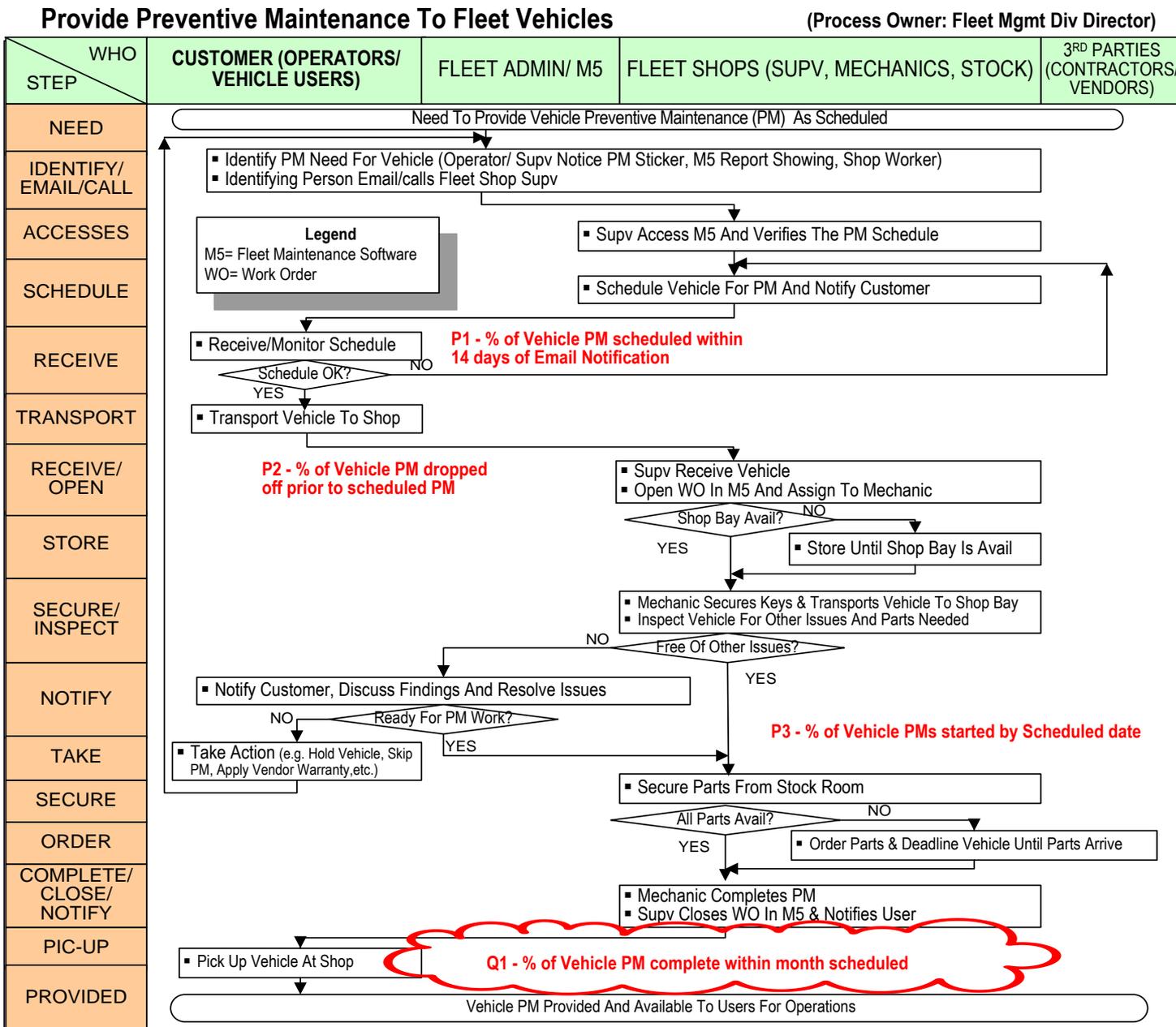


Source Box
When: October 2020- January 2021
Where: Maintenance Shops
Who: Fleet

Construct Process Flow Chart

The team constructed a Process flow chart describing the Process. (see appendix for SIPOC and Cust Rqmts Matrix)

The team next looked Stakeholder process needs



Identify Stakeholder Needs

The team identified stakeholder needs for the process outputs.

Stakeholders Needs	
Stakeholders	Process Output Needs
Vehicle Owners/ Drivers	Notification of PMs due
	Efficient PM appointment scheduling
	PMs completed on time
Fleet Management	Hold vehicle owners/drivers accountable
	Meet the 95% PM compliance goal
	Meet the goal of the Fleet Procedure 806

Identify Cost of Poor Quality

The team identified the hidden costs of delays in Vehicle Preventive Maintenance.

Stakeholder	Pain Experienced	Annualized "Costs"
Fleet Management	1. Added Tasks/Time to track when PM is late or not properly scheduled	1. Avg. rate of (\$35/hr @ .5hrs/day) X 240 workdays = \$4,200 X 20 People = \$84,000/year
Vehicle Owners/ Drivers	2. Decreased Vehicle Life/Increased wear; Increased Repair Costs 3. Increased downtime unnecessary repairs	2. On Avg 30% vehicles are 45 days late with maintenance the team estimated those vehicles would lose up to 2 years Vehicle life (ie sell in 8 yrs versus 10 Yrs)=> Total Cost of useful life Annualized=>Revised Dep Cost per year New Veh Price/10 years depr X (Tot # Vehicles)X30%) # yrs Divided by 10 year life =(\$22K/10 X (8300*30%) X2)/10 = \$1,095,600 3. Included in above

Total Cost of Poor Quality Savings = \$1,179,600 Annually



Develop Data Collection Needs

The team developed a spreadsheet to help analyze the process.

MDC Fleet Maintenance Detail (every row is a Completed PM Work Order)

			Avg Yr							PMA %
			2014.2							27%
Section	Shop	Unit No	Year	Make	Model	Category Desc	Work Order No	WR No	Job Code	
Light	1Main	006945A	2019	RAM	1500 4X4	Pickups - Half Ton - Extended Cab	328421	7440045	59-PMM-PMC	
Light	SDGC	003532A	2015	FORD	INTERCEPTOR	Automobile - Full Size - Law Enforcement	329323	7453125	59-PMM-PMB	
Light	DTMP	003282A	2014	FORD	EXPLORER	Sport Utility-Emergency Serv-Law Enforce	326698	7411083	59-PMM-PMC	

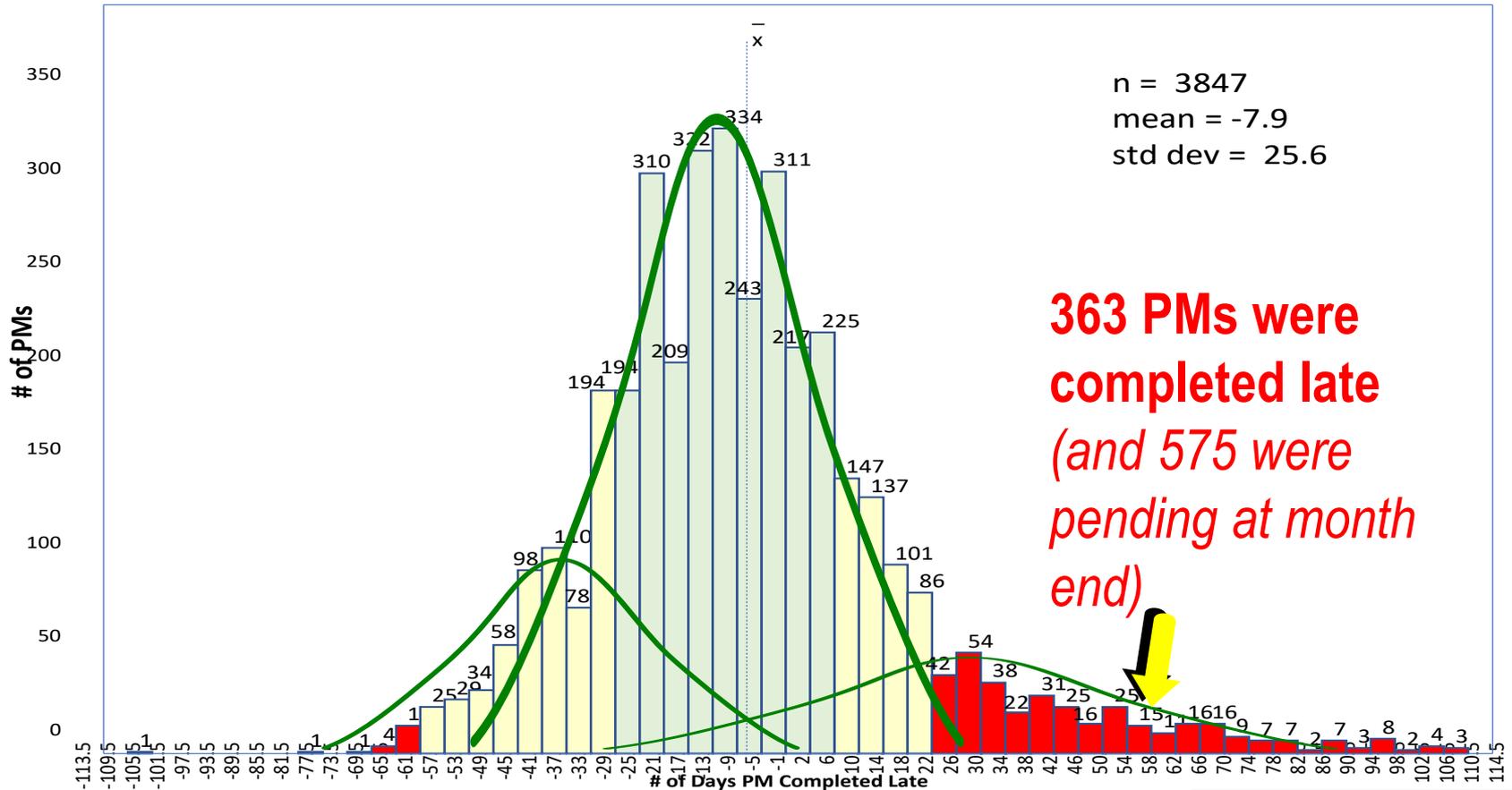
			Avg				
			-7.9				
Month	PM Due Date-EOM Month	PM Completed Date	Days to Complete	PM Status	Department	Division	
October	10/31/2020	9/28/2020	-33	Early	PD - MIAMI DADE POLICE	PD30522PORT1	
October	10/31/2020	9/30/2020	-31	Early	PD - MIAMI DADE POLICE	PD560326	
October	10/31/2020	9/16/2020	-45	Early	PD - MIAMI DADE POLICE	PD560326	



Stratify Problem

The team stratified the 3847 PMs many ways and found...

Vehicle PMs Completed between 9/28/20 thru 1/26/21



The team looked closer at Both the 363 and 575 late PMs.

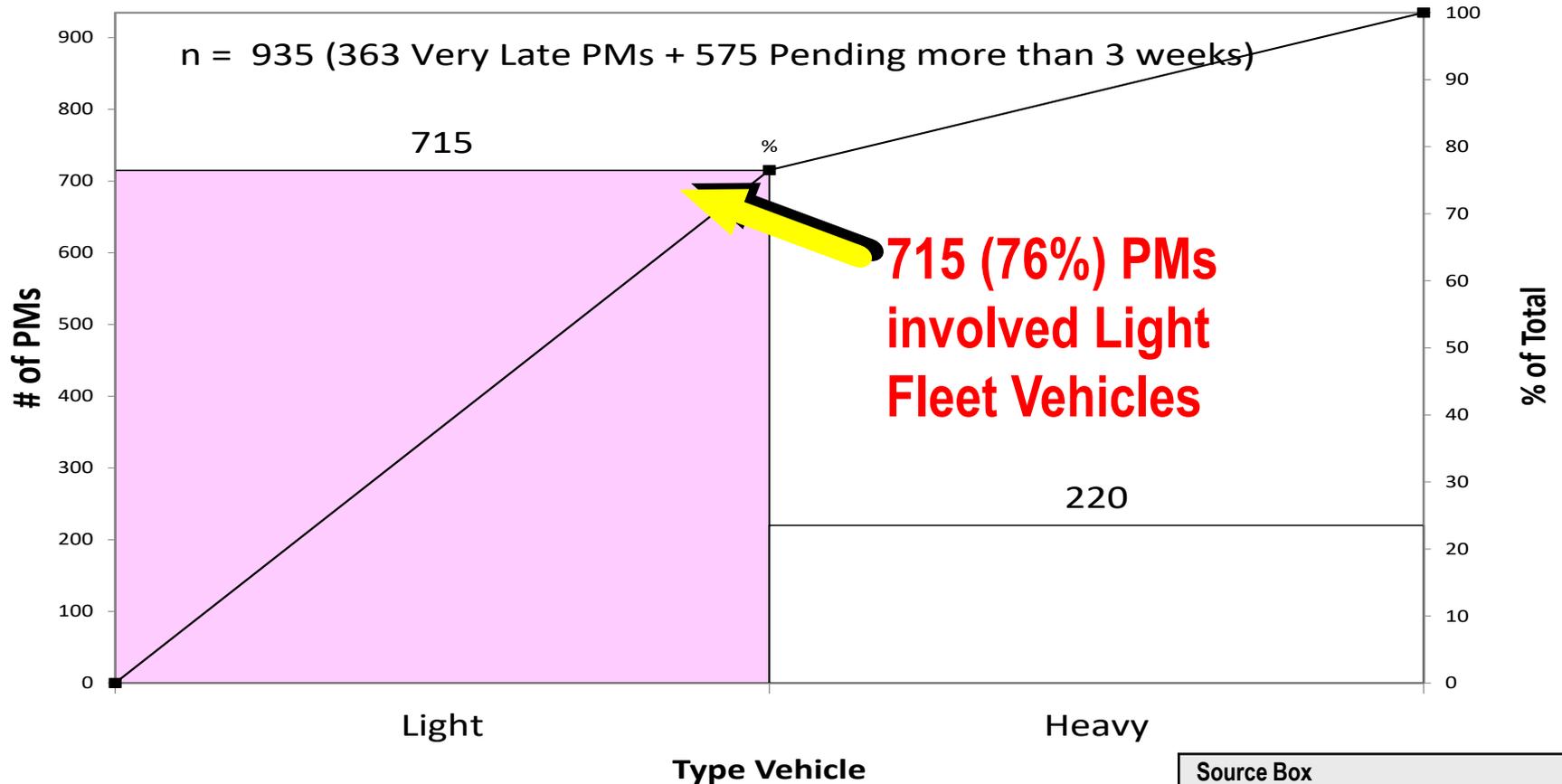
Source Box
When: October 2020-January 2021
Where: Maintenance Shops
Who: Fleet



Stratify Problem

The team stratified the 363 and 575 Late PMs many ways and found...

Vehicle PMs Completed Very Late (>22 days) between 9/28/20 thru 1/26/21



The team looked closer at the 715 Light Fleet Vehicles.

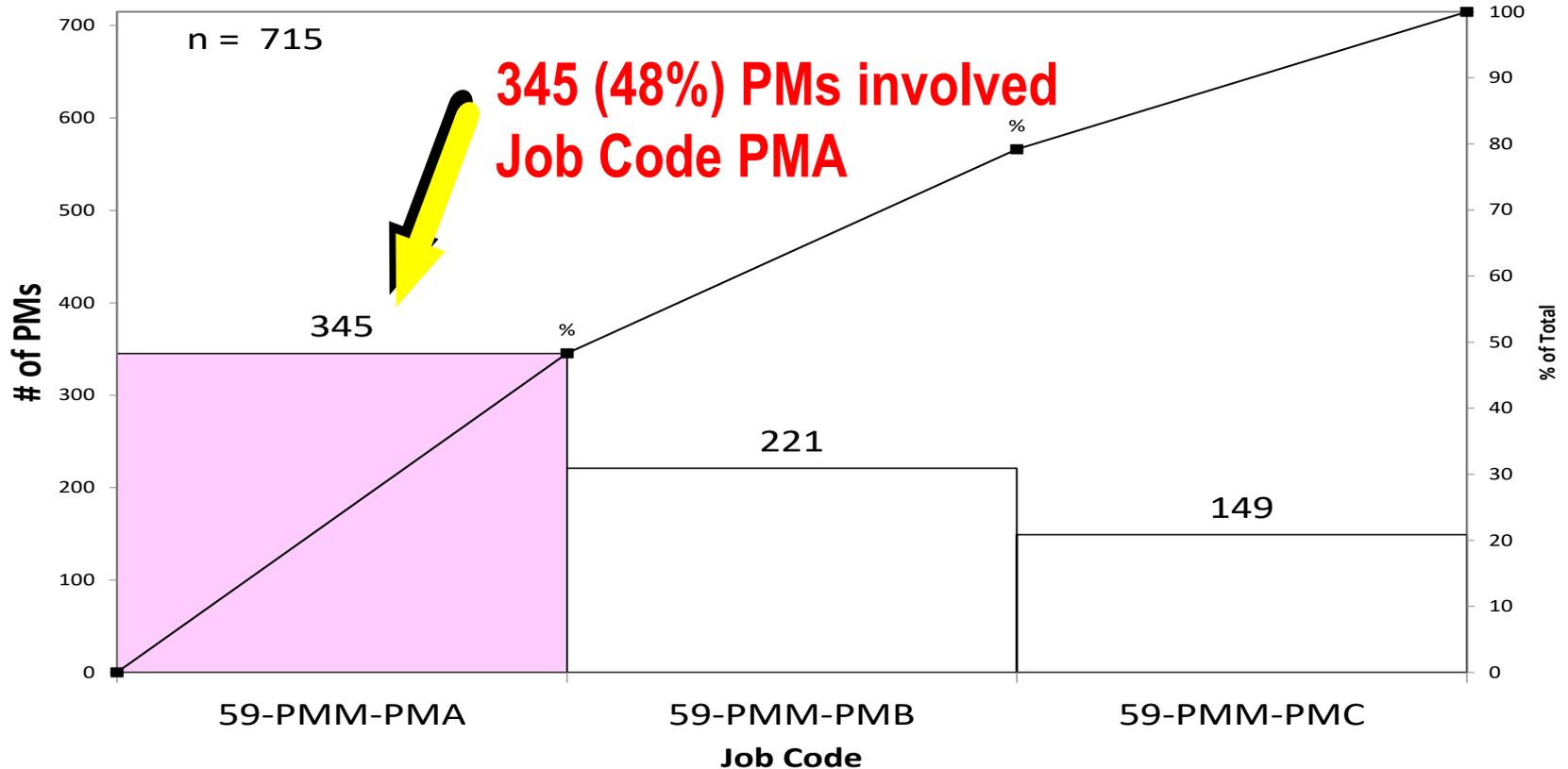
Source Box
When: October 2020-January 2021
Where: Light Maintenance Shops
Who: Total number of late PMs



Stratify Problem

The team stratified 715 Late Vehicle PMs many ways and found...

Light Vehicle PMs Completed Very Late (>22 days) between 9/28/20 thru 1/26/21



Problem Statement: “345 Light Vehicle Preventive Maintenance (PM) work orders between 9/28/20 and 1/26/21 were completed very late (>22 days) and involved Job Code PMA”

Source Box
When: October 2020-January 2021
Where: Light Maintenance Shops
Who: PMA Completed Late



Identify Potential Root Causes

12.,13., 15.



The team completed a Single Case Bore Analysis and found ...

Single Case Bore Analysis

Problem Statement: "345 Light Vehicle Preventive Maintenance (PM) work orders between 9/28/20 and 1/26/21 were completed very late (>22 days) and involved Job Code PMA"

Reasons or Factors (that contributed to the above problem Statement)	Interval Sample of 20 of 345 Late Vehicle PMAs																Total	Percentage					
	028977; 2001 Dod	006154A; 2018 FR	029419; 2005 Forc	004225A; 2015 FR	027876; 2003 Che	003339A; 2015 To	005586A; 2017 FR	006146A; 2018 FR	007840A; 2018 FR	008992A; 2020 FR	028805; 2006 FR	008064A; 2004 Che	007167A; 2020 FR	006195A; 2018 FR	000293A; 2006 FR	005090A; 2006 FR				000282A; 2017 FR	005242A; 2006 FR	000820A; 2018 FR	004429A; 2006 FR
PM Scheduled Cust No show for appointment	B			X	X		X	X	X												5	25%	Shop 1
Vehicle Down for repairs when PM came due										X											1	5%	DTMP
Cust informed but appointment not made	A		X								X	X	X					X	X		6	30%	Station 9
PMA job was scheduled in error due to mileage																X					1	5%	Shop 3 Auto
Shop Failed to inform Customer	C													X	X	X					3	15%	Shop 2 Auto
No call made to reschedule a previous appointment (by Either Cust/Shop)	D						X	X	X												3	15%	
Cust Rescheduled due to Operational Urgency	X					X															2	10%	
Customer refused to bring vehicle due to Mileage Criteria not met on vehicle PM sticker		X	X																		2	10%	

Identify Potential Root Causes

The team completed the Fishbone

A-Cust informed but appointment not made (30%)

C & E Diagram
Problem Statement

"345 Light Vehicle Preventive Maintenance (PM) work orders between 9/28/20 and 1/26/21 were completed very late (>22 days) and involved Job Code PMA"

C- Shop Failed to inform Cust (15%)

No Email was sent to Cust for PMA Notification

Not all Shops use the same Notification Process (Human error)

No Standard process for tracking shop to cust notifications

Shop email Request PMA
Appt was not returned

A1 Email Notification System does not consistently work for all Cust Locn
Email receiver does not know who has vehicle/ Owner never notified

A2 Email Notification System does not provide Veh Locn Info

No standard process to follow up on unscheduled PM

Cust forgot to bring Vehicle
The Vehicle PM Schedule was not on weekly work schedule

No formal Process to add PM schedule to daily work schedule

D-No call made to reschedule (by Either Cust/Shop) (15%)

B- PM Scheduled Cust No show for appointment 25 %

 = Potential Root Cause

The team collected data to verify the root causes and found....

Root Cause Verification Matrix			
Potential Root Cause	How Verified? (Describe in terms of numbers when possible)	Estimated Impact On Gap (H,M,L)	Root Cause or Symptom
A1 Email Notification System does NOT consistently work for all Cust Locn or provide Veh Locn A2	The team reviewed the email notification method and there is no consistent follow-up on whether or not email received or appointment made. Cust sees a long list of vehicles in their dept and they don't always know where vehicle is. Operations see this as a collateral duty (not urgent).	Medium (30%)	
B No formal Process to add PM schedule to daily work schedule	Verified the process to schedule PMs with end users/ Coordinators....and found not all add PMs to work list...some put PM in notes, Some use email...there is no One Process	Medium (25%)	
C No Standard process for tracking shop to cust notifications	The team found not all shops do the same process...there is no standardized process followed.	Low (15%)	
D No standard process to follow up on unscheduled PM	Verified RE-Schedule Process with Shop Supvs...and found Shop supv does pay attention to when PM due...mostly tries to accommodate owner at an expense of On-Time PMs	Low (15%)	

All four (4) were validated as root causes.



Identify and Select Countermeasures

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

		Countermeasures Matrix				
		5=Extreme; 4=High; 3=Moderate; 2=Somewhat; 1=Little				
Problem Statement	Verified Root Causes	Countermeasures	Legend:			
			3=Moderately		2=Somewhat	
			5=Extremely		4=Very	
			Ratings			
			Effectiveness	Feasibility	Overall	Take Action? Y/N
"345 Light Vehicle Preventive Maintenance (PM) work orders between 9/28/20 and 1/26/21 were completed very late (>22 days) and involved Job Code PMA	<p>A- Email Notification System does NOT consistently work for all Cust Locn or provide Veh Locn</p> <p>B- No formal Process to add PM schedule to daily work schedule;</p> <p>C- No Standard process for tracking shop to cust notifications;</p> <p>D- No standard process to follow up on unscheduled PM</p>	A1/C1- Set up General mailbox for coordinator to check and Verify Notification reached Right person	4	4.0	16.0	Y
		A2/B1/D1- Require Depts Quarterly/Annually? to verify Vehicle Contact person for each vehicle (or groupings)	4	3.0	12.0	Y
		A3- 1 Point of Contact on each side (Shop and Owner)	3	2.5	7.5	N
		A4/B2/D2- Identify 1 coordinator for Operations and 1 coord for Shop locations to handle Vehicle scheduling	4	4.0	16.0	Y
		A5 Send reminder text message to Supv Phone	4	1.0	4.0	N
		A6- Open up M5 software to allow Calendar scheduling and operator assignments	5	2.0	10.0	Try

The team selected 4 Countermeasures for implementation.



Identify Barriers and Aids



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

Countermeasure: **Implement 4 Countermeasures to Improve Vehicle PM Timeliness**

Barriers		Aids
Impact (H, M, L)	Forces Against Implementation	Forces For Implementation
H	1. Push back from customers and Shop Staff; (Supported by A,C,D)	A. Management Support B. SMEs in Technology to help program M5 C. Benefits and Savings of countermeasures D. Industry Standard set by GFMA for 95%
M	2. Lack of latest technology (Supported by A, B, C)	
H	3. Limited financial resources (Supported by A, B, C)	

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



Implement Action Plan

17.



The team incorporated the Barriers and Aids analysis into the Action Plan.

Legend:
 = Actual
 = Proposed

WHAT: **Implement 4 Countermeasures to Improve Timeliness of PM WOs**

HOW	WHO	WHEN				
		2021				
		May	Jun	Jul	Aug	Sep
1. Develop Countermeasures/ Practical Methods:						
A1/C1- Set up General mailbox for coordinator to check and Verify Notification reached Right person	Scott/ Manny					
A2/B1/D1- Require Depts Quarterly/Annually to verify Vehicle Contact person for each vehicle (or groupings)	Scott					
A4/B2/D2- Identify 1 coordinator for Operations and 1 coord for Shop locations to handle Vehicle scheduling	Yoamel/ Manny					
A6- Open up M5 software to allow Calendar scheduling and operator assignments	Scott/ ITD SMEs					
2. Secure Management Approval of Countermeasures <i>(share benefits and savings, SMEs information)</i>	Team					
3. Communicate/Train Staff in Countermeasures and related policies/procedures <i>(share benefits and Mgmt Support, SMEs)</i>	Team					
4. Implement /Pilot Countermeasures (Review results and adjust countermeasures for ongoing operations)	Team					
5. Establish On-going responsibilities and standardize countermeasures into operations	Team					

On-Going



A1/C1- Set up General mailbox for Notification

Email text....

Subject: Vehicles Due for PM Services

Dept / Agency Coordinator,

The attached list identifies the vehicles in your department which are due for PM services. Please email the assigned repair shop and schedule these PM (and any additional) services with the shop supervisor for your department/agency within 14 days of this e-mail.

Thank you and please let your assigned shop supervisor know how else we can help.



A4/B2/D2- ID Dept/Agency and Transportation Coordinators

Internal Transportation Coordinators Contact List					
As of May 11, 2021					
FAMIS Dept. Code	Payroll Dept Code	Department/Agency	Coordinator	Telephone Ext.	Fleet Coordinator
AD	036	Animal Services	Luis Salgado	305-418-7162 786-493-7366	Appendix C
063		Aviation	Matilya Daniels	305-876-7323	Appendix C
			Ralph Cutie	305-876-8498	Appendix C
			Jesus Valderrama	305-876-0259	Appendix C
			Danny Nodarse	305-876-7186	Appendix C
CC	001	Board of County Commissioners	Adrian Castellanos	305-375-5055	Appendix C
CL	031	Clerk of the Court	Charis Lubeck	786-469-2475	Appendix C
			Adam Lopez	786-469-2431	Appendix C
CO	379	CAHSD (Community Action & Human Services)	Katrina Green	786-469-4655	Appendix C
CT	203	Communications and Customer Experience (CCED)	Shawn Hinchey	305-375-2431	Appendix C
			Kenia Lopez	305-375-2647	Appendix C

Dept/Agency Coordinator Responsibilities.

1. Notify Current Vehicle User and schedule PM Services by Due Date
2. Monitor Vehicle to ensure Vehicle dropped off for PM Services
3. Re-schedule Vehicle with Transportation Coordinator if needed



Estimate Countermeasures Costs/Benefits/ROI

The team estimated the Costs and Benefits of the countermeasures.

20. 

ROI WORKSHEET for: Improve Timeliness of Vehicle PM WOs			
ITEMIZED COUNTERMEASURE COSTS (DESCRIPTION)	\$ VALUE (ANNUALIZED)	ITEMIZED BENEFITS (DESCRIPTION)	\$ VALUE (ANNUALIZED)
A1- Set up General mailbox for coordinator to check and Verify Notification reached Right person	\$300	The Team felt based on data analysis for PMA type WOs we should be able to realize 50% of COPQ	\$589,800
A2- Require Depts Quarterly/Annually to verify Vehicle Contact person for each vehicle (or groupings)	NA		
A4- Identify 1 coordinator for Operations and 1 coord for Shop locations to handle Vehicle scheduling	NA		
A6- Open up M5 software to allow Calendar scheduling/operator Asgnmts	\$10,000		
Total Investment Cost	\$10,300.00	Total Expected Annualized Benefits	\$589,800
Net Benefits=(Annl Benefits – Investment Cost)==>		\$579,500	
ROI=(Net Benefits/Investment Cost) ==>		56 : to 1 ratio	

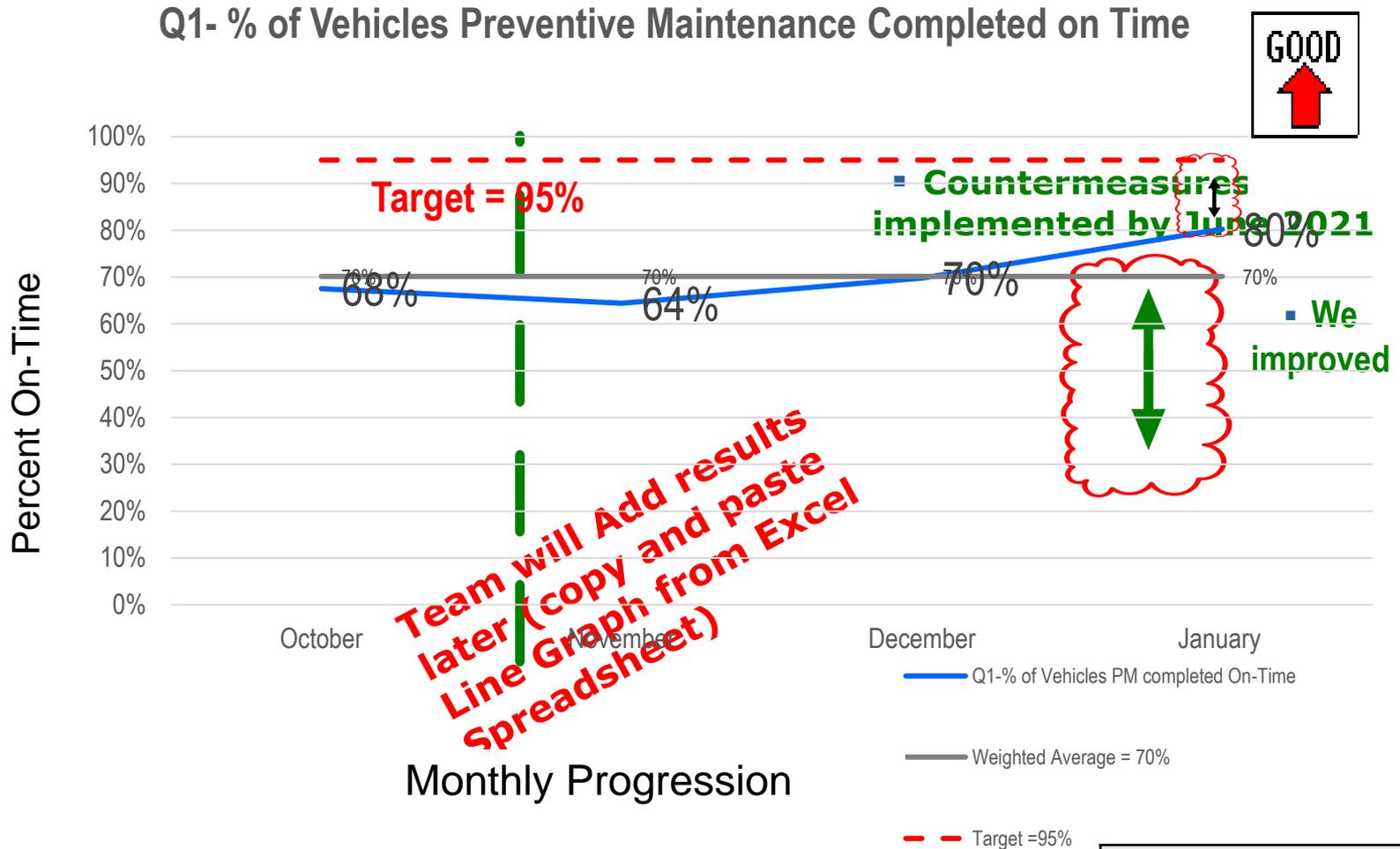


Review Results

19., 21.



The team collected indicator data and reviewed performance trends:



- The team will continue to monitor the countermeasures.

Source Box
When:
Where:
Who:

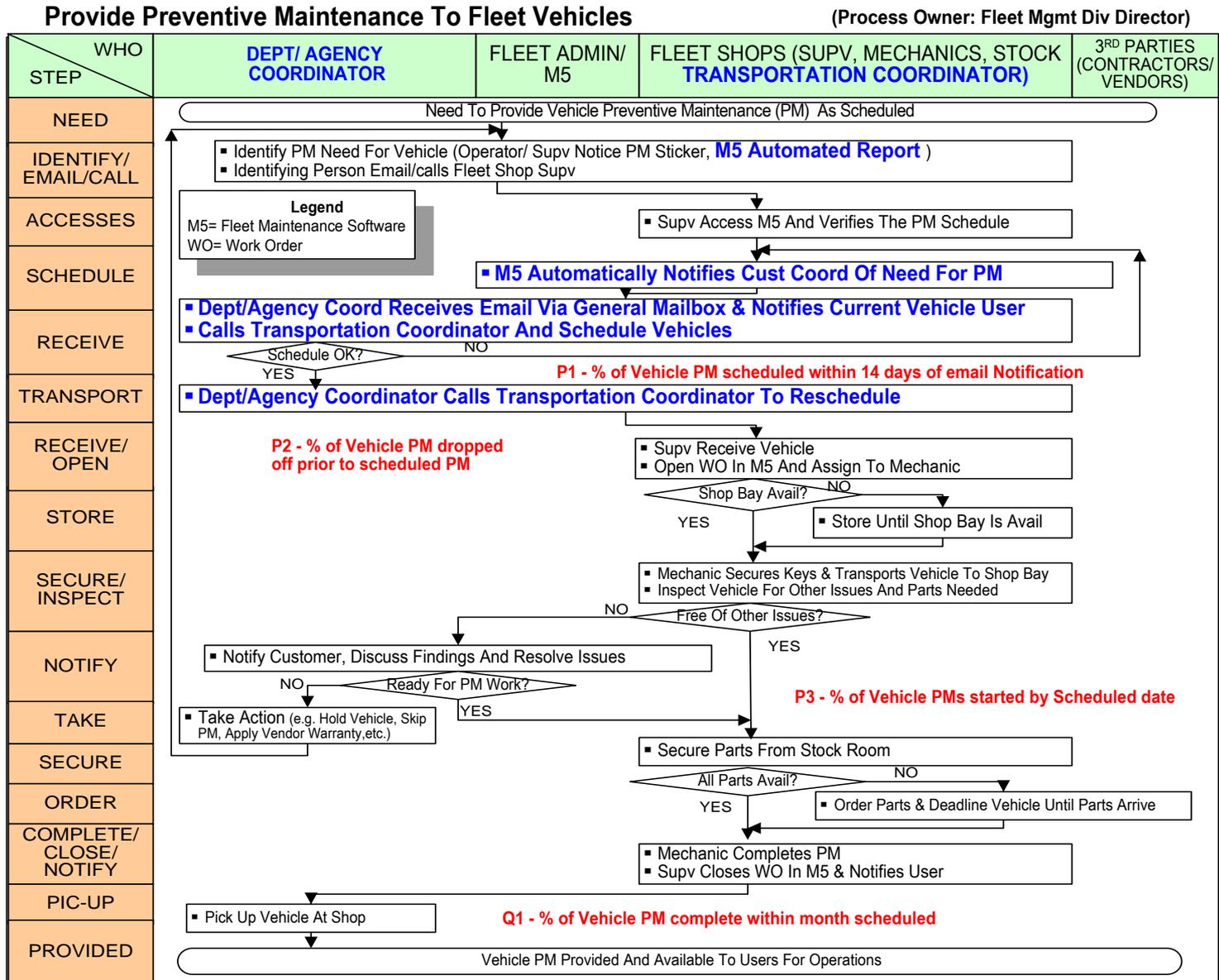


Standardize Countermeasures

22.



The team incorporated their countermeasures into their Process Flowchart.



FBC_DMAIC Story_Increase Vehicle PM Timeliness_MDC_FLOWCHART_Proposed_5-3-21.vsd 5/18/21



Standardize Countermeasures

23.



The team completed the Process Control System form for the Process.

Process Control System

Process Name: Provide Preventive Maintenance to Fleet Vehicles

Process Owner: Fleet Mgmt Div Director

Process Customer: Vehicle Users, Owners, Operators

Critical Customer Requirements: Timely PM Performed

Process Purpose: Perform PM

Current Sigma Level: TBD

Outcome Indicators: Q1

Process and Quality Indicators			Checking / Indicator Monitoring			
Process Indicators	Control Limits	Data to Collect	Timeframe (Frequency)	Responsibility	Contingency Plans / Misc. • Actions Required for Exceptions • Procedure References	
And	Specs/ Targets		When to Collect Data?	Who will Check?		
Quality Indicators		What is Checking Item or Indicator Calculation				
P1	% of Vehicle PM scheduled at within 14 days of Email Notification	95%	100* (# of Vehicle PM scheduled within 14 days of Email Notification)/ (# Vehicle PM scheduled)	Weekly	Service Mgr	Escalate to Mgmt; M5 Compliance report
P2	% of Vehicle PM dropped off prior to scheduled PM	95%	100* (# of Vehicle PM dropped off prior to scheduled PM)/ (# Vehicle PM scheduled)	Weekly	Service Mgr	Escalate to Mgmt; M5 Compliance report
P3	% of Vehicle PMs started by Scheduled date	95%	100* (# of Vehicle PMs started by Scheduled date)/ (# Vehicle PM scheduled)	Weekly	Service Mgr	Escalate to Mgmt; M5 Compliance report
Q1	% of Vehicle PM complete within month scheduled	95%	100* (# of Vehicle PM complete within month scheduled)/ (# Vehicle PM scheduled)	Monthly	Service Mgr	Escalate to Mgmt; M5 Compliance report

Approved: _____

Date: _____

Rev #: _____

Rev Date: _____

The team will monitor using this form.



Lessons Learned

- 1) **Surprised at the gap in communication** between Customers and the transportation Shops
- 2) **“Following the Data”** proved very important to find the root causes.
- 3) **Single Case Bore Analysis** was very effective at uncovering the key info that led to root causes.

Next Steps

- 1) **Continue to Implement Countermeasures** and monitor performance results



Appendix A

S.I.P.O.C. Analysis

Process: *Provide Preventive Maintenance to Fleet Vehicles*

Process Owner: *Fleet Mgmt Div Director*

Date Approved:

Suppliers	Inputs	Process	Outputs*	Customers
MDC IT Vehicle Owner	M5 System Vehicle Past Maintenance Record	<div style="border: 1px solid black; padding: 5px; text-align: center;">1. Schedule Vehicle for PM</div> 	Scheduled Vehicle for PM	Shop/ Vehicle Owner
		<div style="border: 1px solid black; padding: 5px; text-align: center;">2. Receive Vehicle and Inspect for other issues</div> 		
		<div style="border: 1px solid black; padding: 5px; text-align: center;">3. Secure parts for PM</div> 		
		<div style="border: 1px solid black; padding: 5px; text-align: center;">4. Complete PM and close Work Order</div>	PM Completed and Record Updated	

* Outputs used to Identify Outcomes

Appendix B

Customer Requirements Matrix

Process: **Provide Preventive Maintenance to Fleet Vehicles**

Survey Voice of Customer		Process Output(s)	Customer Valid Requirement	Outcome Indicator (P = In-Process; Q = End-of-Process)
Quality Element	Example Question			
1	Timeliness What timeframe does the customers need for Process outputs?	Scheduled Vehicle for PM	1. Schedule meets Vehicle Maintenance timing	P-1 % of vehicle PM scheduled within 14 days of e-mail notification
2	Accuracy How accurate do the outputs need to be?		2. Schedule should be acceptable to Vehicle Owner	
3	Accuracy/ Timeliness How accurate and timely do the outputs need to be?	Inspected Vehicle	3. Vehicle available when scheduled for Inspection and maintenance	P2 - % of Vehicle PM dropped off prior to scheduled PM
4	Timeliness What timeframe does the customers need for Process outputs?	Parts	4. All Parts available when PM Scheduled	P3 - % of Vehicle PMs started by Scheduled date
5	Timeliness What timeframe does the customers need for Process outputs?	PM Completed and Record Updated	5. Complete PM work in timely manner to ensure Operational when needed	Q1- % of Vehicle PM complete within month scheduled

Appendix C

LIGHT EQUIPMENT REPAIR SHOPS

Shop Name	Address	Shop Supervisor	Phone #
Shop 1 Main	703 NW 25 th St.	John Sanso	305-638-6071
Downtown Motor Pool	201 NW 1 st St.	Alex Rodriguez	305-375-4053
Police Headquarters	9105 NW 25 th St.	Antonio Monzon	305-471-2930
South Dade Govt. Ctr.	10740 SW 211 th St.	Timothy Phillips	305-251-3125
Station 1	5975 Miami Lakes Dr.	Genaro Del Busto	305-557-9844
Station 2	799 NW 81 st St.	Alejandro Rodriguez	305-691-3134
Station 5	7707 SW 117 th Ave.	Dahlia De La Riva	305-271-5342
Station 6	15665 Biscayne Blvd.	Alejandro Rodriguez	305-947-4429
Station 8	10000 SW 142 nd Ave.	Dahlia De La Riva	305-383-6820
Station 9	18802 NW 27 Ave.	Genaro Del Busto	305-627-7180
Shop 2 - Auto	6100 SW 87 th Ave.	Robert Baker	305-273-4127
Shop 3 - Auto	8801 NW 58 th St.	Thomas Joseph	305-470-1787

HEAVY EQUIPMENT REPAIR SHOPS

Shop Name	Address		Phone #
Shop 2 – Truck	6100 SW 87 th Ave.	Alvin Francis	305-273-4125
Shop 3 – Main	8801 NW 58 th St.	Noel Valdes	305-591-9515
Shop 3A – Northeast	18701 NE 6 th Ave.	Andy Puig	305-652-0764
Shop 3B – SW	7900 SW 107 th Ave.	Andres Torres	305-279-5050
Shop 3C – Const/Welding	8801 NW 58 th St.	Mike De La O	305-477-1008
Shop 3D	10820 SW 211 th St.	Maxwell Passe	305-233-5297