

Two-Bin Kanban: Supply Ordering Impact at Navy Medical Center San Diego



NAVAL
POSTGRADUATE
SCHOOL

Overview

The purpose of this research is to determine what impact the new two-bin Kanban inventory system had on both supply procurement costs and supply efficiency at Naval Medical Center San Diego (NMCS). The new system was implemented across FY 2014. Comprehensive supply ordering data and physician workload data was collected on three medical departments (Gastroenterology, Urology, and Oral Maxillofacial Surgery) across two fiscal years (FY13 and FY15).



Urology Supply Replenishment

Research Questions

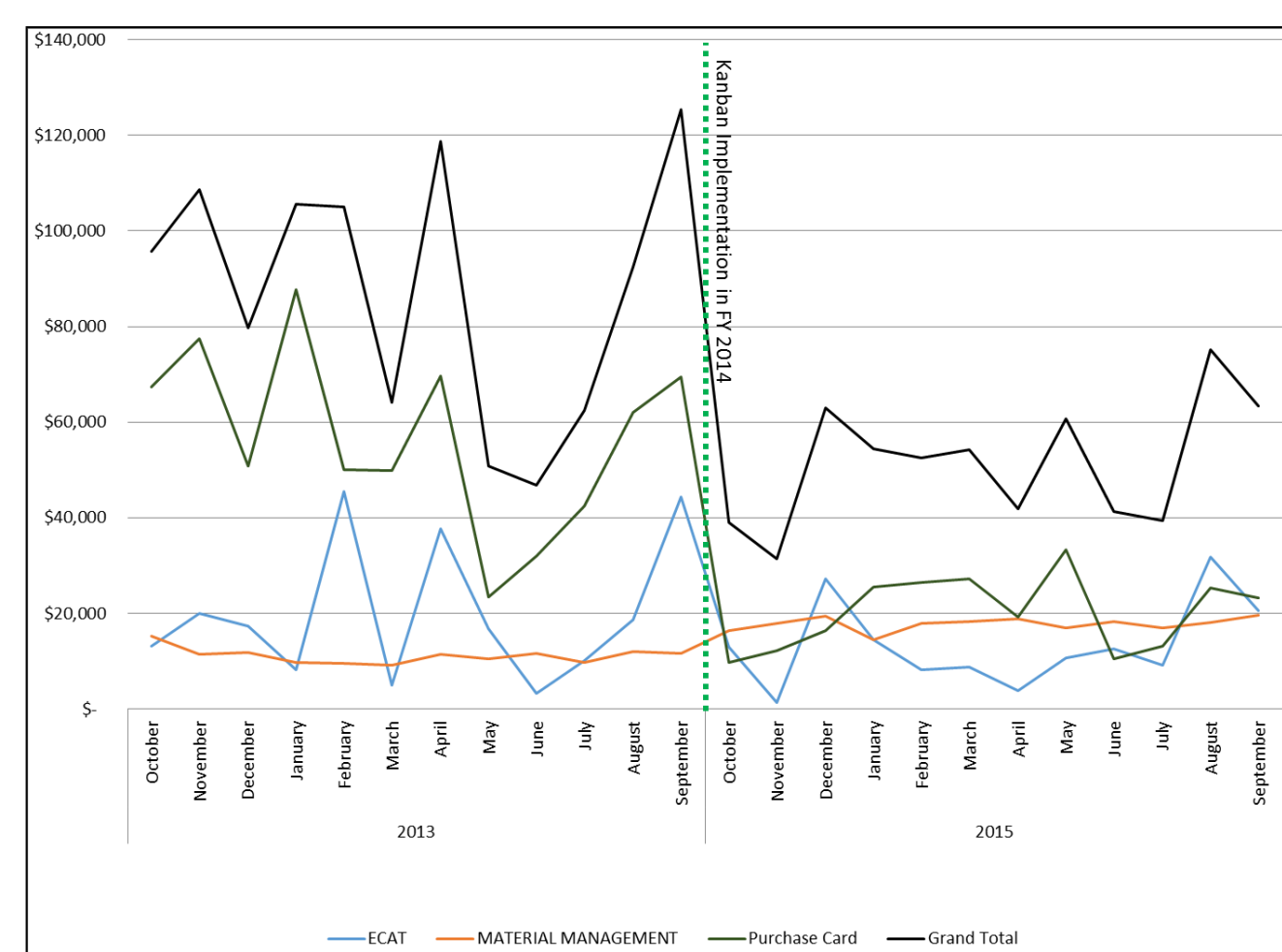
1. What impact did the two-bin Kanban inventory system have on supply procurement cost?
2. What impact did the two-bin Kanban inventory system have on supply efficiency?
3. What are the barriers to system wide sustainment?

Methods

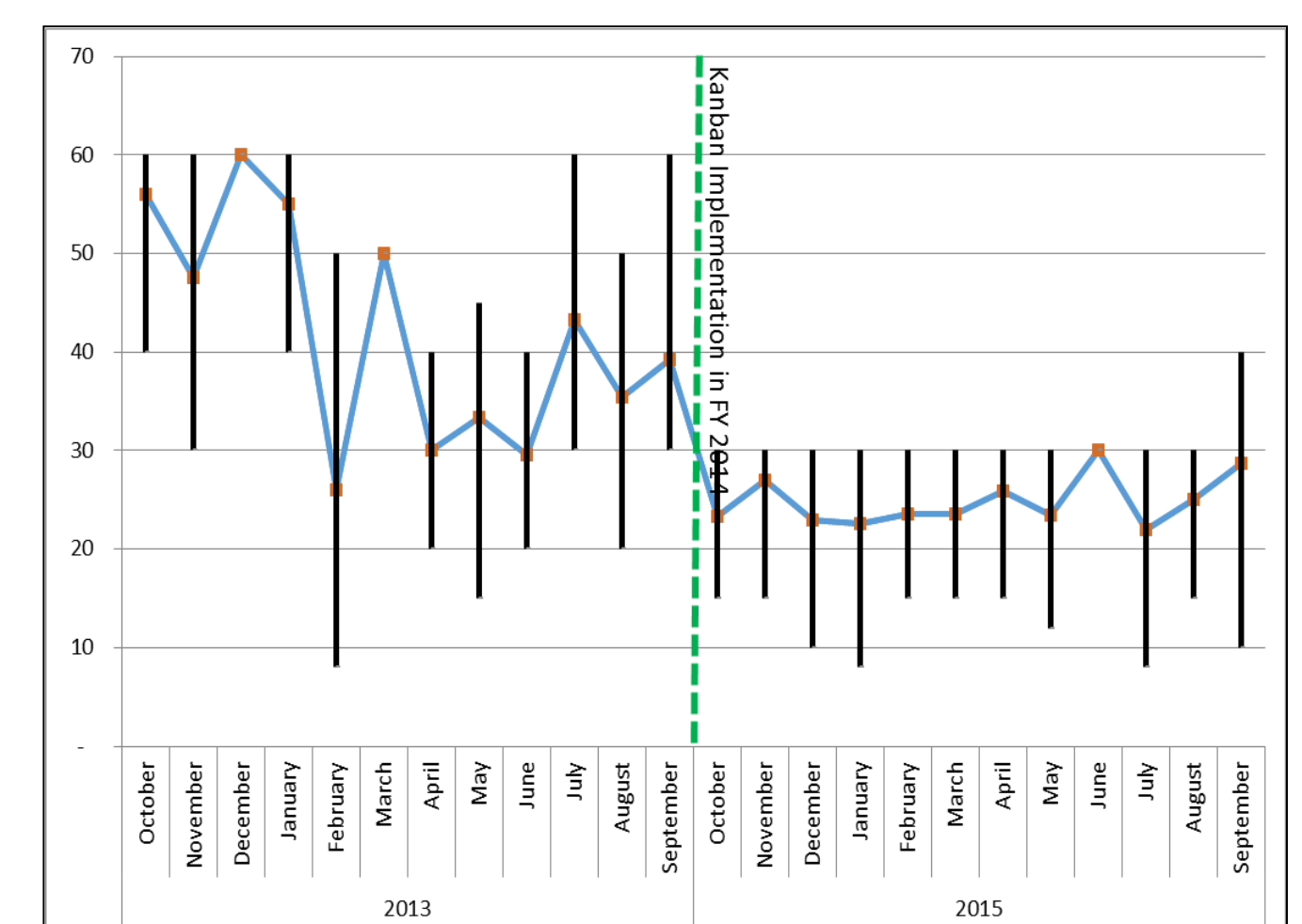
- Collected and analyzed supply procurement and physician workload data across two fiscal years for three medical departments at NMCS.
- Conducted a site inspection and conducted staff interviews.
- Generated descriptive statistics to compare supply procurement costs and supply efficiency for each of the three medical departments across two fiscal years.

Results

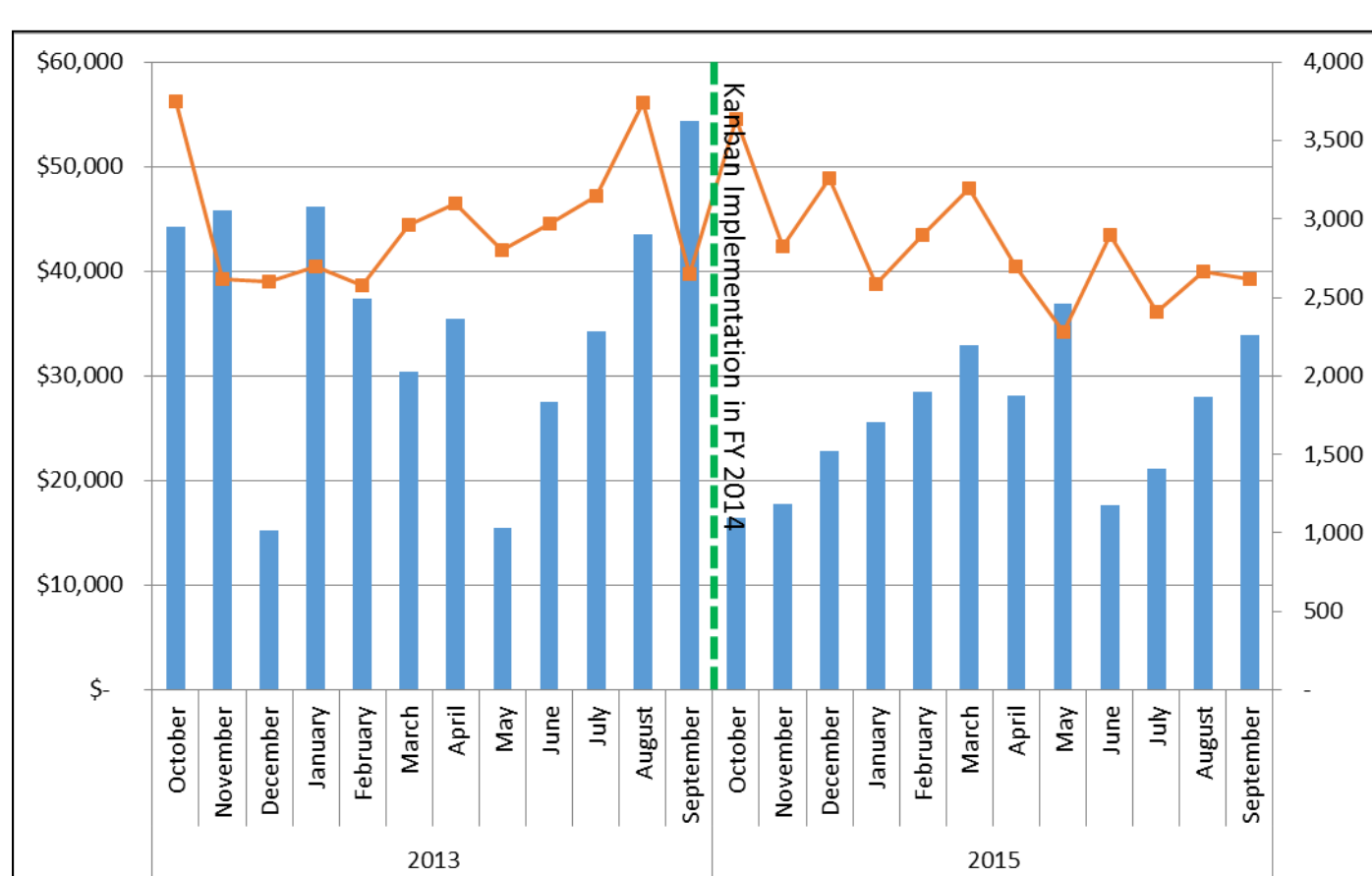
The Gastroenterology, Urology, and Oral Maxillofacial Surgery Departments all showed **statistically significant** evidence that both order cost and order efficiency **improved** after two-bin Kanban implementation.



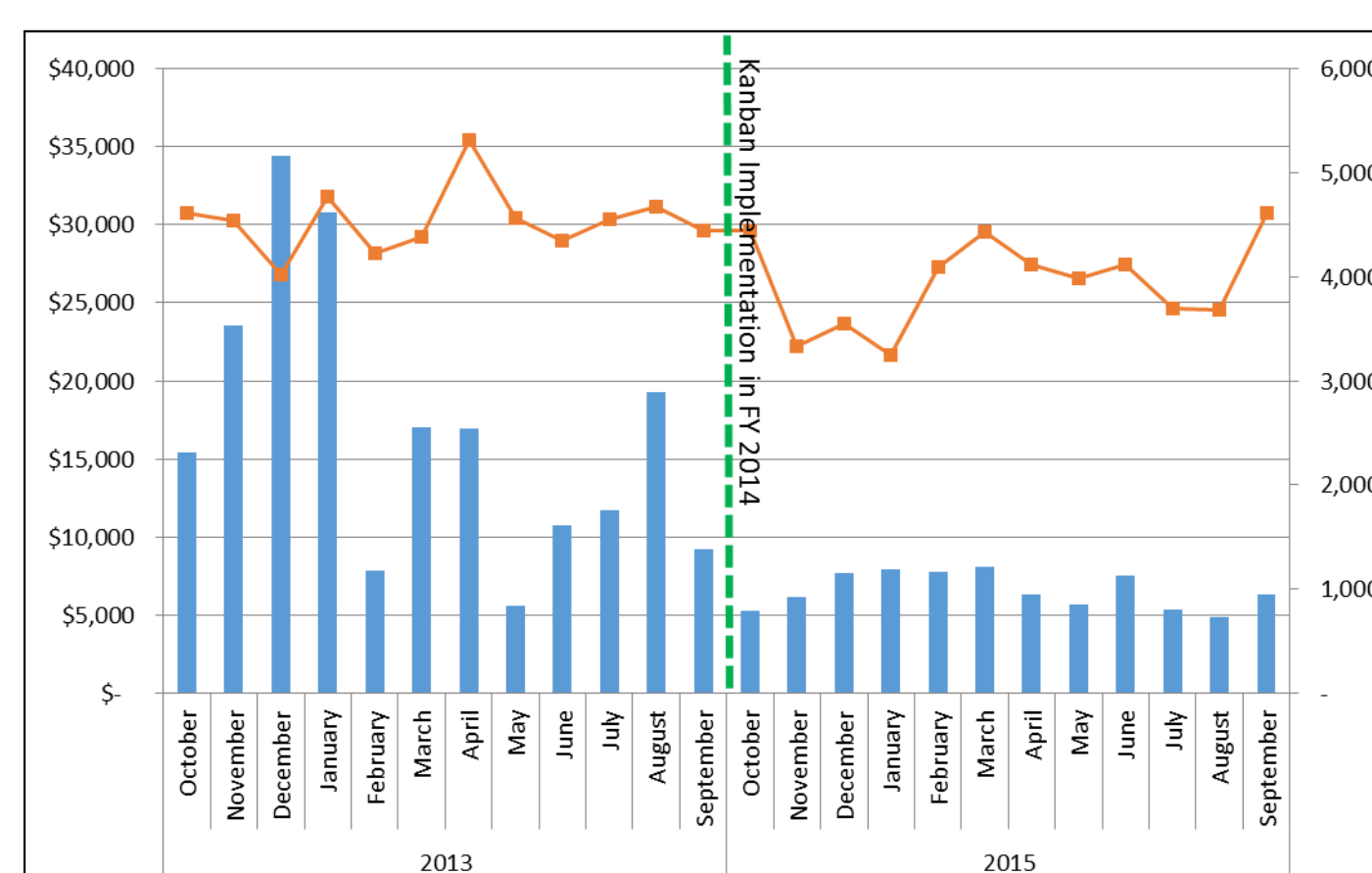
Procurement Cost Type Trend (combined departments)



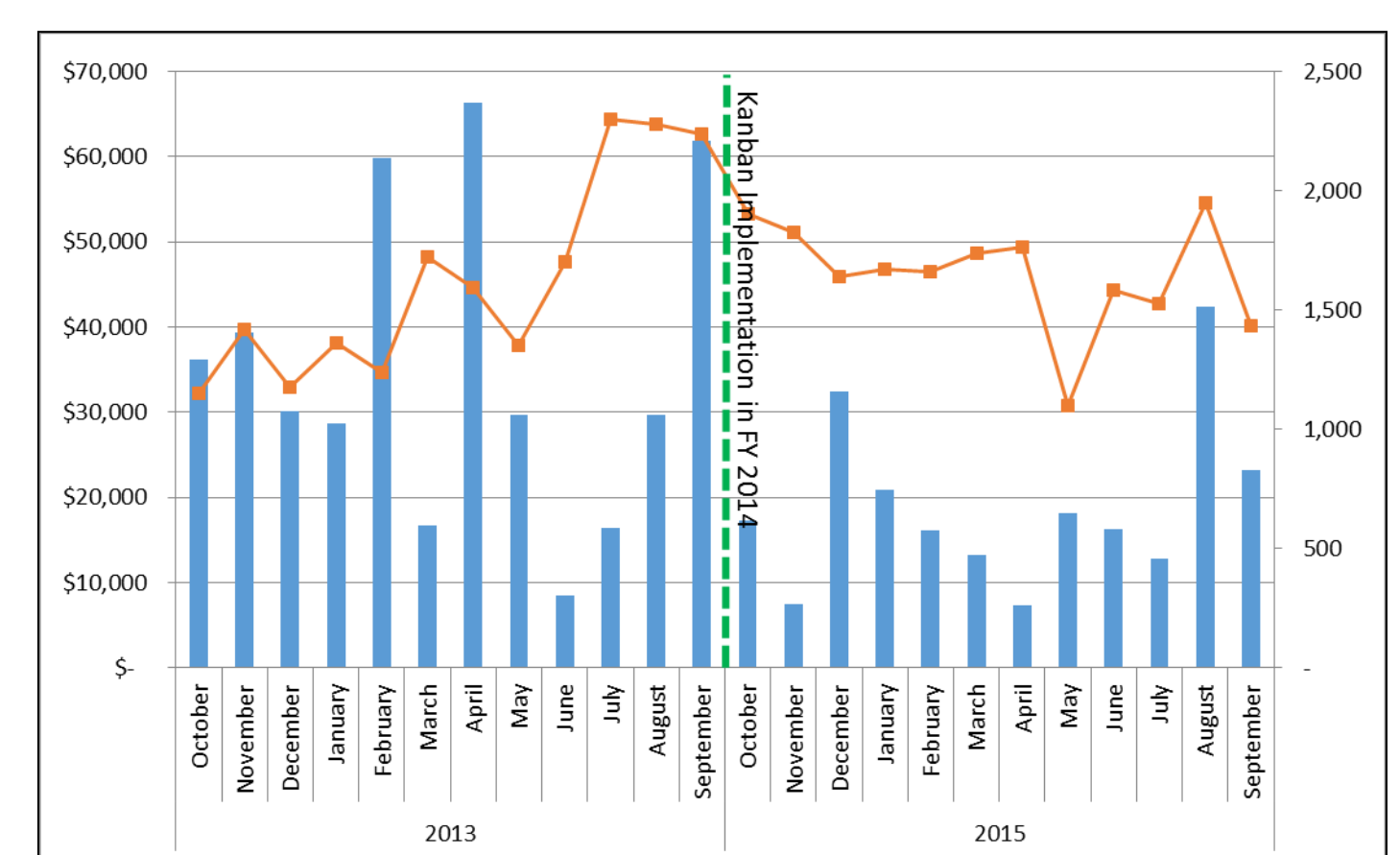
10 CC. SYRINGE Ordering Pattern for Urology (min, max, and average)



Gastroenterology Procurement Cost and RVU Trend



Urology Procurement Cost and RVU Trend



Oral Maxillofacial Surgery Procurement Cost and RVU Trend

GASTROENTEROLOGY		
	FY13 Cost Per RVU	FY15 Cost per RVU
Mean	12.19354232	9.407380527
Variance	20.66703853	10.30819625
Observations	12	12
Hypothesized Mean Difference	0	
df	20	
t Stat	1.734161944	
P(T<=t) one-tail	0.049138821	
t Critical one-tail	1.724718243	
P(T<=t) two-tail	0.098277641	
t Critical two-tail	2.085963447	

Gastroenterology Efficiency T Test

UROLOGY		
	FY13 Cost Per RVU	FY15 Cost per RVU
Mean	3.746049759	1.69488537
Variance	4.44696185	0.141093918
Observations	12	12
Hypothesized Mean Difference	0	
df	12	
t Stat	3.317238881	
P(T<=t) one-tail	0.003070751	
t Critical one-tail	1.782287556	
P(T<=t) two-tail	0.006141502	
t Critical two-tail	2.17881283	

Urology Efficiency T Test

ORAL MAXILLOFACIAL SURGERY		
	FY13 Cost Per RVU	FY15 Cost per RVU
Mean	23.35727473	11.66899331
Variance	178.8677579	33.21710547
Observations	12	12
Hypothesized Mean Difference	0	
df	15	
t Stat	2.78026662	
P(T<=t) one-tail	0.007003054	
t Critical one-tail	1.753050356	
P(T<=t) two-tail	0.014006108	
t Critical two-tail	2.131449546	

Oral Maxillofacial Surgery Efficiency T Test