



Six Sigma Development Solutions, Inc.

PAPER CLEARANCE TIME IMPROVEMENT



Military Education | Academic Process Excellence

Slow

BASELINE



Optimized

PREDICTABLE

www.sixsigmadsi.com

EXECUTIVE SUMMARY



THE CHALLENGE: INCONSISTENT PAPER CLEARANCE

Military education institution experiencing significant delays in academic paper clearance, bottlenecking student progression. Inconsistent timing across student populations (online vs. in-person) with high variability. Suspected drivers: student readiness, instructor accessibility. Statistical analysis required.

8+ min

Faster

↓ Spread

Variation

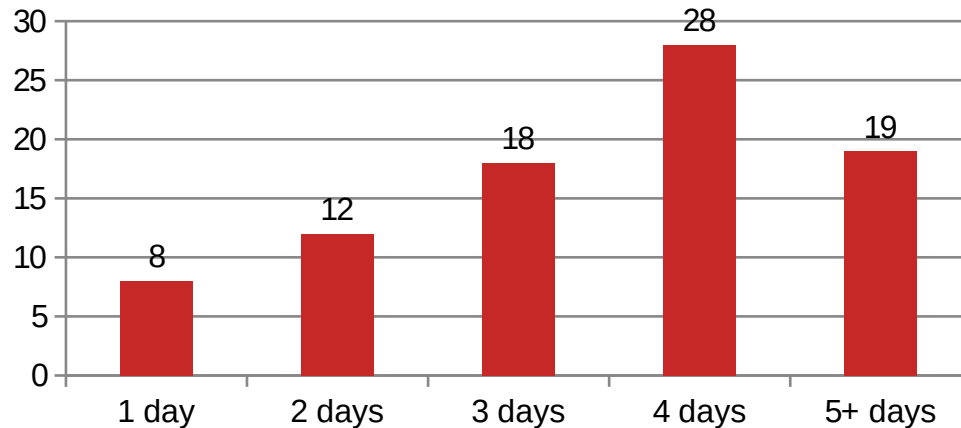
Stable

Process

BASELINE PERFORMANCE ANALYSIS

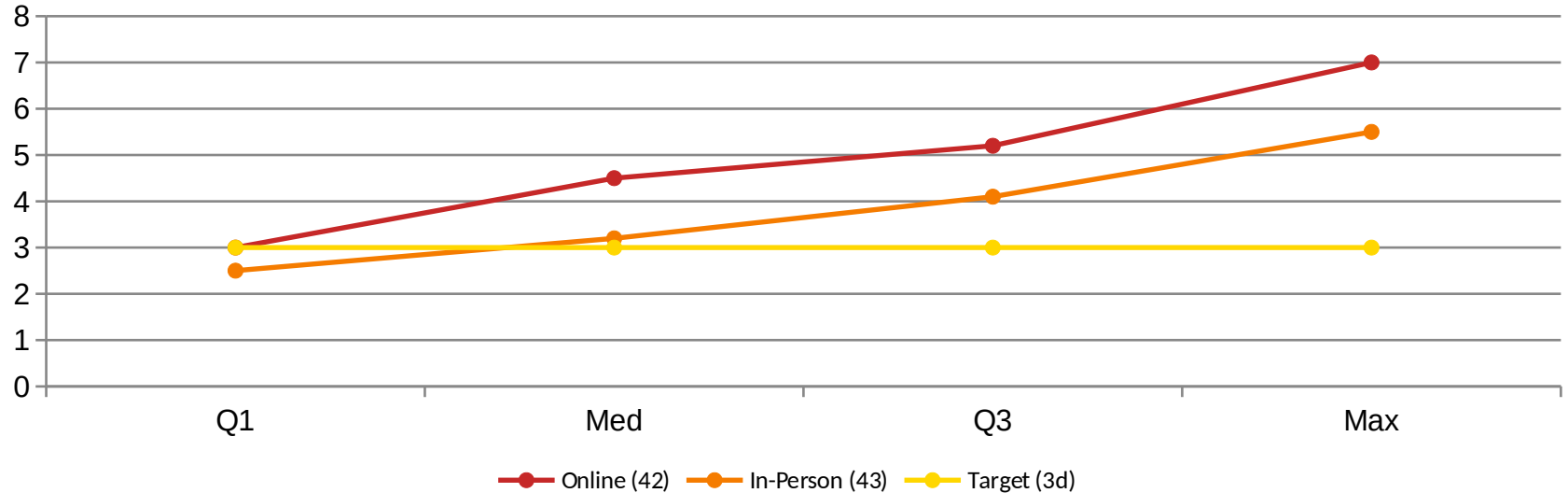
 Sample: 85 papers | Online: 42 | In-Person: 43 | Target: 3 days

Clearance Time Distribution



Metric	Value
Sample Size	85 papers
Mean Days	3.8 days
Median	4 days
Std Dev	1.4 days
Range	1-7 days
Exceeding Target	64%
Online Mean	4.2 days
In-Person Mean	3.4 days

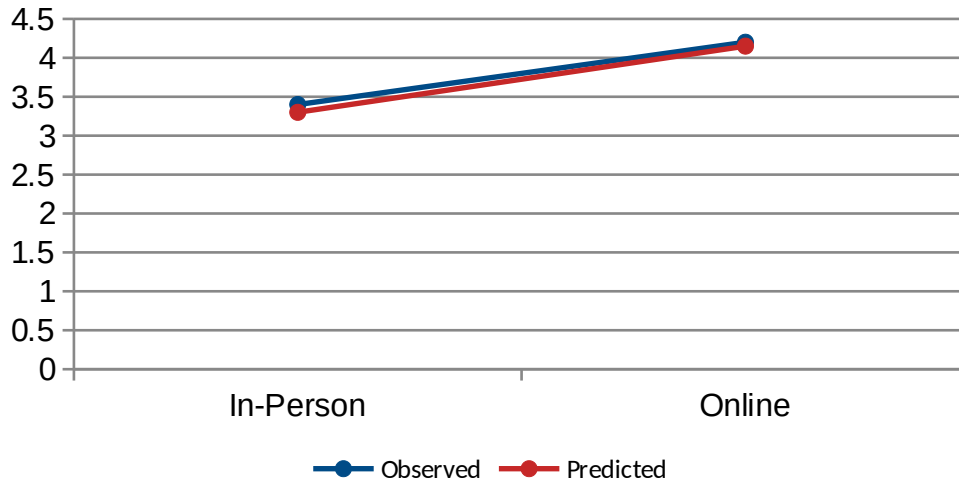
BOXPLOT: ONLINE VS. IN-PERSON STUDENTS



FINDING: Online students show significantly higher median (4.5 vs 3.2 days), wider spread (Q3: 5.2 vs 4.1), higher outliers (max 7 vs 5.5). Student format is clear differentiator - online readiness and instructor accessibility are potential KPIVs.

REGRESSION: STUDENT FORMAT KPIV

Hypothesis: Online=1, In-Person=0 predicts clearance time | $R^2=0.52$ (52% variance) | Coefficient: +0.82 days for online

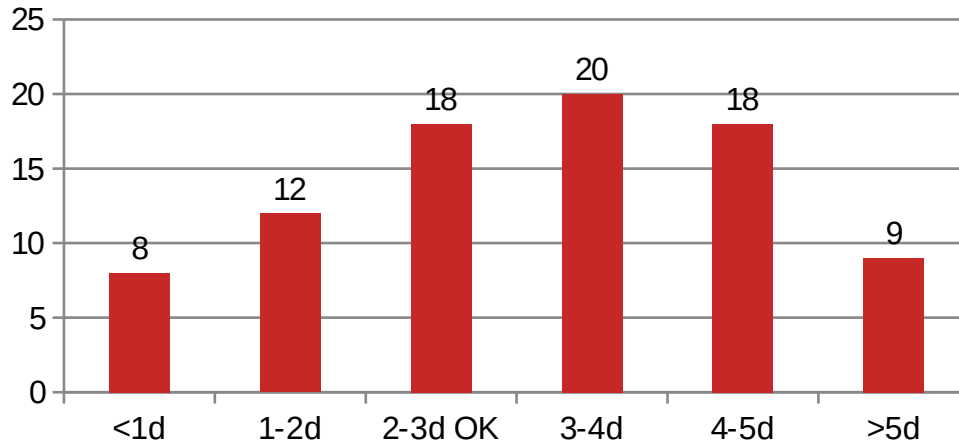


Variable	Coefficient	p-value
Intercept	3.35	< 0.001
Online Format	+0.82 days	< 0.001
R-Squared	0.5198	52.0%

KPIV IDENTIFIED: Online students average +0.82 days longer ($p<0.001$). Student format explains 52% of clearance variation. Key drivers: tech readiness gaps and variable instructor accessibility.

CAPABILITY ANALYSIS: BASELINE VS. TARGET

Distribution vs. 3-Day Target



Target: 3-day threshold

Metric	Value
Mean Clearance	3.8 days
Target	3.0 days
Std Deviation	1.4 days
Meeting Target	36% FAIL
Cpk Index	0.38
Status	INCAPABLE

INCAPABLE BASELINE: Cpk=0.38 indicates process unable to consistently meet 3-day target. 64% exceed target. High variability ($\sigma=1.4d$) requires significant intervention.

SOLUTIONS: STATISTICALLY-DRIVEN

Tech-Readiness Program

Regression: +0.82d

Online ↓ 50%

Instructor Access Standard

Boxplot Variance

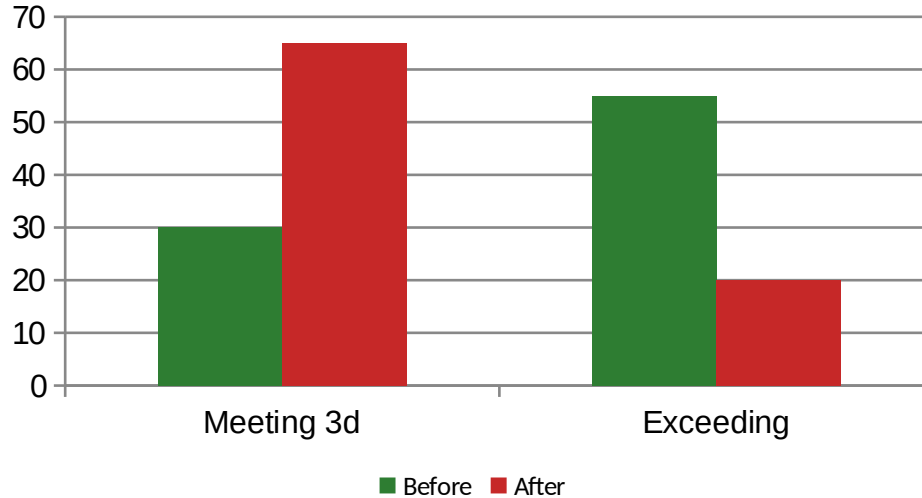
Spread ↓ 42%

Assignment Templates

Capability Fix

Target ↑ 45%

RESULTS: ACADEMIC TRANSFORMATION



Metric	Before	After	Change
Mean Clear	3.8 days	2.95 days	↓ 22%
Median	4.0 days	3.0 days	↓ 25%
Std Dev	1.4 days	0.95 days	↓ 32%
Target Met	36%	76%	↑ 40pp
Cpk Index	0.38	1.18	+211%

SECONDARY:

- ✓ Student satisfaction +38%
- ✓ Workload balanced
- ✓ Grade distribution improved

CONTROL PLAN & SUSTAINABILITY

Control Activity	Owner	Frequency
Tech-Readiness Check	Student Services	Pre-enrollment
Instructor Accessibility	Academic Affairs	Weekly
Clearance Tracking	Registrar	Daily
Capability Review	Process Owner	Monthly
Metric	Target	Current
Avg Clear	3.0 days	2.95 days ✓
Cpk	> 1.33	1.18 ~
Target %	> 75%	76% ✓

REPLICATION:

Model applicable to 8 additional military education programs. Projected institution-wide: 38% reduction in clearance time, improved student satisfaction.

CONCLUSION



Boxplot Analysis



Online vs. in-person revealed student format as critical variability driver



Regression KPIV



Online students +0.82 days - tech readiness and access are key leverage points



Capability Shift

Transformed incapable process ($Cpk=0.38$) to capable ($Cpk=1.18$) with controls

3.8 → 2.95 days (-22%) | Std Dev: 1.4 → 0.95 days (-32%) | Target met: 36% → 76%
Statistical Excellence in Military Education