



Lean 6-Sigma Program



*Department of
Transportation*

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(Project Greenbelt)

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**(Project Champion and
Executive Sponsor)**



Caltrans Traffic Collision Reporting Process

➤ Problem Statement:

- The Traffic Accident Surveillance and Analysis System (TASAS) branch receives an average of 170,000 highway traffic collision reports (TCRs) per year.
- TCRs need to be processed quickly to make sure Caltrans meets the needs of its legal and highway safety improvement programs.

➤ Objective:

- Increase the report processing productivity which is defined as reports processed per full time equivalent (FTE) per day from the current level of 50 reports/FTE/day to 100 reports/FTE/day.

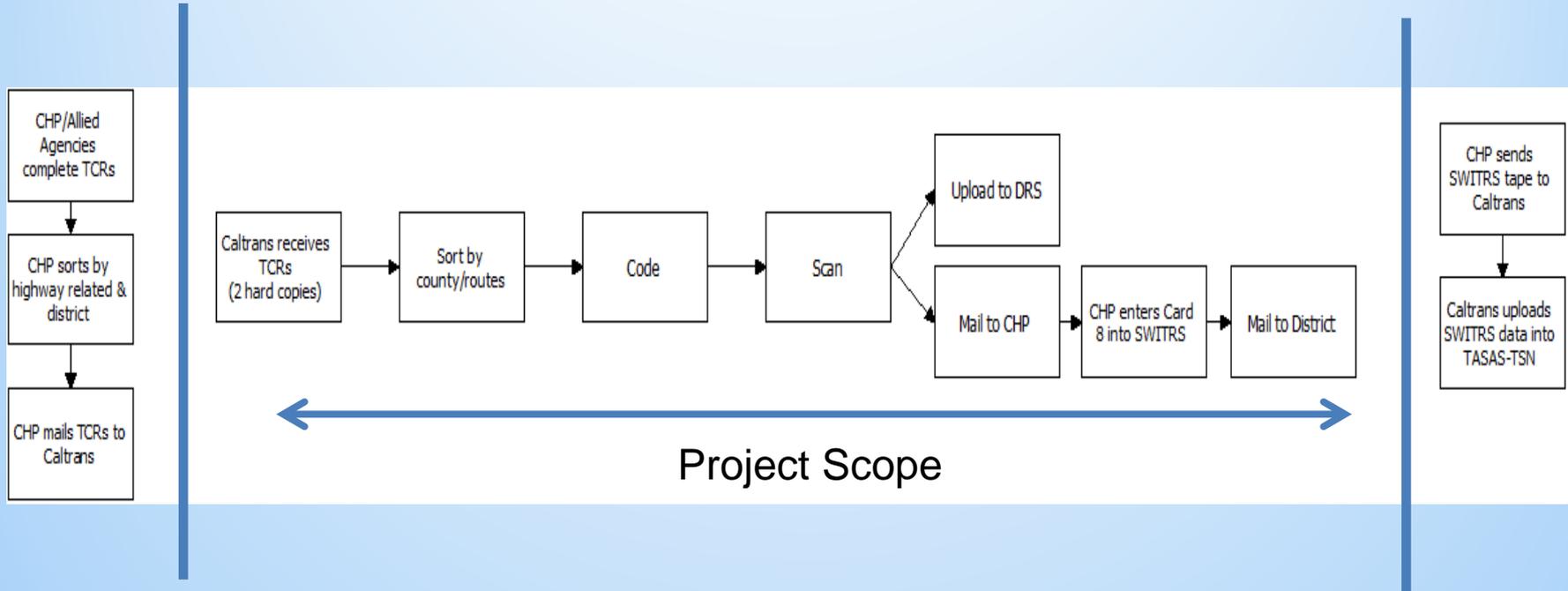


Caltrans Traffic Collision Reporting Process

➤ Project Team:

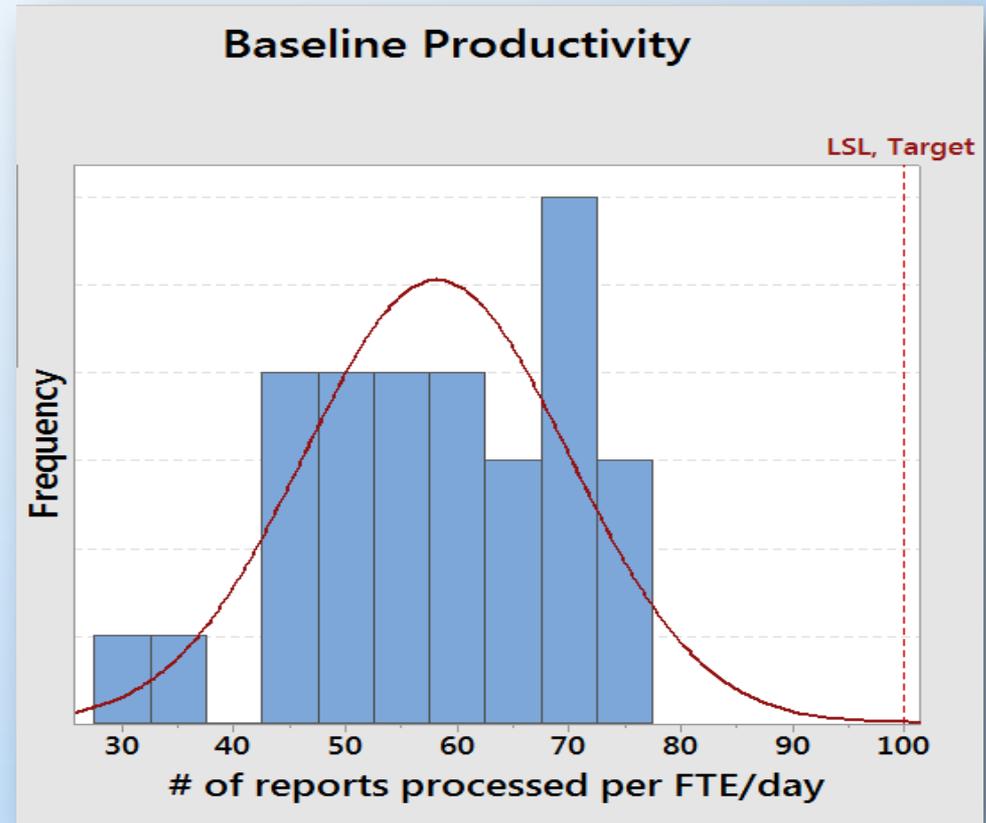
- *Mandy Chu*, Caltrans Office of Highway System Information & Performance
- *Eric Wong*, Caltrans TASAS Branch
- *Ivy NguyenPhan*, Caltrans TASAS Branch
- *Paul Sledge*, Caltrans Collision Coding & Data Analysis Unit
- *Kapsoon Capulong*, Caltrans District 4 TASAS Coordinator
- *Lauren Machado*, Caltrans Legal
- *Thomas Schriber*, Caltrans Traffic Operations
- *Jennifer Mercado*, California Highway Patrol Support Services Quality Assurance

Process Summary



Baseline Capability

- Baseline average: 58.13 reports per FTE/day
- 95% confident average reports processed will be between 53.71 and 62.55 per FTE/day
- Observed performance: 0% within goal of 100 reports per FTE/day
- Expected performance: 0.02% within goal of 100 reports per FTE/day



Analysis Tools

- Process Map
- Fishbone Diagram
- Capability Analysis
- Measurement System Analysis
- Failure Modes and Effects Analysis
- Lean Measures of Time
- Worker Activity Chart
- Productivity Analysis
- Spaghetti Diagrams
- Hypothesis Testing
 - Mood's Median
 - Paired T
- Graphical Tools
 - Load Chart
 - Pareto Chart

Key Finding 1 – Coding Bottleneck

➤ Takt Time

(rate we receive TCRs to process)

- available work time / number of TCRs received
- 1867 hrs per year / 170,000 TCRs per year = 39.5 seconds per TCR

➤ Coding Cycle Time

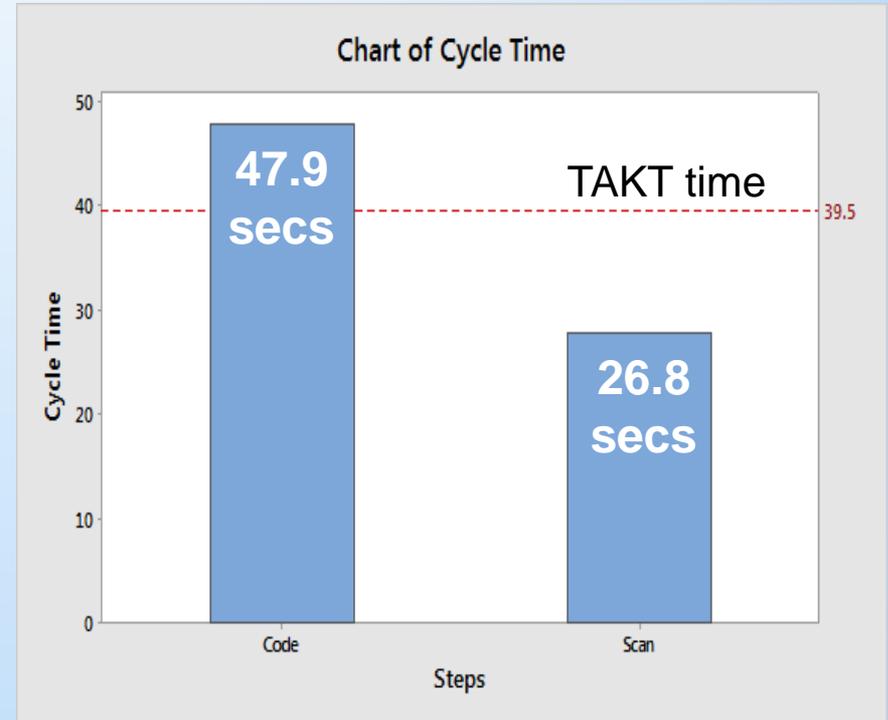
(rate we code as a unit)

- 7.5 hrs per day / 564 average reports coded per day = 47.89 seconds per TCR

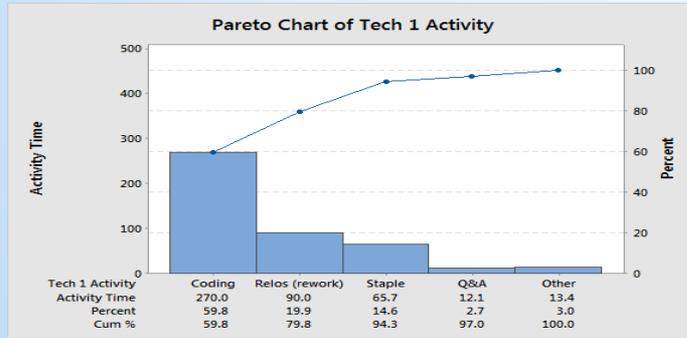
➤ Scanning Cycle Time

(rate we scan as a unit)

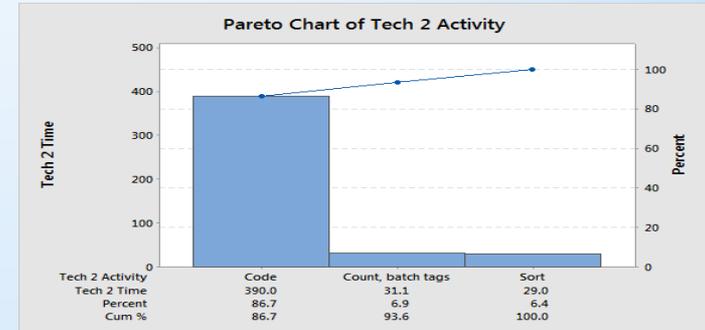
- 80 mins per day/ 179 average reports scanned = 26.8 seconds per TCR



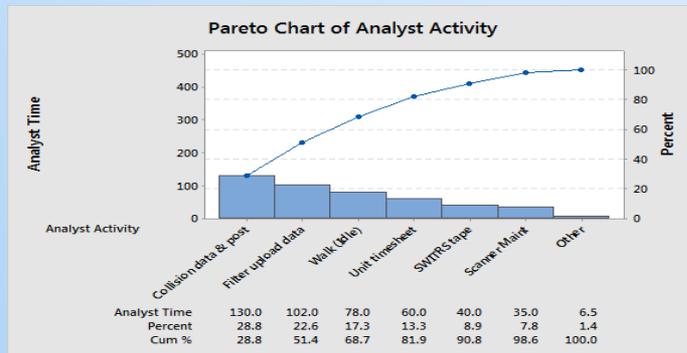
Key Finding 2 – Worker Activity Analysis



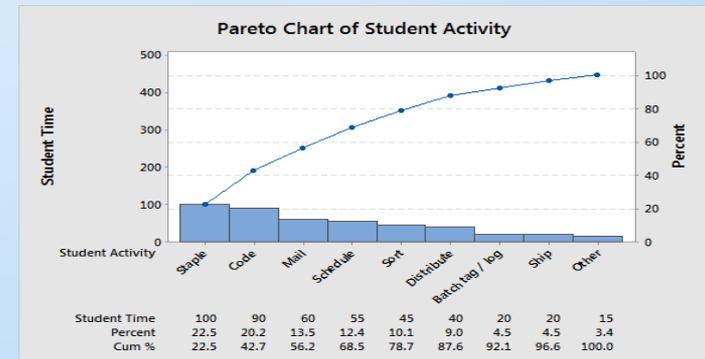
Technician 1: 60% VA and 40% NVA



Technician 2: 87% VA and 13% NVA



Analyst: 31% VA and 69% NVA



Student: 17% VA and 83% NVA

Critical X's (root causes of problems)

- **Constraining productivity goal**
- **Non-value added steps**
 - Counting
 - Sorting
 - Logging
 - Stapling
 - Shipping
- **Worker productivity**
 - Lack of standard operating procedures
 - Time management



Improvement Techniques

➤ Phase 1: Eliminate or simplify NVA steps

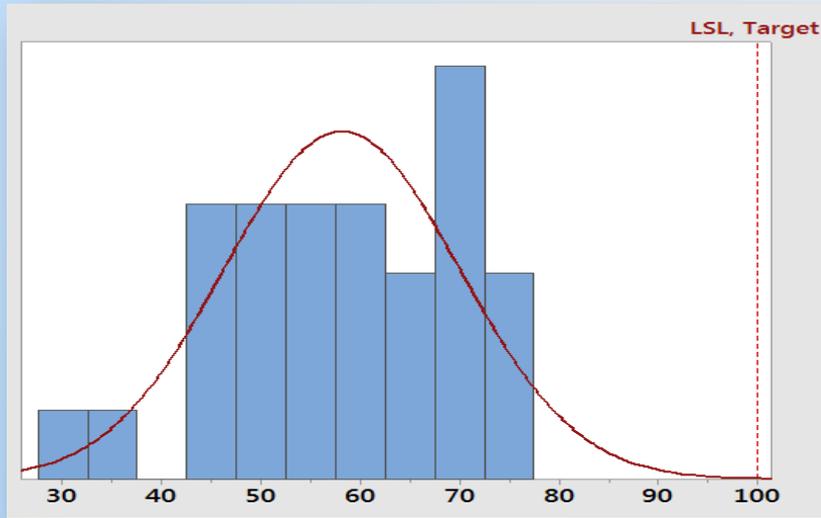
- Stop counting incoming reports
- Consolidate three batch tags into one
- Consolidate two manual logs into one electronic log
- Streamline shipping
- Move stapling away from coding function
- Mass sort before coding

➤ Phase 2: Enhance VA steps

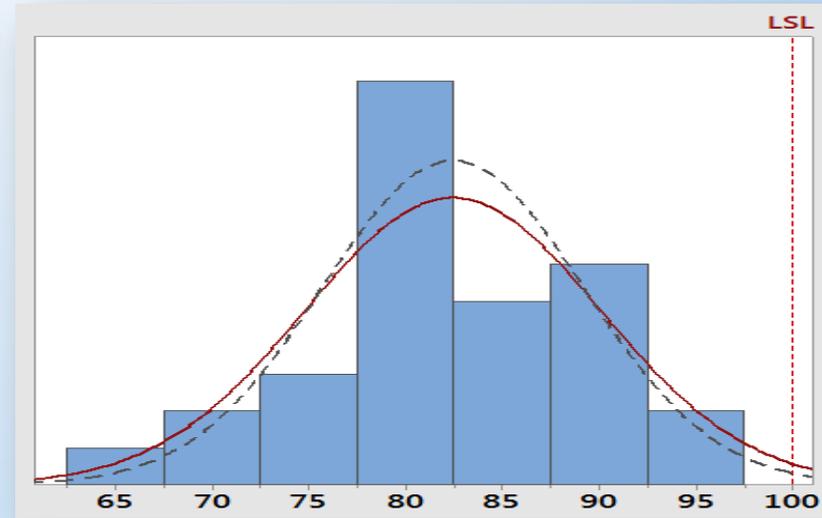
- Create standard operating procedures
- Examine optimal character recognition software to automate data entry and uploading
- Leverage electronic reports



New Capability Analysis



- Baseline average: 58.13 reports per FTE/day
- 95% confident average reports processed will be between 53.71 and 62.55 per FTE/day



- Predicted average: 82.45 reports per FTE/day (42% increase in productivity)
- 95% confident average reports processed will be between 79.59 and 85.31 per FTE/day
- **Predicted new capability will increase to 100 reports per FTE/day**

Control Plan

- **Exercise visual management**
 - Post weekly productivity charts
 - Post standard procedures checklists
- **Conduct pilot studies**

Mass sorting, desk set-up, and tools used
- **Refine standard operating procedures**
- **Update coding manual**
- **Train staff**
- **Create continuous improvement plan to prepare for future automation**
 - IT solutions for scanning, uploading, and possibly coding
 - Electronic TCRs
- **Conduct quarterly process reviews to ensure continuous improvement**



Additional Benefits

- Valuable documentation and data to make sound decisions
- Positive change initiation and follow-through
- Improved morale and increased participation among staff
- Better understanding of needs from customers, partners & staff
- Lessons learned for future Lean 6-Sigma projects



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