SOUTH CAROLINA DOT EQUIPMENT INSIGHT SYSTEM

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SCDOT
South Carolina Department of Transportation

1801
UNIVERSITY OF
SOUTH CAROLINA

OUTLINE

- Part I : Insight Into SCDOT Data
- Part II: Future Work

Part I

INSIGHT INTO SCDOT DATA

WHAT WE HAVE?

WHAT WE WANT?

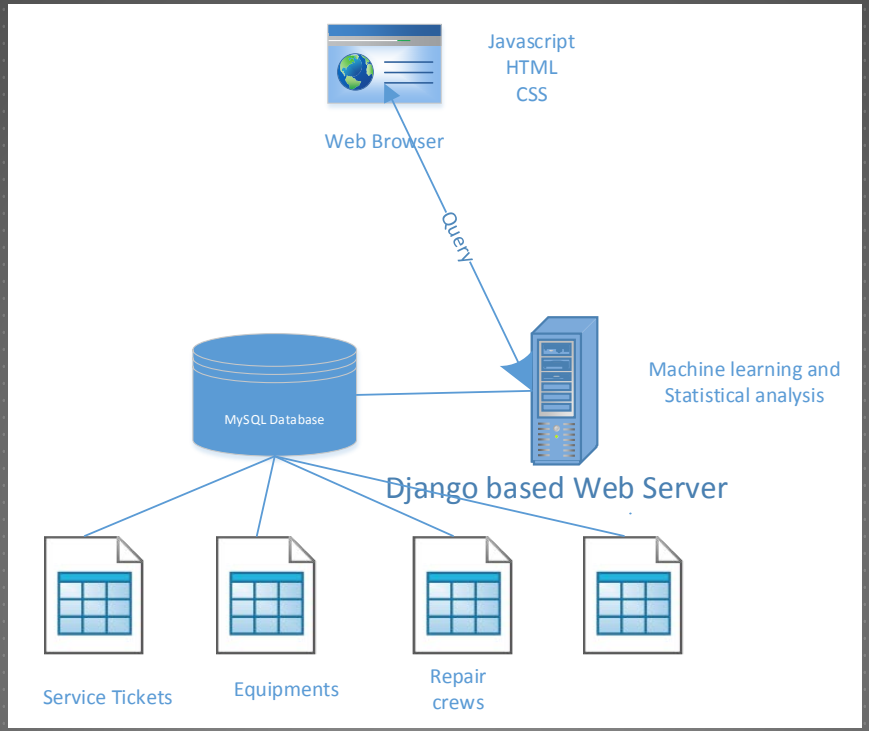
'…I don't know'

DATA THE UNSEEN GOLD MINE

WHAT WE DID

SCDOT Equipment Insight System (EIS)

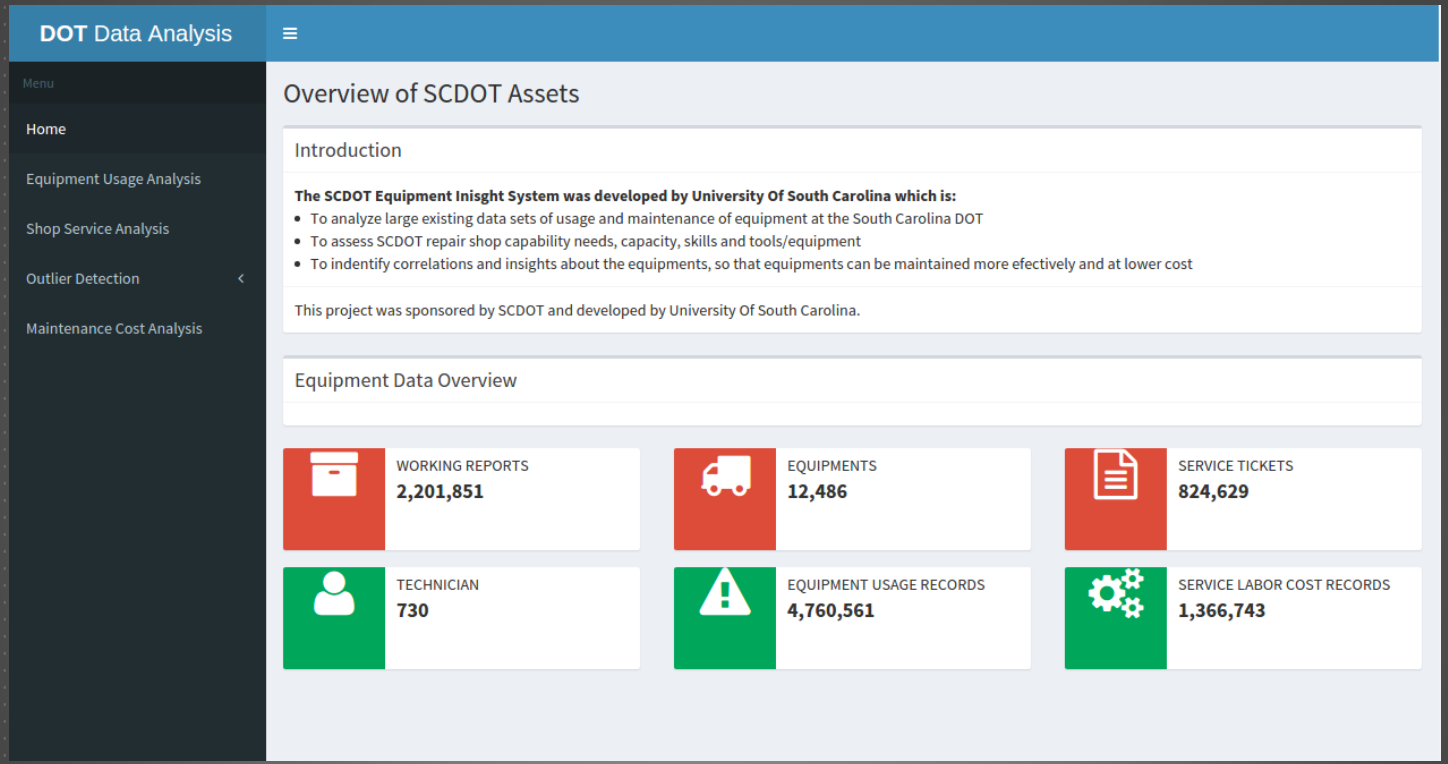
EQUIPMENT INSIGHT SYSTEM (EIS)



FEATURES

- Big data business insights
- Visualization data to trend/insights/knowledge
- Data mining uncover expected or unexpected patterns
- Predictive analytics generate actionable decisions to optimize business process (reduce cost or improve productivity)
  - E.g. how to balance the work loading levels across repair shops
  - How to assign repair tasks to most proficient shops

SYSTEM DISPLAY



EQUIPMENT DETAIL ANALYSIS

DOT Data Analysis

Menu

- Home
- Equipment Usage Analysis
- Shop Service Analysis
- Outlier Detection
- Maintenance Cost Analysis

Equipment Analysis

Key ID and equipment list

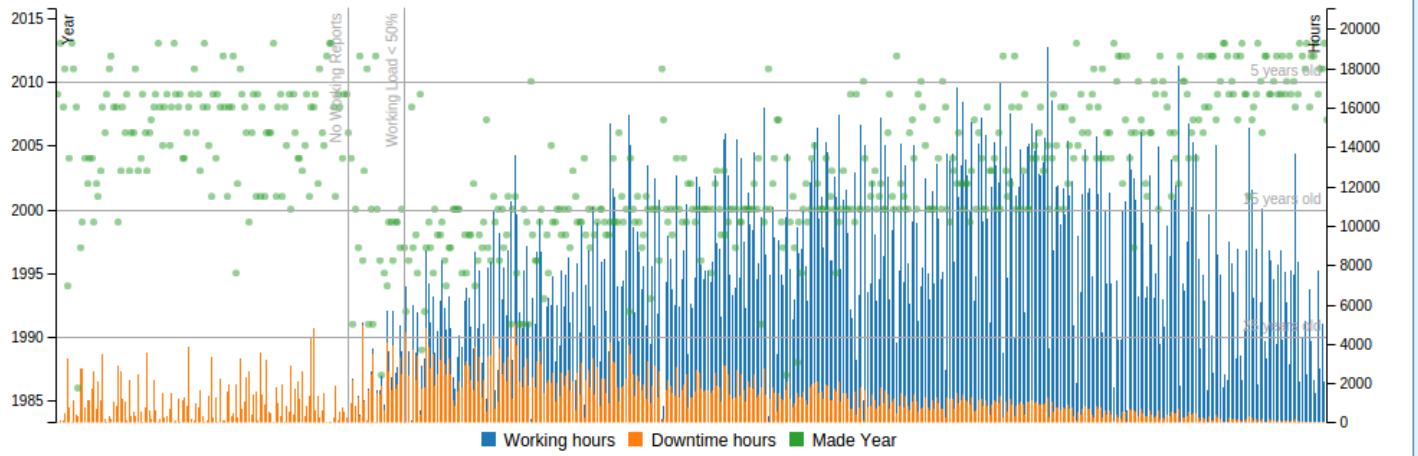
Key ID list

9

Equipment list in this type

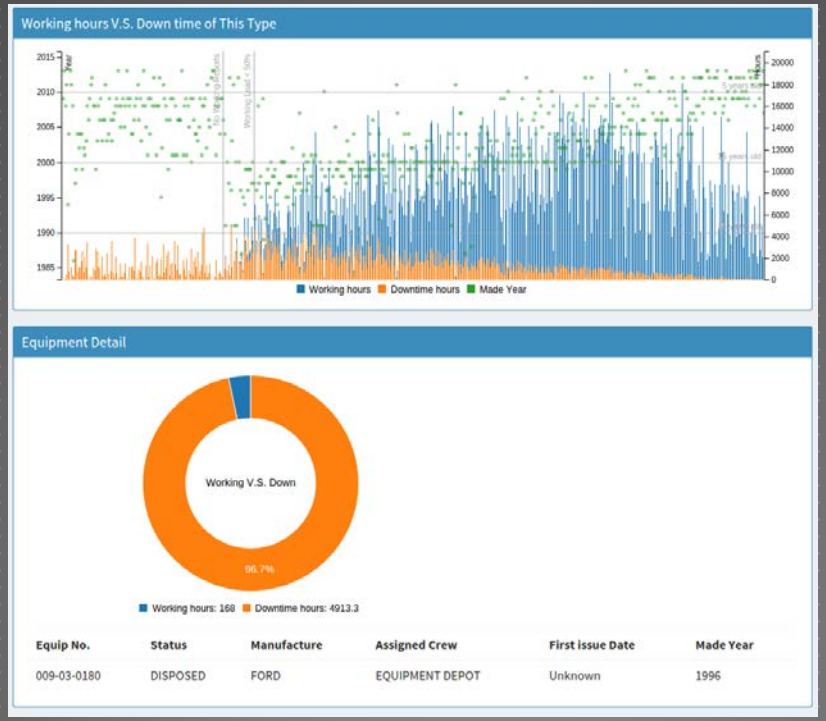
Please select an equipment

Working hours V.S. Down time of This Type

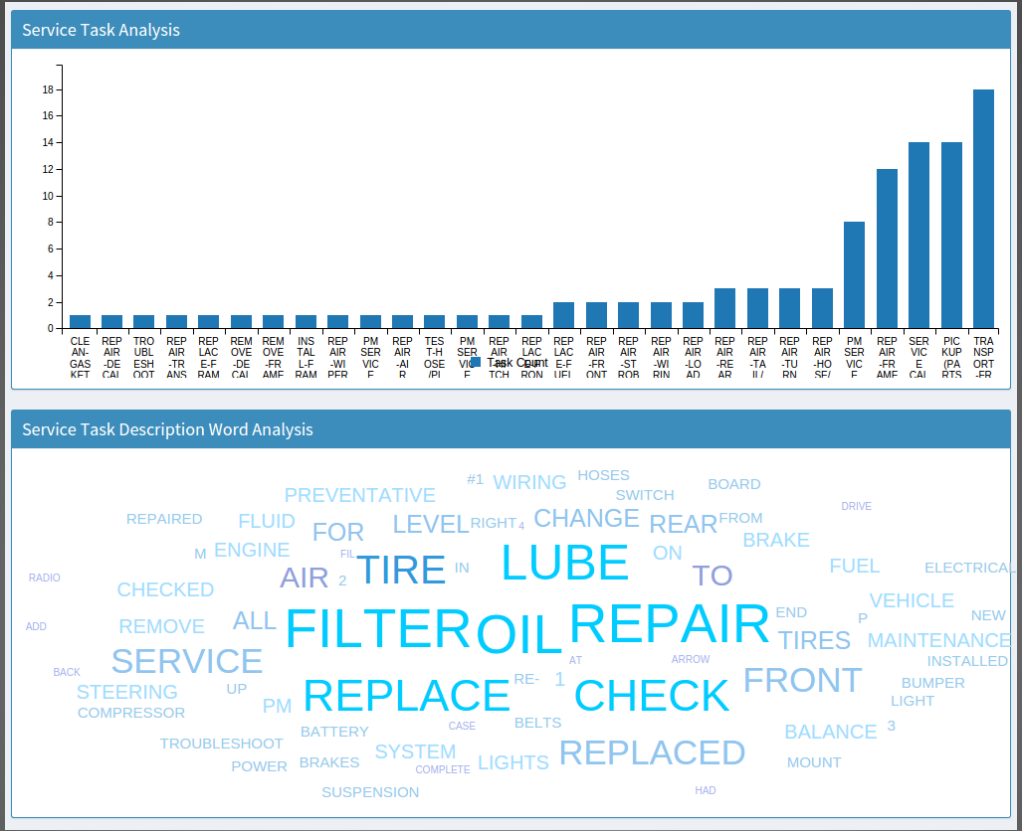


SCDOT INSIGHT

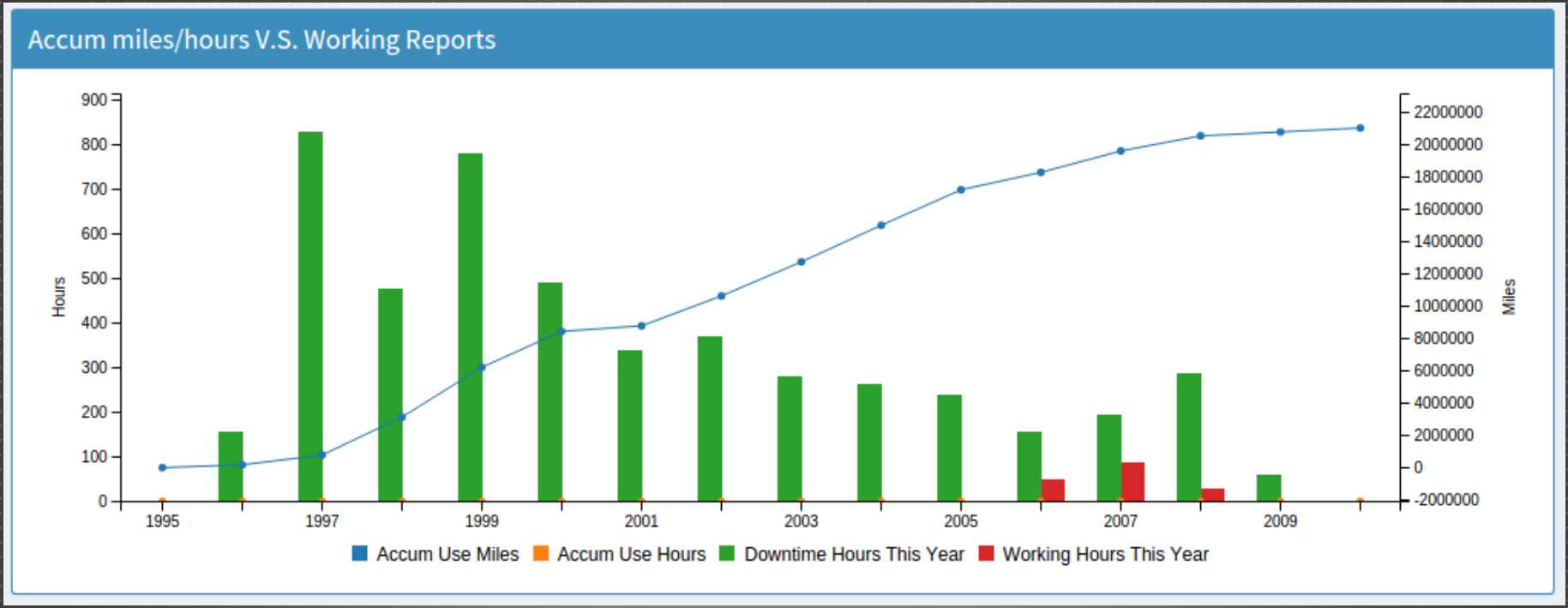
EQUIPMENT DETAIL



SERVICE TASKS

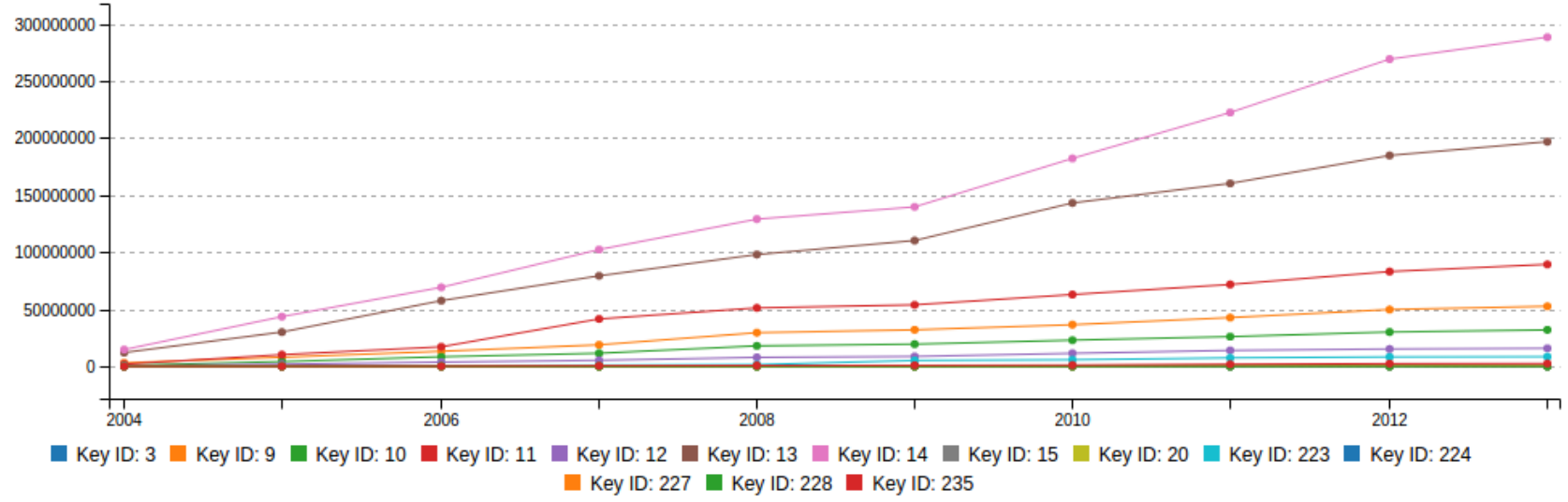


USAGE VS MAINTENANCE



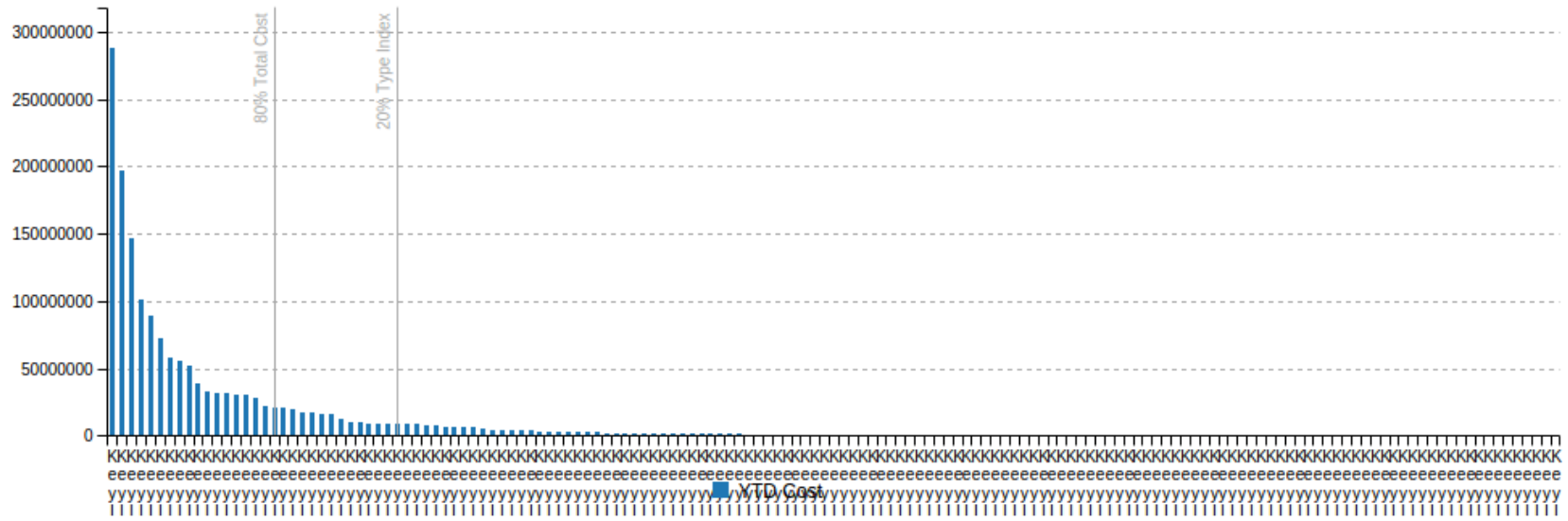
MAINTENANCE ANALYSIS

Accumulated Maintenance Cost of Different Equipment Type



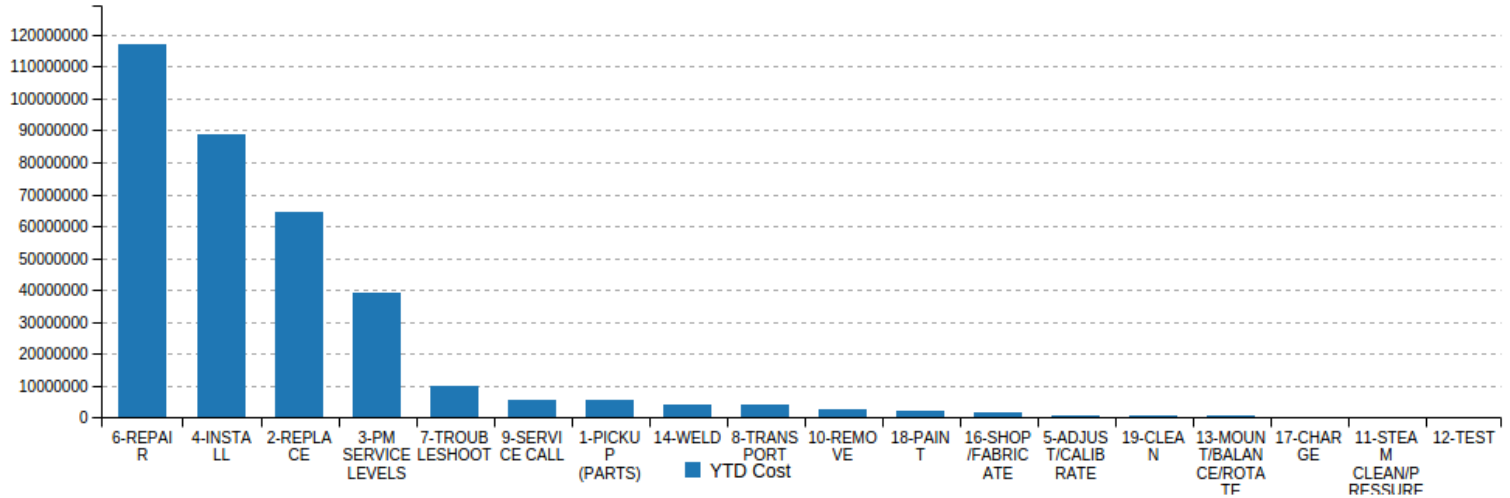
SCDOT INSIGHT

YTD Cost of Different Equipment Type



SCDOT INSIGHT

YTD Cost of Different Activity



SCDOT INSIGHT

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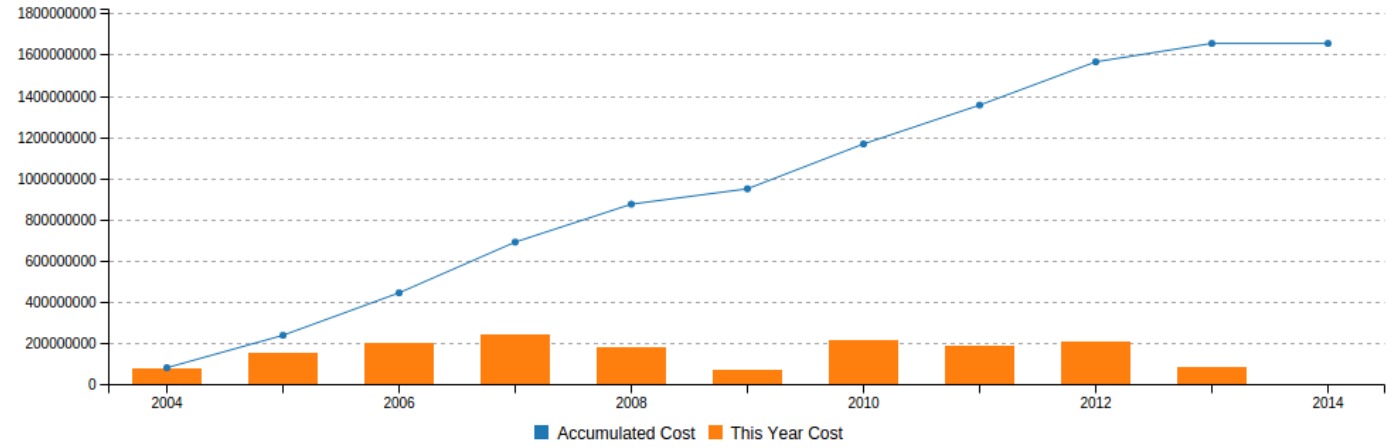
Maintenance Cost Analysis

Chose Job To Analyze

Analyze All History Data

Accumulated Maintenance Cost of All Equipments



SCDOT INSIGHT

OUTLIER DETECTION

DOT Data Analysis

Menu

- Home
- Equipment Usage Analysis
- Shop Service Analysis
- Outlier Detection
  - Outlier Equipment
  - Outlier Crew
  - Outlier Shop
- Maintenance Cost Analysis

Outlier Crew

Select A Crew to Analyze

Crew List

Technician ID: 1

Start Date

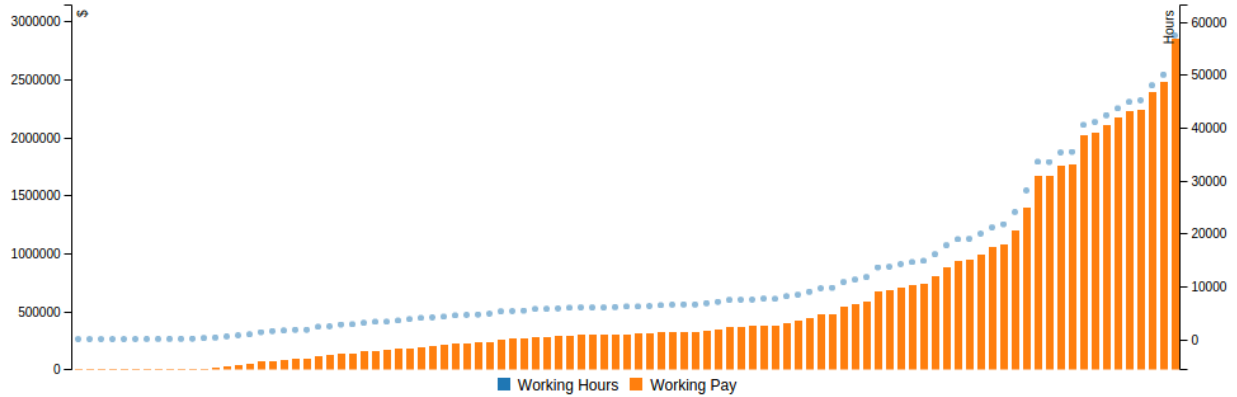
1 January, 2008

End Date

31 December, 2014

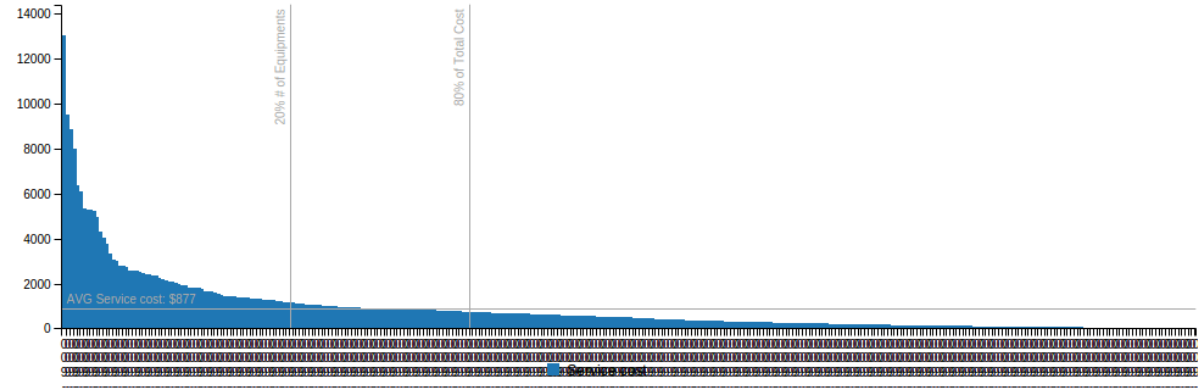
Submit Analysis Job

Overall Analysis



SCDOT INSIGHT

Service Cost of All Equipments and NONE-ZERO Average Cost



Detail Information of NONE-ZERO-COST Equipments

Show 10 entries

Search:

Equip No.	Cost	# Service Tickets	# Working Hours
009-03-0465	13031.21	4	697
009-03-0304	9507.07	20	1121
009-02-0304	8850.98	10	879
009-03-0520	7971.07	17	0
009-02-0313	6357.2	8	469
009-03-0387	6103.23	8	606
009-02-0309	5301.37	5	773

SCDOT INSIGHT

DOT Data Analysis

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  - Outlier Shop
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Outlier Shop

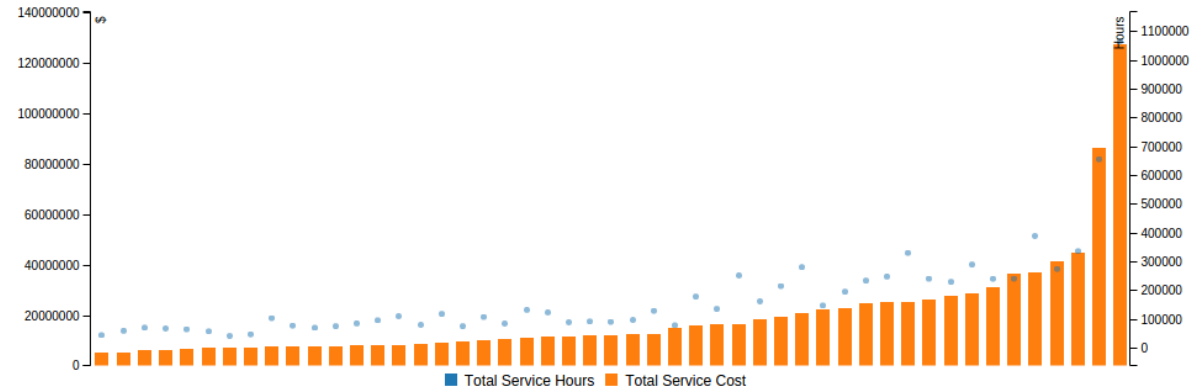
Select Date Range to Analyze

Start Date: 1 January, 2008

End Date: 31 December, 2014

Submit Analysis Job

Overall Analysis



SCDOT INSIGHT

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Shop Service Analysis

Task Selection

Activity Code List

A-REPAIR

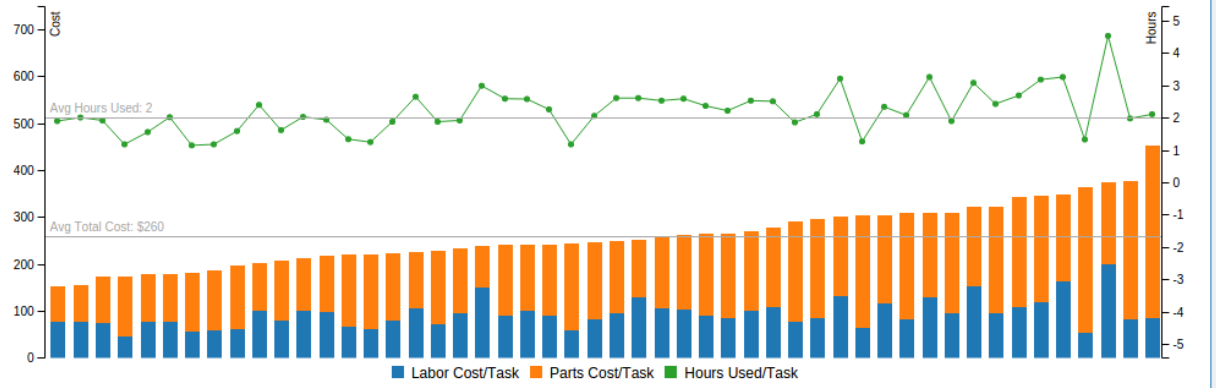
Working Component Code List

02-FRAME

Available Key ID List

9

Analysis result among all shops



SCDOT INSIGHT

FUTURE WORK

FUTURE WORK

- Maintenance task scheduling optimization
- Repair shop efficiency prediction
- Prediction of equipment to retire

OUR NEXT MOVE: CLOUD-BASED EQUIPMENT MANAGEMENT SOFTWARE AS A SERVICE

- Transport Equipment Management
- Work to your own schedule
- Maintain a clear eye on all DOT assets
- Cloud computing
- Keep in control, anywhere
- Success example:
  - http://www.medixir.com/ for medical equipment management