

# Analysis of Network Outage Reports for NRSC Meeting

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*Cybersecurity and  
Communications Reliability  
Division – Public Safety &  
Homeland Security Bureau*

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April 2012



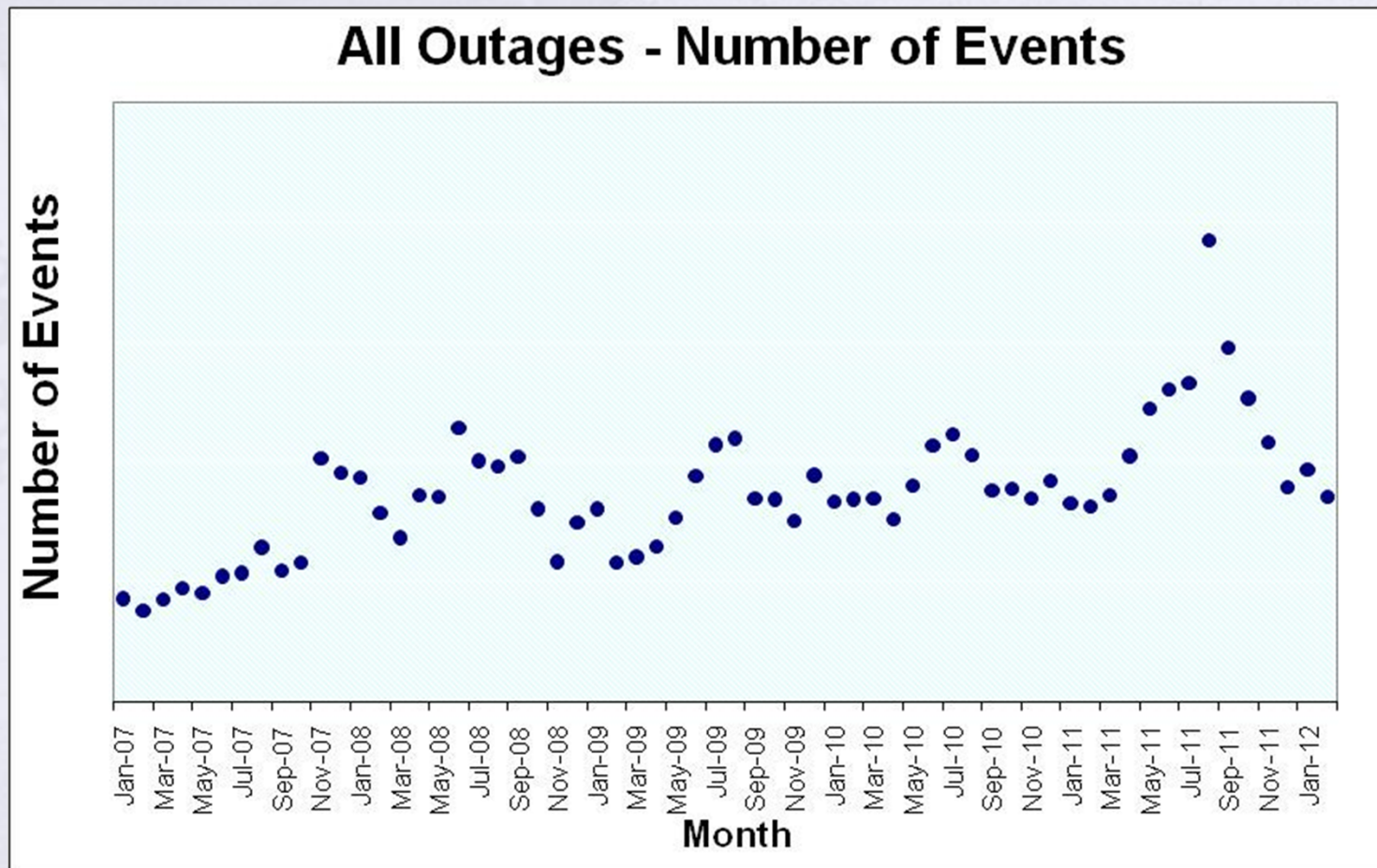
# Overview of Presentation

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- Network Reliability Status
- Improvements to NORS
- NRSC Activities

# Frequency of Outages by Month

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# Standards for Outage Frequencies

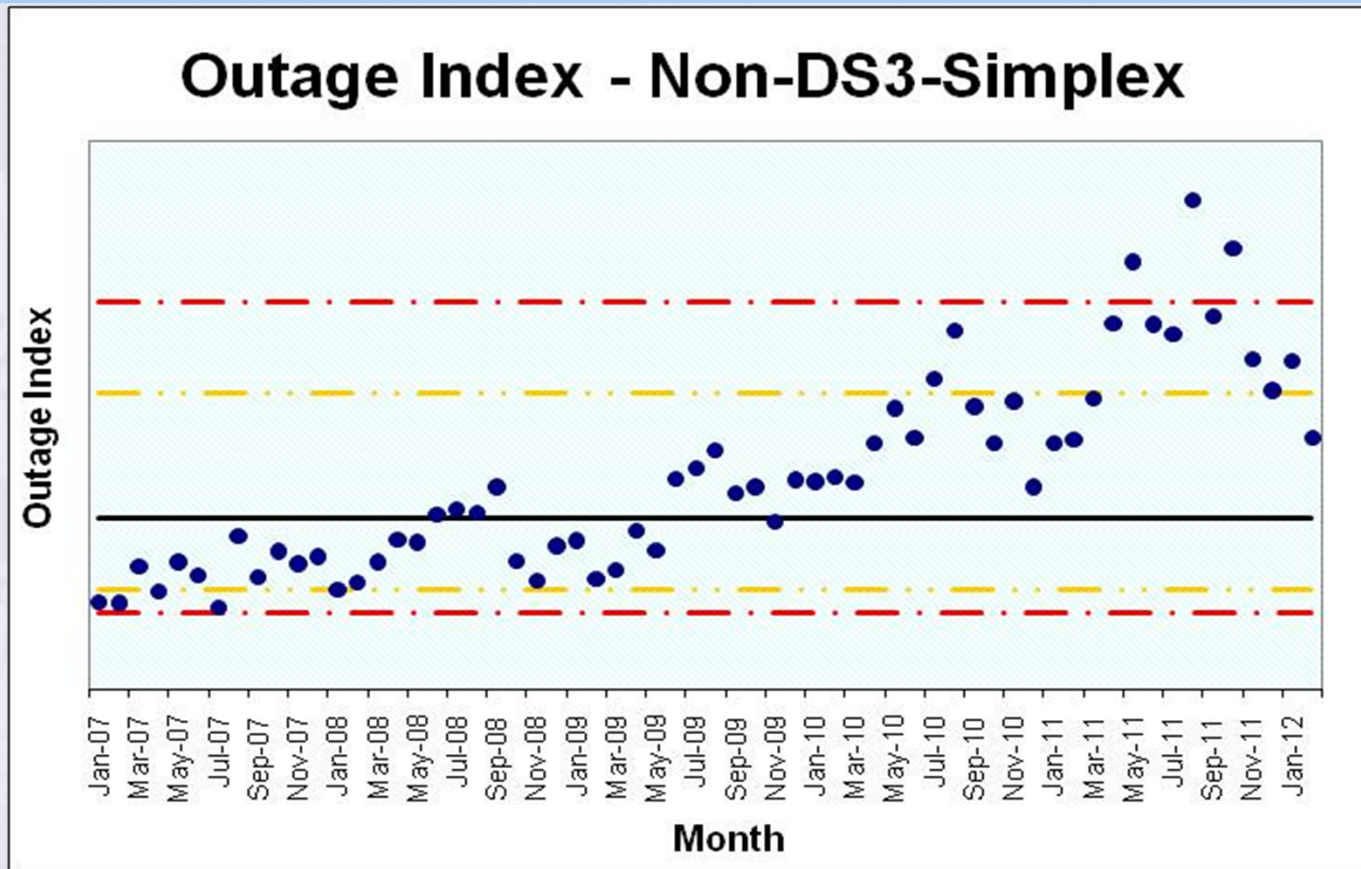
4

- Took average of January 2009 through December 2009 as the standard



# Outage Index – For All Outages Except DS3-Simplex

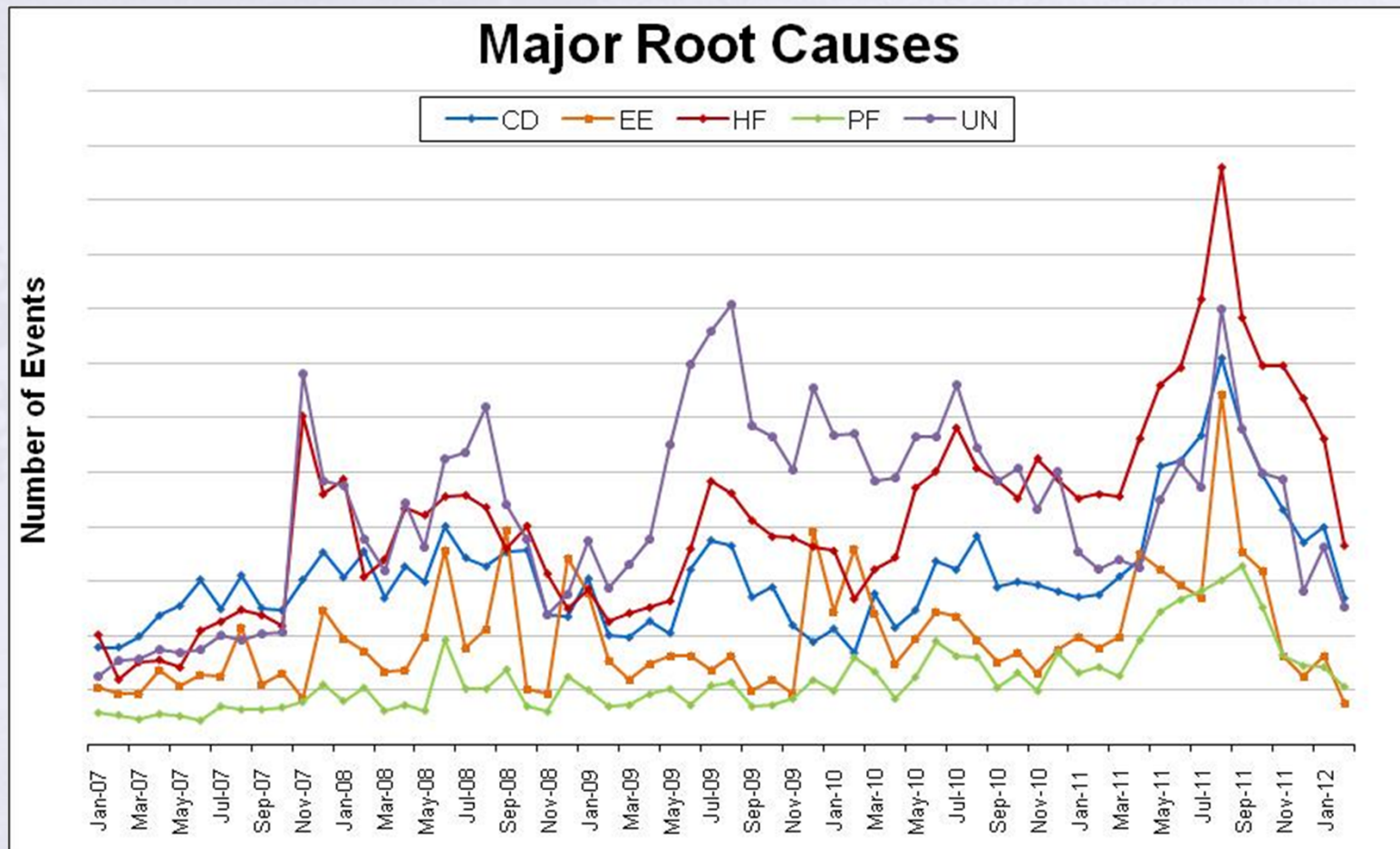
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***See ATIS-0100021 Analysis of FCC-Reportable Service Outage Data for a description of the method used to calculate the outage index.***

# Major Root Causes

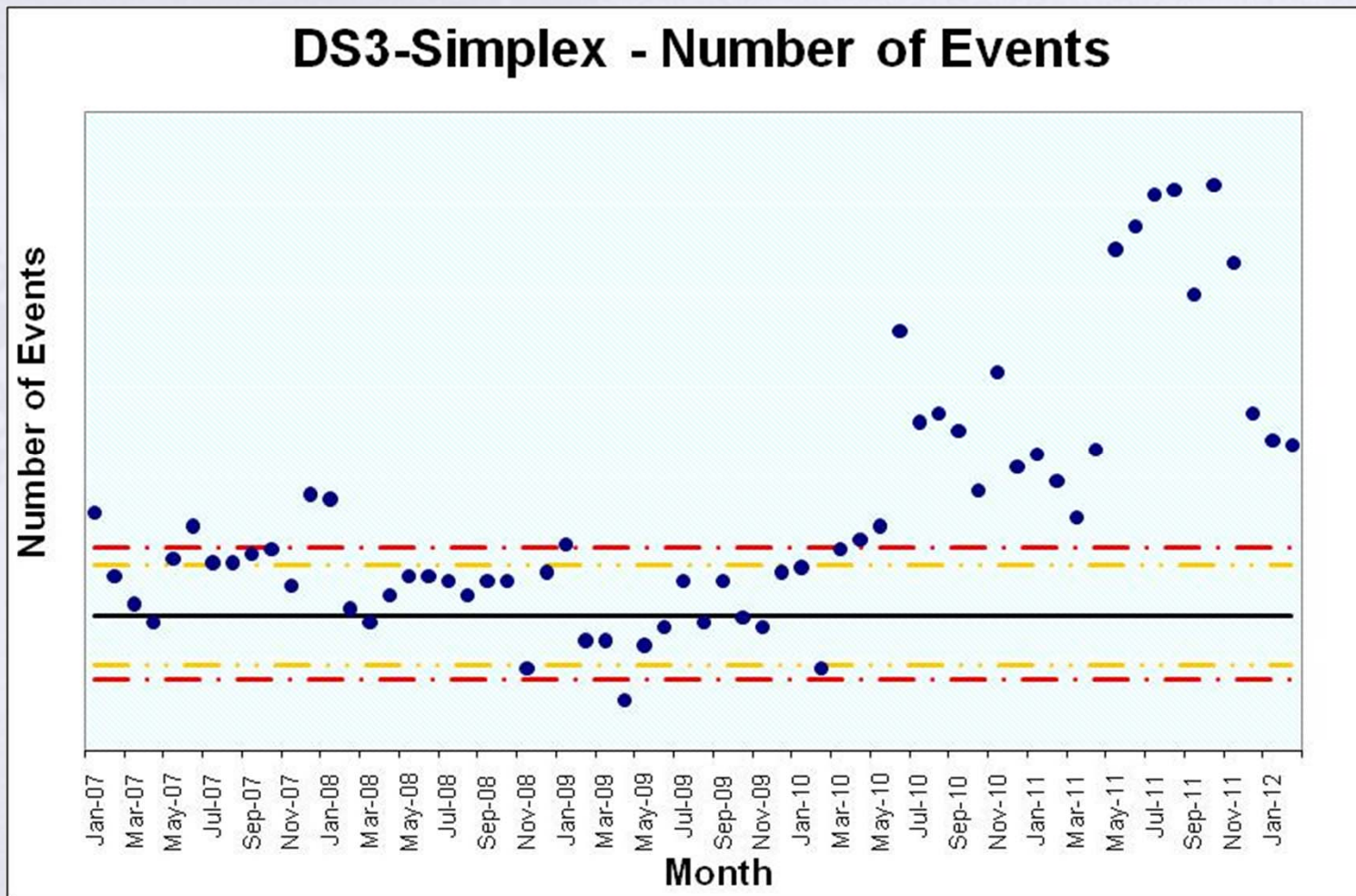
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# DS3-Simplex

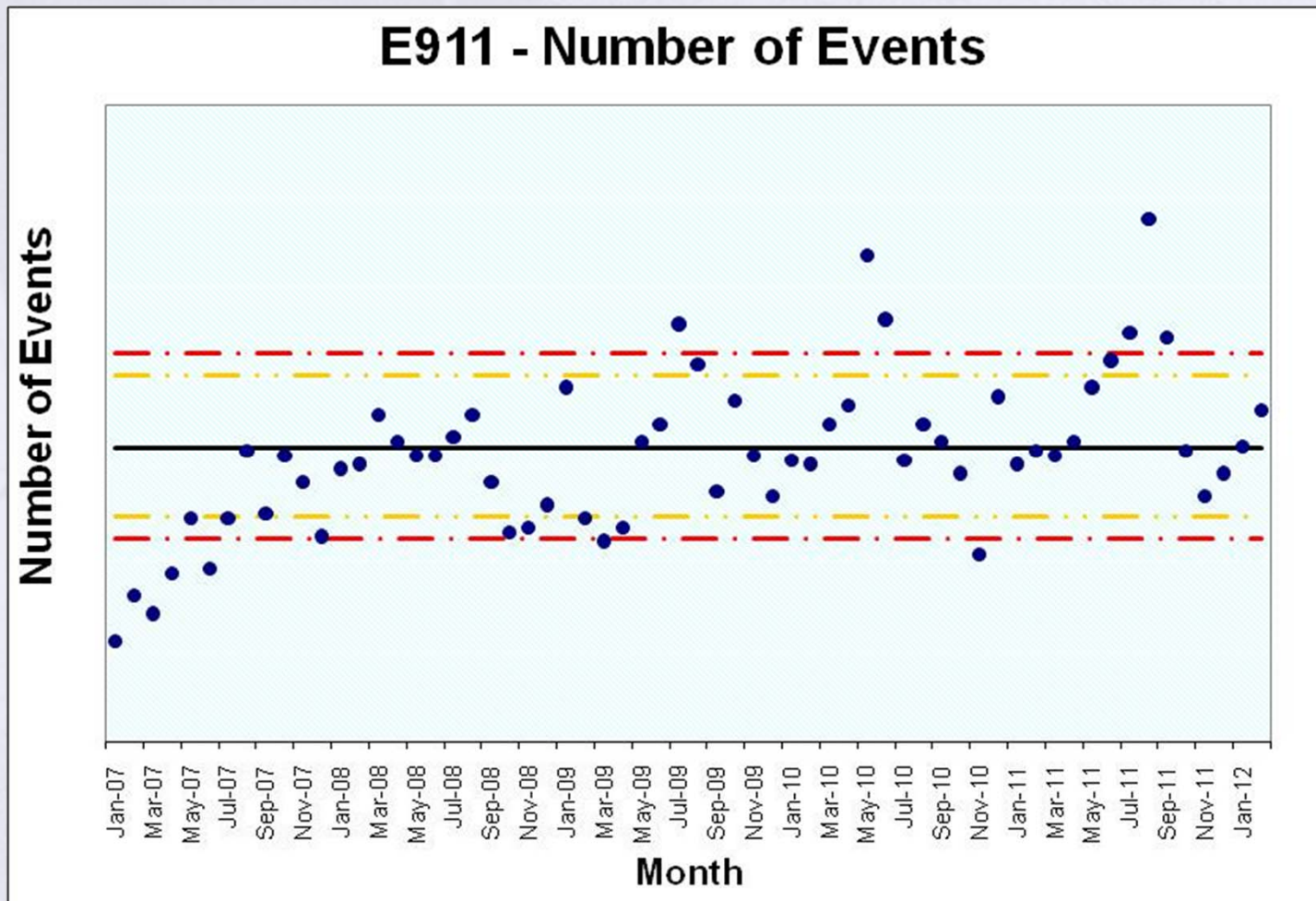
7





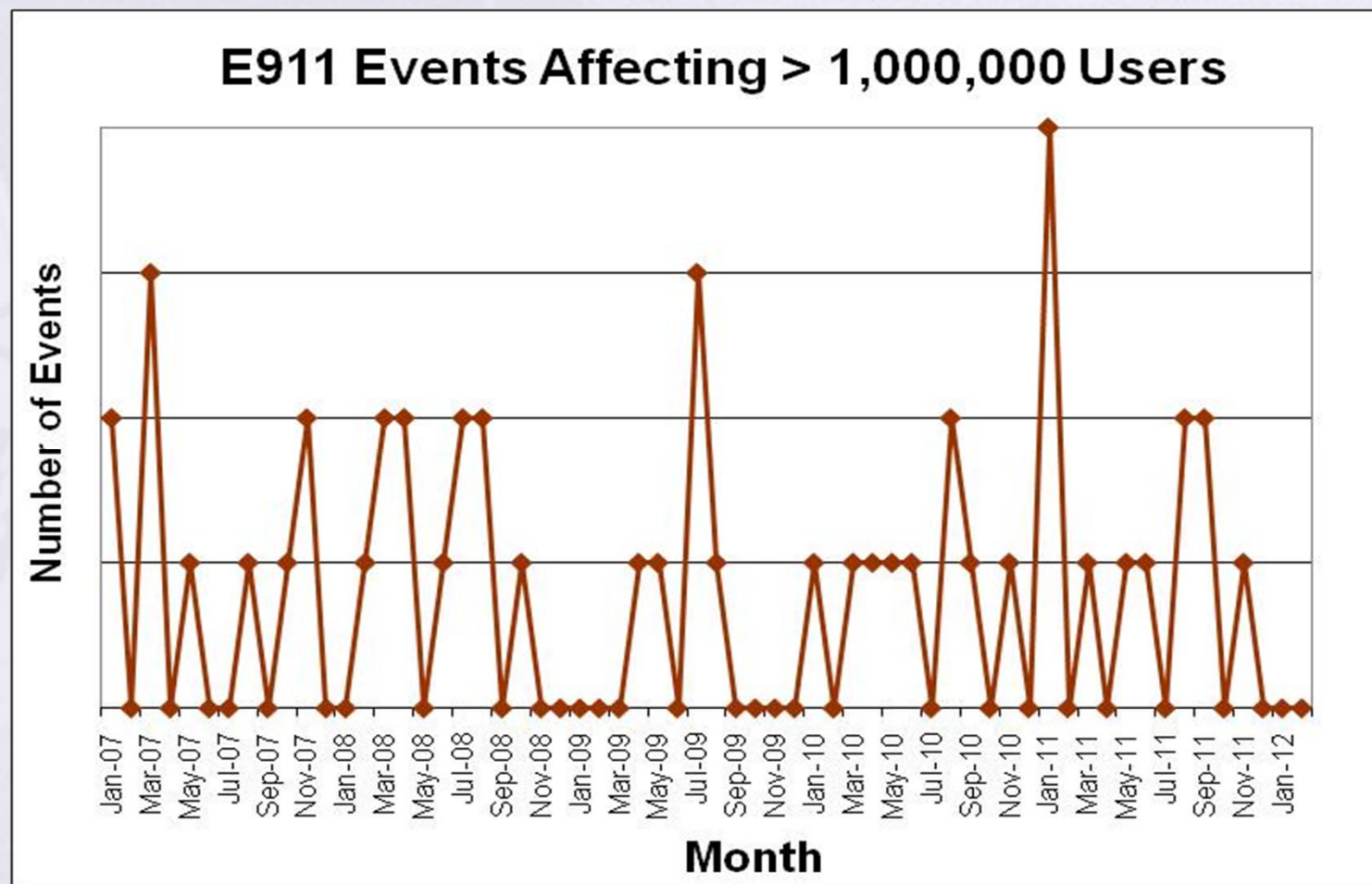
# E911

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# Very Large E911 Outages

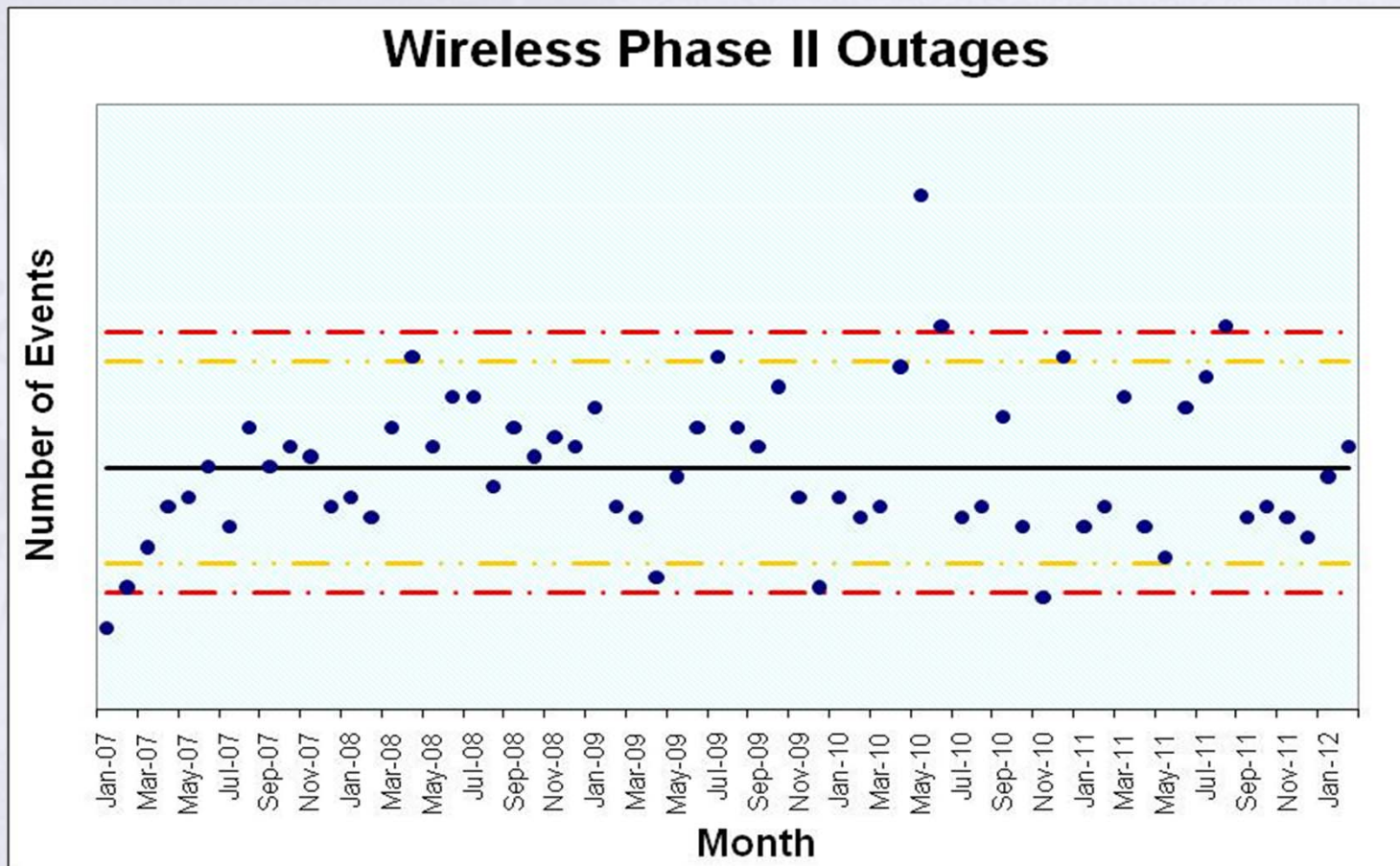
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# E911 – Phase 2 Events

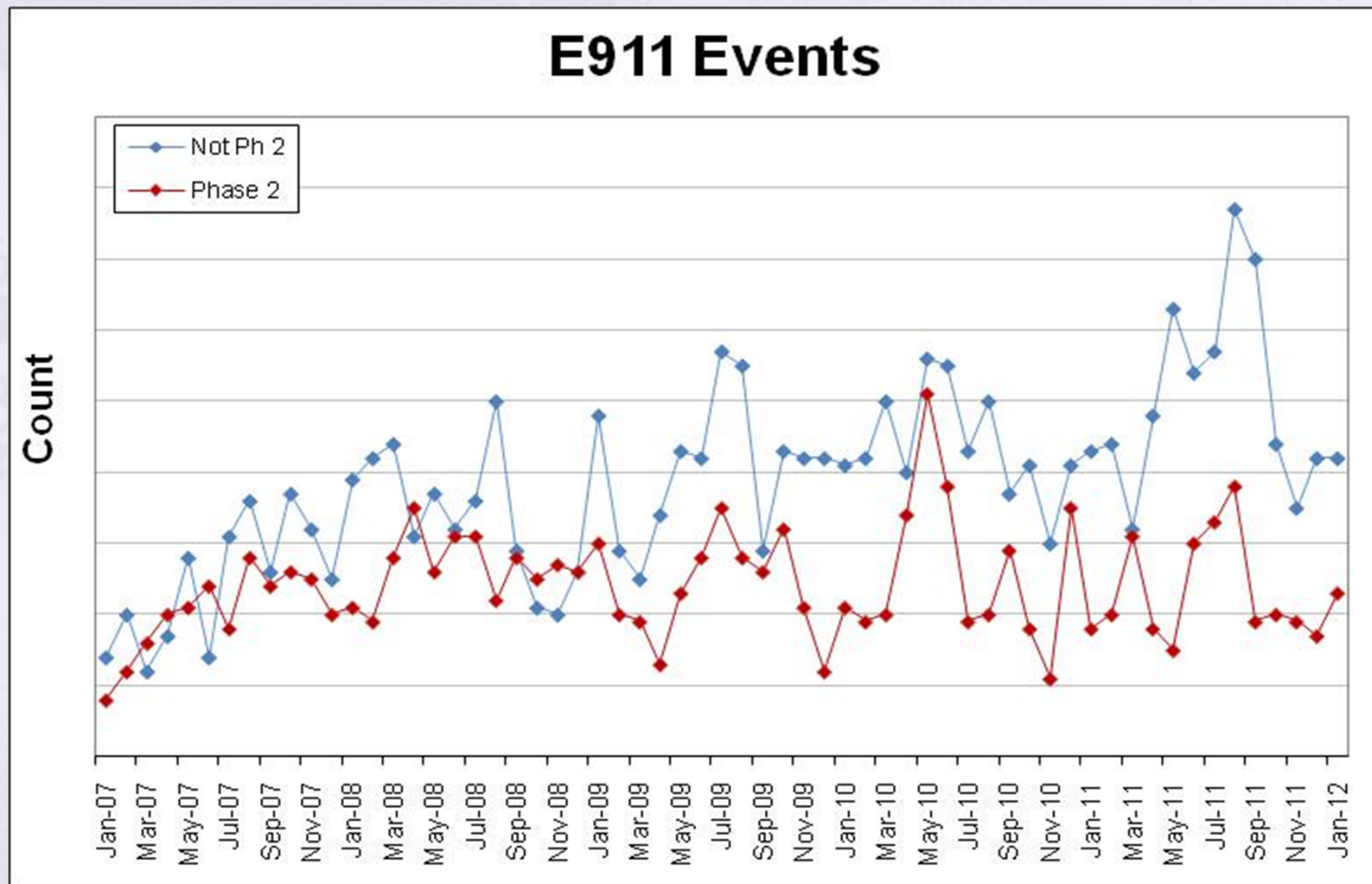
10





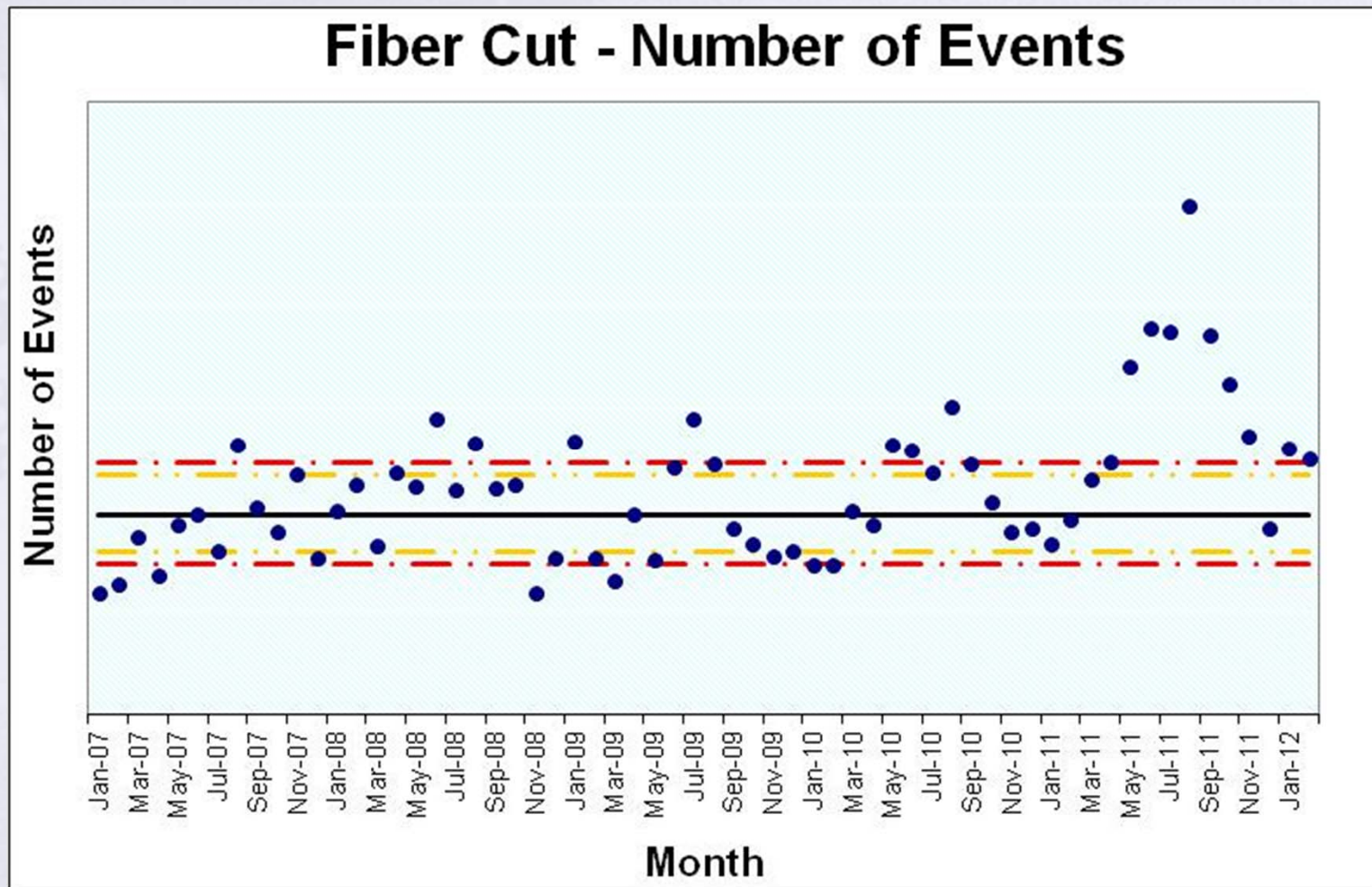
# Phase 2 vs. All Other E911 Outages

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# Fiber Cut

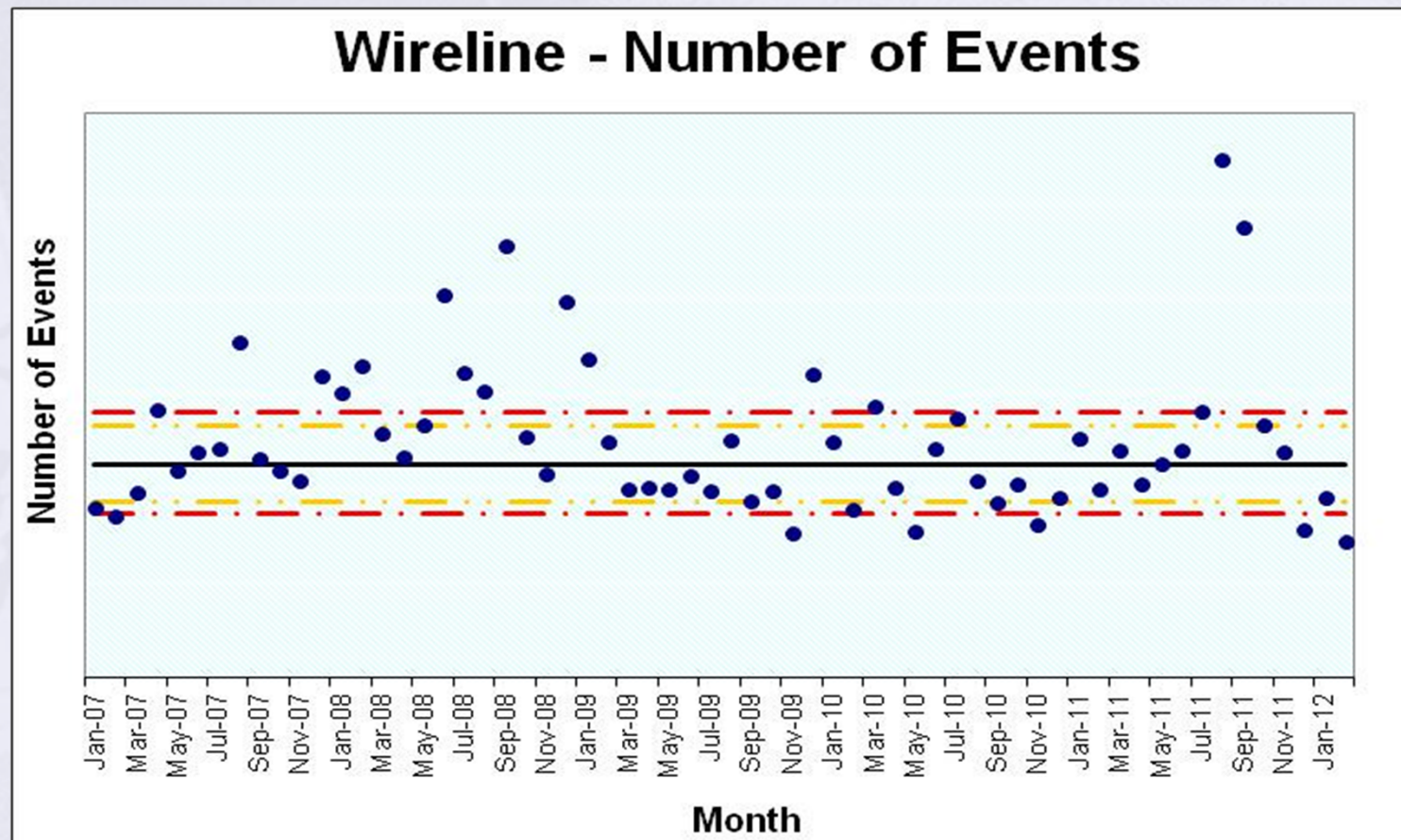
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# Wireline

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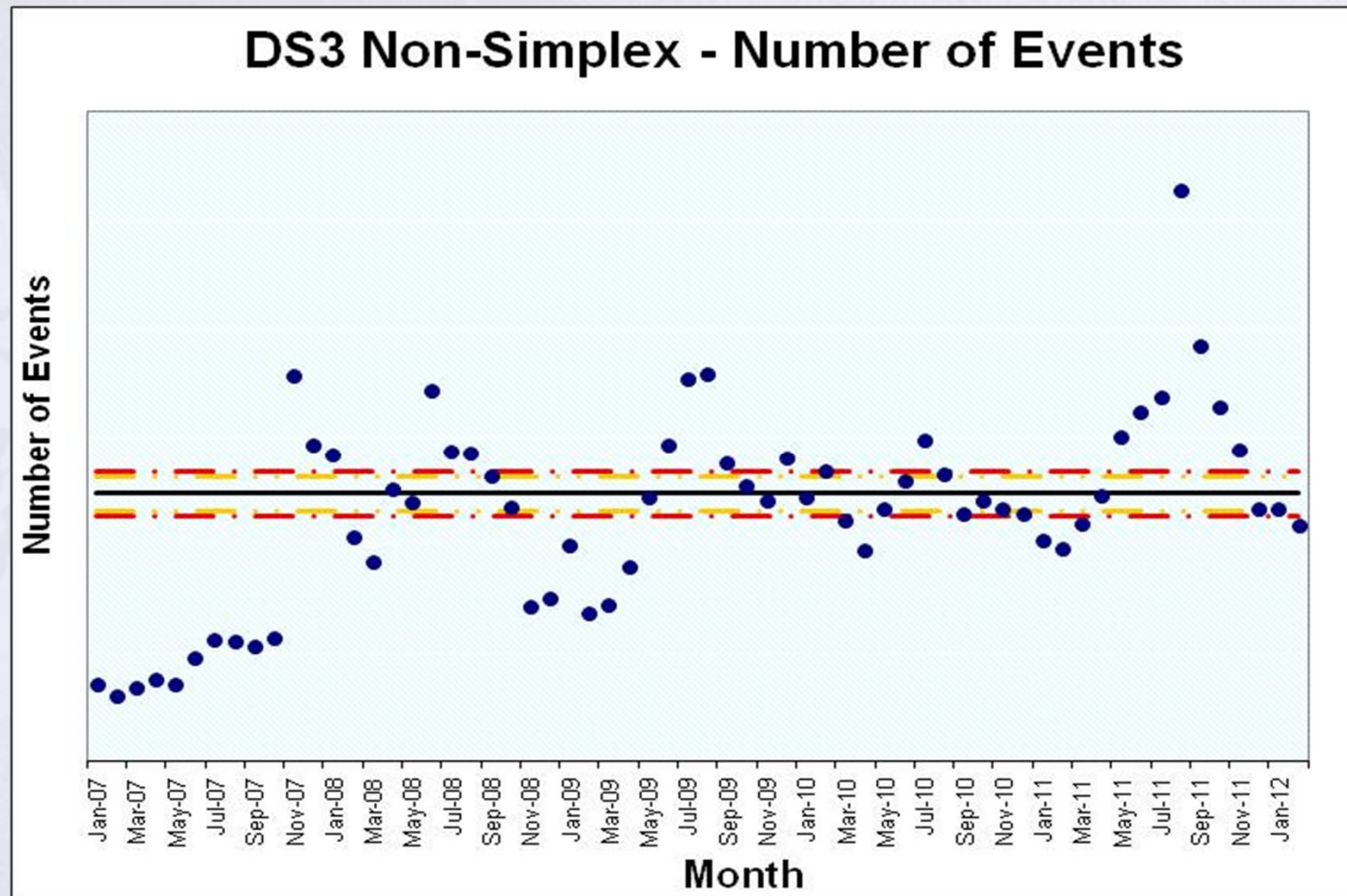


**Wireline outages are all outages for which the Reason Reportable was at least 900,000 wireline user-minutes.**



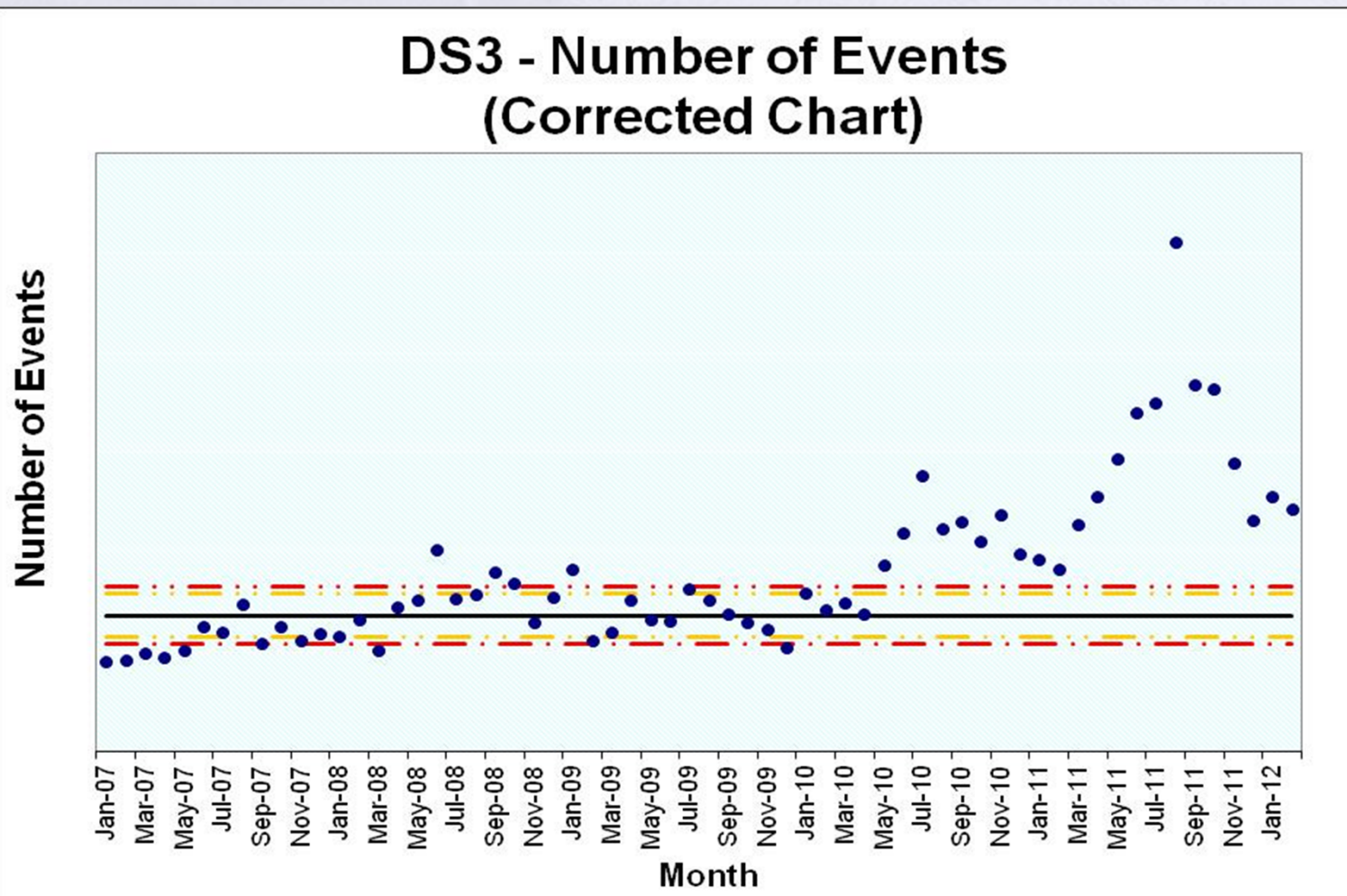
# DS3 (Non-Simplex) Events

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# DS3 (Non-Simplex) Events

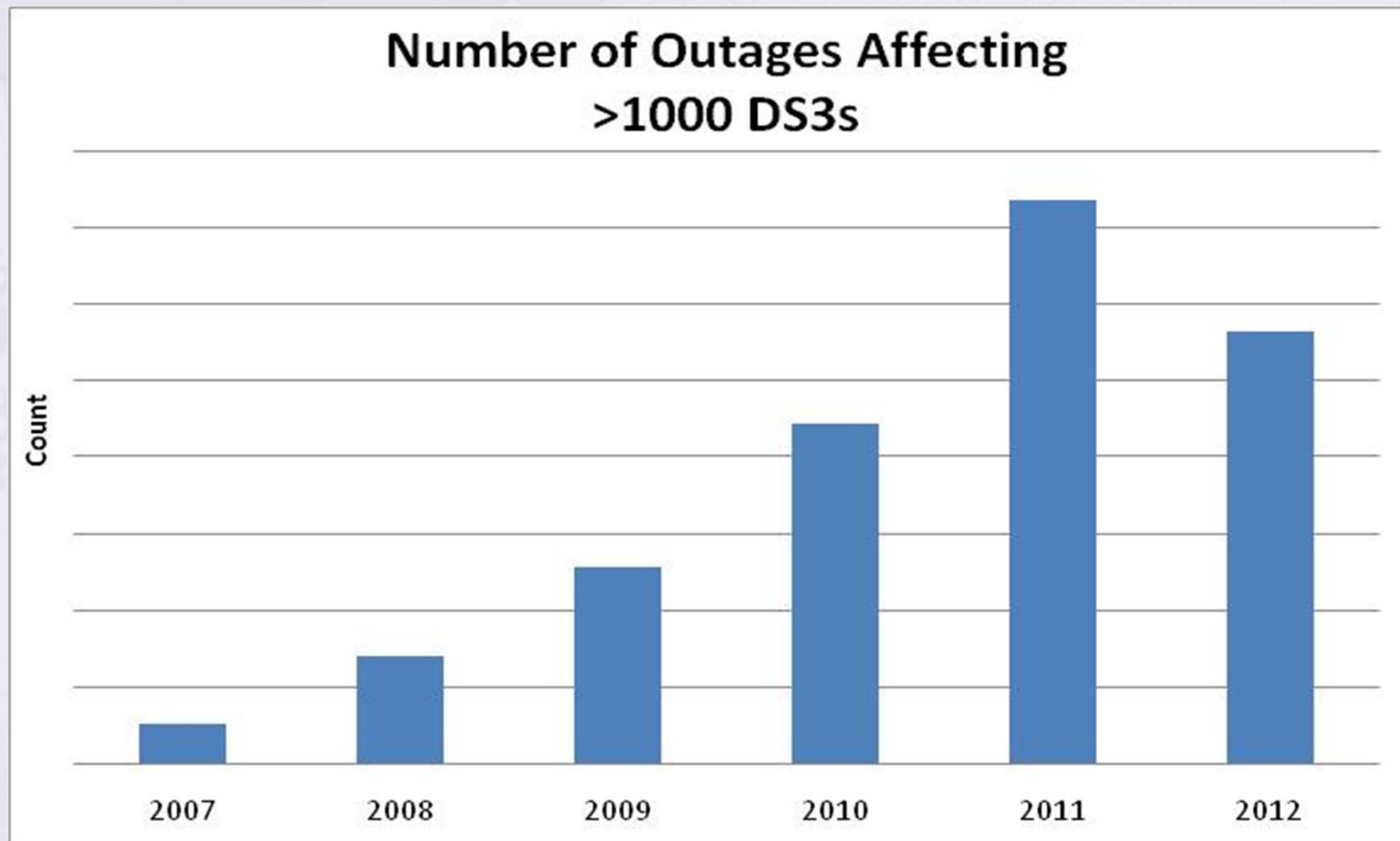
15





# Big DS3 Outages

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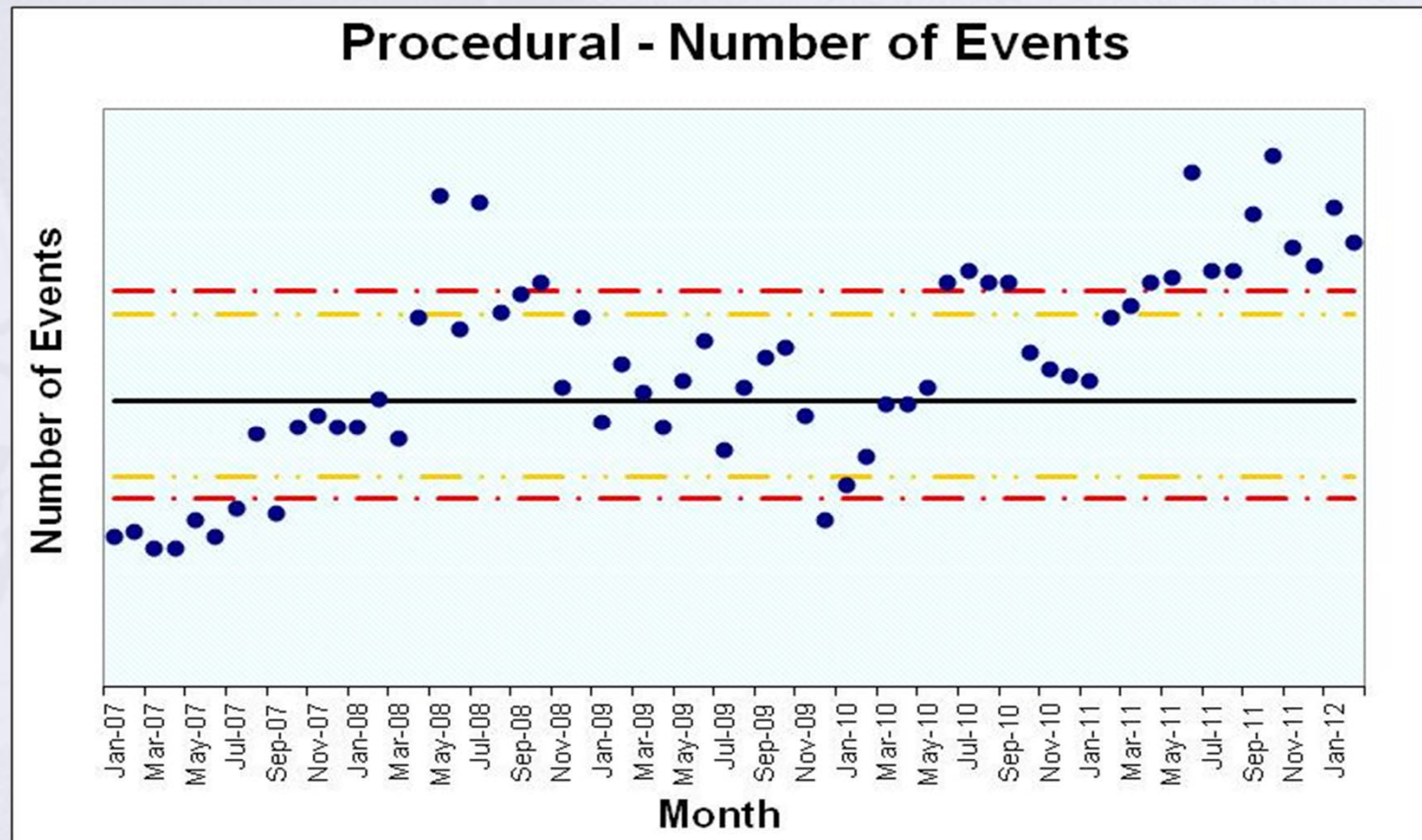


**For 2012, the number of outages for January and February was multiplied by 6**



# Procedural Events

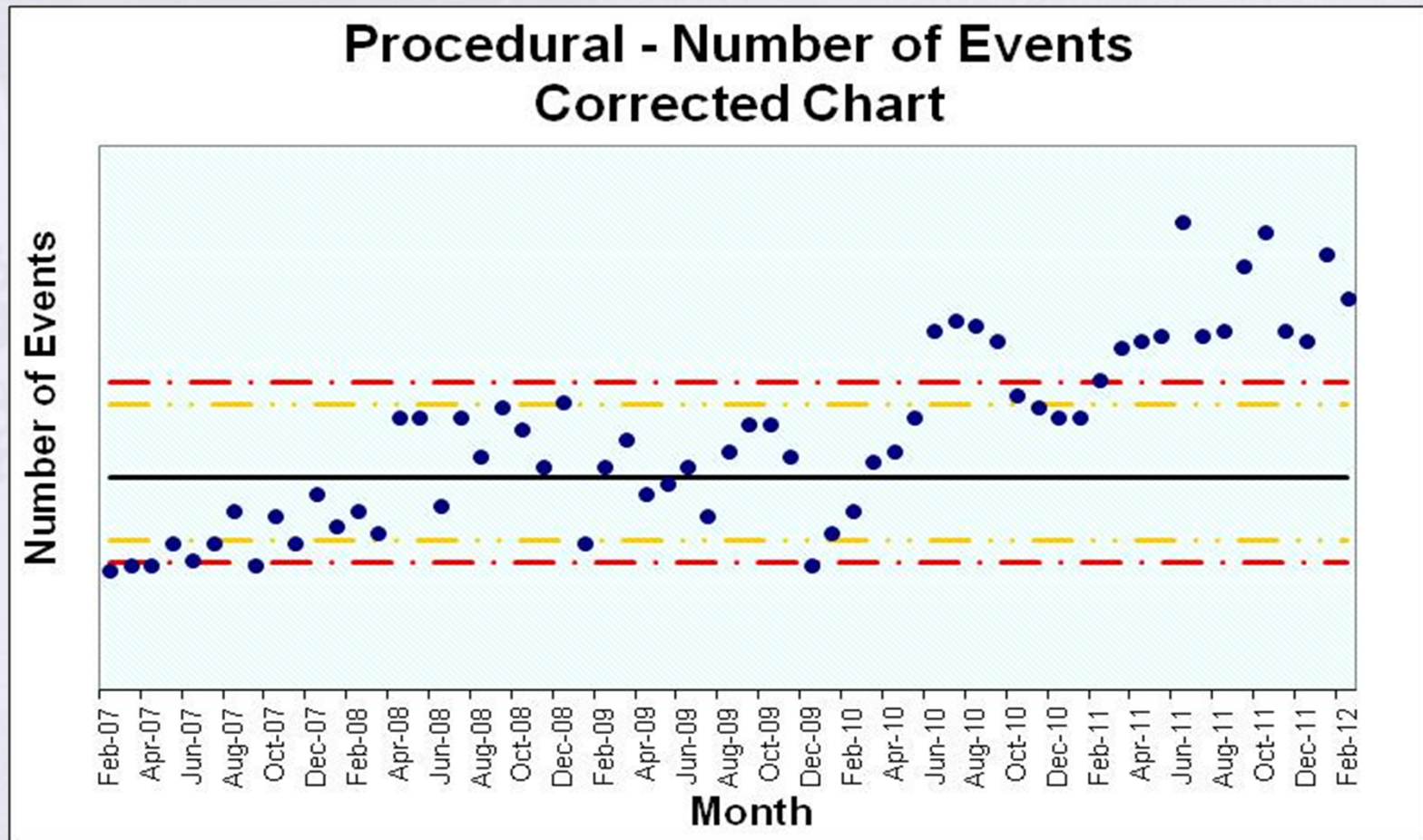
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**Procedural events are ones which have a procedural root cause.**

# Procedural Events

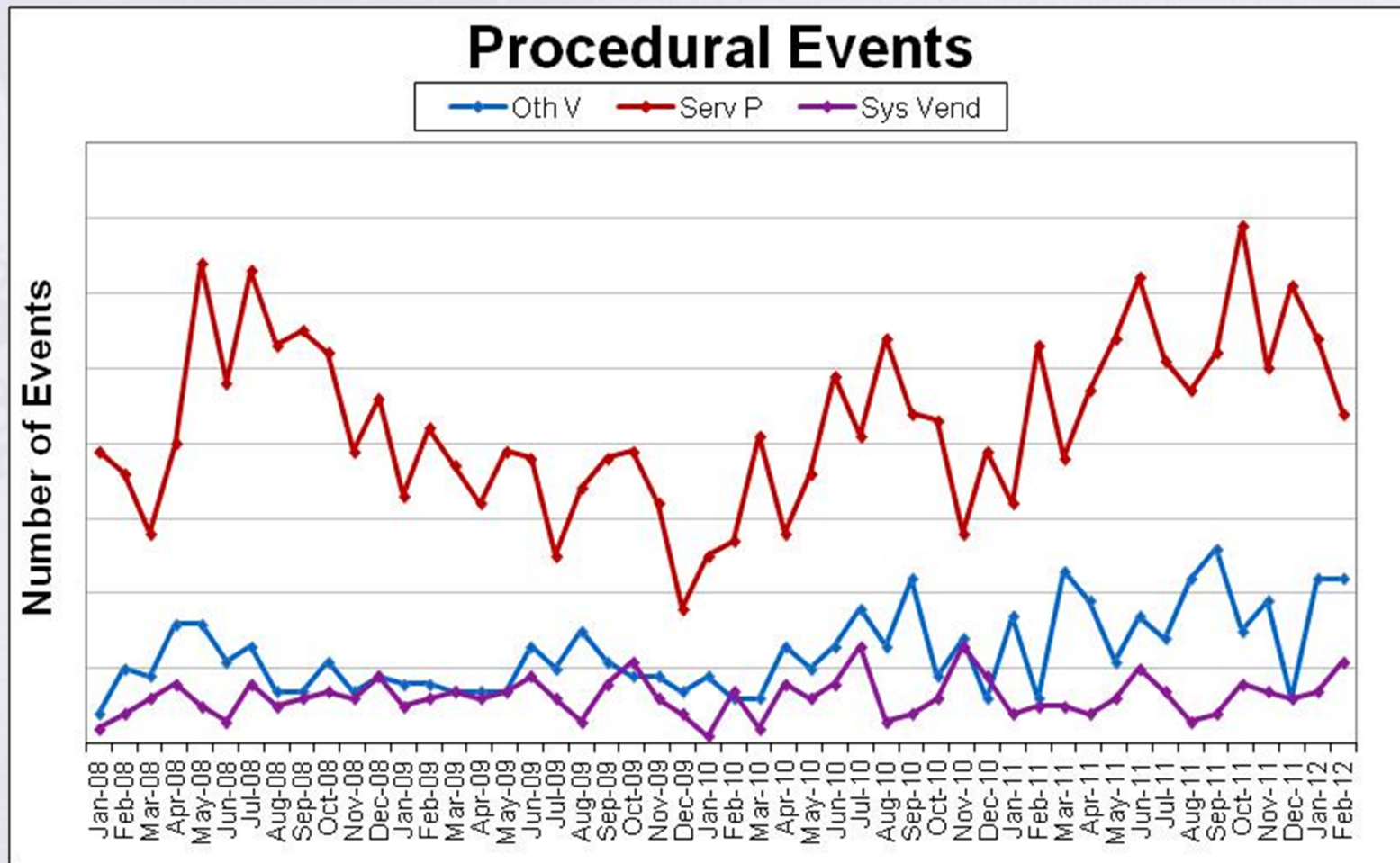
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# Procedural Events by Source

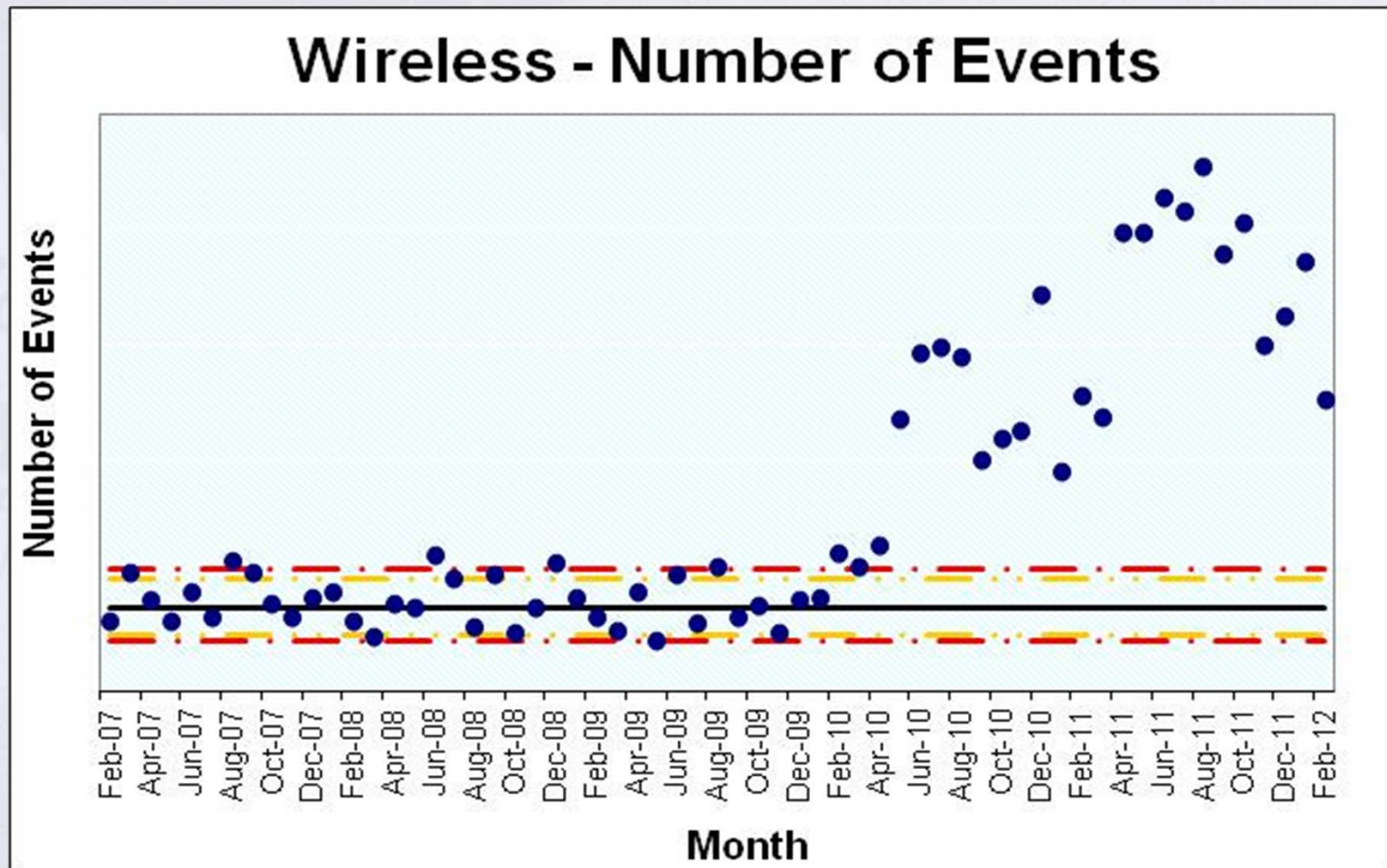
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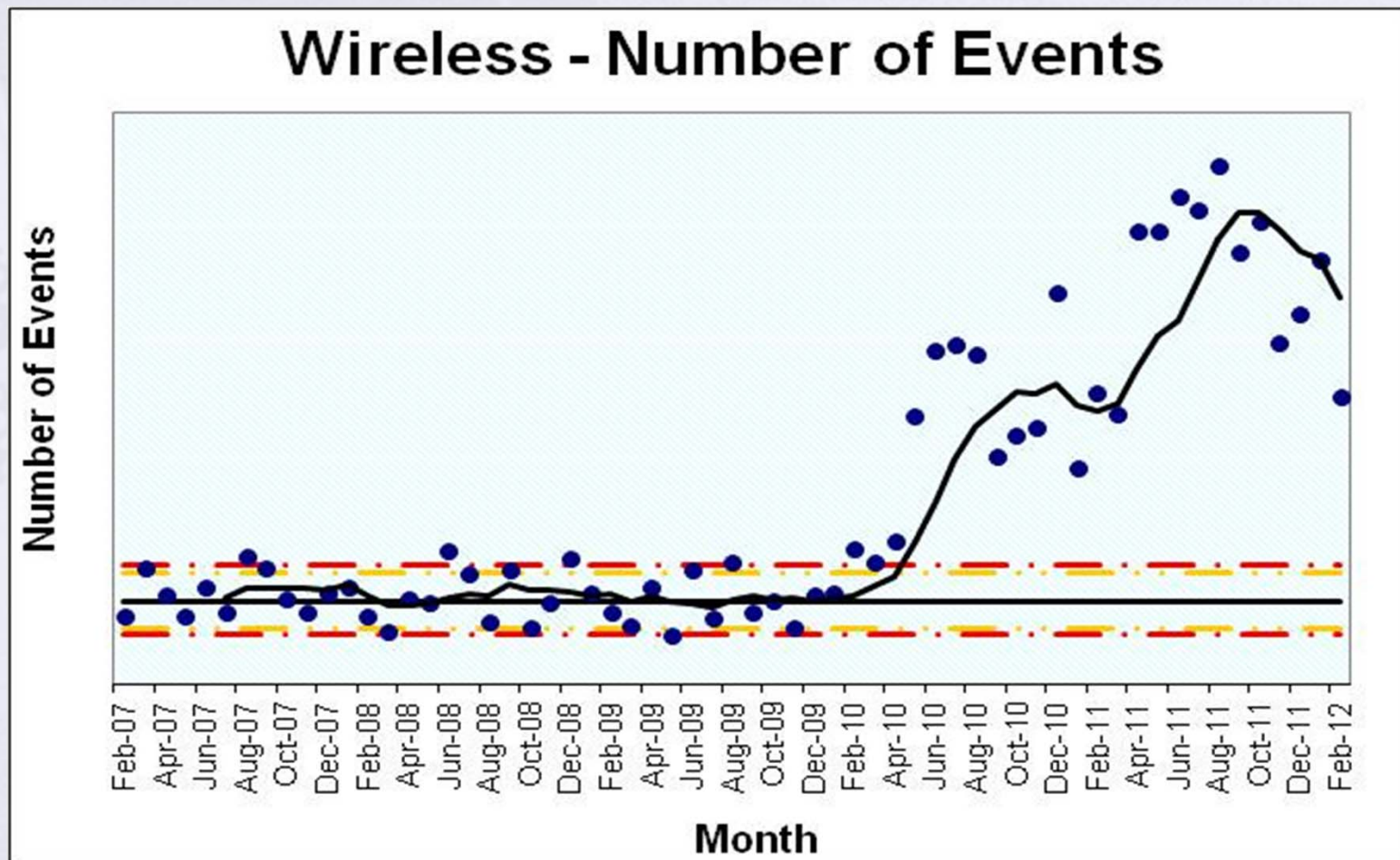
# Wireless

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# Wireless with Trend Line

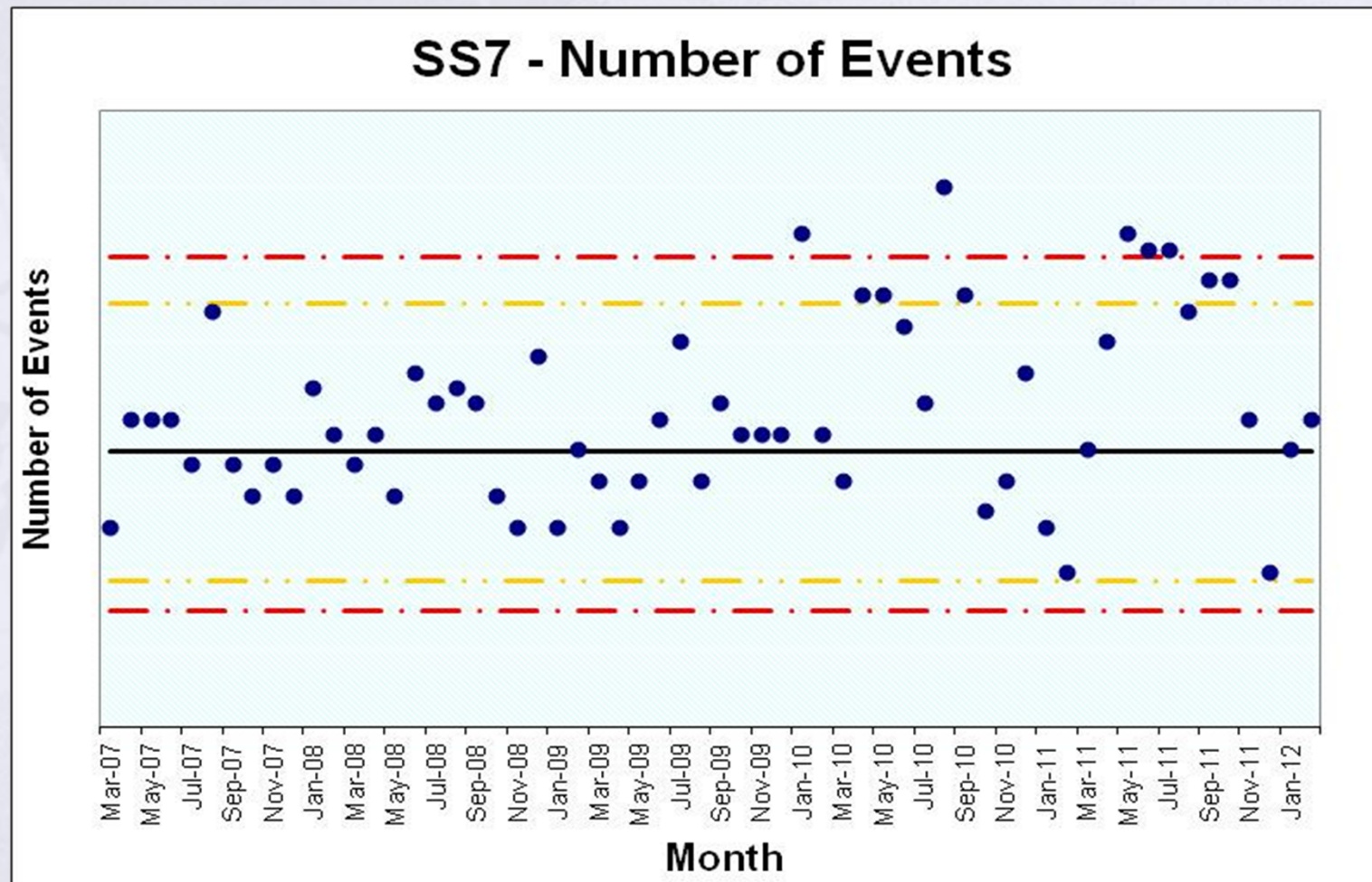
21





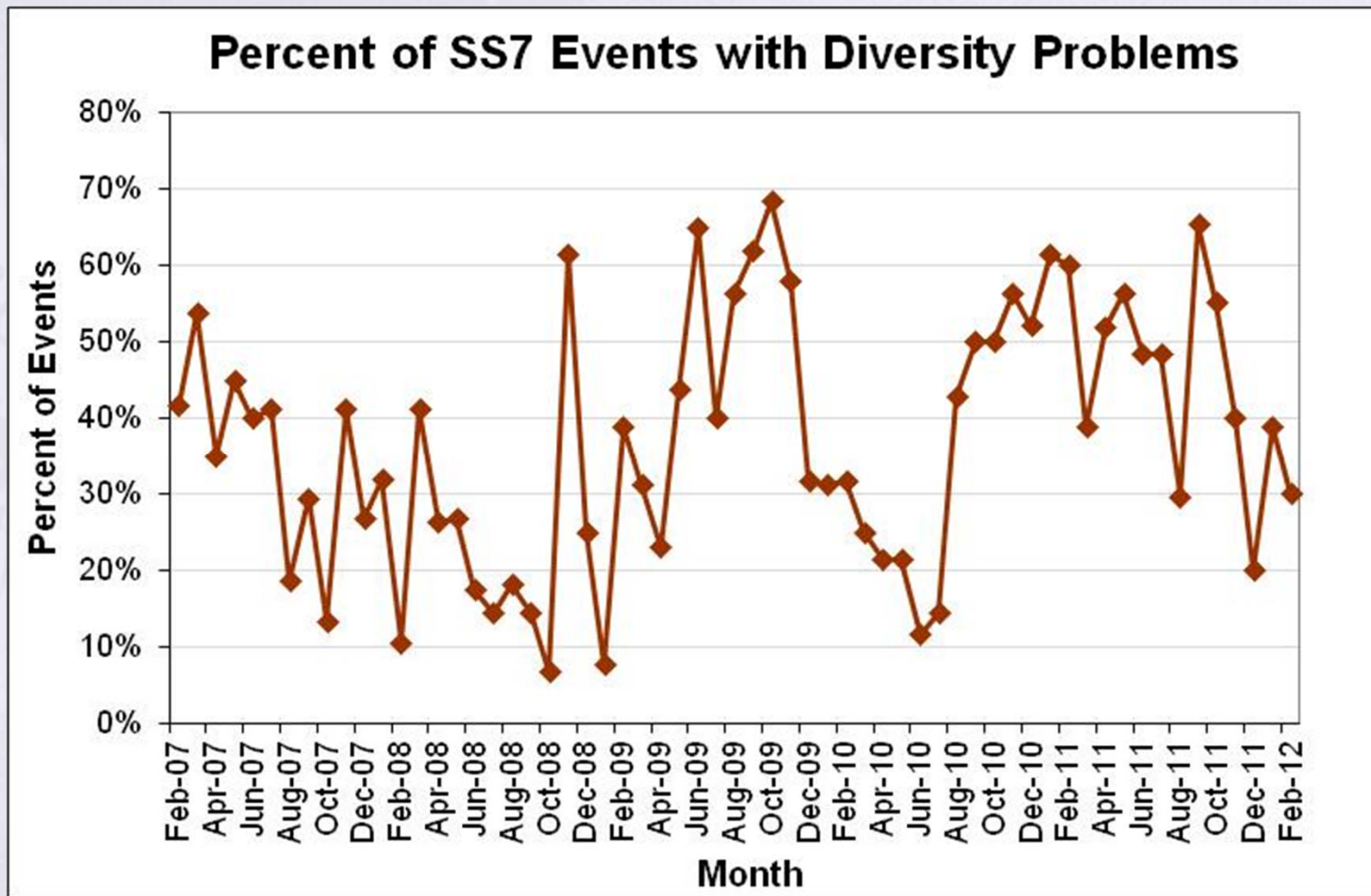
# SS7

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# SS7 and Diversity

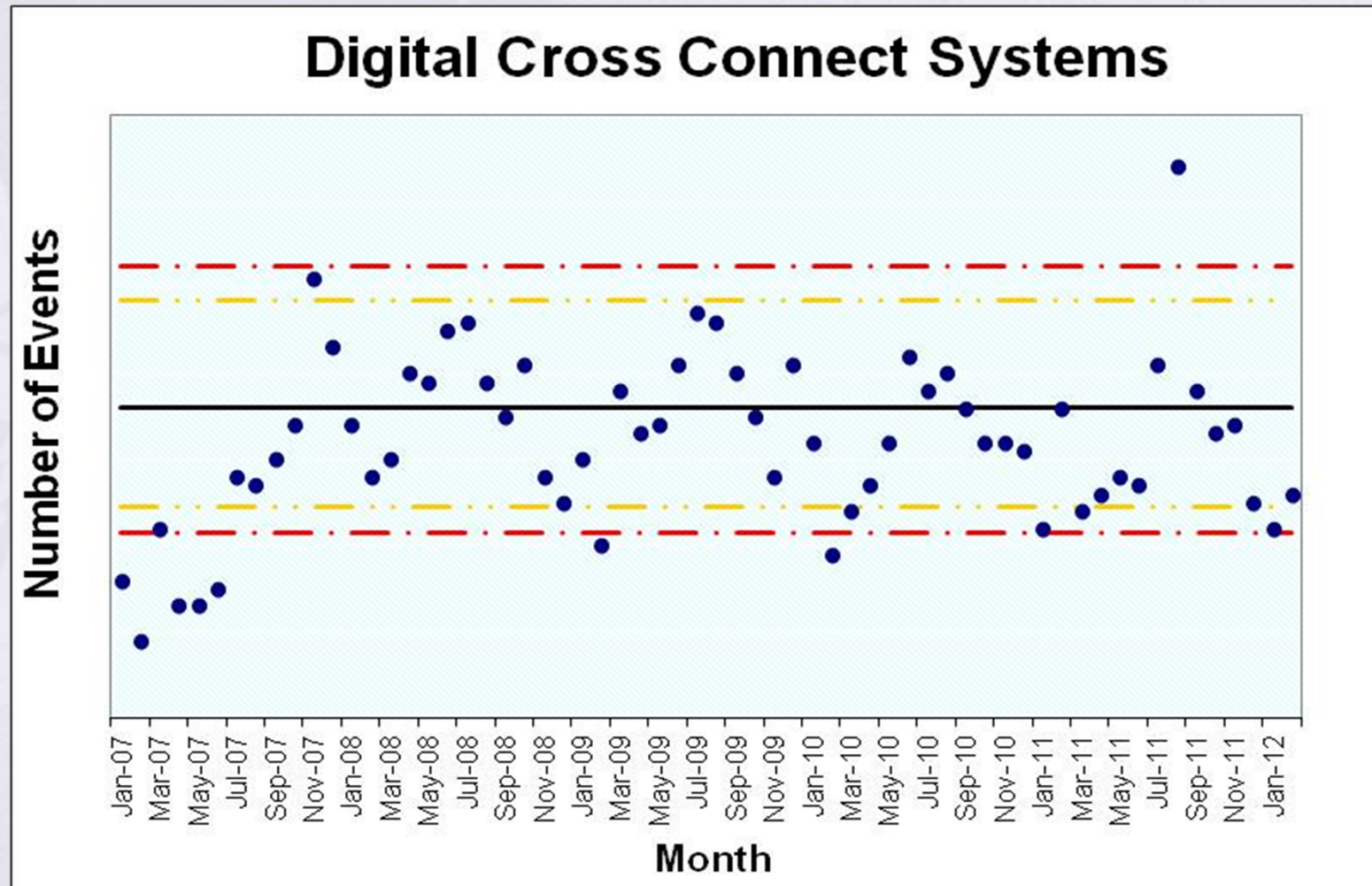
23





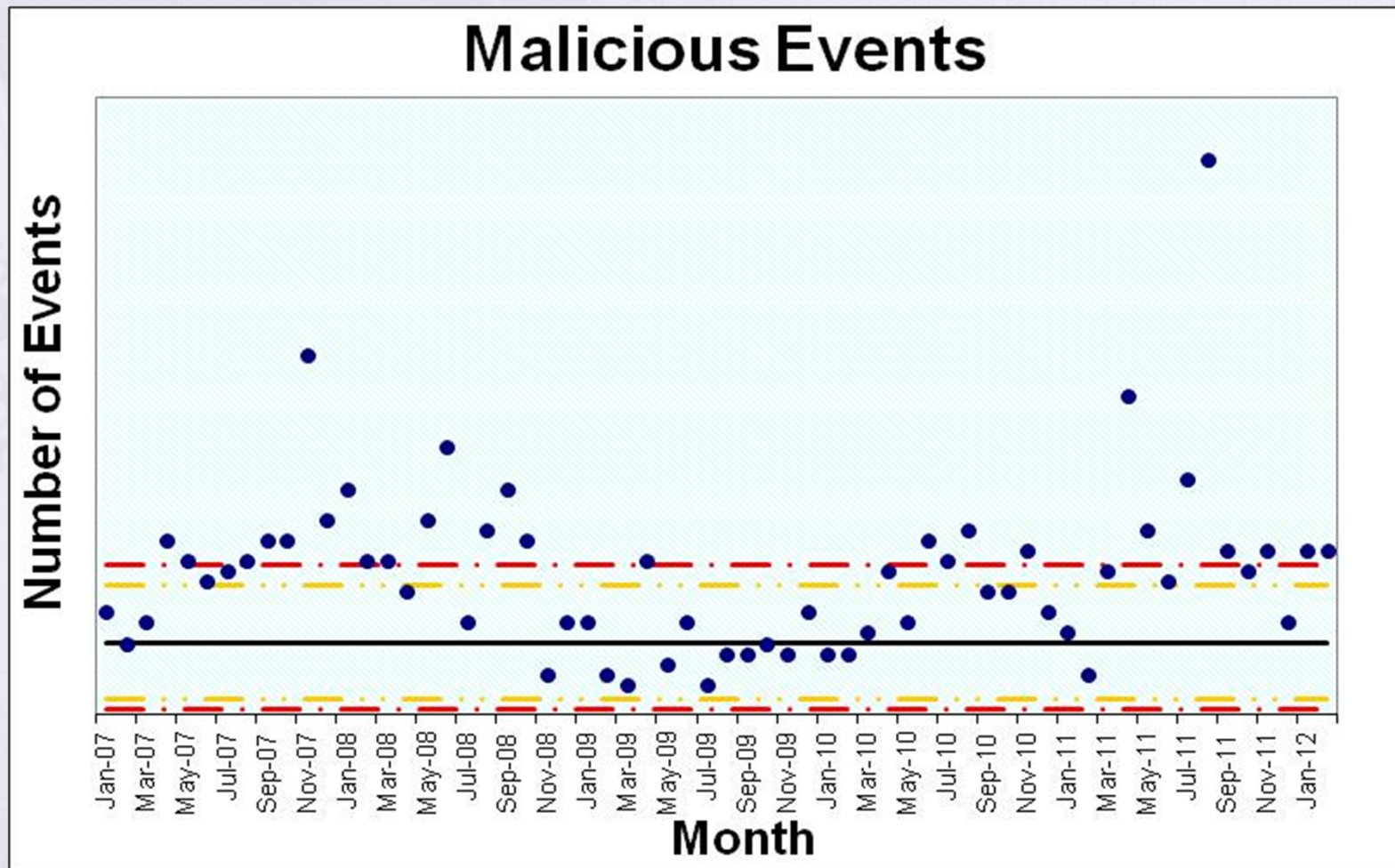
# Digital Cross Connect Systems

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# Malicious Events

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# Malicious Activity

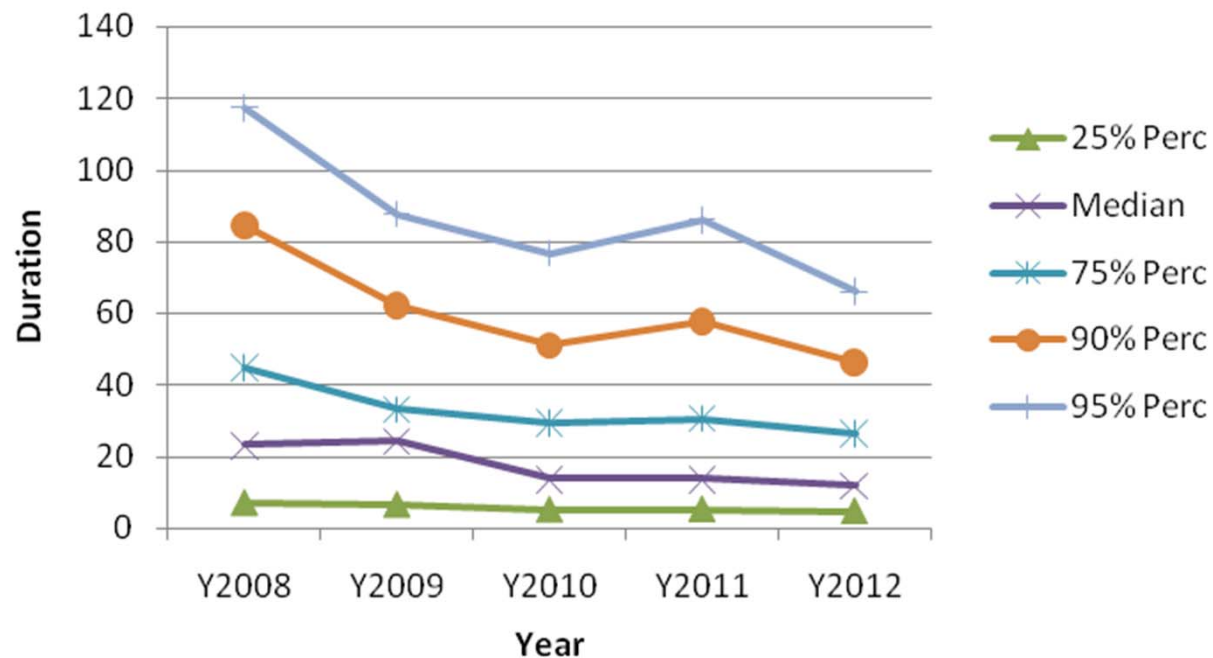
26

- 565 outage reports where malicious activity was indicated (188 in 2007, 188 in 2008, 83 in 2009, 138 in 2010, 222 in 2011, and 32 in the first two months of 2012)
- No outages seemed to be related to terrorist activities.
- About 36% (79) mention vandalism in 2011 and 66% of the reports (21) mentioned vandalism in 2012 and.
- About 4% of the reports (9) mentioned gun or shots in 2011 and 9.4% (3) in 2012.

# Duration Trends: DS3 Non-Simplex

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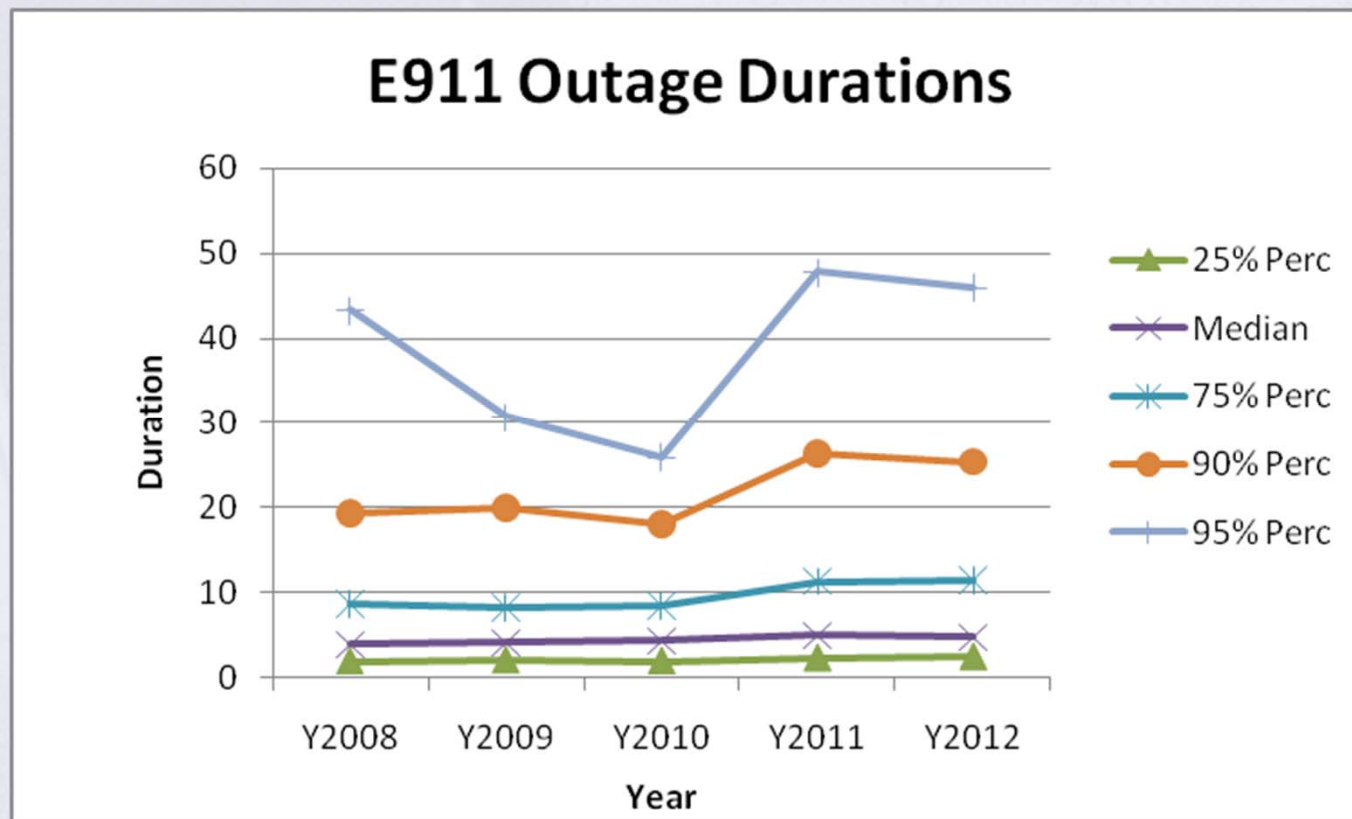
## DS3 Non-Simplex Outage Durations





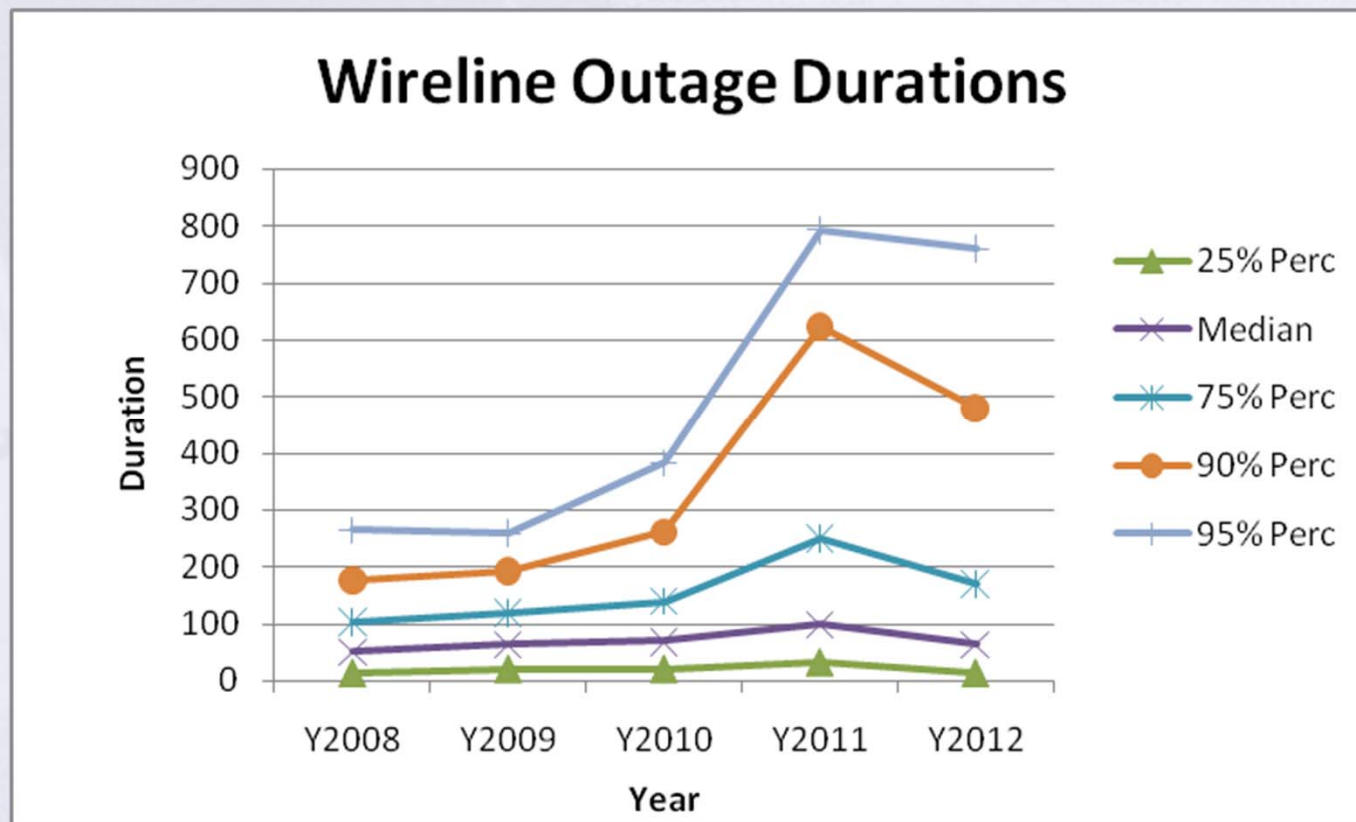
# Duration Trends: E911

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# Duration Trends: Wireline

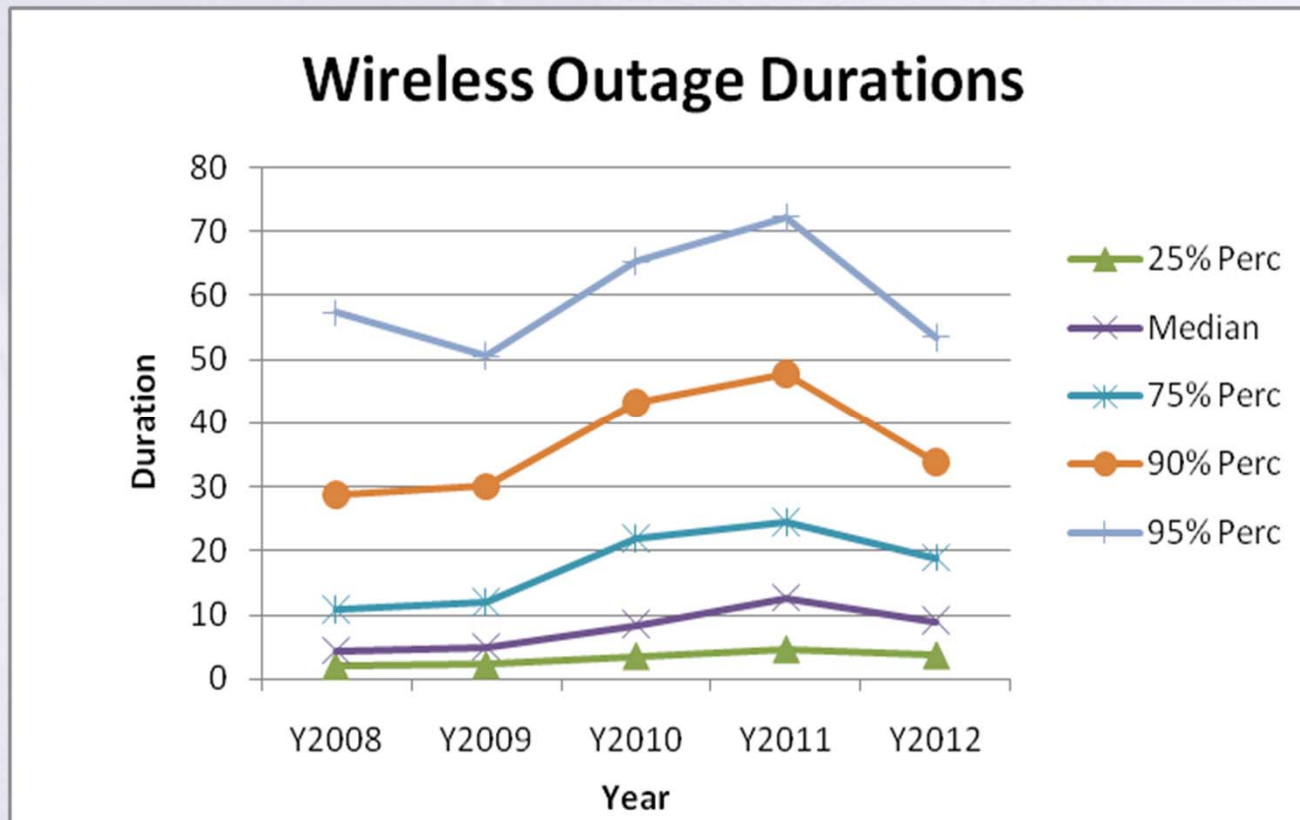
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# Duration Trends: Wireless

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# Test for Trend in Event Duration

## **Non-DS3-Simplex Outages Data from 2010 thru 2012**

Rank Correlation of  
duration with date is .022  
and is significant

**Conclusion: Non DS3-  
Simplex Outages are  
longer from 1/10 to 2/12**

## **DS3-Simplex Events Only Data from 2010 thru 2012**

Rank Correlation of  
duration with date is .044  
and is barely significant

**Conclusion: DS3-Simplex  
Events are longer from  
1/10 to 2/12**



# Changes to NORRS/DIRS

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- **Put VoIP outages on NORRS test system**
- **Put new cause codes on NORRS test system**
- **Put DIRS expansion forms on DIRS test system**

Comments and suggestions are greatly appreciated

# NRSC Activities

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- Big DS3 Team (with DS3 –Simplex)
- Wireless Team
- Procedural Team
- Outage Reporting Advisory Team
  - Improvements to the NORS System
  - Improvements to the template
  - Recommended ways to communicate information
  - Improvements to NORS/DIRS manuals