

Analysis of Network Outage Reports for NRSC Meeting

1



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

***Julia Tu
John Healy***

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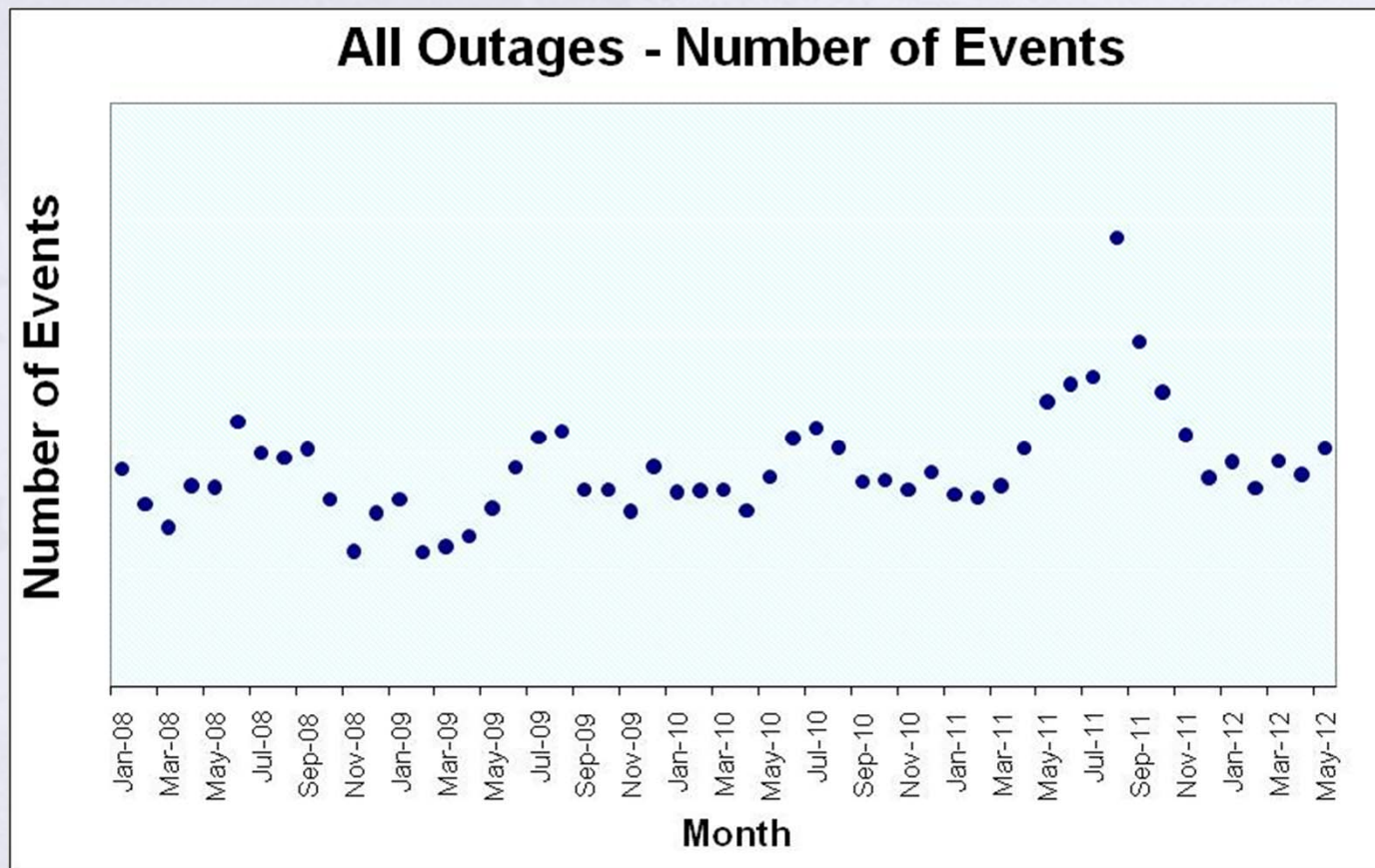
Overview of Presentation

2

- Network Reliability Status
- Improvements to NORS
- NRSC Activities

Frequency of Outages by Month

3



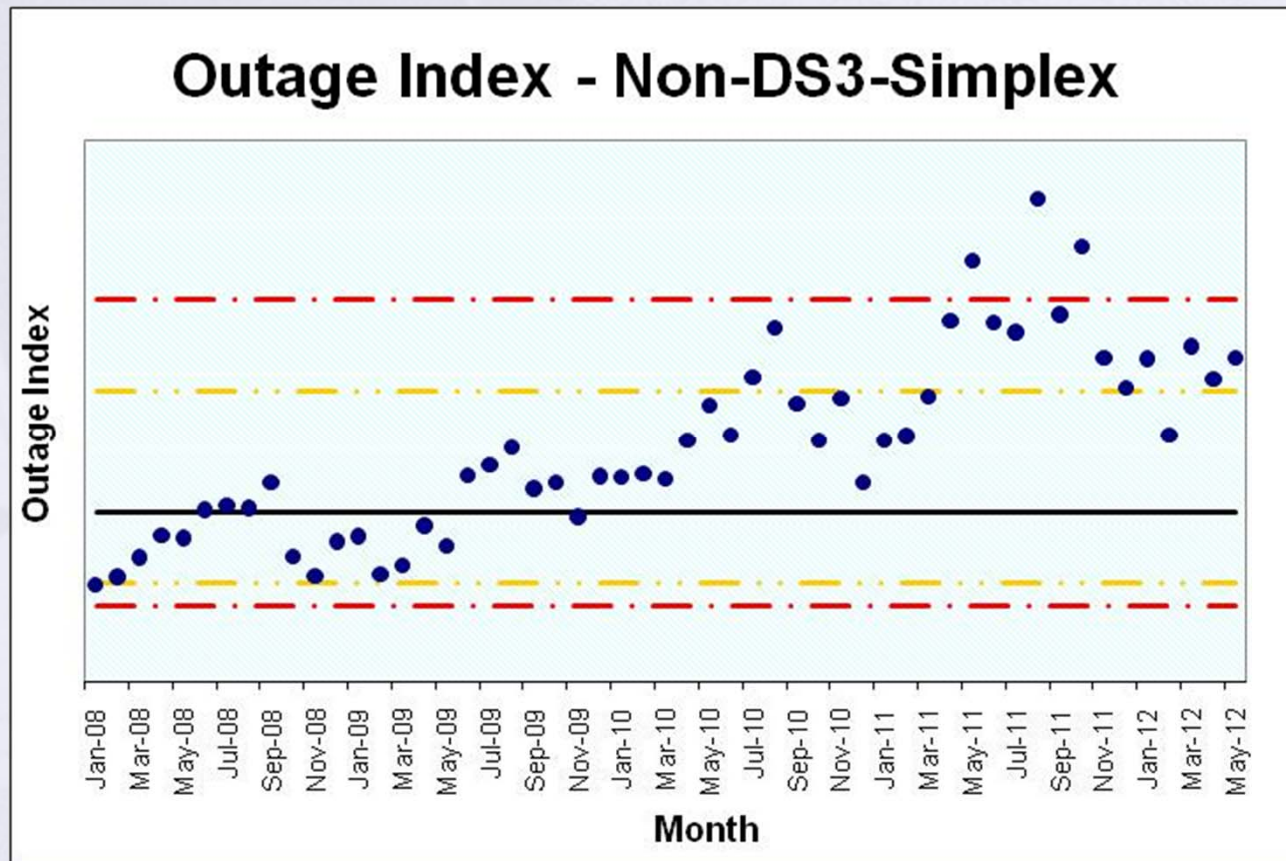
Standards for Outage Frequencies

4

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

Outage Index – For All Outages Except DS3-Simplex

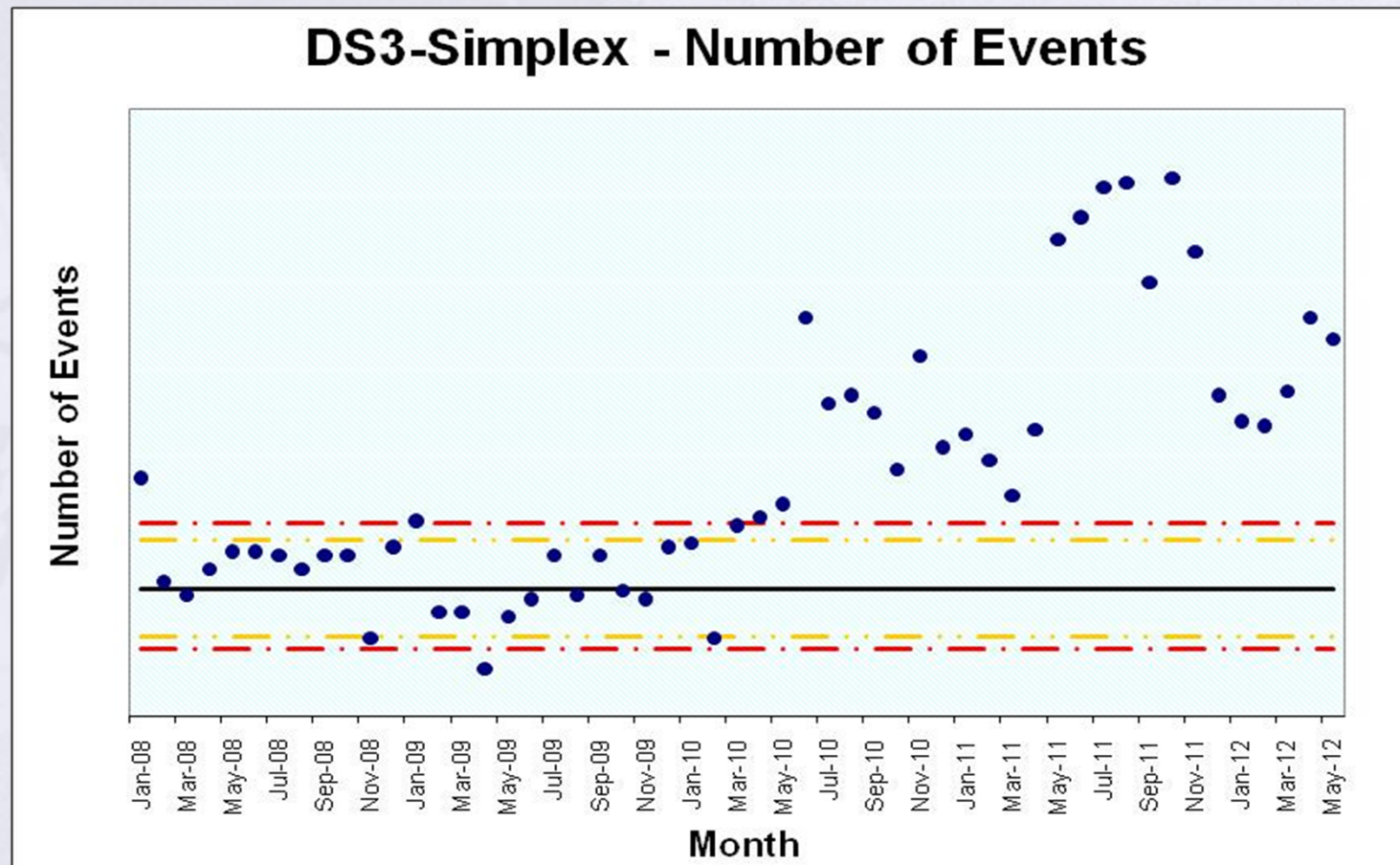
5



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

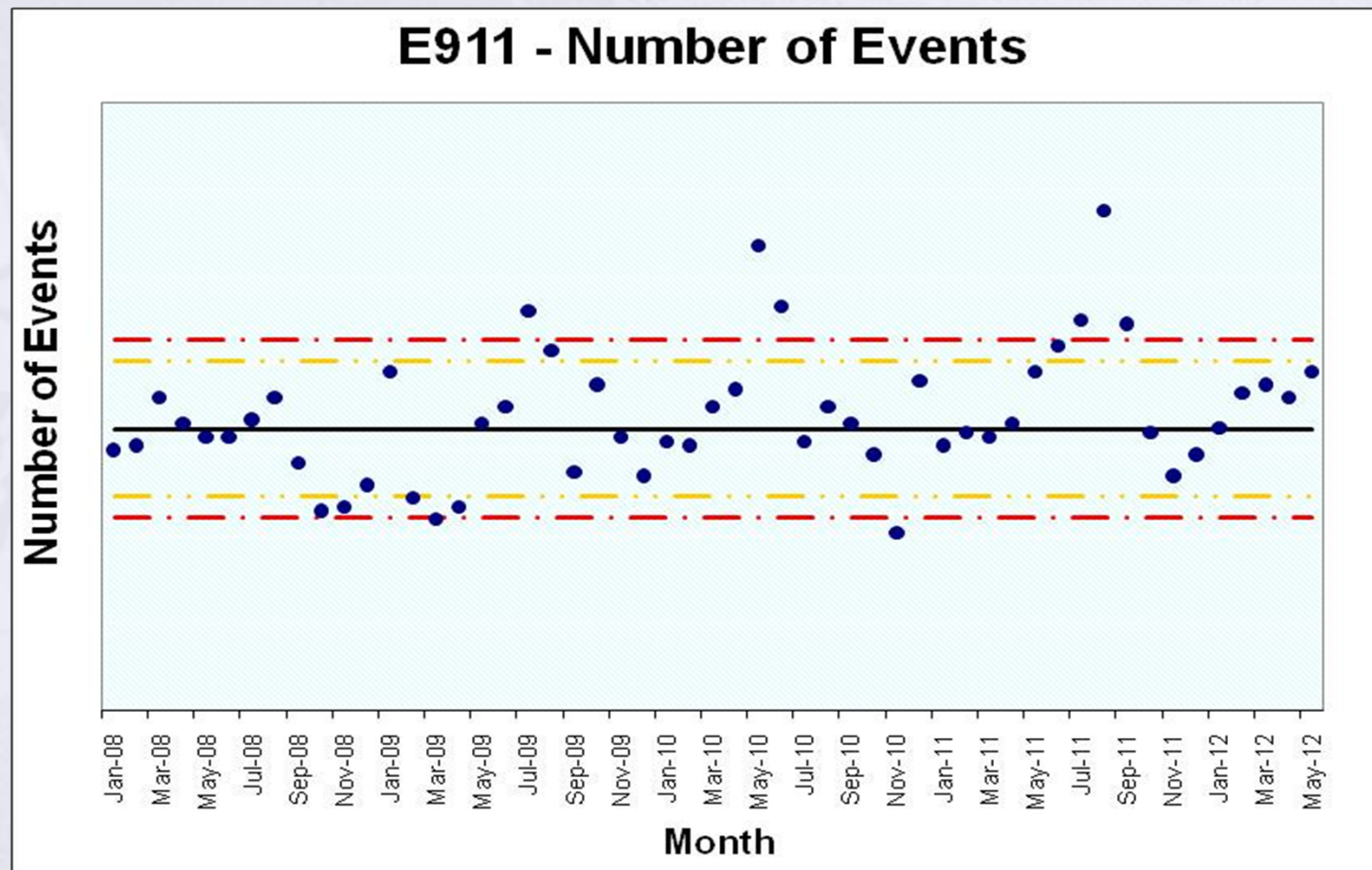
DS3-Simplex

6



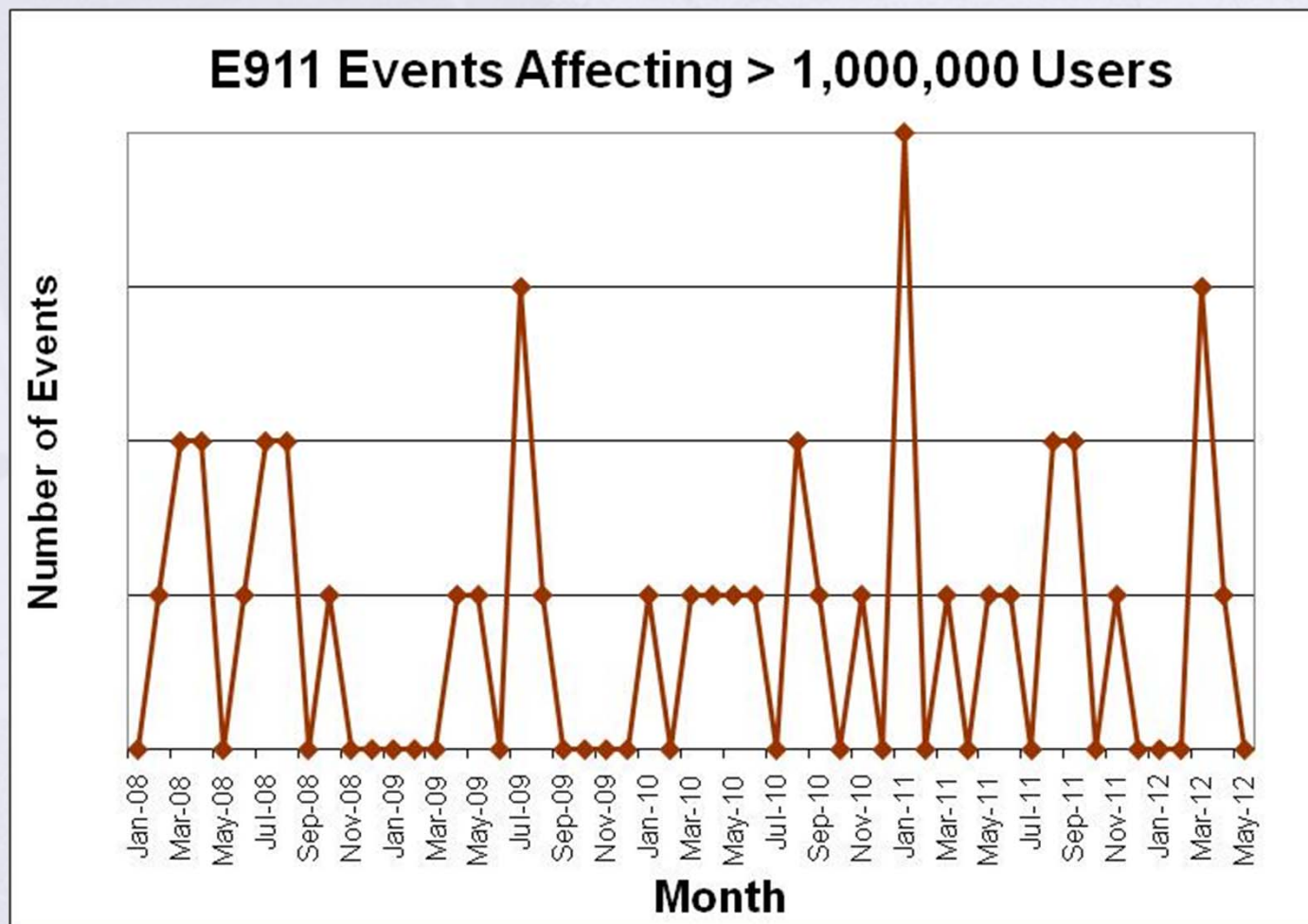
E911

7



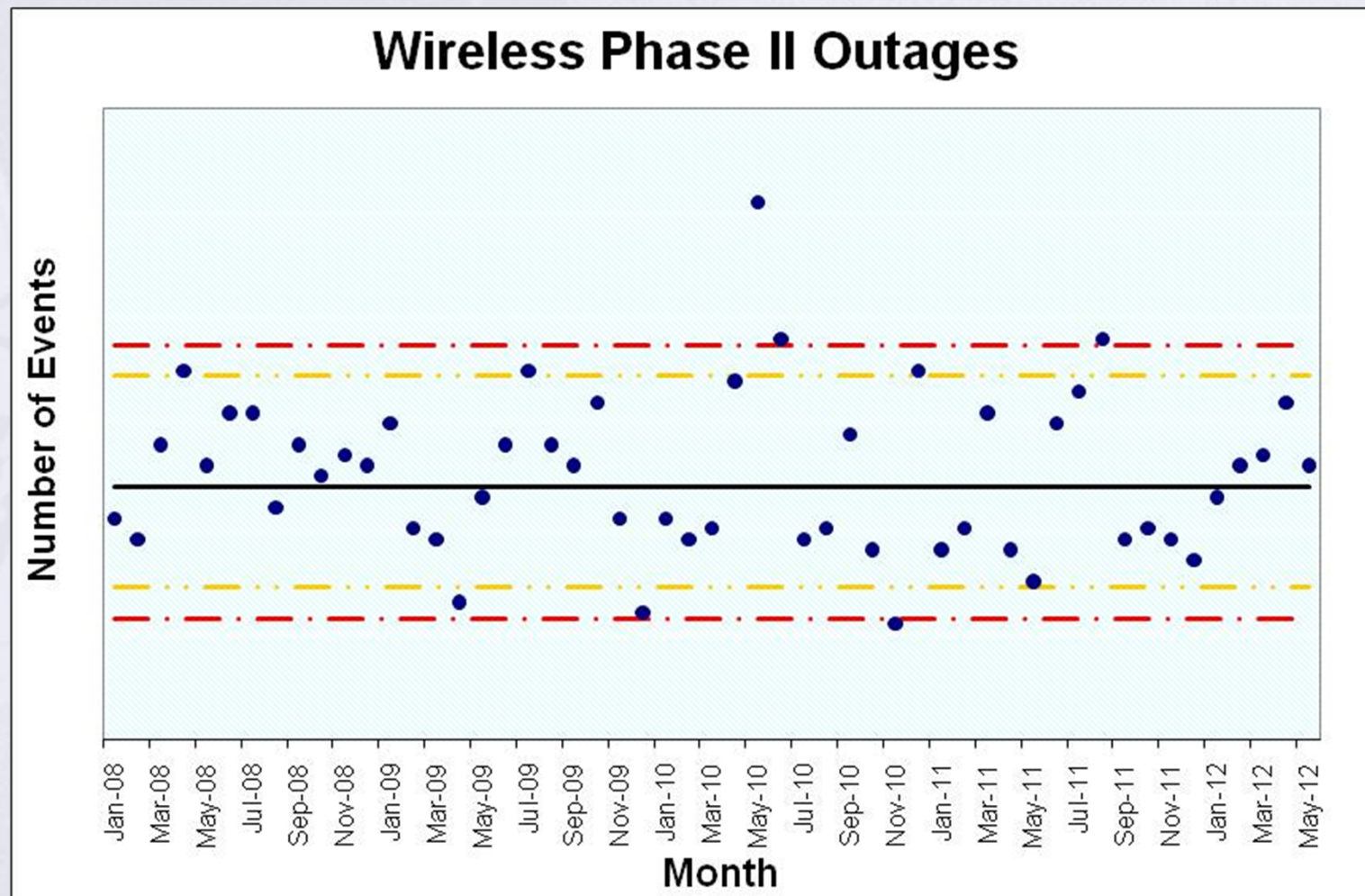
Very Large E911 Outages

8



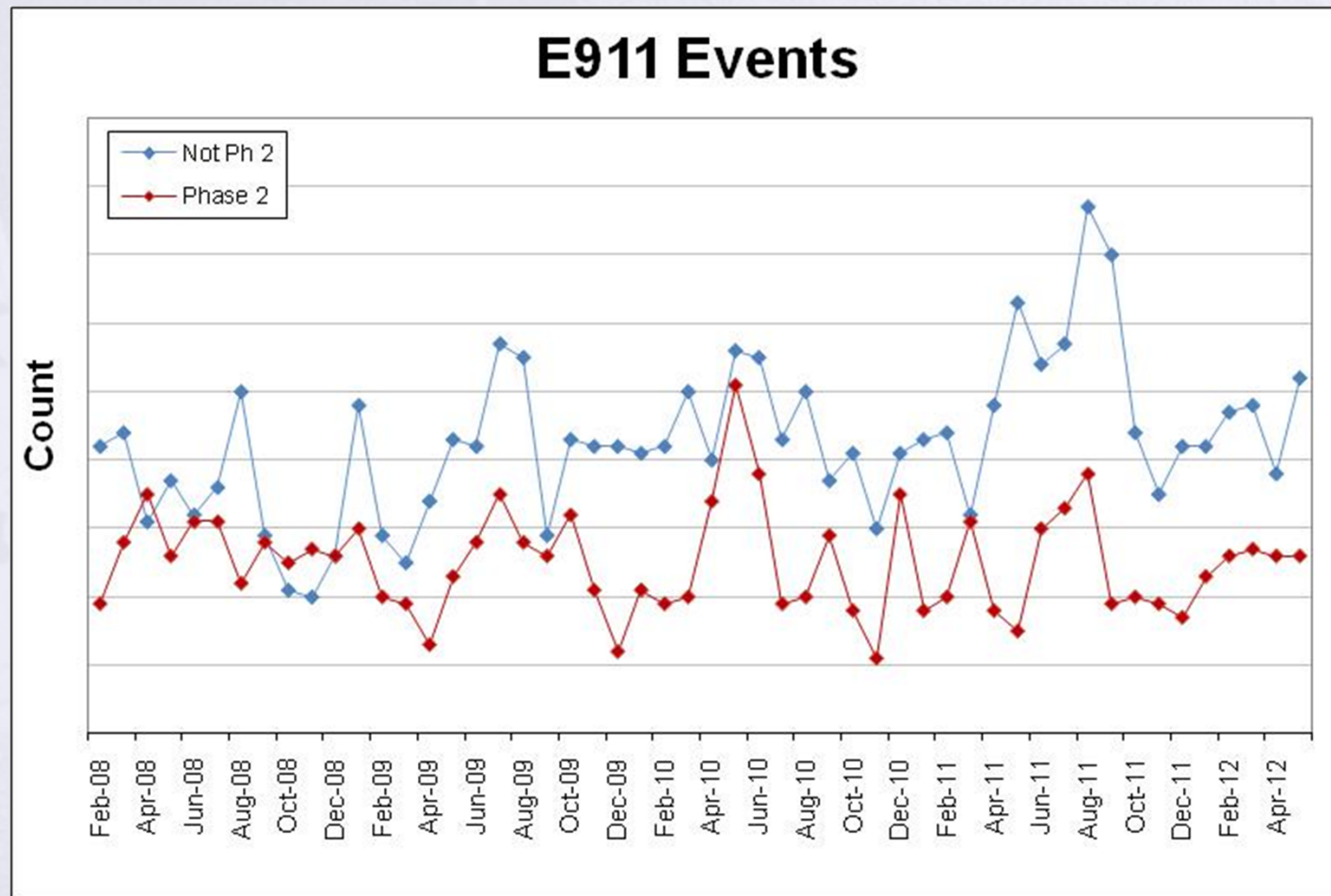
E911 – Phase 2 Events

9



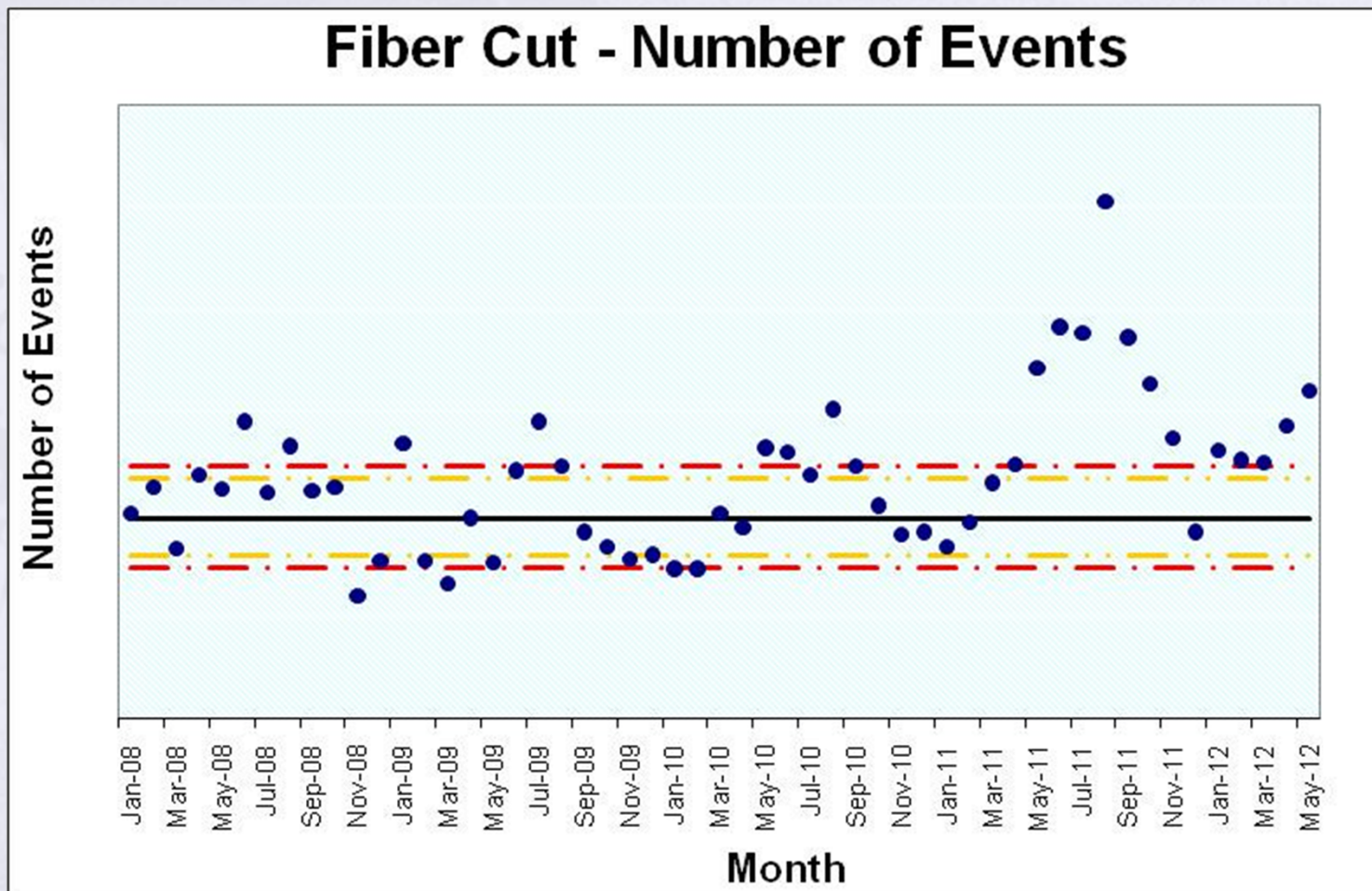
Phase 2 vs. All Other E911 Outages

10



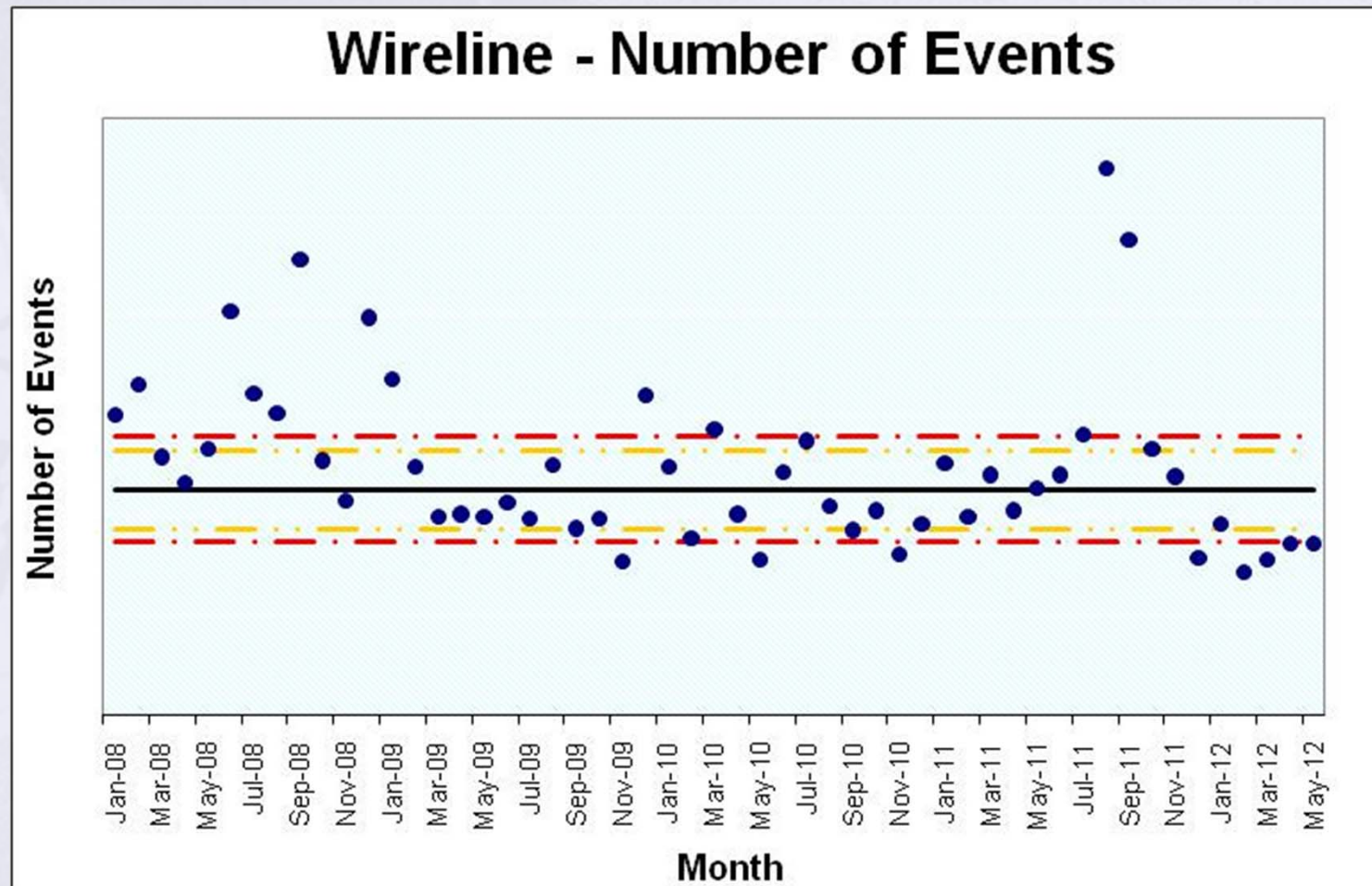
Fiber Cut

11



Wireline

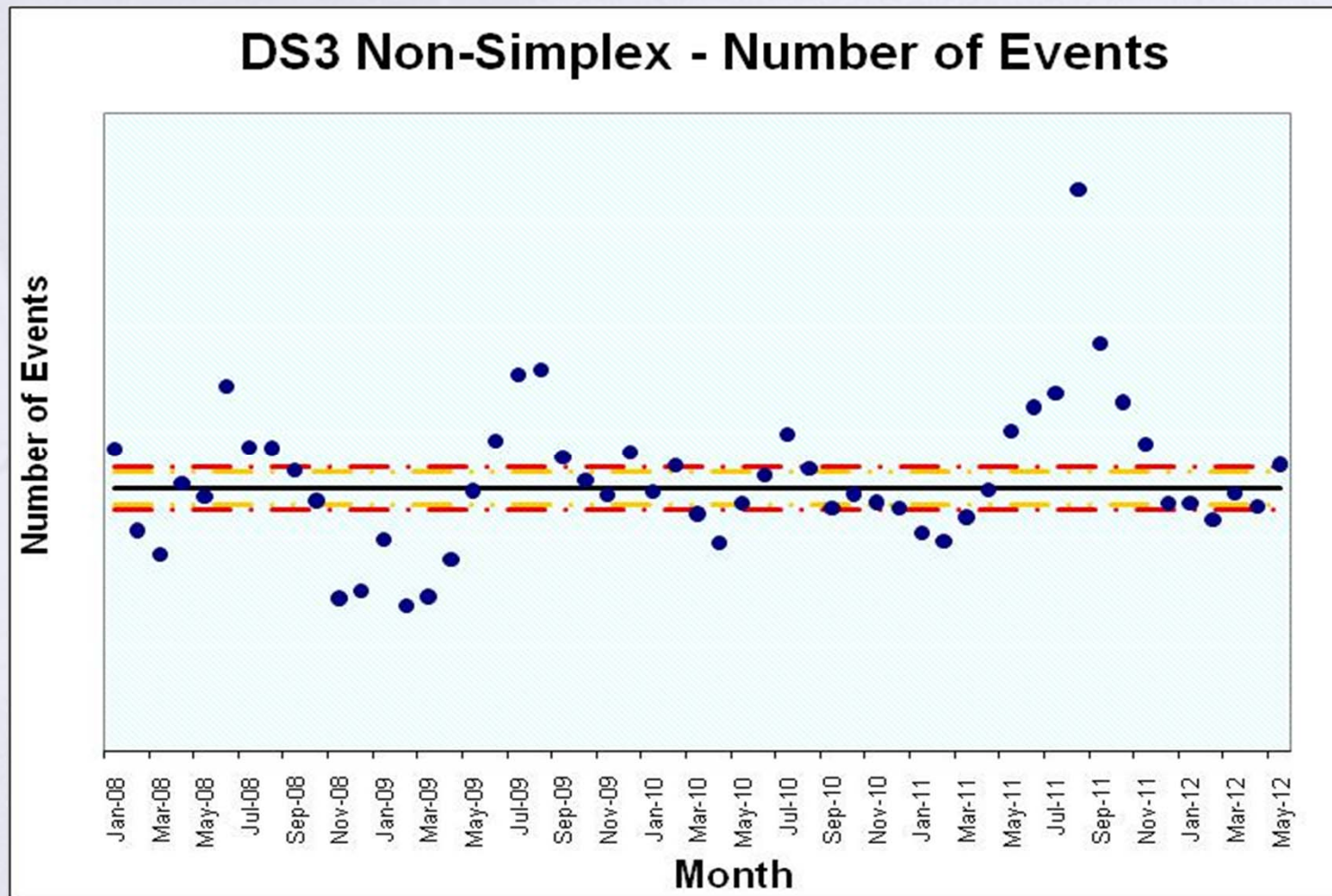
12



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

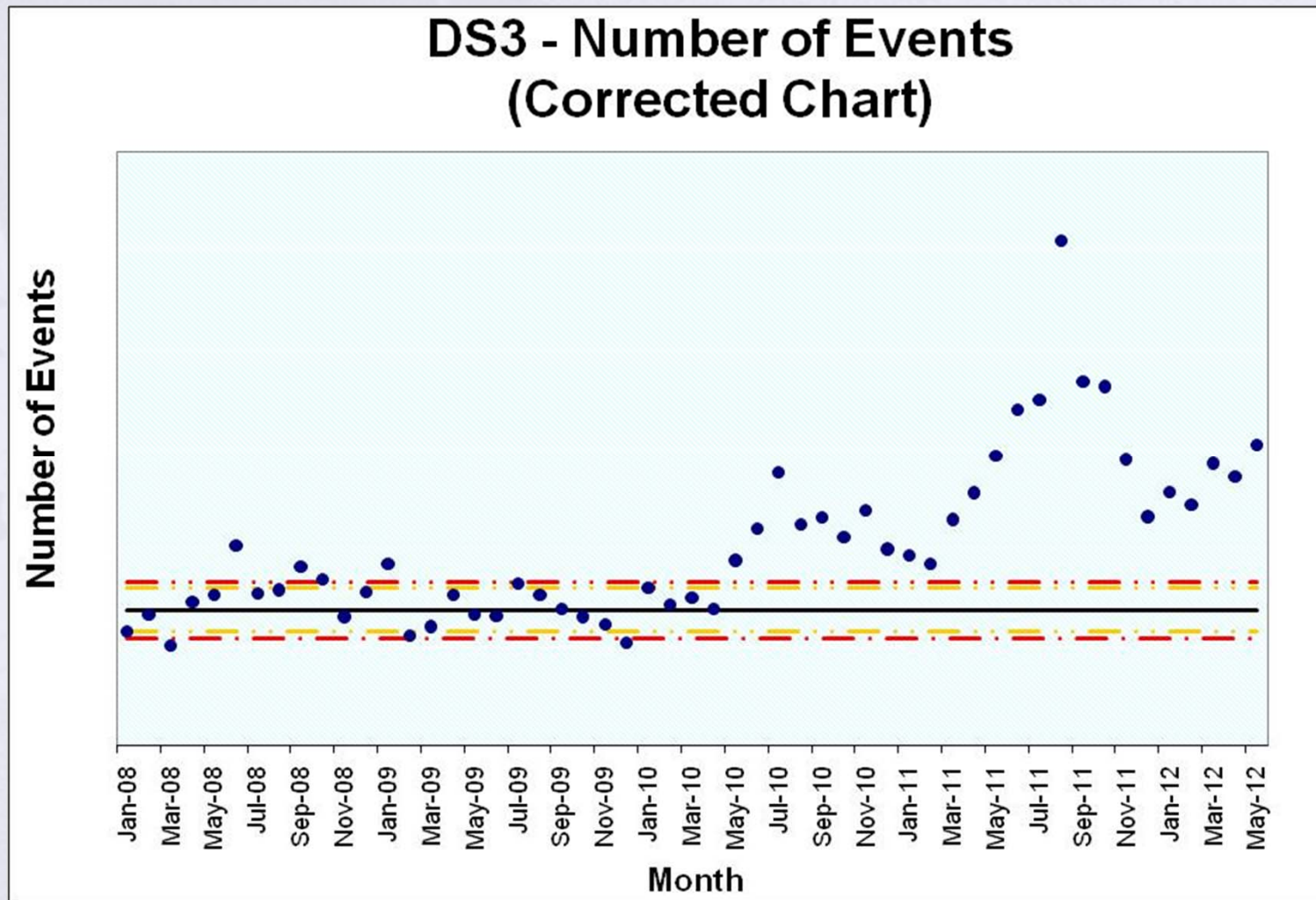
DS3 (Non-Simplex) Events

13



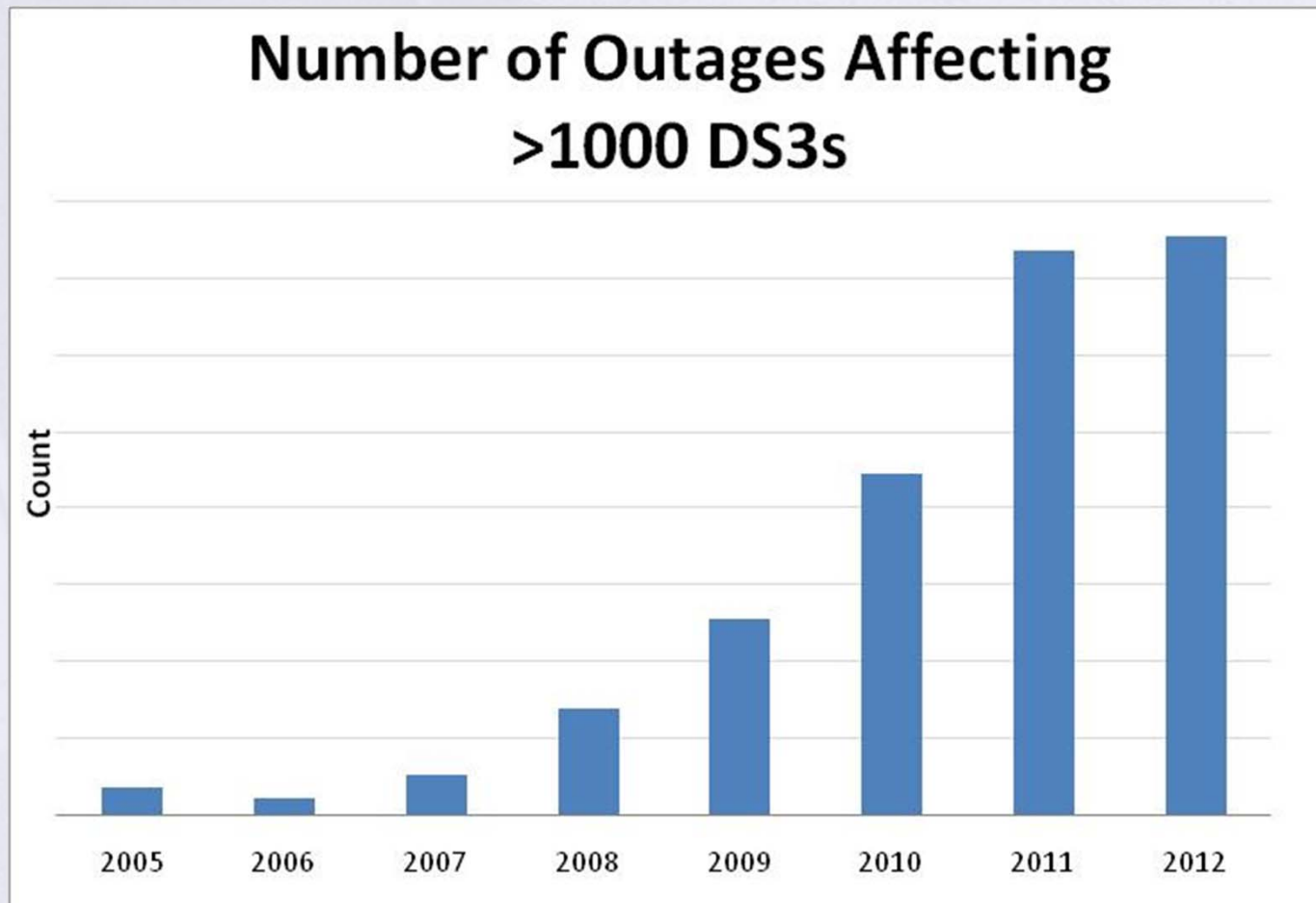
DS3 (Non-Simplex) Events

14



Big DS3 Outages

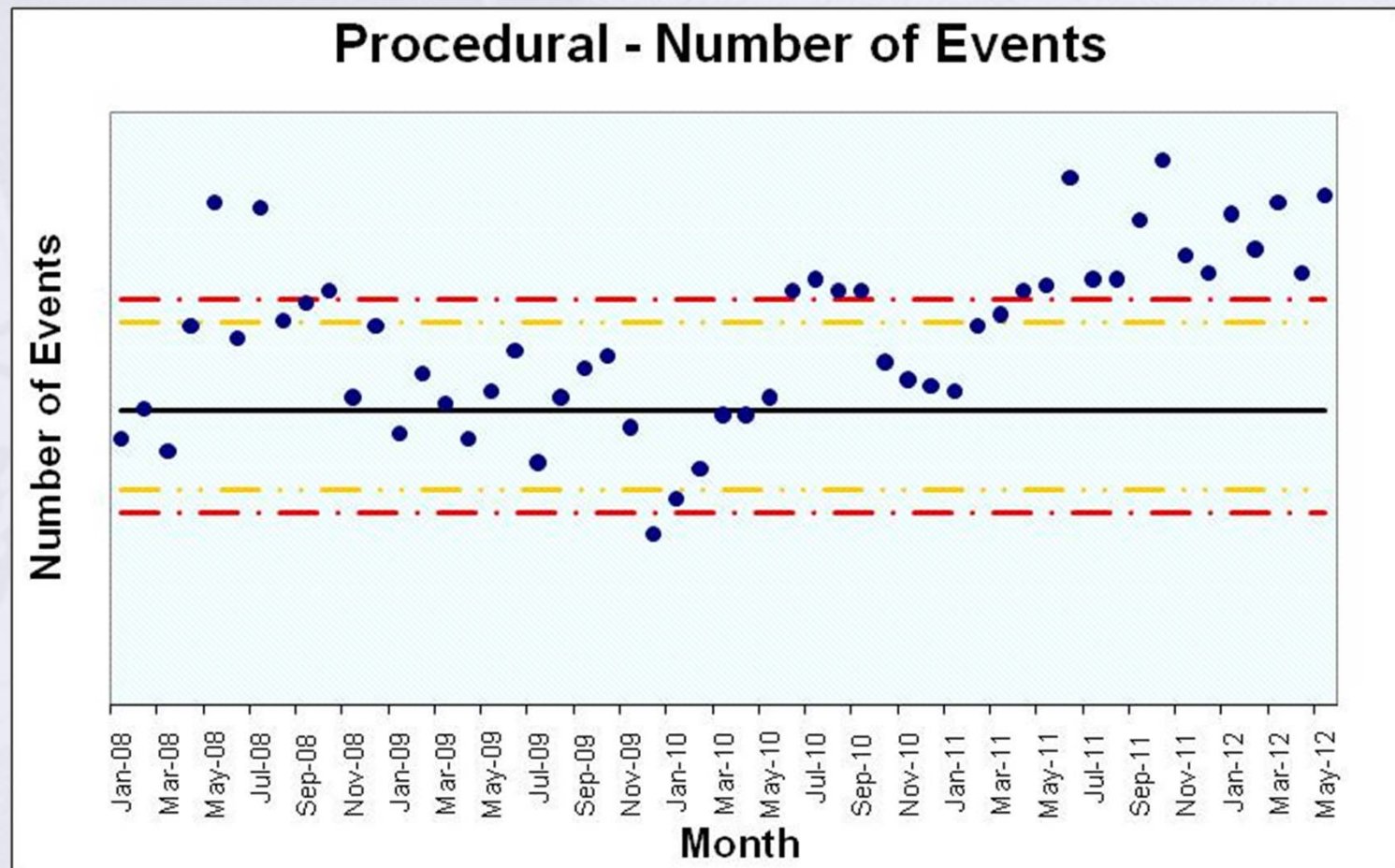
15



For 2012, the number of outages from January to May was multiplied by 2.4

Procedural Events

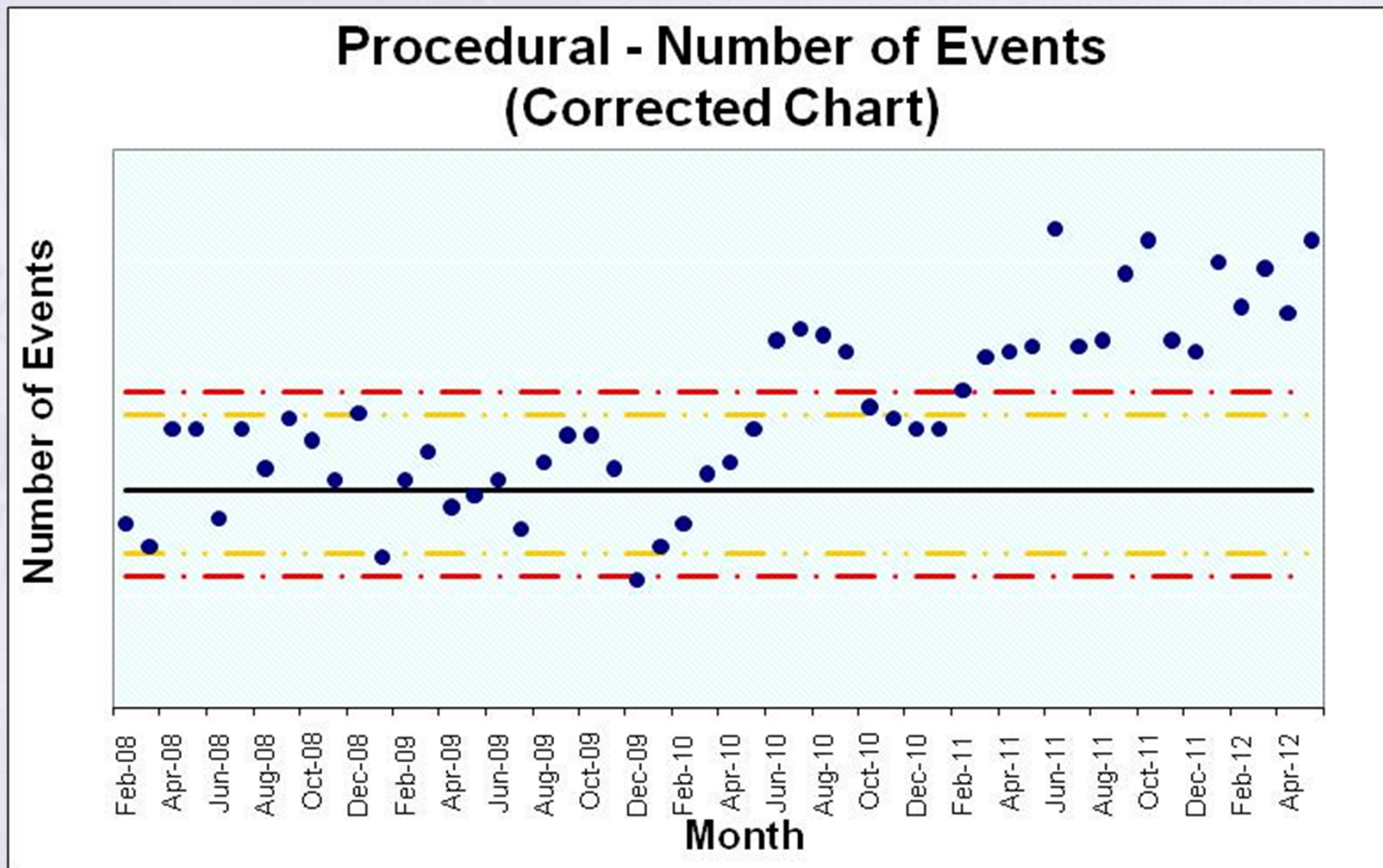
16



Procedural events are ones which have a procedural root cause.

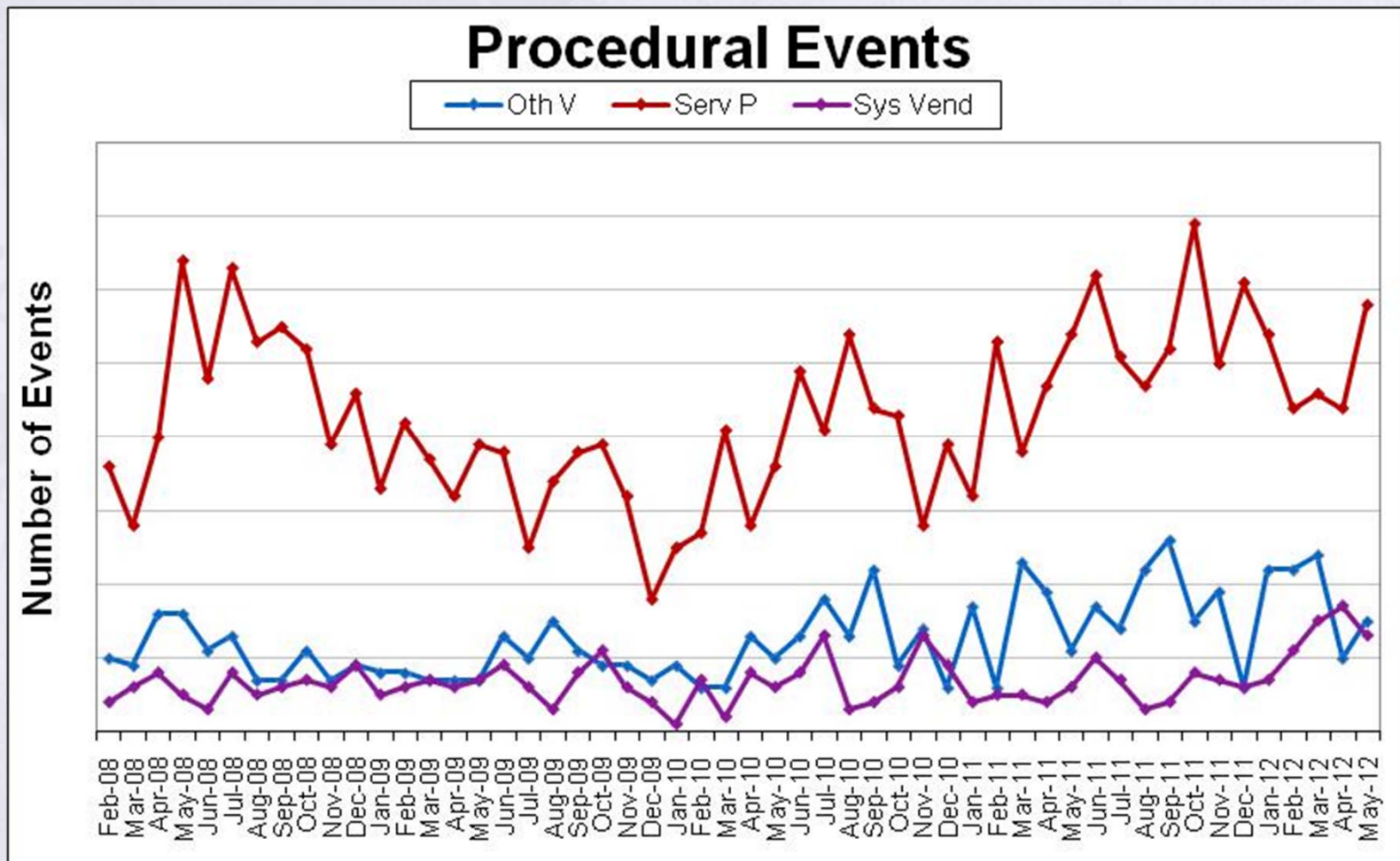
Procedural Events

17



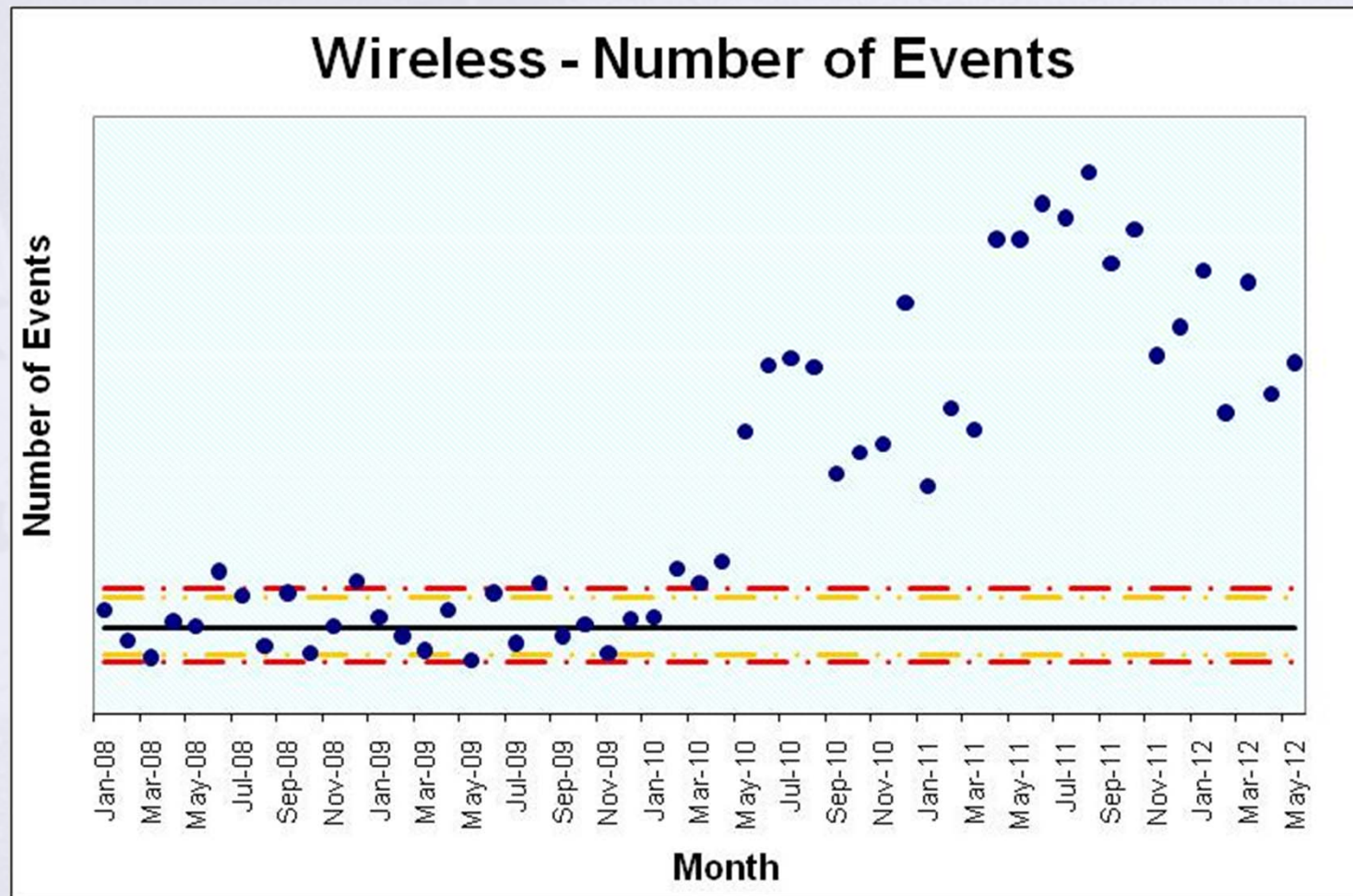
Procedural Events by Source

18



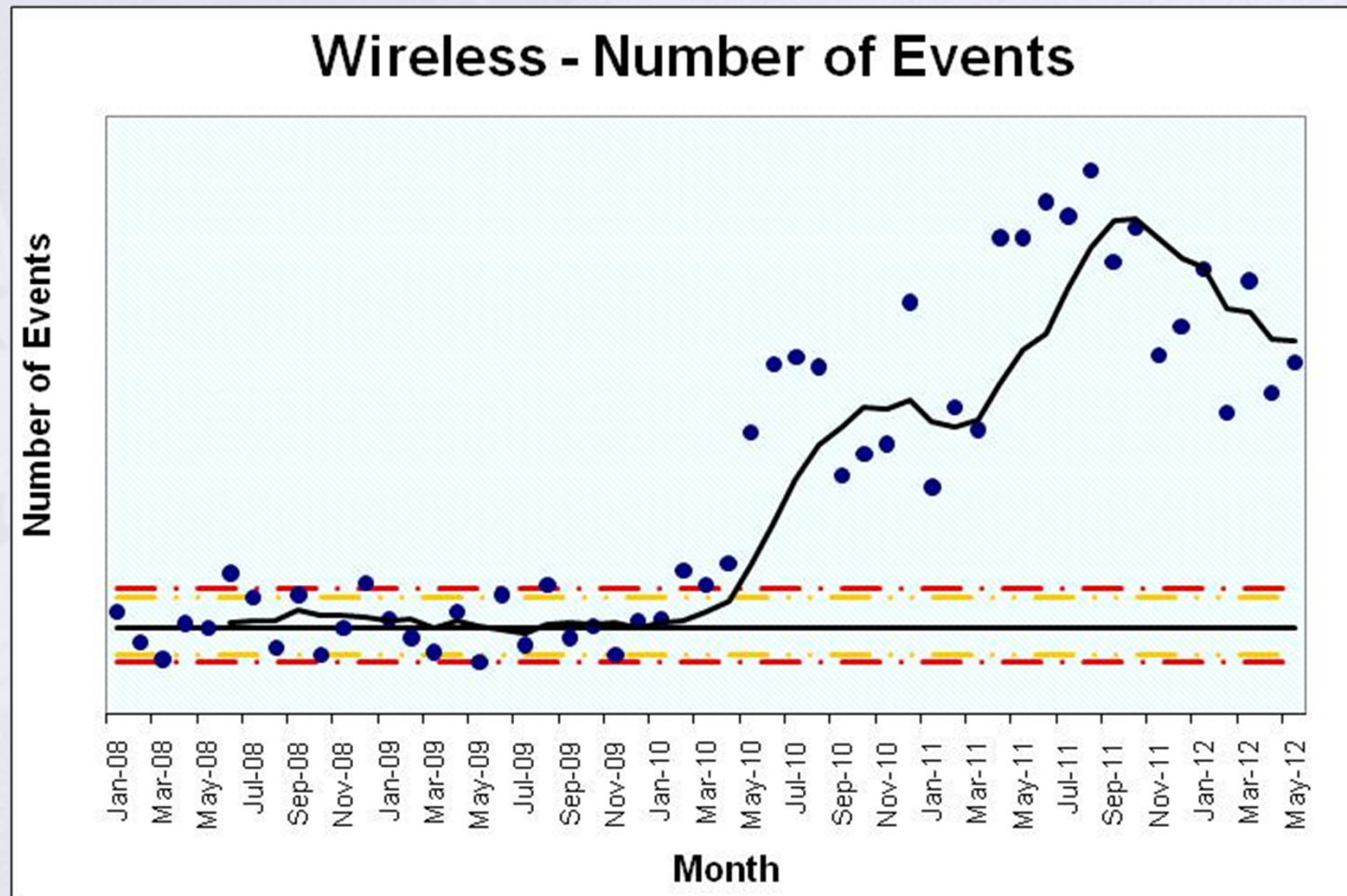
Wireless

19



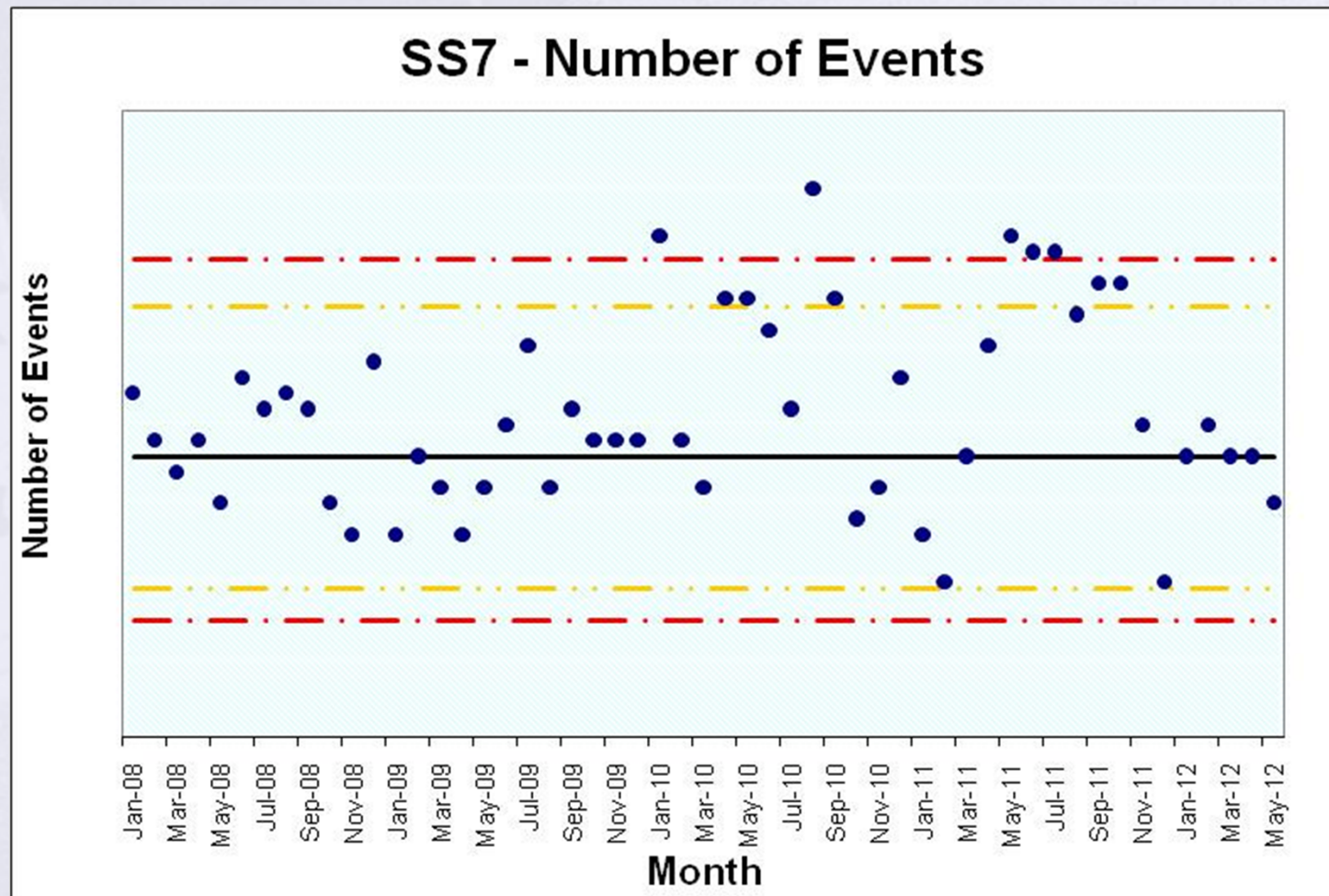
Wireless with Trend Line

20



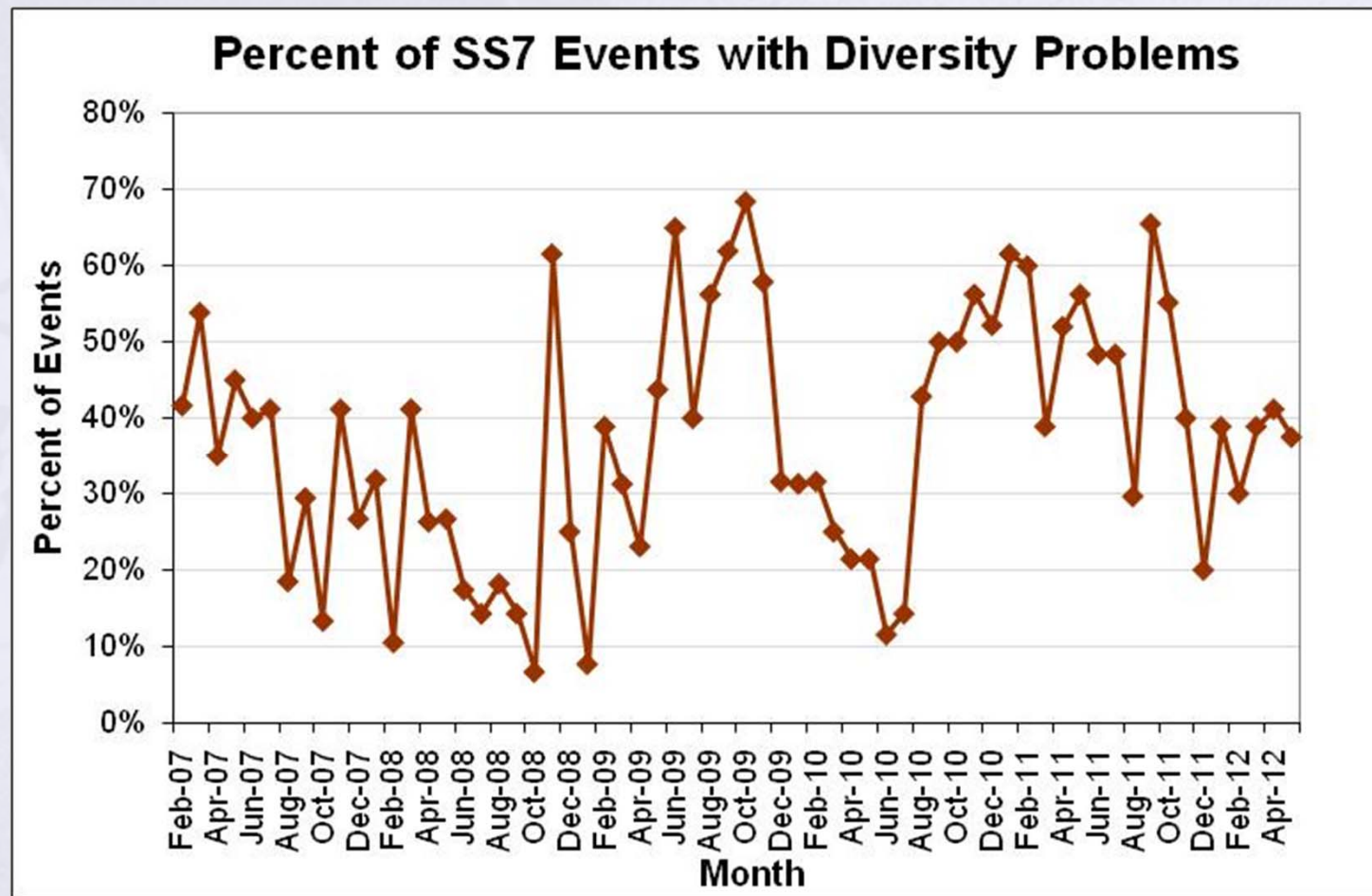
SS7

21



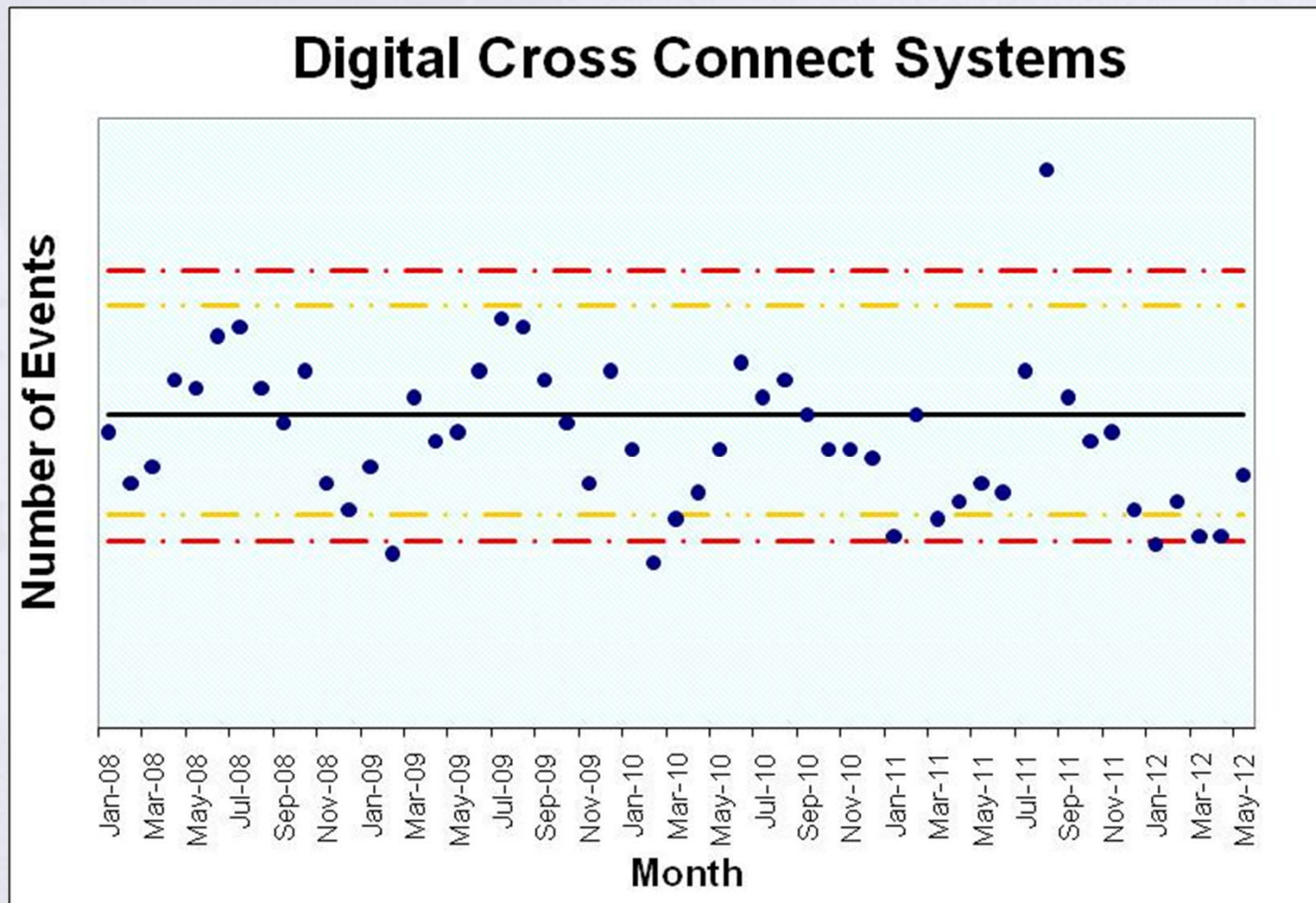
SS7 and Diversity

22



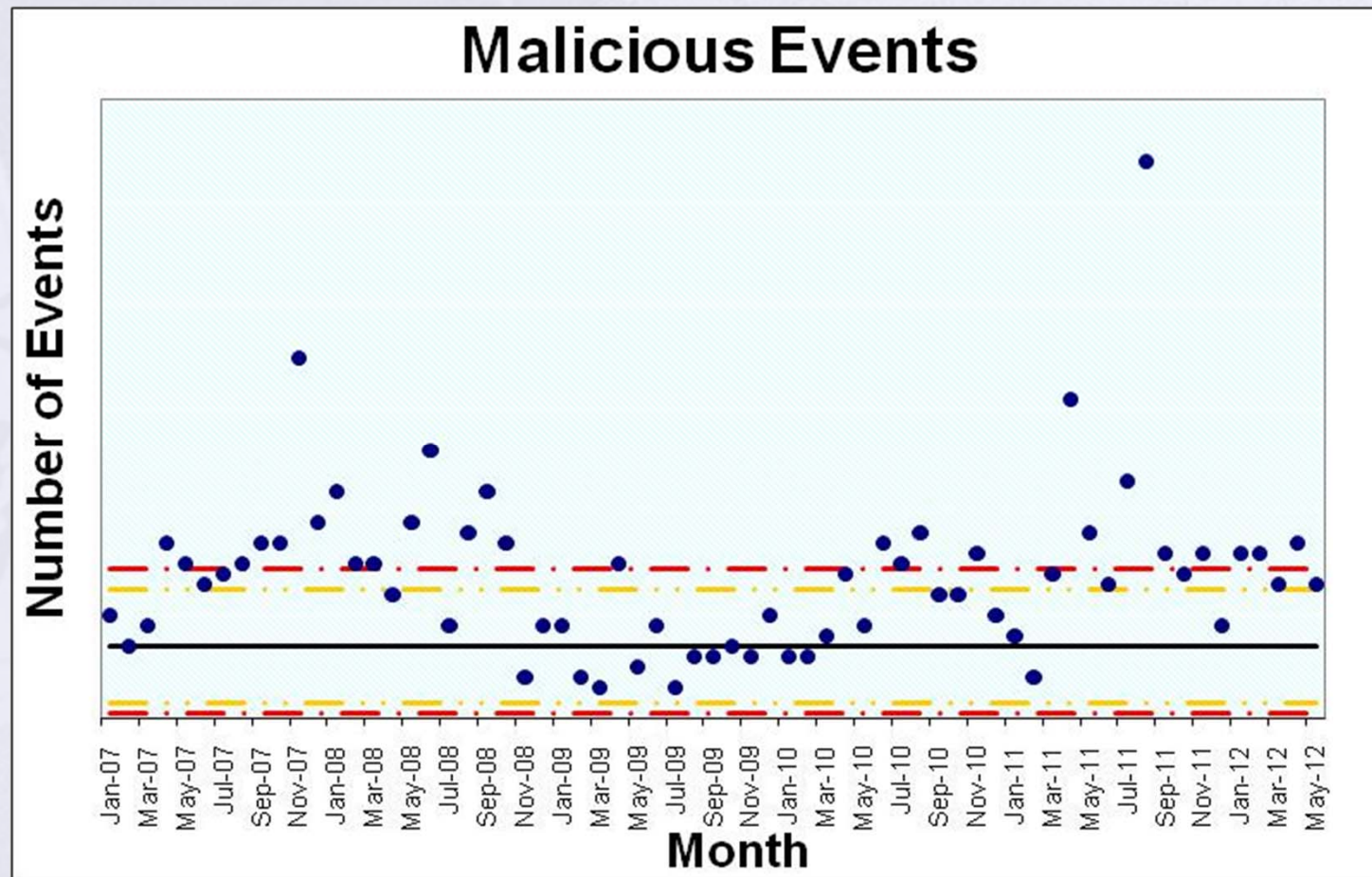
Digital Cross Connect Systems

23



Malicious Events

24



Malicious Activity

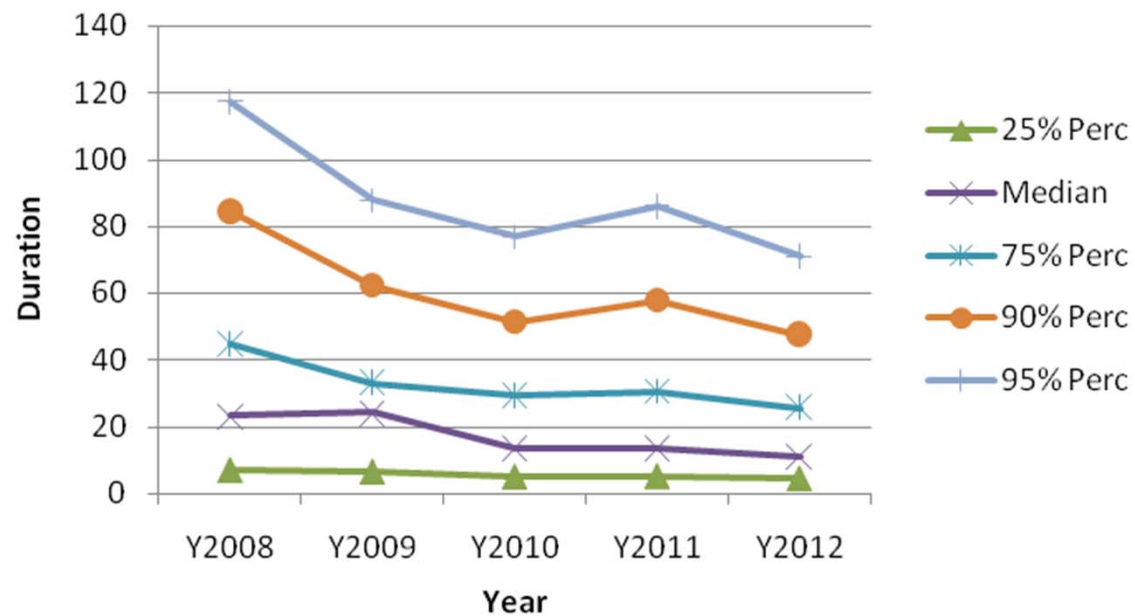
25

- 580 outage reports where malicious activity was indicated (188 in 2007, 188 in 2008, 83 in 2009, 138 in 2010, 222 in 2011, and 76 in the first five months of 2012)
- No outages seemed to be related to terrorist activities.
- About 36% (79) mention vandalism in 2011 and 56% of the reports (43) mentioned vandalism in 2012.
- About 4% of the reports (9) mentioned gun or shots in 2011 and 8% (6) in 2012.

Duration Trends: DS3 Non-Simplex

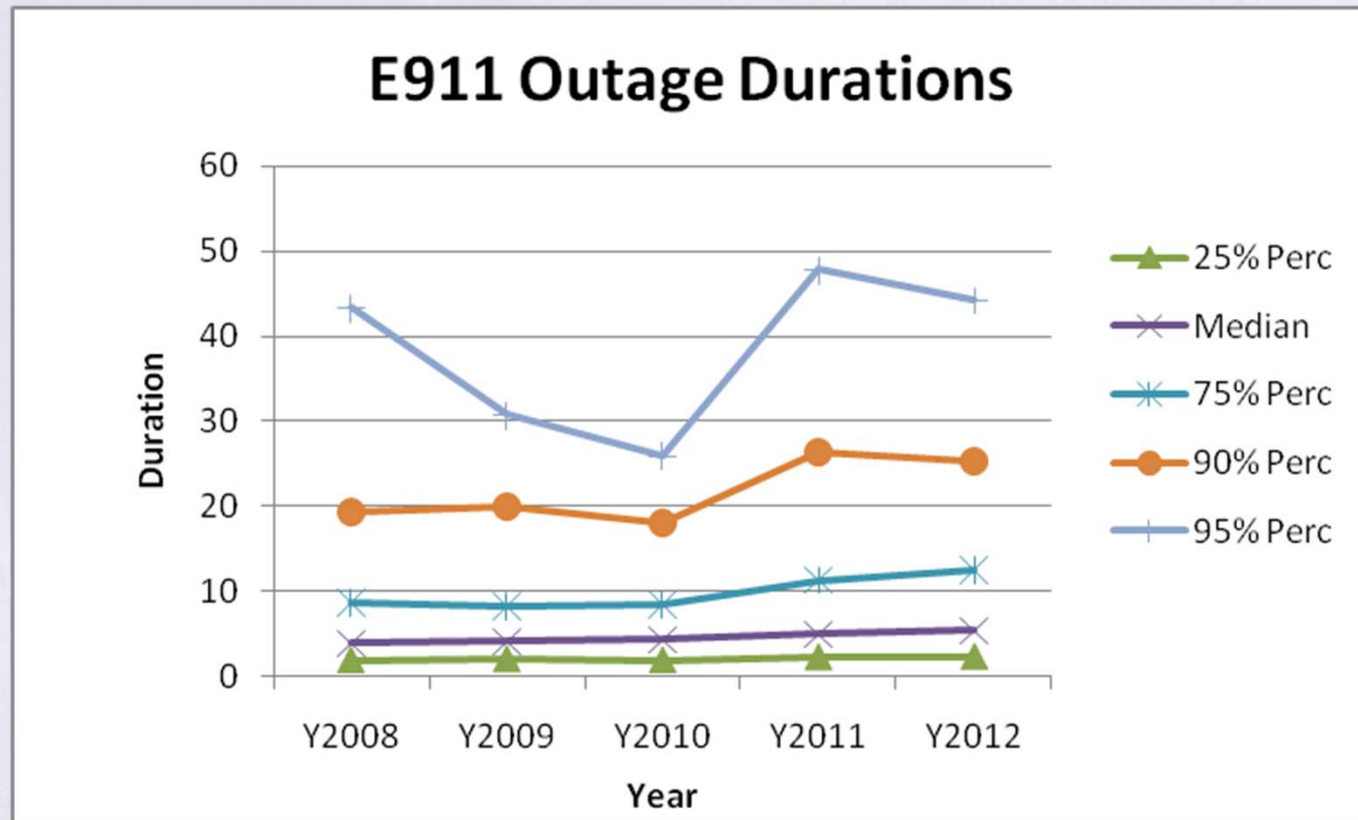
26

DS3 Non-Simplex Outage Durations



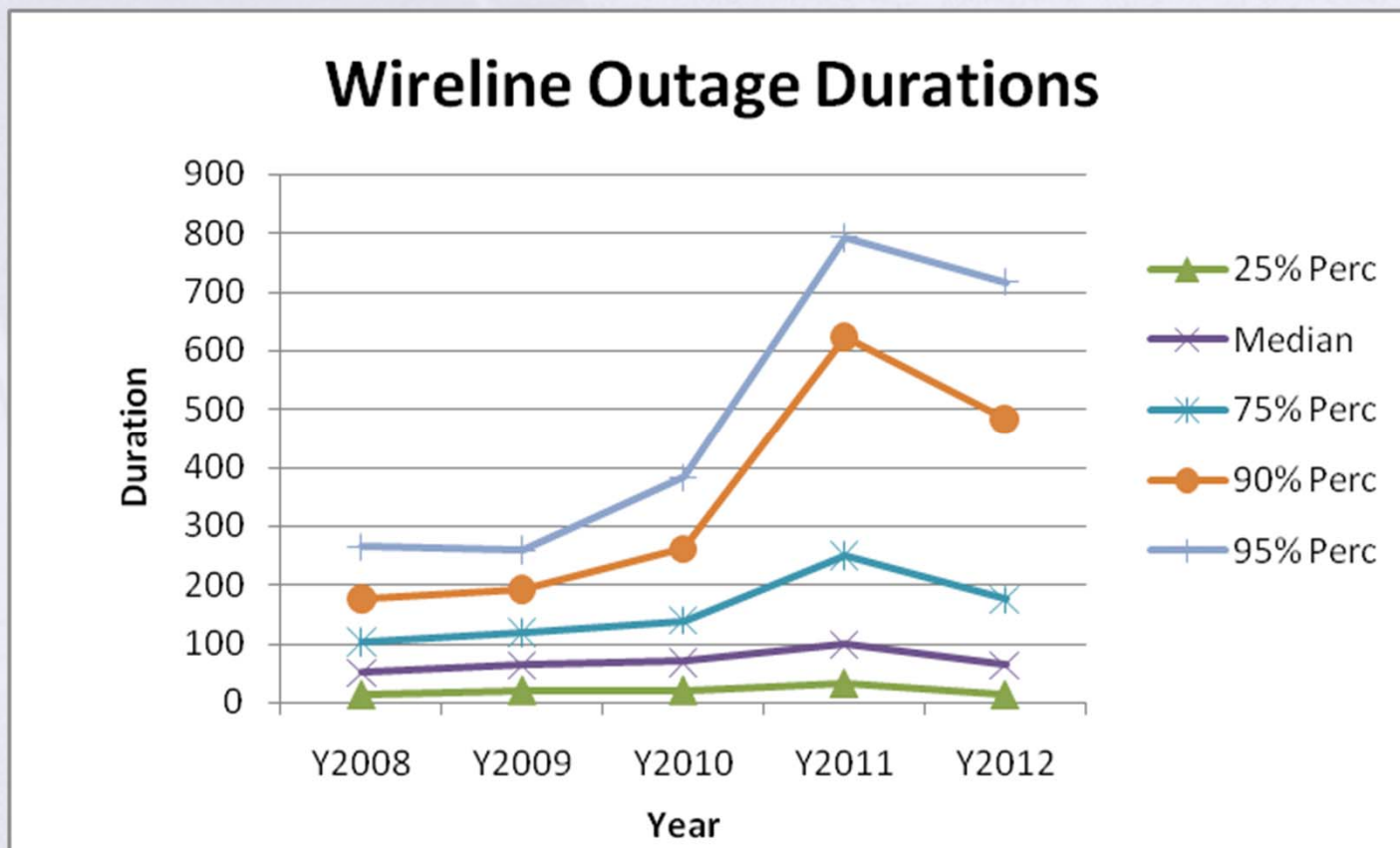
Duration Trends: E911

27



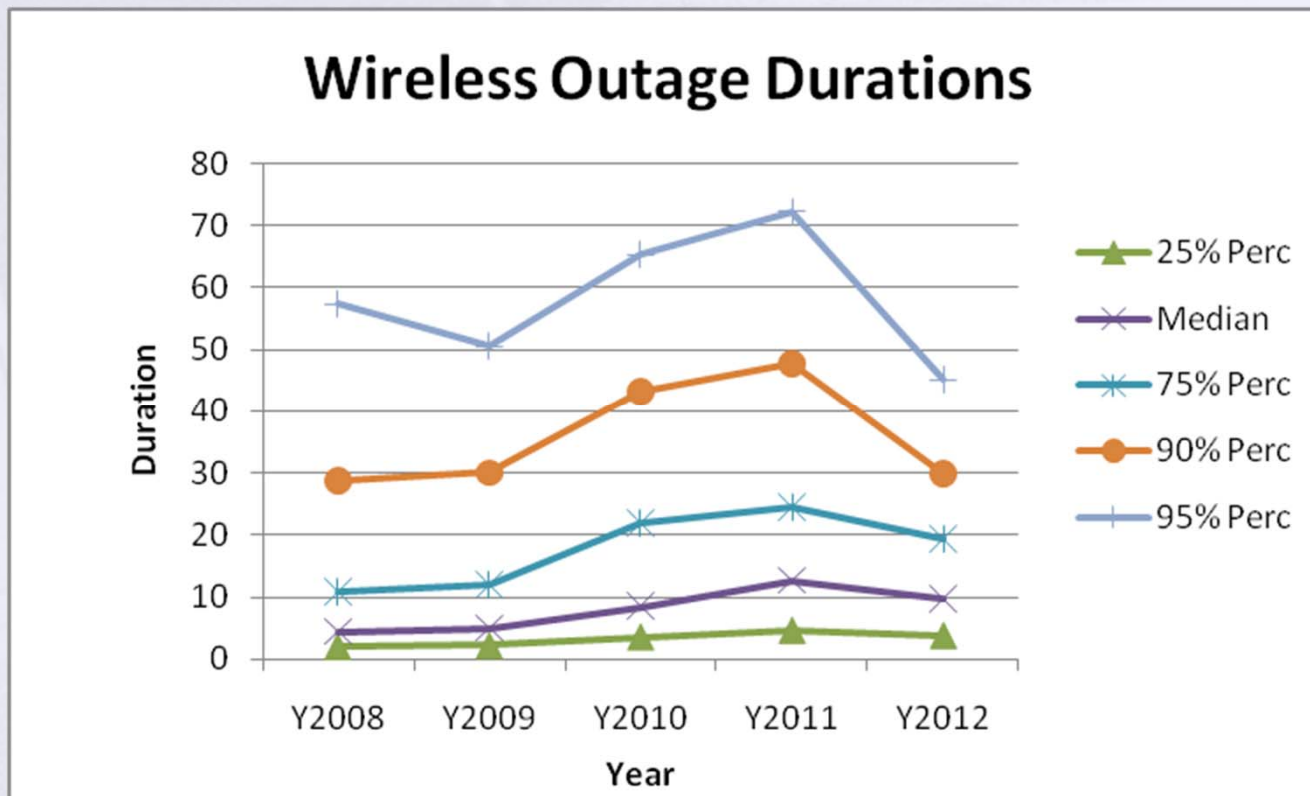
Duration Trends: Wireline

28



Duration Trends: Wireless

29



Test for Trend in Event Duration

Non-DS3-Simplex Outages Data from 2010 thru 2012

Rank Correlation of
duration with date is 0 and
is not significant

**Conclusion: Non DS3-
Simplex Outages are not
showing any trends from
1/10 to 6/12**

DS3-Simplex Events Only Data from 2010 thru 2012

Rank Correlation of
duration with date is .067
and is significant

**Conclusion: DS3-Simplex
Events are longer from
1/10 to 6/12**

Changes to NORRS/DIRS

31

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

Comments and suggestions are greatly appreciated

NRSC Activities

32

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