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# Analysis of MARC Ridership and Delays

January 2003 – July 2010



# How we Compile the Data

- The track that MARC runs on has many different sections.
- If a train moves from section to section behind schedule, the reason for that delay is recorded by MARC staff.
- If the train arrives at its final destination 6 or more minutes late, MARC staff enter those delays into a database.
- A delay entry records the length, location, and reason for the delay.
- The database to record delays began in January 2003, so only data between January 2003 and July 2010 were analyzed for this report.
- *Why present an analysis of delays instead of an analysis of on-time performance (OTP)?*
  - OTP is measured 1 time per train each day. However, up to 5 *delays* can be recorded per train each day. Therefore, analyzing delays gives more information than analyzing just OTP.
  - A train might be late for multiple reasons; these reasons can be recorded as multiple delays.

# ANALYSIS

The following analysis is broken into 2 sections:

1. Ridership and delay trends
2. Causes of delays

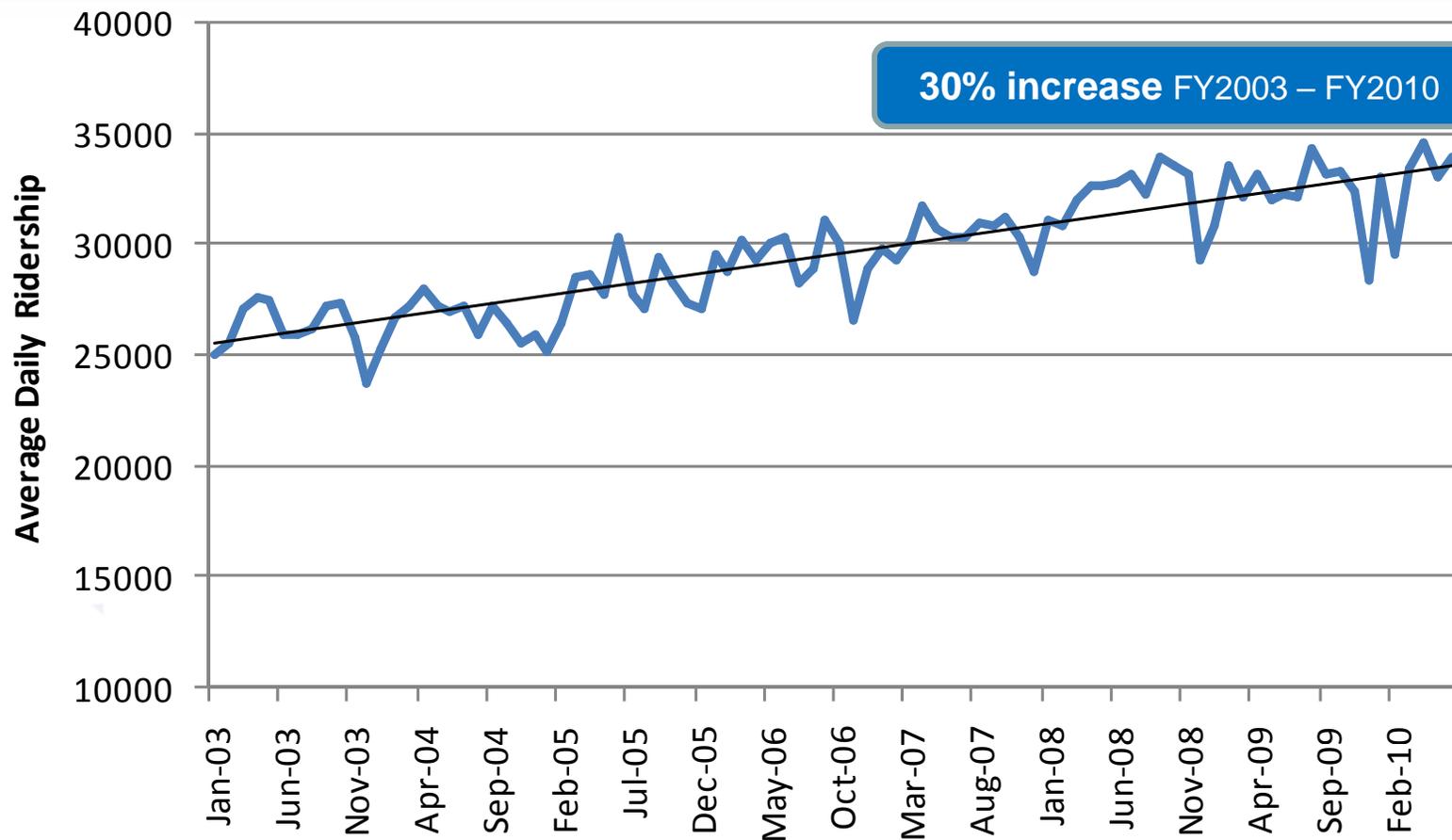
\*Note: Some analyses utilize fiscal-year data. The MTA follows a July through June fiscal year. For example, fiscal year 2010 was July 2009 through June 2010.

Section 1

# **RIDERSHIP AND DELAY TRENDS**

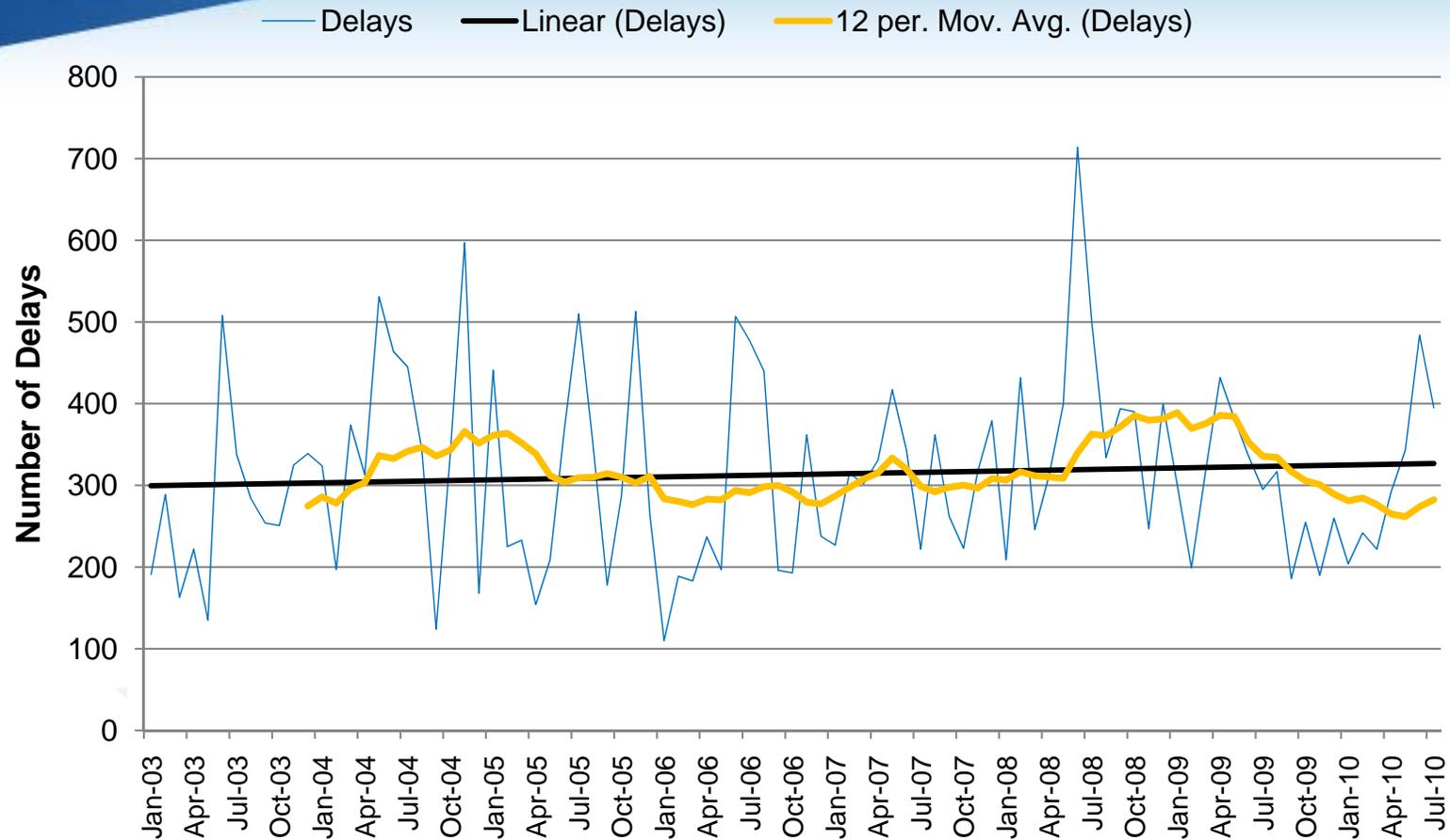
# Ridership Increases

## Average Daily Ridership (Entire MARC System)



Average daily ridership has been consistently growing on MARC service. In fact, average daily ridership in fiscal year 2010 was about 30% higher than fiscal year 2003.

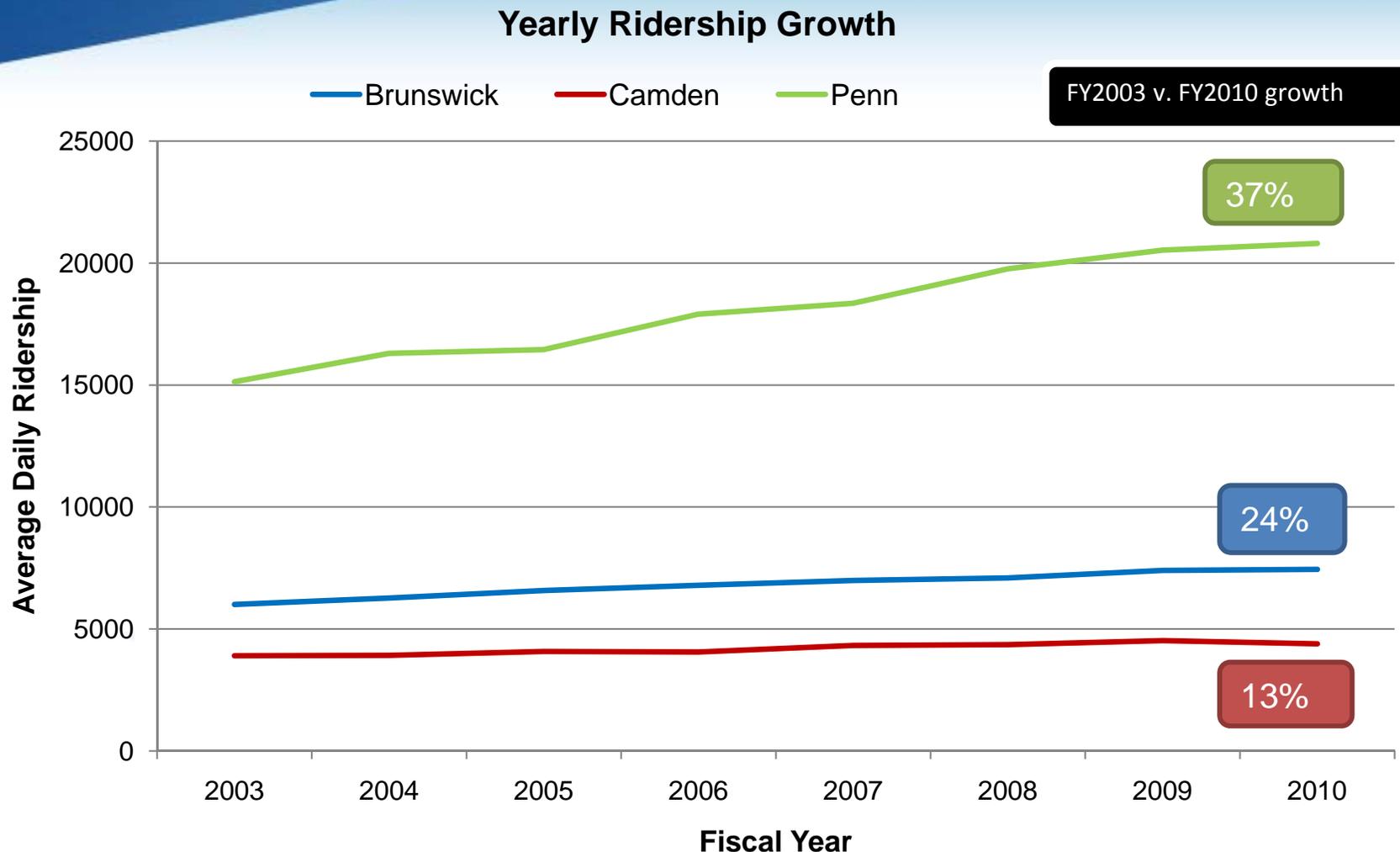
# Monthly Delay Trends: MARC System



Despite the increase in riders, delays have been relatively consistent with a slight increase occurring over the period. However, the rolling 12-month average of delays is at an all-time low.

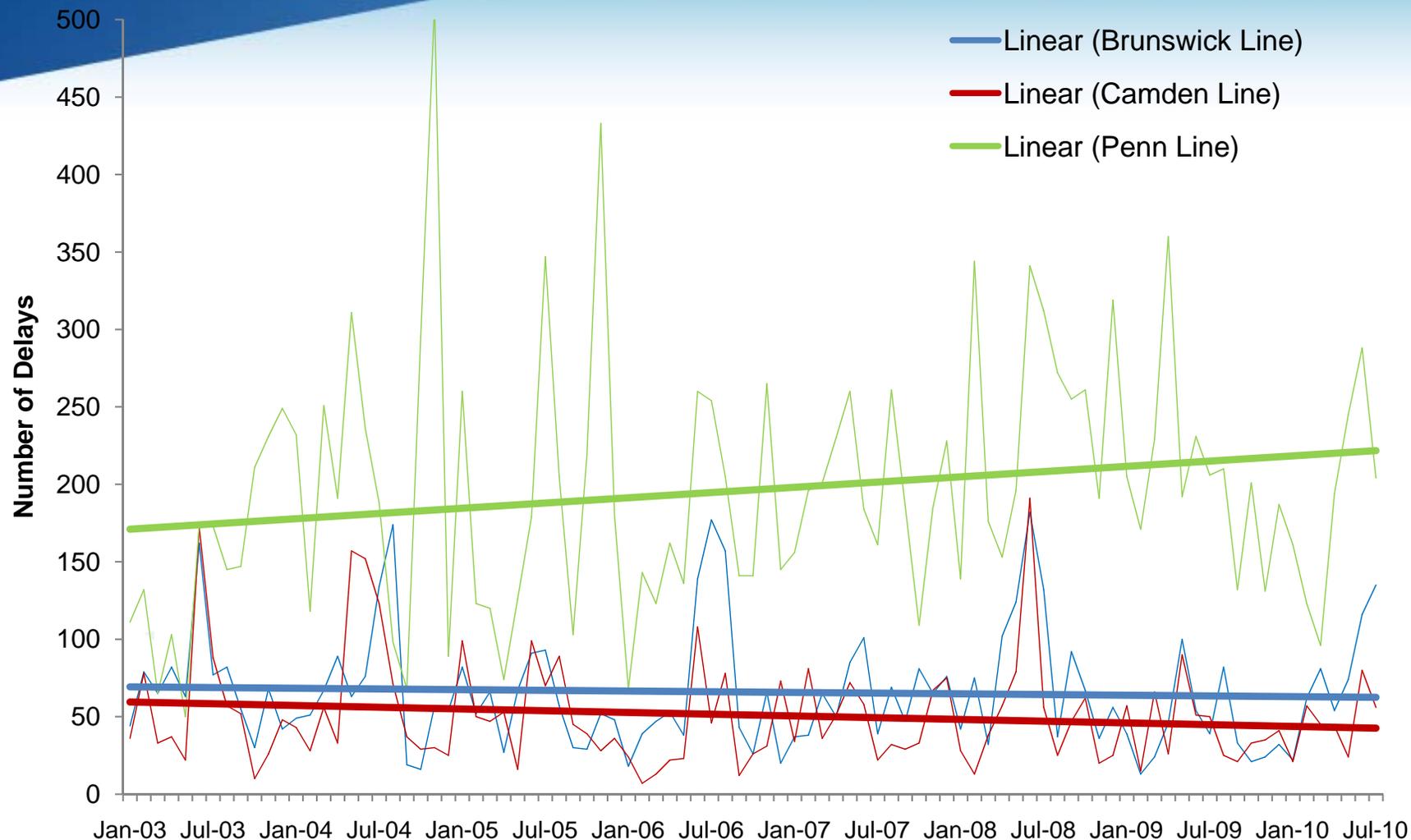
(A 12-month rolling average in a particular month is the average number of delays per month over the last 12 months. For example, July 2010's rolling average includes August 2009 – July 2010.)

# Ridership by Line



Penn line average daily ridership increased by about 37% in fiscal year 2010 compared to fiscal year 2003. Brunswick and Camden demonstrate steady, but slower, growth.

# Monthly Delays by Line



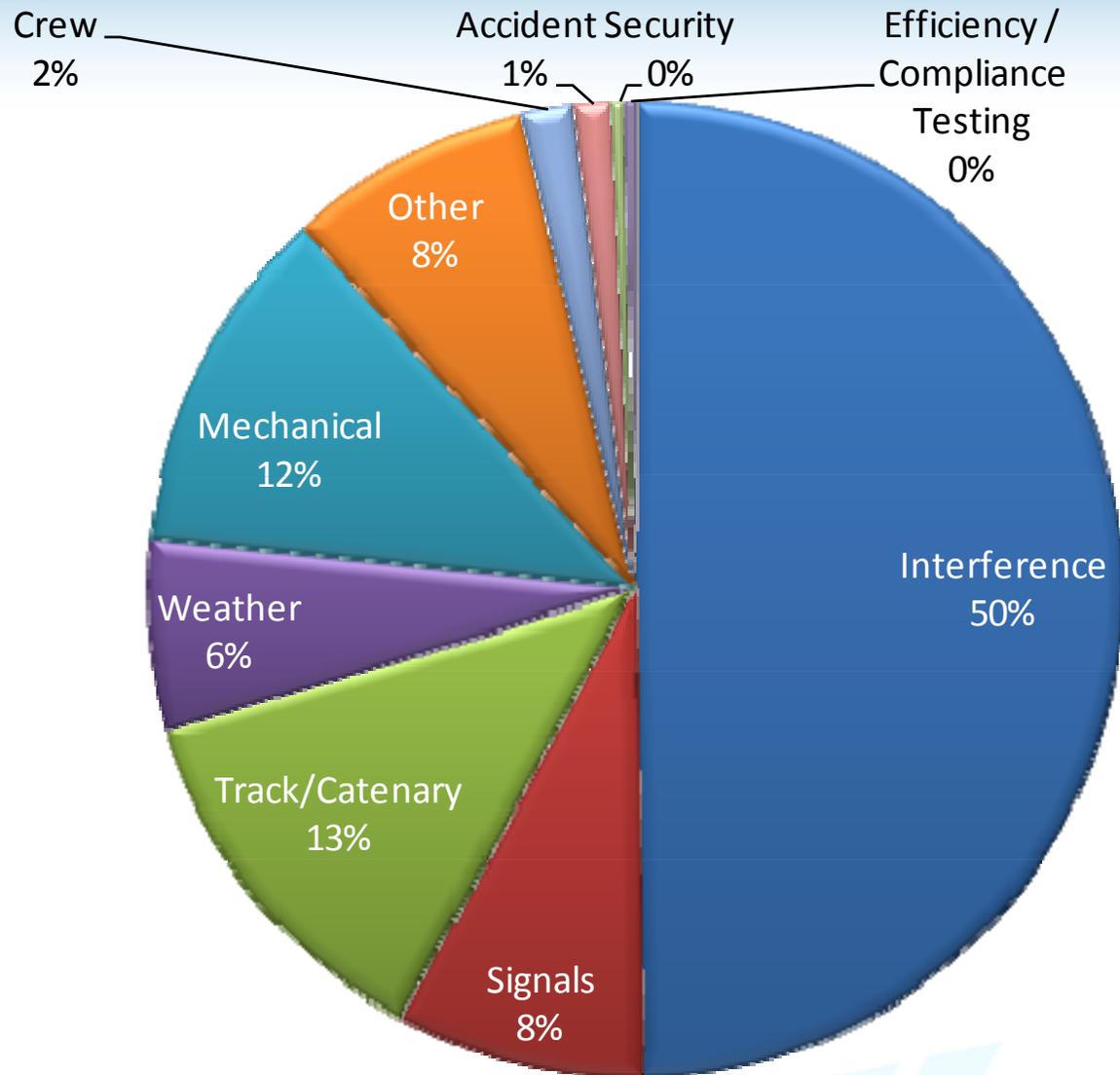
The increase in delays has occurred mainly on the Penn line. Recently, Penn delays were highest from Mar. 2010 – July 2010 (Penn line track work began in Mar. 2010).

Section 2

# CAUSES OF DELAYS

# Causes of Delay: MARC System\*

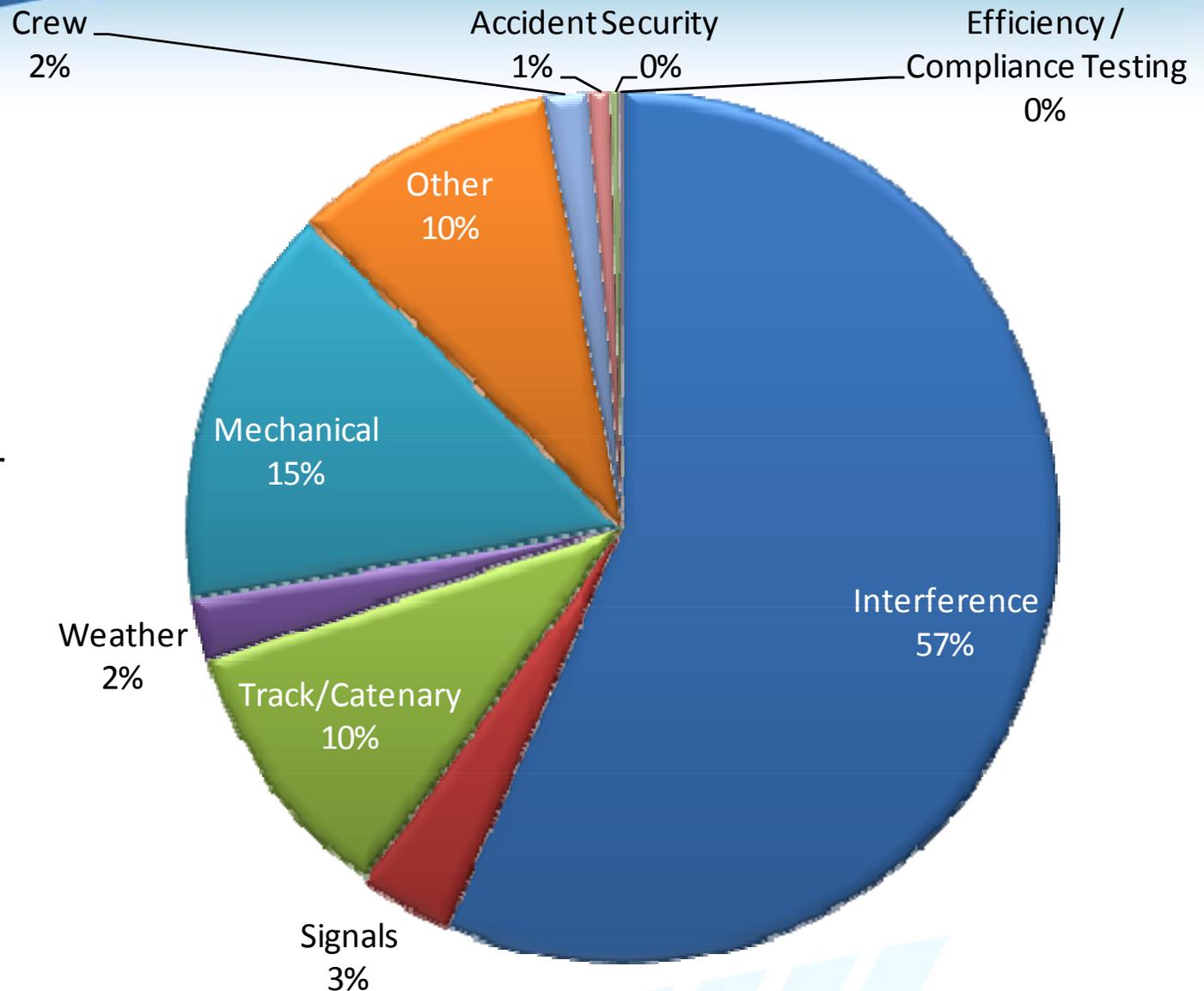
- 5 out of 10 delays are related to interference from other trains or dispatching decisions to hold a train.
- About 1 out of 10 delays is related to a mechanical problem.+
- About 1 out of 10 delays is related to a Track / Catenary problem.
- MTA/MARC has little to no *direct* control over the most substantial causes of delay.



\*This pie chart contains all MARC System delays between January 2003 and July 2010.

+Mechanical delays could be an initial car or locomotive problem as well as delays caused by mechanical problems on *other* trains.

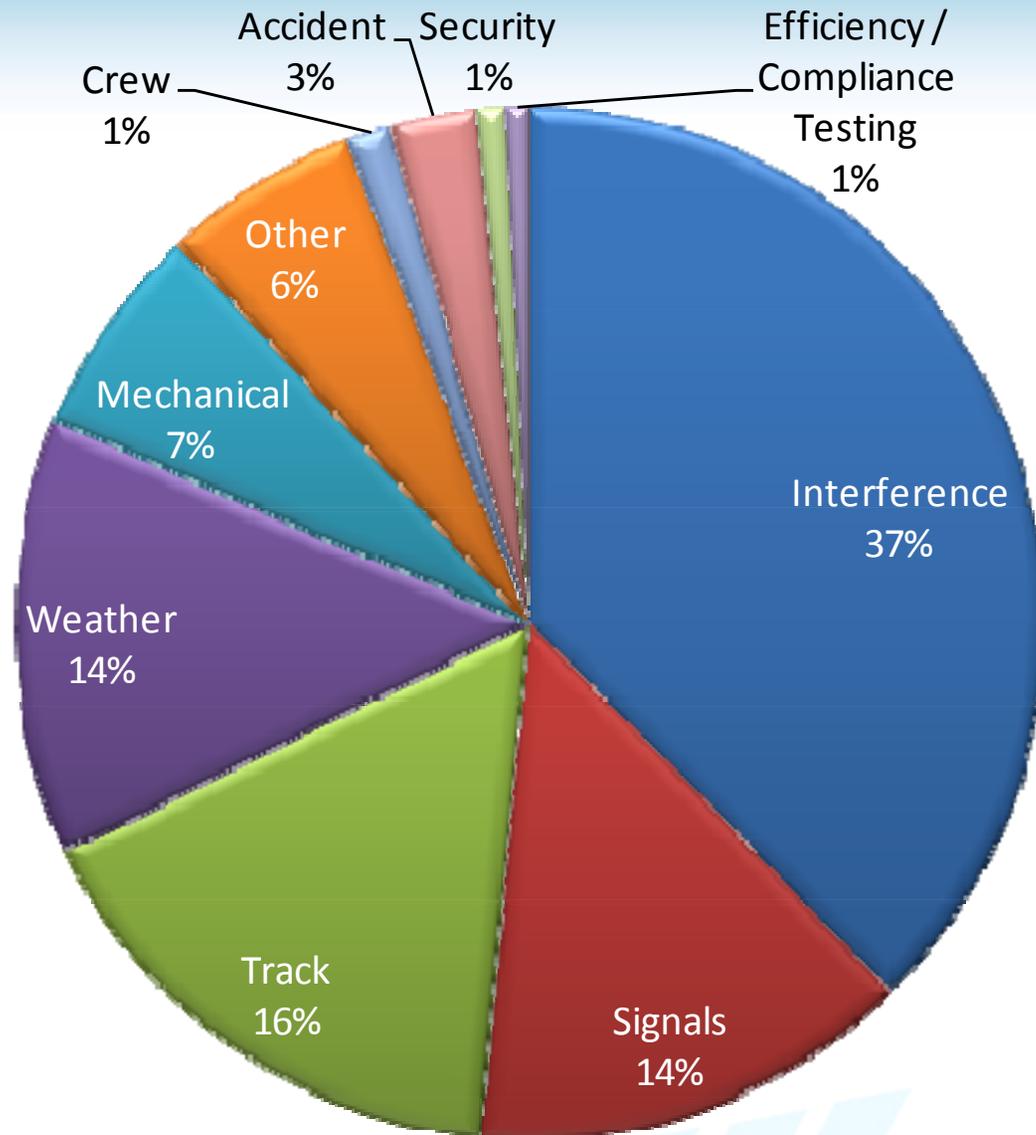
# Causes of Delay: Penn\*



- Interference delays cause nearly 60% of Penn delays—far higher than the other lines.
- 15 % of delays are related to mechanical issues.

\*This pie chart contains all Penn Line delays between January 2003 and July 2010.

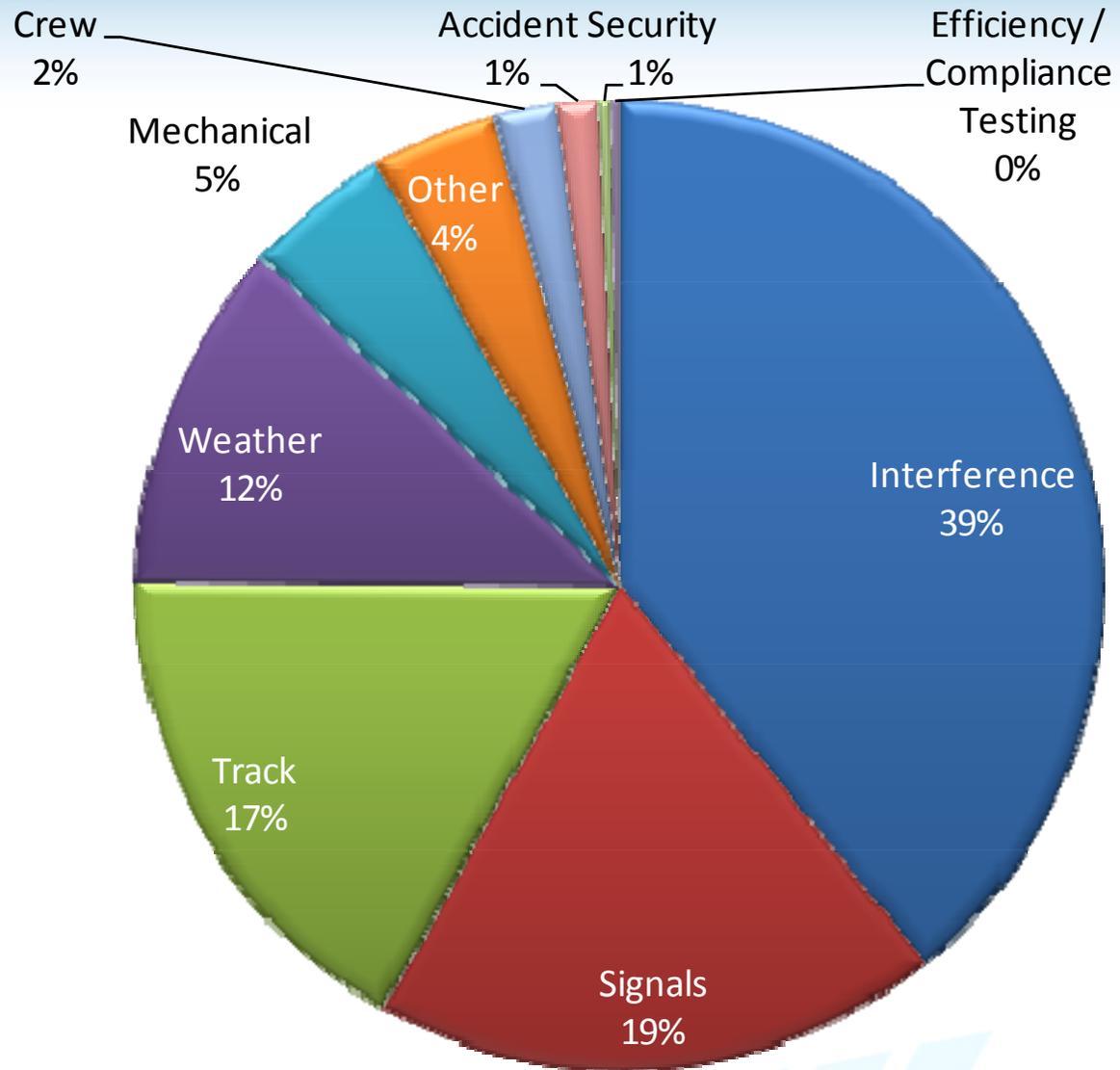
# Causes of Delay: Brunswick\*



- Besides interference delays, most of Brunswick's issues are attributable to:
  - Weather
  - Track
  - Signals
- Weather delays could be storms, trees down and even heat restrictions.

\*This pie chart contains all Brunswick Line delays between January 2003 and July 2010.

# Causes of Delay: Camden\*



- Besides interference delays, most of Camden's delays are caused by:
  - Weather
  - Track
  - Signals

\*This pie chart contains all Camden Line delays between January 2003 and July 2010.