



Designing New York City Subways' Key Performance Indicators to Improve Service Delivery & Operations

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1. ABSTRACT

- Balanced Scorecard (BSC) is widely used in private industry and the public sector to monitor Key Performance Indicators (KPI) and to help achieve strategic outcomes.
- After a fact-finding mission in South East Asia, NYCT sought to employ KPIs to continually improve service delivery performance.
- Incremental performance management initiatives at NYCT culminated in the introduction of a subway line-level KPI based on BSC concepts.
- Following a reorganization recreating functional departments, BSC was applied at departmental levels:
 - Passenger Environment Survey (PES)-KPI (maintenance-oriented)
 - Service (S)-KPI (operations oriented)
- The KPIs provide one number representing overall performance.
 - Also make it possible to identify each subcomponent's contribution.
- Advantages of these indicators include:
 - high-level visibility
 - ease of communication
 - timely report availability
 - detailed diagnostics
- These factors, together with reinvigorated competitive spirit between divisions triggered by reorganization, resulted in a much more proactive organization focused on using performance scores to take corrective action.
- Wait Assessment, the principal component of S-KPI, improved 2.5% on the heavily crowded "1" through "6" lines in 2012 compared to 2011 even as ridership increased steadily systemwide.

2. KPI DEVELOPMENT PROCESS

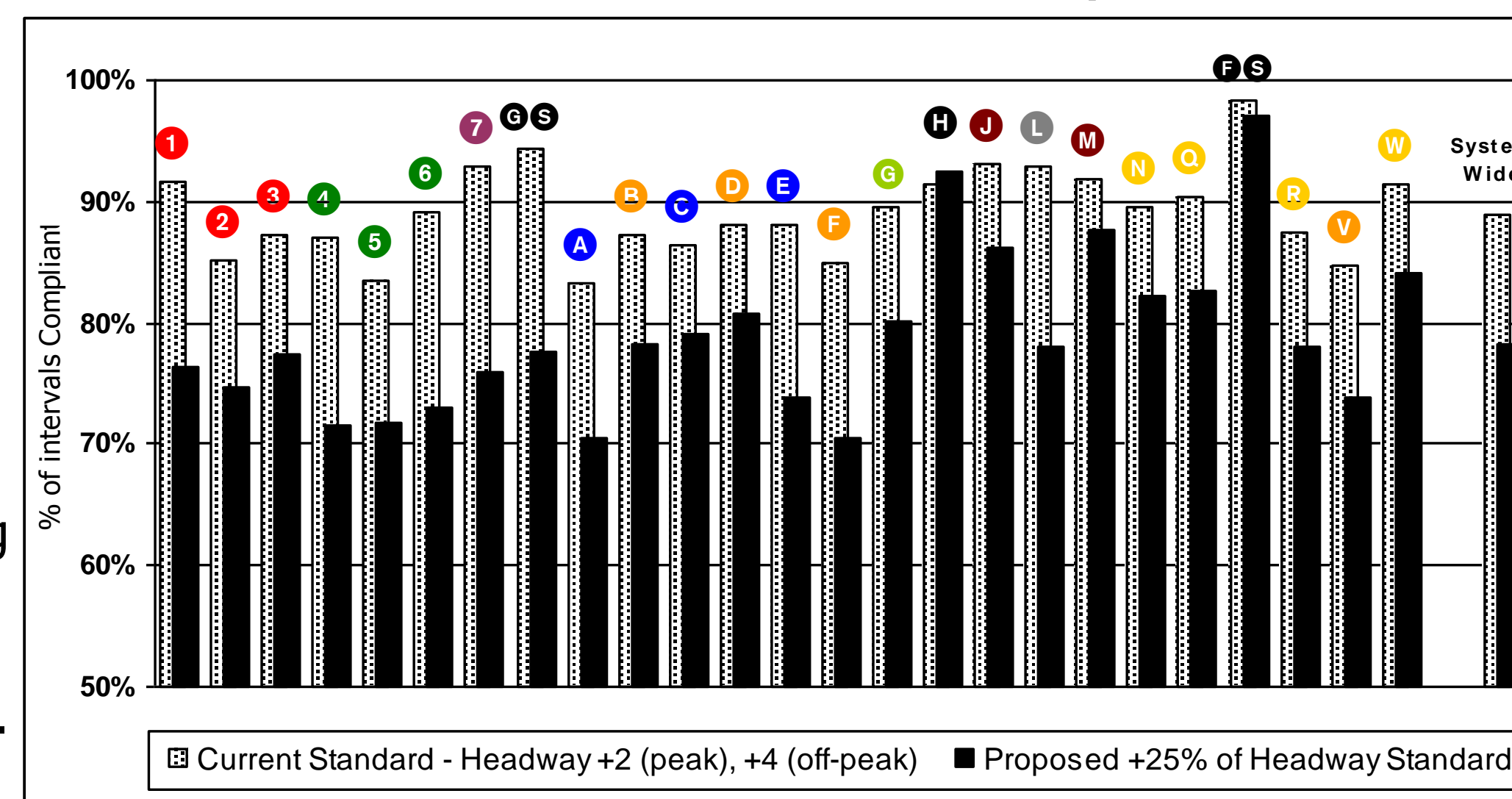
An initial subway line-level composite KPI was developed to support the Line General Manager program. ▶



INDICATORS	STATIONS	SUBWAY CARS
Appearance	Litter 15.0%	Litter 13.0%
	Cleanliness 15.0%	Cleanliness 13.0%
	Graffiti 7.0%	Graffiti 4.0%
Equipment	Escalators/Elevators 14.0%	Climate 16.0%
	Fare Vending Machines 11.0%	Door Panels 8.0%
	Booth Microphone 3.0%	Lighting 9.0%
	Turnstiles 3.0%	
Information	System Maps 9.0%	System Maps 9.0%
	Map Available 9.0%	Announcements 11.0%
	Pass. Info. Center 10.0%	Destination Signs 10.0%
	Uniform 4.0%	Uniform 3.0%

Final KPI weightings were based on input from market research, stakeholders, and senior management. ◀

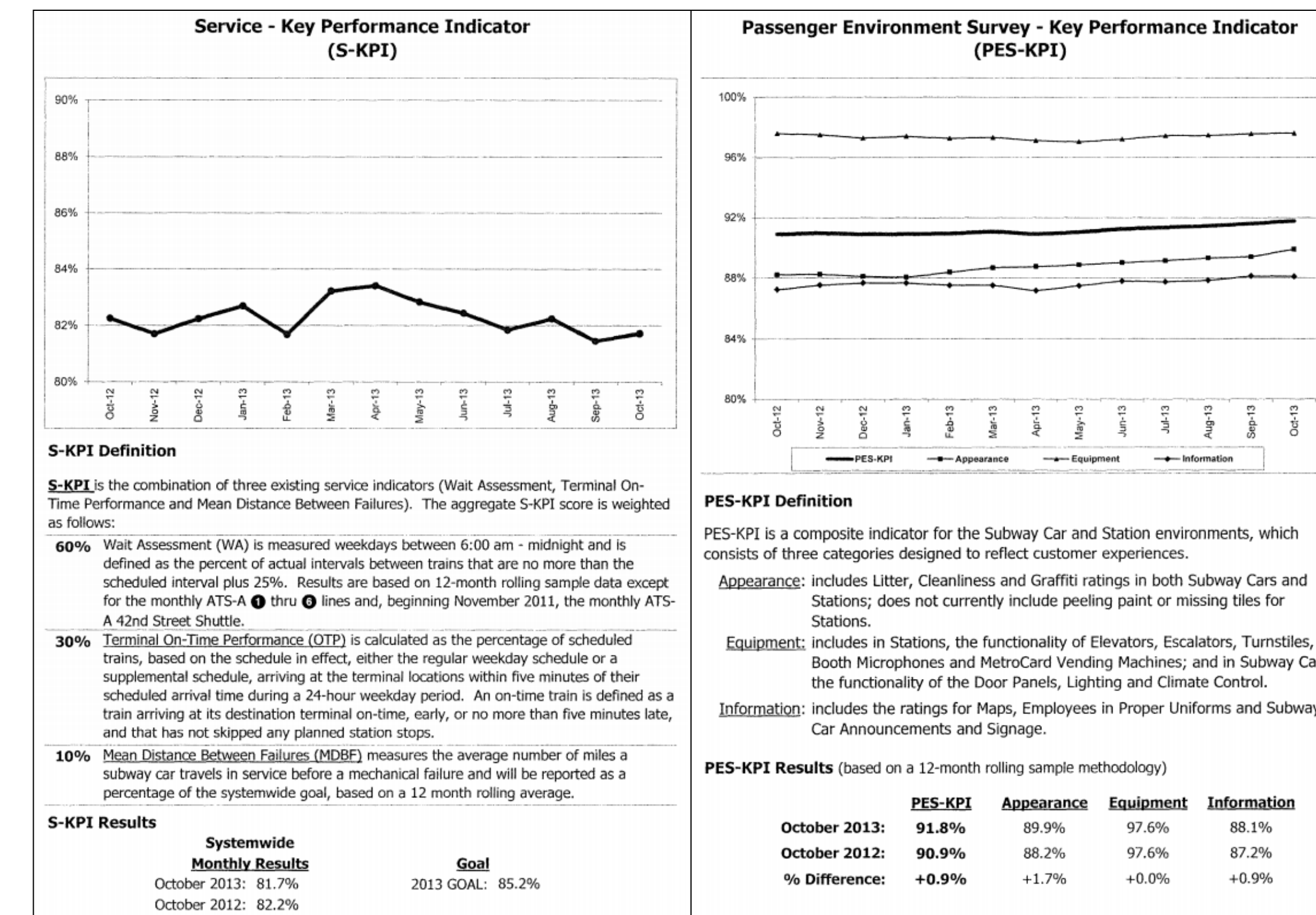
Wait Assessment: +25% Std. vs. +2/+4 Min. Std.



Feedback during S-KPI development prompted NYCT to tighten underlying performance standards. ▶

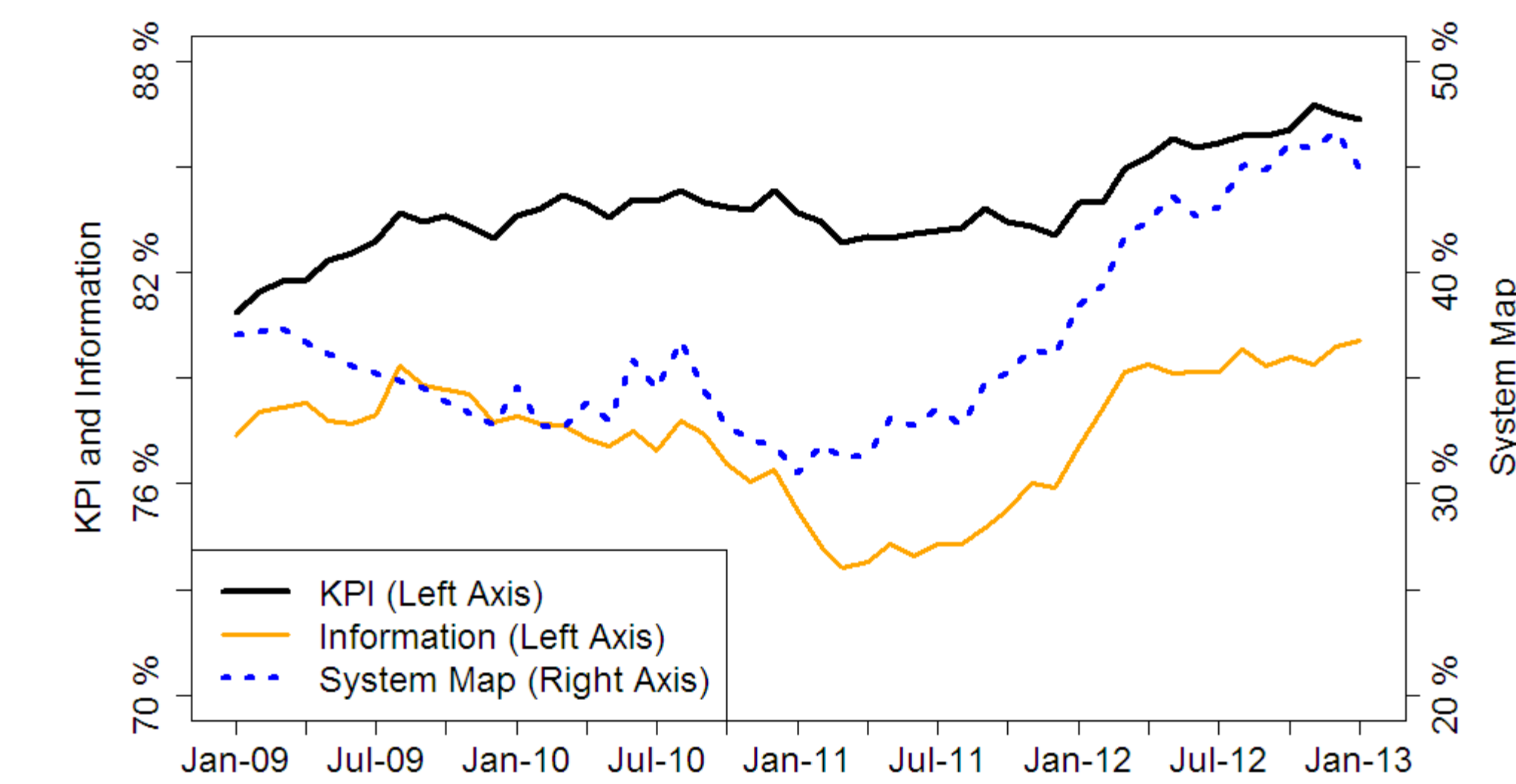
3. PERFORMANCE RESULTS

S-KPI and PES-KPI are reported monthly to MTA Board's NYC Transit Committee starting in September 2010. ▼

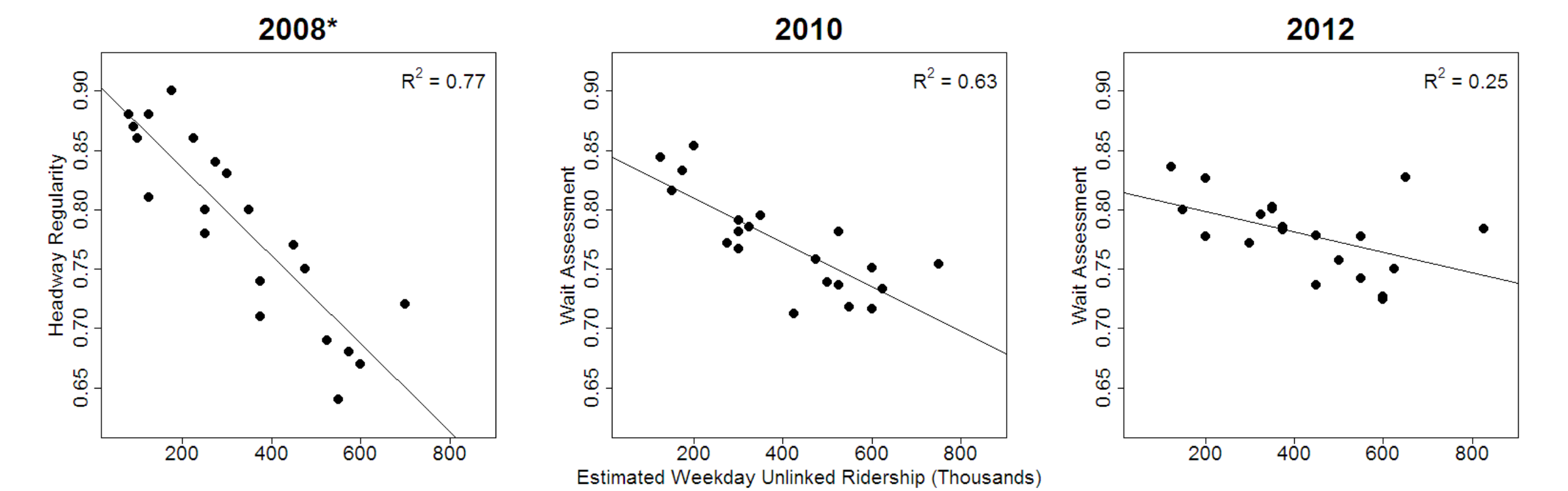


Example: Bronx Station PES-KPI and Subcomponents

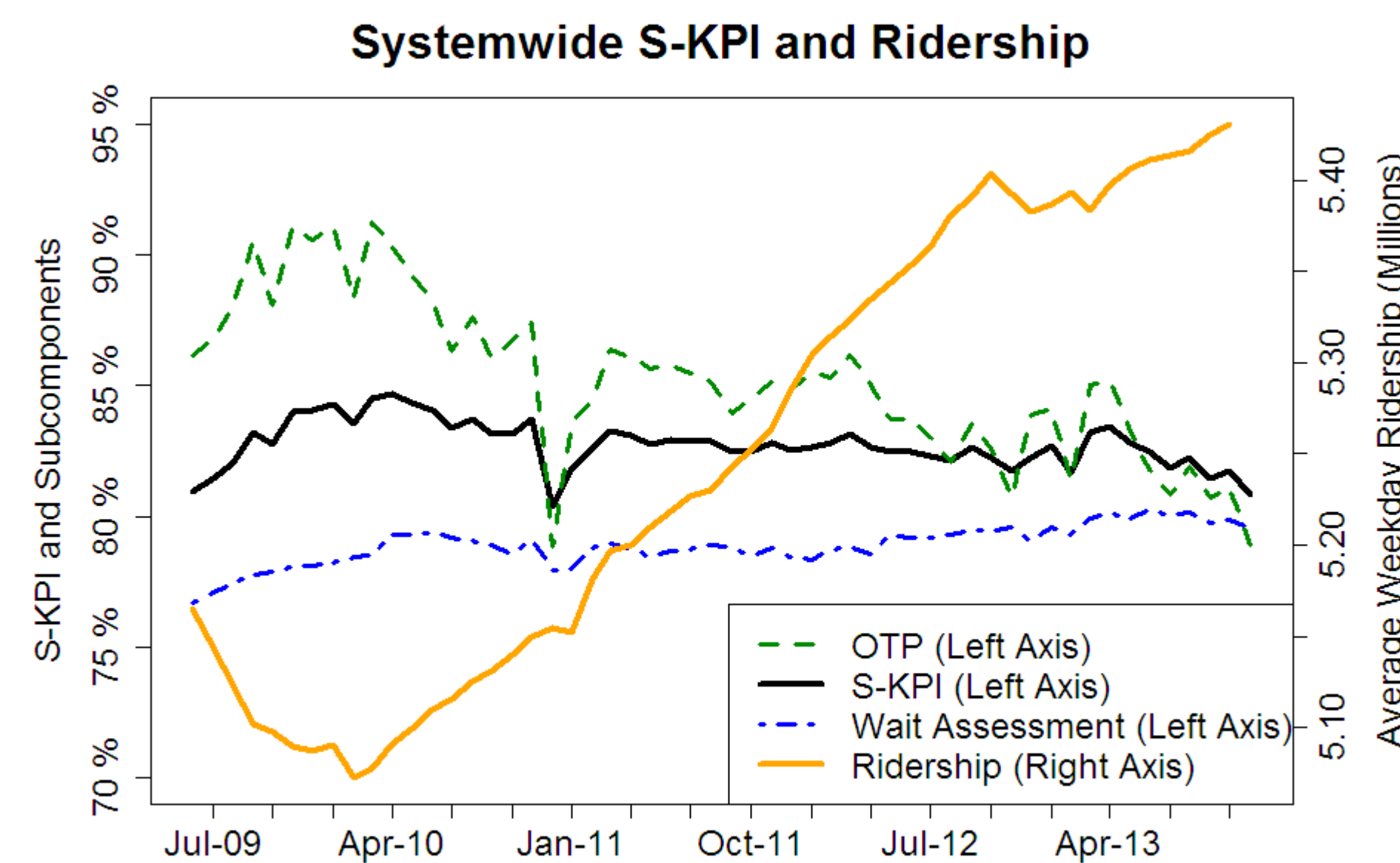
KPI allowed management to drill down and determine that the Information subcomponent was bringing down Bronx PES-KPI scores in 2011, and to see that the System Map indicator was bringing down Information scores. More map frames were installed, Information scores reversed their decline, and the Bronx's overall PES-KPI rose along with them. ▼



Correlation data suggest that management has more effectively mitigated potential service reliability issues associated with increased ridership: the relationship between service regularity and estimated ridership by line has weakened in 2010 and 2012 compared to 2008. ▼



Systemwide, S-KPI remained stable through 2011 and 2012, even as ridership increased steadily and several lines continue to operate at their maximum track capacity. Gains from WA were offset by declines in OTP (and MDBF) in 2012 compared to 2011. ▶



4. LESSONS LEARNED

- Performance measures should reflect underlying organizational responsibilities
- Historical continuity is important when changing performance measures
- Performance feedback should provide opportunities for short-term improvements
- Many factors affect selection of KPI weights
- Balanced scorecard methods can shape management focus
- BSC methods can highlight issues in existing performance indicators
- Competitive dynamics can re-energize operations management
- Performance measures' ease of communication is critical