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Competing on Analytics – The New Science of Winning, 2017 Release

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Chapter 4 – Competing on Analytics with Internal Processes: Financial, M&A, Operations, R&D and Human Resource Applications
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Safety

Safety was not the earliest area to apply data and analytics, but it's growing rapidly today. It turns out that certain types of accidents are – at least to some degree – predictable. They are a function of the people, equipment, and company settings involved. If you have data on past safety incidents and the attributes associated with them, it's not a huge stretch to predict when they will happen in the future, and intervene to try to prevent them.

Safety analytics is one the of specialties of the boutique analytics consulting firm First Analytics, which Tom helped to found in 2009. A manager at a large railroad read the original "Competing on Analytics" article, and contacted First Analytics CEO Mike Thompson in 2010. They began discussing how the company could improve its safety using analytics.

The railroad manager explained that safety was a top priority for the company and that it had improved considerably on this front, but it got harder to keep improving. He said the company had already used some data to identify likely risks, but there was a lot more that could be explored.

The railroad and First Analytics began with a proof of concept project to take existing data on the company's train operators and score how likely they were to be at risk. The available data included location, job position, weather conditions, work schedule, absenteeism, scores on rules tests and training exercises, previous rules violations, and more. The data eventually came from about twenty different databases across the company. The railroad had previously used a risk scoring system based on reasonable logic, but the new one based on analytics improved upon it dramatically.

Since the proof of concept had worked well, the railroad worked with First Analytics to expand the analysis to other safety areas; for example, an analysis was created to identify and prioritize the most at-risk railroad grade crossings. The personnel safety analytics were extended beyond

those operating the trains to the personnel maintaining the tens of thousands of miles of track. The overall results of these efforts was a dramatic improvement in safety. The company's vice president of safety recently discussed the improvements with customers:

> *Big data. We're into it big time. We think it's driving these last eighteen months [of safety results]. There are twenty-five hundred operating managers…there's no way we can look, spend time with, teach all the employees, all the time, every day. This is about focusing management attention on those who exhibit more risk. We're on our fourth iteration of this model; we're constantly fine-tuning it…If you were to take a look at our control charts, it's been a nice downward trend for a decade. Since we turned a lot of this on, it's been a step function: a full standard deviation from our normal run rate.*

Some companies in other transportation industries have adopted similar approaches to safety analytics. This is facilitated by the increasing ease of capturing driving data. Schneider National, Inc., for example, a large trucking firm, captures driver behaviors such as speed, acceleration and deceleration, and driving times. A predictive safety algorithm alerts supervisors that drivers are at risk for accidents even before the have had one.

Other industries that have taken aggressive approaches to safety analytics include mining, energy, and manufacturing. As sensors become more pervasive, we're likely to see many more companies and industries adopt these approaches.