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TECHNOLOGY & BUSINESS OF INNOVATIVE TOLLING
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Big Data Buzz

How Other Industries Use Customer Data

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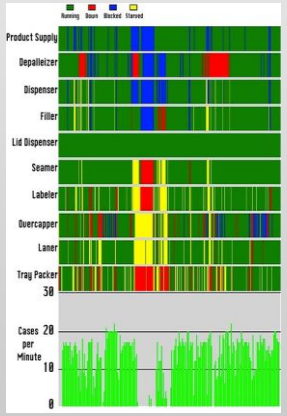
IBTTA
TOLLING. MOVING SMARTER.

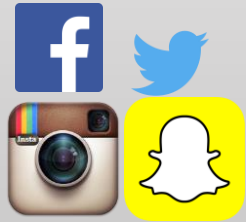
An Introduction to **BIG DATA**

- Big Data – large amounts of complex data that are difficult to manage and process

- Examples:
  - Purchases
  - Online activity
  - Digitized historical content
  - Media content
  - Machine log data
  - Public data
  - GPS and mapping
  - Social media
  - Biometrics
  - Networked vehicles



United States™ Census Bureau



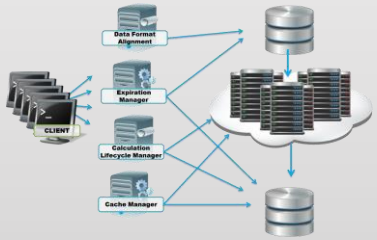
Harnessing Big Data

Data

Big and abundant

IT Systems

Expensive and complex, but improving



Storage

Cheap and abundant

Data Scientists

Scarce (and a bit odd)

Strategy and Implementation

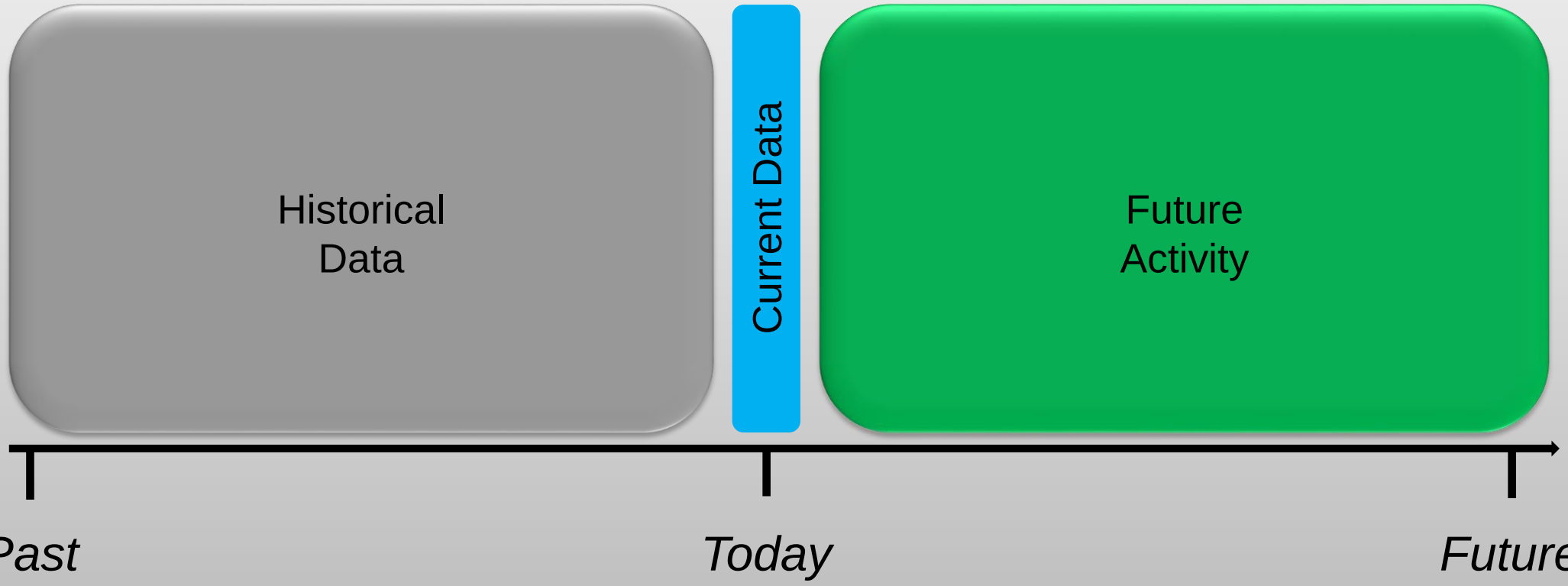
Work-in-progress

Using Big Data to Predict the Future

- Analysis
- Identify Trends
- Predictive Models
- Business Rules

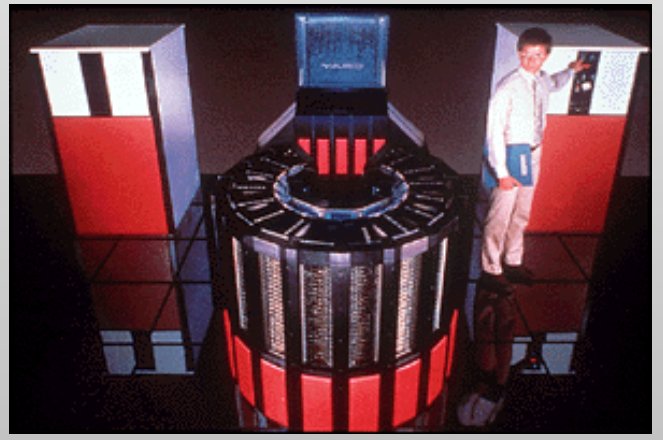
- Reporting
- Monitoring

- Implement Strategies
- Targeted Communications
- Performance Improvement



A History of Big Data

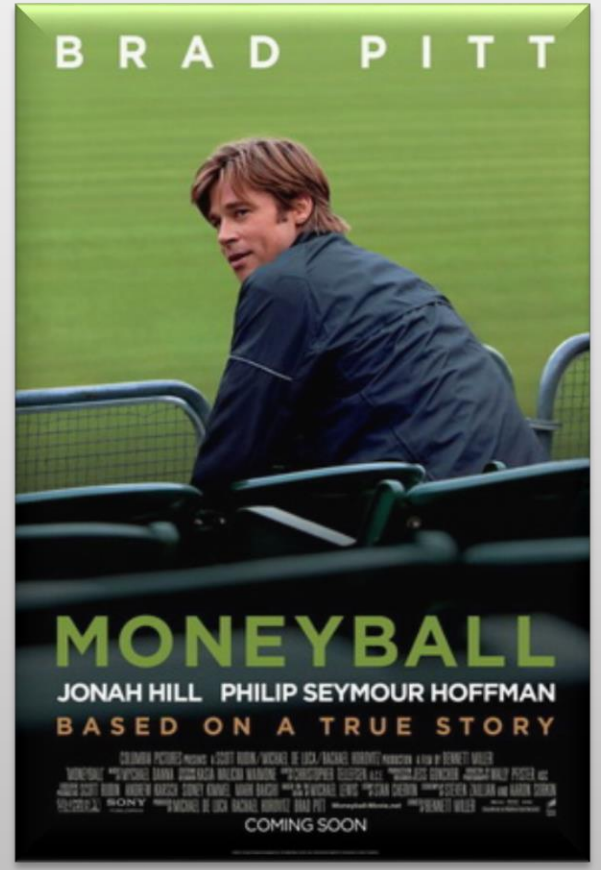
Large amounts of data have been available and used in limited areas ….



…. only now Big Data has arrived in nearly every industry

Big Data in Use

Industry: **Sports & Entertainment**



How Big Data is used:

- Quantify each player's contribution and value
- To improve (or destroy) baseball

Big Data in Use

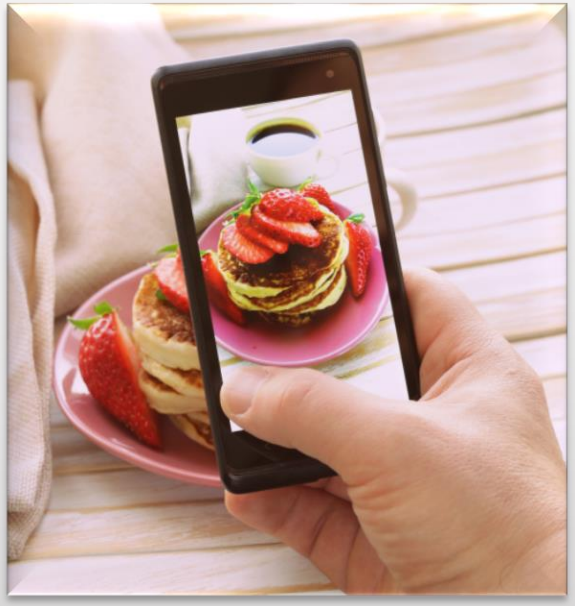
Industry: **Online Retail**

How Big Data is used:

- Shopping history drives recommended products
- Targeted offers
- Select optimal distribution center
- Determine appropriate delivery method

Big Data in Use

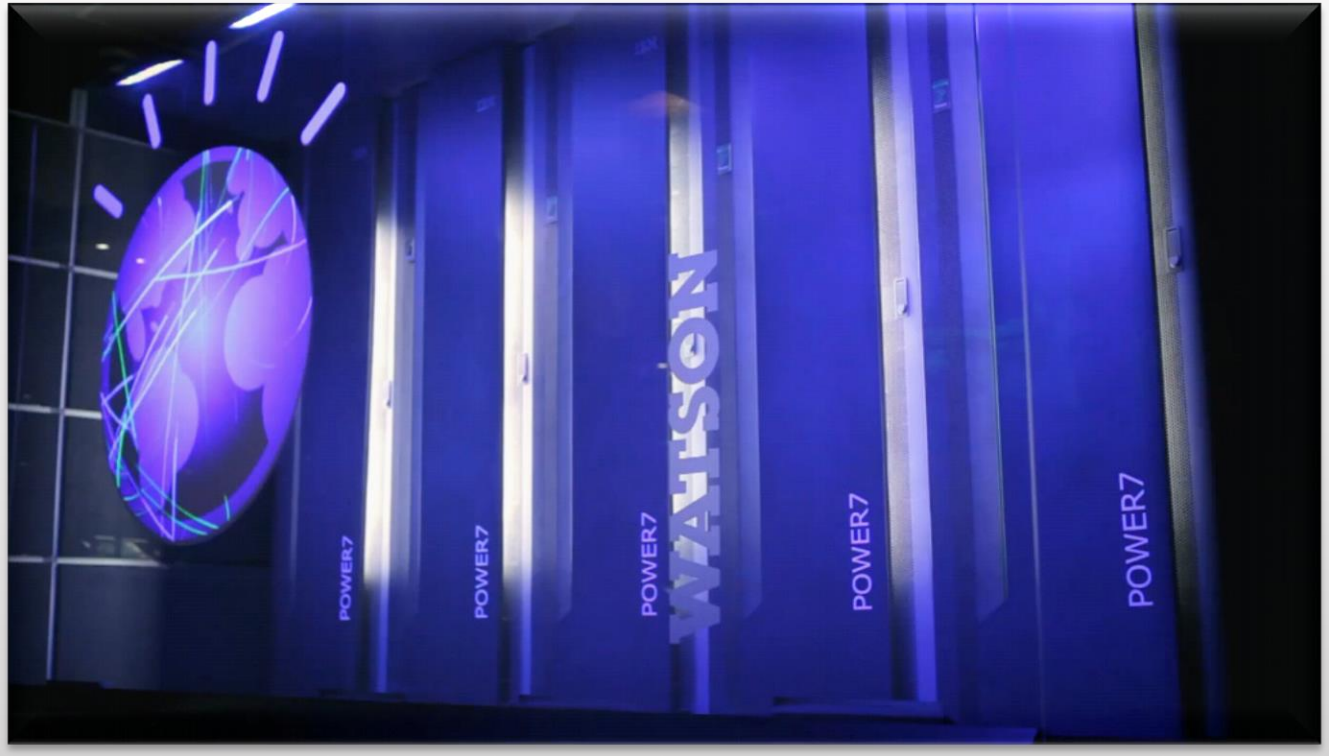
Industry: **Hospitality**



How Big Data is used:

- Customer segmentation and profiling
- Loyalty programs
- Targeted communications and offers

Big Data in Use



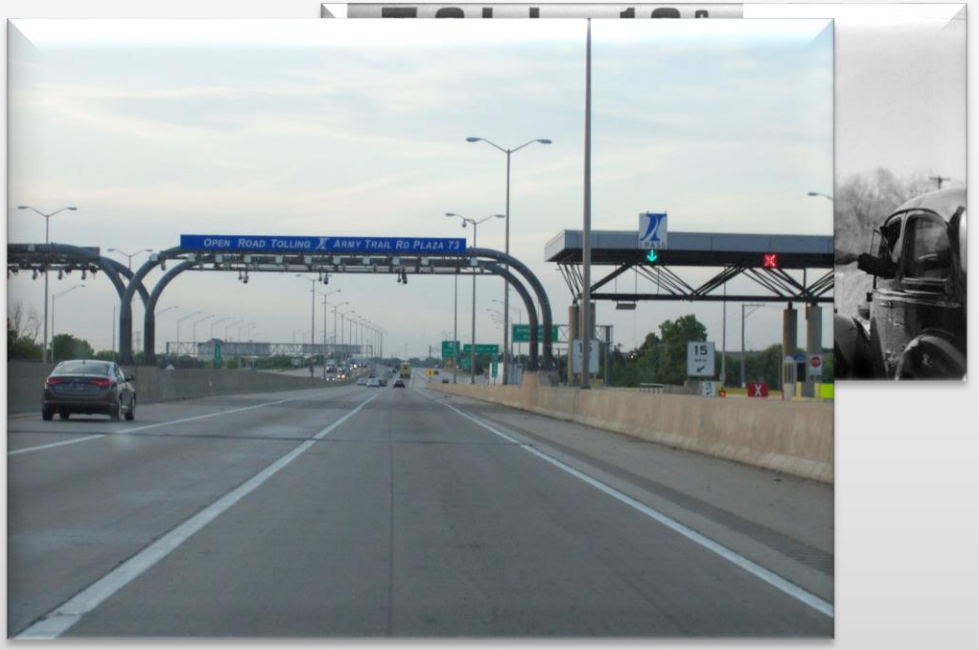
How Big Data is used:

- Analyzing health history
- Diagnosis recommendations

Industry: **Healthcare**

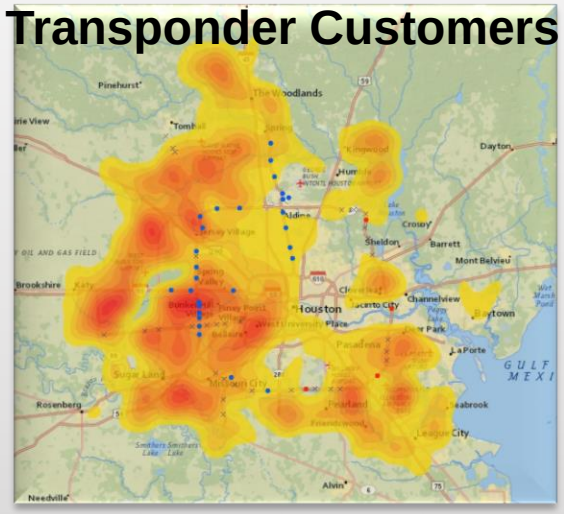
Big Data in the Tolling Industry

- Big Data is prevalent in tolling
- Data Sources:
  - Trip transactions
  - Transponder data
  - Customer demographics
  - Road sensors
  - License plate images
  - Traffic video
  - Weather and road conditions
  - Traffic volume and speed

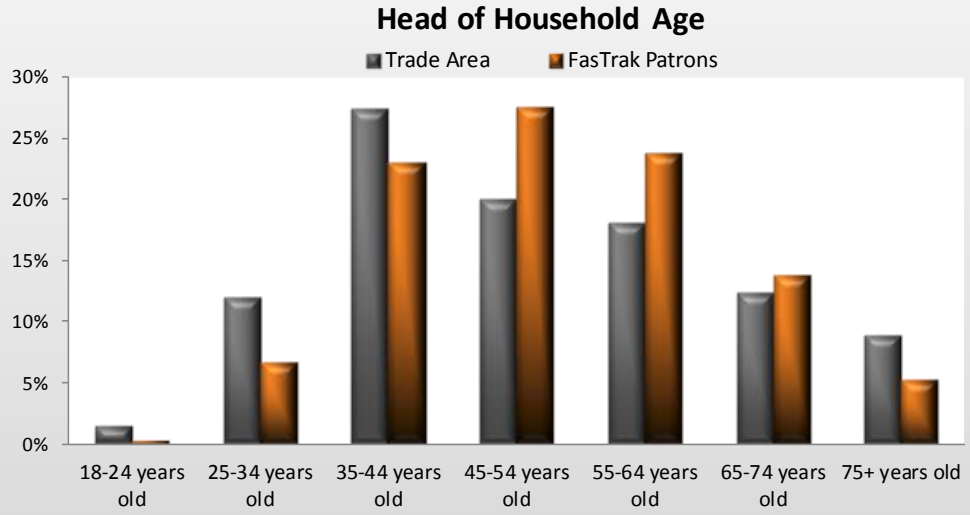


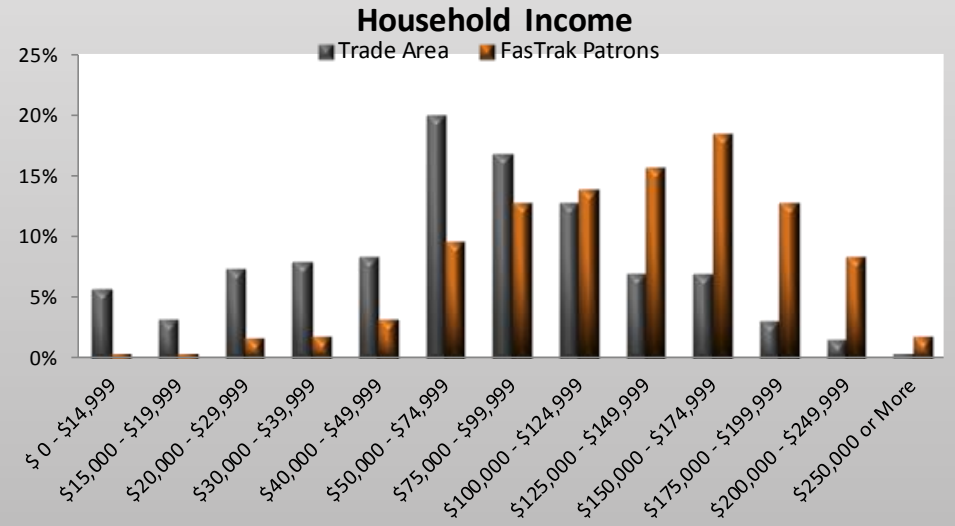
Big Data for Customer Insights in Tolling

Heat Maps



Customer Profiles





Big Data for Customer Segmentation in Tolling

Young Potential

Key Performance Indicators

of Customers: 2,095 (5.7%)
14.6% of Total Trips
21.1% of Total Peak Trips

Miles Traveled:	↑↑
AM Shoulder Trips:	↑↑
PM Shoulder Trips:	↑↑
# Return Trips:	↑↑
Age:	↓↓
Income:	↓↓
Price Sensitivity:	↑↑↑

Behavior Characteristics

Usage

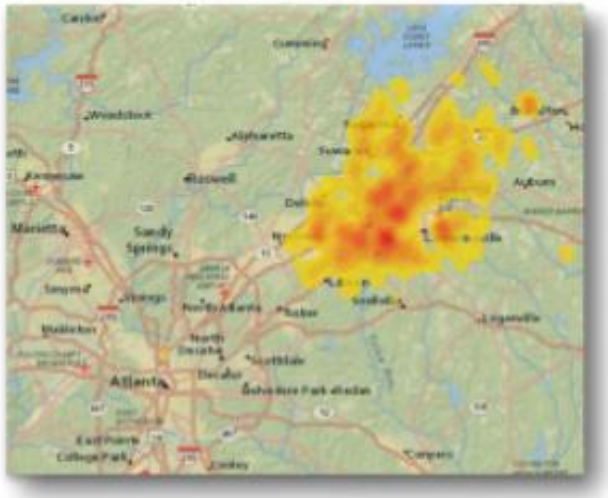
- Avg. trips/week: 4.0
- Avg. days/week: 2.5
- Avg. trip length: 8.4 miles

Travel Patterns

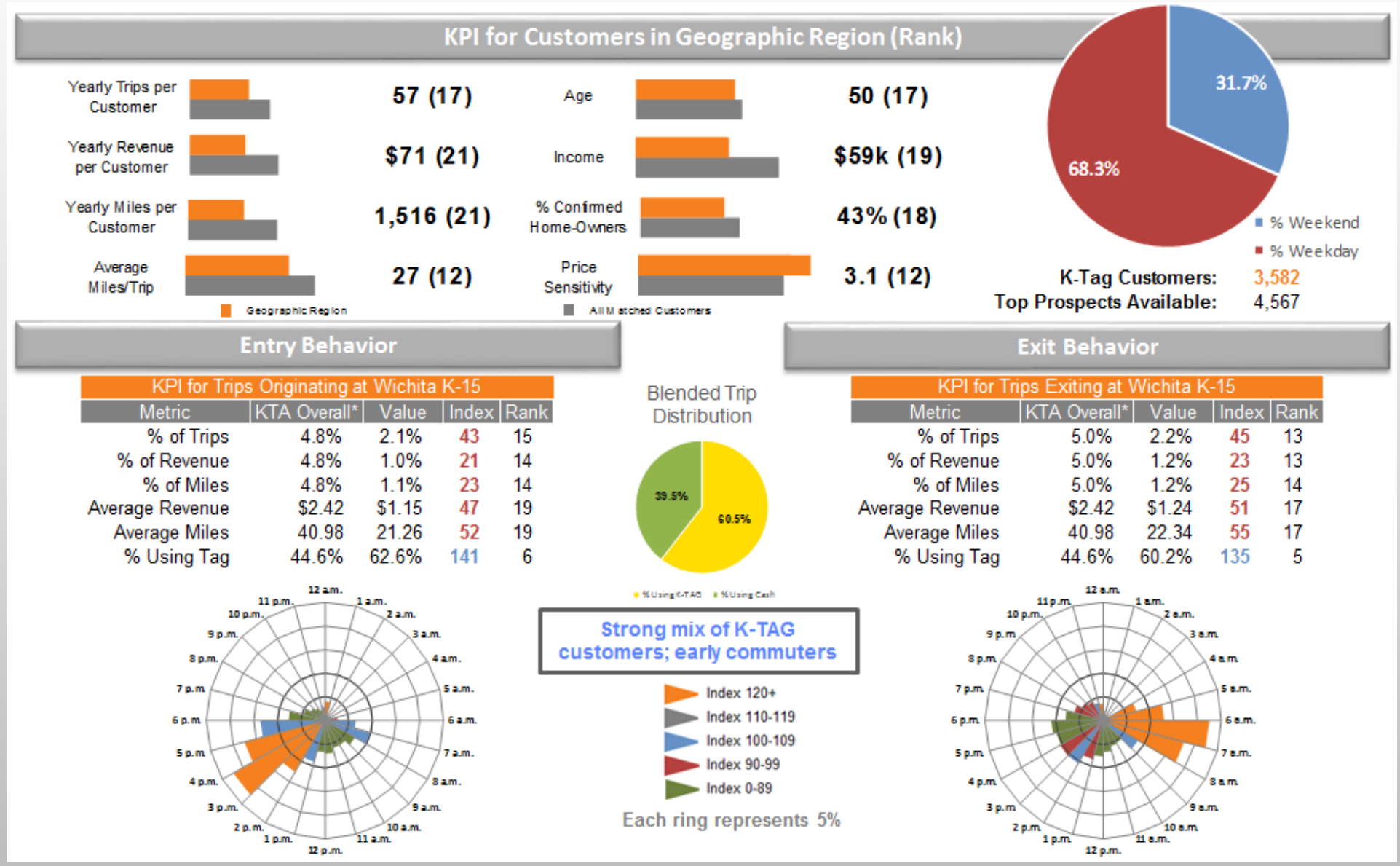
- 50% of trips occur during peak hours
- 17% of trips occur during shoulder
- 52% of days traveled using HOT Lane roundtrip

Demographics

- Young and single – aged below 35
- Income $30k-$75k
- Socially active and influential
- Top Silhouettes: New Luxury, Americana Families, Young Neighbors



Big Data for Tolling Dashboards



Big Data at Work for You!

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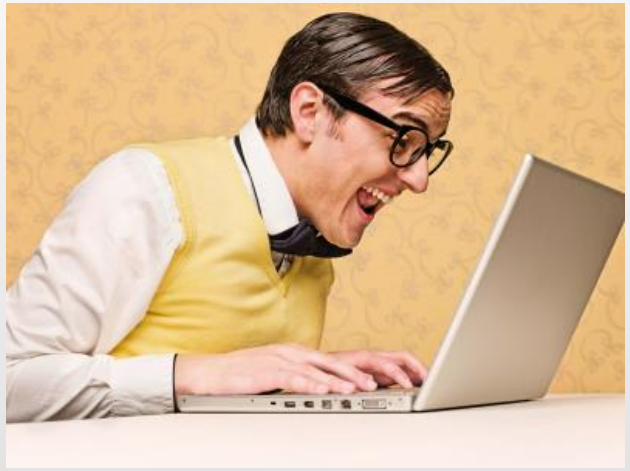

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