



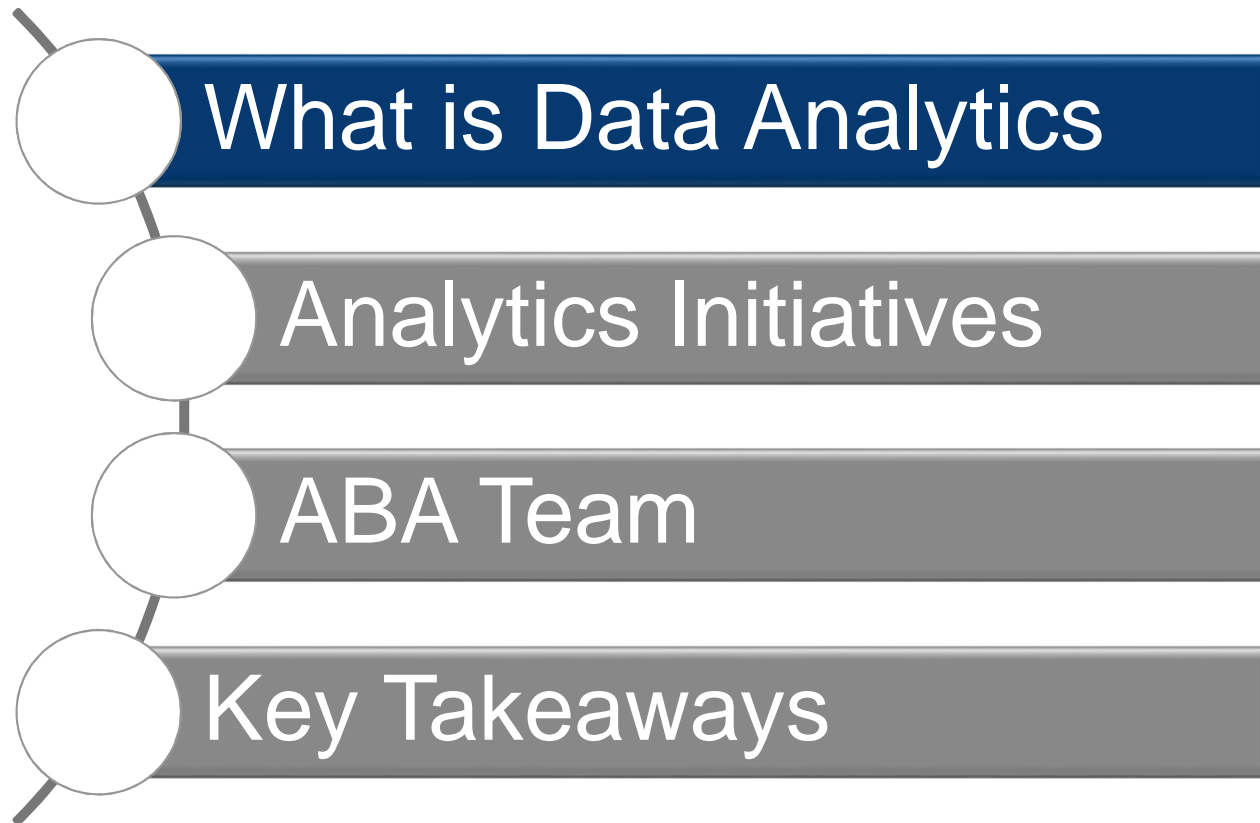
# **Business Analytics Case Studies with Customer Focus**

**Dr. Onur Ulgen – President, Advanced Business Analytics (ABA)**

[www.advancedba.com/](http://www.advancedba.com/)

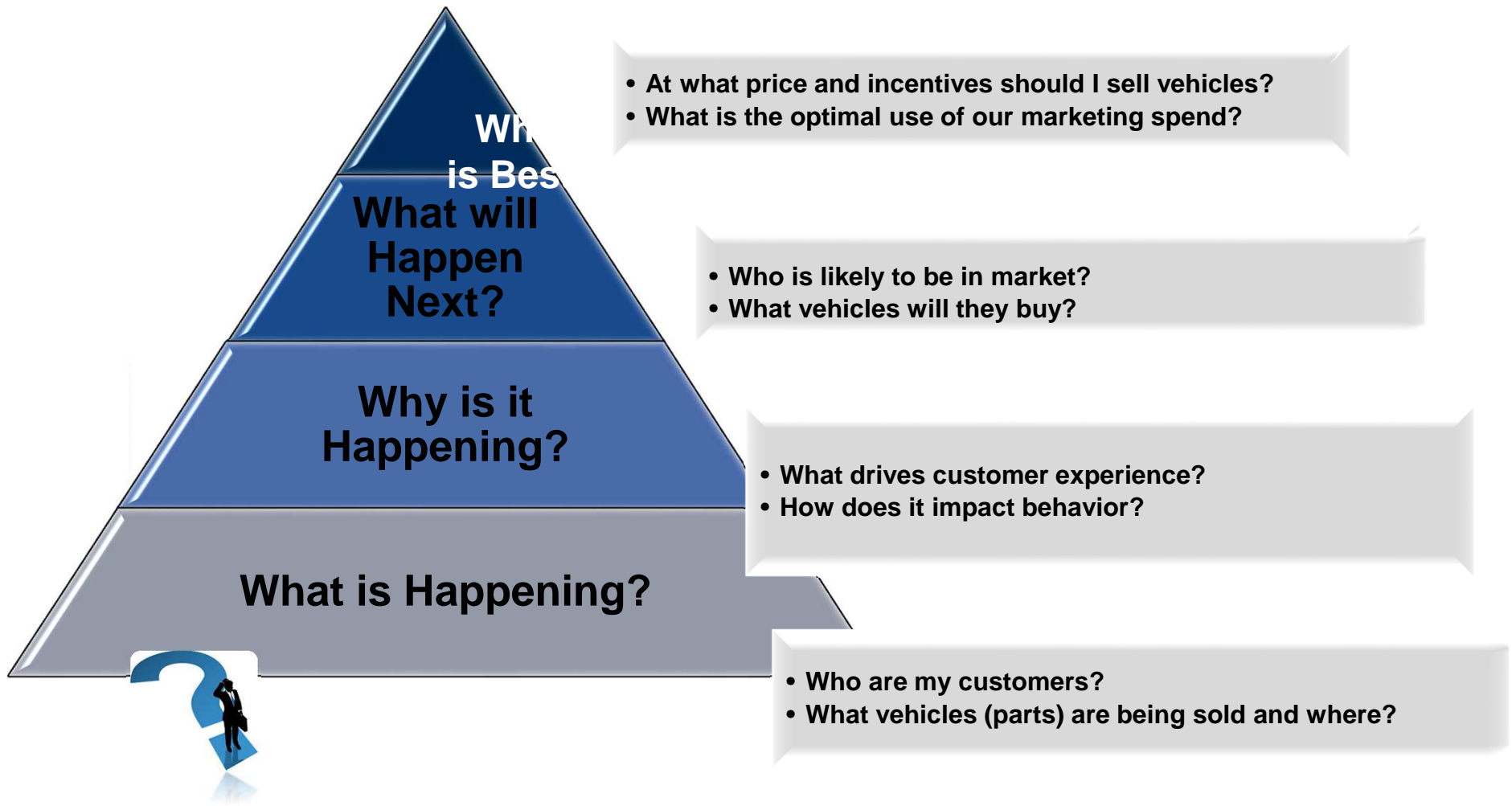
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## Agenda

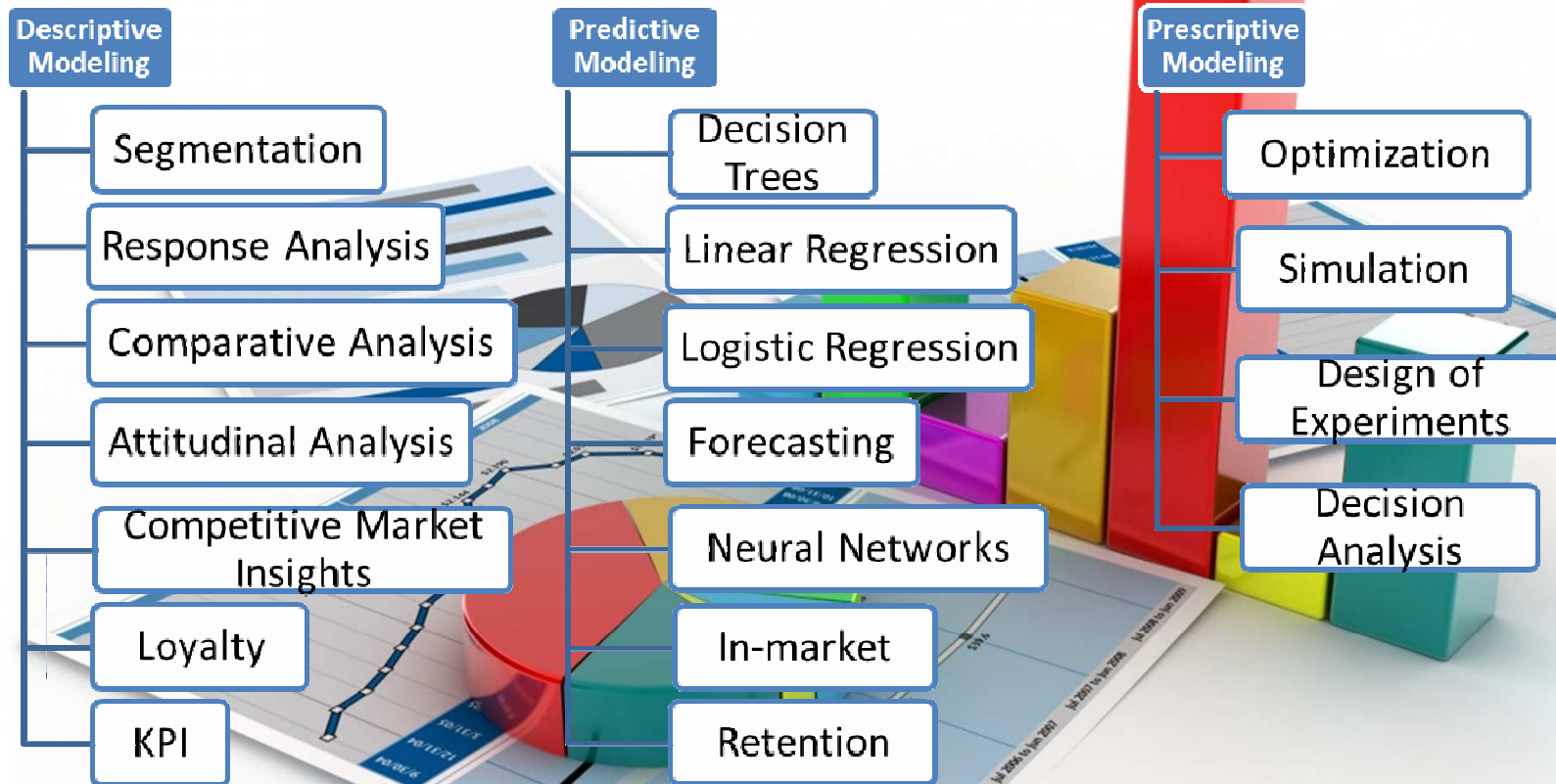


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## Business Decisions Support Pyramid

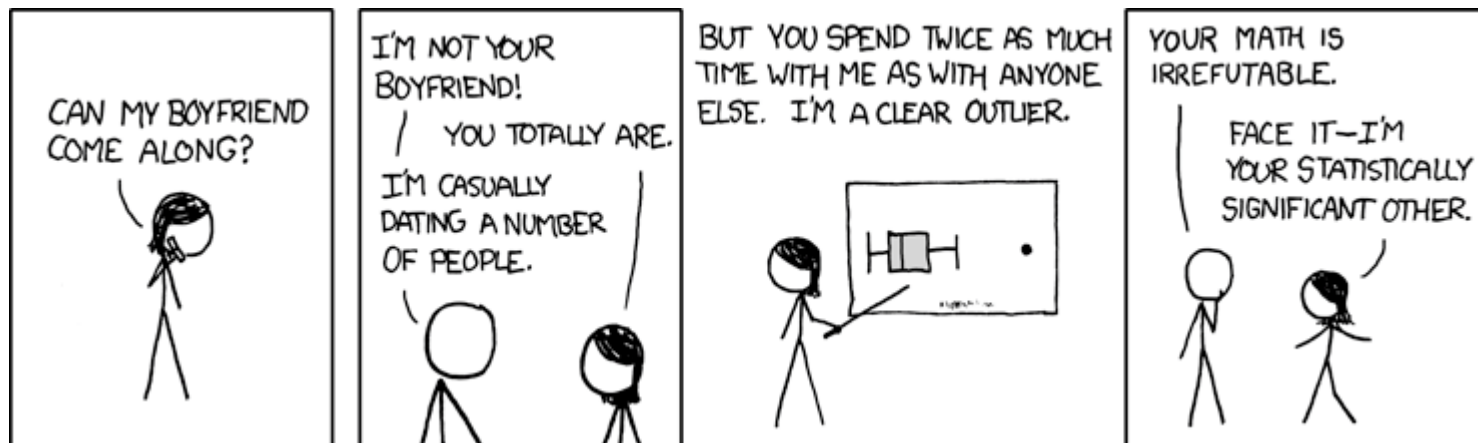


## ABA Portfolio of Analytics Tools



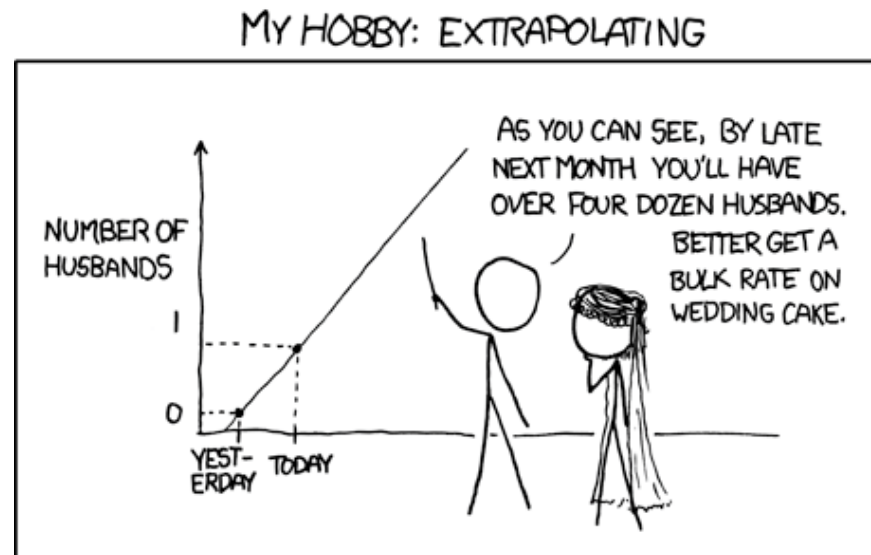
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## Example of a Descriptive Model???



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## Example of a Predictive Model???



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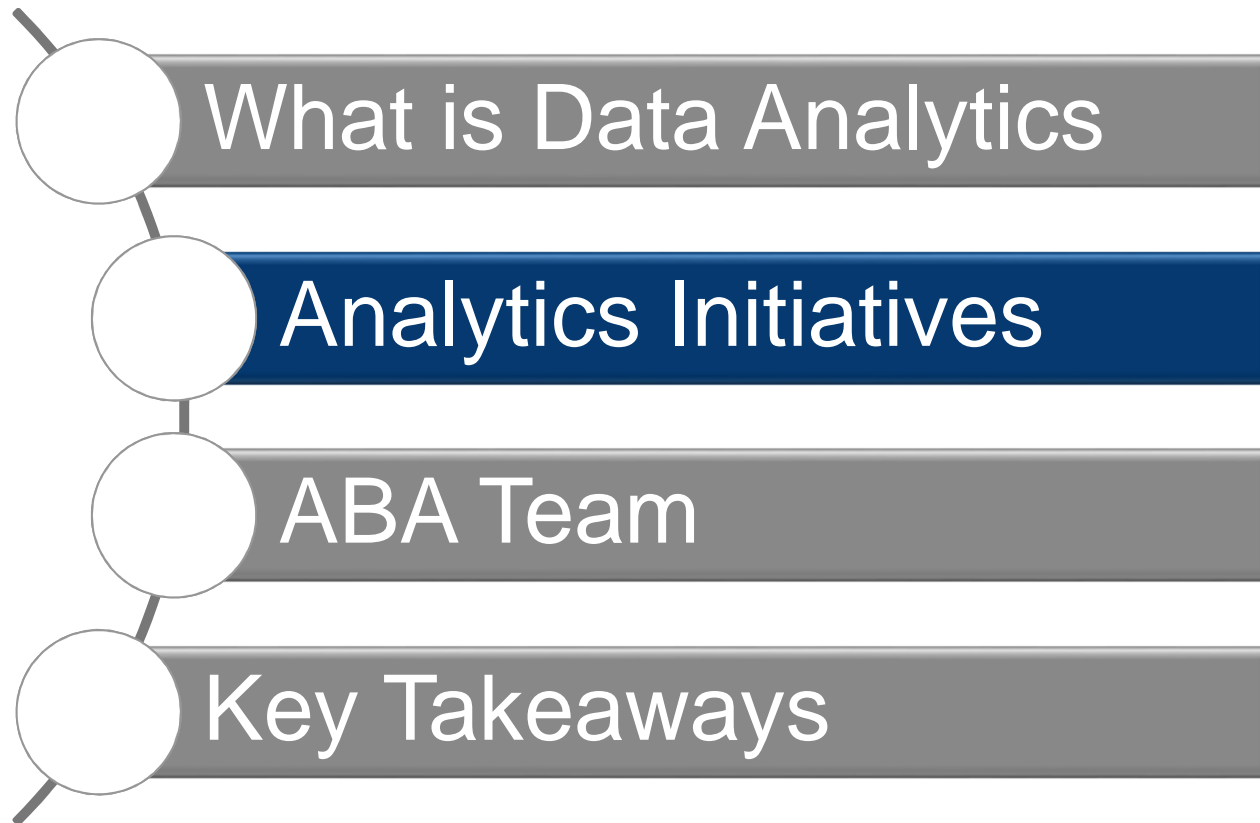
# Business Analytics and Data Mining

## Methodology for Predictive Analytics:

1. Aggregate and cleanse the data, which may come from different systems in different formats, and which may contain anomalies
2. Divide the data into an in-sample group to develop the predictive model and out-of-sample group that will be used to test the model
3. Data Mining – identify underlying trends, patterns, or relationships that are most relevant to predictive model development.
4. Model Development – segmentation and model selection (statistical, simulation, ... )
5. Model Validation – apply the model to out-of-sample group to validate it
6. Prepare the system for the model usage in the production environment (Data update, model update, end-user training, ...)

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## Agenda





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# Customer Focused Predictive Analytics

## Customer Lifetime Value

Identify the most valuable customers/ households based on previous ownership history



Business Benefit:  
Provide predictive insight into customers and future buying behavior



## Customer Experience Indicator

Measure customers/ households experiences with products and services



Business Benefit:  
Actionable view to manage customer experience and cost

## In Segment

Identify customers who are most likely to buy in the next year and in which segment

Business Benefit:  
Target marketing campaigns



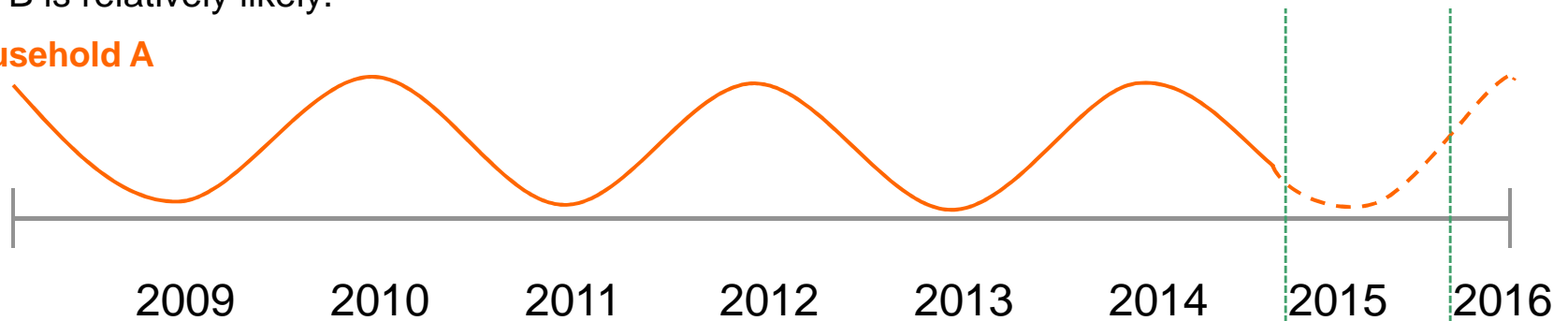
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## In-Segment Model

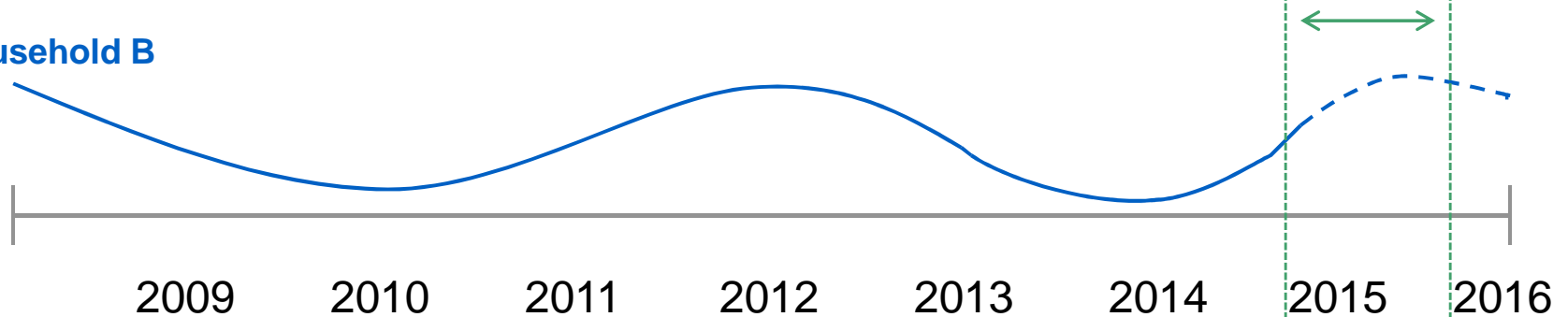
Target variable: The probability of a household that is a known customer of the brand purchasing another vehicle within same brand during the next twelve months.

- Predictor variables may identify whether the household is approaching peak of its buying cycle.
- Households tend to buy vehicles in a rhythm, and the model identified peaks and valleys of each household's rhythm.
- In the example below, Household A is relatively unlikely to purchase in 2015, but Household B is relatively likely.

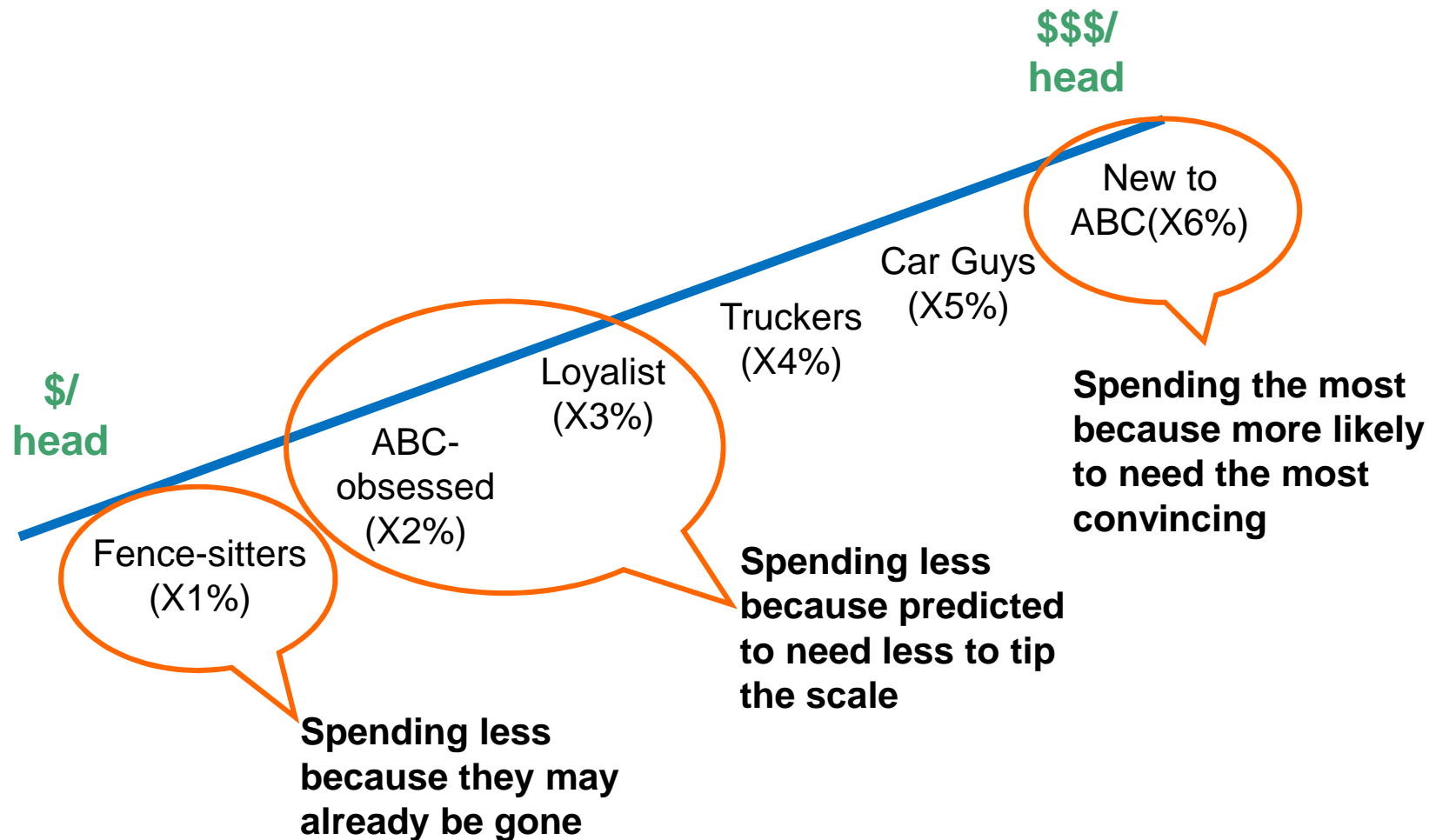
Household A



Household B



## Segment Group Priority Summary



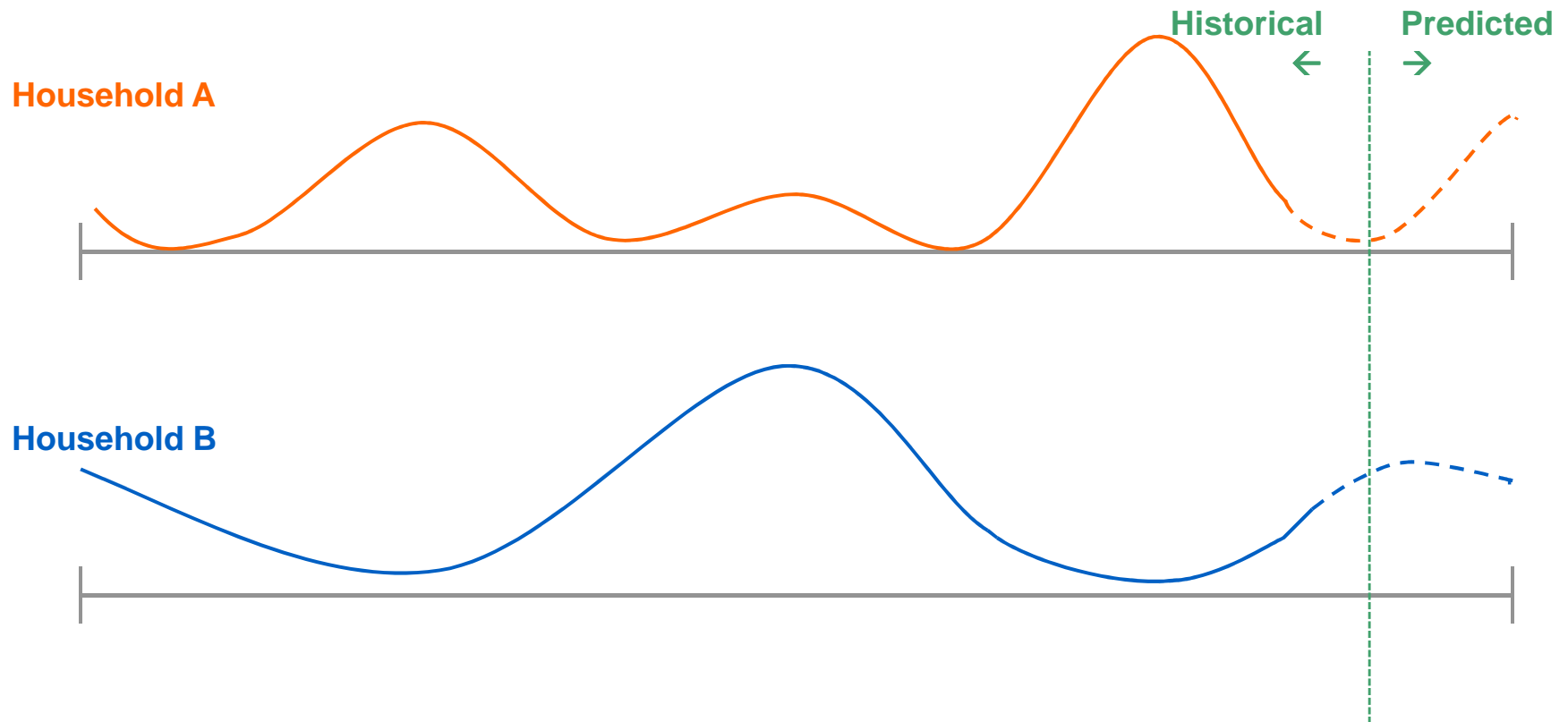
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## Customer Lifetime Value (CLV) Model

Target variable: The approximate dollar value of a household to sales over an extended period of time.

Predictor variables: Household's approximate historic spend, added to predicted spend on new vehicles over the next 12 months.

In the example below, even though Household B may be more likely to purchase in the very near term, Household A has the higher CLV overall.



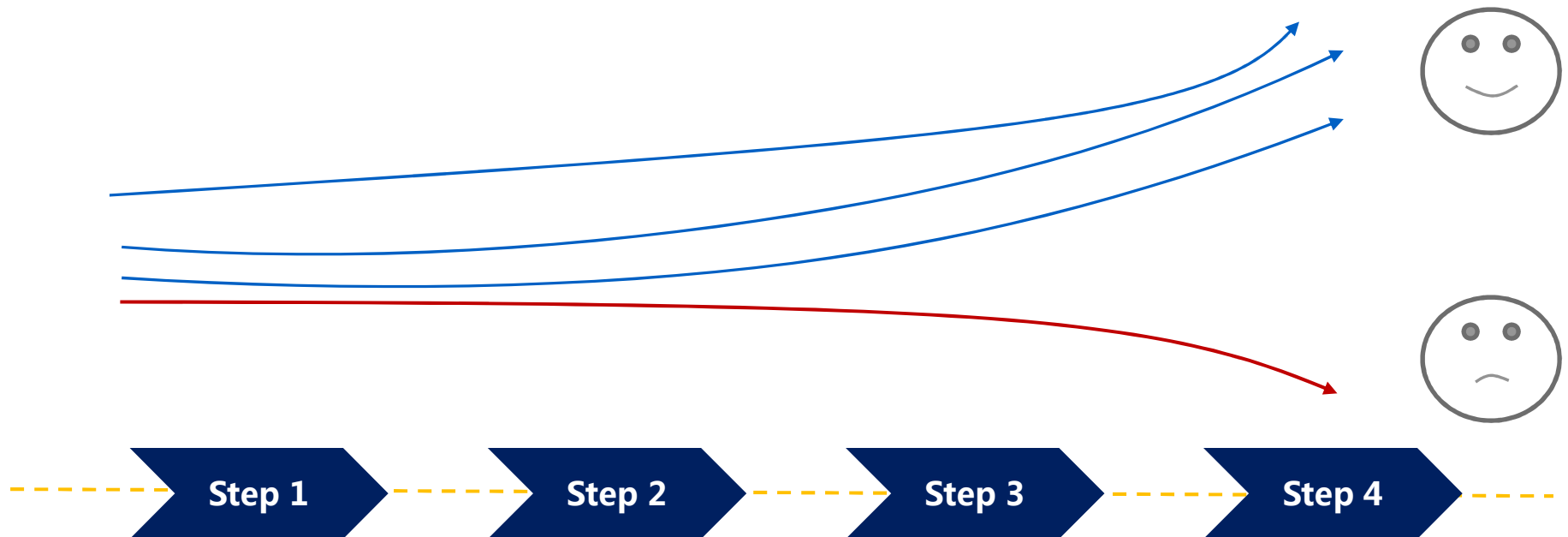
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## Customer Experience Indicator (CEI) Model

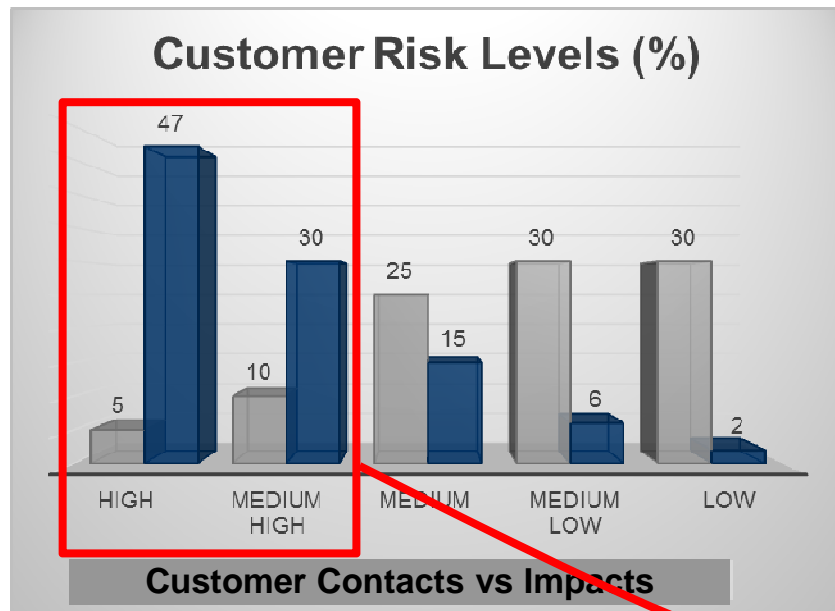
When a vehicle purchaser opens a case or a warranty claim with the brand's customer contact center, this initiates a pre-defined process.

By the end of the process, the most customers are highly satisfied or mostly satisfied. However, a small minority of customers may be very unsatisfied.

The CEI model identifies those that are most likely to fall in the latter category, so that the customer contact center can take additional proactive measures.

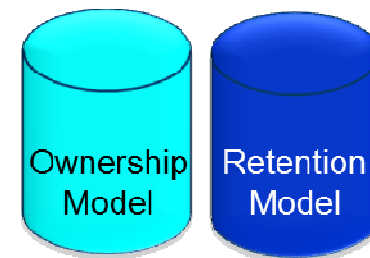


## Quick Hit Initiative #1: Assessing Customer Satisfaction



**Summary:** Assess both internal and external data to determine phases of customer satisfaction

**Base Models:**



**Key Realization:** 80% of the calls originated from 15% of the customers analyzed

### Potential Business Applicability:

- Take business actions on a customer before reaching a “lost cause” state of dissatisfaction
- Improving brand and customer long term relationship

## Quick Hit Initiative #2: Optimizing Goodwill

### Data Driving Business:

- Immediate application: Good-will decisions for customer action in Customer Care Center
- Additional future applications are proactive customer outreach, use in the Field, Dealerships, etc.

The screenshot shows a customer data dashboard. On the left, there's a search form with fields for Customer Id, Last Name (Goldring), City (Boca Raton), and State (Florida). Below this is a 'Reference' section with 'Household Member Count: 2', 'Experience Risk Index Level: 2.3 (as of 09/06/2014)', and 'Customer Lifetime Value Level: 1.0 (as of 09/03/2014)'. At the bottom left, it says 'Vehicles Owned: 3'. On the right, 'Search Results: 2' shows a table with two customers: 14541250 Bradley Goldring and 13348217 Elizabeth Goldring. Below this is a 'Goodwill Action' table with columns for ERI Segment, CLV Segment 1, and CLV Segment 2. The values are: ERI SEGMENT 5 (\$800, \$1,000), ERI SEGMENT 4 (\$800, \$800), ERI SEGMENT 3 (\$800, \$1,100), ERI SEGMENT 2 (\$500, \$800), and ERI SEGMENT 1 (\$100, \$300). A callout box points to the \$500 value in the 'ERI SEGMENT 2' row, containing the text: 'Customer: John Doe', 'Lifetime Value: 1.0', 'Risk: 2.3', and 'Business Action: \$X00.00'. At the bottom, a table lists three vehicles with their VIN, Year, Model, Exterior, Interior, Sale Options, Sale Date, Sale Type, and Dealer Name.

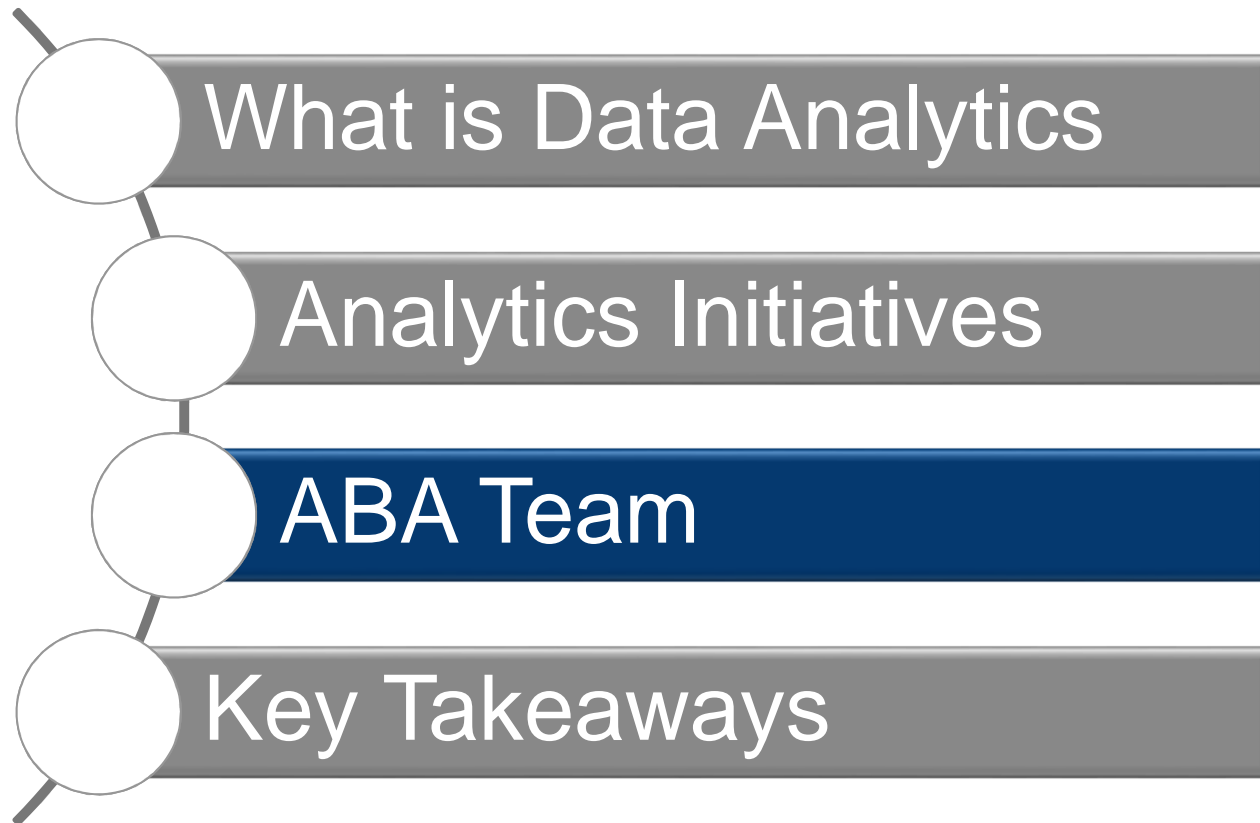
Customer Id	First Name	Middle Name	Last Name	Address Line 1	Address Line 2	City	State	Zip
14541250	Bradley		Goldring					
13348217	Elizabeth		Goldring					

ERI SEGMENT	CLV Segment 1	CLV Segment 2
ERI SEGMENT 5	\$800	\$1,000
ERI SEGMENT 4	\$800	\$800
ERI SEGMENT 3	\$800	\$1,100
ERI SEGMENT 2	\$500	\$800
ERI SEGMENT 1	\$100	\$300

VIN	Year	Model	Exterior	Interior	Sale Options	Sale Date	Sale Type	Dealer Name
2V4RW5DG9BR658411	2011	ROUTAN SEL RSE & NAV 3.6L V6 AUTOMATIC	NOCTURNE BLACK	AERO GRAY NAPPA LEATHER				
2V4RW3DG6BR695596	2011	ROUTAN SE RSE 3.6L V6 AUTOMATIC	NOCTURNE BLACK	AERO GRAY V-TEX		09/18/2011	New	Gunther Volkswagen of Coconut Creek
2V8HW54X49R546183	2009	ROUTAN SEL V6 4.0L AUTOMATIC	CALLA LILY WHITE	CEYLON BEIGE NAPPA LEATHER		09/03/2009	New	Gunther Volkswagen of Coconut Creek

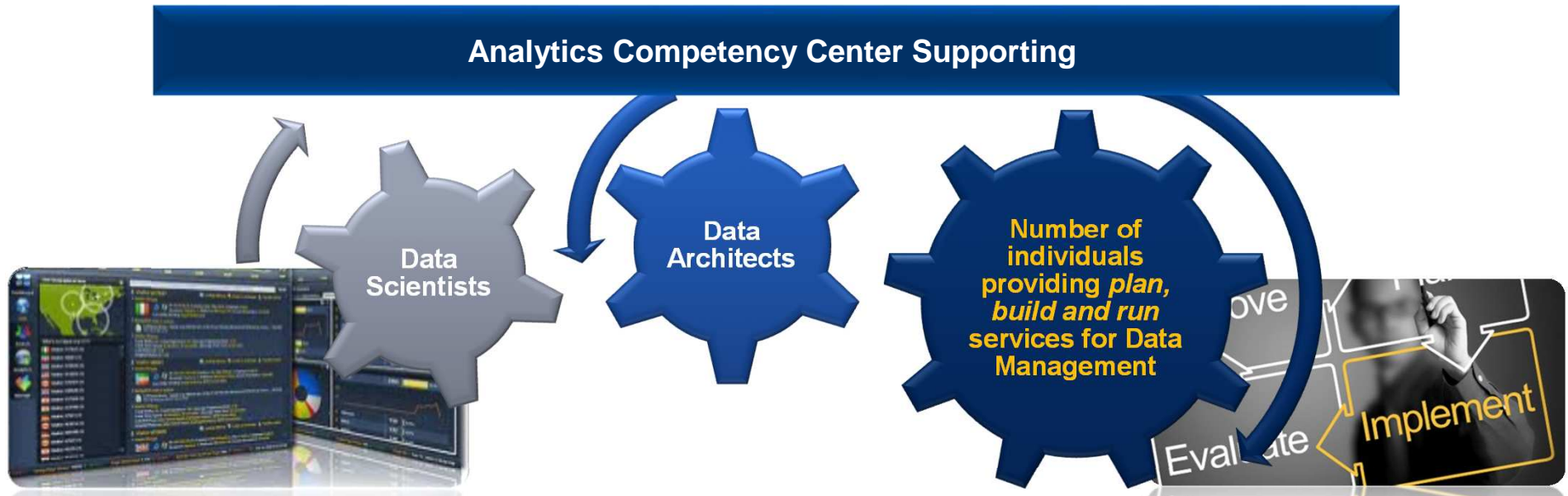
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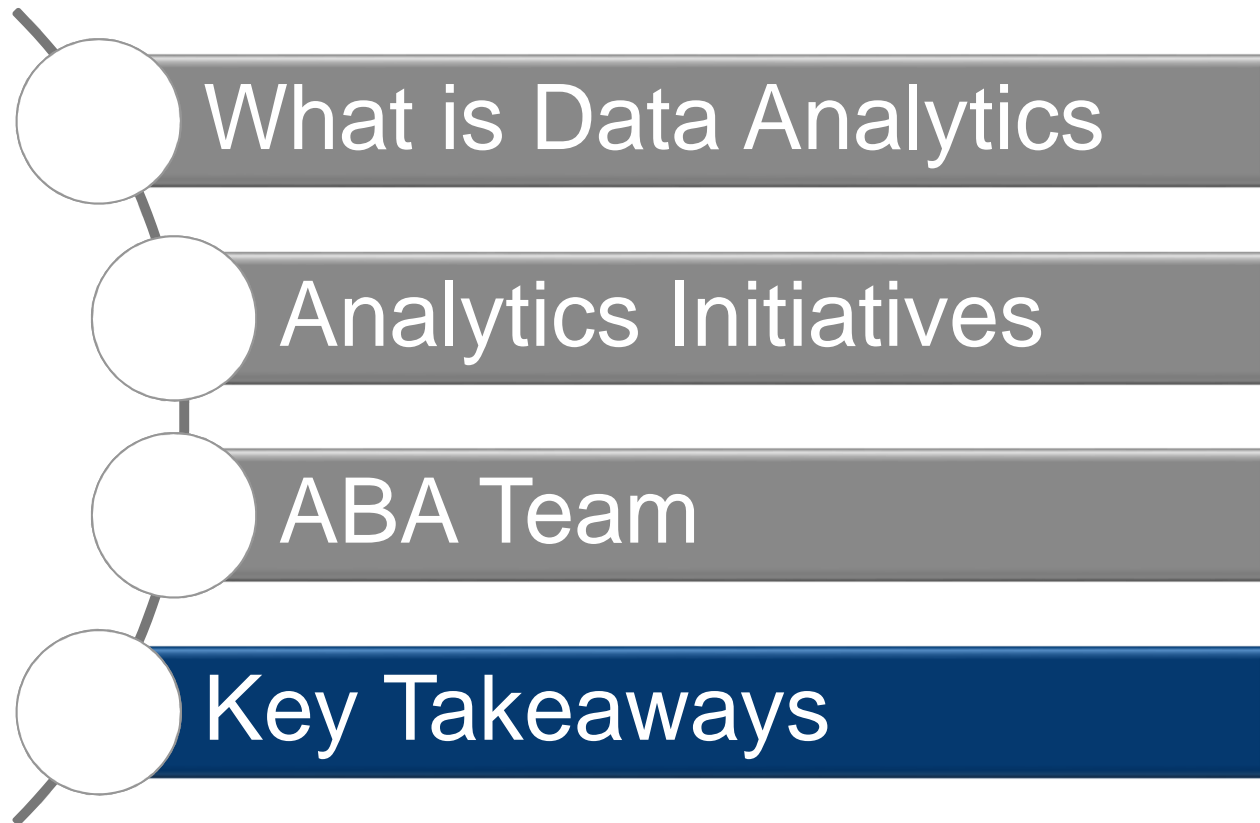
# ABA Team and Use Cases



- New Customer Acquisition
- Optimization of part distribution locations and transportation mediums
- Identify insurance claims that are potentially fraudulent
- Develop predictive models that identify potential new insurance sales
- Develop a method to predict call volumes for a large security based call center
- Increase Service Level and Minimize Shortages, etc.
- Contact: [oulgen@advancedba.com](mailto:oulgen@advancedba.com)
- [www.AdvancedBA.com](http://www.AdvancedBA.com)

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## Agenda



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## Key Takeaways

**Requires skillset in all layers of “Data Management and Analytics”**

**Creating core models and sharing them across lines of business will measurably improve operations**

**“Quick Hit” initiatives have given confidence to the approach**

**Business change (behaviors, methods, vendors) will be the biggest challenge to realizing the benefits of data**

**Investments for data initiatives can be incremental or realized from value created (i.e. self-funded)**



**“The use of data will become a key basis of competition and growth... all companies need to take data seriously.” McKinsey Global Insights**