DOMOPALOOZA®

LIVE
AND ON-DEMAND

EMPOWERING MACHINE LEARNING

SOLVING THE FORECASTING DILEMMA

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Tom Stanek
President

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Chief Analytics Officer

Leading **applied artificial intelligence** and **data science** company from Ann Arbor, MI

Services and solutions

- Leading Domo implementation and consulting firm
- Custom artificial intelligence kick-start program
- RXA Studio
    - Media Optimization
    - Voice of Customer
    - Workforce Optimization

Over **70** different customers across North America, Europe, and Asia.

2019 Domo Innovative Partner of the Year


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ESPN
HEARST
Abbott
Consumers Energy Count on Us
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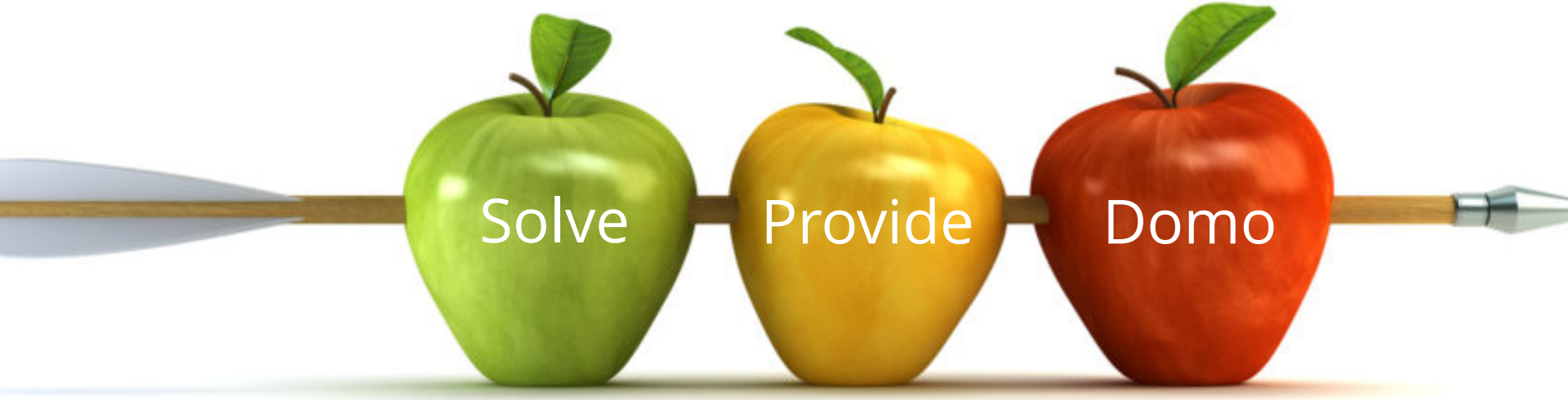
Hays All. Together. Certain.
NAI Latter & Blum
SOUTHWESTERN CONSULTING
TD
Lansinoh
VISIONLINK

3 KEY TAKEAWAYS



The Forecasting Dilemma

Now what?

WE NEED TO KNOW WHAT ARE SALES WILL BE NEXT QUARTER

SALES ARE FORECASTED TO BE BELOW BUDGET…

...WHY?

...AND HOW CAN WE CHANGE THEM?

Sales Decomposition

A Primer

WHAT IS A SALES DECOMPOSITION

Market Mix Models decompose sales

Volume Decomposition

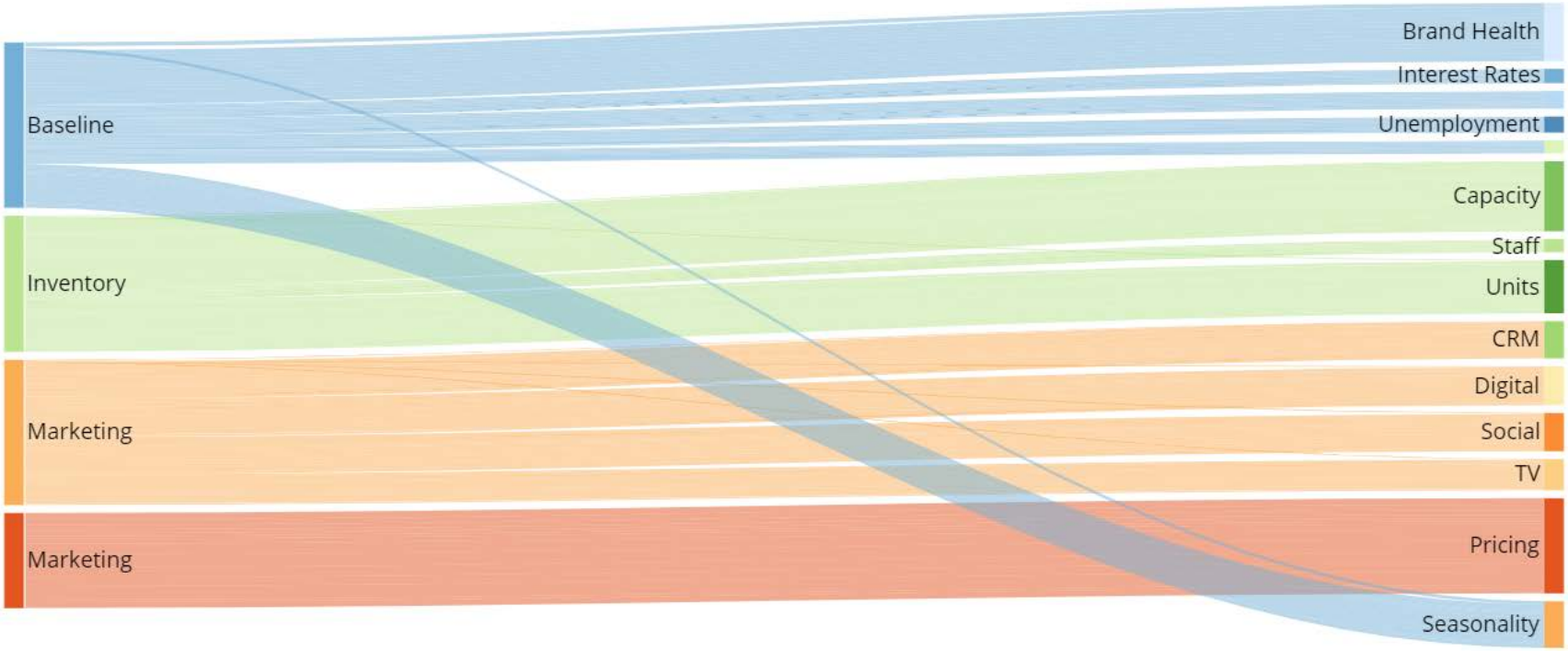
Due-to Analysis

MARKETING MIX FORECASTING

Forecasting Sales using:

- Sales
- Inventory
- Pricing
- Marketing
- External Influences

USE A PREDICTION MODEL TO DECOMPOSE SALES



USE A PREDICTION MODEL TO DECOMPOSE SALES

Predict with the overall model Isolate each variable

- Set the variable equal to zero
- Predict with the reduced model
- Calculate difference

Scale each component to the total

```
###Decompostion#################################################
Pred_s <- data.frame(predict(fit, score))
for(j in 2:length(score))
{
  r<-j
  eval(parse(text =paste0('score_',j,'<-score')))
  k<-pred_vars[j-1]
  eval(parse(text =paste0('score_',j,'$',k,'<-0')))
  eval(parse(text =paste0('Pred_',j,' <- data.frame(predict(fit, score_',j,'))')))
  eval(parse(text =paste0('output_',j,'<-cbind(Pred_s, Pred_',j,')')))
  eval(parse(text =paste0('names(output_',j,')<-c("Full","',k,'")')))
  eval(parse(text =paste0('output_',j,'$differences<-output_',j,'$Full-output_',j,'$',k,'')))
  eval(parse(text =paste0('output_',j,'<-output_',j,'[c(3)]')))
  eval(parse(text =paste0('names(output_',j,')<-c("',k,'")')))
}

output_decomp<-cbind(input1[c(2)],data_in[c(1)],output_2)

eval(parse(text =paste0('output_decomp$baseline<-output_2$',year_var,'')))
for(j in 3:length(score))
{
  eval(parse(text =paste0('output_decomp<-cbind(output_decomp,output_',j,')')))
  k<-pred_vars[j-1]
  eval(parse(text =paste0('output_decomp$baseline<-output_decomp$baseline+output_decomp$',k,'')))
}
eval(parse(text =paste0('output_decomp$baseline<-output_decomp$',response_var,'-output_decomp$baseline')))
eval(parse(text =paste0('output_decomp$seasonality<-output_decomp$',month_var,'+output_decomp$',year_var,'')))
output_decomp2<-cbind(output_decomp[c(1,2)],output_decomp$baseline,output_decomp$seasonality)
for(j in 4:length(score))
{
  eval(parse(text =paste0('output_decomp2<-cbind(output_decomp2,output_',j,')')))

}

names(output_decomp2)[names(output_decomp2)=="output_decomp$baseline"] <- "Baseline"
```

GET THE CODE AT: https://rxa.io/Domo

DEPLOYING IN DOMO

RXA_MODEL_DECOMP

CANCEL SAVE

Search for an action

DATASETS

Input DataSet

Output DataSet

EDIT COLUMNS

EDIT DATA

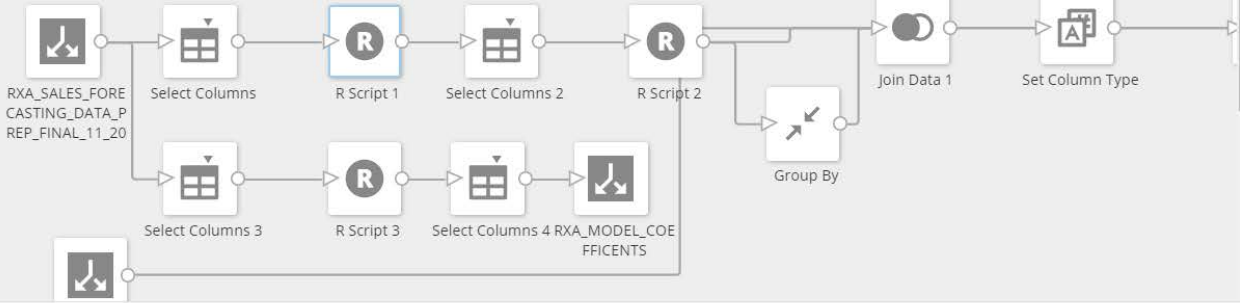
COMBINE DATA

SCRIPTING

DATA SCIENCE

PERFORMANCE

RUN PREVIEW 10K ROW LIMIT 100%



R Script 1 R Script CODE SCHEMA DONE

```
output_decomp<-cbind(score_in[c(1,2,3)],output_2)

eval(parse(text =paste0('output_decomp$baseline<-output_2$baseforecast')))

for(j in 3:(length(topvars)))
{
  eval(parse(text =paste0('output_decomp<-cbind(output_decomp,output_',j,')')))
  k<-topvars[j-1]
  eval(parse(text =paste0('output_decomp$baseline<-output_decomp$baseline+output_decomp$',k,'')))
}

output_decomp$sales<-as.data.frame(Pred_s)
print(head(output_decomp))

output_decomp$sales<-as.numeric(unlist(output_decomp$sales))
```

INPUTS PACKAGES

Search

Select Columns

DUE TO ANALYSIS

DOMO GETS THE RIGHT INFORMATION INTO THE DECSION MAKERS HANDS

MARKETING MANAGER

What Matters to Them:

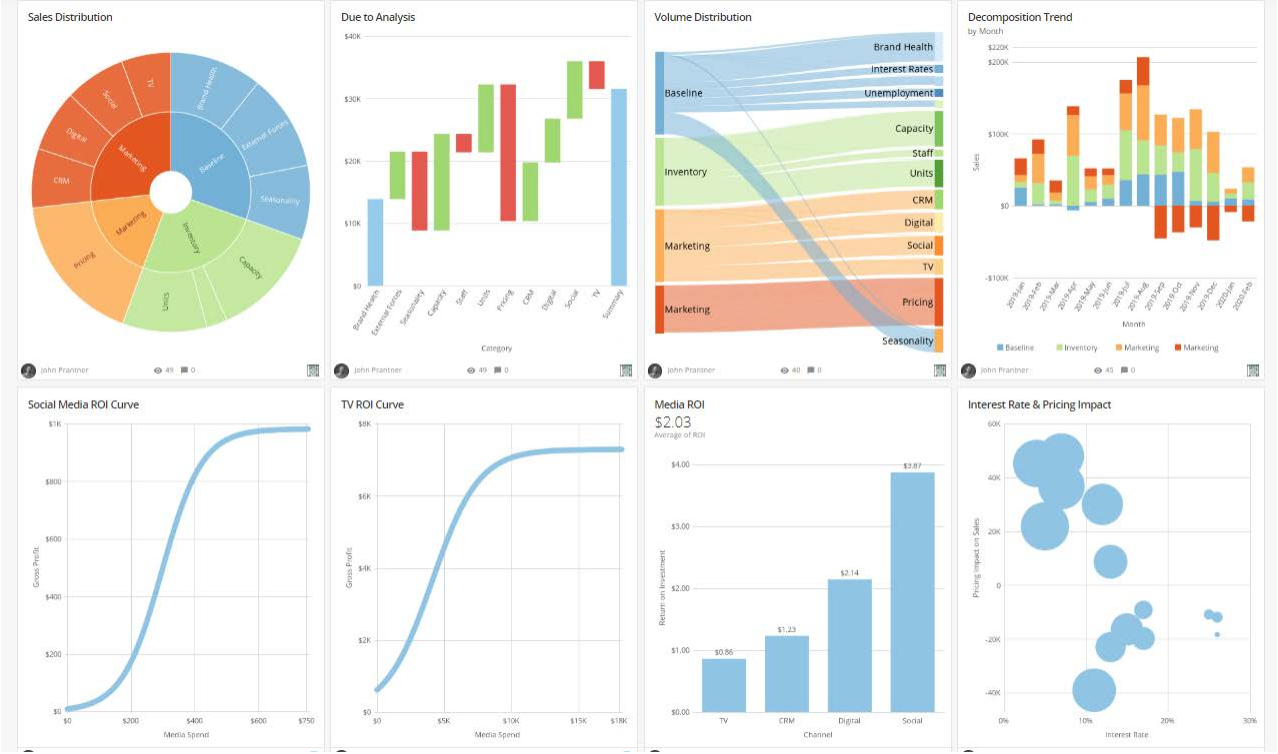
- Media Performance
- Optimization
- Web Traffic
- ROI
- Sales

MARKETING MANAGER

What They Can Control:

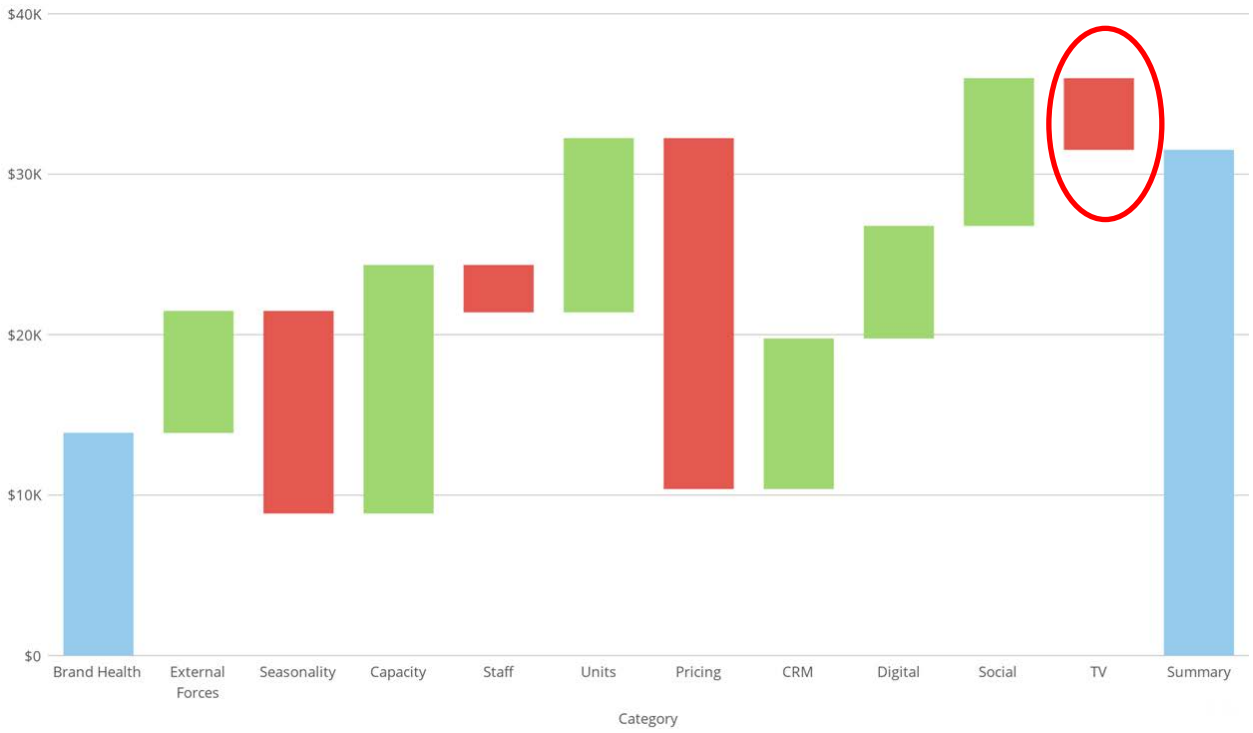
- Budgets
- Schedules
- Mix
- Strategy

MARKETING MANAGER VIEW

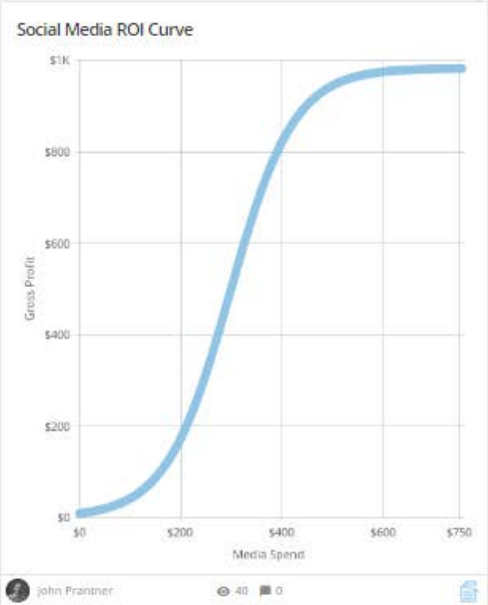


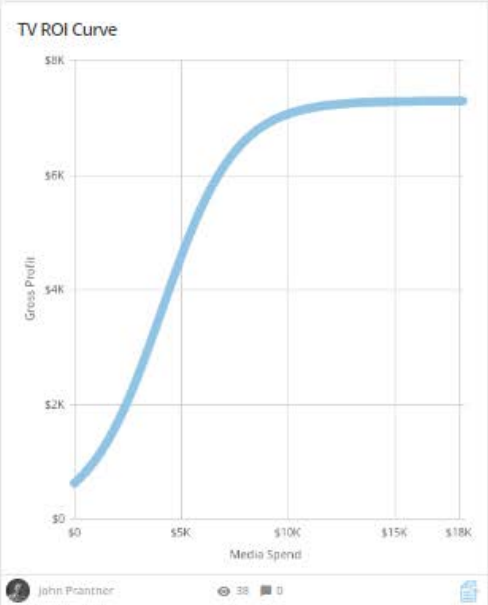
MARKETING MANAGER VIEW

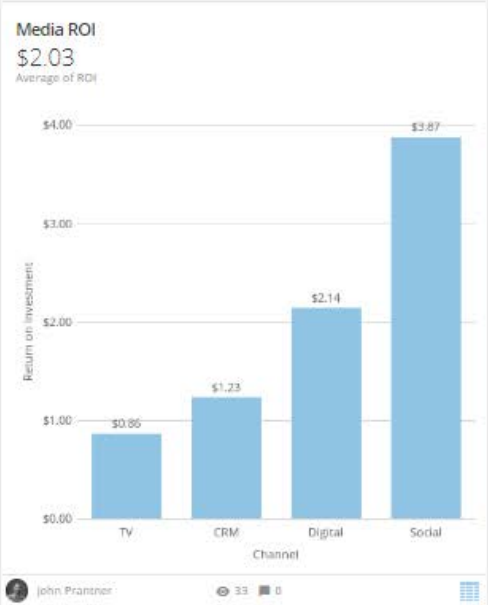
MARKETING MANAGER VIEW



MARKETING MANAGER VIEW







MARKETING MANAGER VIEW

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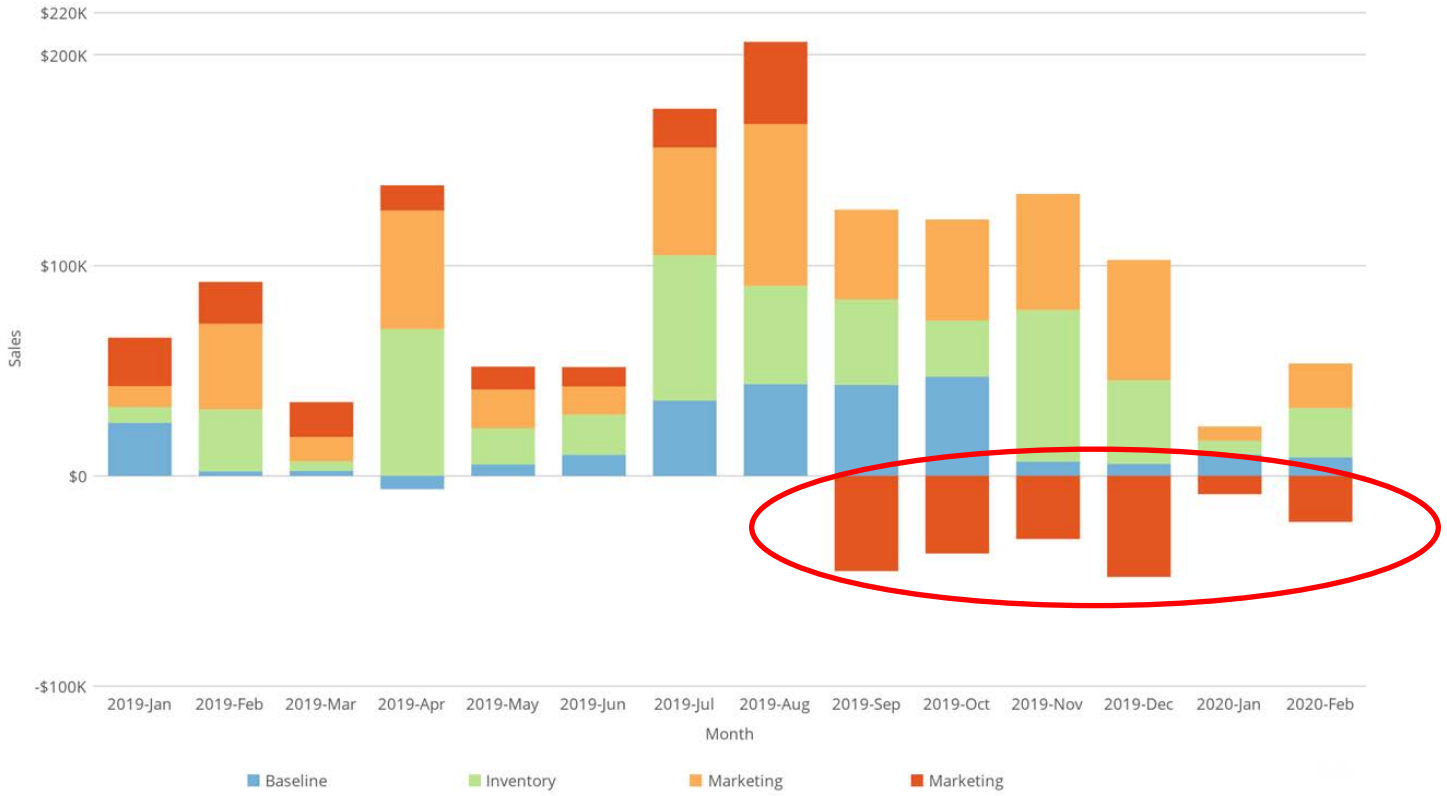
MARKETING MANAGER VIEW



PRODUCTION MANAGER

What Matters to Them:

- Inventory
- Costs
- Workforce
- Demand
- Sales

PRODUCTION MANAGER

What They Can Control:

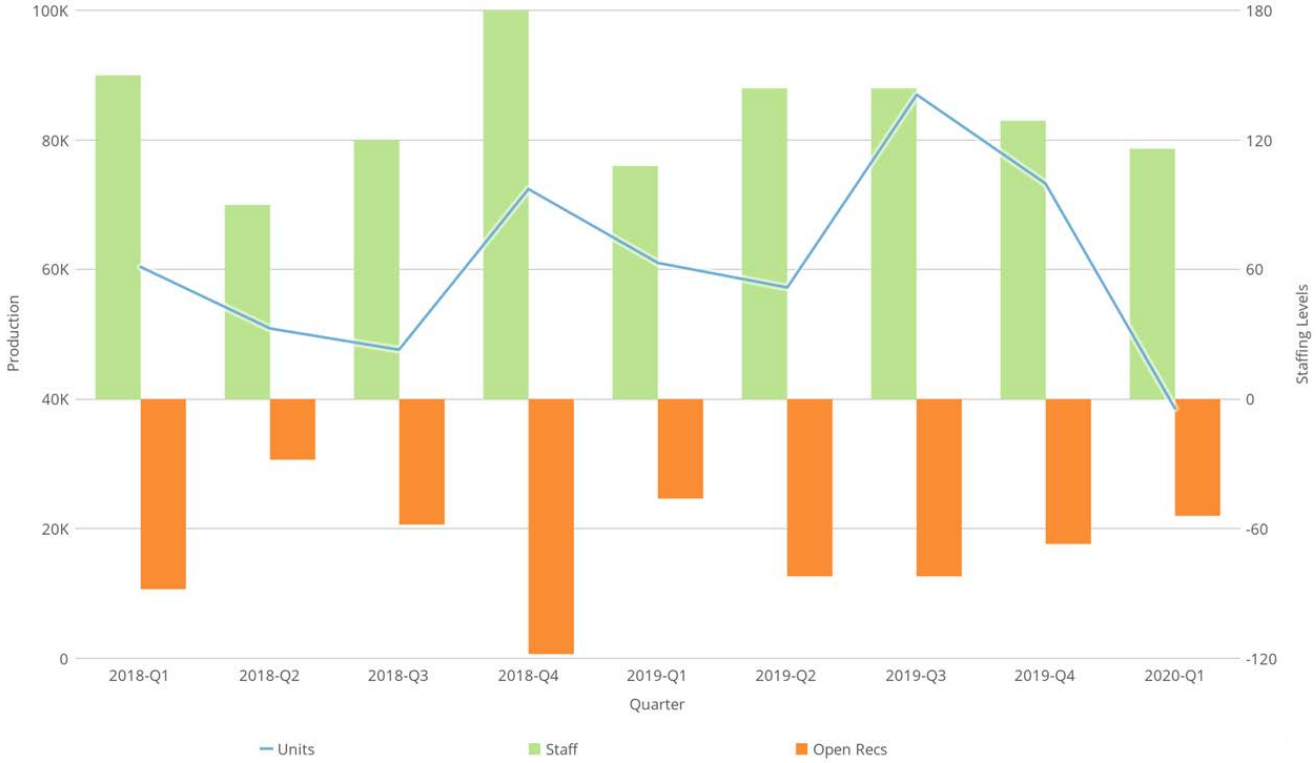
- Inventory
- Suppliers
- Production Calendar

PRODUCTION MANAGER VIEW

PRODUCTION MANAGER VIEW

PRODUCTION MANAGER VIEW

PRODUCTION MANAGER VIEW



External Influences

WHY CONTROL DATA

Accounts for external pressures

Improves forecast

Provides context

SIMPLE WITH DOMO

BACK TO CONNECTORS

READYSIGNAL

Ready Signal- Publisher

Ready Signal Curated Control Data

Ready Signal Control Data Connector

OVERVIEW FAQ REVIEWS

Platform: The Ready Signal connector was created to provide access to the Ready Signal Curated Control Data platform. The platform, which allows users to create custom curated control data based upon their industry and analysis type, gives companies access to continually update data for model building and scoring.

Purpose: The insight provided gives access to this data in real time to be displayed right in your Domo instance. The platform includes economic, demographic, weather, and population data at the desired time and geographic grain. The results> Actionable insight allow you to provide context and improve model performance.

EULA

By obtaining a license to use this App, you are stating that you are an authorized representative of App Subscriber, you have read and understand the terms and conditions of the App License Terms available at https://www.domo.com/company/app-eula, and that on behalf of Subscriber you agree to all provisions of the App License Terms.

GET THE DATA

Included in the app

Connector | Dashboard | Data Science | Dataflow | Enterprise App | Writeback

Setup effort

LOW HIGH

WHAT YOU WILL NEED

API Key

For more setup help please read the power-up guide

Additional details

LAST UPDATED

November 16, 2018

VERSION

0.6

EXTERNAL PRESSURES

Unemployment

Interest rates

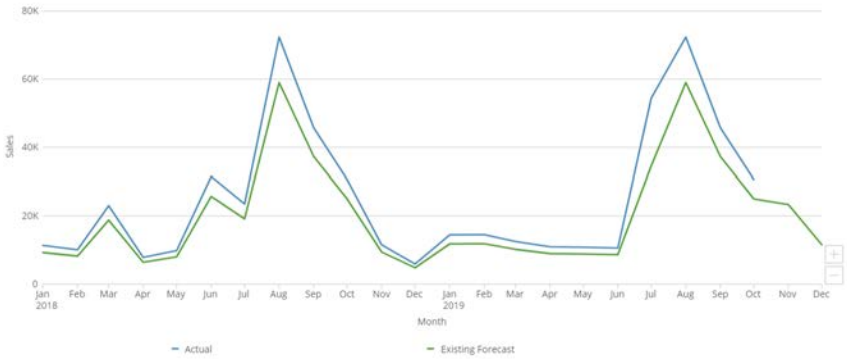
Construction

Weather

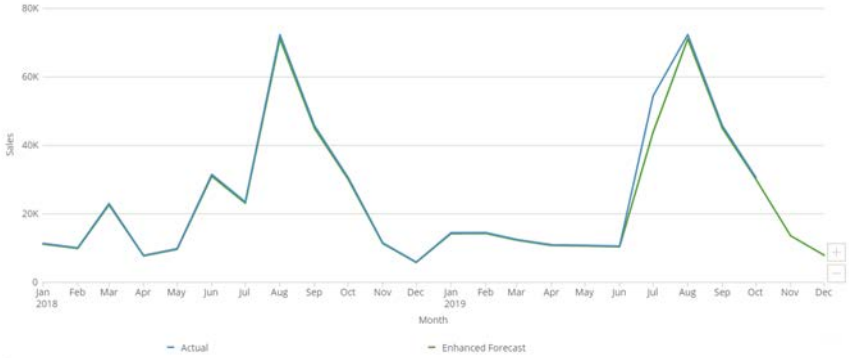
Consumer Confidence

IMPROVES FORECAST

Without Proper Control Data



With Ready Signal Control Data

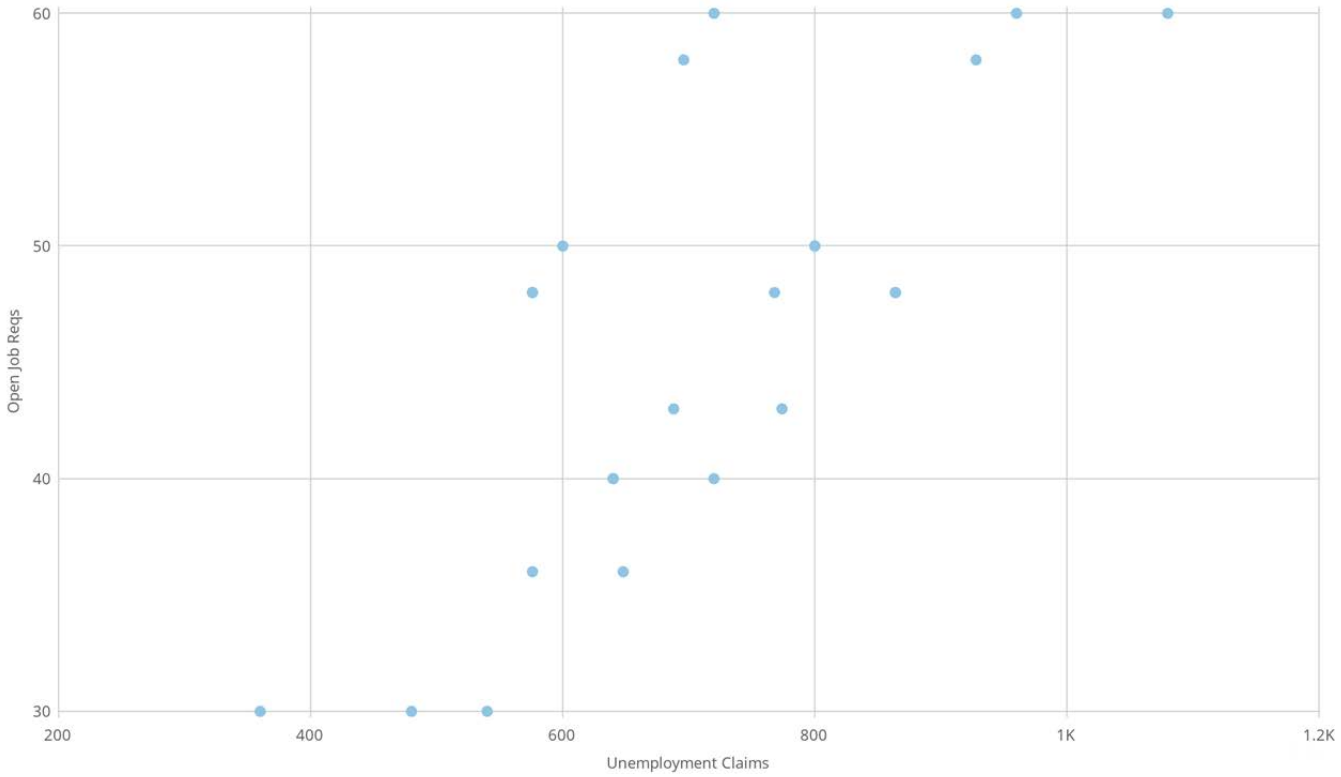


Control data can significantly improve accuracy of models, but is often underutilized based on required effort and knowledge.

DOES A 60-DEGREE DAY MEAN FEWER MOTORCYCLE SALES?

PRODUCTION MANAGER VIEW

PRODUCTION MANAGER VIEW



EXECUTIVE TEAM

What Matters to Them:

- Sales
- Profitability
- Growth

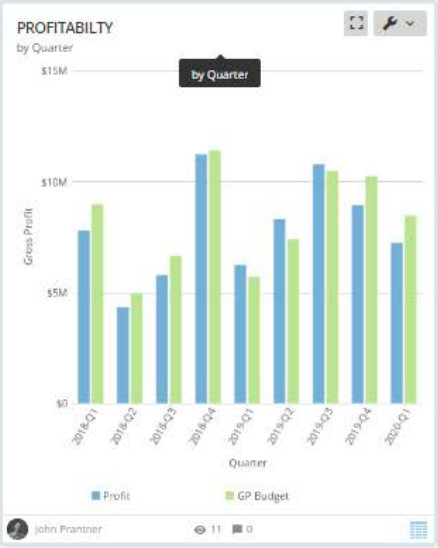
EXECUTIVE TEAM

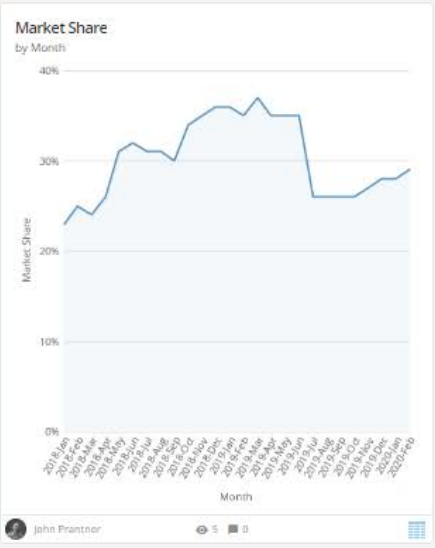
What They Can Control:

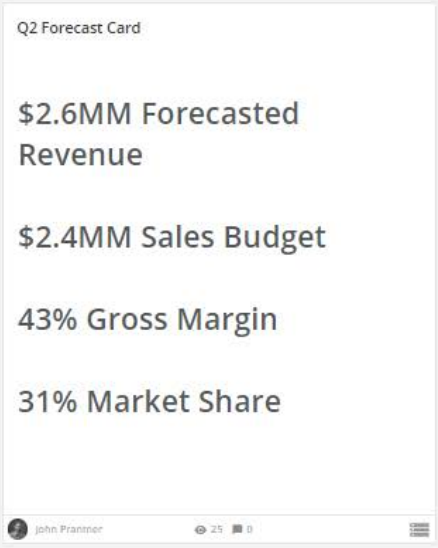
- Strategy
- Resources
- Budgets
- Competitive Positioning

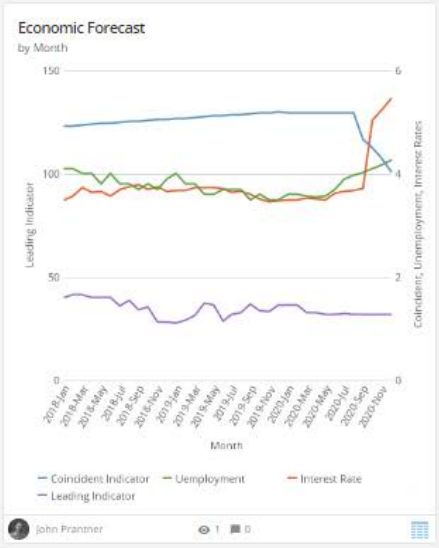
EXECUTIVE TEAM VIEW

EXECUTIVE TEAM VIEW

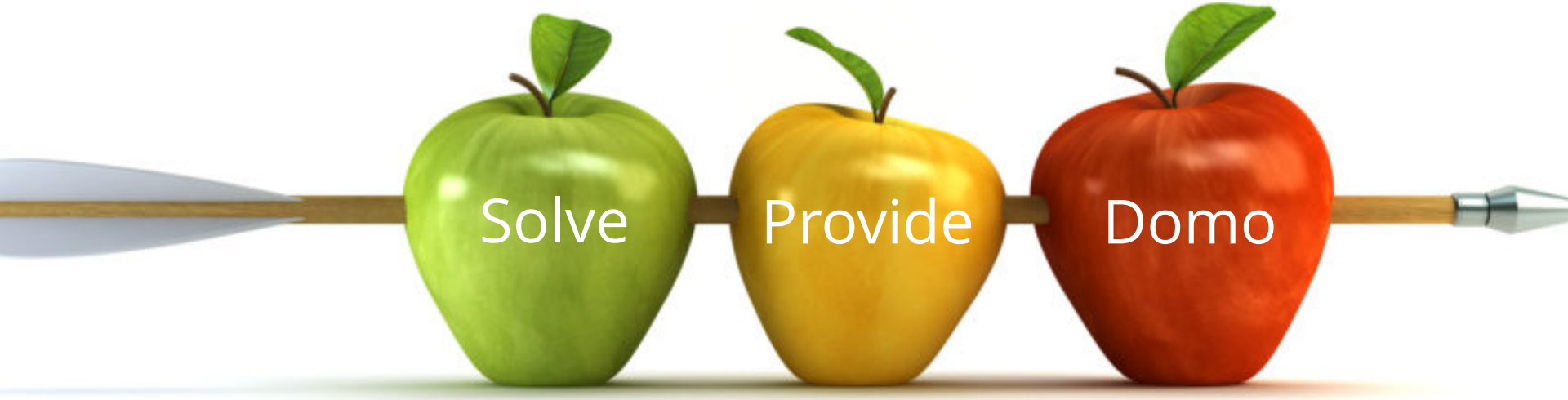








3 KEY TAKEAWAYS



THANK YOU

&

join us at our virtual booth!

DOMO PALOOZA LIVE AND ON-DEMAND