



# Smarten Working with Key Influencers

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## **Disclaimer**

This document is intended to support administrators, technology managers or developers using and implementing Smarten. The business needs of each organization will vary and this document is expected to provide guidelines and not rules for making any decisions related to Smarten. The overall performance of Smarten depends on many factors, including but not limited to hardware configuration and network throughput.

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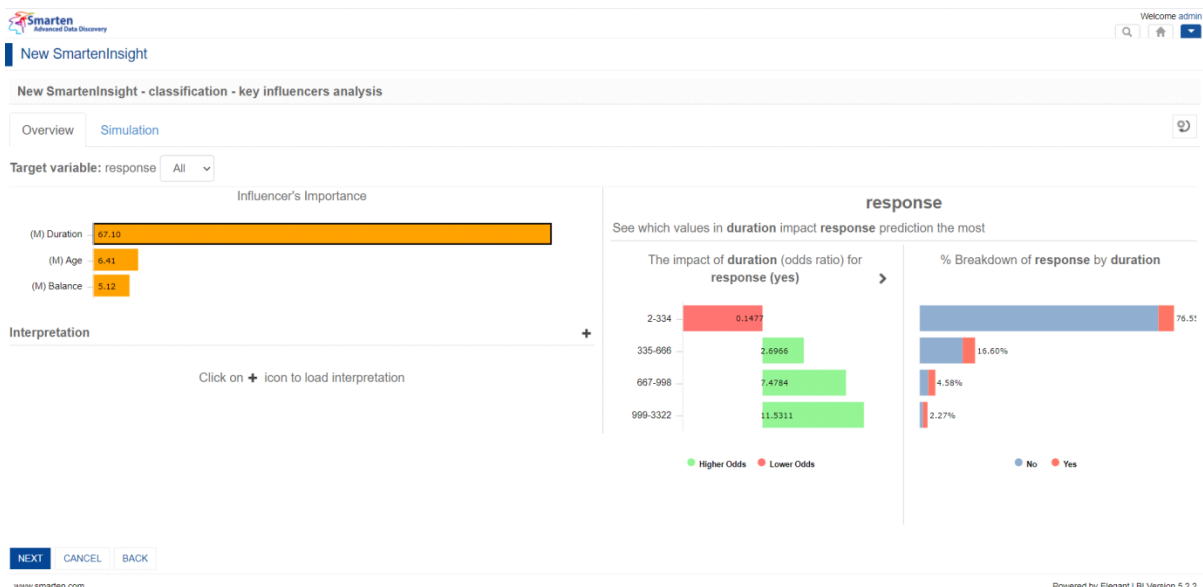
## 1 Introduction

Key influencers analysis helps users get data insights by leveraging machine learning capabilities. It analyzes the data, ranks the influencer factors that affect the target variable attribute of interest, displays them as key influencers, and presents visualizations and insights in simple natural language.

For example, considering customer targeting use-case, email response within your dataset may be affected significantly by duration since the last email and age of the recipient. Using key influencers analysis, users can easily find the most important influencer variables, e.g., duration and age, among many other variables in the dataset for the target variable, e.g., response. Influencer analysis can also further suggest positive and negative impact of influencers on the target variable.

## 2 How it can Help

- Investigate what variables matter the most in predicting your target variable
- Understand the effect of predictor variables on the target
- Leverage auto suggestions and machine learning to get data insights
- Identify influencers affecting the target variable with auto suggestions and quick maneuvers using different combinations



### KEY INFLUENCERS ANALYSIS OVERVIEW

## 3 Component's Analysis

### 3.1 Influencers' importance and impact

Smarten runs various ML algorithms to analyze your data and identify the key variables that influence the target variable. It also shows the effect of influencers on the target variable. The system auto recommends the key influencers along with their impact on the target, and then users also have a choice to evaluate the effect of other predictor variables from the dataset with an easy-to-use user interface.

For example, in the screenshot below, the impact of various influencing predictor variables, e.g., duration, age, and balance, on the target variable, e.g., response, is shown.

## New SmartenInsight

### New SmartenInsight - classification - select variables

Select the target variable containing predefined classes or groups

response

e.g., previously defaulted / not defaulted status for a bank customer

Select the predictor variable(s) based on which you want to classify

DayOfMonth	+	duration	-
job	+	age	-
marital	+	balance	-
education	+		

e.g., age, income, location, gender, etc.

Influencer's Importance

APPLY



Do you want to perform key influencer analysis ?

☐ Yes

☒ No

NEXT

CANCEL

BACK

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## KEY INFLUENCER—FEATURE IMPORTANCE FOR CLASSIFICATION

Key influencer analysis on regression models also displays the nature of impact (positive, negative, or neutral) of influencer variables on the target variable.

For example, considering loan eligibility use-case as shown below, loan amount is the target variable, and it is predicted based upon its influencing variables, such as Annual income, Debt to income ratio, Verification status, and Grade. As shown below, Annual income predictor has a positive effect on the target variable loan amount, indicating that the more Annual income, the more will be the Loan amount.

## New SmartenInsight

### New SmartenInsight - regression - select variables

Select the target variable (variable to be predicted or output variable)

Loan\_amount

e.g., loan amount

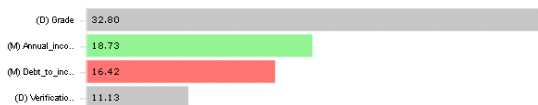
Select the predictor variables (variables being used to predict the target variable)

Employment_length	+	Annual_income	-
Home_ownership_status	+	Grade	-
		Debt_to_income_ratio	-
		Verification_status	-

e.g., Loan amount depends on employment tenure, home ownership status, annual income, verification status, debt-to-income ratio, etc.

APPLY

Influencer's Importance



Positive Negative Neutral

Do you want to perform key influencer analysis ?

☐ Yes

☒ No

NEXT

CANCEL

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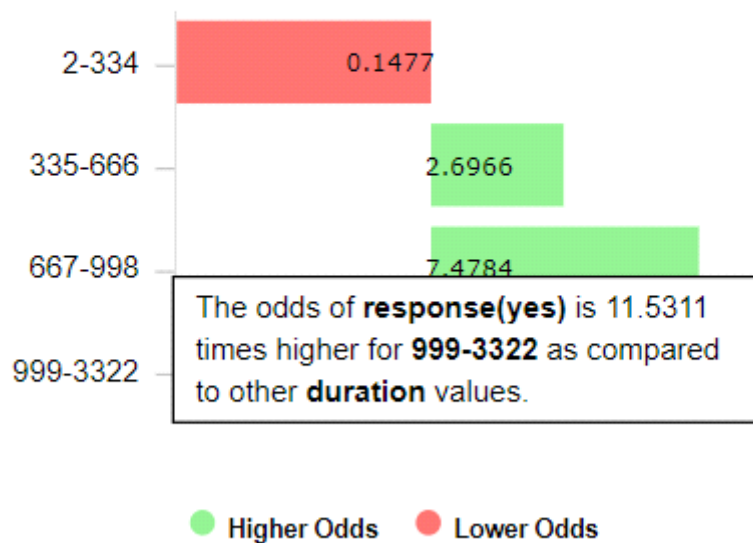
## KEY INFLUENCER—FEATURE IMPORTANCE FOR REGRESSION

## 3.2 Predictor Valuewise Impact on Target Variable

Key influencer analysis resolves into elements the nature of impact of each influencer value on the target variable.

For example, considering customer targeting use-case, users get to scrutinize the effect of each duration period range's impact in predicting the target variable response. As shown below, the predictor valuewise impact is examined in terms of its odds ratio with the corresponding target variable, and it can be inferred that the longer duration period implies higher odds of getting Yes for the response value.

The impact of **duration** (odds ratio) for **response (yes)**



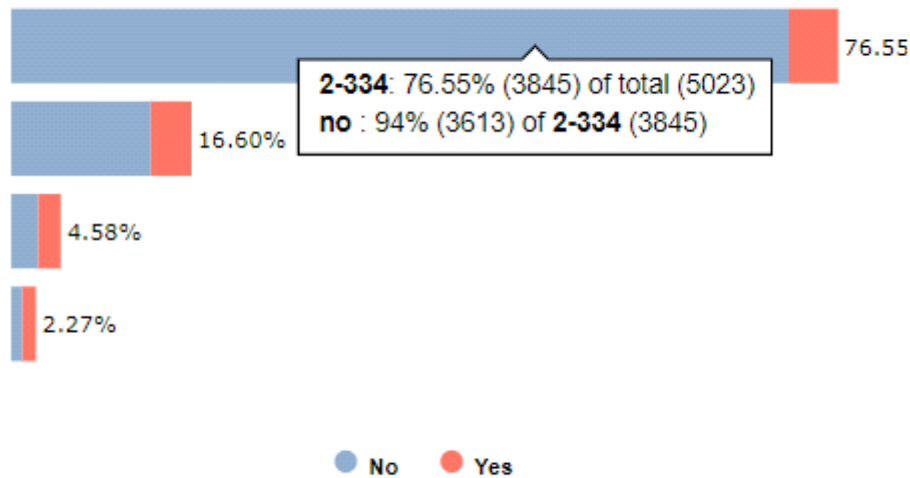
KEY INFLUENCER—PREDICTOR VALUEWISE IMPACT ON TARGET VARIABLE

## 3.3 Predictor Valuewise Percentage Breakdown of Target Variable Values

Key influencer analysis enables users to examine the contribution of each influencer value (in case of dimension influencer) or value range (in case of measure influencer) upon every target variable value.

For example, for customer targeting use-case, it can be examined, as explained from the screenshot, that out of all the duration value ranges, 76.55% of total duration values belongs to duration bucket 2-334. Furthermore, considering the duration range 2-334, the contribution of response No for this bucket is 94%, and that of response Yes is the remaining 6%, helping users interpret that this duration bucket apart from having the highest contribution among all duration ranges also has a higher contribution of response No over response Yes.

## % Breakdown of response by duration



### KEY INFLUENCER—PREDICTOR VALUEWISE PERCENTAGE BREAKDOWN OF TARGET VARIABLE VALUES

## 3.4 Interpretation

Key influencer analytics provides interpretation of insights in simple natural language.

#### Interpretation

There is a significant association between **response** and **duration**.

- There is a statistically significant association between **duration** (2-334, 335-666, 667-998) and **response** (no).
- There is a statistically significant association between **duration** (999-3322) and **response** (yes).

Average **duration** values for **response**:

response	no	yes
Average duration	223.276	529.793

- The average **duration** for **response** (yes) is higher when compared to the other **response** classes.

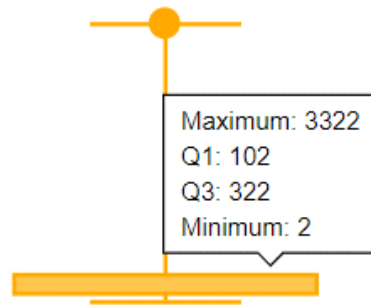
**duration** vs **response**:

response	Minimum	Maximum	Average	Sum	Count
no	2	3322	223.28	990005	4434
yes	74	3183	529.79	312048	589

Odds Ratio:

response	duration			
	2-334	335-666	667-998	999-3322
no	6.7718	0.3708	0.1337	0.0867
yes	0.1477	2.6966	7.4784	11.5311

- The odds of **response**(yes) is highest for **duration**(999-3322) and lowest for **duration**(2-334).
- The odds of **response**(no) is highest for **duration**(2-334) and lowest for **duration**(999-3322).



- Average value for **duration** is **259.218**.
- Most frequent value observed for **duration** is **112**.
- 25% of the observations for **duration** are less than or equal to **102**.
- 50% of the observations for **duration** are less than or equal to **178**.
- 75% of the observations for **duration** are less than or equal to **322**.

KEY INFLUENCER—INTERPRETATION

## 4 Product and Support Information

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Find more information about Smarten and its features at [www.smarten.com](http://www.smarten.com)

Support: [support@smarten.com](mailto:support@smarten.com)

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