Build a DataRobot AI-Driven Tableau Dashboard
About DataRobot

DataRobot is the pioneer of automated machine learning, providing an enterprise-grade platform that enables organizations of all sizes to leverage the power of artificial intelligence (AI) and machine learning.

The DataRobot platform enables analysts to quickly develop highly accurate predictive models and boosts the productivity of data scientists, allowing them to focus on the more complex aspects of data science projects. DataRobot drives cost savings and bottom line impacts for organizations across a range of industries, including banking, fintech, healthcare, insurance, energy, and public sector. DataRobot helps companies supercharge AI efforts, enabling them to become AI-driven enterprises.

About DataRobot AI-Driven Dashboards

Today there is way too much data to manually analyze and a data scientist shortage. Stop waiting for data scientists and learn how you can accelerate insight to action with no-code DataRobot automated machine learning. If you want to deliver proactive insights that optimize bottom line results, learn how combining Tableau with DataRobot can help you focus on what matters most, find hidden patterns, and easily apply AI to solve complex problems smarter and faster than ever before. In this exercise, we walk through how to visualize DataRobot predictions in Tableau dashboards.

To learn more about DataRobot, please see https://www.datarobot.com.
Build a DataRobot AI-Driven Dashboard

For this exercise, we will visualize DataRobot predicted loan defaults on a new machine learning-ready dataset. Our sample dataset is from LendingClub, the world’s largest peer-to-peer lending platform, offering unsecured personal loan trading on a secondary market. For detailed information on the dataset fields, please see the Lending Club Data Dictionary file located in the Datasets folder.

In the competitive online lending industry, the need to quickly make decisions is becoming increasingly important to win new customers. To help investors make better, faster loan decisions, you will create a DataRobot AI-driven Tableau risk-model dashboard. Let’s get started.

1. Connect Data Sources in Tableau

In Tableau, connect to the loans to analyze, DataRobot’s loan predictions and DataRobot’s prediction explanation files. If you are new to Tableau and don’t know how to connect to a data source, create views or a dashboard, please see the tutorial Get Started with Tableau.

a. Click Connect > Text File and select Lending_Club_Dataset_New.csv in the Datasets folder and click Open.
b. Click the **Add** button and select **Predictions.csv** in the Lab 2 folder.

c. Click the **Add** button and select **PredictionExplanations.csv** in the Lab 2 folder.

d. Tableau will automatically use inner joins to relate the three files to one another on the Id field. For our lab, we will use **inner joins** on the **Member Id** field. To change the default join, click on the two sets of circles in the join window. A **join type window** will be shown. In the join type window, select **Member Id** in the **Data Source drop-down** field list and the **Predictions.csv drop-down** field list. Repeat this step to update the join setting for the **PredictionExplanations.csv** join.
2. **Create Loan Details Worksheet in Tableau**

Click the **New Worksheet** tab to create a **Loan Details** view.

a. From Measures, drag **Annual Inc, Out Prncp, Total Rec Prncp, Total Rec Int**, and **Total Rec Late Fee** measure to the Columns shelf.

![Tableau worksheet with loan details](image)

b. From Dimensions, drag **Grade, Id, Purpose, Dti, Inq Last 6Mths** to the Rows shelf.

c. Set **Dti** and **Inq Last 6Mths** to **Attribute**. Click on the blue pill drop-down menu for those two fields and click **Attribute**.
3. **Create Loan Risk Worksheet in Tableau**

Click the **New Worksheet** tab to create a **Loan Risk** view.

a. From Measures, drag **Out Prncp** and **Int Rate** to the Columns shelf.

b. From Dimensions, drag **Id** to **Details** on the Marks shelf.

c. From Measures, drag **Out Prncp** to **Size** on the Marks shelf.

d. From Measures, drag **Term** and **Total Rec Prncp** to **Tooltips** on the Marks shelf.

e. From Dimensions, drag **Purpose** to the **Filters** shelf. Click on the blue pill drop-down menu and click **Show Filter**.

![Tableau screenshot showing the Loan Risk worksheet with filters and dimensions.](image-url)
4. Create Calculated Fields from DataRobot Predictions

To make our prediction fields easier to visualize and explain, we will add Calculated Fields.

a. To create a Calculated Field, select any field in the dimension list and then right-click Create Calculated Field.

b. In the pop-up window, enter the Calculated Field Name Prediction Loan Risk. Then copy Calculation Logic below and click OK.

**Prediction Loan Risk**

// Logic to add Loan Bad label //
IF([Prediction] > 0.10) THEN "TRUE" ELSE "FALSE" END
c. Continue creating three more **Calculated Fields**.

**Prediction Loan Risk Category**  
// Logic to add Loan Risk Category labels from DataRobot Predictions  
IF ([Prediction] > 0.0 AND [Prediction] < .10) THEN '1 LOW RISK'  
ELSEIF ([Prediction] >= 0.10 AND [Prediction] < .20) THEN '2 MEDIUM RISK'  
ELSEIF ([Prediction] >= 0.20 AND [Prediction] < .30) THEN '3 HIGH RISK'  
ELSE '4 VERY HIGH RISK'  
END

**Prediction Explanation**  
// Combining Top 2 DataRobot Prediction Explanations for use in Tooltips  
UPPER([Explanation 1 Feature])  + ' : ' + [Explanation 1 Value]  + ' : ' +  
UPPER([Explanation 2 Feature])  + ' : ' + [Explanation 2 Value]

% Probability of Default  
// Renaming DataRobot Prediction field for Tableau dashboard slider  
[Prediction]

5. **Add DataRobot Predictions to Loan Risk Worksheet**  
Now we will add our prediction fields to color code loan risk levels, add tooltips and a filter to analyze risk by probability of loan default.

a. From Dimensions, drag **Prediction Loan Risk Category** to **Color** on the Marks shelf.

b. From Dimensions, drag **Prediction Loan Risk Category** to the **Filters** shelf and then click **Show Filter**.

c. Click **Prediction Loan Risk Category Filter** and then click the dropdown arrow to **Edit Colors**.
Select the Blue color palette from the drop-down list. Now assign a
darker shade of blue to higher risk categories to visually
communicate related higher risk levels. To set a color, click on the
Data Item **Category**, click on a **Color** box and then click **Apply**.

![Edit Colors](image)

**d.** From Dimensions, drag **Prediction Explanation** to **Tooltips** on the
Marks shelf.

**e.** From Measures, drag % **Probability of Default** to the **Filters** shelf and
then click **Show Filter**.

The Loan Risk Worksheet should similar to the image below. Our scatter
chart shows individual loans by risk category, outstanding amount owed on
the principal balance and loan interest rate. As you hover over loan records,
you can see DataRobot Prediction Explanation details for specific loans.
This added context is important for understanding and explaining results.

DataRobot Prediction Explanations help decision makers understand the
what and why behind each prediction. Unlike a black box, DataRobot
prediction reasoning is transparent, explainable and auditable.
6. Create Totals Worksheets in Tableau

Now let’s add views for totals to use in a dashboard.

a. Click the New Worksheet tab at the bottom of your screen to create a Total Outstanding and Total Loans view. On Total Outstanding, drag the measure Out Prncp to the sheet.

b. Repeat the same steps for Total Loans except drag the measure Number of Records.
7. **Build the Loan Risk Dashboard in Tableau**

Now we will unify all our worksheets into an interactive Tableau dashboard for decision makers to see and act on predicted individual loans at risk.

a. Click the **New Dashboard** tab at the bottom of your screen. From the Dashboard pane on the left, drag your Loan Details Worksheet from Sheets into your empty dashboard.

b. Drag Outstanding Loan Risk Worksheet into your dashboard.

c. Continue to add **Total Outstanding** and **Total Loans**.

d. Drag **Text** from the Objects shelf to the top and enter in the dashboard name, Loan Risk Dashboard.

e. Drag **Image** from the Objects shelf to the top right corner and select **Logo.jpg** from the Lab 2 folder.

f. Click on the Outstanding Loan Risk worksheet and select the **Filter** at the right-side of the chart to use this chart as a filter.
8. Interactively Explore the Tableau Dashboard
To view or present your completed dashboard, click the Presentation Mode icon at the top of the Tableau Desktop screen.

In Presentation Mode, you can change filter settings, review details and predictions for individual loans by risk category. The DataRobot AI-driven dashboard provides decision makers proactive loan predictions along with prediction explanations to help them take better informed actions.
9. Create Top Prediction Explanations Worksheet in Tableau

To provide decision makers a bigger picture summary of all predicted loan status reasons, let’s create one more view and dashboard. In this view, we are going highlight Top DataRobot Prediction Explanations and let our stakeholders drill-down further to see individual loan details.

a. Click the New Worksheet tab at the bottom of your screen to create a Top Prediction Explanations view.

b. From Dimensions, drag Explanation 1 Feature to the Rows shelf.

c. From Measures, drag Number of Records to the Columns shelf.

d. From Measures, drag % Probability of Default to the Columns shelf. Then change the aggregation from Sum to Average.

![Image of Tableau interface showing steps for creating the worksheet.]

- From Dimensions, drag Prediction Loan Risk Category to Color on the Marks shelf.

- On the Marks shelf, change the SUM(Number of Records) to Circle.
10. **Build the Predicted Risk Overview Dashboard in Tableau**

Now let’s combine worksheet views again into an interactive Tableau dashboard to provide the high-level predicted loan status summary.

a. Click the **New Dashboard** tab at the bottom of your screen. Drag your **Loan Details** Worksheet from Sheets into your empty dashboard.

b. Drag **Top Prediction Explanation** Worksheet from Sheets into your dashboard. Click on the worksheet and select the **Filter** at the right-side of the chart to use this chart as a filter.

c. Continue to add **Total Outstanding** and **Total Loans**.

d. Drag **Text** from the **Objects** shelf to the top and enter in the dashboard name, Predicted Risk Overview.

e. Lastly add the logo. Select **Image** from the **Objects** shelf the top right and select the **Logo.jpg** from the Lab 2 folder.
With DataRobot and Tableau, you can put AI to work in a manner that can be easily used, explained and trusted.

This concludes our brief introduction to Building DataRobot AI-Driven Tableau Dashboards. In this lesson, you learned how to combine multiple data sources together with DataRobot automated machine learning Predictions and Prediction Explanations result files into Tableau dashboards. AI-driven dashboards deliver proactive insights that help decision makers better optimize outcomes.