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# On-Demand Training: How to Integrate R and Tableau Transcript

Welcome to this video on how to Integrate R and Rserve for use with Tableau. You can download the Exercises workbook to follow along in your own copy of Tableau. However, R must be installed on your machine to fully follow along with this video. This dashboard with links and instructions is part of the downloadable workbook.

R is a free, open source statistical language. Tableau's R integration is intended for users who are familiar with R and know how to write the scripts and functions required and have access to R server.

## Overview

Using R within Tableau is a straightforward process. Simply create a function that calls R and contains the R script. Tableau will pass the script and data to R where the computation takes place. The results are returned to Tableau and can be visualized just like any other calculated field.

## Necessary Installations & Setup

Using R within Tableau requires a few steps to set up.

- First, R must be installed on the local machine along with Tableau Desktop.
- Next, Rserve needs to be installed and initiated within R
  - Rserve is a package which allows applications such as Tableau Desktop to use R without initializing R each time. Essentially, Rserve is the connector between R and Tableau Desktop.
  - To set up Rserve, within R or Rstudio, run the following
    - `install.packages("Rserve")`
      - select a CRAN mirror, and once the download is complete, run:
    - `library(Rserve); Rserve()`

Attempting to open a workbook with R functionality on a machine without R installed and set up within Tableau will result in an error that there is no Rserve connection configured.

In order to use R functionality in a workbook, that workbook must have an Rserve connection. This holds both for locally shared workbooks and for workbooks published to Tableau Server.

- To set this up in Desktop,
  - go to Help > Settings and Performance > Manage R Connection
  - the default settings of localhost and port 6311 are usually correct

Rserve remains resident in memory even after the R console is closed and is still able to serve requests from Tableau.

## Publishing Workbooks with an Rserve Connection

Publishing a workbook with R functionality to Tableau Server requires Server to have a connection to Rserve. If multiple users need to access Rserve simultaneously, Rserve should be installed on Linux. Rserve on Linux, unlike Windows, handles each user independently and does not allow users to overwrite other's objects. For more information on how to configure Rserve using Tabadmin, please refer to the Online Help.

## Installing Packages and Calling Libraries

One of the benefits of R is that there is a huge community of users who publish pre-built packages of functions, data, and code.

- Packages are downloaded and installed
- And each session needs to load the package by using the `library(package)` command
- Here, for example, this sheet should have a view. However, there's an error
  - An error occurred while communicating with the Rserve service
- When we click Show Details, we see
  - Error in `library(mvoutlier)` : there is no package 'mvoutlier'
  - This lets us know we need to install that package in R
- Back in R
  - go to Packages > Install Packages
  - find mvoutliers on the list
  - and let the packages install – this can take some time
  - once the packages are installed, load the library
  - `library(mvoutlier)`
- back in Tableau, the view renders properly

## Conclusion

Thank you for watching this training video on R Integration. To learn more about using R in Tableau, continue to the next video, Using R within Tableau.