

# C2ER, LMI Institute, & R-Courses Intermediate R Training: Data Science for Workforce and Economic Development Research

February 16 - March 4th, 2021

Online – Tuesday, Thursday | 4:00pm – 6:00pm ET

Please install R and RStudio before the workshop

## R Installation Support Hours:

1. Monday, 2/1 4:30PM - 5:30 PM ET - Katie
2. Wednesday, 2/3 4:30PM - 5:30 PM ET - Ezgi
3. Wednesday, 2/10 5:30 - 6:30 PM ET - Abbas

## Week 1

### **Session 1: 2/16 - Ezgi Karaesmen; TA - Katie Schafer**

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Refresher

- Refresh on tidyverse and data wrangling.
- Refresh on using blscrapeR and tidycensus packages.
- An API example with PA COVID-19 data

**Key Takeaways:** Remember basic operations with select, filter, mutate functions. Import data with

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**Office Hours: 2/17 4:30 - 5:30 PM ET**

### **Session 2: 2/18 - Ezgi Karaesmen; TA - Abbas Rizvi**

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Functional programming with R

- Learn how to write your own functions in R.
- Learn running iterative operations with:
  - for loop
  - purrr package
- If time permits: if else loop

**Key Takeaways:** Learn some key concepts and tools foundational to more scalable and repeatable importing, tidying, and visualization. This content will set us up for the following sessions.

## Week 2

### Session 3: 2/23 - Abbas Rizvi; TA - Katie Schafer

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Formal introduction to RMarkdown

- Header hierarchy and table of contents
  - Chunk options
    - Control code execution
    - Adjust plot presentation
  - Creating pretty tables with kable and gt
  - Interactive tables with DT
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**Office Hours: 2/24 5:30 - 6:30 PM ET**

### Session 4: 2/25 - Abbas Rizvi; TA - Ezgi Karaesmen

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Build your first Shiny app!

- Shiny essentials and basic principles including
  - basic ui
  - basic reactivity
  - upload
  - download
  - best practices

**Key Takeaways:** Make your graphs and reporting interactive. Learn basics to allow other users to explore your results interactively.

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## Week 3

### Session 5: 3/2 - Katie Schafer; TA - Ezgi Karaesmen

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Intro to modeling and feature engineering

- Use previously introduced data sets and data tidying tools too:
  - Explore distributions of key variables
  - Inform feature engineering for rolling metrics
  - Inform feature engineering and model set up for time series data

**Key Takeaways:** Learn the foundational steps to the most critical part of modeling: the data cleaning, prep, and iterative feature engineering

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**Office Hours: 3/3 12-1 PM**

**Session 6: 3/4 - Katie Schafer; TA - Abbas Rizvi**

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Create and run regression model

- Build on feature created to run model
- Learn basics of statistics behind it
- Evaluate the accuracy of the model using key base R plotting features
- Understand how we can expand upon visuals using ggplot2
- Leave with resources needed for self guided investigation of more advanced ML principles (i.e., training, sampling techniques, associated packages).

**Key Takeaways:** Learn 1st principles of the most foundational and commonly used modeling approach. Learn how to assess model fit and accuracy using a basic, repeatable framework

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