

Intermediate R Training 2024: Data Science for Workforce and Economic Development Research

Virtual: October 15, 17, 22, 24, 29, 31 | 4:30 PM – 6:30 PM ET

Session 1 (October 15): Introduction and Setup

Welcome & Introductions (15 minutes)

Setting up R & Quarto (20 minutes)

- Download and install R, RStudio, quarto, and Rtools (for Windows users)
- Install necessary packages: `tidyverse` and `tidycensus`

Refresher on R and Key Packages (30 minutes)

- Quick review of `tidyverse` basics: `select`, `filter`, `mutate`
- Introduction to `tidycensus`

Hands-on Example: Exploring PA COVID-19 Data (40 minutes)

- Load and explore data using `tidycensus`

Key Takeaways & Q&A (15 minutes)

Session 2 (October 17): Functional Programming with R

Introduction to Custom Functions (30 minutes)

- Creating and using custom functions in R

Iterative Operations (40 minutes)

- Introduction to `for` loops and the `purrr` package

Introduction to Control Structures (30 minutes)

- Basic `if`, `else`, and `ifelse` statements in data workflows

Key Takeaways & Q&A (20 minutes)

Session 3 (October 22): Quarto Fundamentals

Introduction to Quarto and (20 minutes)

- Overview of Markdown syntax and document structuring

YAML and Chunk Options (30 minutes)

- Basic YAML setup, controlling code execution, and chunk options

Creating Simple Interactive Documents (50 minutes)

- Introduction to interactive elements in Quarto documents (e.g., simple maps)

Key Takeaways & Q&A (20 minutes)

Session 4 (October 24): Advanced Data Wrangling and Visualization

Advanced Data Wrangling with Tidyverse (40 minutes)

- Efficiently joining, summarizing, and reshaping data
- Case study: Wrangling Census data

Visualizing Census Data with ggplot2 (50 minutes)

- Creating and customizing plots
- Introduction to interactive visualizations with Quarto dashboards

Key Takeaways & Q&A (30 minutes)

Session 5 (October 29): Spatial Data in R with Tidycensus

Introduction to Spatial Data Analysis (30 minutes)

- Working with geographic data using `sf` and `tidycensus`

Mapping Census Data (40 minutes)

- Creating interactive maps using Quarto dashboards

Exploring Other Census Bureau Datasets (30 minutes)

- Introduction to additional datasets and how to integrate them

Key Takeaways & Q&A (20 minutes)

Session 6 (October 31): Modeling Census Data and Microdata

Modeling Census Data (40 minutes)

- Basics of regression models and feature engineering

Introduction to Census Microdata (40 minutes)

- Retrieving and analyzing microdata using `tidycensus`

Interactive Dashboards for Modeling Results (20 minutes)

- Overview of integrating models into Quarto dashboards

Key Takeaways & Q&A (20 minutes)