October 17, 2024 | 1:30 pm
Virtual Workshop

Introduction to R

u.mcmaster.ca/scds-events

Data Analysis Support Hub

Sherman Centre for Digital Scholarship

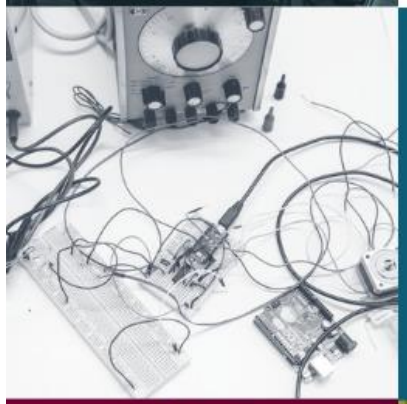
Library | McMaster University

Sherman Centre for Digital Scholarship

Introduction to R Programming

Vivek Jadon, Data Specialist

October 16, 2025



McMaster University Library

Land Acknowledgement

McMaster University is located on the traditional Territories of the Mississauga and Haudenosaunee Nations, and within the lands protected by the “Dish With One Spoon” wampum agreement.

Code of Conduct

The Sherman Centre and the McMaster University Library are committed to fostering a supportive and inclusive environment for its presenters and participants.

As a participant in this session, you agree to support and help cultivate an experience that is collaborative, respectful, and inclusive, as well as free of harassment, discrimination, and oppression. We reserve the right to remove participants who exhibit harassing, malicious, or persistently disruptive behaviour.

Please refer to our code of conduct webpage for more information: **scds.ca/events/code-of-conduct**

Session Recording and Privacy

This session is being recorded with the intention of being shared publicly via the web for future audiences. In respect of your privacy, participant lists will not be shared outside of this session, nor will question or chat transcripts.

Questions asked via the chat box will be read by the facilitator without identifying you. Note that you may be identifiable when asking a question during the session in an audio or visual format.

Book an Appointment with the DASH Team

Receive help from a member of the DASH team! DASH can assist with the following topics:

- Creating data visualizations, including charts, graphs, and scatter plots
- Figuring out which statistical tests to run (e.g., t-test, chi-square, etc.).
- Analyzing data with software including SPSS, Python, R, SAS, ArcGIS, MATLAB, and Excel
- Choosing which software package to use, including free and open-source software
- Troubleshooting problems related to file formats, data retrieval, and download
- Selecting methodology and type of data analysis to use in a thesis project

Book an appointment: **https://library.mcmaster.ca/services/dash**

scds.ca
scds@mcmaster.ca

Certificate Programs

The Sherman Centre for Digital Scholarship Certificate of Attendance

The Sherman Centre's certificate program recognizes attendance at our workshops. It complements degree training, supports the development of critical competencies in data analysis, research data management, and digital scholarship, and formalizes core skills fostered by our workshops.

Participants are invited to attend seven workshops and receive a certificate of attendance. To verify your participation in today's workshop, we will provide a code and additional instructions at the end of the session.

You can learn more about the certificate program at **scds.ca/certificate-program**

The Canadian Certificate for Digital Humanities

This workshop is also eligible for the Canadian Certificate for Digital Humanities. To learn more about the certificate, visit **ccdhhn.ca**. You can also contact local liaison Alexis-Carlota Cochrane at scds@mcmaster.ca

Fall 2024: Upcoming Workshops

Data Analysis Support Hub

October 16: Introduction to R

October 30: Introduction to Data Analysis with SPSS

Digital Research

October 21: Establishing and Maintaining Researcher Profiles

Research Data Management

October 30: Open Science Challenges: Research Data Management Community of Practice

November 19: Data Management Plan Bootcamp (Virtual)

Do More with Digital Scholarship

October 23: Visualizing Networks with Gephi

October 23: Creating High-Quality Documents with LaTeX

November 6: Creating Interactive Data Visualizations with Power BI

Register for Upcoming Workshops: https://u.mcmaster.ca/scds-workshops

Library | McMaster University | Sherman Centre for Digital Scholarship

Learning Objectives

By the end of this workshop, you will:

- Understand what R is and why it is widely used for data analysis
- Learn basic R syntax and data structures (vectors, data frames, lists)
- Perform basic data manipulation and visualization
- Write simple R scripts and use functions/packages
- Gain confidence to explore R further on your own

What is R?

- R is a Data Analysis Software
- R is a programming language
- R is an Environment for Statistical Analysis
- R is Open-Source Software Project
- R is a community: https://www.r-bloggers.com/

Why learn R?

- R does not involve lots of pointing and clicking
- R code is great for reproducibility
- R is interdisciplinary and extensible
- R works on data of all shapes and sizes
- R produces high-quality graphics
- R has a large, welcoming and growing community
- Not only R is free but it is also open-source and cross-platform

What is RStudio?

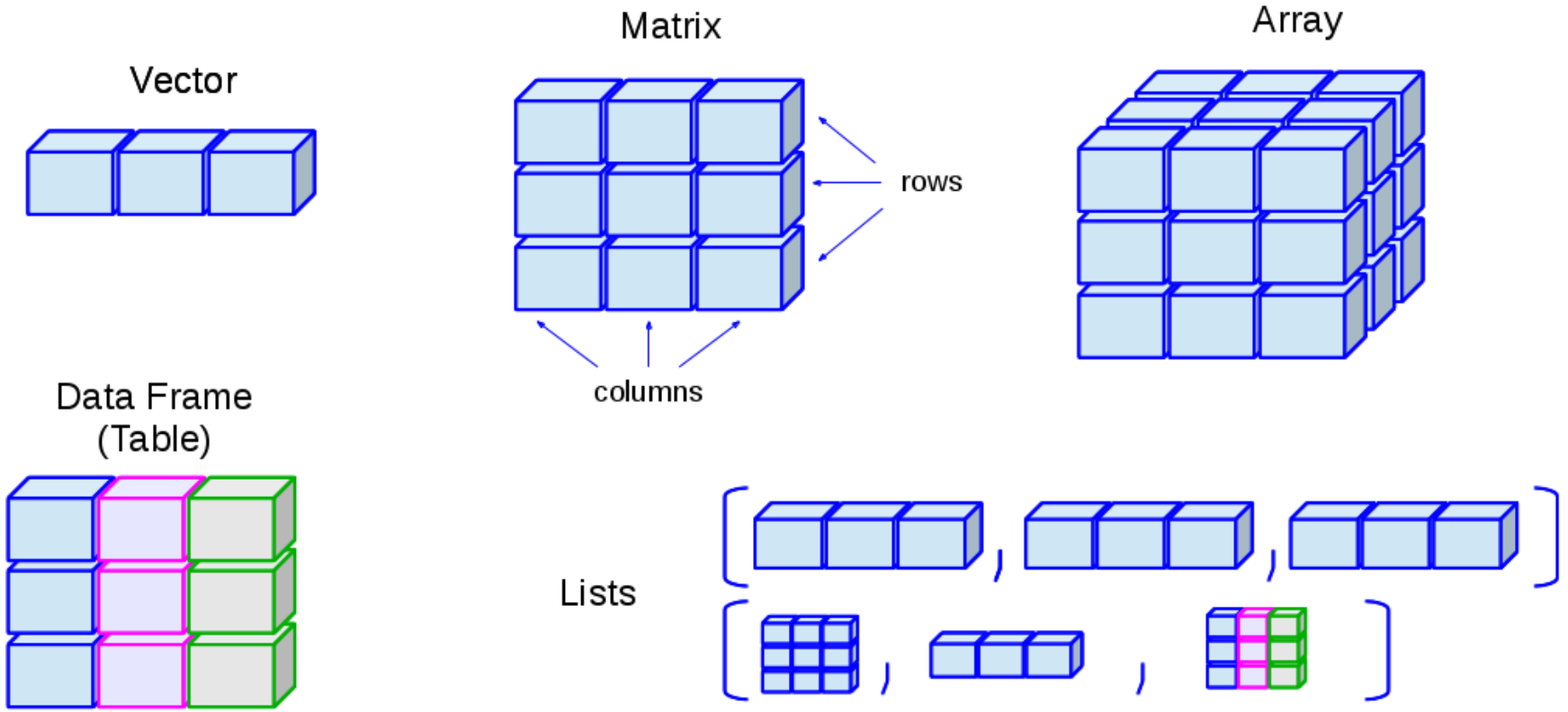
- Most popular IDE (Integrated Development Interface) for R
  - An IDE is a piece of software that provides tools to make programming easier

- RStudio is not only a popular way to write your R scripts but also makes it easier to interact with R
  - We will use RStudio IDE to write code, navigate the files on our system, inspect variables we create, visualize plots we generate.
  - RStudio can also be used for other things such as version controls, developing packages, writing Shiny apps – which are out of scope of this session.

- To function properly, RStudio needs R and hence both need to be installed on the system

Data Type: Summary

Data Type	Description
Vector	It’s a collection of numbers OR text
Lists	A list is a collection of various objects under same name
Matrix	A matrix is a 2D data structure to bind vectors of same length. The elements of matrix must be of same type.
Data Frames	The elements of Data Frames can be of a different type.



Vector: One column or row of data -- One type (Numeric or Text)
Matrix: Multiple columns and/or rows of data -- One type (Numeric or Text)
Data Frame: Multiple columns and/or rows of data -- Multiple inputs

http://venus.ifca.unican.es/Rintro/_images/dataStructuresNew.png

Download Data Files

http://bit.ly/2MVaTmv

Tour of RStudio

Exercise -- Write a simple code

- Install R and R studio
- Create a program to :
  1. Input three values a=22, b=34 and c=102
  2. Calculate the average of a, b, c values
  3. Store the average in the variable 'avg' and print its value.

Sherman Centre for Digital Scholarship

SCDS Links

Send SCDS an Email:

scds@mcmaster.ca

Register for a Workshop:

https://u.mcmaster.ca/scds-workshops

Subscribe to our Newsletter:

https://u.mcmaster.ca/sign-up

Schedule a Consultation:

https://libcal.mcmaster.ca/appointments

McMaster University Library