The R-versus-Python debate

People often wonder which programming language they should learn first. You might be wondering about this, too. This certificate teaches the open-source programming language, R. R is a great starting point for foundational data analysis, and it has helpful packages that beginners can apply to projects. Python isn't covered in the curriculum, but we encourage you to explore Python after completing the certificate. If you are curious about other programming languages, make every effort to continue learning.

Any language a beginner starts to learn will have some advantages and challenges. Let's put this into context by looking at R and Python. The following table is a high-level overview based on a sampling of articles and opinions of those in the field. You can review the information without necessarily picking a side in the R vs. Python debate. In fact, if you check out RStudio's blog article in the Additional resources section, it's actually more about working together than winning a debate.

Languages	R	Python
Common features	- Open-source - Data stored in data frames - Formulas and functions readily available - Community for code development and support	- Open-source - Data stored in data frames - Formulas and functions readily available - Community for code development and support
Unique advantages	- Data manipulation, data visualization, and statistics packages - "Scalpel" approach to data: *find packages to do what you want with the data*	- Easy syntax for machine learning needs - Integrates with cloud platforms like Google Cloud, Amazon Web Services, and Azure
Unique challenges	- Inconsistent naming conventions make it harder for beginners to select the right functions - Methods for handling variables may be a little complex for beginners to understand	- Many more decisions for beginners to make about data input/output, structure, variables, packages, and objects - "Swiss army knife" approach to data: *figure out a way to do what you want with the data*

Additional resources

For more information on comparing R and Python, refer to these resources:

- [R vs. Python, a comprehensive guide for data professionals](#): This article is written by a data professional with extensive experience using both languages and provides a detailed comparison.
- [R vs. Python, an objective comparison](#): This article provides a comparison of the languages using examples of code use.
- [R vs. Python: What's the best language for data science?](#): This blog article provides RStudio's perspective on the R vs. Python debate.

Key takeaways

Certain aspects make some programming languages easier to learn than others. But, that doesn't make the harder languages impossible for beginners to learn. On the flip side, a programming language's popularity doesn't always make it the best language for beginners either.

R has been used by professionals who have a statistical or research-oriented approach to solving problems; among them are scientists, statisticians, and engineers. Python has been used by professionals looking for solutions in the data itself, those who must heavily mine data for answers; among them are data scientists, machine learning specialists, and software developers.

As you grow as a data analytics professional, you may need to learn additional programming languages. The skills and competencies you learn from your first programming experience are a good foundation. That's why this course focuses on the basics of R. You can develop the right perspective, that programming languages play an important part in the data analysis process no matter what job title you have.

The good news is that many of the concepts and coding principles that you will learn from using R in this course are transferable to other programming languages. You will also learn how to write R code in an Integrated Development Environment (IDE) called RStudio. RStudio allows you to manage projects that use R or Python, or even a combination of the two. Refer to [RStudio: A Single Home for R & Python](#) for more information. So, after you have worked with R and RStudio, learning Python or another programming language in the future will be more intuitive.

For a better idea of popular programming languages by job role, refer to [Ways to learn about programming](#). The programming languages most commonly used by data analysts, web designers, mobile and web application developers, and game developers are listed, along with links to resources to help you start learning more about those languages.