

## CSC 400, Package Summaries Directions, Spring 2024

There are thousands of packages that can be installed and enhance functioning in R. You can find a complete list of available packages on CRAN at

[https://cran.r-project.org/web/packages/available\\_packages\\_by\\_name.html](https://cran.r-project.org/web/packages/available_packages_by_name.html)

While we used a number of packages in the MTH 324/325 course, in this course students will explore the available packages more freely. While we will try to keep the packages for each week connected to the course topics, and suggestions are made in the syllabus, students are free to deviate from the suggestions at their own discretion. The purpose of this set of assignments (to be submitted weekly) is to facilitate that exploration.

Each week, you will select one package from the list of available packages. Choose from one of the listed packages in the syllabus, or use topics from the previous week of lectures to search for topics.

### Available CRAN Packages By Name

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

<a href="#">A3</a>	Accurate, Adaptable, and Accessible Error Metrics for Predictive Models
<a href="#">AalenJohansen</a>	Conditional Aalen-Johansen Estimation
<a href="#">AATtools</a>	Reliability and Scoring Routines for the Approach-Avoidance Task
<a href="#">ABACUS</a>	Apps Based Activities for Communicating and Understanding Statistics
<a href="#">abasequence</a>	Coding 'ABA' Patterns for Sequence Data
<a href="#">abbreviate</a>	Readable String Abbreviation
<a href="#">abc</a>	Tools for Approximate Bayesian Computation (ABC)
<a href="#">abc_data</a>	Data Only: Tools for Approximate Bayesian Computation (ABC)
<a href="#">ABC.RAP</a>	Array Based CpG Region Analysis Pipeline
<a href="#">ABCanalysis</a>	Computed ABC Analysis
<a href="#">abclass</a>	Angle-Based Large-Margin Classifiers

You can use the Find option in your browser to search for keywords if you choose to deviation from the selected list. Or scroll through the list to find the package you've selected from the syllabus.

When you have selected the package you want and have found it in the list, click on the package link. (Do not select packages we have used extensively in MTH 324/325.)






As an example, if we find ggplot2 in the list, it looks like this:

[ggplot2](#) Create Elegant Data Visualisations Using the Grammar of Graphics

If we click on the link we are taken to a page with information about the package.

ggplot2: Create Elegant Data Visualisations Using the Grammar of Graphics

A system for 'declaratively' creating graphics, based on "The Grammar of Graphics". You provide the data, tell 'ggplot2' how to map variables to aesthetics, what graphical primitives to use, and it takes care of the details.

Version: 3.4.4  
Depends: R (≥ 3.3)  
Imports: cli, glue, grDevices, grid, gtable (≥ 0.1.1), isoband, lifecycle (> 1.0.1), MASS, mgcv, rlang (≥ 1.1.0), scales (≥ 1.2.0), stats, tibble, vctrs (≥ 0.5.0), withr (≥ 2.5.0)  
Suggests: covr, dplyr, ggplot2movies, hexbin, Hmisc, knitr, lattice, mapproj, maps, multcomp, munsell, nlm, profvis, quantreg, ragg, RColorBrewer, rmarkdown, rpart, sf (≥ 0.7-3), svglite (≥ 1.2.0.9001), testthat (≥ 3.1.2), vstiffr (≥ 1.0.0), xmir2  
Enhances: sp  
Published: 2023-10-12  
Author: Hadley Wickham  [aut], Winston Chang  [aut], Lionel Henry [aut], Thomas Lin Pedersen  [aut, cre], Kohske Takahashi [aut], Claus Wilke  [aut], Kara Woo  [aut], Hiroaki Yutani  [aut],  
Thomas Lin Pedersen <thomas.pedersen@posit.co>  
Maintainer: Thomas Lin Pedersen <thomas.pedersen@posit.co>  
BugReports: <https://github.com/tidyverse/ggplot2/issues>  
License: MIT + file LICENSE  
URL: <https://ggplot2.tidyverse.org>, <https://github.com/tidyverse/ggplot2>

There is information on the current version, which other packages are imported along with it (packages it depends on), who created it and who maintains it, where to send bug reports, and so on.

NeedsCompilation: no  
Citation: [ggplot2\\_citation\\_info](#)  
Materials: [README NEWS](#)  
In views: [Phylogenetics](#), [Spatial](#), [TeachingStatistics](#)  
CRAN checks: [ggplot2\\_results](#)

**Documentation:**

Reference manual: [ggplot2.pdf](#)  
Vignettes: [Extending ggplot2](#)  
[Using ggplot2 in packages](#)  
[Aesthetic specifications](#)

**Downloads:**

Package source: [ggplot2\\_3.4.4.tar.gz](#)

Further down, there is also a link to a reference manual and vignettes. These files provide information which specific functions are included in the package and their attributes along with any defaults. The vignettes also provide examples of how the functions in the package are used with code examples. Every package has a reference manual, though not every package has vignettes.

Explore the documentation for each package (click on the link on CRAN) that you select. The documentation includes functions included in the package and some include examples of their use in addition to the vignettes. Recreate the examples (or some of them depending on the size of the package), and write up what you learned. You should try to do at least 3-5 examples (with different functions or changing attributes). You can use the vignettes or examples included to get started.

Try to answer the following questions in your write up:

- What kind of graphs can the package produce (either to improve on, or produce itself)? Give examples of the graphs.
- What kind of functionality does the package add? (what kind of functions are included? what kind of analysis does it assist in?)
- How does this package differ from other similar packages?
- Would you recommend the use of this package and for what purpose?

In addition, consider the context of the package.

- Does it support another package (such as extending ggplot), or is it in a family of functions (for example, ggplot is part of the tidyverse), or does it build up from base R functions directly?
- Who are the creators and maintainers of the package? What do they do? Why did they create this package?

Finally, adapt one example from the package documentation and apply it to a data set we are working with in the course (it can be the data analysis dataset or from our code examples, or a built-in dataset (such as the iris dataset) as needed). While it is not required, it is a good idea to think about choosing a dataset with the current data analysis dataset in mind, and then you'll be able to incorporate this example directly into that report (it can do double duty), or to apply it to the dataset of general interest.

One package summary will be due each week starting in Week 2, for 10 total submissions (although there is a break before the final one). Each is worth 20 points.