

## R - always learn something new:

- Burns, R Inferno (not intro book)
- Peng, <https://bookdown.org/rdpeng/rprogdatascience/>
- Hadley, <https://r4ds.had.co.nz/index.html>
- Jennybc (book) wtf git
- Gillespie (2016) <https://bookdown.org/csgillespie/efficientR/>
- Matloff: Art of R Programming (2011)
- de Jong, Intro to Data Cleaning [https://cran.r-project.org/doc/contrib/de\\_Jonge+van\\_der\\_Loo-Introduction\\_to\\_data\\_cleaning\\_with\\_R.pdf](https://cran.r-project.org/doc/contrib/de_Jonge+van_der_Loo-Introduction_to_data_cleaning_with_R.pdf)

## R - more advanced

- official R CRAN: <https://cran.r-project.org/manuals.html>
- design.tidyverse.org

## Basic Statistics

### More Intuitive/Explanatory:

- [Rossman, know all the basics? confident?] ( <https://askgoodquestions.blog/> )
- Przemyslaw Biecek and Tomasz Burzykowski | different ideas | Ch1, 2 Explanatory Model Analysis | <https://ema.drwhy.ai/>
- ML Berkeley: <https://ml.berkeley.edu/blog/posts/crash-course/part-1/>
- Goodfellow et al: <https://www.deeplearningbook.org/> ideas
- Guo: Creative site and book: <https://seeing-theory.brown.edu/#firstPage>
- navarro (learn statistics with r) review `lm()` and geometric  $r^2$ , Ch15, 16
- navarro 2019 (learn statistics with r) study output of `lm()`

## Solid, basic stats intros

- PSU Course begin with 414 | no R \* <https://online.stat.psu.edu/stat414/> \* <https://online.stat.psu.edu/stat462/> \* <https://online.stat.psu.edu/stat415/>
- AMS Basic, good intro CLT (but not t)
- Dekking, et al Modern Introduction to Probability & Statistics (2005), no R. \* [https://cis.temple.edu/~latecki/Courses/CIS2033-Spring13/Modern\\_intro\\_probability\\_statistics\\_Dekking05.pdf](https://cis.temple.edu/~latecki/Courses/CIS2033-Spring13/Modern_intro_probability_statistics_Dekking05.pdf)
- Faraday, PRAR: Practical Regression, Anova, linear algebra (mature approach)
- Frey, Bruce “Statistical Hacks”
- [Dalpiaz, David, Univ of IL] ( <https://davidalpiax.github.io/appliedstats/> )
- Lindelov: Concise R examples of common stat tests.
- Matloff (Prob book) \* <http://heather.cs.ucdavis.edu/~matloff/132/PLN/probstatbook/ProbStatBook.pdf> \* (via pdflatex) <https://github.com/matloff/> Good, maybe too good and skips a few basics?
- Siegrist CLT, stats, linear alg | aka [randomservices.org](http://randomservices.org) | \*\* best book for introducing Math
- Nahim, Dueling Idiots, harder but real world stats/prob problems (pins falling on surfaces)

## R, the Language: Functional, Standard and Non- Evaluation, Environments, Call Stacks:

- Gaslam, Brodie - blog - several good posts \* NSE: <https://www.brodieg.com/2020/05/05/on-nse/> \* HP Calculator & Reverse Polish! <https://www.brodieg.com/2019/01/11/reverse-polish-notation-parsing-in-r/> \* Side Effects, Macros: <https://www.brodieg.com/2019/10/30/visualizing-algorithms/>
- Gupta, Suraj - How R Finds objects: <https://blog.obautifulcode.com/R/How-R-Searches-And-Finds-Stuff/>
- Rnews - Lumley, Macros in R: [https://www.r-project.org/doc/Rnews/Rnews\\_2001-3.pdf](https://www.r-project.org/doc/Rnews/Rnews_2001-3.pdf)
- Rnews - 2001-2008 has lot of good articles

## Other book stats/R books:

- Hannay (=rbassett) read, (avoid pkgs ch 11, 12) | [https://faculty.nps.edu/rbassett/\\_book/](https://faculty.nps.edu/rbassett/_book/)
- Compeau:
  - \* great ideas book! <http://compeau.cbd.cmu.edu/> |
  - \* <http://compeau.cbd.cmu.edu/programming-for-lovers/> cmu - ch 8, 9 esp collinear.
- Berkeley, excellent glossary: <https://www.stat.berkeley.edu/~stark/SticiGui/Text/gloss.htm>
- Ismay modern dive (2020)
- Kaplan (2017) ch 6.5 <https://dtkaplan.github.io/SM2-bookdown/>
- Kurz: Statistial Rethinking reCoded (Bayesian)
- Lane se(b\_hat)
- Matloff(2020) book
- Mcelreath (videos)
- PENG | art of ... (2017) ch 6.5 | r4ds (2019) ch 9.5
- mosaic ch 5.6, ch 24

## More advanced regression/modeling books

- Shalizi: excellent: \* (2019) <http://www.stat.cmu.edu/~cshalizi/TALR/> -deeper/more explanatory. By Ch 11, use of gradient f, matrix derivatives .... (following FARA?) \* Shalizi <http://www.stat.cmu.edu/~cshalizi/ADAfaEPoV/ADAfaEPoV.pdf>  
\* <http://www.stat.cmu.edu/~cshalizi/mreg/15/>
- Boehmke Hands on ML | <https://bradleyboehmke.github.io/HOML/> Ch 4,5
- Davidson (Econometric) - Ch 1, 2
- MATLOFF (1st book) | ch3 - lot of useful prproperties of x,y | ch 7 - affine transformations
- Thomas, Math for ML ... good lin alg, but quickly gets advanced. <https://gwthomas.github.io/docs/math4ml.pdf>
- Deisenroth, Faiesel et al | Math4ML \*book | linear alg book, regression, 2nd level
- Efron, Hastie “Computer Age Statistical Inference” (advanced, but chapter intros put techniques into perspective), no R.
- Kuhn (2019): <https://bookdown.org/max/FES/>
- RAFAEL dsbook - ch 17.4, ch 18.3.4
- **Roback/Legler Beyond Multiple Linear Regression: (2021)** \_ <https://bookdown.org/roback/bookdown-BeyondMLR/> (Replaces BYSH) introduces likelihood; ch6 - logistic worked problem
- Siegrist (aka random services.org) \* random| (3)expected value 1..11 and |(5) random samples 1-8 (t-dist)
- Taubes, linear alg, statistics, [http://people.math.harvard.edu/~knill/teaching/math19b\\_2011/handouts/chapters1-19.pdf](http://people.math.harvard.edu/~knill/teaching/math19b_2011/handouts/chapters1-19.pdf) Biology? math? probability? Think this is really an ideas book; not as easy as may appear.
- ISLRv2: [https://web.stanford.edu/~hastie/ISLRv2\\_website.pdf](https://web.stanford.edu/~hastie/ISLRv2_website.pdf)

## Linear Algebra (as mathematics)

- Beezer Linear Algebra (easier?)
- Herve Adbi | lin alg| no R, no stat, starts simple but gets to decomposition.
- Strang, Linear Algebra (classic)
- Artin, Michael “Algebra” - readable ?
- Friendly - R Pkg linear algebra
- Kazan | normal equations

## Intro to Linear Alg & Models,

- Kuiper, Shonda: simple, clear: video: <https://www.youtube.com/watch?v=jQkK0XMrAdM>
- Race, Shaina gentle intro to lin alg.; <https://shainarace.github.io/LinearAlgebra/index.html>
- Thomas, Garrett, Math for ML, Berkeley <https://gwthomas.github.io/docs/math4ml.pdf>
- Bendixcarstensen.com, with R & matrix models (practical; try not use api pkg) <http://www.bendixcarstensen.com/APC/linalg-notes-BxC.pdf>
- Rafael genomics - Chapter 4 matrix

## Latex (.tex, latex, not knitr, markdown, pandoc)

Many, many, of course, but these emphasize basic .tex documents.

- Latex: Latex in 24 hours (iPad)
- <https://mirrors.rit.edu/CTAN/info/beginlatex/html/intro.html#intro>
- wikibooks: [https://en.wikibooks.org/wiki/LaTeX/Document\\_Structure](https://en.wikibooks.org/wiki/LaTeX/Document_Structure)
- <http://ctan.imsc.res.in/info/first-latex-doc/first-latex-doc.pdf>
- <https://texfaq.org/FAQ-man-latex>

## Good Technical Reading

- Linux: Archiwiki, Debian, FreeBSD
- Gross, Ash et al “Elliptical Tales” - very readable, but must think! (515.983 | ASH | 2012)
- Seefeld, et al Biology & R | [https://cran.r-project.org/doc/contrib/Seefeld\\_StatsRBio.pdf](https://cran.r-project.org/doc/contrib/Seefeld_StatsRBio.pdf)
- Janssens, DS at Command Line: <https://www.datascienceatthecommandline.com/2e/>  
Great way to improve zsh, CLI skills.

## Videos

- maththebeautiful - Paul?
- Bright Side of Math
- 3Blue1Brown
- Zedstatistics
- Chris Mack - practical R, models
- Statistics Globe
- Statquest - Josh Starmer

## APIs and R

### Longer Reading/Documentation

- Gargle docs include discussion of a few Google Cloud features
- Mozilla MDN
- Request body
- <https://oauth.com> (Aaron Parecki)
- web technologies, including RESTFUL, <https://www.se.rit.edu/~swen-344/expectations/>
- RFC Specs

Something Linky

### Videos

- Anson, Getting Google API/Oauth2 setup.
- \* [Griffith] (<https://www.youtube.com/watch?v=iLV0A1DTE60>) Curl to make requests.
- ggmaps Google Maps API [https://www.youtube.com/watch?v=0f\\_M4kcE9yM&list=PLbcglKxZP5PN07Vw-0ukcDJCxFGY2Crgc](https://www.youtube.com/watch?v=0f_M4kcE9yM&list=PLbcglKxZP5PN07Vw-0ukcDJCxFGY2Crgc)
- \* [freeCodeCamp] (<https://www.youtube.com/watch?v=VywxIQ2ZXw4>) Postman Intro.
- \* [Oauth 2.0 - Explain like I am 5] (<https://www.youtube.com/watch?v=hHRFjbGTE0k>)
- \* \url{<https://www.youtube.com/watch?v=rhi1eIjSbvk>} Basic Authentication: urlencode, user:pass, how browser responds, TLS
- \* Curl's Creator <https://youtu.be/I6id1Y0YnK?list=PLbcglKxZP5PN07Vw-0ukcDJCxFGY2Crgc>
- \* Postman and GitHub: <https://youtu.be/AfuL7AFpFmQ?list=PLbcglKxZP5PN07Vw-0ukcDJCxFGY2Crgc>

**CRAN Task Views: Web Technology & Services:** <https://cran.r-project.org/web/views/WebTechnologies.html>

**Vocabulary (also: <https://developer.mozilla.org/en-US/docs/Glossary> )**

**HTTP, JSON, RFC and Web Technologies** Curl: <https://everything.curl.dev/>  
<https://stackoverflow.com/users/93747/daniel-stenberg> <https://daniel.haxx.se/blog/>

Command Line book: <https://datascienceatthecommandline.com/2e/index.html>

JSON <https://cran.r-project.org/web/packages/jsonlite/index.html>  
HTTP protocol MDN <https://developer.mozilla.org/en-US/docs/Web/HTTP>  
HTTP Header Fields [https://en.wikipedia.org/wiki/List\\_of\\_HTTP\\_header\\_fields](https://en.wikipedia.org/wiki/List_of_HTTP_header_fields), Media types (MIME): <https://www.iana.org/assignments/media-types/media-types.xhtml> HTTPS, HTTP over TLS or SSL: <https://en.wikipedia.org/wiki/HTTPS> HTTP mentioned by Hadley Wickham: - <https://code.tutsplus.com/tutorials/http-the-protocol-every-web-developer-must-know-part-1-net-31177> - <https://www.jmarshall.com/easy/http/> - <https://docs.python-requests.org/en/master/user/quickstart/>

Media Types (was MIME): [https://en.wikipedia.org/wiki/Media\\_type](https://en.wikipedia.org/wiki/Media_type)  
<https://docs.github.com/en/rest/overview/media-types> RFC  
- RFC 2616 HTTP 2.1 <https://www.rfc-editor.org/rfc/rfc2616>  
- RFC 2617 Basic Authentication <https://www.rfc-editor.org/rfc/rfc2617>  
- RFC 3986 + RFC 8820 URI/URL \* RFC 6749 OAUTH 2.0 <https://www.rfc-editor.org/rfc/rfc6749>  
\* RFC 6750 Bearer Token: <https://datatracker.ietf.org/doc/html/rfc6750>  
SOAP [https://en.wikipedia.org/wiki/SOAP\\_URI](https://en.wikipedia.org/wiki/SOAP_URI) [https://en.wikipedia.org/wiki/Uniform\\_Resource\\_Identifier](https://en.wikipedia.org/wiki/Uniform_Resource_Identifier) URL

**OAUTH 2.0 & Security** AUTH Code

AUTH CODE

AUTH SERVER

AUTH Token (?? or Access Token)

Token, Service Account: <https://gargle.r-lib.org/articles/get-api-credentials.html#service-account-token>

Grant

identity, identify server OAuth 2.0 Protocol (<https://datatracker.ietf.org/doc/html/rfc6749>)

oob (out-of-band) <https://docs.auth3.dev/grant-types/urn-ietf-wg-oauth-2.0-oob> openSSL USER

### Popular APIs

- GitHub API <https://docs.github.com/en/rest>
- GitLab API <https://vulpes.cba.mit.edu/help/api/index.md>
- Google Cloud <https://cloud.google.com/>

- Google Cloud Platform <https://console.developers.google.com/products> [https://en.wikipedia.org/wiki/Google\\_Cloud\\_Platform](https://en.wikipedia.org/wiki/Google_Cloud_Platform)
  - \* Google Cloud Platform (GCP)
  - \* Google Explorer
  - \* Google Identity (<https://developers.google.com/identity>)
  - \* Google OAuth2.0 implementation (<https://developers.google.com/identity/protocols/oauth2#installed>)
  - \* google people api
  - \* google web fonts api
  - \* googleapis.com
  - \* googleAuthR::

**R and related** curl:: (based on C library used in cURL) <https://jeroen.cran.dev/curl/index.html> cloudyR project

curlconverter:: <https://github.com/hrbrmstr/curlconverter>

fakerapi.it fakerapi <https://fakerapi.it/en>

gargle:: good intro (<https://www.tidyverse.org/blog/2021/07/gargle-1-2-0/>)

.httr-oauth

httptest2:: <https://enpiar.com/httptest2/index.html>

httpuv, libuv (<https://cran.r-project.org/package=httpuv>) <https://nikhilm.github.io/uvbook/introduction.html>

httr:: github <https://github.com/r-lib/httr2> cran <https://cloud.r-project.org/web/packages/httr2/index.html>

httr::

S3, class httr2\_token

Workload Identity federation

**RESTFUL API** Bearer Token

CLIENT

Client\_ID

Client\_Secret

endpoint

Access Token

API

OpenApi (was Swagger) <https://swagger.io/docs/specification/about/> Postman

Refresh Token

Restful

<https://www.ics.uci.edu/~fielding/pubs/dissertation/top.htm>; [https://en.wikipedia.org/wiki/Representational\\_state\\_transfer#Architectural\\_constraints](https://en.wikipedia.org/wiki/Representational_state_transfer#Architectural_constraints)

<https://restfulapi.net/>

[http://www.cse.lehigh.edu/~spear/cse216\\_tutorials/tut\\_spark/index.html](http://www.cse.lehigh.edu/~spear/cse216_tutorials/tut_spark/index.html)