P5.2 Statistics for Medicine

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Background

To describe the features of a quantitative dataset:

- the **location** of the data
- and their **variability**

Elise Whitley, Jonathan Ball.
Statistics review 1: Presenting and summarising data
`https://ccforum.biomedcentral.com/articles/10.1186/cc1455`

Alla Katsnelson.
Colour me better: fixing figures for colour blindness
`https://www.nature.com/articles/d41586-021-02696-z`

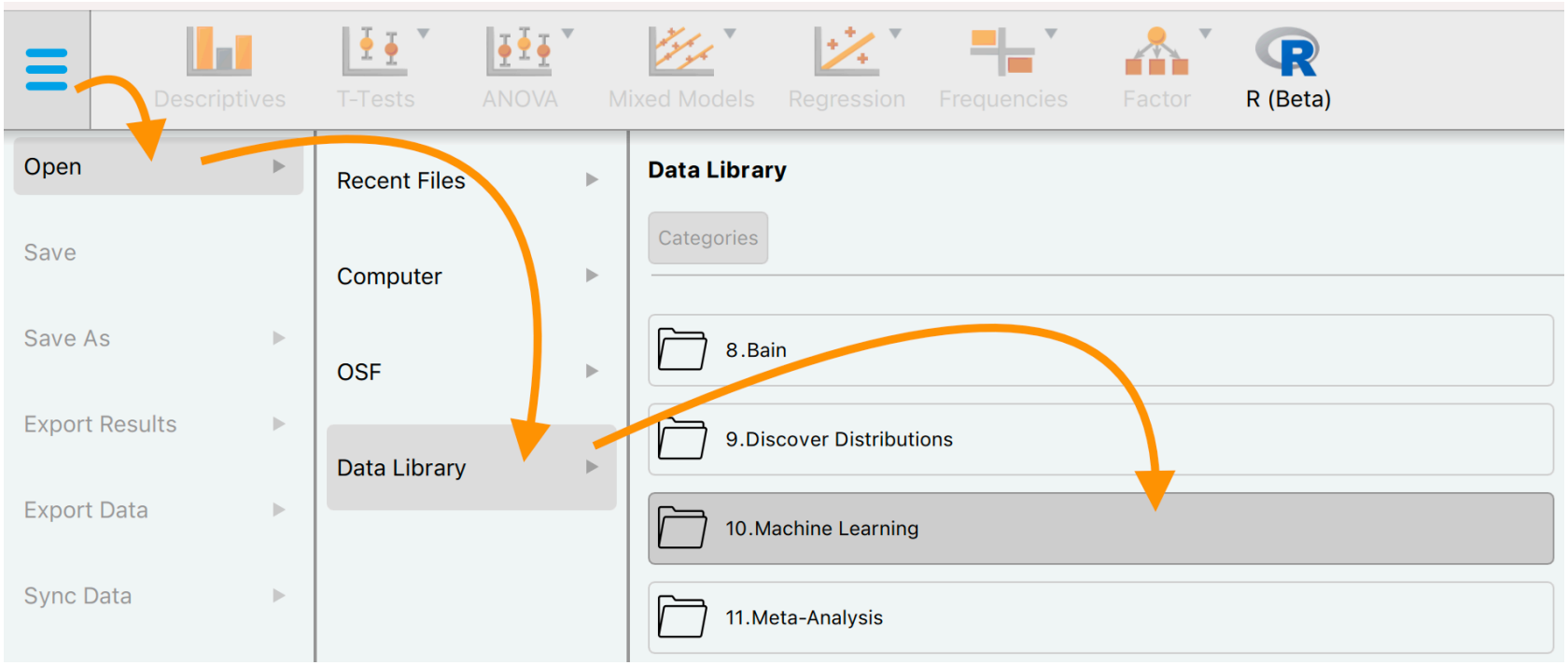
historical example: the `iris` dataset

- *setosa*
- *versicolor*
- *virginica*

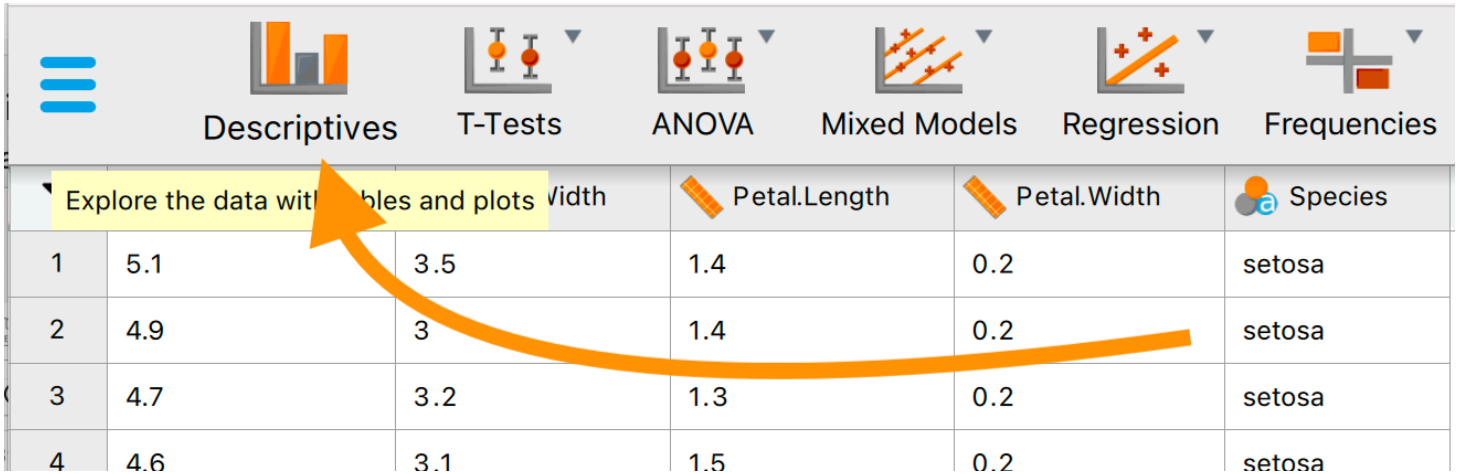
- petal length, petal width
- sepal length, sepal width

preview

`iris` is already stored in JASP



menu Descriptives



lab guided activity /1

Example (position and dispersion measures)

Are we able to understand?

- **measures of central tendency / location**
- **measures of shapes / dispersions**
- the concepts of quantiles
- a **balanced** dataset
- a **complete** dataset

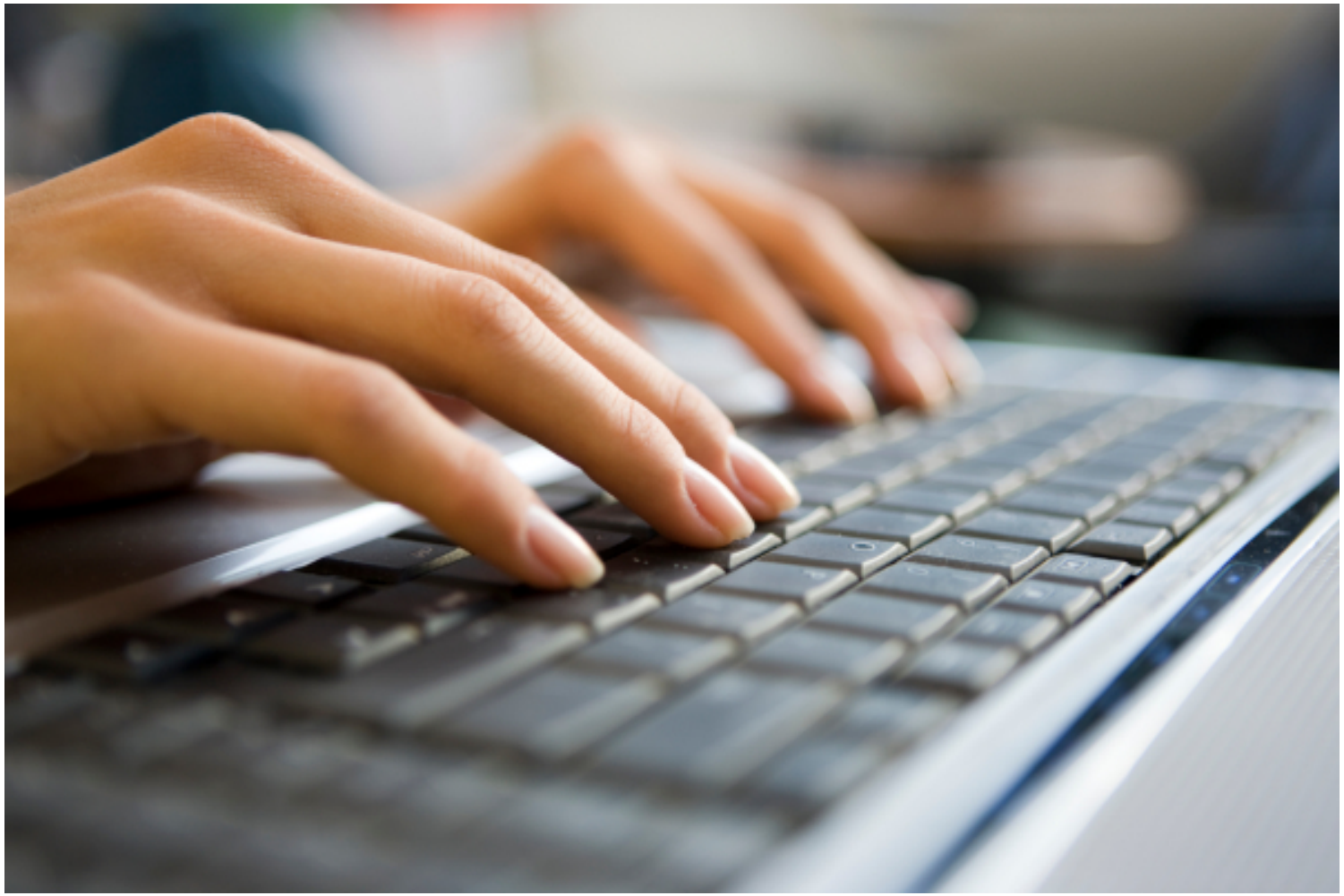
Jonathan Blitzstein, Jessica Hwang.
Introduction to Probability.
`https://projects.iq.harvard.edu/stat110/home`

lab guided activity /2

'A picture is worth a thousand words'

Example (graphs)

- dot plots
- distribution plots
- boxplots (quantiles and outliers?)
- scatter plots



1st Homework Activity (final exam)

118 Severgnini et al.: *In vivo* dosimetry by EBT3 film in breast IOERT 118

TABLE 1. Results for the 37 patients treated in this study. In the first six patients, the dimensions of GAFCHROMIC film were smaller than the disk's and it is not possible to estimate the area of the radiation field that escapes outside the shield; the data is not available (n.a.).

N.Rt	Energy MeV	Collimator Diameter cm	Collimator Edge Aperture Angle °	Difference Expected Dose vs. Measured Dose %	Area Outside Shielding cm²
1	9		0	-2	n.a.
2	9		-	-2	n.a.
3	9			-3	n.a.
4	9			-5	n.a.
5	6				n.a.
6	9			10	n.a.
7	9			5	1.2
8	9			-2	8.2
9	6			-39	1
10	9			4	4.9
11	9			4	21.2
12	6			-1	8.7
13				-7	5.5
14				5	2.1
15				-35	13.3
16				1	5.8
17				3	0
18				8	0
19				3	11.7
20				0	0.3
21				-1	2.6
22				-1	0
23				4	4.3
24				-9	3
25				3	0
26				1	8.7
27				3	4.8
28				7	1.4
29				-9	0
30				-8	0
31				-3	8.4
32	6			1	6.8
33	9			-4	4.1
34	6	5.5		-1	0
35	9	6.5		-5	11.4
36	9	5.5	15	-5	1.5
37	9	5.5	30	-1	4.7

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Journal of Applied Clinical Medical Physics / Volume 16, Issue 1

Radiation Oncology Physics | Open Access

In vivo dosimetry and shielding disk alignment verification by EBT3 GAFCHROMIC film in breast IOERT treatment

Mara Severgnini, Mario de Denaro, Marina Bortul ... See all authors ›

First published: 08 January 2014

https://doi.org/10.1120/jacmp.v16i1.5065

Mario de Denaro and Mara Severgnini (Radiation Oncology)

Table 1. Characteristics of Infants with Very Low Birth Weight and Those Born at Term.*

Characteristic	Study Participants	Study Nonpart
Very low birth weight		
No. of subjects	166	89
Gestational age — wk	29.17±2.22	29.17±2.(
Birth weight — g	1120±221	1130±20

	n	Mean (SD) g/ week	Median g/ week
1994	362	128 (147)	79
1996	363	112 (110)	78

Results

Reliability of automated analysis

For the analysis of the datasets, the two expert analysts manually detected, on average, 4,562 (range 4,439 to 4,686) events (EAdi or P_V events). ICCs for the $NeuroSync_{MANU}$