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Daniel Vartanian

{abnt}: Quarto format for ABNT theses and dissertations

[City]
2023

Daniel Vartanian

{abnt}: Quarto format for ABNT theses and dissertations

[Original/Revised version]

[Dissertation/Thesis] presented to the [School/Department] at [University], as part of the requirements for the degree of [Master of Science/Doctor of Science] by the [Graduate program].

Area of concentration: [Area of concentration].

Revised version incorporating the changes requested by the examining committee on [Date]. The original version is held in the reserved collection at the [School/Department] Library and in the Digital Library of Theses and Dissertations of the [University].

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37p. : il

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[Original/Revised version]

1. [Subject A]. 2. [Subject B]. 3. [Subject C]. I. [Supervisor's surname], [Supervisor's forename(s)], super. II. [Co-supervisor's surname], [Co-supervisor's forename(s)] co-super. III. Title.

ERRATA

[Author's surname], [Author's forename(s) initial(s)]. **{abnt}: Quarto format for ABNT theses and dissertations**. 2023. 37p. [Dissertation/Thesis] ([Master of Science/Doctor of Science]) – [School/Department], [University], [City], 2023.

This is the development version of the thesis (version <1.0.0). Any necessary corrections will be listed here after its approval.

[Dissertation/Thesis] by Daniel Vartanian, under the title **{abnt}: Quarto format for ABNT theses and dissertations**, presented to the [School/Department] at the [University], as part of the requirements for the degree of [Master of Science/Doctor of Science] by the [Graduate program], in the concentration area of [Area of concentration].

Approved on _____ , _____ .

Examination committee

Committee chair:

Prof. Dr. _____

Institution _____

Examiners:

Prof. Dr. _____

Institution _____

Evaluation _____

Prof. Dr. _____

Institution _____

Evaluation _____

Prof. Dr. _____

Institution _____

Evaluation _____

To the worm that first gnawed on the cold flesh of my corpse,

I dedicate, as a fond remembrance, these posthumous memories.[1]

[1] ASSIS, M. **Memórias póstumas de Brás Cubas** [The Posthumous Memoirs of Brás Cubas]. São Paulo: Companhia das Letras, 2014. ISBN 978-85-438-0163-6.

ACKNOWLEDGEMENTS

I would like to acknowledge this awesome Quarto format! :)

Nullius in verba[2]

[2] THE ROYAL SOCIETY. **History of the Royal Society**. Available from: <https://royalsociety.org/about-us/history/>. Visited on: 9 Sept. 2023.

ABSTRACT

[Author's surname], [Author's forename(s) initial(s)]. **{abnt}: Quarto format for ABNT theses and dissertations**. 2023. 37p. [Dissertation/Thesis] ([Master of Science/Doctor of Science]) – [School/Department], [University], [City], 2023.

{abnt} is a Quarto format designed for theses and dissertations that adhere to the standards of the Brazilian Association of Technical Standards (ABNT). It is based on the `abntex2` LaTeX class and on USP guidelines for creating thesis and dissertation documents.

Keywords: [Keyword 1]. [Keyword 2]. [Keyword 3].

RESUMO

[Sobrenome do autor], [Inicial(is) do(s) prenome(s) do autor]. **[Título]**. 2023. 37p. [Dissertation/Thesis] ([Master of Science/Doctor of Science]) – [School/Department], [University], [City], 2023.

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Palavras-chaves: [Palavra-chave 1]. [Palavra-chave 2]. [Palavra-chave 3].

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS AND ACRONYMS

F

Subscript indicating a relation with work-free days

W

Subscript indicating a relation with workdays

MCTQ

Munich ChronoType Questionnaire

MCTQ^{PT}

Portuguese version of the MCTQ

MEQ

Morningness-Eveningness Questionnaire

MSF

Local time of mid-sleep on work-free days

MSF$_{sc}$

Chronotype proxy. The midpoint between sleep onset and sleep end on work-free days. A sleep correction ($_{SC}$) is made when a possible sleep compensation related to a lack of sleep on workdays is identified.

MSW

Local time of mid-sleep on workdays

LIST OF SYMBOLS

For an extensive list of chronobiology related symbols, please refer to Aschoff, Klotter, and Wever (1965) and Marques and Oda (2012).

τ

Period of a rhythm in free flow; only revealed under constant environmental conditions.

T

Zeitgeber period.

ϕ

Phase

$\Delta\phi$

Phase shift

$+\Delta\phi$

Phase advance

$-\Delta\phi$

Phase delay

Ψ

Phase relation

CONTENTS

1 [SHOWCASE] INTRODUCTION

> **Note**
>
> The text below is for demonstrative purposes only.
>
> See https://github.com/danielvartan/abnt to learn more about this template.

See Figure 1.

“The activity can be represented by a *general schema of problem-solving by the method of imaginative conjectures and criticism*, or, as I have often called it, by *the method of conjecture and refutation*. The schema (in its simplest form) is this

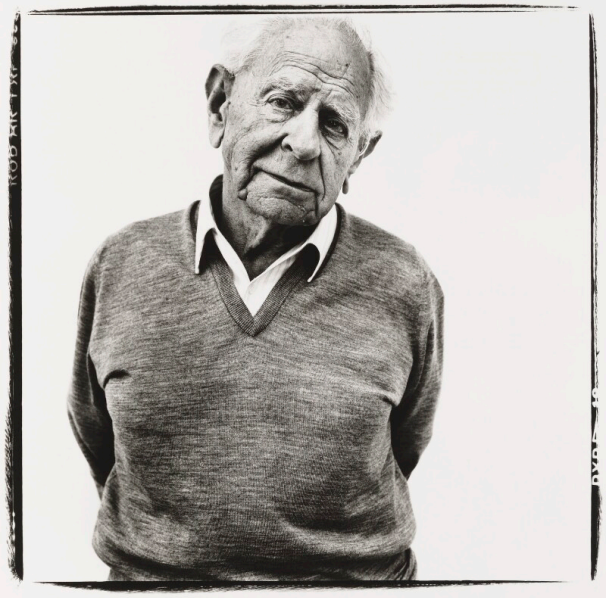
$$P_1 \rightarrow TT \rightarrow EE \rightarrow P_2$$

Here P_1 is the *problem* from which we start, TT (the ‘tentative theory’) is the imaginative conjectural solution which we first reach, for example our first *tentative interpretation*. EE (*‘error- elimination’*) consists of a severe critical examination of our conjecture, our tentative interpretation: it consists, for example, of the critical use of documentary evidence and, if we have at this early stage more than one conjecture at our disposal, it will also consist of a critical discussion and comparative evaluation of the competing conjectures. P_2 is the problem situation as it emerges from our first critical attempt to solve our problems.

It leads up to our second attempt (*and so on*). A satisfactory understanding will be reached if the interpretation, the conjectural theory, finds support in the fact that it can throw new light on new problems — on more problems than we expected; or if it finds support in the fact that it explains many sub-problems, some of which were not seen to start with. Thus we may say that we can gauge the progress we have made by comparing P_1 with some of our later problems (P_n, say).”

(POPPER, 1979, p. 164)

Figure 1 – Karl Popper (July 25, 1902 – September 17, 1994).
One of the 20th century's most influential philosophers of science.



Source: Steve Pyke.

1.1 SECONDARY SECTION

See Table 1.

```
datasets::iris ▷
  dplyr::as_tibble() ▷
  dplyr::slice_sample(n = 5) ▷
  gt::gt()
```

Table 1 – A sample of the famous (Fisher's or Anderson's) iris data set

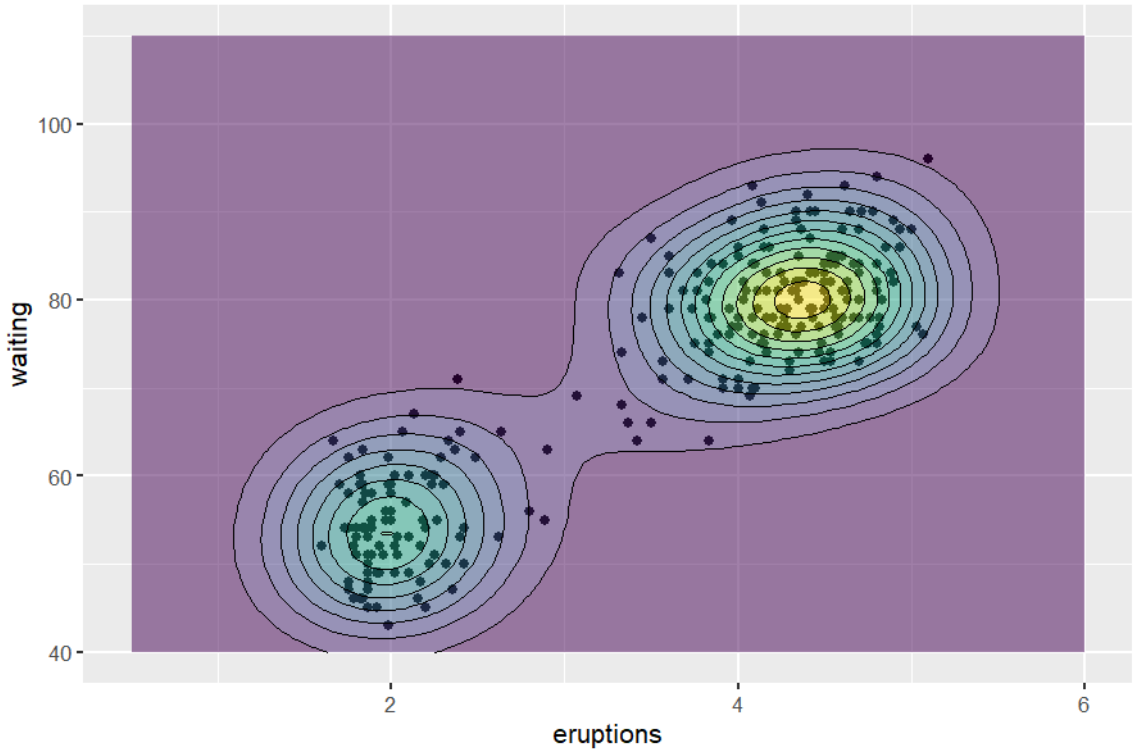
Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
6.5	3.0	5.5	1.8	virginica
6.5	3.0	5.8	2.2	virginica
5.0	3.0	1.6	0.2	setosa
5.0	3.5	1.6	0.6	setosa
6.2	2.9	4.3	1.3	versicolor

Source: Based on Fisher (1936).

1.1.1 Tertiary section

```
ggplot2::ggplot(
  data = datasets::faithful,
  mapping = ggplot2::aes(x = eruptions, y = waiting)
  ) +
  ggplot2::geom_point() +
  ggplot2::xlim(0.5, 6) +
  ggplot2::ylim(40, 110) +
  ggplot2::geom_density_2d_filled(alpha = 0.5) +
  ggplot2::geom_density_2d(linewidth = 0.25, colour = "black") +
  ggplot2::theme(legend.position = "none")
```

Figure 2 – Relationship between *waiting time to next eruption* (minutes) and *eruption time* (minutes) at Old Faithful Geyser, Yellowstone National Park, Wyoming, USA



Source: Retrieved from the `ggplot2` R package documentation (WICKHAM, 2016).

1.1.1.1 Quaternary section

- Bullet point
  - Bullet point
    - Bullet point

1.1.1.1.1 Quinary section

1. List
2. List
3. List

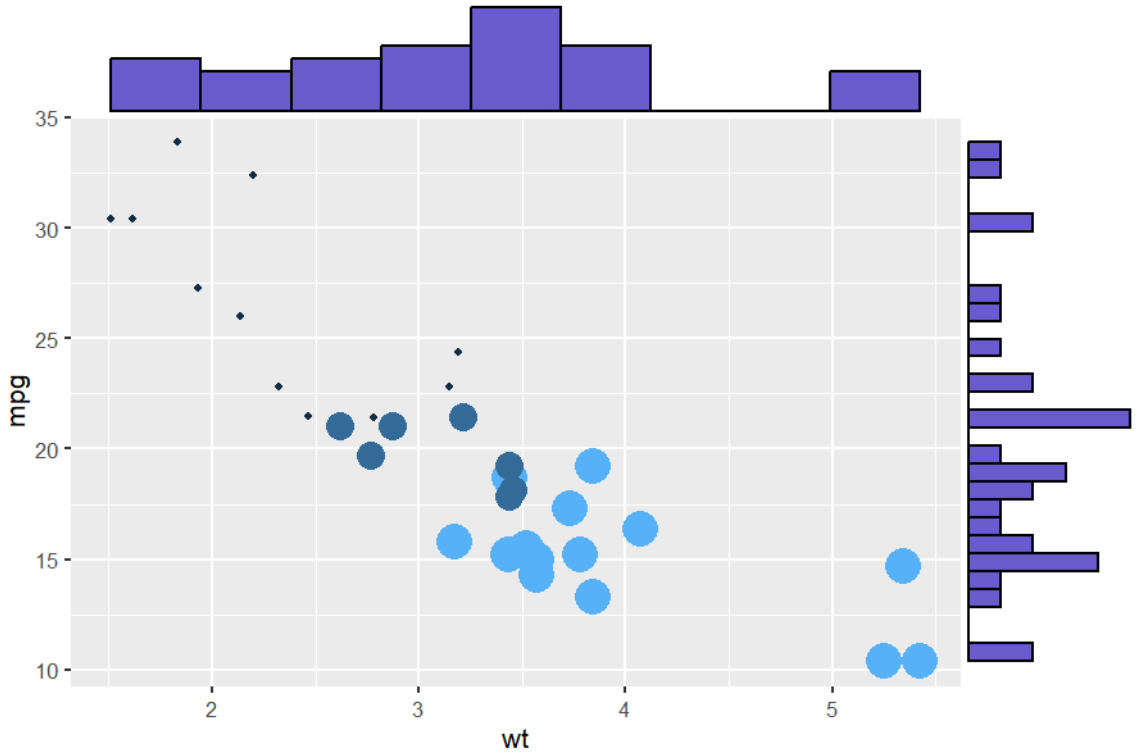
1.2 ANOTHER SECONDARY SECTION

See Figure 3.

```
p <- ggplot2::ggplot(
  data = datasets::mtcars,
  mapping = ggplot2::aes(x=wt, y=mpg, color=cyl, size=cyl)
  ) +
  ggplot2::geom_point() +
  ggplot2::theme(legend.position="none")

ggExtra::ggMarginal(
  p = p,
  type = "histogram",
  fill = "slateblue",
  xparams = list(bins=10)
)
```

Figure 3 – Relation between *weight (1000lbs)* (wt) and *miles per galon* (mpg) for combustion engine vehicles



Source: Data extracted from the 1974 Motor Trend magazine and published by Henderson and Velleman (1981). Visualization by Holtz (2023), available at The R Graph Gallery.

2 [SHOWCASE] DEVELOPMENT

> ⚠ Warning
>
> The text below is for demonstrative purposes only.
>
> See https://github.com/danielvartan/abnt to learn more about this template.

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3 [SHOWCASE] CONCLUSION

> **!** Important
>
> The text below is for demonstrative purposes only.
>
> See https://github.com/danielvartan/abnt to learn more about this template.

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ROENNEBERG, T.; WIRZ-JUSTICE, A.; MERROW, M. Life between clocks: daily temporal patterns of human chronotypes. **Journal of Biological Rhythms**, v. 18, n. 1, p. 80–90, Feb. 2003. ISSN 0748-7304, 1552-4531. DOI: 10.1177/0748730402239679.

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* According to the Brazilian Association of Technical Standards (ABNT NBR 6023).

GLOSSARY

For an extensive list of chronobiology related terms and definitions, please refer to Aschoff, Klotter, and Wever (1965) and Marques and Oda (2012).

Chronotype

Any kind of temporal phenotype (EHRET, 1974; PITTENDRIGH, 1993). Usually, it refers to circadian phenotypes in a spectrum that goes from morningness to eveningness (ROENNEBERG; WIRZ-JUSTICE; MERROW, 2003). It can also be seen as an organism's phase of entrainment (ROENNEBERG; ALLEBRANDT, et al., 2012).

Circadian rhythm

A rhythm with a period close to a day/24h, an approximation to the period of the earth's rotation (PITTENDRIGH, 1960). From the Latin *circā*, around, and *dĭes*, day (LATINITIUM, 2023). Example: the sleep-wake cycle.

Complex system

There are several definitions. Here are some that I found to be of use:

- "Systems that don't yield to compact forms of representation or description" (David Krakauer apud Mitchell (2013))
- "A system of many interacting parts where the system is more than just the sum of its parts" (Mark Newman apud Mitchell (2013))
- Systems with many connected agents that interact and exhibit self-organization and emergence behavior, all without the need for a central controller (adapted from Camilo Rodrigues Neto's definition, supervisor of this thesis).
- Dialectics at its finest (my working definition).

Entrainment

A shift and alignment of biological rhythms induced by a zeitgeber input (KUHLMAN; CRAIG; DUFFY, 2018). For example: a shift/alignment of an organism's circadian rhythm when exposed to light.

APPENDIX A – [SHOWCASE]

> **Tip**
>
> The text below is for demonstrative purposes only.
>
> See https://quarto.org/docs/authoring/markdown-basics.html to learn about the basics of Markdown's syntax.

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A.1 SECONDARY SECTION

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APPENDIX B – PDF SETTINGS

> **Important**
>
> You are reading the work-in-progress of this manual.
>
> This chapter is undergoing heavy restructuring and may be confusing or incomplete.

B.1 TYPOGRAPHY

B.1.1 **Typeface**

To change typefaces, simply use the Quarto options, such as `mainfont`, `monofont` and `sansfont` in your `quarto-[format].yml` file.

```yaml
format:
  abnt-pdf:
    mainfont: Arial
```

The ABNT NBR 14724:2011 norm does not specify the use of any specific font. You have the freedom to choose any font you prefer, but it's important to note that the selected font must be installed on your computer.

B.1.2 **Font size**

To adjust the font size, utilize the `fontsize` option in in the `quarto-[format].yml` file.

```yaml
format:
  abnt-pdf:
    fontsize: 12pt
```

It's important to note that the third paragraph of Section 5.1 of ABNT NBR 14724:2011 norm establishes that the font size should be 12pt for the entire document, including the cover, except for quotations longer than three lines, footnotes, pagination, cataloging data, captions, and sources of illustrations and tables, which should be in a smaller and uniform size.

The smaller font is set to `\footnotesize`, which corresponds to a 10pt font size with the default settings. You can modify this setting by inserting the following LaTeX command into `tex/include-in-header.tex`:

```
\renewcommand{\ABNTEXfontereduzida}{[NEW SIZE (e.g., \small)]}
```

B.2 LANGUAGE AND HYPHENATION

B.3 DOCUMENT SECTIONS

B.3.1 **Editing pre-textual sections**

`abnt` uses a system of tags to transfer and render the content of Quarto files (`.qmd`) to LaTeX. These tags look like this:

```
%:::% class attribute begin/end %:::%
```

```
<!-- %:::% class attribute begin/end %:::% -->
```

Unless you want to customize the template, you don't need to modify the `.tex` files. You can write directly in the `.qmd` files. Just ensure that you preserve all the tags.

Please note that some settings regarding the pre-textual sections must be changed in the `qmd/_congfig.qmd` file.

B.3.2 **How to include LaTeX commands in Quarto files (`.qmd`)**

To add LaTeX commands in your writing, without worrying that it will contaminate the `html` format, use a `{=latex}` chunk.

```
```{=latex}
% Some LaTeX code.
```
```

B.3.3 **How to add or remove sections**

For pre-textual sections (e.g., list of symbols, abstract), remove them from `tex/include-before-body.tex` and from `R/quarto-pre-render.R`.

For textual sections (e.g., chapters), remove them from `.quarto-[format].yml` file. For post-textual sections (e.g., appendices, annexes):

- If it's the Glossary, remove it from `.quarto-[format].yml` and copy the the LaTeX code after `<!— glossary end —>` in `glossary.qmd` to the bottom of the last chapter;
- If it's not the last appendix chapter, simply remove it from `.quarto-[format].yml`; else remove it from `.quarto-[format].yml`, remove `\begin{apendicesenv}` from the bottom of `glossary.qmd` and add the code the code after `<!— appendices end —>` of the appendice file to the bottom of `glossary.qmd`;
- [Annexes];
- [Index].

It's important to note that, at this moment, the transition between sections of the document are made inserting LaTeX code at the end of specific sections. These are:

- Between the last chapter and the Glossary section.
- Between the Glossary section and the Appendices section.
- Between the Appendices and Annexes section.
- After the Annexes section.

B.4 CITATION MANAGEMENT

B.4.1 **Citation method**

This Quarto format was specifically designed to be compatible with BibLaTeX, which is a comprehensive reimplementation of BiBTeX. At first glance, these two systems may appear very similar.

To get started, simply insert your references into the `references.bib`file. However, this task can be somewhat tedious and demanding. To simplify the process, we recommend exploring the integration of Zotero along with Better BiBTeX, as demonstrated in a section below.

For detailed guidance on handling citations in Quarto, please refer to Quarto's Citation & Footnotes documentation.

B.4.2 **Citation style**

There are two built-in citation styles:

- ABNT (Brazilian Association of Technical Standards);
- APA (American Psychological Association).

To use one of them, simply change the `biblio-style` option in your `yml` file with the style of you preference.

```yaml
format:
  abnt-pdf:
    biblio-style: abnt # options: [abnt, abnt-ibid, abnt-numeric, apa]
```

There are other options related to the citation style; some are shown below. Please refer to `biblatex`, `biblatex-abnt` and `biblatex-apa` manuals to learn more about them.

```yaml
format:
  abnt-pdf:
    biblio-footnote: >
      According to the Brazilian Association of Technical Standards
      (ABNT NBR 6023).
    biblatexoptions:
      - backend=biber,
      - language=english, # [options: english, brazil, spanish, french]
      - url=true,
      - useprefix=false,
      - giveninits=true,
      - extrayear=true
    bibhang: 0cm # Use 0.5cm if `biblio-style: apa`.
    bibparsep: 0ex
```

B.4.3 **Zotero integration**

This template can work with Zotero and the Better BiBTeX plugin. The advantage of using this integration is that you don't need to manually input your references into `references.bib`; they are automatically imported when you render the format.

For this to work, you must activate the `zotero` option in your `yml` file and have Zotero, with Better BibTeX installed, open while rendering your thesis (activated by default). A pre-render script (see `R/quarto-pre-render.R`), created using the `rbbt` R package, will scan all `.qmd` and `.tex` files searching for BibTeX citations (e.g., `@watson1953`). If they match with your Zotero database, the citations will then be written into the `references.bib` file.

```yaml
format:
  abnt-pdf:
    zotero: true
```

B.4.3.1 Title case change

By using Zotero, you may experience a title casing change when exporting your references. This is the default behavior of Better BibTex while exporting to BibLaTeX.

You can disable this by going to Zotero's configuration editor (go to Edit > Preferences > Advanced > Config Editor) and changing the variable\ `extensions.zotero.translators.bett` `bibtex.exportTitleCase` to `false`. Beware that this can produce some issues. You can find more information about this behavior here.

B.5 ABNT FIGURES AND TABLES

Thanks for the incredible work of Carlos Scheidegger and other Quarto developers we now have a built-in solution for figures and tables that require two captions (one at the top and the other at the bottom, or a caption and a legend), as required by the ABNT norms. Please note that this feature is only available for Quarto versions >=v1.4.

The procedure for adding these captions is the same for figures and tables. Enclose your figure/table/code in figure `divs`, as shown in the example below. The first paragraph after the figure content will be rendered as the source (bottom caption), and the last one will be the top caption.

The formatting options for this bottom caption/legend is still matter of debate (see here). That's why is important to add Quarto's LaTeX Environment filter in your `_quarto-pdf.yml" with the command`legend`and use`[SOURCE TEXT GOES HERE].legend}‘ when defining legends for figures/tables, like the example below.

```
::: {#fig-1}

::: {.figure-content}
This is the figure content.
:::

[Source: My source.]{.legend}

This is a caption.

:::
```

Please note that, like all cross-reference elements, these `divs` must follow a naming pattern. Always use the prefixes `#fig-` for figures and `#tbl-` for tables.

Visit the showcase chapter “Introduction” (`qmd/introduction.qmd`) of this Quarto format to see this feature in action. For more detailed information, please refer to Quarto's Crossreferenceable elements article.

B.6 REDENRING PDF AFTER RENDERING HTML (AND VICE-VERSA)

The index file title (`index.qmd`) and content must be altered for each format to render properly. This cause some issues that `abnt` can't resolve for now. If you've rendered the HTML format and them wish to render the PDF format, you must run `R/quarto-pre-render-pdf.R` one time before starting the render. If is the inverse situation, you must run one time `R/quarto-pre-render-html.R`.

We're working to fix this.

B.7 CROSSREFERENCEABLE ELEMENTS

Quarto allow you to create and reference almost anything by using div enclosures.

Example: See Theorem B.1.

Theorem B.1 (Line)**.** *The equation of any straight line, called a linear equation, can be written as:*

$$y = mx + b$$

Although, it's important to note that for this to work, each type of `div` must use pre-defined prefixes. If you don't follow these rules your document will not be rendered.

Here are most of the the label prefixes.

- `cnj-`: Conjecture
- `cor-`: Corollary
- `def-`: Definition
- `eq-`: Equation
- `exm-`: Example
- `exr-`: Exercise
- `fig-`: Figure
- `lem-`: Lemma
- `lst-`: Listings
- `prp-`: Proposition
- `sec-`: Section
- `tbl-`: Table
- `thm-`: Theorem

For more information about cross-reference elements, see Quarto's guideBook Crossrefs, Cross References and Crossreferenceable elements articles.

B.8 FREEZING AND CACHE

See Freeze.

B.9 HOW TO CUSTOMIZE THIS QUARTO FORMAT

B.9.1 **Quarto system**

See Quarto's guide.

B.9.2 **Template and template partials**

See Tempalte partials.

B.9.3 **Spacing rules**

- Set fixed dimensions (e.g., page dimensions) in `cm` or `pt`. `cm` is the prefer unit for margins.
- Set line spacing as a proportion of `\baselineskip` (e.g., `1.5\baselineskip`).
- Use the settings `\tinyskipamount`, `\smallskipamount`, `\midskipamount`, `\bigskipamount`, `\hugeskipamount` and their counterparts `\tinyskip`, `\smallskip`, `\midskip`, `\bigskip`, `\hugeskip`. You can find them in the `lengths.tex` template partial.
- For other kinds of relative vertical spacing, use the `ex` unit.
- For relative horizontal spacing, use the `em` unit.

See Oetiker et al. (2023, section 7.5) to learn more about LaTeX spacing features. The articles on Overleaf are also a great source of information. Check Lengths in LaTeX and How to change paragraph spacing in LaTeX to get a sense of the subject.

B.9.3.1 Unit equivalences

- 1`em` $==$ 12`pt` or $\approx$ 0.423333`cm`.
- 1`ex` $==$ $\approx$ 6.22266`pt` or $\approx$ 0.219521`cm`.

B.9.3.1.1 `\baselineskip`

These are the equivalences for a Arial typeface with size 12`pt`:

Use `\the\baselineskip` and `\gevalue{}` to figure out the exact value. Note that `\gevalue{}` will return the value in `pt`.

Example of using `\getvalue{}`:

```
\begingroup
\setlength{\parskip}{1em}
\getlength{\parskip}
\endgroup
```

- `\linestretch=1`
  - `1\baselineskip` $==$ 14.5`pt`. That's about 1.2x (or ($≈$1.208333x) the font size (standard procedure).
- `\linestretch=1.5`

- `0.25\baselineskip` == 5.4375pt or ≈ 0.191822917cm;
- `0.5\baselineskip` == 10.875pt or ≈ 0.383645833cm;
- `0.75\baselineskip` == 16.3125pt or ≈ 0.57546875cm;
- `1\baselineskip` == 21.75pt or ≈ 0.76729167cm;
- `1.5\baselineskip` == 32.625pt or ≈ 1.1509375cm;
- `2\baselineskip` == 43.5pt or ≈ 1.534583cm;
- `2.5\baselineskip` == 54.375pt or ≈ 1.91822917cm;
- `3\baselineskip` == 65.25pt or ≈ 2.301875cm.

B.9.4 How to add new citation styles

B.9.5 Must see references

To learn the basics about LaTeX, see Oetiker et al. (2023). To delve deeper into the LaTeX system, see Lamport (1994) and Knuth (1986).

B.9.5.1 Manuals

- Quarto
- `abntex2`
- `memoir`
- `biblatex`
- `biblatex-abnt`
- `biblatex-apa`
- `babel`
- `fontspec`
- `makeidx`

B.9.5.2 R packages

- `gt`
- `rutils`

ANNEX A – [SHOWCASE]

> **Note**
>
> The text below is for demonstrative purposes only.
>
> See https://quarto.org/docs/authoring/markdown-basics.html to learn about the basics of Markdown's syntax.

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DE NORMAS
TÉCNICAS

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