

A Minimal Book Example

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Chapter 1

Prerequisites

This is a *sample* book written in **Markdown**. You can use anything that Pandoc's Markdown supports, e.g., a math equation $a^2 + b^2 = c^2$.

The **bookdown** package can be installed from CRAN or Github:

```
install.packages("bookdown")  
# or the development version  
# devtools::install_github("rstudio/bookdown")
```

Remember each Rmd file contains one and only one chapter, and a chapter is defined by the first-level heading #.

To compile this example to PDF, you need XeLaTeX. You are recommended to install TinyTeX (which includes XeLaTeX): <https://yihui.name/tinytex/>.

Chapter 2

Introduction

Here's an introduction about JAMES

Chapter 3

Growth charts in JAMES

3.1 Chart naming conventions

The link <https://groeidiagrammen.nl/ocpu/lib/james/www/> contains an interactive overview of the available growth charts. There are 342 different charts: for boys and girls, for preterms, for different age ranges, for specific ethnic groups, for height, weight, BMI, and so on. Each chart design has a `chartcode`, a character code identifying the design. This section explains the construction of the chart codes.

The GitHub repository <https://github.com/stefvanbuuren/chartbox> contains the chart libraries that are available to JAMES. The `list_charts()` function produces a tabular overview.

```
charts <- chartbox::list_charts()
dim(charts)
```

```
## [1] 342 8
```

```
charts[c(1, 22, 23, 300, 301, 340), ]
```

##	chartgrp	chartcode	population	sex	design	side	language	week
## 1	nl2010	HJAA	HS	male	A	front	dutch	
## 22	nl2010	HMBH	HS	female	B	hgt	dutch	
## 23	nl2010	HMBR	HS	female	B	wfh	dutch	
## 300	preterm	PMEAN32	PT	female	E	front	dutch	32
## 301	preterm	PMEAN33	PT	female	E	front	dutch	33
## 340	who	WMBA	WHOpink	female	B	front	dutch	

The `chartbox` package currently contains three chart groups: `nl2010`, `preterm` and `who`. Each groups collects charts of a similar type.

Chart Group	Charts	Chart code	Description	Source
n12010	136	CCCC	Dutch children 0-21 years, including minorities	Talma et al. (2010)
preterm	192	CCCCCN	Dutch preterms, ga \leq 36 weeks, 0-4 years	Bocca-Tjeertes et al. (2012)
who	14	CCCC	WHO Child Growth Standards 0-4 years	WHO

The chart code is an alpha-numeric code of four (for **n12010** and **who**) or seven (for **preterm**) that uniquely identifies each of the charts. The table below specifies the full coding schema used to construct the chartcodes.

Position	Field	Value	Description
1	Population	N	Dutch
		T	Turkish
		M	Moroccan
		H	Hindostan
		P	Preterm
		W	WHO
2	Sex	J	Male
		M	Female
3	Design	A	0-15 months
		B	0-4 years, WFH
		C	1-21 years
		D	0-21 years
		E	0-4 years, WFA
		X	A4, double sided
4	Side	A	A4, front
		B	A4, back
		C	A4, back, no hdc
		H	square, hgt
		O	square, hdc
		Q	square, bmi
		R	square, wfh
		W	square, wgt
5	Language	N	Dutch
		E	English
6-7	Week	25-36	Gestational age

For example, code **NJAA** reference to Dutch (**N**), boys (**J**), 0-15 month (**A**), front side (**A**). Likewise, **PMEAN33** codes for the chart of preterm (**M**), girls (**M**), 0-4 years (**E**), front side (**A**), Dutch language (**N**) born at 33 weeks of gestation (**33**).

Some forms hold multiple growth charts. For example, the **NJAA** chart is designed for a A4 paper size (297mm \times 210mm) and holds three growth charts: head circumference by age, length by age, and weight by age. Some others no

chart, like NJAB with explanations. All square formats holds one growth chart. All of square format have equal sizes (160mm \times 160mm).

The measures per design-form combination are listed in the following table.

Design	Side	Measure	Description
A	A	hdc	Head circumference by age, 0-15 mo
		hgt	Length by age, 0-15 mo
		wgt	Weight by age, 0-15 mo
B	B		
	H	hgt	Length by age, 0-15 mo
	O	hdc	Head circumference by age, 0-15 mo
	W	wgt	Weight by age, 0-15 mo
	A	wfh	Weight for height, 0-4 yr
		hgt	Length by age, 0-4 yr
	B	hdc	Head circumference by age, 0-4 yr
	C		
	H	hgt	Height by age, 0-4 yr
	O	hdc	Head circumference by age, 0-4 yr
C	R	wfh	Weight for height, 0-4 yr
	W	wgt	Weight by age, 0-4 yr
	A	wfh	Weight for height, 1-21 yr
		hgt	Height by age, 1-21 yr
	B	bmi	BMI by age, 1-21 yr
		hdc	Head circumference by age, 1-21 yr
	C	bmi	BMI by age, 1-21 yr
	H	hgt	Height by age, 1-21 yr
	O	hdc	Head circumference by age, 1-21 yr
	Q	bmi	Body mass index by age, 1-21 yr
E	R	wfh	Weight for height, 1-21 yr
	A	wgt	Weight by age, 0-4 yr
		hgt	Height by age, 0-4 yr
	B	hdc	Head circumference by age, 0-4 yr
	H	hgt	Height by age, 0-4 yr
	O	hdc	Head circumference by age, 0-4 yr
	W	wgt	Weight by age, 0-4 yr

Chapter 4

Methods

We describe our methods in this chapter.

Chapter 5

Applications

Some *significant* applications are demonstrated in this chapter.

5.1 Example one

5.2 Example two

Chapter 6

Final Words

We have finished a nice book.

Bibliography

- Bocca-Tjeertes, I., van Buuren, S., Bos, A., Kerstens, J., ten Vergert, E., and Reijneveld, S.A. (2012). Growth of preterm and fullterm children aged 0-4 years: Integrating median growth and variability in growth charts. *Journal of Pediatrics*, 161(3):460–465.
- Talma, H., Schonbeck, Y., Bakker, B., Hirasing, R., and van Buuren, S. (2010). *Groeidiagrammen 2010: Handleiding bij het meten en wegen van kinderen en het invullen van groeidiagrammen*. TNO Kwaliteit van Leven, Leiden.