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NOVEL METHODS FOR DOSE-RESPONSE META-ANALYSIS

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NOVEL METHODS FOR DOSE-RESPONSE META-ANALYSIS

THESIS FOR DOCTORAL DEGREE (Ph.D.)

By

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“If I have seen further, it is by standing on the shoulders of giants.”
—Isaac Newton

Abstract

My abstract:
In Paper I,
In Paper II,
In Paper III,
In Paper IV,
In Paper V,
In conclusion,

List of publications

I. Alessio Crippa, and Nicola Orsini
Multivariate dose–response meta-analysis: the dosresmeta R Package
Journal of Statistical Software, Code Snippets 2016; 72(1), 1–15

II. Andrea Discacciati, Alessio Crippa, and Nicola Orsini
Goodness of fit tools for dose–response meta-analysis of binary outcomes
Research Synthesis Methods 2015

III. Alessio Crippa, Polyna Khudyakov, Molin Wang, Nicola Orsini, and Donna Spiegelman
A new measure of between-studies heterogeneity in meta-analysis
Statistics in medicine 2016; 35(21), 3661–75

IV. Alessio Crippa, Ilias Thomas, and Nicola Orsini
A pointwise approach to dose-response meta-analysis of aggregated data
Manuscript 2018

V. Alessio Crippa, Andrea Discacciati, Matteo Bottai, Alicja Wolk, and Nicola Orsini
One-stage dose–response meta-analysis for aggregated data
Manuscript 2018

The articles will be referred to in the text by their Roman numerals, and are reproduced in full at the end of the thesis.

Related publications

- Alessio Crippa, Susanna C. Larsson, Andrea Discacciati, Alicja Wolk, and Nicola Orsini
  Red and processed meat consumption and risk of bladder cancer: a dose–response meta-analysis of epidemiological studies
  European journal of nutrition 2016, 1–13

- Andrea D. Smith, Alessio Crippa, James Woodcock, and Søren Brage
  Physical activity and incident type 2 diabetes mellitus: a systematic review and dose–response meta-analysis of prospective cohort studies
  Diabetologia 2016, 1–19

- Marco Vinceti, Tommaso Filippini, Alessio Crippa, Agnès de Sesmaisons, Lauren A. Wise, and Nicola Orsini
  Meta-Analysis of Potassium Intake and the Risk of Stroke
  Journal of the American Heart Association 2016, 5(10), e004210

- Alessio Crippa, and Nicola Orsini
  Dose–response meta-analysis of differences in means
  BMC medical research methodology 2016, 16(1), 91

- Emir Veledar, Alessio Crippa, Chukwuemeka U Osondu, Adnan Younus, and Khurram Nasir
  Letter to Editor:?Ideal cardiovascular health metrics and risk of cardiovascular disease or mortality
  International journal of cardiology 2016, 222, 737

- Alessio Crippa, Andrea Discacciati, Nicola Orsini, and Viktor Oskarsson
  Letter: coffee consumption and gallstone disease—a cautionary note on the assignment of exposure values in dose–response meta-analyses
  Alimentary Pharmacology & Therapeutics 2016, 43(1), 166-167

- Susanna C. Larsson, Alessio Crippa, Nicola Orsini, Alicja Wolk, and Karl Michaëlsson
  Milk consumption and mortality from all causes, cardiovascular disease, and cancer: a systematic review and meta-analysis
  Nutrients 2016, 7(9), 7749-7763

- Daniela Di Giuseppe, Alessio Crippa, Nicola Orsini, and Alicja Wolk
  Fish consumption and risk of rheumatoid arthritis: a dose-response meta-analysis

Arthritis research & therapy 2014, 16(5), 446

- Alessio Crippa, Andrea Discacciati, Susanna C. Larsson, Alicja Wolk, and Nicola Orsini
  Coffee consumption and mortality from all causes, cardiovascular disease, and cancer: a dose–response meta-analysis
  American journal of epidemiology 2014, 180(8), 763-775

Contents

List of abbreviations

AIC	Akaike Information Criterion
CI	Confidence Interval
df	Degrees of Freedom
GLS	Generalized Least Squares
GRSS	Generalized Residual Sum of Squares
GTSS	Generalized Total Sum of Squares
FP2	Second-degree Fractional Polynomials
HRR	Hazard Rate Ratio
IR	Incidence Rate
IRR	Incidence Rate Ratio
logRR	log–Relative Risk
MR	Mortality Rate
MRR	Mortality Rate Ratio
RCS	Restricted Cubic Splines
R^2	Coefficient of Determination
RR	Relative Risk
WLS	Weighted Least Squares

Chapter 1

Introduction

Write my introduction

Chapter 2

Background

Write my background with subsections.

Here an example of a figure (Figure 2.1).

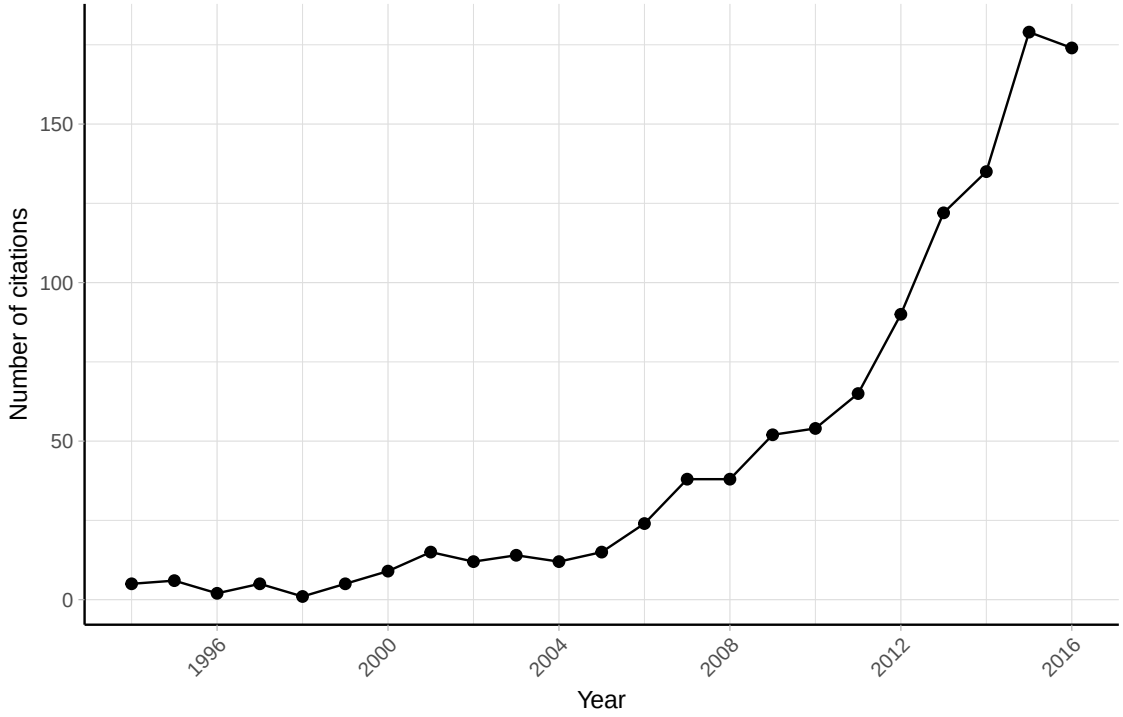

Figure 2.1

Chapter 3

Aims of the thesis

The overall aims of this thesis were to <>.

More specifically, the aims were:

- <>
- <>
- <>
- <>

Chapter 4

Materials and methods

Write materials and methods with subsections as in the background section

Chapter 5

Results

Write the results with subsections as in the background section

Chapter 6

Discussion

Write the discussion with subsections as in the background section

Chapter 7

Conclusions

Write summary of conclusions.

More specifically we conclude the following:

- <>
- <>
- <>
- <>

Chapter 8

Future research

Based on the conclusions presented in this thesis, future research includes:

- <>
- <>
- <>

Appendix A

Supplementary figures

Figures.

Appendix B

Supplementary tables

Tables.

References

Crippa A, Discacciati A, Bottai M, Spiegelman D, Orsini N (2018a). "One-stage dose–response meta-analysis for aggregated data." *Manuscript*.

Crippa A, Khudyakov P, Wang M, Orsini N, Spiegelman D (2016). "A new measure of between-studies heterogeneity in meta-analysis." *Statistics in medicine*, **35**(21), 3661–3675.

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Crippa A, Thomas I, Orsini N (2018b). "A pointwise approach to dose-response meta-analysis of aggregated data." *Submitted*.

Discacciati A, Crippa A, Orsini N (2015). "Goodness of fit tools for dose–response meta-analysis of binary outcomes." *Research synthesis methods*.

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