The emergence of Zipf’s law in fashionable given names

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understanding diffusion of fashion

given names are ideal

• no external influences (no advertisement)
• all namings are documented

work flow

1. collecting birth dates of all children with a fashionable name
2. developing a model of diffusion of fashionable names (on the basis of the previous data)
3. studying the emergence of Zipf’s law in fashionable names (predicted on the basis of the previous model)

a corpus of given names in the Netherlands

• 1790 - 2017
• given names of 25.9 million persons (total 35.2 million)
• their date of birth

popularity 1790 - 2017

Gerrit
new names in the civil registration

a model of diffusion of new names

requires:
1. year of the innovation
2. imitation probability (imitation speed)
3. number of social networks for propagation

a fashionable given name

Ingrid

(1) year of innovation

Robin
Luuk
Roy
Remco
Milan
Danny
Wesley
Kevin
Jeffrey
Mariska
Marjolein
Jessica
Hoe
Tamara
Merie
Kim
Chantal
Wendy
Aneke
Amber
Britt
Melissa
Mandy
Cindy
Romy

(2) imitation probability

the probability of the time until imitation of the innovation depends on future popularity
future popularity is built in

(3) steps through social networks

small-world network

contribution of subsequent social networks

Zipf’s law

- many rare names
- a few very popular names

count number of names with frequency 1, 2, 3, 4, ..., 100, ..., 10,000

number of social networks involved

social networks

number of name bearers

number of name bearers

years after innovation

number of social networks

social networks

Ingrid (n=34,342)

number of names

frequency of a name
Zipf’s law for 24,937 new names with a total of 1.8 million name bearers

The emergence of Zipf’s law

Achievements so far

A ‘birth announcement card’ for all

Multiple processes