Welcome to Methodology & Statistics in Psychology

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Welcome to Methodology & Statistics in Psychology

- international (English) Master
- one year program (60EC)
- aims at becoming a data scientist, statistical consultant, researcher
  - making good predictions
    * who has the largest chance of becoming depressed?
    * who will buy my product?
  - wanting to understand the relation between variables
    * which factor is most related to getting a depression?
  → good career prospects

- if you would like to become a researcher in statistics, the two year Statistical Science for the life and behavioural sciences master is a better choice.
Data Scientist: The Sexiest Job of the 21st Century

by Thomas H. Davenport and D.J. Patil

FROM THE OCTOBER 2012 ISSUE

When Jonathan Goldman arrived for work in June 2006 at LinkedIn, the business networking site, the place still felt like a start-up. The company had just under 8 million accounts, and the number was growing quickly as existing members invited their friends and colleagues to join. But users weren’t seeking out connections with the people who were already on the site at the rate executives had expected. Something was apparently missing in the social experience. As one LinkedIn manager put it, “It was like arriving at a conference reception and realizing you don’t know anyone. So you just stand in the corner sipping your drink—and you probably leave early.”

Goldman, a PhD in physics from Stanford, was intrigued by the linking he did see going on and by the richness of the user profiles. It all made for messy data and unwieldy analysis, but as he began exploring people’s connections, he started to see possibilities. He began forming theories, testing hunches, and finding patterns that allowed him to predict whose networks a given profile would land in. He could imagine that new features capitalizing on the heuristics he was developing might provide value to users. But LinkedIn’s engineering team, caught up in the challenges of scaling up the site, seemed uninterested. Some colleagues were openly dismissive of Goldman’s ideas. Why would users need LinkedIn to figure out their networks for them? The site already had an address book importer that could pull in all a member’s connections.
Career prospects

For Today's Graduate, Just One Word: Statistics

By STEVE LORH  AUG. 5, 2009

MOUNTAIN VIEW, Calif. — At Harvard, Carrie Grimes majored in anthropology and archaeology and ventured to places like Honduras, where she studied Mayan settlement patterns by mapping where artifacts were found. But she was drawn to what she calls “all the computer and math stuff” that was part of the job.

“People think of field archaeology as Indiana Jones, but much of what you really do is data analysis,” she said.

Now Ms. Grimes does a different kind of digging. She works at Google, where she uses statistical analysis of mounds of data to come up with ways to improve its search engine.

Ms. Grimes is an Internet-age statistician, one of many who are changing the image of the profession as a place for drollish number nerds. They are finding themselves increasingly in demand — and even cool.

“I keep saying that the sexy job in the next 10 years will be statisticians,” said Hal Varian, chief economist at Google. “And I’m not kidding.”

The rising stature of statisticians, who can earn $125,000 at top companies in their first year after getting a doctorate, is a byproduct of the recent explosion of digital data. In field after field, computing and the Web are creating new realms of data to explore — sensor signals, surveillance tapes, social network chatter, public records and more. And the digital data surge only promises to accelerate, rising fivefold by 2022, according to a projection by IDC, a research firm.
The Best Jobs of 2017

By: CareerCast.com

STEM Education Coalition executive director James Brown projected careers in STEM—science, mathematics, engineering and technology—to be the "Jobs of tomorrow" in 2014. The annual Jobs Rated reports confirm that assessment, but with an added twist: the future is now. STEM jobs abound on the Jobs Rated's best jobs of 2017 list.

As the world becomes more quantitative and data-focused, mathematics takes center stage, with Statistician topping the best jobs of 2017. Applying the Jobs Rated criteria—evaluating income, growth outlook, stress and environmental factors—this hot field ranked No. 1.

One key factor in the profession’s top billing is that employment is expected to jump by 34% in the coming seven years. The extraordinarily high hiring outlook is the result of increased demand in fields that might not otherwise seem like areas for Statisticians.

A Statistician's skill set can be used to break down and analyze large quantities of data. The demand for these skills spans a variety of industries, including marketing, banking, government, sports, retail, and even healthcare.

Since so many different industries now rely on data interpretation, a second data analysis job made the best jobs of 2017: fifth-ranked Data Scientist.

In total, four of the top 10 best jobs of 2017 are built on math. Operations Research Analysts, another math-related career, ranked No. 4. Medical Scientists and Economists rounded out the math-based spotlights.

To find the full list of the best jobs of 2017, visit the Jobs Rated page of CareerCast.com.
Career prospects

• statistical consultancy
• market research
• psychological assessment
• making prediction models (needed in many companies)
• recruitment and selection of personnel
• assisting with data analysis for applied research
• fundamental research
  – at university: PhD in methods and statistics

→ in this master program you obtain skills applicable in many research fields of research in psychology, but also outside psychology.
# Program

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<th>EC</th>
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**Internship & Thesis**

- **Internship (10 ECTS)**
  - scheduled February-April (together with Statistical Consulting, Block III-IV)

- **Thesis (20 ECTS)**
  - scheduled from May-end of the academic year
  - Thesis and Internship can be combined

- Thesis and Internship can be internal or external
  - internal: statistical analysis for research at university (e.g., longitudinal depression study, studying criminal records)
  - internal: developing/testing methods for data analysis (e.g., methods for EEG/fMRI data analysis)
  - external: companies or research institutions
Internship & Thesis

Internship companies

- CITO (testing company)
- Parnassia, Antes, Trimbos (mental health)
- Erasmus MC, Leiden University MC, VUMC, AMC
- Statistics Netherlands (CBS)
- TNO (consulting)
- Unilever, Danone, Campina (food research)
- SKIM, Human Insight (market research, business intelligence)
- Dutch Forensic Institute (NFI) / Crime and law enforcement (NSCR)
- DSW (health insurance), ENECO (energy)
- ROBECO (investment banking)
An Internship mainly deals with a more complicated analysis of a dataset

- a prediction problem: who will get depressed or is at risk for criminal behavior?
- evaluation of tests: psychometric analysis
- advanced methods for brain data

A thesis in M&S answers a methodological question.

- apply a new statistical model for an existing analysis problem
- compare two statistical models for a single data analysis problem
- investigate the behavior of a statistical model when assumptions are invalid
- comparison of statistical models in a computer simulation study
Why to study M&S in Psychology?

Interesting features of the M&S Master

- evaluation mostly through take-home assignment (a very limited number of exams)
  - focus on skills instead of on knowledge
  - 30/60 EC for Internship/Thesis
  - more flexibility in when to study

- use of real life data sets, assignment not always very structured (real life problems)
  - you are responsible for your own learning

- you’ll learn programming (in R)
  - important skill at the labor market !!

- you can propose a topic for Internship and Thesis yourself !

- you can do an Internship abroad
  - University of Naples, University of Barcelona
  - many more possibilities due to personal contacts of our staff (e.g., Leuven)
Starting in September or February?

Regarding the M&S Master

- one can start in September or February
- our program is targeted at students who start in September
  - is mostly a small group
- we do not encourage the start in February!
  - there are not so many courses in the second semester!

For more information about Student for a day, see

- [www.universiteitleiden.nl/onderwijs/bachelors/](www.universiteitleiden.nl/onderwijs/bachelors/)
  voorlichtingsactiviteiten/meeloopdagen
Statistical Science Master (2 years)

- two year program (‘research master’)
- you do not need a bachelor in mathematics
- aims at becoming an statistical researcher (PhDs)
- collaboration between Leiden, Wageningen and Amsterdam
- first year: common courses
- second year: life/behavioral sciences or data science specialisation


- contact: pr@stat.leidenuniv.nl
Statistical quotes

Admission information and deadlines


Some statistical quotes

- Torture numbers, and they’ll confess to anything (Gregg Easterbrook)
- Statistics can be made to prove anything - even the truth (author unknown)
- The average human has one breast and one testicle (Des McHale)
- All models are wrong, but some are useful (George E. P. Box)
- To call in the statistician after the experiment is done may be no more than asking him to perform a post-mortem examination: he may be able to say what the experiment died of (Fisher)
- There are three types of lies – lies, damn lies, and statistics (Benjamin Disraeli)