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University of Basel

MSc Epidemiology

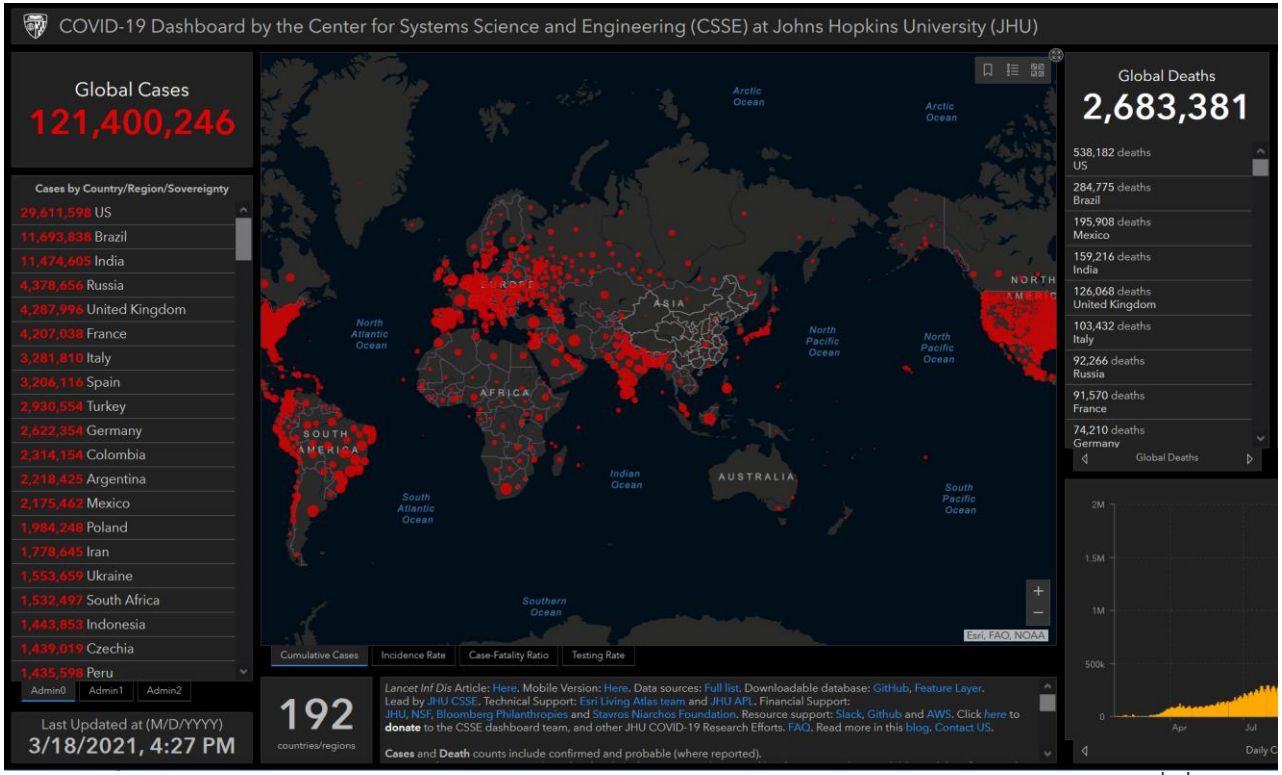
Specialised Master's degree programme

Prof. Dr. Peter Odermatt

Epidemiology is the science behind public health

- ✓ While medical doctors investigate disease in individual patients, epidemiologists investigate health of populations.
- ✓ And they do not only study disease and possible risk factors, they also propose actions and then measure whether the situation has improved.

Epidemiologist have been very much involved in describing, modelling and advising about the COVID-19 pandemic



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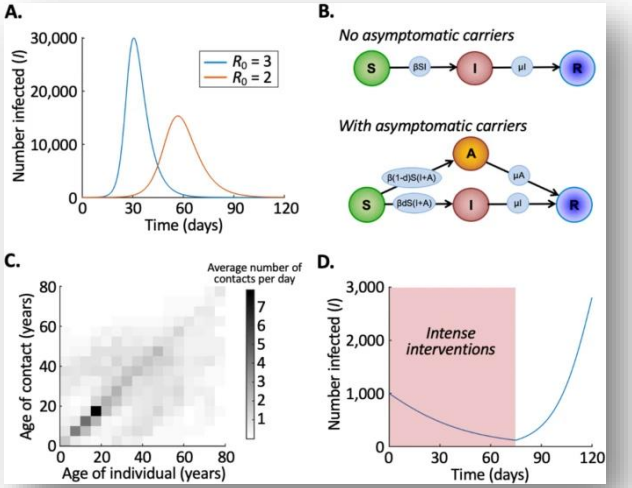
Understanding the complexity of transmission through modelling

The recent COVID-19 pandemic has shown the value of mathematical models for analysing the epidemiological situation, and projecting the effect of multiple public health interventions. Modelling has significantly contributed to political decision-making during the pandemic.

- Elucidate complex patterns of disease
- Effects from multiple interventions
- Relative cost-effectiveness of a number of interventions



Thomson et al. 2020 BMC Medicine

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And working with the media

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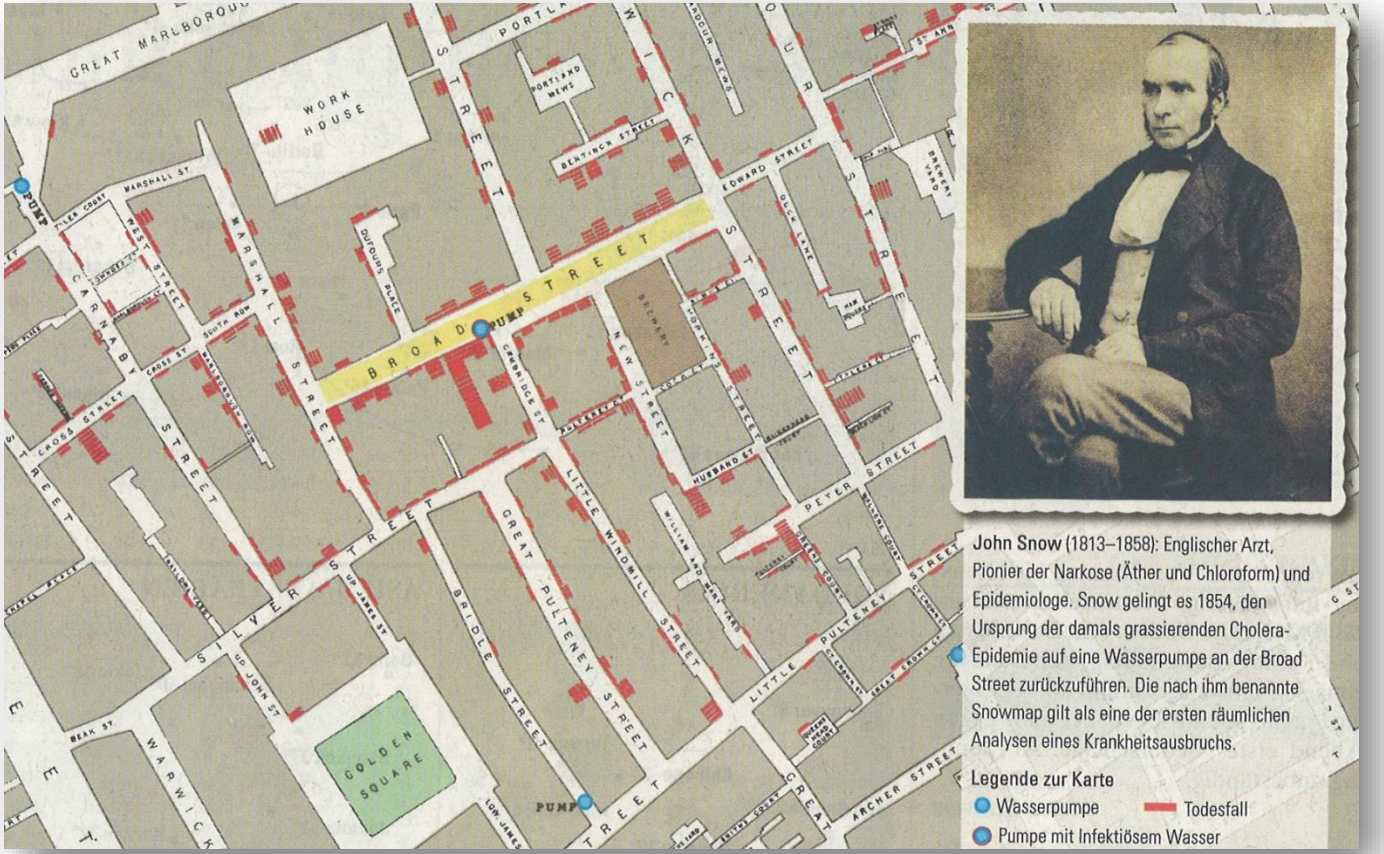
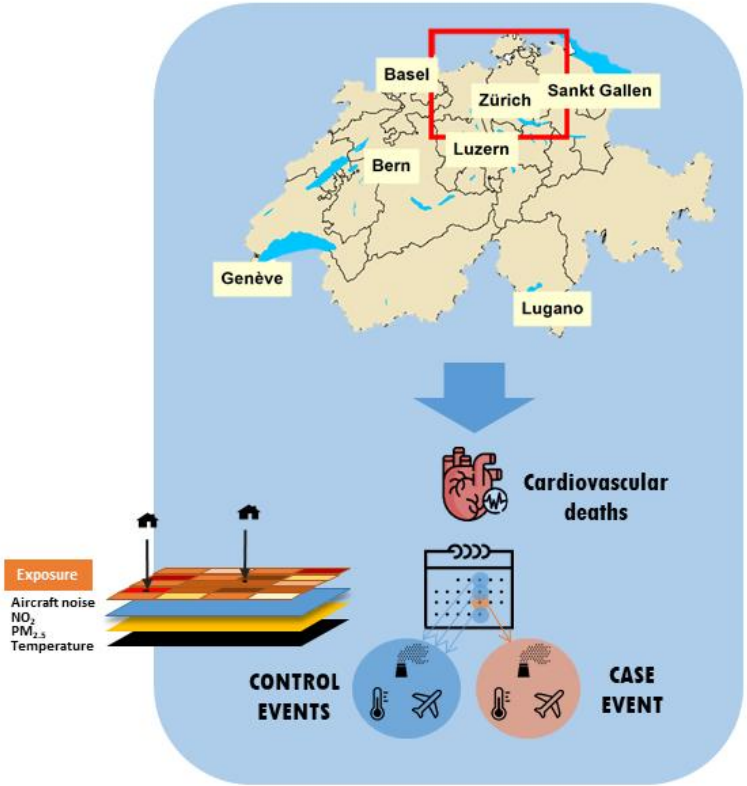
Cholera in London around 1850

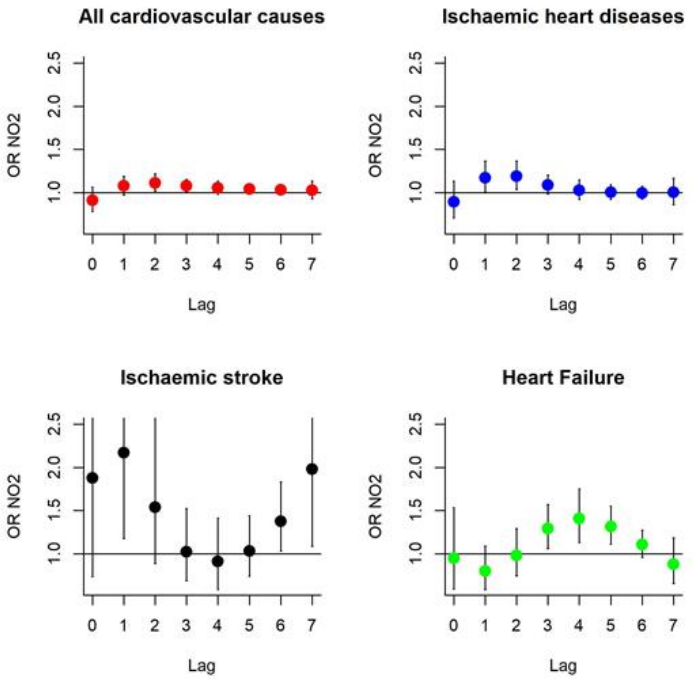
Dr. John Snow, 1813-1858



NZZ, April 2013

Understanding the effects of noise on cardio-vascular health





Saucy, Röösli et al. 2021

Chocolate Consumption, Cognitive Function, and Nobel Laureates

Franz H. Messerli, M.D. NEJM 367; October 18, 2012

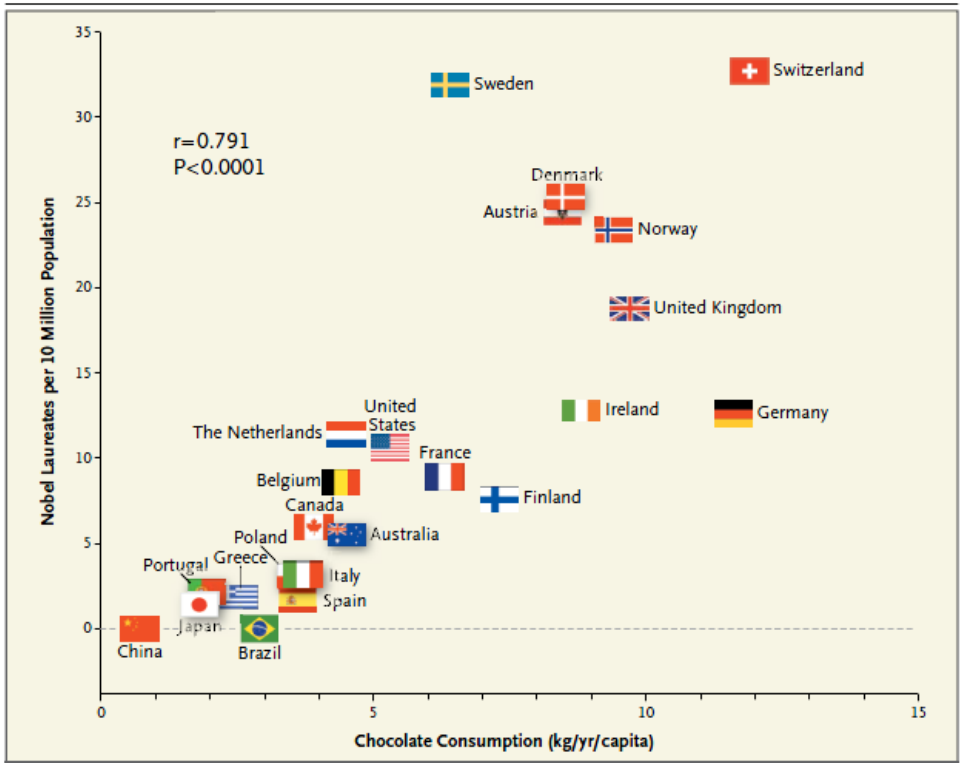


Figure 1. Correlation between Countries' Annual Per Capita Chocolate Consumption and the Number of Nobel Laureates per 10 Million Population.

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Effect of a serogroup A meningococcal conjugate vaccine (PsA–TT) on serogroup A meningococcal meningitis and carriage in Chad: a community trial

D M Daugla et al. Lancet 2013

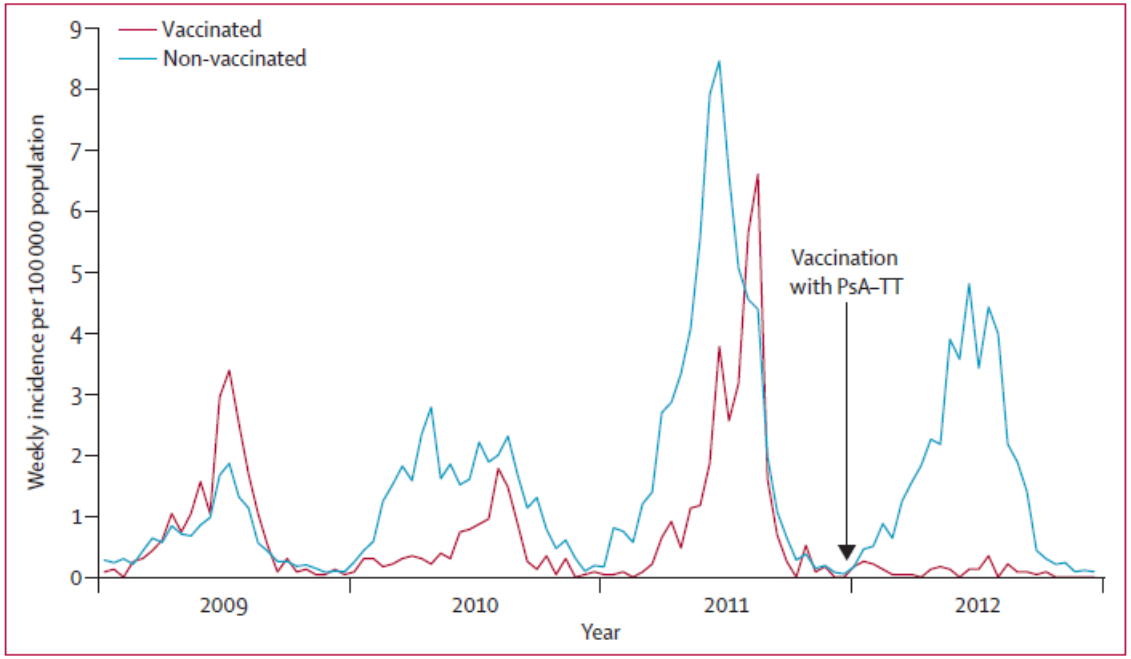

Figure 3: **Incidence of reported cases of meningitis in Chad, 2009–12**
Vaccination with PsA–TT was undertaken in patients aged 1–29 years at the end of 2011 (arrow).
PsA–TT=serogroup A meningococcal polysaccharide–tetanus toxoid conjugate vaccine.

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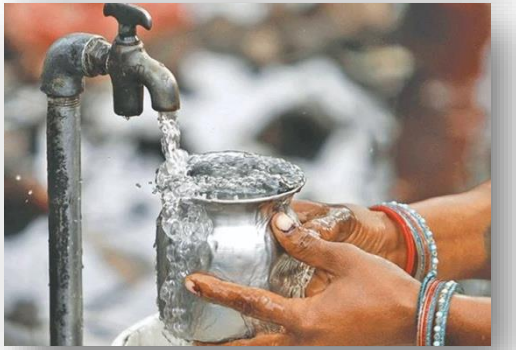
Epidemiology aims to design solutions for improving health problems. Such interventions then need to be designed, tested and implemented.

www.gettingsmart.com



In brief

- ✓The Specialized Master's degree program in Epidemiology at the University of Basel is run by the Swiss Tropical and Public Health Institute (Swiss TPH), an internationally recognized center for global epidemiological and public health excellence. Over 960 staff from 87 countries.

- ✓Thematic focus of the Specialized Master's degree program in epidemiology: neglected tropical diseases, environmental health, climate change, malaria, disease modelling, outbreak investigations, health systems and interventions, migration health, molecular and genetic epidemiology, One Health, gender and health, COVID-19.

Main goals

- ✓ To provide students with the necessary core knowledge and skills to be able to design, conduct, analyze and report epidemiological work;
- ✓ To provide students with an overview of additional key aspects of scientific activities in a multi-disciplinary global public health environment, including an understanding of health systems, health economics and social sciences;
- ✓ To equip students with a set of essential transferable skills, to enhance their academic capacities and their employability in a non-academic environment.
- ✓ To present to students a set of values governing scientific work in an academic and/or public health environment

Course structure

- ✓Duration: 4 semesters in total (course work and individual research project)
- ✓120 ECTS (60 CP for courses, 50 CP for Master's thesis, 10 CP for Master's examination)
- ✓Duration of individual research project: 9-12 months
- ✓Language: English
- ✓Start of program: fall semester
- ✓Application deadline: 30 April (July for Basel students)

Autumn Semester 1	Spring Semester 1	Autumn Semester 2	Spring Semester 2
Foundation courses (compulsory)	More advanced courses (consolidation)	Thesis including potential field work	Thesis writing and additional advanced courses
Weekly / biweekly courses over full or half semester	Weekly / biweekly courses on Mon-Wed Block courses on Thu-Fri.	No lectures – work on MSc thesis in the field	Individual work on MSc thesis plus advanced lectures

Mandatory lectures (1)

AS = Autumn Semester SS = Spring semester		CP
Module 1 – Foundations in epidemiology 15 CP		
Epidemiological concepts	AS1	3
Epidemiological methods	AS1	4
Chronic diseases epidemiology	AS1	1
Environmental epidemiology	AS1	1
Qualitative and mixed methods	AS1	2
Producing, interpreting and using evidence in HC	SS1	2
GIS in health and exposure sciences	SS1	2
Module 2 – Biostatistics and computing 15 CP		
Biostatistics (weeks 1-7)	AS1	2
Biostatistics exercises (weeks 1-7)	AS1	1
Basic Statistical Modelling: A. Farnham/F. Vanobberghen (weeks 8-14)	AS1	3
Data analysis in epidemiology	SS1	3
Demography	SS1	2
Statistical methods in trial design	SS1	2
Research data management	SS1	2

Mandatory lectures (2)

AS = Autumn Semester SS = Spring semester		CP
Module 3 – Global Public Health 10 CP		
Public health in light of the SDG	AS1	1
Public health across the life course	AS1	2
Advances in IB, Epidemiology and global PH	AS/SS	1
Key issues in international and public health	AS1	2
Interdisciplinary research in epidemiology and IB	AS2	1
Health systems	SS1	2
Health financing and economic evaluation	SS1	1
Module 4 – Transferable skills and competences 5/8 CP		
Good scientific conduct in health sciences (**compulsory**)	SS1	1
Application to an ethics committee (**compulsory**)	SS1	1
Scientific writing	SS1	2
Project management	SS	2
Effective presentation skills	SS	1
Meet the epidemiology professionals	SS	1
		45
Optional courses – 15 CP out of 48		

Admission criteria

The following degrees of a Swiss University allow for direct admission (at least 150 ECTS):

Bachelor of Science (BSc) in:
Biology, Human, Dental or Veterinary Medicine, Pharmaceutical Sciences, Nursing Science, Sciences et technologies du vivant, Agricultural Sciences, Forestry Sciences, Nutritional Sciences, Applied Life Sciences, Sports Sciences, Biochemistry, Psychology, Sociology, Geography, Environmental Sciences, Mathematics, Informatics or in Economics.

Students with a BSc in a different field will be assessed individually for equivalence.

Further admission criteria:

- ✓ A minimum average mark of 5.0 (Swiss system) for all eligible BSc degrees
- ✓ Basic knowledge in biology and mathematics/biostatistics (at least 2 ECTS each)

If these further admission criteria are not fulfilled,
students can alternatively pass the GRE® General Test in the area of «Quantitative Reasoning» with a score in the top 35%. *(GRE = Graduate Record Examinations®)*

Career opportunities

Holders of a Master of Science in Epidemiology usually work in:

- ✓ Academia (often by continuing on a PhD track)
- ✓ Government (cantonal, national)
- ✓ Non-governmental organisations and foundations
- ✓ Pharmaceutical industry
- ✓ International organizations such as WHO, UNICEF, etc.
- ✓ Science communication
- ✓ Teaching
- ✓ Etc.

Further information

Visit our website:

https://www.swisstph.ch/en/study-with-us/bachelor-and-master/msc-in-epidemiology/

Contact the programme coordinators for questions related to course content:

- Prof. Dr. Peter Odermatt (peter.odermatt@swisstph.ch)
- Prof. Dr. Martin Röösli (martin.roosli@swisstph.ch)

Contact the administrative course coordinator for any administrative matters:

- Pascal Gschwind (pascal.gschwind@swisstph.ch)

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Thank you for your interest in the MSc Epidemiology Programme

We hope to welcome you soon as one of our students