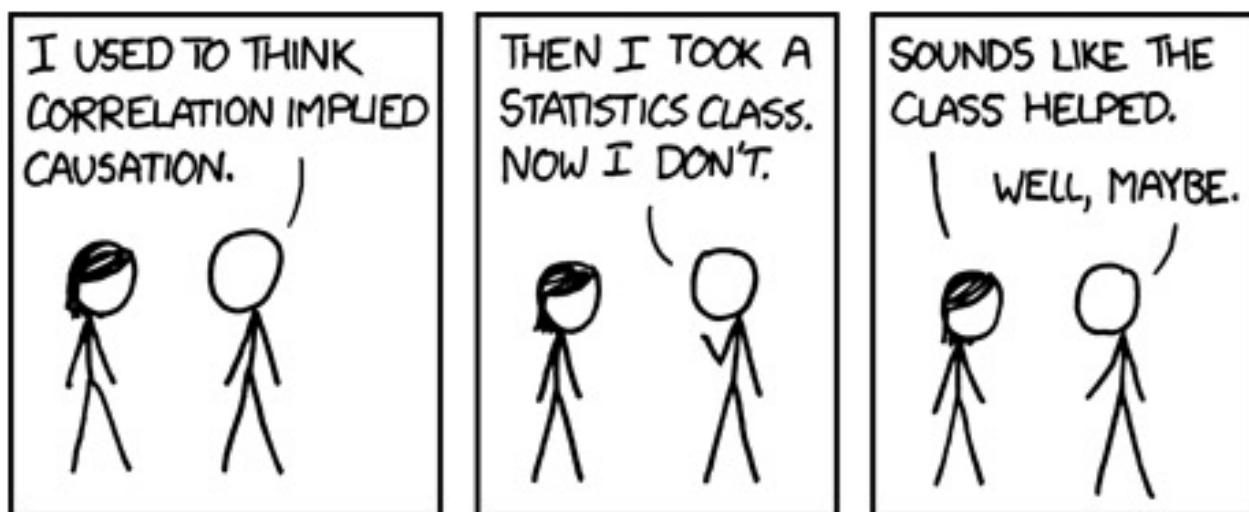


# QUANTITATIVE EVALUATION OF PUBLIC POLICIES

---

**EGT/APP/DASEE** Masters Course, 2<sup>nd</sup> year





# Course Presentation

- **Contact**

Julie LE GALLO

Professor, Agrosup Dijon, DSHS

[julie.le-gallo@agrosupdijon.fr](mailto:julie.le-gallo@agrosupdijon.fr)

Personal website:

<https://sites.google.com/site/legallopage/>

Bureau 012, Bâtiment Longelles, Agrosup Dijon

Phone: 03 80 77 23 66

# Course Presentation

- **Course Organization**

- *Part by Rachel GUILLAIN*

- The problem of impact evaluation
    - The Rubin causal model
    - Controlled experiments

- *Part by Julie LE GALLO*

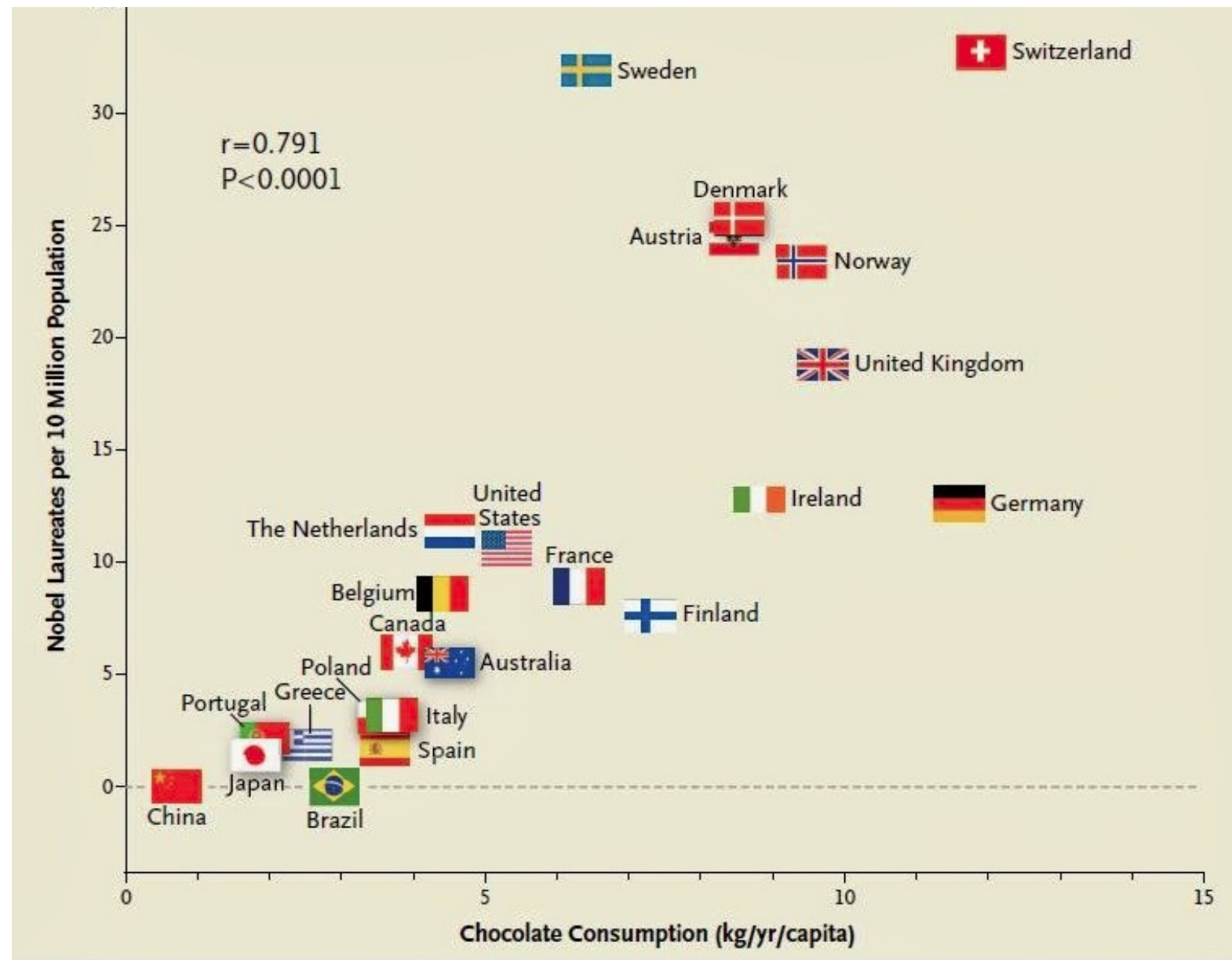
- Matching on observables
    - Matching on unobservables (difference in difference, instrumental variables)
    - Regression discontinuity design

- **Documents and resources available on Teams**

# Course Presentation

- **Evaluation**

- Two (out of four) articles to be commented on in groups of two or three
- Make critical study notes
  - Explanation of the research question: context and issues
  - Critical analysis of the method
  - Main findings, scope and limitations
  - Possible extensions and identification of papers for further study of the subject from the reading list
- 1 article to choose from those proposed by RG and 1 article to choose from those proposed by JLG
- From 5 to 10 pages long



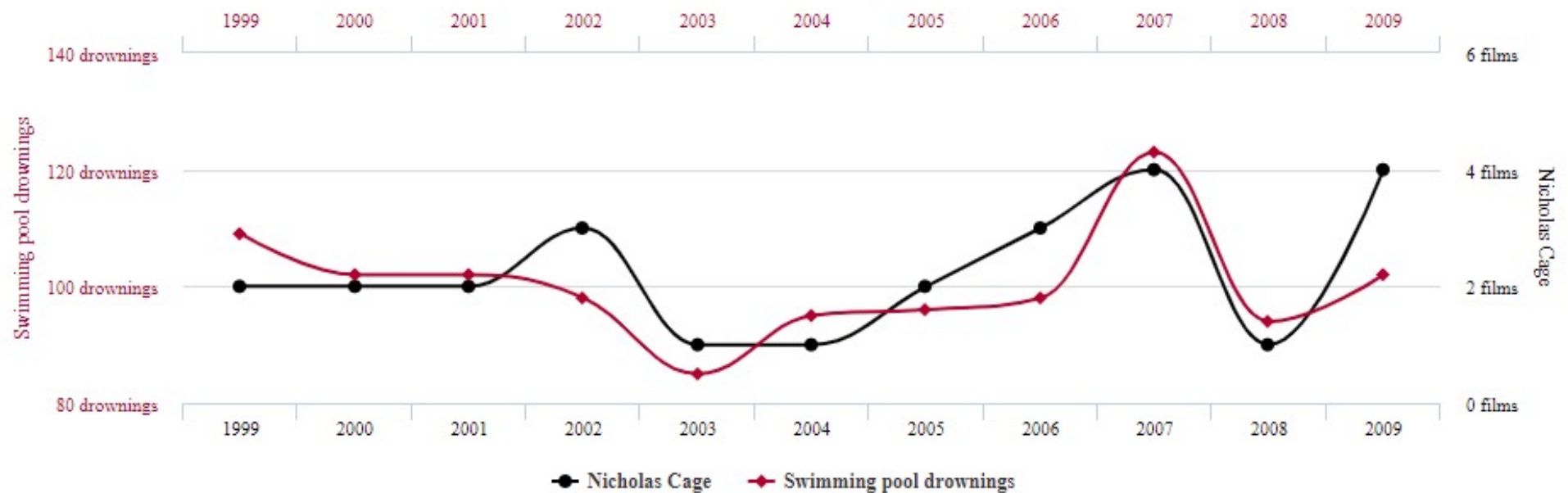
**Figure 1.** Correlation between Countries' Annual Per Capita Chocolate Consumption and the Number of Nobel Laureates per 10 Million Population.

## Number of people who drowned by falling into a pool

correlates with

## Films Nicolas Cage appeared in

Correlation: 66.6% ( $r=0.666004$ )



tylervigen.com

Data sources: Centers for Disease Control & Prevention and Internet Movie Database

<https://www.tylervigen.com/spurious-correlations>

# Reminders

- A program provides a service to an eligible population
  - Job seeking support
  - Access to micro-credit
  - CCT for schooling
  - etc.
- Purpose of econometric impact evaluation methods: define and measure the **ex-post impact** of these programs:
- This is just one stage in evaluation engineering: estimation of needs - estimation of programme's logical framework – process evaluation – impact evaluation – cost/benefit analyses



## Types and Uses of Evaluation

In order to plan the evaluation in accord with the most appropriate evaluation method, it is necessary to understand the difference between evaluation types. There are a variety of evaluation designs, and the type of evaluation should match the development level of the program or program activity appropriately. The program stage and scope will determine the level of effort and the methods to be used.

Evaluation Types	When to use	What it shows	Why it is useful
Formative Evaluation Evaluability Assessment Needs Assessment	<ul style="list-style-type: none"><li>• During the development of a new program.</li><li>• When an existing program is being modified or is being used in a new setting or with a new population.</li></ul>	<ul style="list-style-type: none"><li>• Whether the proposed program elements are likely to be needed, understood, and accepted by the population you want to reach.</li><li>• The extent to which an evaluation is possible, based on the goals and objectives.</li></ul>	<ul style="list-style-type: none"><li>• It allows for modifications to be made to the plan before full implementation begins.</li><li>• Maximizes the likelihood that the program will succeed.</li></ul>
Process Evaluation Program Monitoring	<ul style="list-style-type: none"><li>• As soon as program implementation begins.</li><li>• During operation of an existing program.</li></ul>	<ul style="list-style-type: none"><li>• How well the program is working.</li><li>• The extent to which the program is being implemented as designed.</li><li>• Whether the program is accessible and acceptable to its target population.</li></ul>	<ul style="list-style-type: none"><li>• Provides an early warning for any problems that may occur.</li><li>• Allows programs to monitor how well their program plans and activities are working.</li></ul>
Outcome Evaluation Objectives-Based Evaluation	<ul style="list-style-type: none"><li>• After the program has made contact with at least one person or group in the target population.</li></ul>	<ul style="list-style-type: none"><li>• The degree to which the program is having an effect on the target population's behaviors.</li></ul>	<ul style="list-style-type: none"><li>• Tells whether the program is being effective in meeting its objectives.</li></ul>
Economic Evaluation: Cost Analysis, Cost-Effectiveness Evaluation, Cost-Benefit Analysis, Cost-Utility Analysis	<ul style="list-style-type: none"><li>• At the beginning of a program.</li><li>• During the operation of an existing program.</li></ul>	<ul style="list-style-type: none"><li>• What resources are being used in a program and their costs (direct and indirect) compared to outcomes.</li></ul>	<ul style="list-style-type: none"><li>• Provides program managers and funders a way to assess cost relative to effects. "How much bang for your buck."</li></ul>
Impact Evaluation	<ul style="list-style-type: none"><li>• During the operation of an existing program at appropriate intervals.</li><li>• At the end of a program.</li></ul>	<ul style="list-style-type: none"><li>• The degree to which the program meets its ultimate goal on an overall rate of STD transmission (how much has program X decreased the morbidity of an STD beyond the study population).</li></ul>	<ul style="list-style-type: none"><li>• Provides evidence for use in policy and funding decisions.</li></ul>

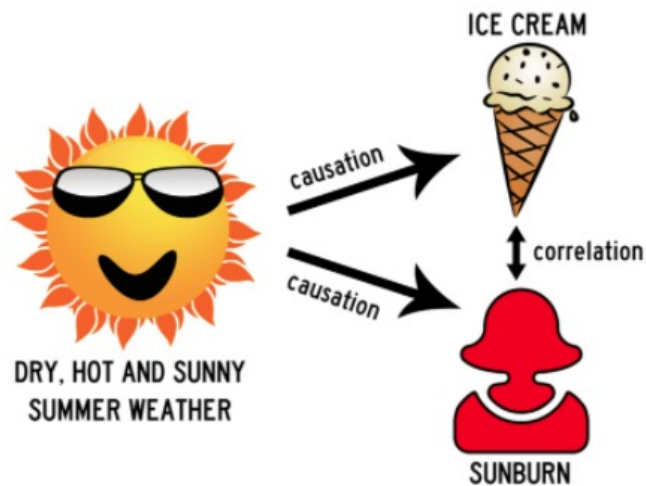


# Reminders

- **The counterfactual problem**
  - Effect of smaller class sizes
    - What is the effect of being in a class of 20 instead of 30?
    - Can results attained in 'large' and 'small' classes be compared?
  - How can we know whether the unemployed benefit from support programmes?
  - Where would a firm have located had it not benefited from tax breaks for locating in an enterprise zone?

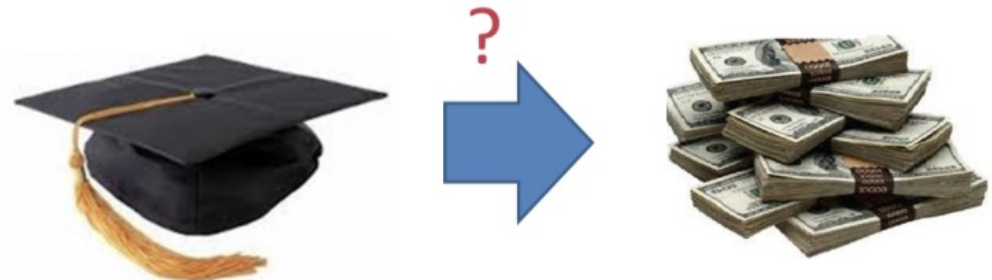
# Reminders

- **Difficulties of ex-post evaluation**
  - Correlation and causality



Cause

Effect



# Reminders

- **Difficulties of ex-post evaluation**

- Correlation and causality
- Controlling for selection effects
  - Correlation (programme participation) \* (outcome variable)
  - Selection problems on observables (*overt bias*) and non-observables (*hidden bias*)!

→ **confounding**

- But also:
  - Problem of incidence
  - Multiple effects
- **So, to properly evaluate a public policy or any kind of program, it is not enough just to observe changes in indicators describing the policy/program objectives.**

# Course Outline

- **Chapter 1 - Definition and framework of analysis – R GUILLAIN**
- **Chapter 2 - Evaluation of programmes and controlled experiments – R GUILLAIN**
- **Chapter 3 - Conditioning on observables: regression adjustment, weighting and matching methods – J Le GALLO**
- **Chapter 4 - Conditioning on unobservables – J Le GALLO**
  - Differences in differences
  - Instrumental variables
- **Chapter 5 - Regression discontinuity design – J Le GALLO**
- **Chapter 6 – Conclusion – J Le GALLO**
  - Internal and external validity
  - SUTVA

# Suggested Readings

- Abadie A., Cattaneo M.D. (2018) Econometric methods for program evaluation, *Annual Review of Economics*, 10, 465-503.
- CAE (2013) Evaluation des politiques publiques, February 2013
- Jatteau A. (2013) Les expérimentations aléatoires en économie, Repère La Découverte
- Givord P. (2010) Méthodes économétriques pour l'évaluation de politiques publiques, WP D3E G2010-08
- Imbens G., Wooldridge J. (2008) Recent developments in the econometrics of program evaluation, NBER WP 14251
- Yao et al. (2020) A survey on causal inference, mimeo

---

- Brumback, Babette A. (2022) *Fundamentals of causal inference: with R*. First edition. Texts in statistical science. Boca Raton: CRC Press.
- Cerulli G. (2015) Econometric evaluation of socio-economic programs. Theory and Applications, Springer-Verlag.
- Imbens G.W., Rubin D.B. (2015) Causal inference for statistics, social and biomedical sciences. An introduction, Cambridge University Press

# QUIZ 1

- Econometric impact evaluation methods are tools for:
  - *Anticipating the impact of a policy on its beneficiaries from a theoretical standpoint*
  - *Empirically estimating the causal impact of a policy on the situation of its beneficiaries*
  - *Qualitatively exploring why a policy has not had any impact on the situation of its beneficiaries*

# QUIZ 2

- Selection effects make impact evaluation difficult because:
  - *Beneficiaries have different characteristics from non-beneficiaries because they have been targeted*
  - *Beneficiaries have different characteristics from non-beneficiaries because they have opted to take part*
  - *Neither*
  - *Both*



# QUIZ 3

- The methods presented in the course seek to solve the central problem of impact evaluation which is:
  - *The increased probability of beneficiaries taking part*
  - *The elimination of selection bias*
  - *The identification of beneficiaries of the policy*