



# International Program in Survey and Data Science: An environment for training and cooperation

by Karin Frößinger, IPSDS Program Manager/Project Coordinator

# INTERNATIONAL PROGRAM IN SURVEY AND DATA SCIENCE

offered through the University of Mannheim and the Joint Program in Survey Methodology

(Universities of Maryland and Michigan, Westat)

BE PART OF IT



We are pleased to announce the launch of the International Program in Survey and Data Science (IPSDS). Fundamental changes in the nature of data, their availability, the way in which they are collected, integrated, and disseminated are a big challenge for all those working with designed data from surveys as well as organic data. IPSDS was developed in response to the increasing demand from researchers and practitioners for the appropriate methods and right tools to face these changes. We offer a multidisciplinary curriculum, world-class faculty, and a web-based learning environment that allows you to take courses from anywhere in the world.

# Frauke Kreuter

- ❖ Director and founder of International Program in Survey and Data Science, University of Mannheim, Germany
- ❖ Director of the Joint Program in Survey Methodology at the University of Maryland, USA
- ❖ Head of Statistical Methods Research Department, Institute for Employment Research, Germany
- ❖ Co-founder of the Coleridge Initiative
- ❖ Elected fellow of the American Statistical Association.
- ❖ Currently **Visiting Scholar** at the Simons Institute of the University of California, Berkeley, working on Data Privacy



# Project Coordinators/Funding



SPONSORED BY THE



Federal Ministry  
of Education  
and Research



The project on which this report is based was promoted with funds from the Federal Ministry of Education and Research under the reference number [16OH22064]. Responsibility for the contents of this publication lies with the author.

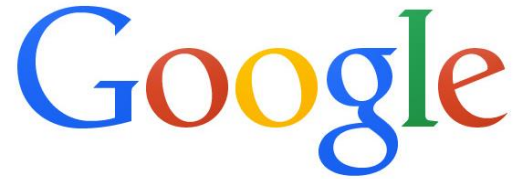




# Faculty from Partner Universities



# Faculty from the Industry



Institute for Employment  
Research

The Research Institute of the  
Federal Employment Agency

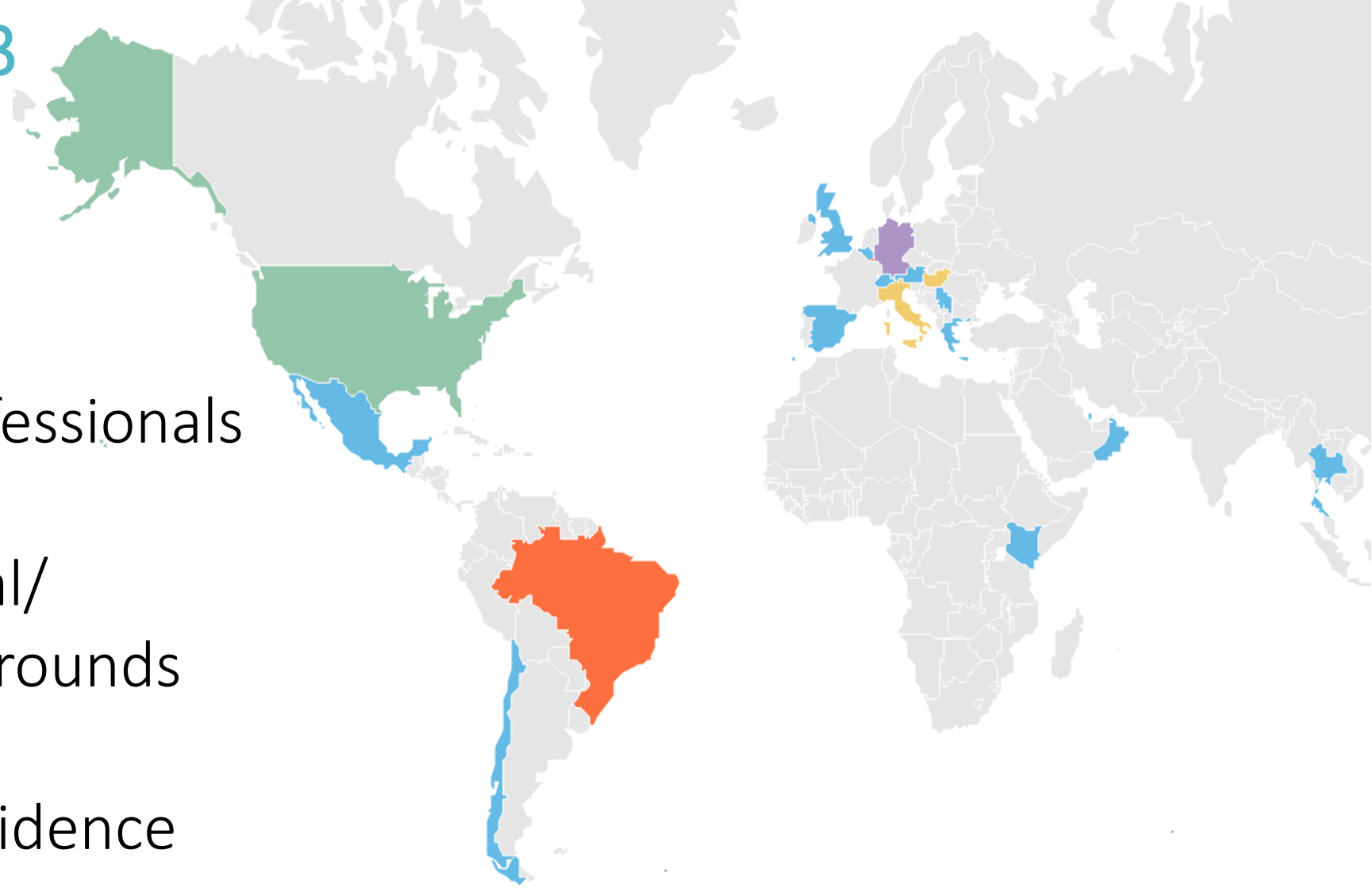




# IPSDS Participants

# IPSDS (Test) Cohorts 1-3

- 47 Participants  
(27 f + 20 m)
- 100% working professionals
- Diverse educational/  
professional backgrounds
- 19 countries of residence
- Age: median=31







# Curriculum

Data Output/Access

Data Analysis

Data Curation/Storage

Data Generating Process

Research Question

Learn how to communicate results and distribute and store your data

Learn a variety of analysis methods suited for different data types

Learn how to curate and manage data

Understand how to collect data yourself, and how data are generated through administrative and other processes.

Learn how to formulate your research goal and which data are best suited to achieve it.

Source: Usher in Japac et al 2015

# Problems we tried to solve – in brief

## Key elements:

- Multidisciplinary curriculum
- Modularized – adapt to prior skills and work needs
- Wide variety of options: from individual courses (4 to 12 weeks) or course sequences to a modular program
- Mix of faculty from academia and industry



# Program Structure

# Problems we tried to solve – in brief

## Key elements:

- Flexible web-based learning environment
- Live (video) interaction with faculty and students
- Face-to-face networking meetings

# Format

## Asynchronous

### Introduction – How to do survey research and data science

Introduce key terminology of survey research and discuss the steps of a data research project.

#### Objectives

After this session, you will be able to identify the terms survey research, data science, and data analysis. You will also be able to describe the key steps of a data research project and the different types of data.

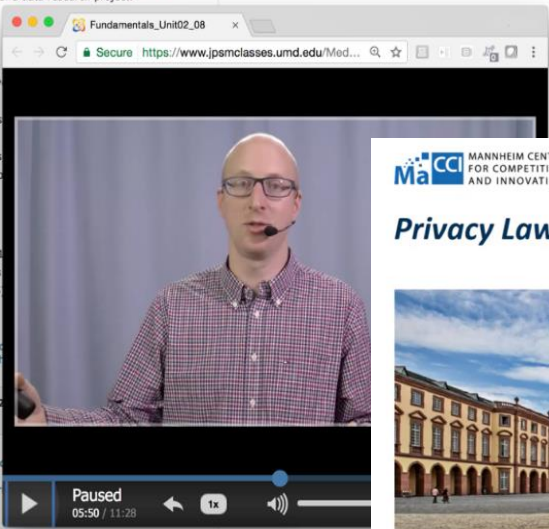
#### Readings

Chapters 109, Chapters 1015, Chapters 1015, Chapters 1015, R.D. (2015) below)

Assigned texts and reading to discuss the

Monday, 03/03/2025

After this session, you will find a better understanding of the assignment by Prof.



MANNHEIM CENTRE FOR COMPETITION AND INNOVATION

Prof. Dr. Thomas Fetzer, LL.M. (Vanderbilt)

UNIVERSITY OF MANNHEIM

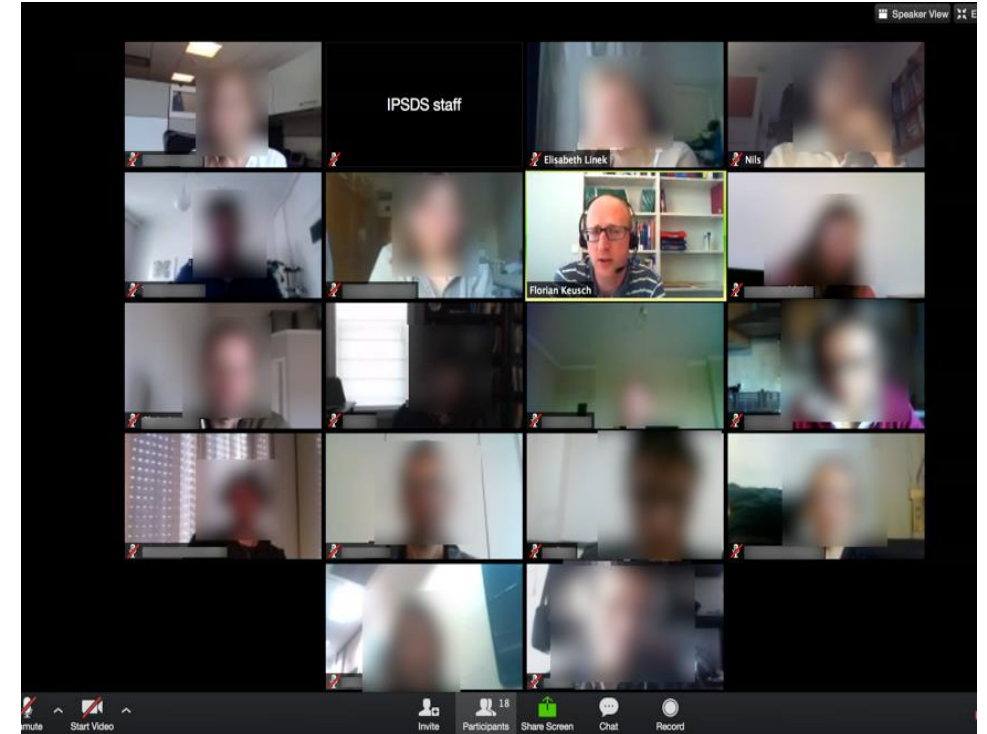
Privacy Law



- Pre-recorded lectures
- Required readings and assignments
- Discussion forums



## Synchronous



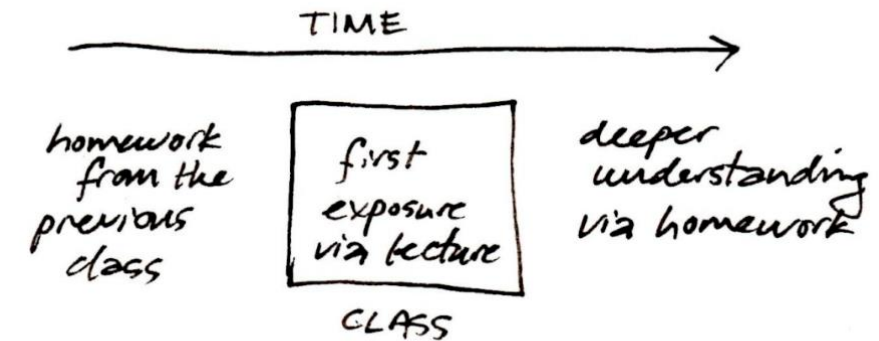
- Small virtual classrooms
- Weekly discussions led by the instructor



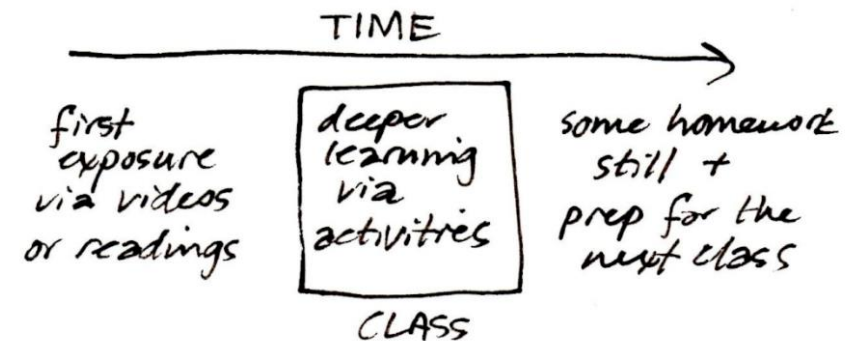
# Courses

## Advantages of Flipped Teaching

- more opportunities for interactivity in (online) discussions
- more personalized guidance
- more time for feedback
- deeper learning



Traditional classroom



Flipped classroom

Source: Derek Bruff at <https://goo.gl/Nrt1xA>

# Videos

- Lectures, interviews and discussions with experts, demonstrations of specific techniques and software tools
- Lectures are broken into easily-digestible sessions
- Students engage with the material at their own pace: e.g., replay parts that cover difficult concepts



**Question with visual aids**

VIII. Neighborhood Networks

INTERVIEWER SHOW CARD D TO RESPONDENT.

Now I would like to ask you some questions about the people who live in this neighborhood. For the first set of questions, please use the options on CARD D when giving your answers.

INTERVIEWER: WRITE IN THE RATING NUMBER THAT CORRESPONDS TO THE RESPONDENT'S ANSWER.

NONE	1-2	SEVERAL	MANY	ALMOST EVERYONE
1	2	3	4	5

\_\_\_ 1. First, how many people in your neighborhood would you recognize?

RESIDENT SURVEY OF NEIGHBORHOOD CONDITIONS, <http://povertycenter.cwrn.edu>

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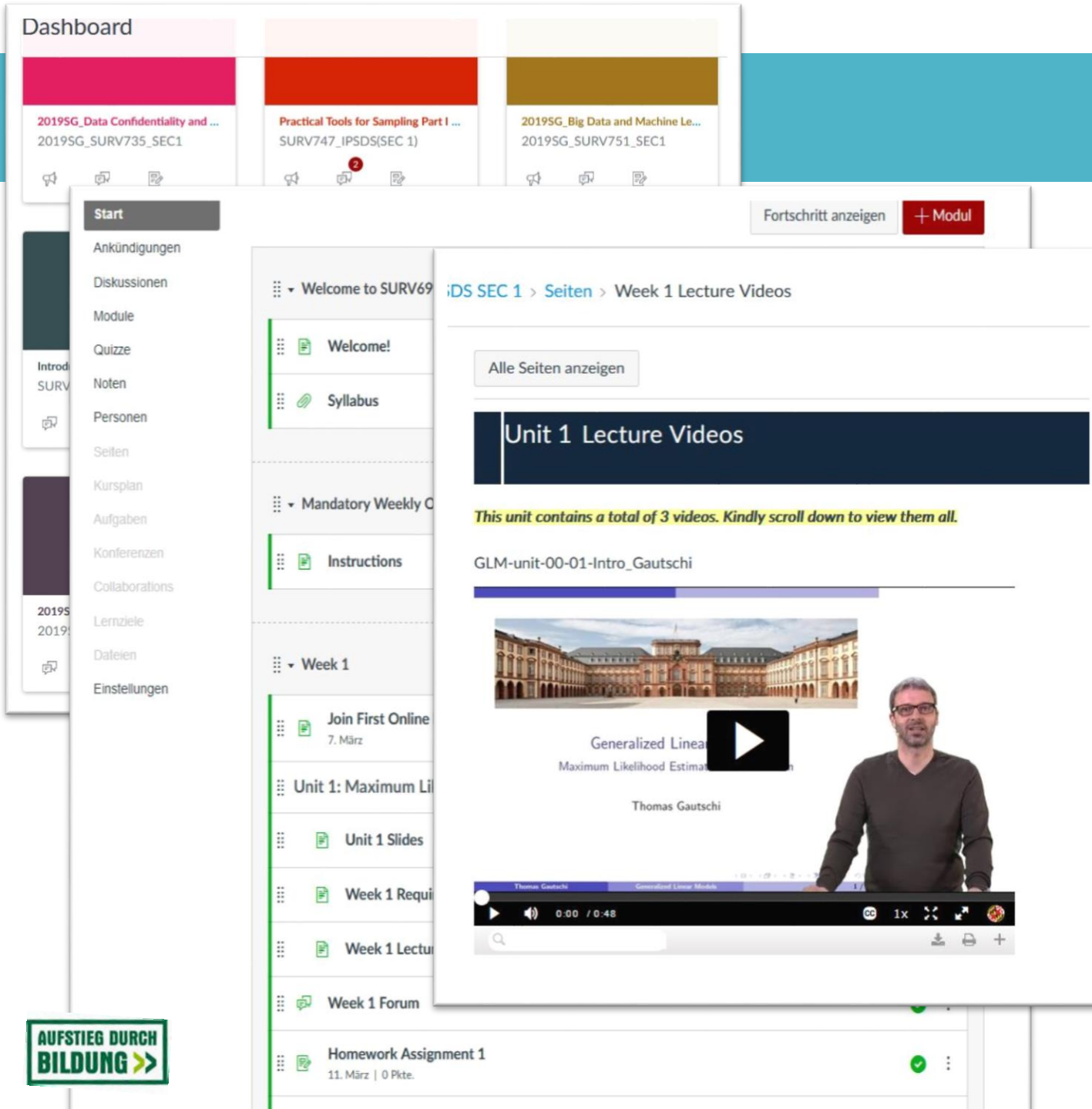
# Canvas

## Course description/General Information

Topics covered, syllabus, additional resources

## New units auto-display each week. Each unit includes:

- Readings (Note reference to book chapter, URLs, PDFs)
- Slides
- Lecture videos
- (Link to external resources)
- (Additional material)
- Zoom link for online meeting + date and time
- Discussion forum for submitting questions/student-instructor interaction
- Homework
  - Quiz (autograded)
  - Assignment submission
  - Solutions

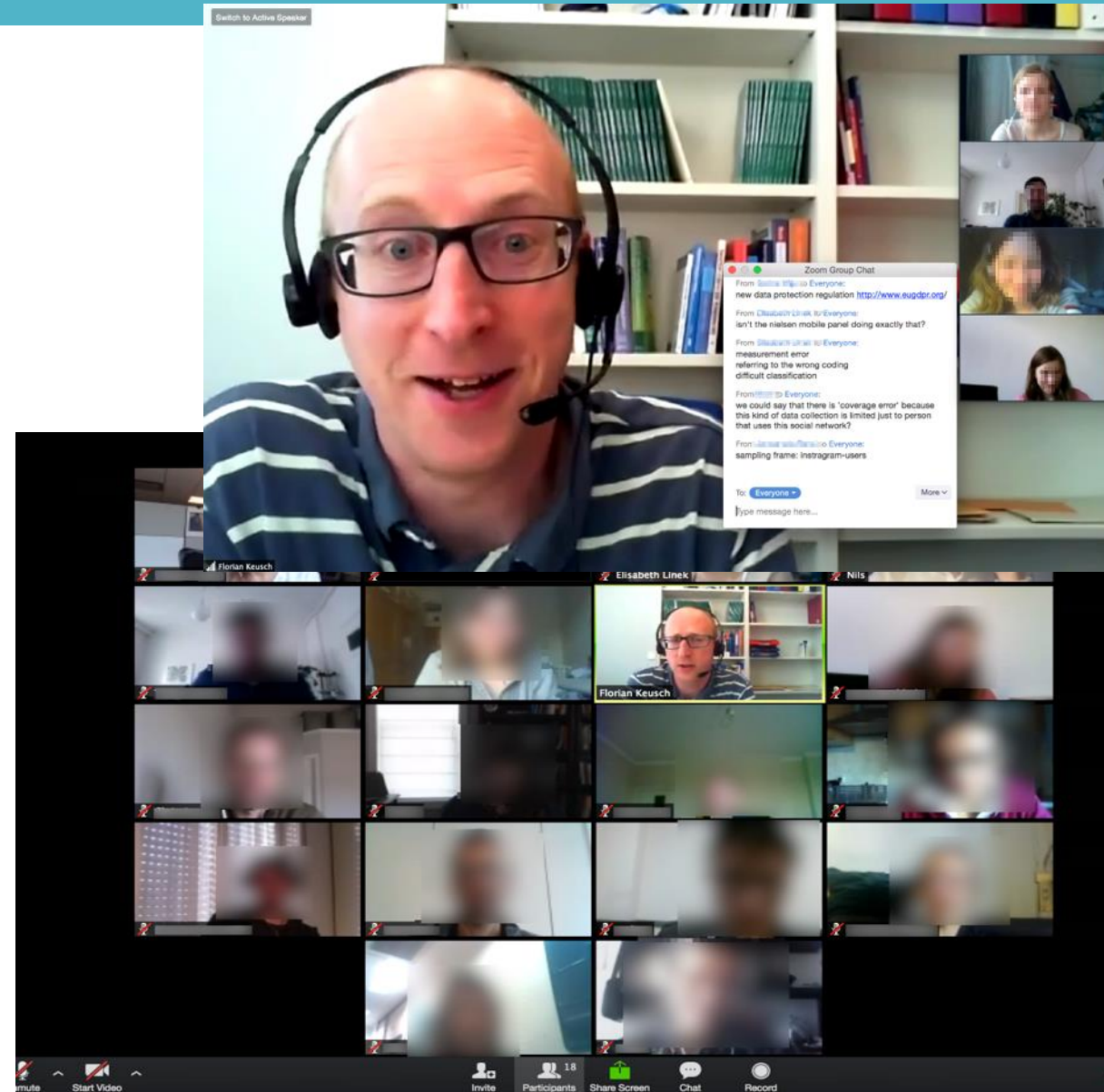


The screenshot displays the Canvas LMS interface. At the top, there's a 'Dashboard' with three course cards: '2019SG\_Data Confidentiality and ...', 'Practical Tools for Sampling Part I ...', and '2019SG\_Big Data and Machine Le...'. Below this is a navigation menu with options like 'Start', 'Ankündigungen', 'Diskussionen', 'Module', 'Quizzes', 'Noten', 'Personen', 'Seiten', 'Kursplan', 'Aufgaben', 'Konferenzen', 'Collaborations', 'Lernziele', 'Dateien', and 'Einstellungen'. The main content area shows the course page for 'SURV69 IDS SEC 1' with a breadcrumb trail 'Seiten > Week 1 Lecture Videos'. A 'Fortschritt anzeigen' button and a '+ Modul' button are visible. The page content includes a 'Welcome!' message, a 'Syllabus' link, and a section for 'Mandatory Weekly C'. The 'Unit 1 Lecture Videos' section features a video player for 'Generalized Linear Models' by Thomas Gautschi. The video player shows a play button and a progress bar. Below the video, there's a 'Homework Assignment 1' section with a green checkmark icon.



# Virtual Classrooms

- Weekly mandatory online meetings (50 minutes)
- Discuss students' questions
- Review problems with assignments
- Collaborative problem solving
- Motivate students to persist in the course
- Break out rooms, (private and public) chats, polls ...



# Onsite/Online

## Onsite (Connect@IPSDS)



AUFSTIEG DURCH  
BILDUNG >>

## Online

2. Model Eval\_Validation  
January 12, 2016 Mediasite Presenter

3. K-Means Clustering  
January 12, 2016 Mediasite Presenter

Homework Assignment 1  
data file for homework n  
Tasks for Homework Num

Quiz 2  
HW Number 1 Solutions

This is a .R file that can be opened using Notepad or other text editor (or Word tasks of HW 1.

Week 3

Windows Media Player

Machine Learning Methods/Techniques

- There are many different machine learning methods available
- Many are non-parametric in nature and while a functional form can be specified, it is generally not a natural byproduct of the method
- Wu et al. (2008) provide an overview of ten of the top machine learning methods (see <http://bit.ly/1liWTir>)

on and Regression Trees  
(n-Maximization)  
post and Random Forests).

Small Course Big





## May 31<sup>st</sup>-June 1<sup>st</sup>, 2019

- Day1: create a community within IPSDS students
- Day2: open to audience interested in data science

## Renowned speakers

- Roberto Rigobon (Professor at the MIT Sloan School of Management)
- Mine Cetinkaya-Rundel (Associate Professor at Duke University, Professional Educator at RStudio)
- Hilary Parker (Data Scientist at Stitch Fix)



# Lessons Learning

# Lessons Learning

- Modular approach much appreciated by working professionals
- Feasibility of combining studies with work and family
- Biggest challenge: workload management
- Balancing flexibility and consistency
- Workplace orientation

# Future Scenarios

- Future Skill University
- Networked University
- My University
- Lifelong Learning University



Sources:

- Ulf-D. Ehlers, Sarah A. Kellermann (2019): Future Skills – The Future of Learning and Higher Education. Results of the International Future Skills Delphi Survey. Karlsruhe
- Wissenschaftsrat (2019): Empfehlungen zu hochschulischer Weiterbildung als Teil lebenslangen Lernens.



YOUR Questions

Thank you for your attention!

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