Intro to Quantitative methods

...and it's applications

Chuvakin Sergey

«School of Advanced Studies»

October 11, 2020

Welcome

- **About me:** Data Scientist in Arcaidia inc. (SPb), mostly worked with pharma companies. Former sociologist with focus on criminology.
- **My interests:** Business and Research Analytics, Natural Language Processing, Python, Digital Humanities, Robotics
- **Feel free to contact me:**
  - Email: sergeychuvakin1@mail.ru
  - telegram: @sergechuvakin
- **Office hours:** TBA

Qauntitative methods

Qauntitative methods – is a set of rules and algorithmes to reach stable, sustained results of reasearch.
Research – common term for defining procedure of finding answer on question.

Qauntitative methods

After completing this course, you will be able:

- to read and understand (sic!) quantitative research papers
- to speak the language of data fluently
- move further to Data Science and Machine Learning
- able to understand and explain to others such words as "variable", "distribution", "regression", "p-value", etc.
- able to choose statistical methods appropriate to your research problem
- use R for your programming needs

Course Structure

- Week 1 - Intro *
- Week 2 - R Language *
- Week 3 - Key statistical concepts *
- Week 4 - Data Management *
- Week 5 - Basic statistical tests **
- Week 6 - Regression *
- Week 7 - Regression advanced
- Week 8 - Methodology of Quantitative research * (**)

* – Quizzes
** – Home Assignment

Prerequisites

- Math (at least school level)
- Calculus (basics) (recap today)
- Linear Algebra (basics) (recap today)
- Computer literacy

Major (approximate)

Assignment or Task	Due date/s	Percent
Recap of math and Probability	22 November	8
R language practice	29 November	8
Data management practice	13 December	8
Regression practice	27 December	8
1 Home assignment	11 January	30
Design research	20 January	8
2 Home assignment	20 January	30

* it's not the end version, small changes can be (TBA)

Minor (approximate)

Assignment or Task	Due date/s	Percent
Recap of math and Probability	22 November	15
R language practice	29 November	15
Data management practice	13 December	15
Regression practice	27 December	15
1 Home assignment	11 January	25
Design research	20 January	15

* it's not the end version, small changes can be (TBA)

Reading

- Field A., J. Miles, and Z. Field. 2012.Discovering StatisticsUsing R. SAGE publications ltd
- Wickham, H., and Grolemund, G. 2016.R for data science.O'Reilly Media

Sofware

- R
- Rstudio
- GitHub

Intro

- Course introduction
- Calculus and linear algenbra recap
- quizzes

R Language

R – general purpose programming language. We will practice:

- writing a good readable code
- use basic built-in functions
- modify and create data tables
- prepare data to analysis
- use statstistical functions
- run models and diagnostics
- vizulize data and models
- use RMarkdown extension
- a lot of other activities