DATA DESIGN & UNIVERSITY

DATA-DRIVEN DECISION MAKING AT THE UNIVERSITY OF WARSAW

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Data at the University of Warsaw

- Data at the University:
  - 44,4K students
  - 7,2K academics & administrative employees
  - 3 campuses: Central (55K m2), Ochota, Slużew

- Process:
  - Collect and merge data (from spreadsheets to databases)
  - Analyse
  - Design (visualise)
  - Instead of reports interactive software
    - update automatically
    - intuitive
    - transparent
Aim of the program

- Identify
  - changes at the University and at its departments
  - the capacity and usage of lecture halls and classrooms
  - the determinants of costs and differences between new and old buildings
  - the perspectives of different users at the campus
Ochota Campus
Data Management
The University is planning new investments...

...but it is a challenge to identify the real needs of the Campus
People

1,9K employees 5,2K students

Costs of infrastructure maintenance (costs for m2 of usable area)
Outsourcing of teaching – Maths and Polish

STEM leads in acquiring research grants

National Projects (value, 2015)

International Projects (value, 2015)
Structure and complementarity of classrooms
Sharing lecture halls between faculties at the Ochota Campus is uncommon

<table>
<thead>
<tr>
<th></th>
<th>Biologia</th>
<th>Chemia</th>
<th>Fizyka</th>
<th>Geologia</th>
<th>MIM</th>
<th>Geografia</th>
<th>MSOŚ</th>
<th>UW</th>
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<td>0%</td>
<td>94%</td>
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</table>
BI with USOS data
IT system for the management of higher studies.

The main areas of implementation:

- didactic offer of Universities (defining subjects, classes, programs, dates of classes etc)
- helping students to manage their studies (classes, grades, protocols etc)
- matriculation of students printing and managing
- Electronic Student ID
- Exchange of students surveys
o Created in 2000 at the University of Warsaw
o 53 universities (January 2017)
o 49% of public university students have access to USOS (2015)
o Users: students, academic staff, university administration
The goal:

- Improve sharing of classrooms and lecture halls between faculties
- Identify the possibilities for optimalisation
- Estimate required space
- Analysing
  - academic staff,
  - students,
  - faculties,
  - study programmes
N. of unique classes: 2,093,006

N. of rows (in file describing room use in time): 239,120

N. of classes (in analysed years): 19,823

N. Cells (for room use in time): 4,304,160

N. Data points (Cells) for classes: 123,118
Open source software tools

- Python
- Pandas
- Leaflet
- Matplotlib

\[ y_{it} = \beta' x_{it} + \mu_i + \epsilon_{it} \]
All buildings with University classes (excluding buildings used only for sports)
Classes of the Faculty of Chemistry at the Ochota Campus

Blue – more classes
Grey – fewer classes
Red – no classes
Classes of the Faculty of Philosophy and Sociology at the Central Campus

Blue – more classes
Grey – fewer classes
Red – no classes
Rooms in buildings by number of seats

1102 – Faculty of Polish Studies
1221 – Tyszkiewicz-Potocki Palace
3109 – Faculty of Biology
### Estimation of required space and rooms

#### Estymacja potrzebnej powierzchni efektywnej

<table>
<thead>
<tr>
<th>Wydział</th>
<th>Pow. dydaktyczna</th>
<th>Pow. administracyjna</th>
<th>Pow. nauczycielska</th>
<th>Łączna oczekiwana powierzchnia efektywna</th>
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#### Potrzebnych sal przy pełnym wykorzystaniu

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</table>
Massive data collection and visualisation

Faculty of Psychology
Recruitment by form of study

Faculty of Economic Sciences
Recruitment by form of study
Capacity of buildings for didactics: how efficiently used?

- **1120, Lato: 20 - 40**
- **1120, Zima: 20 - 40**
- **1342, Lato: 20 - 40**
- **1342, Zima: 20 - 40**
Eat. Sleep. Data

....also at the University
Thank you!

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