Big data for policy
from data analytics to evidence-informed policy

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Big data for evidence-informed policy making

explored the opportunities that innovative data-driven approaches offer for evidence-informed policy making

Data analytics (theory-based, indicator-based, using statistics, econometrics, modelling, etc.)

Policymaking
- Agenda and priority setting
- Policy options
- Policy design
- Ex ante evaluation and impact assessment
- Implementation
- Monitoring
- Ex post evaluation and impact assessment

Data collection

Visualisation
Inventory of relevant operational initiatives (58)

- Status of the initiative: pilot, demonstrator, implementation
- Type of responsible authority: department, agency, PPP, etc.
- Policy area(s) addressed by the data for policy initiative
- (Expected) use of the data in the policy cycle
- Data sources, variety, volume, velocity
- Data format, data interoperability and data linking
- Data veracity: un/verified, in/complete, in/consistent
- Level of openness of data
- Data analysis methodologies
- Data analytics tools and platforms

Explorative study, non-representative sample
Examples related to environmental policy

- Digital Delta in the Netherlands: Public Private Partnership (PPP) on water policy, using sensors, geodata and administrative data

- Canadian Geospatial Data Infrastructure (CGDI). Satellite, administrative, sensor and large-scale survey data
Examples related to research and innovation

- Data about R&I policies and impact: online, interactive country reports and cross-country thematic reports

- STAR METRICS repository of datasets and tools to assess the impact of US federal R&D investments

- Data on R&I projects, public procurement, patents, trademarks, publications, websites of ICT companies (e.g. employment), blogs/news sites, job portals

Big data for the evaluation of R&D grants in the ICT sector (Spain)
Social policy, education, transport and other policy areas

- Free software for open-source micro-simulation of the tax-benefit system in France. Users can calculate tax implications for specific social groups.

- Learners control their own education data (from various educational and administrative institutions) and the full dataset allows for analysis of education trends, skills gaps, etc.

- Vehicle detection loops and mobile phone data to monitor and forecast traffic in the Netherlands.
Expected use of data in policy cycle

- Foresight and agenda setting: 18
- Monitoring and interim evaluation: 12
- Problem analysis: 11
- Policy implementation: 7
- Identification and design of policy options: 8
- Ex-post evaluation and impact assessment: 1
- Other: 1

n = 58
Data sources

- Administrative data
- Statistical offices
- Sensor-based data
- (other) Large-scale surveys
- Commercial/traded data
- Social media data
- Small-scale surveys

Type of data source closely linked to openness of data: ‘half the data open, half the data closed’

58 initiatives
111 data sources
Data linking
Type of data analysis

- Descriptive statistics: 43
- Trend analysis: 13
- Other: 12
- Profiling: 10
- Text analytics: 8
- Predictive analytics: 7
- Sentiment mining: 6
- Benchmarking: 5
- Agent-based modelling: 2

n = 58
Main conclusions of the study

• Policy for data, e.g. privacy, ownership, standardisation
• Passing the top of the hype cycle: risk of underestimation of impact
• Transparency, accuracy, inclusion, accountability (no black boxing)
• Skills for developing and interpreting data-driven approaches
• Relevant data or readily available data? Intervention logic!
• Policy-based evidence: lies, statistics and big data
• Dual learning: policy experiment + big data experiment
Example of one of our most recent projects: Estimating the level of servitisation through web scraping

- What percentage of firms web-scraped offer product-service combinations as expressed on their websites?
- Using the software Dandelion API (semantic text analysis as a service)
Thank you

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