

DATA_HUB

Team members:

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BUSINESS CASE

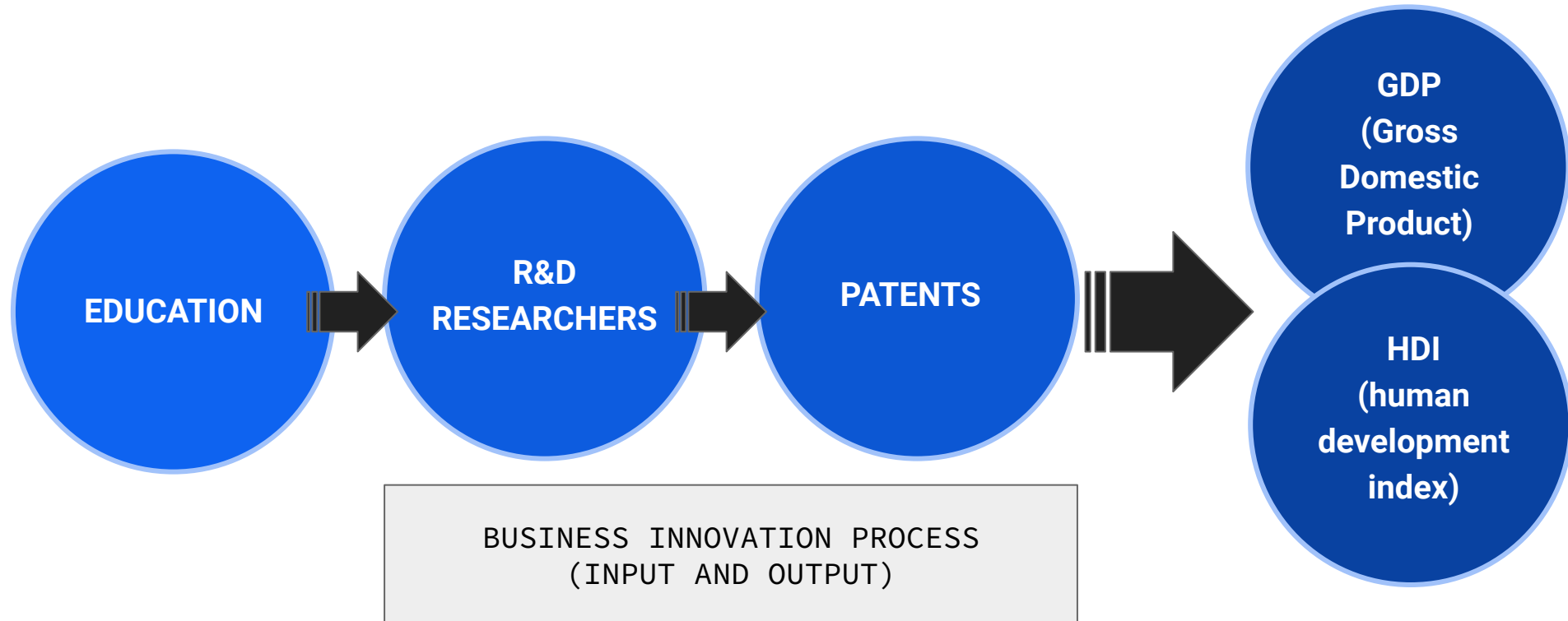
PROJECT OVERVIEW

- Startup that offers services like data collection and data analysis.
- Our main customers are researchers, policy makers, students and organizations.
- Public-private partnerships, international collaborations, and government incentives can accelerate R&D investment.
- We are part of the actors/intermediaries that contribute to creates positive externalities that are of key importance in the innovation process.
- We want to be the bridge between the networks and institutions that participate in the Global Innovation Systems (GIS).

CLIENT PERSONA

- Our customer asked us to collect, clean and analyse information about innovation in the World.
- She works for a global organization and intends on pitching our data in an international conference. She wants to ensure that each country's attention and resources are directed towards investment in research and development.

INNOVATION PROCESS AND ITS RELATIONSHIP WITH ECONOMIC VARIABLES



INNOVATION VARIABLES

R&D intensity

Research and experimental development.

R&D statistics are among the most widely-used indicators to monitor the national innovation systems(NIS)

- R&D dataset.
- Gross domestic expenditure on R&D as a percentage of GDP.

Researchers

Professionals engaged in the conception or creation of new knowledge. They conduct research and improve or develop concepts, theories, models, techniques instrumentation, software or operational methods.

- R&D dataset.
- Researchers (in FTE) per million inhabitants.

ECONOMIC VARIABLES

Education

R&D requires advanced skills in STEM areas, which are nurtured by a strong education system. Countries that invest in education tend to have a larger, highly skilled talent pool, crucial for driving innovation.

- Education dataset.
- Public investment in education as a percentage of GDP.

GDP

Gross domestic product (GDP) is the standard measure of the value added created through the production of goods and services in a country during a certain period.

- GDP dataset.
- GDP.

HDI

Human Development Index

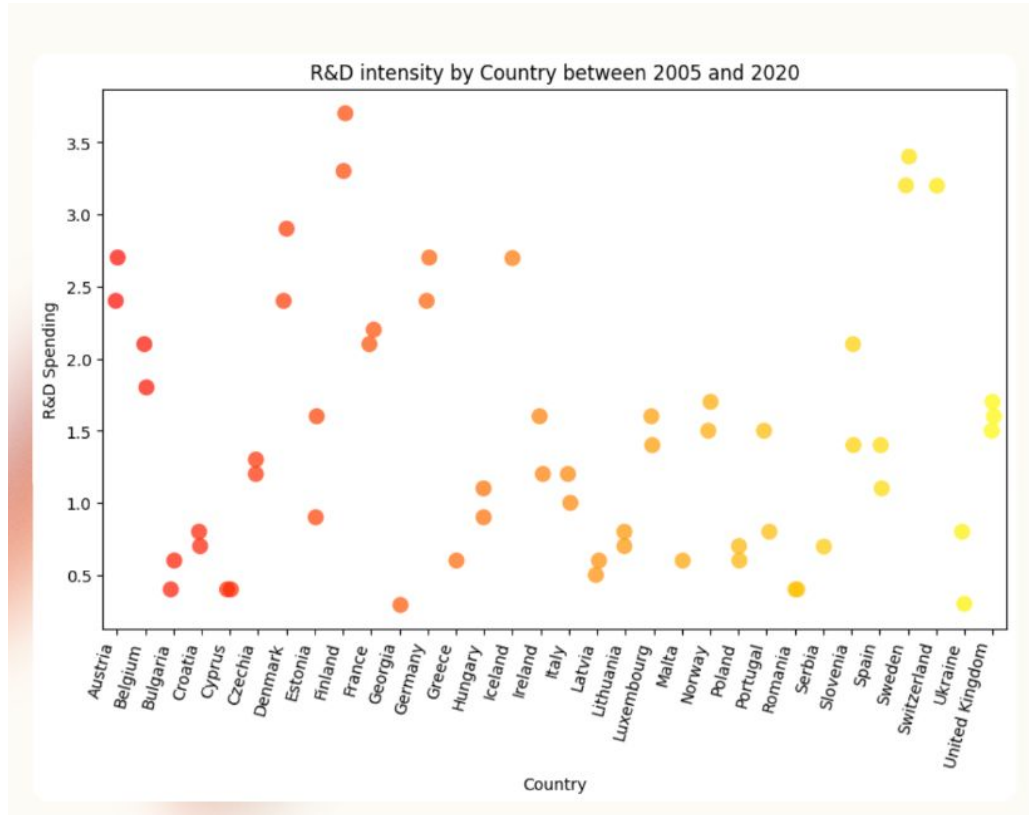
Investment in R&D contributes to the improvement of the HDI's key dimensions: health, education, and standard of living.

- HDI dataset.
- HDI.

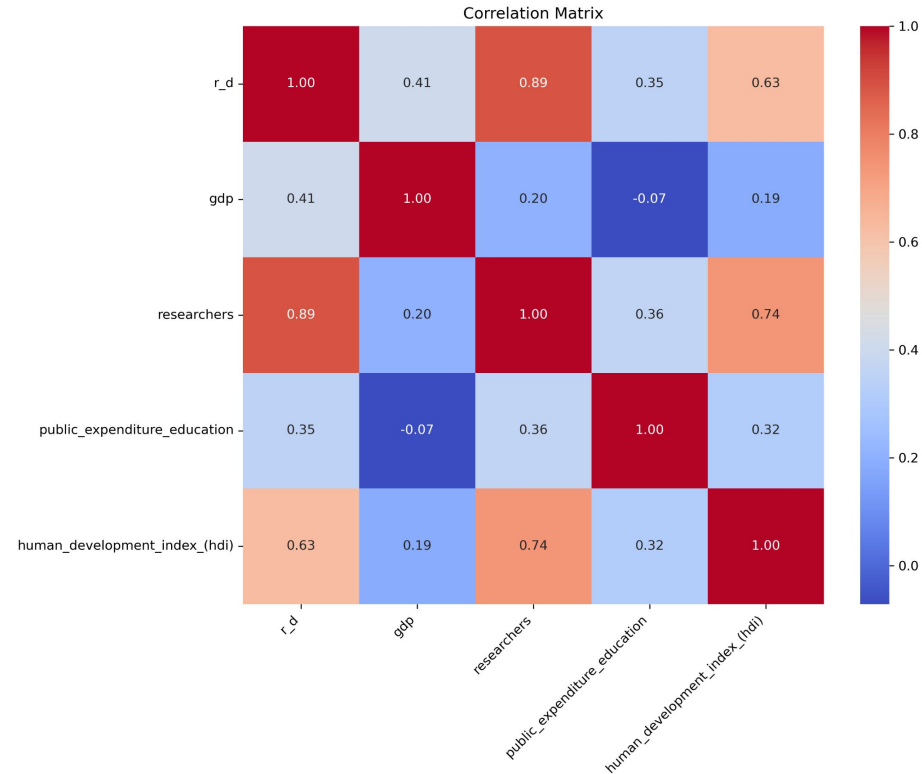
DATA WRANGLING AND CLEANING

- 6 different datasets were analysed during this project
- Standardizing is key
- Outlier detection
- Handling missing values
- Prioritizing relevant data
- Data transformation
- Finding missing information
- Training your patience

CLEAN DATA AND RESULTS

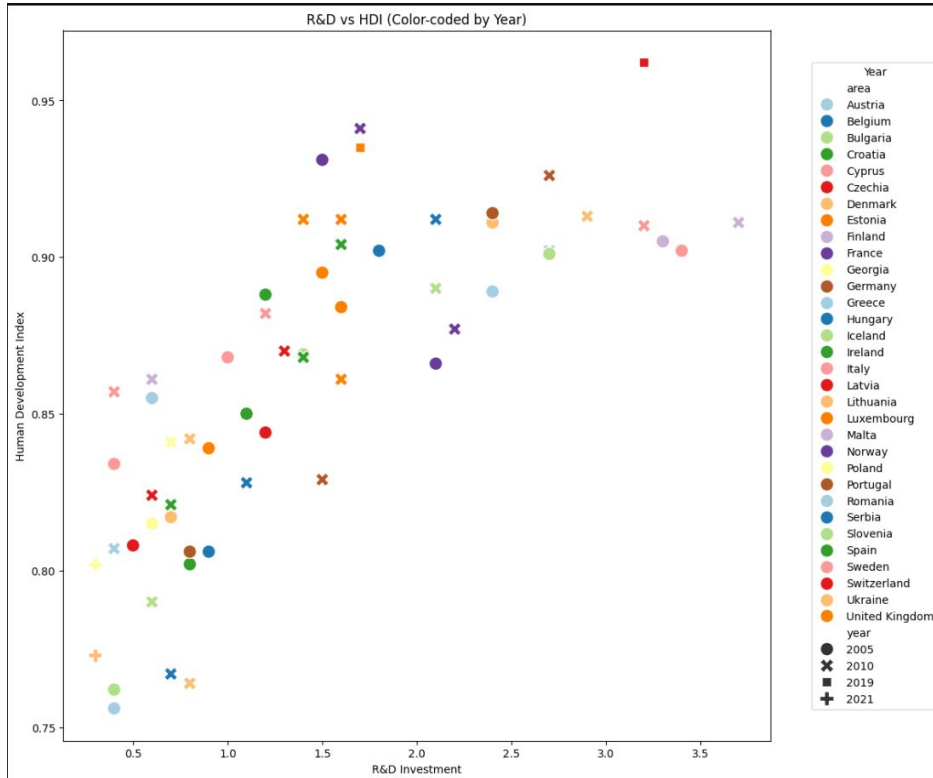


ANALYSIS AND CORRELATION



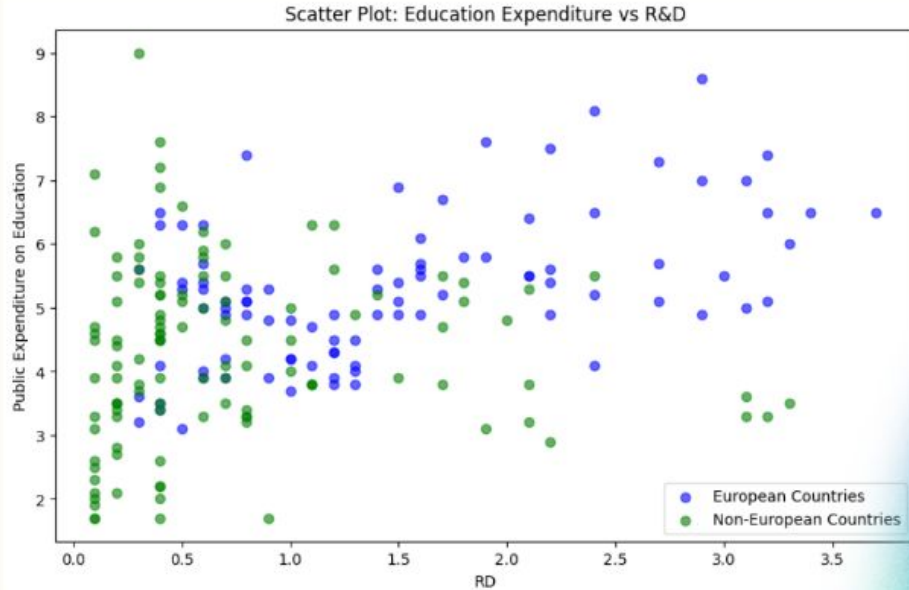
Best way to observe the correlations between each indicator

ANALYSIS AND CORRELATION



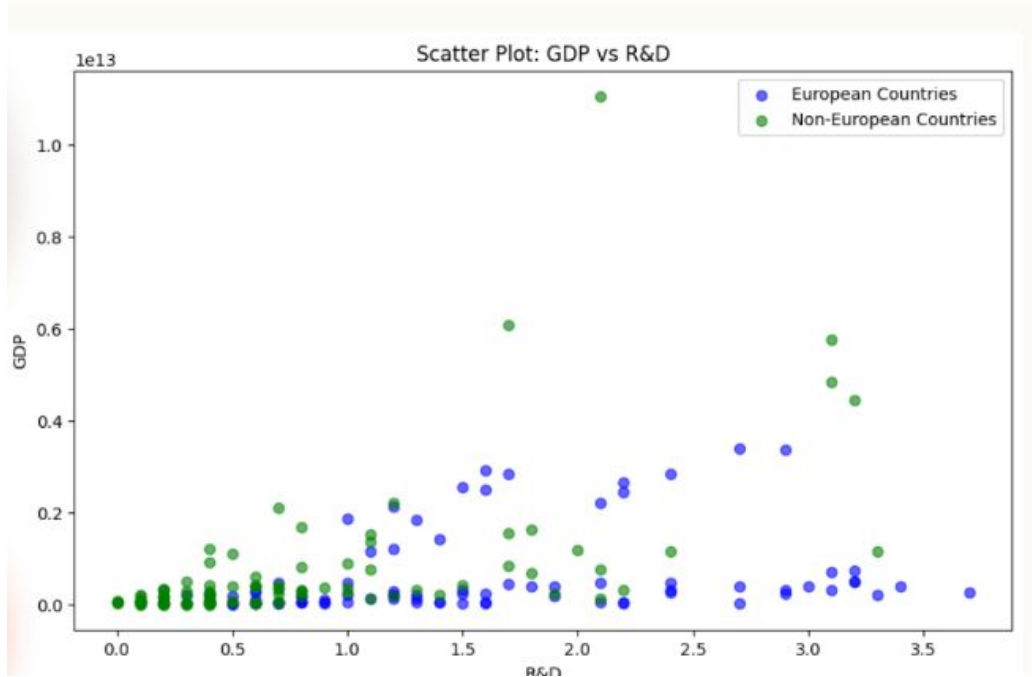
- Strong correlation with HDI

ANALYSIS AND CORRELATION



- Moderate correlation with education.

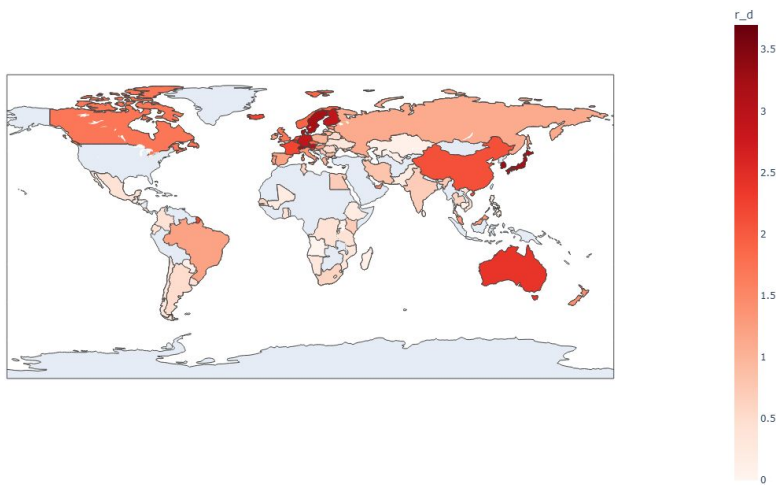
ANALYSIS AND CORRELATION



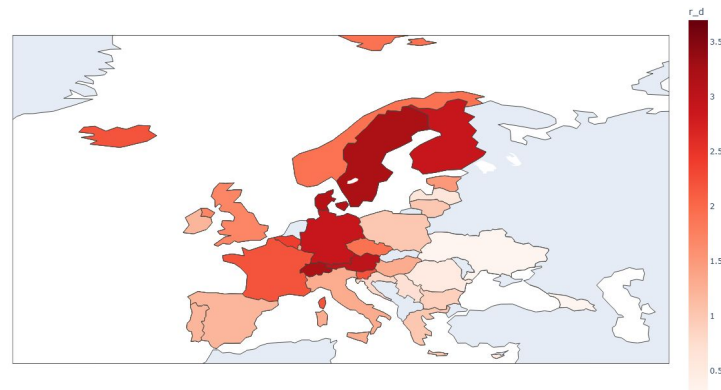
Weak correlation with
GDP

R&D INTENSITY IN THE WORLD VS EUROPE

World Map: Share of GDP Allocated to R&D



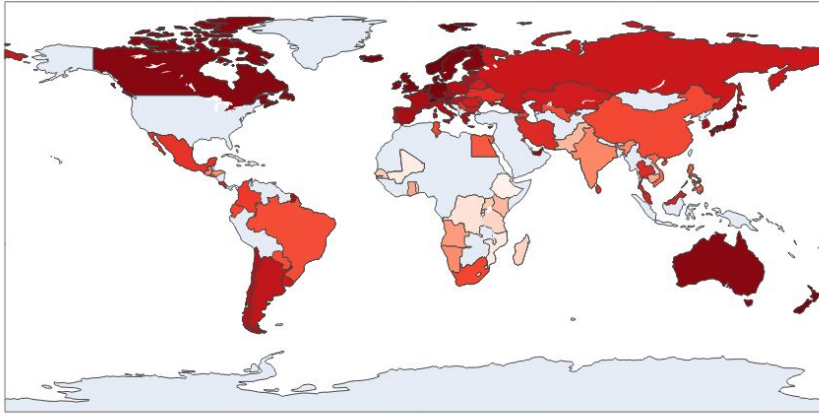
European Countries: Share of GDP Allocated to R&D



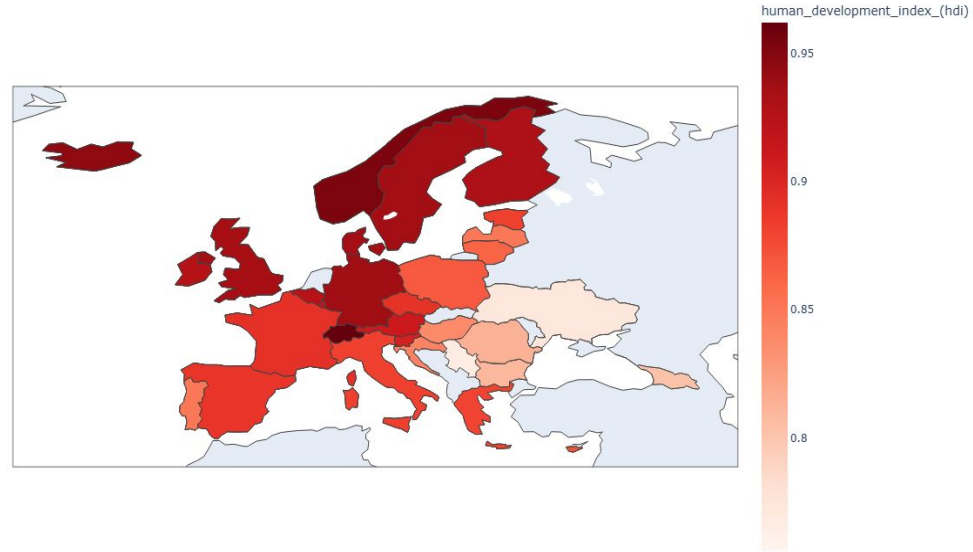
These maps also show a potential correlation between significant investment in R&D and economic growth.

HDI IN THE WORLD VS EUROPE

World Map: HDI



European Countries: HDI



As observed in the correlation matrix, higher research budgets are often associated with an increase in the Human Development Index.

CONCLUSIONS

- A global shift towards R&D investment can help close the development gap between nations, benefiting societies across the world and secures a prosperous future for generations to come.
- For policymakers, understanding this relationship is essential for crafting strategies that meet current and future economic needs.
- Specialized agencies (such as UNESCO) should continue to collect statistics with hard data to improve the quality in research.

CHALLENGES

- Environments:
 - Github
 - 4 of us had to re-install the environment
- Merging the datasets:
 - We merged 4 datasets
 - We missed a lot of values
- Interpreting and condensing the information:
 - Correlation between the variables
 - Find the correct way to represent the variables
 - Find the correct graphic for each variable

RESOURCES AND REFERENCES

- World Intellectual Property Organization (WIPO) statistics database:
<https://www.wipo.int/web/ip-statistics>
- Human Development Index:
<https://hdr.undp.org/data-center/human-development-index#/indicies/HDI>
- UN Data repository (maintained by the United Nations)
<https://data.un.org/>
- United Nations Educational, Scientific and Cultural Organization (UNESCO)
<https://uis.unesco.org/en/topic/research-and-development>
- The UNESCO Institute for Statistics (UIS) statistics database.
<https://data.uis.unesco.org/>
- Binz, C., Research Policy (2017), <http://dx.doi.org/10.1016/j.respol.2017.05.012>



USE DATA WITHIN

**YOU MUST
TURN UP**

THANK YOU = GRACIAS + MERCI + OBRIGADO + BEDANKT + VIELEN DANK