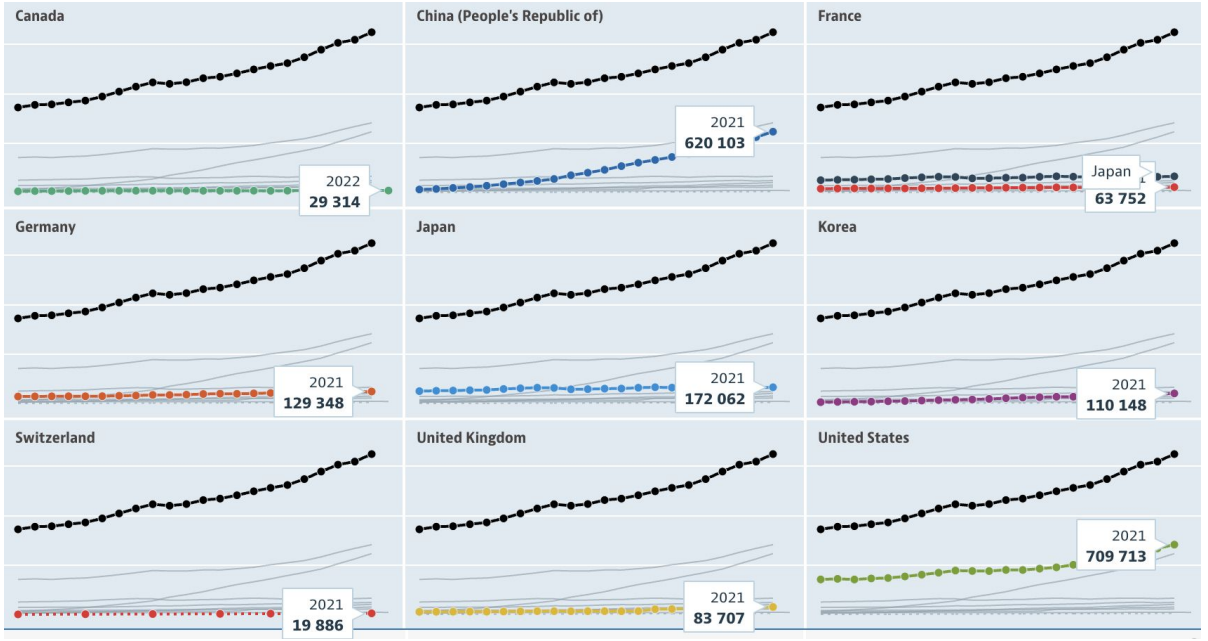
ML4Science Project Offering

Nowcasting R&D Expenditure

R&D Expenditure

- R&D as a pivotal macroeconomic variable driving societal and productivity growth.
- Highly scrutinized investment variable.



Unit: Million USD - OECD (2023), Gross domestic spending on R&D (indicator). doi: 10.1787/d8b068b4-en

Limitations of R&D Expenditure Measures

- Limitations of traditional archaic methods: slow, infrequent, and might not capture rapidly changing economic environment:
  - Survey-based.
  - Data timeliness and occasional gaps in data series (e.g. Switzerland).
  - The increasing demand for real-time economic insights (a year after financial crisis, OECD still hadn't have any indicator of impact on R&D, except for US companies quoted on stock market – from their annual financial report to SEC).

Nowcasting R&D Expenditure

- The Concept of Nowcasting:
  - Predicting the present, near future, or recent past.
  - Addressing the need for closer to real-time economic insights.
- Using different data sources, how well can we predict the R&D expenditures, and can we offer a series with finer granularity?
  - Various Models: ranging from statistical models to ML algorithms and NN.
  - Mixed frequency data sampling: Macro variables (OECD, IMF), higher frequency data sources – including search volumes (GT), etc.