AI and Machine Learning and SDG Monitoring

Ranjula Bali Swain

Södertörn University &
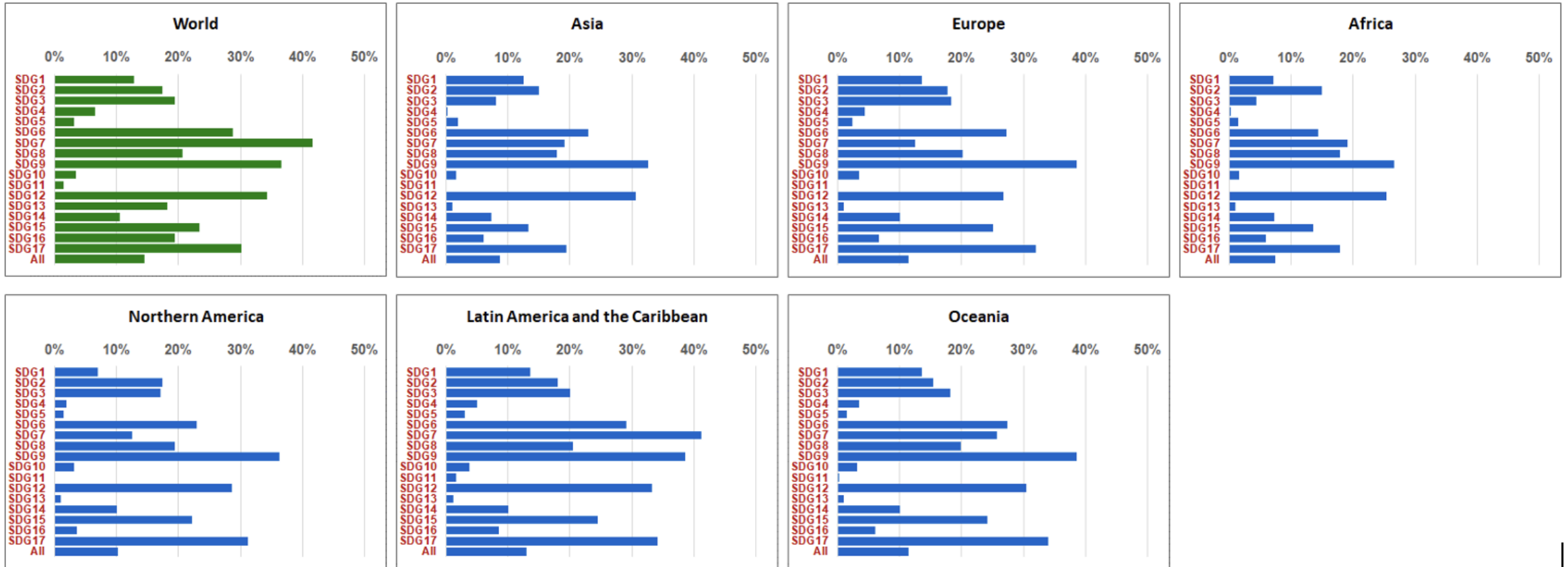CSR (SIR), Stockholm School of Economics, Sweden

AI /Machine Learning for SDGs

- AI can enable 134 of 169 SDGs across all goals, may inhibit 59

Our Objective:

- How to use AI/Machine Learning in monitoring SDGs

Lack of SDG Data

Source: Zhou, X., Moinuddin, M. and R. Bali Swain, Streamlining SDG indicators for effective monitoring: A strategic approach to key indicators, *forthcoming*.

AI and Machine Learning

Artificial Intelligence:

Machine learning

Natural language processing

Expert systems

Speech

Vision

Planning

Robotics

Machine Learning

- Supervised learning – regression (forecasting, estimating, predictions etc.)
- Unsupervised Learning– Dimensionality reduction (big data visualisation, meaningful compression, feature elicitation, structure discovery etc.)
- Reinforcement learning

Theory /models

Deep learning theory

Probabilistic programing

Automated machine learning

Data

Primary data

Secondary data

Alternative data: Big data (the 3 Vs: volume, velocity and variety)

Limitations of using Machine Learning

- **quality**, reproducibility and **transparency**

- algorithmic bias and lack of fairness not yet captured by existing monitoring

- posterior analysis required

Using AI/Machine Learning for SDG Monitoring

Track illegal fishing activities through pattern recognition
Track marine-life migration

Track stratospheric ozone depletion
Model climate change to predict disasters such as windstorms

Monitor consumption levels
Predict optimal production levels to reduce waste.

Mapping poverty with big data

Satellite images analytics & agro metereological Monitoring

Predict crop/annual disease etc.

Analyze health records to identify disease trends

Monitoring and tracking gender bias (gender inequality)

Smater water monitoring & management systems

Smart grid