



Application of Big Data in Official Statistics

National Statistical Office
Ministry of Statistics and Program Implementation
Government of India
11th October 2022

■ ■ ■
The better the question. The better the answer.
The better the world works.

Indian Official Statistical System

- ▶ Indian official statistical system is **decentralized**
 - ▶ horizontally across the Ministries/Departments
 - ▶ vertically across the states
- ▶ Data pertaining to different sectors are collected by different agencies from multiple sources at various disaggregated levels.
- ▶ NSO, Ministry of Statistics & Programme Implementation, Government of India is the **nodal ministry for planning integrated development of the statistical system** in the country
- ▶ NSO, India is also tasked with **laying down and maintaining norms and standards** in the field of statistics

Data Sources

- ▶ *Administrative Data*
- ▶ *Census*
- ▶ *Surveys*

Need for Big Data and its usage

- Tremendous scope for developing **new data products and processes** through **use of advanced ICT** to address primary concerns of NSOs
 - Quick and timely response to emerging information needs
 - Issues in addressing quality concerns while harnessing alternative sources of data
 - vulnerability to shocks
- In the constantly evolving data ecosystem, **integration of traditional and non-traditional data sources** is the need of the hour

NSO, India Initiatives On Big Data

Use of BIG data in compilation of GDP

- ▶ **Goods and Services Tax (GST) data** is used in compilation of quarterly GDP estimates
- ▶ **MCA21** used in preparing estimates of Non-Financial Private Corporations.

Monitoring of SDGs

- GIS used in compiling some of the SDG National Indicators covering areas like Forest, Wet Lands, Land Use.
- Indicators related to Water, Land Cover, Built up Area of cities are being explored for use of GIS

Engagement with International Bodies

- ▶ Acquired Membership of UN Committee of Experts on Big Data and Data Science for Official Statistics
- ▶ Technical Assistance from UNSD for Capacity Building of NSO, Officials in field of Big Data and Data Science for Official Statistics
- ▶ Member of the Data Integration Community of Practice (DI-CoP), UN ESCAP
- ▶ Active Participation in UNSC sessions held on Big Data and Non-traditional Sources for SDGs

Geospatial data benefitting Agriculture

- ▶ Geo-tagging of Rashtriya Krishi Vikas Yojana (RKVY) Assets using Geoportal Technologies
- ▶ Bhuvan Geo-Portal provides facility to visualize asset spread in the context of high resolution image backdrop with GIS analytical capabilities.
- ▶ National Hydrology Project (NHP) is engaged with:
 - ❖ Generation of geospatial products & services pertaining to water resources sector
 - ❖ Generation of high resolution digital elevation models
 - ❖ Development of flood early warning systems
 - ❖ Decision support system development for irrigation water management
 - ❖ Modelling & dissemination of hydrological products to support water resources management
- ▶ Yuktadhara portal to collect data through remote sensing which will benefit the agriculture sector for irrigation

Unifies District Information Systems for Education (U-DISE+)

- ▶ *Collects information from all schools imparting formal education from Classes 1 to XII.*
- ▶ *Collects information on school profile, physical infrastructure, teachers, enrolments, examination results, etc.*
- ▶ *Entire system is now online.*
- ▶ *Stakeholders can access and analyse information to make evidence-based decisions.*
- ▶ *Monitor and measure school performance in real-time.*
- ▶ *Cross-sectional analysis of data to study the relationship among various factors impacting the school's performance especially in enrolment.*



Unifies District Information Systems for Education (U-DISE+) Contd.

GIS Mapping

- ▶ *The exact geographic location of schools with latitude & longitude can be viewed.*
- ▶ *Base map services like street maps and high-resolution satellite images are available for a better understanding of the topography/ terrain of the school locations.*
- ▶ *School report cards giving vital information such as school category, management, infrastructure, enrolment, student-teacher ratio, student-classroom ratio, etc. will be linked to the photos of the schools on the map.*



Applications at Sub-National Level

Water Management

- *To provide equitable water supply*
- *To plug Revenue Losses*
- *To measure water quality on a real time basis*

Integration of Services and Platforms

- ▶ Some of the most useful examples on **Integration of services and platforms** include Aadhaar platform of Unique Identification Authority of India (UIDAI), Payment Gateways, Mobile Seva platform.



- ▶ **Linking of Aadhaar with DBT**

It enables Ministries/Departments under Centre and State governments to provide Direct Benefit Transfer to the beneficiaries using the Aadhaar Payment Bridge.



Official Statistical System – Digitised Data: Challenges

Access to Data



Data Availability Unstructured Formats



Connecting Data Silos



Missing Key Identifier



Duplication



Privacy and Confidentiality





THANK YOU



The better the question. The better the answer.
The better the world works.