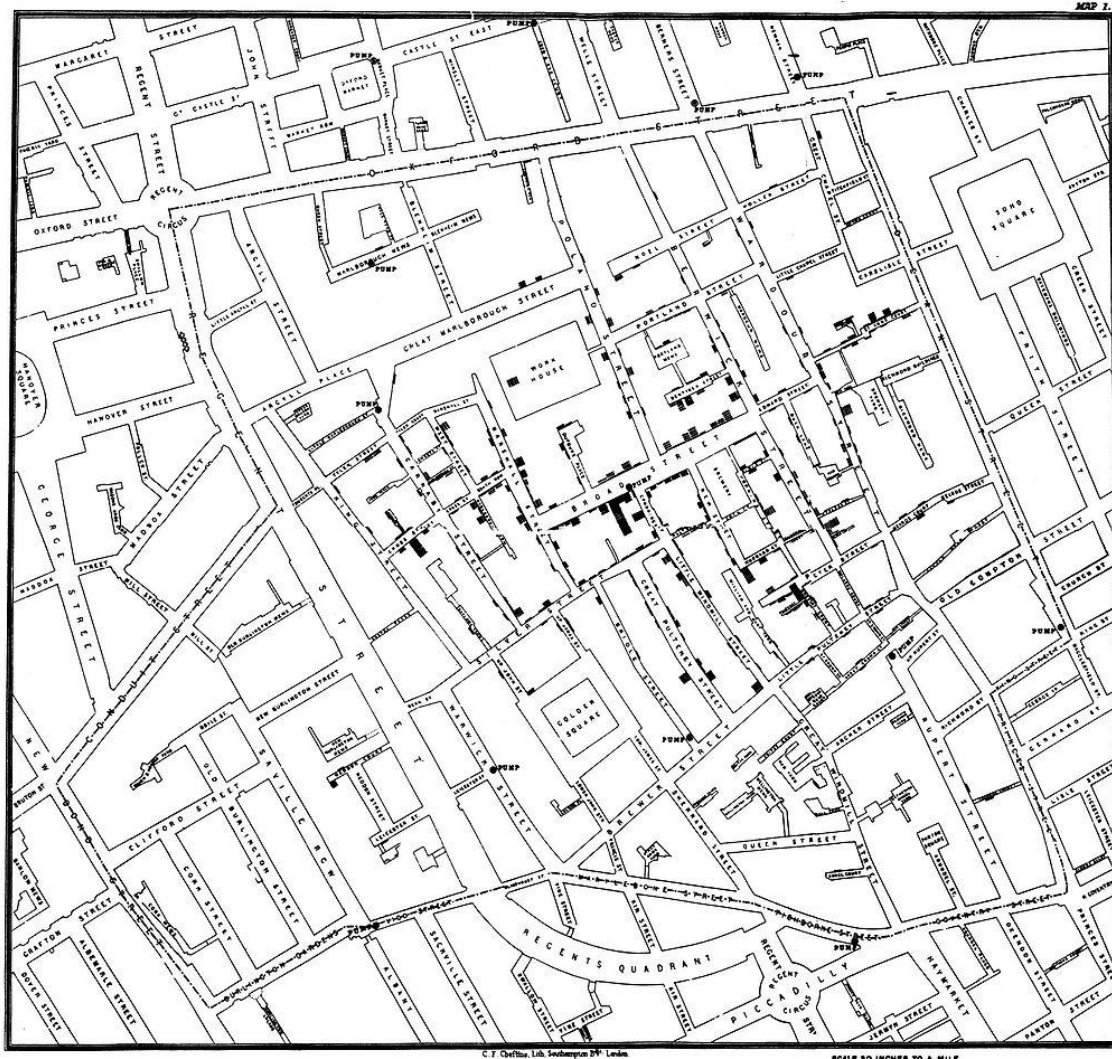


*Geo-statistics: building a partnership
between the geospatial and the statistical
community*

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Co-Chair of the United Nations High Level Group
for Partnership, Coordination and Capacity-Building for post-2015 monitoring*

Early geo-statistics: Dr. John Snow's map of clusters of cholera cases, London epidemic, 1854



Broadwick Street, showing the memorial pump associated with Dr. John Snow's discovery in 1854 that cholera is conveyed by water

From census cartography to geostatistics

- Census cartography since the 19th century
 - **data collection:** delineation of enumeration districts – enumerators' workload - for fieldwork organisation
 - **presentation** of data at various subnational (enumeration districts, administrative boundaries) and cross-country levels
- Gradual change in users' needs: recognition of the value of linking socio-economic information to location for understanding causal relationships, for evidence-based decision-making, for improving the lives of people
 - ⇒ Increasing demand for information linked to location about people, health, wellbeing, businesses, economic performance and potential, environment, risks, hazards, sustainable development etc.
- Availability of new and enhanced methodologies and infrastructure to produce information at very granular levels
- **Combining statistics with geospatial information creates unprecedented analytic potential**

Integrating statistical and geospatial information

UNSC - ABS global programme review - Background

- UN SG report: better integration of statistics with geospatial information is crucial for sound and evidence based decision-making
 - **Users of statistics:** Increasing demand for location linked information, to better understand issues at local levels and interrelationships between social, environmental and economic issues
 - **Users of geospatial information:** using socio-economic information adds value to the traditional focus of the geospatial community on natural and man-made environment
 - **Geospatial information can be the link that enables the integration of location based information derived from various disparate sources**
- ABS programme review on behalf of the UNSC to identify
 - the geospatial capabilities and activities of NSOs
 - existing cooperation between NSOs and national geospatial authorities
 - institutional arrangements for the collaboration between NSOs and geospatial agencies

Programme review – main findings

- Drivers of integrating geospatial information
 - policies with people in the focus (health, education, social welfare)
 - urban planning, land administration
 - emergency management, national security
 - increasing interest from researchers, businesses and the general public
- Spatial capabilities in NSOs
 - significant diversity in capabilities and wide range of levels of engagement
 - recognition of the need for georeferenced statistics
 - recognition of the benefits of location-linked statistics (e.g. more focused policies and responses, identifying patterns that are not easily seen without location based information)
- Institutional arrangements – strong predictors of the ability to integrate statistics and geospatial information
 - statistical office and mapping agency fully integrated
 - separate but closely linked
 - separate
- Geographic boundaries used by statisticians
 - currently mostly administrative boundaries, with some functional geographies and grid-based systems

Programme review – recommendations

- Establish an Expert Group with a view to developing a global framework, and propose guidelines to advance the implementation of the global framework (⇒ UN Expert Group on the integration of statistical and geospatial information)
- Convene an international conference on the integration of statistical and geospatial information (⇒ Global Forum 2014, 2016)
- Promote the creation of formalised cooperation linkages between national statistical and geospatial organisations

Agenda 2030: Sustainable Development Goals



Agenda 2030: SDG Goals and targets

- 17 goals and 169 targets
- the spatial dimension is relevant for monitoring the implementation of practically all goals and targets
- Indicator framework
 - global indicators (elaborated by the Inter-Agency and Expert Group on SDGs, adopted by the UN Statistical Commission in March 2016)
 - regional indicators
 - national indicators, including regional, spatial differences within countries
 - sectoral indicators

Global coordination efforts: UN Expert Group on the Integration of Statistical and Geospatial Information

- Since 2010, each session of the UN Statistical Commission has been discussing a report on geospatial information, more recently on the integration of statistical and geospatial information
- Reporting to both the UN Statistical Commission and the UN Committee of Experts on GGIM, the Expert Group on the integration of statistical and geospatial information
 - is a forum for coordination and dialogue among representatives of both statistical and geospatial communities with a view to **developing a global statistical-geospatial framework as a standard for the integration of statistical and geospatial information**
 - proposes workplans and guidelines **to advance the implementation of a global statistical-geospatial framework**
 - addresses various technical, institutional and information **policy issues** related to implementation of a global statistical-geospatial framework, especially issues related to confidentiality
 - pursues the implementation of the statistical-geospatial framework in the **2020 Round of Censuses, other censuses**, such as agriculture censuses, economic censuses, etc., and global initiatives such as **Agenda 2030 (SDGs)**

UN GGIM Declarations

- Third High Level Forum on UN Global Geospatial Information Management; Beijing Declaration, October 2014
 - improve the integration between geospatial information and statistics, at multiple scales, in order to provide better planning, monitoring and evaluation of sustainable development
- Fourth High Level Forum on UN Global Geospatial Information Management; Addis Ababa Declaration, April 2016
 - encourage the integration of geospatial and statistical information and the improvement of institutional coordination between National Geospatial and Mapping Agencies and National Statistical Offices in the context of the 2030 Agenda, the SDG global indicator framework and the 2020 Round of Censuses;

European coordination efforts

- ***EFGS – European Forum for Geography and Statistics***

- EFGS overall focus on
 - application of data integration and
 - knowledge exchange between experts from NSIs and researchers and users of spatial statistics
- a forum for exchange among NSI and NMCA experts
- Current focus:
 - creation of a point-based spatial reference framework for official statistics;
 - partnership between NSI and NMCAs on equal terms;
 - a fully geocoded census 2021;
 - an object oriented statistical-geospatial information system for sustainable development ranging from local to global

- ***UN-GGIM:Europe Working Group B on the integration geospatial data with other information***

- Among others: statistical-geospatial data integration within the framework of sustainable development (UN Agenda 2030 and Europe 2020)

UN HLG for Partnership, Coordination and Capacity-Building for post-2015 monitoring

- Created by UNSC in 2015; 22 Chief Statisticians representing the sub-regions of the UN
- Co-Chairs Hungary and Côte d'Ivoire
- Closely working with the Inter-Agency and Expert Group on SDG indicators
- Current focus
 - **Global Action Plan for Sustainable Development Data**; strategic areas:
 - *Coordination and strategic leadership*
 - *Innovation and modernisation of national statistical systems*
 - *Strengthening of basic statistical activities and programmes*
 - *Dissemination of sustainable development data*
 - *Multistakeholder partnerships*
 - *Mobilise resources and coordinate efforts for statistical capacity building*
 - Objective 3.4: Integrate geospatial data into statistical production programmes at all levels
 - Key Actions:
 - *Promote the integration of modern geospatial information management systems within mainstream statistical production programmes*
 - *Promote the integration of geospatial and statistical metadata*
 - *Encourage the use and adoption of technologies that promote integration of geospatial and statistical information*
- **First UN World Data Forum**

First UN World Data Forum, Cape Town, 15-18 January 2017

- Organised under the guidance of the UNSC and the HLG for Partnership, Coordination and Capacity Building for Statistics for the 2030 Agenda
- Hosted by Statistics South Africa in Cape Town, 15-18 January 2017
- At the First United Nations World Data Forum, data and statistics experts from around the world will



JOIN together in this unique event with governments, businesses, civil society and the scientific and academic communities



EXPLORE innovative ways to apply data and statistics to measure global progress and inform evidence-based policy decisions on the 2030 Agenda for Sustainable Development



CONTRIBUTE to important discussions, data labs and interactive platforms aimed at improving the use of data for sustainable development



LAUNCH new initiatives and solutions that will deliver better data for all

First UN World Data Forum: Topics

- Building statistical capacity and data literacy
- Synergies between traditional statistics and new data sources, including Big Data
- Innovative technologies for data production and analysis
- Mobilizing resources
- Privacy and data protection
- Data governance and standards
- Geo-spatial information systems
- Data communication and visualization tools

Key messages to enhance the integration of statistical and geospatial information

- Institutional coordination and cooperation between statistical and geospatial agencies is a prerequisite of the consistent integration of statistical and geospatial information
- Institutional coordination and cooperation requires strong commitment, supportive legislation and resources
- Urgent need for a global statistical-geospatial framework, streamlining national efforts, to facilitate the consistent production and release of geostatistics, in order to integrate diverse economic, social and environmental information, to support more robust decision-making at local, national, regional and global levels
- Integration of statistical and geospatial and big data as well as other non traditional sources of data is necessary to fulfil user needs
- Granularity **vs** privacy – confidentiality has to be observed as data are detailed at smaller and smaller geographic levels; legislative and methodological development necessary
- Develop, adopt and implement common terminologies, technical standards, metadata and share agreed protocols
- Adding geospatial capability to statistics requires the codification of location attributes linked to socio-economic information
- Share experience about geocoding address information in the data management system of NSOs

Challenges for NSOs

- Cost of IT and statistical infrastructure investments, software development
- Operational cost of generating robust, internationally comparable small area data
- Methodological issues related to data fusion – i.e. of integrating data from different and often incongruous sources
- Limited geospatial capability in NSOs, limited statistical capability in national geospatial agencies
- Cooperation mechanisms between various actors involved (official statistics, owners of administrative data, owners of big data, national geospatial authorities) are not yet well established

Opportunities

- 2020 Round of Censuses offers an opportunity to enhance geospatial capabilities of NSOs
- 2030 development agenda calls for robust data at granular levels of geography
- Use these opportunities to build a common linking approach to realise the full potential of the benefit of linking statistics and geospatial information
 - consistency and comparability across countries and within countries
 - an internationally consistent approach can lead to the shared development of IT tools and applications
- Modernisation efforts and the transformative agenda in NSOs also offers an opportunity to incorporate geospatial linkage
- Capacity building in NSOs and geospatial agencies
- Spread existing national good practices

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