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Putting Mobile Phone Big Data to work for Policy and Official Statistics

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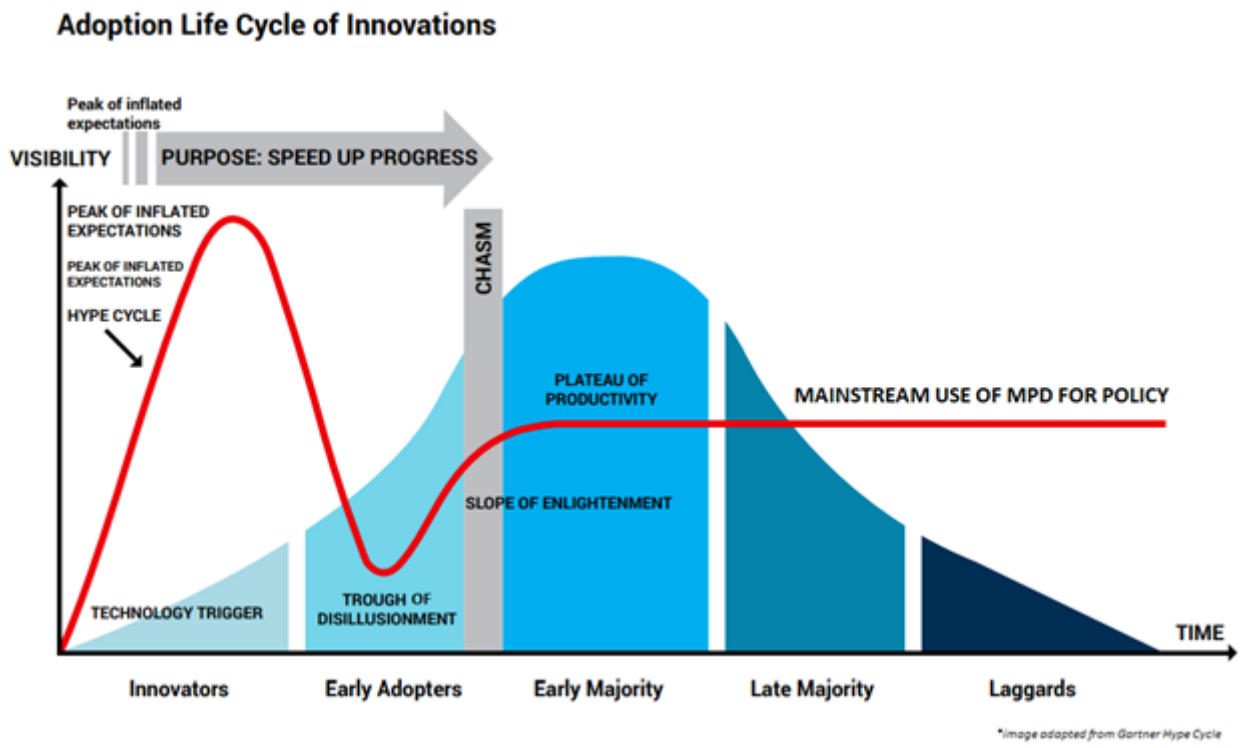
As COVID-19 restrictions started to take hold in The Gambia at the onset of the pandemic, policymakers there turned to an innovative resource to track population movement patterns: Mobile Phone Big Data (MPD). In the framework of a World Bank-supported project, the Gambia Bureau of Statistics collected and analyzed 2 billion individual anonymized call records from two of the four telecom operators—covering 70% of the population—and found that COVID-19 reversed traditional migration trends. The timely and high-resolution insights gained from this data were instrumental in tracking the virus's potential spread and creating an evidence base for the government's relief and recovery efforts.

The Gambia was not alone in these efforts. Indeed, COVID-19 was an inflection point in the demand from governments to put MPD to work towards pandemic policy response. During the pandemic, over 40 countries used aggregated and anonymized MPD for high-resolution insights on population dynamics. In addition, 78 percent of National Statistical Offices surveyed during the pandemic intend to prioritize capacity-building around the use of mobile phone data and call detail records in the immediate future.



Repurposing MPD into policy measurements is challenging. Mainstream adoption involves commitment from public and private stakeholders to provision data infrastructure, safeguards, technical capacity, and agreements. Currently, less than 20 percent of low- and middle-income countries have the local capacity to use sophisticated data in policymaking, according to the World Development Report: Data for Better Lives 2021.

Recent years have seen the emergence of practical resources (ethics principles, maturity frameworks, statistical methods, tools, and good practices) to mainstream the global use of MPD for official statistics within this decade (see figure above). The UN Committee of Experts on Big Data and Data Science for Official Statistics, for example, through its Task Team on Mobile Phone Big Data chaired by the International Telecommunication Union, has launched five Methodological Guides on the Use of MPD for Official Statistics. The Guides provide information on data sources and reference data, as well as methods on how to analyze MPD. Importantly, they also include instructional use cases that illustrate how MPD can be used to complement or supplement traditional data sources for tourism, migration, population dynamics, information society, transport, and disaster context statistics, significantly enhancing development insights at high resolution.

In Haiti, for example, where the latest publicly available census is from 2003, MPD is a particularly valuable asset for policy research and actions surrounding crisis events. Human displacement in complex crisis situations can lead to excess mortality and can trigger additional crises. Without rapid insights into population movements during a crisis, relief and policy response is compromised. While large-scale surveys and censuses can give information on people's movement history, they are not feasible during a crisis. Earlier research using MPD in Haiti was retrospective to demonstrate how it could be applied for policy insights in the context of epidemics, earthquakes, hurricanes, and

access to jobs. More recently, MPD analysis in Haiti has been conducted with remarkable speed and efficiency to inform policy responses toward COVID-19, the 2021 earthquake, and the 2022 cholera outbreak.

> *"In the decade plus since Flowminder started work in MPD for policy, we have constantly developed our methods for privacy-preserving production of robust, statistically reliable outputs. We are excited by the potential of the World Bank's Global Data Facility to transfer these learnings to help developing countries integrate mobile phone data into their national data systems."* (**Linus Bengtsson**, Executive Director and Co-founder of Flowminder Foundation)

Instructive use cases like the above are crucial for innovation and have been made possible through small-scale funds and grants for research and pilots. Yet we have seen that technical resources and small pilots are not enough to institutionalize the use of MPD in the long run. Now is the time to step up investment toward the sustainable use of MPD across countries.

The World Bank-hosted Global Data Facility aims to boost programmatic funding and support to integrate the use of MPD for official statistics and policy planning into 30 national data systems by 2030. The Global Data Facility is an innovative global funding instrument designed to enable long-term support and transform data ecosystems and data capital in low- and middle-income countries. Hosted by the World Bank as an umbrella trust fund, the Global Data Facility can connect to significant additional financing via World Bank financing and close the data funding gap.

> *"Collaboration among all national stakeholders is key for successful use of MPD for official statistics. We need to build capacity in the use of this new data source and make sure that this knowledge is sustainable and that it will permeate national statistical systems. The UN-CEBD Task Team on MPD is ready to help NSOs build this capacity through collaboration with the Regional Hubs."* (**Esperanza Magpantay**, ITU, Chair of UN-CEBD Task Team on MPD)

Enabling durable data transformations is critical to addressing pressing policy challenges. According to a recent investment case, investing in integrated national data systems can deliver an average return of $30 USD for every $1 USD invested. Once the safeguards and enablers are in place to access MPD, it can be used to develop a wide range of cost-effective, high-resolution indicators.

> *"It has been demonstrated that the opportunity for society is huge with more evidence-based policymaking based on MPD. However, tangible progress is slow because -as societies- we fail in turning demonstrations into operational systems. In the absence of immediate and direct profits, this remains outside the scope of most businesses. Now is the time for governments and institutions to invest in*

> *ecosystems including MPD to help solve the large societal and environmental problems. We need to move from response to preparedness, and from philanthropic pilots to financially sustainable operational systems."* (**Richard Benjamins**, Chief AI & Data Strategist, Telefónica)

The potential of MPD for development is transformational, yet we are only scratching the surface of its use for policy impact. We need all hands on deck to mobilize investments and partnerships, to build capacity that connects the frontier with the fundamental, to put MPD to work everyday for more robust and higher resolution policy insights and solutions that improve lives and livelihoods. Visit the Global Data Facility to join the partnership.

Learn More:

- GSMA: Big Data Analytics and Artificial Intelligence
- Flowminder: FlowGeek knowledge center
- UN CEBD for Official Statistics: Mobile Phone Data Awareness Course
- World Bank: Open Learning Campus: Mobile Phone Data Module | Mobile Phone Data Video | Mobility Task Force - Code repository