Communication of statistics in post-truth society: the good, the bad and the ugly

EMANUELE BALDACCI AND FELICIA PELAGALLI

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Abstract

This paper deals with the challenges for official statistics of changes in the information market spurred by network technology, data revolution and changes in information consumers' behaviours. It shows that the challenge for statistical organizations is to address the reputational risks from the post-truth ecosystem (the bad scenario) which could lead to permanent damage to trust in official statistics (the ugly scenario) by embracing the data revolution and empowering users to benefit from information and knowledge services (the good scenario). This requires investment in modern communication, data literacy and users-oriented statistical products.

Key words: communication, data literacy, post-truth society.

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1 Changes in information market

Key trends have impacted the information market lately, spurred by technology developments, data commoditization and data services availability, and changes in information consumption modalities. At the same time, the emergence of the *post-truth* world was certified in 2016 by the inclusion of this term in the Oxford Dictionary and the announcement that this was the word of the year.

This was compounded by the use of "fake news" in important political competitions around the world ([1]). Furthermore, the perceived lack of control over the spread of such misinformation on social media platforms led many authors to claim that we live in a post-fact era.

These changes have a potential dramatic impact on the relevance of official statistics as a trusted source of information for society. The main argument in favor of considering statistical a public good is that it provides neutral empirically sound arguments to all citizens that can be used to make informed decisions. By removing information asymmetries, which would lead to sub-optimal processes, these could benefit society at large and not just individuals.

An additional argument is that public policies can be better designed, implemented and monitored if accompanied by evidence-based information systems. This ensures transparency of public actions and better ways for citizens to control how public resources are allocated and used on their behalf. As such, statistics is a fundamental enabler of a modern democratic system.

The confidence in this model is, however, put into questions by a combination of factors:

- The emergence of network technologies that allow decentralized communication. Social media platforms and network-based information have replaced the centralized information environment of the past (where media outlets were the main gatekeeper and disseminators of information) with peer-to-peer modalities for information co-creation (e.g., wiki-based information) and communication.

- The commoditization of information in the data revolution era. Big data generation has increased dramatically the possibility to derive empirical evidence from non-traditional data sources. Combined with powerful algorithms to analyze these data, this leads to large amounts of unprocessed and processed information being available to potential users at low cost.

- The modalities of information consumption have also changed spurred by the availability of new data and new technologies. Consumers of information can rely on a variety of information sources, not necessarily certified in terms of their quality and adherence of scientific statistical production methods. Decentralized information provisioning also helps create communication networks involving peers and groups as the main channels through which individuals access and select information.

([1]) http://www.vox.com/policy-and-politics/2016/11/16/13426448/trump-psychology-fact-checking-lies

While none of these factors is *per se* a negative development for the information market, the recent events clearly highlight the potential risks that are embedded in a decentralized ecosystem for the production and consumption of information.

The key element that helps understanding better where the dangers from this new environment may come from is the decision theory results about cognitive bias. These findings help dig into the way individual access, select and process information and expose the risks for evidence-based policies and decisions which are inherent in the new information market.

A striking result from these studies is that cognitive bias matters a lot. We are very different from the rationale "homo oeconomicus" we read about in our microeconomics textbooks in college.

The way we process information and classify it in our brain, depends on the group we belong to, our beliefs, our previous experience, the source of the information, the way the information is presented and our mood. And most importantly: we may be completely unaware that these factors are influencing the way we use the information when we read a news post or an article, as this is embedded in the way our brain works.

For example, we may be more willingly to believe that information is true if it confirms our initial a priori about a topic, if it is presented in ways that solicit fear or empathy, if it rings a bell with respect to other similar pieces of information we have in our memory.

As the debate on post-truth society and the end of facts continues, for statisticians it is critical to understand more deeply how information is processed by individuals and groups.

This affects the ability to communicate correctly, but also the very design of the statistical products and services provided.

2 Trust and reputation: challenges

This section will focus on issues related to trust and reputation in the post truth environment and their implications for statistics.

Until some time ago, the way we perceived reality was led by our individuality and the social group in which we usually belonged. For example, our choices about the newspaper or the TV news provide a lot of information about us: age range, social class, profession, political preferences, etc.

Nowadays, digital platforms are the instruments for representing our contexts of reference: they tell us about the rules of behaviour; they drive the categories of the information consumption and the construction of the meaning. Once, long ago, the "storytelling" was offered by newspaper editors and the TV news that were in charge to select news, establishing the right order, the spaces, the relevance and the overall tone of the public discussion.

Today, the reader meets directly the news online. It builds his personal storytelling through comments belonging to other readers within the chosen platform and the bubble in which it falls. The uninterrupted flow of information, the shared experiences together with the emotional contact with the others, exposes the individual to stimuli and continuous choices: True or false? Can I trust or not? Can I purchase it? Do I read it? Do I share it? Do I Vote it?

The individual, in operating its choices and assessments, does not consider anymore the old influential institutions (such as academia, political parties, trade unions, etc.), but he/she listens to the "voice" of peers.

Reputation is not given (once for all), but it is steadily built through the network behaviour, expressed opinions, the collected comments, and the gained trust. We are living through an age where the reputation is the most valuable asset. Reputation is the measurement of how much a community trusts you and the extent of your credibility.

We are not dealing with stable communities; rather we are dealing with contexts constantly changing depending on the platform within which we act (Facebook, Airbnb, Research Gate, etc.). Each digital platform builds relations, establishes truth or falsity and gives priority to events. The primacy of the symmetry, of the proximity and of the “liquidity” put the authoritativeness in motion. Even the trustworthy sources have to gain trust and maintain their reputation.

Nothing is obvious. But, what is the basis of the reputation capital? Why people tend to trust the “pairs” opinion more than that of the "official" sources? How to build trusting relationships with our audiences? How to offer interpretive contexts of reference?

3 Three scenarios: the bad, the ugly and the good

Against the backdrop of significant changes in the information markets and in consumers' behaviours, the response of statistical organizations to the challenges highlighted in the previous sections could result in different scenarios for the future.

We have highlighted in this section three stylized scenarios which could help frame the analysis on the implications for statistical organizations of the post-truth world. We will focus on a "bad "scenario in which statistics competes with "fake news", an "ugly" scenario in which distrust could jeopardize relevance of official statistics and the "good" scenario in which the data revolution is used to empower individuals and the community to access information.

Let's discuss each of the three scenarios in terms of the key underlying determinants and the outcomes for official statistics, with a view to highlighting which are the building blocks of a possible strategy to strengthen relevance of fact-based decisions and evidence-based policy making.

The first scenario corresponds to a business as usual environment for official statistics. It assumes that current trends which undermine the importance of facts, supported by empirical evidence, will not stop in the near future and that continued availability of multiple information channels will increasingly lead to decentralized information markets with strong segmentation. Information will continue to be consumed via multiple decentralized channels, with new information intermediaries emerging through social platforms, digital opinion leaders, technologies that reinforce belonging to peers with similar profiles and backgrounds, including in terms of beliefs.

No strong regulation from government authorities or private sector code of conducts will emerge to prevent dissemination of fake news and information not supported by empirical evidence. In this scenario, statistical organizations continue to focus on their core business centred around production of high quality statistics. They supply information to different communication outlets mostly in the form of data and commented press releases. They engage with users through major communication platforms and social media, contact centres and media outlets.

Although this scenario does not seem to be catastrophic for official statistics, it would likely lead to progressive marginalization of its role in the public debate, as multiple information sources, including non-certified empirical evidence, are gaining momentum in the information ecosystem and are given similar relevance to statistics on decisions which affect society. Under this scenario it is likely that increased competition from alternative data providers will put pressure on the official statistics position in the information ecosystem and lead to drastic reduction of public resources invested in official statistics, as a result of the perceived lack of relevance.

In terms of their public image, official statisticians will increasingly be challenged by alternative facts and figures which contradict statistical information. However, in this status quo scenario official statisticians will stick to traditional communication strategies focused on reactive interventions in public debates about the correct figures in public policy issues. Their main communication priorities will continue to be reaching out different users with a mix a general and more tailored statistical products and providing clarity on definitions and methodologies used. This, however, will not be sufficient to hamper a continuing sliding into marginality of official statistics in public opinion's perception.

While this scenario may look sufficiently negative for official statistics, it may not be bad enough. A worst case scenario will turn this bad outlook into an ugly one. This second scenario is predicated on a massive restructuring of the information markets, which may evolve from the current decentralized set up into an oligopoly. Under the latter, market concentration of information platforms will emerge as a natural response to the advantages deriving from synergies in the data ecosystem between the availability of massive sources of data and the powerful engines to process them. This scenario could grow hand in hand with Web 3.0 technologies releasing enormous volumes of data increasingly difficult to manage by small scale operators. The growth of data intermediaries with strong computational capacity will result in algorithms driven information market.

On the demand of information side, this would lead to extreme profiling of information consumers and segmentation of users oriented information products. This extreme personalization of communication services will give rise to personal media content being delivered to individuals on the basis of preference revealed by their profiles.

On the information market production side, this scenario would lead to massive increase in the scale of data processing power and the use of algorithms to automate data management and data analysis. Big oligopoly giants will emerge by integrating technologies, data and content and providing these to a variety of smaller scale platforms and information intermediaries, with limited pricing power for further dissemination.

In this scenario, data generated by sensors and machines connected to the network will increasingly create smart information for individuals. However, individuals will not participate in the data processing task, but will be mostly confined to crowdsourcing data for digital platforms and using information services.

This technology scenario with little competition and lack of society's control over data and information processes, could be combined with an increasing gap between the data competencies of individuals and the power from data-enriched information services. This gap will reduce the control over information sources and the quality of empirical evidence and will increasingly push individuals to rely on information fed to them in highly sophisticated ways by a limited number of powerful actors. In this scenario, limited control over data veracity could scale up the amount of non-verified facts provided to society. As a paradox, this could be consistent with a strong push for data-oriented decision processes for public policies, which would however rely on oligopoly driven information content.

In this scenario, official statistics will be further marginalized and its very existence could be put in jeopardy. More importantly, no public authority with significant influence could be in charge of assessing the quality of data used in the information markets. Statistics as a public good may be curtailed and limited to a narrow set of dimensions. With these trends in place, communication impacts of official statistics will also be hampered by lack of trust and credibility on the part of the users. Official statisticians will appear as old dinosaurs on the way to extinction, separated from the data ecosystem by a huge technology and capability gap. Obviously, consequences of this scenario will also go beyond official statistics role and the provision of this public good for society, as the very democratic foundation of our communities could be harmed by this perverse evolution of high tech digital ecosystem.

Fortunately, in our opinion, this is not the most likely outlook. There is also a good scenario predicated on two major assumptions. First, the information market will be increasingly competitive by sound regulations that prevent the emergence of dominant positions in countries and even more important across them. Second, official statistics pursue a strong modernization to evolve towards the production of smart statistics, which fully leverage technology and new data sources while maintaining and enhancing the quality of the data provided to the public.

In this scenario, official statistics will generate new more sophisticated data analytics that cater to different users by tailored information services. It uses network technologies (e.g., blockchain, networks) to involve individuals, companies and institutions in the design, collection, processing and dissemination of statistics.

It engages users with open collaborative tools and invests heavily in data literacy to ensure their usability. It strengthens skills and capacity on statistical communication to help users understand in transparent manners what are the strengths and limitations of official statistics.

In doing so, official statisticians in this scenario use fully decision theory findings to help protect citizens from the constant threat of fake news and misinformation. They engage proactively in fact checking and pursue visibly and openly the sources of misinformation exposing them to the public. They also provide certification services to other information providers, to help them ensure the quality of statistics produced outside the scope of government statistical networks.

Official statisticians in this scenario also play an active role in protecting society from misuse of data. They do so by providing high-quality open statistics and encouraging a critical approach to empirical information. Kahan and others (2017) and Harford (2017) suggest that scientific literacy differs substantially from scientific curiosity. While individuals who have high degrees of scientific literacy are not immune from information "bandwagoning" and peer-group thinking bias, those with high levels of scientific curiosity tend to prefer a broad range of sources to inform their knowledge about issues. Experiments run in controlled environments seems to confirm this result. Official statistics in this scenario harnesses these results to ensure that information provision encourages curiosity, highlights uncertainty, and provides answers to questions.

While these three scenarios are clearly stylized and serve illustrative purposes, they likely depict possible outcomes of today's trends and describe how the combination of exogenous factors and responses by the statistical community could shape the future. In the next section, we turn to the type of actions that official statisticians would need to focus on in the future to enhance their capacity to communicate and face the challenges ahead.

4 Strengthening communication for statistics

Time, attention, and relevance have become scarce resources, while rising misinformation (post-truth) increases the difficulty of being able to assess the "echo-chambers".

The toolbox, which the communicator has to use, has changed: direct web TV, videos on YouTube, blogs on Medium, content in real time on Twitter, post on Facebook, photos on Instagram, conversations with a community in dedicated Newsletter, communication via Barcamps, Hackathons and more.

This is not only about how to disseminate statistical information using new tools, but how to develop the most suitable mode of communication to different users, starting from a deep change in the culture of Statistical Institutes.

It is important to change mindsets and practices which have been established, in order to put in contact the citizens with official statistics, to make data accessible, to expand the understanding of their analysis, to support individuals, business and institutions in the decision-making process.

The key issue is how to be authoritative and to develop quality knowledge in the new and changing information market. It is important to know the rules and languages of the media platforms used for communication; to overcome the technicalities; to tell stories close to the people; to create communities around specific themes; to develop among citizens the ability to read the data and understand what is behind the statistical process. In summary, put people at the center (overused phrase, but extremely valuable):

- communicate statistics through engaging experiences and relevant to the people who benefit from them;
- customize the content;
- adopt "user analytics" to acquire the knowledge of the "users" through the analysis of data (web and social analytics) and the understanding of people's interaction with the different platforms.

A communication strategy is not complete without adequate measurement tools .It is important to monitor the result of communication initiatives through the analysis of large data: identifying the indicators of communication's effectiveness and analysing the data produced by the process of communication itself, through the behaviour of the users.

Against this background, key changes are needed in official statistics to strengthen its ability to communicate effectively with users.

These cover the establishment of modern communication services, investment in data literacy and the provision of more tailored user-centric statistical services, while maintaining high quality of methods.

It will be essential for statisticians to build more tailored data insight services and team up with communication experts to play a more proactive role in contrasting fake news, checking facts appropriately and building users' capacity to harness the power of data.

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