

## Select Relevant Literature

**Kim, G. H., Trimi, S., & Chung, J. H. (2014). Big-data applications in the government sector. *Communications of the ACM*, 57(3), 78-85.**

This paper illustrates how to utilize big data to government sectors. Businesses, governments, and the research community can all derive value from the massive amounts of digital data they collect. Governments of leading ICT countries have initiated big-data application projects to enhance operational efficiency, transparency, citizens' well-being and engagement in public affairs, economic growth, and national security. Analyzing big-data application projects by governments offers guidance for follower countries for their own future big-data initiatives.

**Rabari, C., & Storper, M. (2014). The digital skin of cities: urban theory and research in the age of the sensed and metered city, ubiquitous computing and big data. *Cambridge Journal of Regions, Economy and Society*, 8(1), 27-42.**

A 'digital skin' of the city is coming into being. This skin consists of a censored and metered urban environment. The urban world is becoming a platform for generating data on the workings of human society, human interactions with the physical environment and manifold economic, political and social processes. The advent of the digital skin opens up many questions for urban theory and research, and many new issues for public and urban policy, which are explored in this article.

**Einav, L., & Levin, J. (2014). Economics in the age of big data. *Science*, 346(6210), 1243089.**

Economic science has evolved over several decades toward greater emphasis on empirical work. The data revolution of the past decade is likely to have a further and profound effect on economic research. Increasingly, economists make use of newly available large- scale administrative data or private sector data that often are obtained through collaborations with private firms, giving rise to new opportunities and challenges.

This review has discussed the ways in which the data revolution is affecting economic and broader social science research. More granular and comprehensive data surely allow improved measurements of economic effects and outcomes, better answers to old questions, and help in posing new questions and enabling novel research designs. We also believe that new data may change the way economists approach empirical research, as well as the statistical tools they employ.

Several challenges confront economists wishing to take advantage of these large new data sets. These include gaining access to data; developing the data management and programming capabilities needed to work with large-scale datasets; and, most importantly, thinking of creative approaches to summarize, describe, and analyze the information contained in these data. Big data is not a substitute for common sense, economic theory, or the need for careful research designs. Nonetheless, there is little doubt in our own minds that it will change the landscape of economic research. Here we have outlined some of the vast opportunities. We look forward to seeing how they will be realized.

**Lusk, J. L. (2017). Consumer research with big data: applications from the food demand survey (FoodS). *American Journal of Agricultural Economics*, 99(2), 303-320.**

In three separate studies based on data from the Food Demand Survey (FooDS), which has been conducted monthly for over three years, this paper explores heterogeneity in preference across consumers in traditional demand systems, heterogeneity in preferences over time in choice experiments, and the tail of the distribution for a particular food consumption pattern—vegetarianism. Results show that elasticities of demand for food at home and food away from home vary widely across different groups of consumers defined by a priori cluster analysis based on demographic and attitudinal variables. Results from a choice experiment are found to depend on when the experiment was conducted and on the market prices prevailing at the time of the survey. Given the large sample of consumers observed over time, there is sufficient data to demographically characterize a small portion of the population—vegetarians—using traditional logit models and a machine learning method - a classifications tree.

**Kubiszewski, I. (2014). Beyond GDP: are there better ways to measure well-being. ANU. Australian National University, 2.**

Imagine if a corporation used Gross Domestic Product (GDP) accounting to do its books: it would be adding all its income and expenses together to get a final number. Nobody would think that's a very good indication of how well that business was doing. Herman Daly, a former senior economist at the World Bank, said that, "the current national accounting system treats the earth as a business in liquidation." He also noted that we are now in a period of "uneconomic growth"; where GDP is growing but societal welfare is not.

**Robert, C., Kubiszewski, I., Giovannini, E., Lovins, H., McGlade, J., Pickett, K. E., ... & Wilkinson, R. (2014). Time to leave GDP behind. Nature, 505(7483).**

This paper claim that successor to GDP should be a new set of metrics that integrates current knowledge of how ecology, economics, psychology and sociology collectively contribute to establishing and measuring sustainable well- being. The new metrics must garner broad support from stakeholders in the coming conclaves.

**David Pilling. (2018, Jan 17) 5 ways GDP gets it totally wrong as a measure of our success. Retrieved from <https://www.weforum.org/agenda/2018/01/gdp-frog-matchbox-david-pilling-growth-delusion/>**

Author of this paper think that there are 5 ways GDP gets it totally wrong as a measure of our success. GDP is born of the manufacturing age. GDP is flummoxed by the Internet. GDP deals in aggregates; GDP per capita in averages. From GDP's perspective, bigger is always better. In general, GDP measures only cash transactions.

**Durahim, A. O., & Coşkun, M. (2015). # iamhappybecause: Gross National Happiness through Twitter analysis and big data. Technological Forecasting and Social Change, 99, 92-105.**

The prominence of social media has contributed to open information access for the researchers. With voluntary information sharing structure of Twitter, user disposition and sentiment analyses can be performed for determining the emotional well-being of the citizens. In this respect, we

adopted a sentiment analysis model to calculate the Gross National Happiness (GNH) of a Middle East country, Turkey. For this purpose, over 35 million tweets, published in 2013 and in the first quarter of 2014, of over 20 thousand users were collected and analyzed. In the proposed model, prior to calculating the GNH by considering the polarities of tweets, first convergent and face validities of sentiment analysis and reliability of dataset were tested. After obtaining satisfactory results, the GNH by province survey results of Turkish Statistical Institute was compared to results of sentiment analysis for 2013 in order to state the difference between the surveying method and the proposed social media analysis method. Also, GNH by province in the first quarter of 2014 was analyzed. Additionally, relationships between users' account properties and happiness levels were investigated. Results showed that two GNH calculation approaches give similar results for the country-wide GNH levels. As a conclusion, GNH levels in the first quarter of 2014 were calculated as 47.4% happy, 28.4% neutral and 24.2% unhappy. Besides, strong correlations were found between users' happiness levels and Twitter characteristics.

**Blumenstock, J., Cadamuro, G., & On, R. (2015). Predicting poverty and wealth from mobile phone metadata. *Science*, 350(6264), 1073-1076.**

Accurate and timely estimates of population characteristics are a critical input to social and economic research and policy. In industrialized economies, novel sources of data are enabling new approaches to demographic profiling, but in developing countries, fewer sources of big data exist. We show that an individual's past history of mobile phone use can be used to infer his or her socioeconomic status. Furthermore, we demonstrate that the predicted attributes of millions of individuals can, in turn, accurately reconstruct the distribution of wealth of an entire nation or to infer the asset distribution of microregions composed of just a few households. In resource-constrained environments where censuses and household surveys are rare, this approach creates an option for gathering localized and timely information at a fraction of the cost of traditional methods.