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**Response by official statistics to the Sustainable Development Goals****Sustainable Development Goals and data from  
administrative registers****Note by Statistics Denmark***Summary*

This paper suggests that handling data challenges emerging from the Sustainable Development Goals (SDGs) could be approached by creating pools of data derived from existing statistical data sets and administrative registers. Data from these pools of data could be used as an input for the measurement of some of the Sustainable Development Goals indicators. Thinking along these lines may help when statisticians are faced with the challenge of measuring the Sustainable Development Goals and the related targets. More importantly, these data would help empower local administration and political decision making.

The paper is presented for discussion to the first session of the Conference of European Statisticians' seminar "Response by official statistics to the Sustainable Development Goals".

## I. Introduction

1. Data sources and especially the potential of Big Data to impact the collection of data for SDGs has been an issue raised by several people and organizations. There are high hopes that Big Data will be able to solve at least some of the data challenges related to SDGs. Data challenges are a valid concern as the Millennium Development Goals (MDGs), which were less ambitious in scope, had major problems in data coverage. Much of the information covering MDGs is extrapolated; the Human Development Index is based on data three years old – and just as an illustration of the challenges facing us – about half of the children in sub-Saharan Africa are not registered at birth. In other words, there is a strong need to develop the ability to produce, coordinate and communicate data from official statistics around the world. SDGs are a major opportunity to address those needs.

2. This paper argues that one way of dealing with the challenges is to increase the capacity to produce official statistics based on data from administrative registers. To be able to do this, one needs both the registers as well as the capacity to use them as the basis for the production of statistics. On the one hand, the establishment of one or more core administrative registers will be a great advantage for countries without any register capacity. On the other hand, the ability to produce statistics based on administrative data can be learnt by all countries – as it is already the basis for statistical production especially in a number of developed countries.

3. Stiglitz is quoted for stating that: “*What we measure affects what we do. If we have wrong metrics, we will strive for the wrong things*” when he, together with others, presented the analysis and suggestions that led to a major focus among national statistical offices (NSOs), especially in the developed world, to measure well-being. This development is a recent example of how political focus on a specific area has led to the creation of new data and new political discussions. The development of the SDGs is a more ambitious example of an effort to get the right focus and later the right metrics. And getting the right metrics for SDGs is a challenge that we are all faced with.

4. Big Data have often been mentioned when discussing these challenges. Big Data are an interesting new area of data with major potential that we have only started to explore. Big Data are created, for example, when data are collected on the traffic on mobile devices like mobile phones, and in social media like Google, Facebook and Twitter. As we need to look for new ways to get data to cover the SDG indicators, Big Data are worth exploring. But no NSO today has any major experience with Big Data and very little if any official statistics is produced based on Big Data.

5. This is not the case when it comes to statistics based on data from administrative registers. A number of countries including Denmark are already producing some. In the case of Denmark a lot of official statistics are based on data from administrative registers. But administrative registers are not only useful for the production of statistics. In fact, statistics are only a side product of administrative registers. The main purpose of administrative registers should be to provide a systematic and well informed basis for local administration and local political decision making.

6. The technological development that created Big Data might ease the collection of data inputs to create administrative registers. Mobile phones are wide spread all over the world, also in the developing world. The technological infrastructure that has been created through mobile networks could and should be used to get the data needed for the administrative registers. In that we can combine a well-known technology – the mobile phone network – with another the technology for the production of statistics based on using administrative registers.

7. First, this paper presents a fully-fledged model for the production of statistics based on data from administrative registers.

8. The paper then goes through some of the SDG indicators and argues that a population register or parts of a population register, such as a birth register, could lead to a marked improvement in the data coverage for the SDG indicators. And this is what we are striving for – to try to create a register-based statistical system that can, on the one hand, support local administration and, on the other hand, give us better data in relation to the SDG indicators. We want to – just like Stiglitz – do the right metrics.

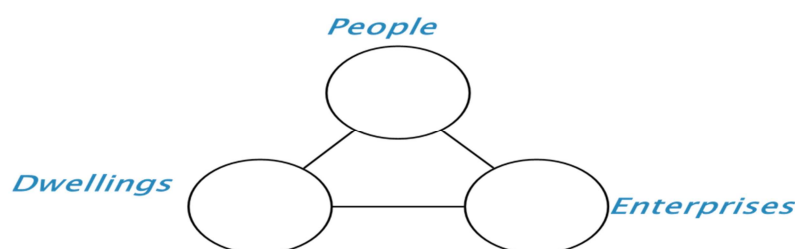
## II. Register-based statistics

9. Our point of departure is a fully fledged register-based statistical production system – but this is by no means our end goal. This short introduction to the full coverage system has two purposes. Firstly, to give the reader a sense of what is meant by a register-based statistical production system, and secondly, to relate the content of the full coverage system to the content covered by the SDGs in order to discuss how register-based statistics can contribute to the development of the statistical basis for SDGs.

10. The fully fledged register-based statistical production system is the one used today in Statistics Denmark. Close to 90 per cent of all social statistics and large parts of business statistics are produced based on data from administrative registers. The system is showed in figure 1.

Figure 1

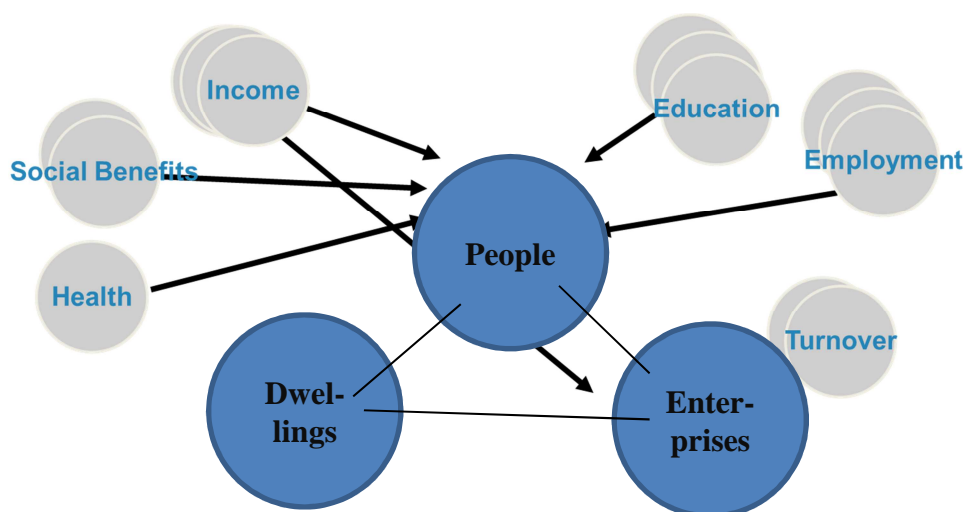
### Core register structure in the Danish register-based production system



11. The core register structure of the Danish register-based production system contains three registers; a register on individuals (people), a register on active companies (enterprises) and a register on housing (dwellings). There is a unique identifier for each unit in the register (person, enterprise and building). This makes it possible to link information vertically between the registers, and horizontally within each register over time, to tell a story of the development of that specific unit in that specific register. At a given moment in time one can e.g. link a person to his or her dwelling as well as to his or her workplace (enterprise), and over time one can tell the statistical story of each building, enterprise or person from cradle to grave.

12. In Denmark it all began with the population register containing basic information on every individual, for example, place of birth, gender and biological parents. This basic demographic information can then be dynamically supplemented with information on e.g. marriage and divorce, children and migration. Each of the units in the three basic registers can be supplemented with a lot of other important information, of which most come from the population register i.e. information on individuals cf. figure 2.

Figure 2  
Data related to the three core registers



13. The Danish register-based production system contains information on the health, social benefits both in cash and kind, income, educational background and employment situation of individuals – as well as information on the turnover of enterprises. This information can be combined in any given combination; the health and income situation of social benefit recipients; the educational background of people in full time or part time employment; the development in labor market participation for people with health problems; the development in enterprise turnover for enterprises, which increased the employment of workers with an academic background by 50 per cent. The possibilities are if not endless then at least numerous.

### III. Register-based statistics and the Sustainable Development Goals

14. The system of goals and targets included in the SDGs is very ambitious. It is ambitious because it aims to cover close to all aspects of importance for human life, and because of the challenges it poses to NSOs worldwide and to their ability to provide data that can be used to monitor many target areas.

15. These challenges are an opportunity to come up with suggestions on how NSOs can handle the very ambitious agenda in relation to data that comes with SDGs. There is no simple solution to this, and it might be worthwhile to see the data challenges as an offset for a long term plan to develop statistical capabilities and competences worldwide. As is often stated, we tend to focus on the issues we measure, and data are a very strong tool of measurement as well as a very strong means of communication.

16. This paper proposes to include data from administrative registers as one possible data source that could be developed to contribute to the data coverage of SDGs. This approach has several advantages and a number of challenges. The main advantage is that register-based statistics are cheap and flexible once the register has been established. Establishing the register is one of the challenges, and we will return to that. Another advantage is that the register will be able to support not only the production of statistics but also empower administration and policy development. The production of statistics based on

administrative registers is basically a byproduct of the establishment of the register, while the main purpose is to support administrative practices. A third advantage is that the running of a register is continuous. Data will be reported to the register continuously firstly to support the administrative processes and secondly to be used in statistics. For statistical purposes data are subject to quality assurance and documentation. The running of a well-functioning register ensures that data will not be ‘three years old’ as was mentioned earlier in relation to data used for the Human Development Index.

17. To establish a register is a challenge. It should be mentioned that whereas some countries are using data from administrative registers as an input to official statistics, there is a bigger group of countries where administrative registers already exist but are not necessarily used for statistics. They can be tax registers, registers on recipients of some kind of income support or local registers of university graduates. The existence of a register is of course a better starting point than if no registers exist at all.

18. There is no turn-key solution on how to establish a register. It could be based on methods used in countries that already have administrative registers. But it could also be based on a combination of existing knowledge and practices and new ways of doing things. If mobile data can help report 18 million births – as was the case in Nigeria in 2011-12 – this way of collecting digital data can be combined with the establishment of a register with continued reporting based on digital data collection through e.g. mobile devices.

19. As mentioned in the short introduction to the Danish register-based statistical production system, a core feature in a register-based production system is the population register. The establishment of a population register is in many ways a good place to begin the path to register-based statistics. This is also the case with the goals, targets and indicators in SDGs. In general, population is the denominator in many targets like e.g. ‘mortality rate per 100,000’, ‘under-five mortality per 1,000 live births’, ‘percentage of women aged 20-24 who were married or in a union before age 18’, ‘percentage of population with electricity access’, ‘homicide and conflict-related deaths per 100,000 people’. A population register or just parts of a population register like a birth register will greatly help to reach the overall goal of empowering administration and facilitating data based political decisions. And on top of that it will be helpful in collecting data for the SDG targets.

20. There are other target areas in SDGs where one could consider establishing a register – again to support administration and political decision making but also to cater for the SDGs. A register of banks and ATMs as well as a population register could fulfill the data needs for the indicators ‘proportion of population with an account at a formal financial institution’ and ‘number of commercial bank branches and ATMs per 100,000 adults’. A register of phone companies and their customers (the companies might already have that) is needed for the indicator ‘individuals who own a mobile phone’. For indicators ‘percentage of international cooperation projects being implemented to facilitate access to clean energy’ and ‘number of patents granted annually in developing countries...’, a register on international projects in developing countries and, a register of patents would be useful. In other words, SDGs are a golden opportunity to develop registers to support the measurement and follow up of the SDG targets and indicators.

#### **IV. Conclusions and recommendations**

21. SDGs are putting data producers like the National Statistical Offices to a test. It will be a major challenge to be able to cover data needs of all the indicators involved in the SDG system. It is a challenge but it is also an opportunity. It is an opportunity for NSOs to work together in strengthening the capacity to cover the many different focus areas of

SDGs. This will not happen overnight. It calls for a mapping of what is already possible to cover, and it calls for initiatives on how to be able to cover what we are not able to cater for at present.

22. This paper suggests that some of that challenge should be covered by the creation of a number of data registers in core areas. Core areas not only for SDGs but also core areas that enable countries to administer and to take political decisions based on good data. There are a number of steps to this suggestion. There is a technical side as well as an administrative side to it. Technically the input interface for the register(s) has to be developed in accordance with the devices one wants to use to get data input to the register. Mobile phones and apps are useful in this sense, as mobile phones have spread all over the world, included the lesser developed parts of the world. Basically, the register should be set up to support daily practices at street level in all parts of health and social administration. These can be birth clinics, hospitals, local authorities administering social benefits in kind or cash or churches administering the registration of baptisms, marriages and funerals. This is the input side of the register, and this will only work as long as registration in the register helps these institutions in their daily work. The most important output of the register is data to support good administrative practices. Another output of the register is data that can be shared with the NSOs who can produce statistics based on the data from the register; statistics to support the measurement of SDG indicators.

23. Making this work calls for close collaboration between administrators at the local level, experts, who develop the technical part of the input to and the structure of the register as well as experts in the production of statistics based on data from administrative registers. As part of the activities needed to support the implementation of SDGs, a limited number of pilot projects along the lines described in this paper should be set up in collaboration with local and national administrators in a given country, and technical experts and experts from countries like Denmark, who already produce the majority of social statistics based on data from administrative registers.

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