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THE STATISTICIAN AND THE DATA OWNER

Establishing a dwelling register in Norway: the role of Statistics Norway

Note by the Statistics Norway

1. Statistics Norway has a strategy on data collection that is based on comprehensive co-operation between external register owners and the units in Statistics Norway responsible for relevant subject matter statistics. Such co-operation is important to identify changes in registration and thus maintain updated registers.

2. The aim of this paper is to provide a description of a process where Statistics Norway has worked closely together with several register owners to achieve the goal of establishing and maintaining a dwelling register of good quality. During this process Statistics Norway has played different roles. In the early stages of the process Statistics Norway had the role as project manager. When the project phase was ended the responsibility was transferred to the register owners, but Statistics Norway still decided to play an active role to achieve the quality desired. Based on this case, different aspects of being a statistical institute playing an active role in establishing and maintaining administrative registers will be discussed.

I. POPULATION AND HOUSING CENSUS AND ADMINISTRATIVE REGISTERS

3. Norway has a tradition to use the population and housing census to establish administrative registers. The 1960 Census provided the basis for Central Population Register (CPR) which was established in 1964. In 1970 the census was used to establish the Register of Education. Establishing a dwelling register was an integral part of the 2001 Census project.

4. There is also a tradition to use administrative data as a source for census statistics. In the 1980 Census, administrative registers were used to rationalise data collection, and data capture by postal mail only was introduced. In the 1990 Census, information on demography, education and income, as well as geographical characteristics, was collected from registers. In the 2001 Census all data on persons (place of residence, demography, education, labour market, income etc.) were based entirely on

registers. The census in 2011 will be totally register-based. Data on households, families and couples will be collected from the CPR and data on housing from the Cadastre.

5. There are two main trends in the development of register-based censuses in Norway. The *first* one is that censuses have been used quite extensively in establishing registers. The *second* trend is the step-by-step development. In the first steps subject matter statistics are tested and published in different areas. Register-based variables are introduced in the census as soon as the quality is considered sufficient. The time elapsing from administrative registers have been established till the data are satisfying for census purposes have varied from one subject matter to another. When statistics has been developed for all areas relevant for censuses, a totally register-based census can be conducted. These same trends have been observed in other countries developing register-based censuses.

6. Legislation provides a key foundation for the use of administrative data sources for statistical purposes. The Statistics Act gives Statistics Norway the right to access administrative data on unit level with identification numbers and to link them with other administrative registers for statistical purposes. Furthermore, the Statistics Act provides a detailed definition of data protection. According to this act, processing data for statistical purposes is allowed even if it was not the main aim of the data collection. Once data have been processed in Statistics Norway, they must not be used for purposes other than statistics and research (the principle of "one-way traffic").

II. ESTABLISHING A DWELLING REGISTER

7. Both in connection with the census in 1980 and 1990 Statistics Norway proposed to establish a dwelling register that covered all dwellings. During the 1990ies several working groups were established with the mandate to consider the possibilities to establish a dwelling register. The authorities in charge of the relevant registers, Tax Norway (The Tax Authorities) and the Norwegian Mapping Authorities had different views about the idea. Tax Norway was negative and The Mapping Authorities was positive, but wanted Statistics Norway to be in charge of the process. Statistics Norway had already at this stage in the process the role as an imitative taker and a driving force.

8. During the summer of 1998 the plans "caught the eyes of media" and resulted in big headlines in one the biggest newspapers in the country. The question of establishing a dwelling register was described as "the state wants to know whom you are living with" that could lead to a "Big brother watching you" situation. The views expressed in this article were supported by some negative statements from different leading politicians. To what extent this negative publicity influenced the government in the decision to turn down the request for founding in the 1999 budget we don't know. However, the Ministry of Finance wanted to continue to cooperate with Statistics Norway for further planning. In this period the most important issues were how to furnish the relevant ministries with precise and balanced information and how to cut costs of the project. At this stage Tax Norway, mainly because of external pressure, turned positive. As a result of these efforts, the project was included in the 2000 national budget. The proposal even passed unanimously through the Parliament in 1999.

9. The project, the dwelling-address project (DAP), was now more precisely described as an updating of two existing base registers, the Cadastre and the CPR, and not as establishing a new

dwelling register. DAP was organised as a joint project with three participants: Tax Norway (in charge of the CPR), the Mapping Authorities (in charge of the Cadastre) and Statistics Norway. The municipalities (local authorities) did also play an important role in the project. Statistics Norway was in charge of the project and the project was included as an important part of the Census 2001 project. The supervisor of DAP was also the leader of the Census.

10. There were several reasons for Statistics Norway to take the role as leader of this project. First, Statistics Norway had historically been the driving force in establishing a dwelling register. On this basis, it was not unnatural that Statistics Norway took this role to reach the goal of a complete dwelling register. Second, there was also an economic component that supported a project led by Statistics Norway. The cost was estimated to be significantly lower since the project was a part of the Census. The main reason of the cost reduction was related to postage since the census was used for data collection.

11. Although the project was led by Statistics Norway the top executive leaders of The Mapping Authorities, Tax Norway and Statistics Norway met and still meet on regular basis to discuss different issues regarding the project. The project did also have a steering committee consisting of directors from the three agencies. There was, and still is, also regular meetings with the Ministry of Finance. Since the project was approved by the Parliament, the ministry have been an important supporter and followed the development closely.

III. THE DWELLING ADDRESS PROJECT

12. It's general acceptance for the importance of the correlation between the register owner's needs and the quality of the register data. Information considered most useful by the authorities has the best quality. When it comes to the dwelling address project, the statistical needs were the most obvious, at least in an early stage. The project had probably not been initiated, at least not in 2000, if Statistics Norway had not decided to play such an active role. Although Statistics Norway had the role as project manager it was decided to focus on public interest of the project, and not the needs for register-based statistics in the communication towards the public.

13. We can divide the project into five phases or activities: 1. Quality control and coordination of existing addresses in the CPR and the Cadastre, 2. Identify all dwellings in multi-dwelling buildings, 3. Label the dwellings, 4. Establishing the link between dwellings and persons, 5. Follow up and quality improvement.

Quality control and coordination of existing addresses

14. Historically the lack of coordination of the addresses in the CPR and the Cadastre was a problem. In 1998 Statistics Norway took an initiative to improve the data quality of the registers. A plan was formed together with the register authorities. An almost perfect match was important since Statistics Norway was planning to use the CPR as a base for sending out the census forms. Coordinated addresses were also important as a starting point for the following phases of the project. Statistics Norway's role in this phase was mainly as an initiative taker and a coordinator. Statistics Norway compared data from the two registers involved and measured the lack of consistency on a detailed level. Most of the work, however, was done by the register owners. This work was also important to increase the understanding of the needs for Statistics Norway regarding data quality in

the administrative registers. The mutual understanding between the Tax Norway and the Mapping Authorities concerning quality issues was also improved.

Identifying the dwellings in multi-dwelling buildings

15. The most extensive part of the project was to identify all the dwellings in multi-dwelling buildings. This job was mainly done by the municipalities in cooperation with the Mapping Authorities. More precisely the municipalities did the following at this stage in the project:

- Assign new addresses to all dwellings in multi-dwelling buildings
- Report the addresses to the Mapping Authorities (register the address in the Cadastre)
- Control and correct some crucial variables on dwellings and buildings in the Cadastre

16. The identification of dwellings was done by assigning a *dwelling number* that is a standardised number giving information on where in the building the dwelling is located. The municipalities had to use different approaches to solve this problem. In some cases there existed information in the Cadastre or local registers that made the job relatively easy. In other cases they had to visit the buildings to identify the dwellings. This was especially the case regarding older buildings built before the Cadastre was established in 1983. In this phase Statistics Norway's role as a supervisor and coordinator was important. The municipalities were paid for the extra workload and Statistics Norway was responsible for a fair distribution of resources to more than 400 municipalities.

Labelling the dwellings

17. All dwellings were labelled in a uniform way. Labels were designed, containing the full address of the dwelling, including the dwelling number. The Mapping Authorities was responsible, and still is, for sending the labels to the owners of the dwellings by mail. The labels were sent out about a month before the census in 2001. The owners were responsible for labelling their dwellings. In this phase, in addition to coordinate the project, Statistics Norway was also responsible for operating a "first line" telephone support. This was carried out by the Census staff.

Establishing the link between dwellings and persons

18. The census was used as a tool to establish this link. Every family received a questionnaire (the census form), and the names of the family members, according to the CPR, were pre printed on the questionnaire. Families living in multi-dwelling buildings were asked to fill in their dwelling number on the questionnaire. The families were also asked to give some information on the dwelling in which they were living. After scanning and data processing in Statistics Norway, the data was sent to the register owners. Tax Norway received the dwelling number for entering in the CPR. The Mapping Authorities received updates and additional data on dwellings for entering in the Cadastre. In November 2001 Tax Norway changed their forms for declaration of move to include the dwelling number.

19. The Statistical act is based on the principle of "on way traffic". In principle Statistics Norway can collect data for statistical use only. Accordingly, the transfer of census information from Statistics Norway to the administrative registers required that the 2001 Census was founded on

the legislation that governs the current administrative registers: the CPR and the Cadastre and not the Statistical Act only (multiple legal base).

20. The project period formally ended by the end of 2003 and all responsibility was handed over to the register owners. Unfortunately the quality was not satisfactory by the end of the project. Follow up and quality improvement was needed.

IV. FOLLOW UP AND QUALITY IMPROVEMENT

21. During the project there were agreed upon a rather ambitious goal concerning the quality of the link between dwellings and persons in the CPR: 95 per cent of people living in multi dwelling building should be registered in the CPR with a unique address (dwelling number).

Follow up within the project period

22. The project faced several challenges during the project period. Several municipalities did not manage to identify and register all their dwellings in time for the census. This of course resulted in a rather high non response rate for dwelling numbers in the Census. Statistics Norway only received dwelling numbers for less than 50 percent of persons registered on an address with a multi dwelling building. This result was far from the goal of 95 per cent.

23. The municipality that struggled most to complete this process was the capital city of Oslo. This had great impact of the coverage on national level, as more than 35 per cent of the multi dwelling buildings in Norway are situated in this city. A follow up project was established, organised as a part of the Census 2001 project. The target population, every person/family in the country registered on a multi dwelling address without a dwelling number in the CPR, received a new questionnaire during 2002. When this project was finished Statistics Norway was still not satisfied with the quality. About 77 per cent of the target population was now registered with a unique address in the CPR. Oslo now had coverage of 67 percent and the second largest city Bergen had coverage of 83 per cent. Since the coverage in the two largest cities was significantly lower than the rest of the country we had to concentrate on improving the quality in these two cities, especially since these cities have the largest proportion of residents in multi dwelling houses in the country.

24. In addition to the low coverage there were also detected several other issues affecting the quality of dwelling number in a negative way: the procedures for handling notifications of move in Tax Norway was insufficient, little awareness among the citizens on the existence of dwelling number, competition from "private" or local dwelling numbers and limited use of the dwelling number by authorities (including Tax Norway). There was also a problem of attitude: the project was associated too much with Statistics Norway instead of the Tax and Mapping Authorities.

Follow up after the project was ended

25. As pointed out Statistics Norway was not satisfied with the quality achieved within the project period. There were also problems with updating, meaning that there was a risk for quality worsening rather than quality improvement. At the same time, as the joint project was finished, the responsibility was now also de facto transferred to the register owners. Statistics Norway went from

a role as responsible for a project on updating and extending two administrative base registers to a more traditional role as a user of the register data only. Although the responsibility was now with the register owners, Statistics Norway still played a very important and active role in the further process.

Statistics Norway as a initiator

26. Even after the project period, Statistics Norway has been in frequent contact with the Ministry of Finance concerning dwelling addresses. The most important issue in this dialog has been the lack of quality improvements in the CPR. As a part of this dialog Statistics Norway in 2007 applied for and received funding from the Ministry of Finance to send out questionnaires to all families in multi dwelling houses in Oslo and Bergen not registered with a dwelling number in the CPR. The fact that Statistics Norway received the funding emphasizes our strong attachment to the project. Although Statistics Norway received the funding, Tax Norway was responsible for carrying out the project in cooperation with the Mapping authorities, the municipalities of Oslo and Bergen and Statistics Norway. The project was completed by the end of 2008 with very good results.

27. In addition to this Statistics Norway also encourages firms and organisations such as telecom companies, cable TV operators, insurance companies, real estate, property management, municipalities (social services), ambulance operators and the fire brigades to start using the dwelling number. The Norwegian Post has so far not been willing to include the dwelling number in their postal addresses. The idea is that increased use of the dwelling number will make citizens more aware of its existence and this will in the long run improve the quality in the register data. Statistics Norway plays an active part in all these activities. Statistics Norway was until 2009 in charge of these initiatives, but now Tax Norway has taken over this role.

Statistics Norway as quality supervisor

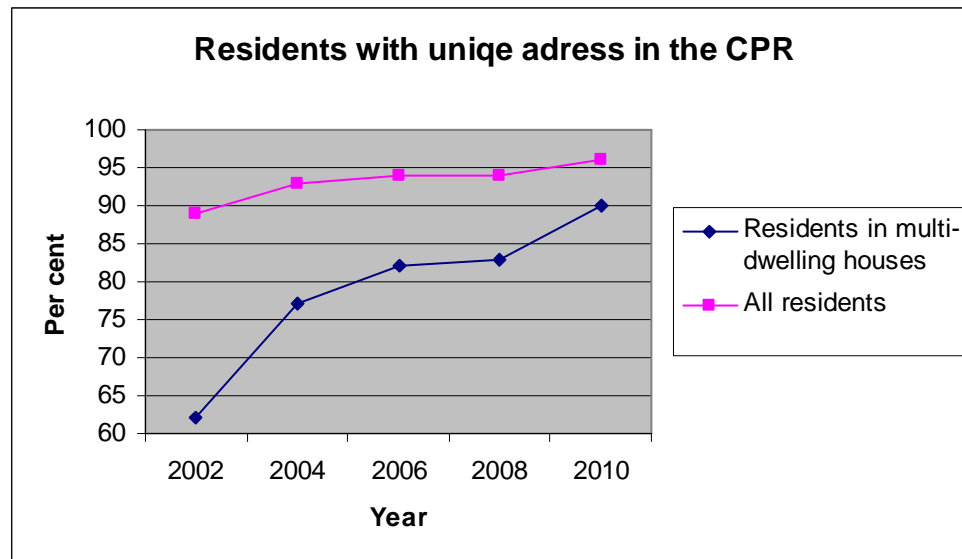
28. Monitoring the quality of the registers is always important when making register-based statistics. From 2004 Statistics Norway have been measuring the register quality on a regular base. The most important quality indicators are: (i) The proportion of persons living at a multi-dwelling address with a unique address in the CPR and (ii) the proportion of removal notices registered with a unique address for persons moving into a multi-dwelling building. Both indicators are produced at a municipality level. This information is of course distributed to the register owners and is important input for the Tax Authorities.

29. As a result of the follow up projects in 2007-2008 the Ministry of Finance has been paying greater attention to Statistics Norway's concerns regarding the quality in the CPR. The Ministry has now expressed clear and rather ambitious goals for the quality by the time of the population and housing census in 2011. The Ministry of Finance has actually adopted the goals set by Statistics Norway in the earlier stages of the project: by the end of 2010 at least 95 percent of the residents shall have a unique address in the CPR. Statistics Norway and The Mapping Authorities are obligated to support Tax Norway to reach this goal. This means that about 99 percent of the whole population will be registered with a unique address in the CPR if this goal is reached.

Quality development

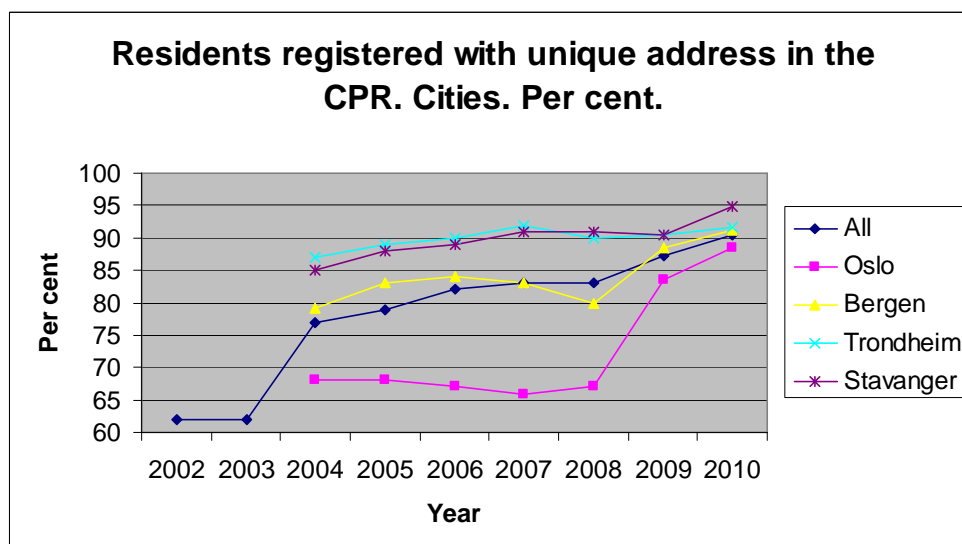
30. As mentioned earlier Statistics Norway has concentrated on mainly two different, rather simple, indicators that describe the quality or the coverage of the register in two different ways.

Figure 1 Residents registered with unique address in the CPR. Per cent



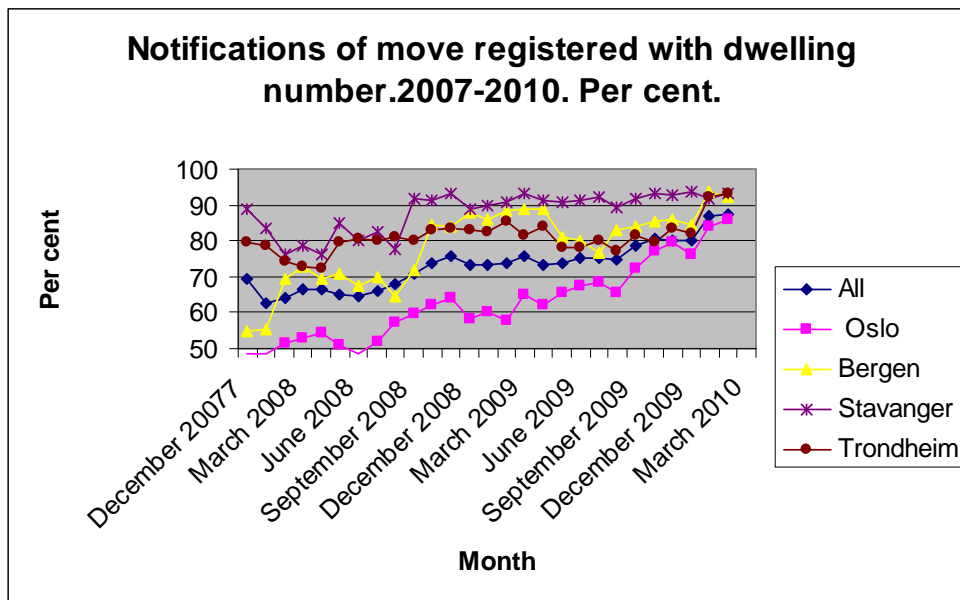
31. Figure 1 shows the proportion of residents with a unique address in the CPR. The upper curve shows all persons with a unique address in the CPR while the lower curve describes the situation for people living in multi-dwelling houses. About 30 percent of the Norwegian population lives in multi-dwelling buildings. If we concentrate on the multi dwelling buildings we see an increase in the coverage from about 60 percent in 2002 to 90 percent today. It's important to emphasize that this quality improvement mainly is a result of specific projects (where Statistics Norway have played an important role in most of them) and not so much a result of the daily management of the register (notifications of move).

Figure 2 Residents registered in a multi-dwelling building with unique address in the CPR. Per cent



32. Figure 2 shows basically the same as figure 1 but for the four largest cities in the country. Here we clearly see why most of the quality work has been concentrated in Oslo and Bergen. The effects of different local projects are even more evident in this diagram. The best example is the massive quality improvement in Oslo and Bergen in 2008-2009.

Figure 3 Notifications of move registered with dwelling number 2007-2010. Per cent.



33. Figure 3 shows the proportion notifications of move registered with dwelling numbers. In an ideal world, where all notifications of moves to multi-dwelling buildings contain a dwelling number, the CPR should have been maintained only by management of notifications of move. That is why this indicator is well suited to describe to which extent the project is sustainable in the long term. There are two striking features shown in Figure 3: the positive development in Oslo and Bergen. This of course also has a positive major impact for the country as a whole. Although there has been a positive development on this issue. Statistics Norway (and the Mapping Authorities) has not been satisfied with the way Tax Norway have prioritized the work with the notifications of move. However, Tax Norway has from 1 January 2010 changed their procedures regarding management of notifications of move. The effects of these change was clearly visible in the statistics already from January.

V. THE ROLE OF A STATISTICAL INSTITUTE IN ESTABLISHING AND MAINTAINING AN ADMINISTRATIVE REGISTER

34. Establishing, maintaining and updating administrative registers are the responsibility of public authorities. The role of the Statistical Institute is as a user of the administrative data to produce statistics of good quality. To achieve this it is obviously important to have a good cooperation between registers authorities and the Statistical Institute.

35. Statistics Norway has a policy not to have the responsibility for administrative registers, and have not had such responsibility since 1989 when the CPR was transferred to Tax Norway.¹ But as pointed out earlier the Statistics Act gives Statistics Norway access to existing administrative registers and the right to be informed if the register owners plan to do changes in the registers. In some contexts a Statistical Institute have to consider how far they should go to achieve the goal of producing register-based statistics on new areas, and sometimes it will be necessary to take initiatives to achieve important goals. The establishment of a dwelling register in Norway is an example where the needs of Statistics Norway were considered as so important that an active role was the right strategy. There had not been a dwelling address project in Norway in 1999 if Statistics Norway had not taken the responsibility for implementing the project and taken the role as a project manager.

36. When the project passed the parliament in 1999 it was decided that the project was going to be included as a part of the Census. A natural consequence of this decision was that Statistics Norway became responsible for the data capture regarding updating two of the most important administrative registers in the country. This rather unusual role for a Statistical Institute was based on a solid legal basis since it was founded on the legislation that governs the current administrative registers: the CPR and the Cadastre and not the Statistics Act. Having held this unusual position during a considerable time, has given Statistics Norway a series of positive as well as negative experiences.

Positive aspects

37. An active role, like the role of Statistics Norway described in this paper, increase the chance the opportunities to expedite the process. In this context it's important not to exceed the needs of the register owners. Primary focus must be on the administrative needs. It's unlikely that Statistics Norway could have conducted a complete register based census in 2011 without having taken this role to implement the extension of the CPR and the Cadastre.

38. Although you have the role as project manager you still are dependent on the register authorities, but you're in a better position to set the agenda and influence various government institutions and other key actors if needed. An example of this is the way Statistics Norway has utilized the support from the Ministry of Finance in particular in relation to Tax Norway.

39. Playing an active role imply that you have to work closely together with the register owners at many levels. This can be a very good venue for establishing contacts and mutual understanding of each other's needs and challenges. This may for example have a positive effect on the quality of variables that have minor importance for the register owners. Examples of variables of this type in Norway can be numbers of rooms, toilet and bathing facilities from the Cadastre. Through the dwelling address project Statistics Norway experienced this on several occasions where people working with addresses at different levels have met in connection with this project. For example have Statistics Norway organized several meetings where executive officers from the municipalities and Tax Norway representing the same geographical area or region have met to discuss issues of this project.

¹ There are some expectations regarding the business register.

Negative aspects

40. An active role can also cause negative effects. It may lead to less attention to these areas/variables from the register owners. This can occur since they don't have the primary responsibility for implementing the improvements themselves. This can be one of the reasons why Tax Norway has struggled with updating the register in the dwelling address project. Tax Norway did not have the same feeling of ownership and understanding of the project as Statistics Norway. This could have had a negative effect on the way Tax Norway implemented their routines on processing of the notifications of move.

41. The role as project manager naturally brings focus and attention. This was in the first place a good thing, since it was important to reach the public with information regarding the project. This may cause the impression that the register is established primarily to produce register based statistics and not mainly for administrative use. This can support an attitude that it's not so important "since it's just for statistics". Statistics Norway has experienced this in the dwelling address project. After the responsibility for the project was transferred to the register authorities, the project still has to some extent been attached to Statistics Norway among the public. It is for instance still is not unusual to hear the dwelling number to be called the "Statistics Norway Number". We also receive several requests (e-mails and phone calls) weekly although it has decreased significantly during the last year.

What is the best practice?

42. It's of course no clear answer on this question but based on our role in the dwelling address project we have gained some experiences.

- It is essential to have good support from the government and especially from the most important ministries
- It is important that the register is also beneficial for administrative purposes and not for statistical purposes only
- When arguing for the establishment of an administrative register it's important to emphasize public interest instead of the need for register based-statistics in the area.
- It is important to transfer as much of the responsibility to the register authorities as early as possible
- Use of the register should be encouraged. The more use, the better chance for good quality in the register.
- Quality monitoring is important and should be done continuously.

43. Despite a lot of challenges, we are now about to reach a very good quality on dwelling addresses in the CPR. The main reason for this is the support from the Ministry of Finance and the decision taken by Statistics Norway to continue having a focus on this work although we were formally not in charge of the project anymore. This shows that it is possible to establish an administrative register of good quality although you don't have the desired support from the register owners from the beginning, especially if you are patient and have strong support from the government. It is always important to remember that it often takes time to establish a register of good quality

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