

SCHATTINGEN VAN HET AANTAL SLACHTOFFERLOZE DELICTEN

In het bijzonder voor
– illegaal vuurwapenbezit
– illegaal uitrijden en lozen van mest

Een vooronderzoek uitgevoerd in opdracht van het
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SUMMARY OF FINDINGS CONCLUSIONS AND RECOMMENDATIONS

4.1 Purpose, background and method of study

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The purpose of the study Estimates of the number of victim-less offences is to find out how the number of victim-less offences can be estimated.

The following should be noted. In the case of a victim-less offence there is, by definition, no victim involved who reports the offence¹. Because of this, the number of victim-less offences is (for a large part) unknown to the police, and therefore does not show up in the police statistics as produced by the CBS (Central Bureau of Statistics). Also, because of the lack of a victim, this type of offence does not appear in the victim-questionnaires of the CBS, nor does it appear in the 'Politiemonitor' [Police Monitor] of the Ministry of Internal Affairs and the Ministry of Justice. In brief, there is no formal registration and we are dealing with 'concealed criminality'.

Estimates of the number of offences are useful for:

1. determining the workload of the police;
2. determining priorities in the police' areas for special attention;
3. determining the required size of tools that are needed (see 1);
4. helping to determine how to divide the available tools (see 2).

Furthermore, estimates of size may play a role in various other objectives, such as gaining insight into the causes of criminality; in programme-evaluation; and in the determination of economic and ecological damage resulting from criminality.

Hence, there are many applications, and we therefore conclude that estimates of size may play an interesting role within the framework of the execution of policy concerning the fight against criminality.

This report consists of two parts:

1. We give a general (theoretical) survey of methods and techniques that can be used to obtain the necessary information, which can then be used for the estimates of size. This is described in appendices I and II.
2. The above is elaborated upon in a more concrete way for two very

different victim-less offences, being: (a) illegal possession of firearms (Chapter 2) and (b) illegal spreading and dumping of manure (Chapter 3).

Other types of victim-less offences are referred to incidentally and fulfil an exemplary role in this report.

4.2 Collection of data and estimation techniques

In appendix I, a survey is provided of ways to collect the necessary data independently, in case no records exist, or in case the existing records are inadequate for whatever reason. We distinguish between methods for (a) sampling, and (b) for the collection of data from sample surveys that have been carried out.

4.2.1 Methods of sampling

A number of sampling methods exist. We order them starting with a sampling method for a large and registered population, and ending with a sampling method for a small and non-registered population:

1. samples with known and equal chances of selection (simple random sampling, systematic random sampling);
2. samples with known, but unequal chances of selection (stratified sampling, multi-stage sampling, areal sampling);
3. samples with (usually) unknown chances of selection (choice-based sampling, snowball sampling).

4.2.2 Methods of data collection

In appendix II, we further pay attention to methods of data-collection within a sample survey that has been carried out. We take into account the degree of accessibility of the population studied. If the population is accessible, i.e. if they easily give the information required, the standard methods of social-scientific research suffice: the various forms of direct questioning. As the population studied becomes less accessible, more subtle ways have to be used to obtain the information needed; the various forms of indirect questioning. In the event that a population refuses all cooperation to the study one should use the direct or indirect observation method. This shows the following division:

1. direct questioning (interview, questionnaire);
2. indirect questioning (key informants, randomized response)
3. (in)direct observation (aerial observation, observation of indicators)

In our choice of methods of sampling and data-collection we can be guided by (a) the fact that data are or are not registered, and (b) the degree of accessibility of the population studied. This results in combinations of sampling and data-collection. These combinations are described at the end of appendix I.

4.2.3 Estimation techniques

In appendix II, we describe estimation techniques. Once data have been collected, either from existing records or independently, we can start to make estimates of size. For this we work according to the following categorization:

1. estimates of the relative size of a criminal population;
2. estimates of the size of a closed population (no births, deaths, immigration and emigration during the period of research);
3. estimates of the size of an open population (in which births, deaths and migration do play a role);
4. estimates of the frequency with which the criminal population commits offences.

We give examples of these different estimates. There are a number of (basic) principles for making absolute estimates. We only describe those estimation techniques which we think can be applied in criminology.

1. Counts per sample area. Instead of counts of all specimen in the entire population area, we conduct counts in a smaller number of sample areas. The numbers observed in the sample areas indicate the totals.
2. Single mark-release. At the time of a capture (confiscation) a number of specimen are recognized because they were marked at previous occasions. The capture shows a certain proportion of known and unknown specimen. This proportion is used to calculate the total of specimen.
3. Capture-recapture. The number of times 1x, 2x, .. or more, that someone is caught gives insight into the question whether a large, not very active criminal group is at work, or a small, yet active one. Statistics can be used to calculate how large the group of criminals that are never caught is. This way the size of the population can be determined.
4. Capture by effort. The degree of effort made to confiscate firearms for instance, and the degree with which the result of each capture (number of firearms confiscated) decreases shows us the size of the original population (of firearms).

Our discussion of estimation techniques is non-technical. We mainly describe the principle of estimation techniques, elaborate on these, mention the technical requirements for the data, and indicate the assumptions the techniques are based on.

A literature study has shown that there are many estimation techniques. The four mentioned above are based on assumptions that seem realistic and useful in the light of their application to criminology. We therefore conclude that it is a good idea to apply statistical estimation techniques to the estimation of the number of victim-less offences.

Our recommendation is to consider for each offence:

- what assumptions are realistic;
- which estimation techniques are preferred; and
- what type of data should be available.

Subsequently, it may be determined

- whether suitable data are already available in the shape of records;
- whether, as an addition to existing data, additional data should be collected; and
- in case appropriate data are not available, whether one should start collecting all necessary data oneself. We have already made some recommendations on this point.

It should be clear that there is not one particular estimation technique that can always be applied to each type of offence. For each type of offence one should first find answers to the questions described above.

4.3 Illegal possession of firearms

4.3.1 Importance of the topic

Estimating the number of illegal firearms is the topic of Chapter 2. The significance of this topic can be explained as follows. Illegal possession of firearms is a criminal offence. Research has proven that possession of firearms is related to use of firearms. This is not just so because potential criminals will make an effort to get firearms, but also the other way around. People who possess firearms have a greater chance of becoming criminals 'by accident', as it were. Hence, the opportunity creates the criminal. Annually, possession of firearms results in some dozen deaths and over a hundred people injured. Furthermore, firearms are used in raids, violent crimes and liquidations within criminal circles. Over the years, an upward trend can be observed. The increase in the possession of firearms creates a feeling of fear among citizens. This causes a growing inclination on the part of the citizens to possess their own (illegal) firearm. The question is whether this process is turning into an armament spiral among the population. The police have indications that criminal circles make use of this process by illegally selling firearms to citizens.

4.3.2 Estimation methods and data

We outlined the possibilities for estimating the number of owners of illegal firearms, or, the number of illegal firearms, which comes down to the same (one person can own more firearms). We distinguish the following:

1. Methods which seem logical initially, but which we now know will fail to produce estimates;
2. Methods that produce (relative) estimates and for which existing records are used; and
3. Methods that produce estimates by making use of data collected independently.

Chapter 2 provides elaborate proposals. In this summary we limit ourselves to a survey.

Re 1. Methods that seem logical initially, but which have proven to produce no estimates. An example can be found in estimates of the number of firearms based on:

- production and
- trade in firearms.

The problem with this method is that not enough reliable data are available (see: 2.4.1 and 2.4.2).

Re 2. Methods that render (relative) estimates and for which existing records are used:

- The use and possession of firearms are related. An increase of the known number of shooting incidents (and the related number of casualties) therefore provides insight into the increase in possession of firearms. This is a relative estimate of the increase or decrease in possession of firearms (see: 2.5.1).
- The international victim-questionnaire contains questions relating to possession of firearms. These are self-report data. We assume that these data at least give a minimum of the total (possession) of firearms in The Netherlands. In the international victim-questionnaire no distinction is made between legal and illegal possession of firearms. Therefore, the number of legal firearms registered elsewhere should be deducted from the total number in order to establish a minimum number of illegal firearms (see: 2.5.2).
- By means of an investigation of the criminal records of the 'Herkenningssysteem' (HKS) [Recognition System], data are produced that show whether a person was caught for illegal possession of firearms 1x, 2x, or more times. Subsequently, the size of the group of people that have never been caught can be estimated, and with these data the total population of owners of illegal firearms can be calculated (see: 2.5.3).
- As a result of theft, sets of known firearms are brought into the illegal circuit. In the case of later captures by the police, these firearms can be recognized (type and serial number). From the proportion of known and unknown firearms one can calculate the total number of firearms (see 2.5.4).

Re 3. Methods that render estimates by making use of independently collected data.

- For each district or region, CID-officers [Criminal Information Service] are requested to give an estimate of the number of owners of illegal firearms in the area. The individual estimates per area are combined to form a total estimate. (see: 2.6.1).
- Capture of firearms by effort. The degree of effort made to confiscate firearms, and the degree with which the number of confiscated firearms

decreases per capture, indicate the size of the original number of firearms (see: 2.6.2).

4.3.3 Findings, conclusions and recommendations

Our findings can be represented as follows:

1. Existing estimation techniques seem to be based on assumptions that make these techniques realistic enough to be applied to data on firearms.
2. Virtually all existing records show deficiencies when looked at from our point of view: providing estimates of size. We mainly refer to the administrative incompleteness of these data. If existing data are used, these should be checked for completeness in almost all cases. In other cases, the records only contain part of the necessary information and additional collection of data is needed for the part that is lacking. For each proposal, we describe what the current situation is.
3. In most cases it will be possible to estimate at least a minimum of the total number of firearms.
4. In a number of cases it seems worthwhile to collect data independently, especially when a connection can be made with existing and current data-collecting activities. Additional proposals are included for this.

We conclude that a number of possibilities to make estimates are, in principle, realistic and practical.

In view of current and future data-collections and estimates of size we recommend the following (see: 2.7):

1. We recommend that, in line with the international victim-questionnaire, in the (national) victim-questionnaire which is conducted by the CBS, or in the 'Politiemonitor', questions are included that relate to the possession of firearms in Dutch households (see: 2.5.2).
2. It is recommended that association is sought with the efforts developed by the CRI [Central Criminal Investigation Information Service]. This department is developing a computer programme that takes care of the administrative aspects of confiscated firearms. This will soon become an important source of information. This source will become more valuable for estimates of size if two questions are added that relate to the efforts (in man-hours) made by the police to trace the firearms (see 2.6.2). This provides capture by effort data which can be used in the estimates of the total size of the number of firearms (see Appendix II.3, p. iv).
3. We have formulated various research proposals for the estimation of the number of owners of illegal firearms. If we were asked to make a choice, we would recommend using data on recidivism from HKS and

applying capture-recapture-analyses to these data in order to estimate the number of illegal firearms. HKS is not an analysis-system. The data entered into the system can be retrieved (standard) in a limited number of ways. If, in the case of an analysis to be made, more complex searches should be carried out within HKS, a separate retrieval programme should be developed. Additionally, 'specialist-estimates' could be carried out. This method includes estimates per geographical area made by CID-officers (see 2.6.1). The individual estimates are combined to form a total estimate. This method may be validated by means of a different approach. One may look into the potential relationship between characteristics of the areas (number of inhabitants, quality of neighbourhood, demographics, etc.) and the suspected number of firearms in these areas. If such a relationship is discovered, this would create possibilities for the quantification of the workload of the police because the characteristics of the areas could then be used to define this workload.

4.4 Illegal spreading and dumping of manure

4.4.1 Manure, the environment and legislation

The over-production of animal manure results in considerable pressure on the environment. The most important pollutants in animal manure are: nitrogen, which is partly turned into ammonia, phosphates and heavy metals such as cadmium and copper. The most important problems are the threat to drinking water supply, the deterioration of flora and fauna as a result of the eutrophication of surface waters, and the acidification of the soil. Within the framework of the plan to considerably reduce the emission of ammonia and the acidification in The Netherlands between now and 2005, the government is imposing rules and restrictions on the production and use of animal manure. Production of manure is regulated in the Act on Manure and Fertilizers, use is regulated in The Soil Protection Act. The Act on Manure and Fertilizers sets a limit of 125 kilograms phosphates per hectare for the production of manure. Farmers who produce more have to pay over-production surcharges for the surplus they produce; they have to account for their manure production by way of a manure-bookkeeping, and they cannot expand their business. The Soil Protection Act sets restrictions for the amount of manure that may be spread, the period of the year in which it may be spread, and the way in which it may be spread, by means of the Decree on the Use of Animal Manure. The Pollution of Surface Waters Act (WVO) prohibits the dumping of manure on surface waters.

Supervision of the amounts of manure used is in the hands of the AID [General Inspection Department]. Supervision of the time when, and way in which manure is spread on the land is part of the basic tasks of the police and as such is part of police-patrolling. The police fulfil an

independent supervisory task with regard to these regulations. The regional directorates of 'Rijkswaterstaat' [Directorate-General for Public Works and Water Management] and the so-called regional water authorities (water and purification boards, etc) are mainly responsible for the enforcement of the WVO. The police have a supportive role in this.

For an assessment of the data on the dumping of manure we used the information available on the efforts of the purification board 'De Veluwe', for the data on illegal spreading of manure we studied the way the AID works.

4.4.2 Methods of estimation and existing data

The estimation methods that are discussed with regard to the dumping and illegal spreading of manure do not show great differences as far as fundamentals and main assumptions go. The following methods are discussed:

- quantification of the flows of manure in which the differences observed between legal (registered) flows (production, transport to elsewhere, and storage) make an estimate of illegal flows and numbers of offences possible;
- estimates with the help of counts in a certain sample unit that are drawn up by a number of maintenance bodies: the outcomes of the count in the sample unit are extrapolated to the population area. This is done by means of data on the density and distribution of the risk group and its relevant characteristics (type of animal or industry, size of business and surplus of manure, proximity to surface water, etc.). The sample units may be defined geographically, i.e. counts taken from the air, or counts of instances of illegal dumping alongside a certain watercourse. The units can also be defined in a socioeconomic way, which is the case when a certain line of industry, in which a certain type of animal is kept, is subjected to a count.
- Capture/recapture: in which (administrative and criminal) records of offenders are determined. By determining how many farmers have been caught 1x, 2x, 3x, etc, for illegally spreading or dumping manure, it can be estimated how many farmers have committed the crime concerned, but have never been caught. This indicates the size of the group of offenders. In addition, the average number of offences committed can be determined for each offender with the help of a questionnaire that is part of a sample survey among farmers who have violated the manure laws. By multiplying both outcomes, an estimate of the number of offences committed is made.
- a relative estimate of size can be made of the trend in the number of manure dumping occurrences on surface waters. Data on the development of the quality of water in a certain area, as collected by the

water authorities, provide a (global) indication of the increase or the decrease in manure dumping over a number of years.

The next comment should be made:

Estimates that are based on existing counts result in a systematic underestimation of the number of offences. The more sizeable and systematic dumping instances are less well represented in counts. Dumping instances belonging to this category most probably do not constitute a considerable part of the total number of dumping occurrences. The techniques that lead to systematic underestimation can, by the way, be useful in the determination of a limit, a minimum number of offences in a certain category. We call this a 'qualified' estimate.

4.4.3 Collecting primary data

Primary data can be collected to check and/or complete the (outcomes of manipulations of) existing data. Primary data may be collected by means of questionnaires, observation or investigation projects under controlled conditions. The following recommendations can be made in relation to these methods:

- When conducting a questionnaire it is advisable to tie in with research that approaches the same target group with related questions, for instance research into the acceptance of government regulations by farmers.
- The most appropriate observation technique for the illegal spreading and dumping of manure is supervision from the air, in which some of the flights at least should be conducted according to a random selection method.
- In certain police areas, special projects are carried out that are geared towards enforcement of the manure laws and the WVO. We recommend that part of the checks are carried out according to a random selection method.

4.4.4 Conclusions and recommendations

The conclusions concerning the estimation methods and data regarding dumping and illegally spreading manure are, briefly, the following:

1. The assumptions made by existing estimation methods are in principle sufficiently realistic to be applied to data on illegal use of manure.
2. Good sampling frames exist in the agricultural field with the help of which research can be conducted.
3. Existing data are too limited to be used as material on which estimates of size can be based. The limitations involve:
 - (A) incompleteness of records;
 - (B) distribution of data over various institutions and limited accessibility to these;

(C) the ways in which the data are collected (in case of tracing) do not always correspond with the assumptions that should be made for data-collection that is to be used for estimation methods.

4. A good set-up for research geared towards making estimates of the number of environmental offences should involve more databases and estimation methods, because of the shortcomings of existing data. These can be combined in a number of steps in order to complete and correct each other.

Based on the findings and conclusions the following recommendations are made. It is advisable to set up research into the illegal dumping and spreading of manure on a step-by-step basis and to start as simply as possible. The following step-by-step plan is recommended:

- The first and fairly simple step is the collection of data with which the manure flows can be quantified, from the various institutions. With the help of these data, municipalities are selected that are suspected to have problems with illegal spreading and dumping of manure. At this local level, differences between the flows of manure are calculated and the total amount that could be available for illegal dumping and spreading is determined. In the case of manure dumping occurrences, data on the development of the quality of surface waters may indicate the increase or decrease of dumping, taken over a number of years.
- The second step is the collection of data from existing counts in various sample areas in The Netherlands combined with additional data about the distribution of the group of potential offenders in the areas concerned. Extrapolations are drawn up with the help of these data for the areas for which no counts are available;
- Next, a capture-recapture method can be applied. It should be noted that uncertainty about the quality of the databases held by the regional maintenance institutions still exists.
- New data are collected by way of one or more of the methods mentioned in the relevant paragraphs.

By going through (part of) these steps, insight is gained into the value of the methods suggested and data collected. The exact way in which research geared towards estimation methods should be set up is, for a large part, dependent on the policy objectives that are set.

4.5 Recent developments with regard to the registration of offences

Registration by institutions that are charged with the enforcement of the law concerning firearms and manure may render more useful data for estimates of size, in the near future. In general, one can say that a considerable amount of management information can be used, directly or with minor adjustments or additions, for these estimates of size.

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This also means that the police forces and other bodies, when recording results and characteristics of routine checks and/or special projects, themselves hold the key to improvement of data-collection to be used for estimates of size. When designing registration systems in the shape of new or adjusted business processes systems, and of national and regional databases such as the national judicial documentation centre in Almelo, and the regional registration points for environmental offences, one should take into account the possibility that data could be supplied for estimates of size. National agencies can (help) develop instructions and programmes that make registration easier, and that further keep the data required up-to-date at a national level.

4.6 Final remarks

The most important conclusion of this study is that a number of interesting estimation methods are in principle sufficiently realistic, as far as their assumptions go, to be applied to existing data, or to data to be collected, on victim-less criminality, such as firearms offences and illegal use of manure. This also gives a number of practical research possibilities.

The fact that more estimation techniques seem applicable creates the opportunity to continue with the development of estimation tools (data, methods, design) for the estimation of the number of these offences. For the development of such tools it is necessary to collect and manipulate actual (secondary and possibly primary) data and to make estimates based on these. Only actual collection and manipulation of data will render a clear picture of:

- a. the availability, usefulness and quality of existing data and data that can be collected through new research, and of:
- b. the outcomes and practical value of such estimation tools.

We recommend that development of such estimation tools is done step by step. Each preceding step, consisting of the application of one of the suggested estimation techniques, is evaluated, supplemented, and corrected by a successive step.

Which steps are taken depends partly on the priorities set by policy. From the point of view of research, it is important to start with some simple variants of the estimation techniques suggested. These can then be completed and improved upon until an adequate estimation tool is developed.

Note

- There are in fact two situations. (1) There is no victim, because no damage has been done. Illegal possession of firearms is an example of this. (2) Damage has been done, but the victim is not a natural person. An example is the illegal dumping of manure.