

Learning About Illegals: Issues and Methods

FoU-report June 2008

Research with irregular migrants in Norway. Methodological and ethical challenges and emerging research agendas.

By Anette Brunovskis and Lise Bjerkan, Fafo

Developing Methods for Determining the Number of Unauthorized

Foreigners in Norway. By Li Chun Zhang, SSB

Introduction

In this publication the *Norwegian Directorate of Immigration (UDI)* presents two reports on issues and methods that are relevant for learning about people residing illegally in Norway. How many are there; why do they come and stay; what is their demographic profile (nationalities, age, sex, family circumstances); how do they cope (with health, education and shelter); how do they earn a living (who employs them, what do they do and what are their working conditions)? These issues are important both for the authorities that regulate immigration and for those responsible for other public services, including the prevention and punishment of criminal activities. Thus it is important to have effective methods of obtaining the best possible replies to these and related questions: it is important for the various authorities as well as for the individuals themselves.

The two research reports presented here address issues related to how to estimate the number of unauthorized foreigners in Norway as well as how to contact members of this group in order to be able to describe their motivation for staying in Norway and the circumstances surrounding their stay. UDI has provided the funding for these studies through its research and development budget. The studies have been carried out by researchers at *Statistics Norway (SSB)* and the research institute *Fafo*. The views and opinions expressed in these reports are those of the researchers and do not necessarily represent those of SSB, Fafo, UDI or other Norwegian authorities. However, that the work has been carried out in SSB and Fafo respectively represents a guarantee for the quality of the research methods used. However, UDI intends to examine the recommendations made and

carefully consider whether and how they may be effectively implemented.

The first report discusses ethical and operational challenges that need to be addressed when trying to learn more about the motivation and circumstances of people residing illegally in Norway, especially as these issues relate to children. It is expected that UDI and other government authorities, as well as national NGOs, will continue working to learn more about these circumstances, in order to provide a better basis for concrete actions as well as for evaluating policies.

The second report provides a methodological basis for UDI to prepare estimates on the number of people residing illegally in the country. The model presented also provides UDI a means of estimating the precision (how valid the results are) of the results. This will in turn provide a basis for evaluating the direction in which this number is moving; i.e. is it increasing or decreasing over time? However, the report also makes clear that UDI will need to discuss how to improve the quality and timeliness of the data that have been used for these estimates with the *National Police Directorate (POD)* and SSB. UDI intends to respond to this challenge.

Oslo, 28 May 2008

Ida Børresen
Director General

Summary from part 1 of the UDI project:

Research with irregular migrants in Norway. Methodological and ethical challenges and emerging research agendas.

By Anette Brunovskis and Lise Bjerkan

Executive summary

This report addresses the issues of how irregular migration can best be studied in Norway, in light of methodological and ethical concerns, as well as what the most pertinent research agendas are. Through qualitative interviews with irregular migrants and key informants, this project seeks to discuss the need for knowledge about what challenges irregular migrants face in Norway today in terms of health, work and exploitation, children's situation, and their relation to society. The goal of this report is not to conclude on what the situation is for irregular migrants in Norway today, but rather to point out issues where it could be useful to obtain more knowledge.

One of the main challenges in terms of conducting research with this group is to come into contact with potential respondents. In other countries, there are reports about well established arenas, for instance where irregular migrants can meet with potential employers in the irregular labour market, or health clinics that treat irregular migrants. Such arenas have been used for respondent recruitment in the past. In Norway, there are to our knowledge no such meeting places, or other natural arenas where irregular migrants can be expected to be found. Respondents will therefore have to be recruited through so-called gatekeepers, which may be organisations, religious communities, individuals who come into contact with irregular migrants in various capacities etc. A general observation is that each contact point will probably not yield a large number of irregular migrant respondents. It will therefore be necessary to set aside ample time for respondent recruitment, and also to identify multiple arenas for recruitment. This is reinforced by the fact that irregular migrants are unwilling to reveal whether or not they know others in the same situation, making chain referral schemes difficult. At present, the most likely approach to succeed is a qualitative research design with broad recruitment of respondents through many different channels. This has the advantage of being flexible, but has the disadvantage that representativity is difficult to assess, making it difficult to conclude whether findings are only applicable to sub-groups. Our respondents were very worried about being identified, and it may be difficult to get a large number of respondents for a potential future study, depending on the time and resources available.

An ethical concern for all studies involves the informed and voluntary consent of respondents. Respondents have the right to know exactly what they are consenting to when they agree to participate in research. Our experience was that several of our respondents initially agreed to talk to us with the hope that it would somehow help their case. However, none chose to back out after we explained that participation

would not have any effect on their applications. Another specific challenge is the problem of respondents' assistance needs. Normally, respondents who in the course of research are identified as being in need of assistance, for instance medical or psychological help, get an offer of follow up through normal channels, either in public institutions or from NGOs. This is very difficult to fulfil for irregular migrants, as the availability of assistance is extremely limited. Also for this reason, children should not be included directly as respondents, as the researchers cannot reasonably assume they will be able to help the child should information about assistance needs or abuse come out during the interview.

The most useful approach for a future study would be to conduct targeted qualitative research. In our interviews several potential research agendas emerged. Irregular migrants in Norway face a number of challenges.

One recurring issue was that of health and the lack of access to health care. Our respondents reported that they were not able to get medical treatment, or that they were sometimes afraid to seek out medical institutions. Mental health among irregular migrants comes across as a field where there would be a great need for more knowledge. While the sample in this study is small, it was disconcerting to see in how many cases the issue of suicide came up in interviews. This was also echoed in interviews with key informants, many of whom had experienced contact with suicidal irregular migrants.

Children are also found among irregular migrants in Norway, and some are born into irregularity. It is pressing to get more knowledge about the conditions under which these children grow up and how their lack of legal status in the country affects them. Children were not included directly as respondents in this study, but we obtained information from irregular migrant parents, from key informants, and from one young woman who had essentially grown up as an irregular migrant. Issues of concern regarding children are whether and to what extent they are isolated and able to make use of the rights they have. Irregular migrant children have the same rights in Norway as other children, to education and medical care. It does however seem that sometimes parents may be too afraid to come forth and claim these rights on behalf of the child. A second issue is how children are affected by their parents' lack of rights. Given the fragile mental state many irregular migrants appear to be in, it seems inevitable that children are affected profoundly by their parents' health conditions as well.

Other issues raised by irregular migrants and key informants were related to exploitation in the labour market, difficulties in finding a place to live, and their reliance on their social network. A common theme was that irregular migrants are vulnerable to exploitation in various forms. Some had been severely exploited in the labour market, while one respondent was a victim of extortion and death threats over many years from a human smuggler. Some of these situations could well fall under the

definition of trafficking in human beings. While our respondents talked a great deal about the practical difficulties that dominate their lives, several also pointed to more existential problems tied to being an irregular migrant. Our respondents felt it was impossible to return to their country of origin, while at the same time it was impossible for them to plan a future in Norway or elsewhere. Several had made large personal and financial investments in their migration, and expressed a feeling of hopelessness and apathy.

Summary of part 2 of the UDI project:

DEVELOPING METHODS FOR DETERMINING THE NUMBER OF UNAUTHORIZED FOREIGNERS IN NORWAY

By Li-chun Zhang

Summary

This is a summary of the report on the first part of the joint research and development project funded by the Norwegian Directorate of Immigration (UDI, reference number 06/6594), developing methods for determining the numbers of unauthorized foreigners in Norway. The report is prepared by Senior Researcher Li-Chun Zhang.

A method is developed based on the data available. The expected total irregular residents population with non-EU origins is estimated to be 18196 by 1.1.2006. This constituted 0.39% of the official residents populations in Norway in 2005. The estimated lower and upper bounds of a 95% confidence interval are 10460 and 31917, respectively. Of the estimated total irregular residents, 12325 were previous asylum seekers, and the rest, 5871, were persons that had never applied for asylum. The estimated lower and upper bounds of a 95% confidence interval for the irregular residents excluding previous asylum seekers are 3352 and 10385, respectively.

Comparisons with relevant empirical results available from other EU countries suggest that the aforementioned estimates are plausible indicators of the size of the target population. It is, however, important to be aware of two basic preconditions for the results.

Firstly, there is the problem of data, which are few and difficult to extract. The details will be described in Section 3. The estimation approach is necessitated by the data that have been made available to us. Due to limited time and resources, it has not been possible to study in depth other potential data sources such as the many databases at the Police. Also, it has not been feasible to go more thoroughly through the data that may be available at UDI. A main difficulty is that the various types of potential data are not maintained for the purpose of this project, which makes test data extraction extremely costly and time-consuming. A more systematic and coordinated survey of the data sources should have a high priority in future methodological development.

Secondly, the estimation method makes use of certain model assumptions, explained in Section 5. It is important to realize that, while assumptions of various kinds are

unavoidable in this case due to the nature of the problem, it is impossible to verify all the underlying assumptions beyond any empirical doubt. We therefore emphasize that one should not be overconfident in the reported estimates. Rather one should treat them as useful pieces of information that can help us towards a better overall understanding of the phenomenon of interest.

Below is a summary of the data and the model assumptions. For each country we have

m: number of unauthorized foreigners registered at UDI between May of 2005 and 2006.

n: number of foreign citizens who faced criminal charges during the calendar year 2005.

N: number of foreign-born persons of the age 18 and over, registered in the Central Population Register by 1.1.2006.

The data are prepared in aggregated table form such that no person can be identified. The aim is to estimate M , the number of irregular residents from each country, in order to arrive at the overall total by 1.1.2006. The model assumptions can briefly be described as follows:

(1) There is a relationship between M and N of the type: M is increasing with N , where the rate of increase decreases as N becomes larger. The actual rate of increase is unknown and estimated from the data.

(2) There is a relationship between m/M and n/N of the type: m/M is increasing with n/N , where the rate of increase decreases as n/N becomes larger. The actual rate of increase is independent of the rate of increase under (1) and is unknown and estimated from the data.

(3) In addition to the underlying structural assumptions in (1) and (2) we assume random variation from country to country.

The derived model for m with explanatory variables (n, N) fits well to the data, but can not verify beyond any doubt the assumed relationship between M and N . Statistical associations assumed in the model do not express any cause-effect relationships.

Jan Bjørnstad
Head of Research
Division for Statistical Methods and Standards
Statistics Norway

Anette Brunovskis and Lise Bjerkan

Research with irregular migrants in Norway.
Methodological and ethical challenges and
emerging research agendas.

Contents

Contents	9
Executive summary.....	10
Sammendrag	12
1. Introduction	14
Irregular migration in a Norwegian context.....	14
Methodological approach and ethical issues in this project	16
2. Methodological and ethical challenges	18
Irregular migrants in Norway and research methodology.....	18
Identification and entry points.....	18
The concerns and roles of key informants	20
Trust.....	22
Ethical challenges in the study of irregular migrants	23
Voluntary and informed consent.....	23
Incentives for participation.....	25
Research with vulnerable people with very limited rights	28
Research dissemination and consequences for respondents	29
3. Emerging research agendas and approaches.....	33
Daily life as an irregular migrant.....	33
Social network and relationships	36
Work conditions and income	41
Living arrangements.....	42
Health issues.....	43
“It wasn’t my choice to come here” – children as irregular migrants in Norway	47
Children under school age.....	48
Adolescence, early teens	49
Becoming an adult as an irregular migrant, mid teens to early twenties	51
Motivation for staying.....	52
Fear	54
Seeing others succeed, hoping for a change	56
Large investments in migration	57
CONCLUSION.....	59
Literature:	61

Executive summary

This report addresses the issues of how irregular migration can best be studied in Norway, in light of methodological and ethical concerns, as well as what the most pertinent research agendas are. Through qualitative interviews with irregular migrants and key informants, this project seeks to discuss the need for knowledge about what challenges irregular migrants face in Norway today in terms of health, work and exploitation, children's situation, and their relation to society. The goal of this report is not to conclude on what the situation is for irregular migrants in Norway today, but rather to point out issues where it could be useful to obtain more knowledge.

One of the main challenges in terms of conducting research with this group is to come into contact with potential respondents. In other countries, there are reports about well established arenas, for instance where irregular migrants can meet with potential employers in the irregular labour market, or health clinics that treat irregular migrants. Such arenas have been used for respondent recruitment in the past. In Norway, there are to our knowledge no such meeting places, or other natural arenas where irregular migrants can be expected to be found. Respondents will therefore have to be recruited through so-called gatekeepers, which may be organisations, religious communities, individuals who come into contact with irregular migrants in various capacities etc. A general observation is that each contact point will probably not yield a large number of irregular migrant respondents. It will therefore be necessary to set aside ample time for respondent recruitment, and also to identify multiple arenas for recruitment. This is reinforced by the fact that irregular migrants are unwilling to reveal whether or not they know others in the same situation, making chain referral schemes difficult. At present, the most likely approach to succeed is a qualitative research design with broad recruitment of respondents through many different channels. This has the advantage of being flexible, but has the disadvantage that representativity is difficult to assess, making it difficult to conclude whether findings are only applicable to sub-groups. Our respondents were very worried about being identified, and it may be difficult to get a large number of respondents for a potential future study, depending on the time and resources available.

An ethical concern for all studies involves the informed and voluntary consent of respondents. Respondents have the right to know exactly what they are consenting to when they agree to participate in research. Our experience was that several of our respondents initially agreed to talk to us with the hope that it would somehow help their case. However, none chose to back out after we explained that participation would not have any effect on their applications. Another specific challenge is the problem of respondents' assistance needs. Normally, respondents who in the course of research are identified as being in need of assistance, for instance medical or psychological help, get an offer of follow up through normal channels, either in public institutions or from

NGOs. This is very difficult to fulfil for irregular migrants, as the availability of assistance is extremely limited. Also for this reason, children should not be included directly as respondents, as the researchers cannot reasonably assume they will be able to help the child should information about assistance needs or abuse come out during the interview.

The most useful approach for a future study would be to conduct targeted qualitative research. In our interviews several potential research agendas emerged. Irregular migrants in Norway face a number of challenges.

One recurring issue was that of health and the lack of access to health care. Our respondents reported that they were not able to get medical treatment, or that they were sometimes afraid to seek out medical institutions. Mental health among irregular migrants comes across as a field where there would be a great need for more knowledge. While the sample in this study is small, it was disconcerting to see in how many cases the issue of suicide came up in interviews. This was also echoed in interviews with key informants, many of whom had experienced contact with suicidal irregular migrants.

Children are also found among irregular migrants in Norway, and some are born into irregularity. It is pressing to get more knowledge about the conditions under which these children grow up and how their lack of legal status in the country affects them. Children were not included directly as respondents in this study, but we obtained information from irregular migrant parents, from key informants, and from one young woman who had essentially grown up as an irregular migrant. Issues of concern regarding children are whether and to what extent they are isolated and able to make use of the rights they have. Irregular migrant children have the same rights in Norway as other children, to education and medical care. It does however seem that sometimes parents may be too afraid to come forth and claim these rights on behalf of the child. A second issue is how children are affected by their parents' lack of rights. Given the fragile mental state many irregular migrants appear to be in, it seems inevitable that children are affected profoundly by their parents' health conditions as well.

Other issues raised by irregular migrants and key informants were related to exploitation in the labour market, difficulties in finding a place to live, and their reliance on their social network. A common theme was that irregular migrants are vulnerable to exploitation in various forms. Some had been severely exploited in the labour market, while one respondent was a victim of extortion and death threats over many years from a human smuggler. Some of these situations could well fall under the definition of trafficking in human beings. While our respondents talked a great deal about the practical difficulties that dominate their lives, several also pointed to more existential problems tied to being an irregular migrant. Our respondents felt it was impossible to return to their country of origin, while at the same time it was impossible for them to plan a future in Norway or elsewhere. Several had made large personal and financial investments in their migration, and expressed a feeling of hopelessness and apathy.

Sammendrag

Denne rapporten handler om hvordan man best kan forske på irregulær migrasjon i Norge, med et fokus på metodologiske og etiske utfordringer, i tillegg til noen av de mest fremtredende aktuelle forskningstemaene. Gjennom kvalitative intervjuer med irregulære migranter og nøkkelinformanter diskuterer prosjektet behovet for kunnskap om hvilke utfordringer irregulære migranter møter i Norge i dag i forhold til helse, arbeid og utnytting, barns situasjon, og forholdet til samfunnet generelt. Målet for denne rapporten er ikke å komme frem til en konklusjon om hva som er situasjonen for irregulære migranter i Norge i dag, men heller å peke på tema hvor det er et behov for mer kunnskap.

En av hovedutfordringene i å forske på denne gruppen er å komme i kontakt med potensielle respondenter. I andre land rapporteres det om veletablerte arenaer hvor irregulære migranter for eksempel kan komme i kontakt med potensielle arbeidsgivere, eller helseklinikker som behandler irregulære migranter. Slike arenaer er tidligere blitt brukt til å rekruttere respondenter. I Norge er det etter det vi vet ingen slike møteplasser, eller andre naturlige arenaer hvor man kan forvente å finne irregulære migranter. Respondenter må derfor rekrutteres gjennom såkalte døråpnere, som kan være organisasjoner, religiøse samfunn, individer som kommer i kontakt med irregulære migranter i forskjellige funksjoner, etc. En generell observasjon er at hvert kontaktpunkt sannsynligvis ikke vil gi et stort antall respondenter. Det vil derfor være nødvendig å beregne betydelig tid til respondentrekruttering, og også å finne mange forskjellige arenaer for rekruttering. Dette blir ytterligere forsterket av at irregulære migranter er uvillige til å avsløre hvorvidt de kjenner andre som er i samme situasjon, noe som gjør såkalt kjederekruttering vanskelig. På det nåværende tidspunkt er den tilnærmingen som har størst sjanse for å lykkes et kvalitativt forskningsdesign med bred rekruttering av respondenter gjennom mange forskjellige kanaler. Denne tilnærmingen har den fordelen at den er fleksibel, mens ulempen er at det er vanskelig å vurdere hvor representative funnene vil være for gruppen som helhet. Våre respondenter var svært engstelige for å kunne bli identifisert, og det kan vise seg vanskelig å få et stort antall respondenter for en fremtidig studie, avhengig av hvor mye tid og hvor store ressurser man har tilgang til.

En etisk forpliktelse i alle studier er frivillig og fritt samtykke fra respondentene. Respondentene har rett til å vite hva de samtykker til når de sier ja til å delta i forskning. Vår erfaring var at flere av våre respondenter i utgangspunktet hadde sagt ja til å delta i intervjuer fordi de håpet at dette på en eller annen måte ville hjelpe saken deres. Samtidig var det ingen som valgte å trekke seg etter at vi forklarte at deltagelse ikke ville påvirke oppholdssøknadene deres verken den ene eller den andre veien. Normalt vil respondenter som i løpet av forskningen identifiseres å ha assistansebehov, for eksempel medisinsk eller psykologisk hjelp, få tilbud om oppfølging gjennom vanlige kanaler, enten i det offentlige tilbudet eller gjennom organisasjoner. Dette er svært

vanskelig å få til for irregulære migranter fordi tilgangen på hjelp for denne gruppen er ekstremt begrenset. Blant annet av denne grunnen bør barn ikke involveres direkte i forskning på denne gruppen som respondenter, fordi forskerne ikke vil kunne være tilstrekkelig sikre på at de vil kunne hjelpe barnet dersom det skulle komme frem informasjon om assistansebehov eller mishandling i løpet av intervjuet.

Blant irregulære migranter i Norge er det også barn, og noen blir født inn i irregularitet. Det er presserende å innhente mer kunnskap om forholdene disse barna vokser opp under, og hvordan deres mangel på lovlig opphold i landet påvirker dem. Barn var ikke inkludert direkte i denne studien som respondenter, men vi innhentet informasjon fra foreldre som var irregulære migranter, fra nøkkelinformanter, og fra en ung kvinne som i essens hadde vokst opp som irregulær migrant. Viktige tema når det gjelder barn er hvorvidt og i hvilken grad de er isolert og i stand til å benytte seg av de rettighetene de har. Barn som er irregulære migranter i Norge har de samme rettighetene som andre barn til helse og utdanning. Det kan imidlertid synes som foreldre noen ganger er for redde til å kreve disse rettighetene på vegne av barna sine. Et annet spørsmål er hvordan barn påvirkes av foreldrenes mangel på rettigheter. Gitt den sårbare mentale tilstanden mange irregulære migranter synes å befinne seg i, fremstår det som uunngåelig at også barn blir fundamentalt påvirket av sine foreldres helsetilstand.

Andre tema som ble tatt opp av irregulære migranter og nøkkelinformanter var relatert til utnytting i arbeidsmarkedet, vanskeligheter knyttet til å finne et sted å bo, og avhengigheten av et sosialt nettverk. Et vanlig tema var at irregulære migranter er sårbare for utnytting i forskjellige former. Noen hadde blitt grovt utnyttet i arbeidsmarkedet, mens en respondent var offer for utpressing og dødstrusler fra en menneskesmugler. Noen av disse situasjonene kan klart falle inn under definisjonen av menneskehandel. Mens våre respondenter snakket en god del om de praktiske vanskene som dominerte livene deres var det også flere som pekte på mer eksistensielle problemer knyttet til å være en irregulær migrant. Respondentene våre følte at det var umulig å returnere til sine opprinnelsesland, samtidig som det også var umulig å planlegge en fremtid i Norge eller et annet sted. Flere hadde gjort store personlige og økonomiske investeringer i å migrere, og uttrykte en følelse av håpløshet og apati.

1. Introduction

This report concludes a twelve week research project with the aim of exploring the context for doing research on irregular migrants in Norway. The overarching goal is to contribute towards knowledge about how this group can best be studied in Norway, paying heed to methodological, ethical and applied research concerns.

Irregular migrants belong to the category of people often included in the term “rare and elusive populations”, not least because of their interest in staying hidden. This poses particular challenges, both in terms of research methodology and ethics. Through interviews with key informants in various fields and a limited number of irregular migrants, we had two goals; the first was to form a basis for a discussion of methods, aiming to explore possible starting points for sampling respondents. The second aim, particularly in the interviews with irregular migrants, was to explore how we could get in touch with this group. Under which circumstances would they agree to participate in research? Would we be able to build a sufficient level of trust? What kind of information can we expect to obtain from a group assumed to be sceptical of providing any information at all? In addition to addressing these issues, we were also able to form an impression of relevant research themes emerging from the way irregular immigrants in Norway described their lives, challenges and motivation for staying.

The intention of this project has not been to map the situation of irregular migrants, but rather to discuss how such a mapping could best be executed, and also to outline future research agendas and concerns that have emerged through our exploratory research. The emphasis in this report is therefore on methodology and research ethics, and it should be considered as a pilot study rather than a study aiming to provide a set of conclusions on the current state of affairs with regards to irregular migration in Norway. Chapter 2 discusses general methodological challenges with this group as well as ethical concerns, while chapter 3 points towards themes and topics that emerged through our interviews with irregular migrants and key informants, and also includes discussion about methods and approaches suitable for different topics and groups.

Irregular migration in a Norwegian context

Migration is generally taken to signify movements that people make across borders with a certain element of permanence to it, although migration can also take place internally in a country. What is regular and what is irregular migration depends on each country’s legal context and migration regime. The implications of what it means to be an irregular migrant will also differ considerably depending on structural circumstances, for instance within the labour market or health services in any given country. As an example, while

irregular migration in Southern Europe is mostly tied to labour migration, in the Nordic countries it originates more from the asylum system (Koshravi 2006:290). Other factors, such as transparency of borders or regional inequality can also play a role in how irregular migration takes place and is shaped. In practical terms, and for research purposes, this means that it is complicated to draw on methodological approaches in other settings, as the phenomenon of irregular migration in itself differs so much from place to place.

Over the past decade, migration to Norway has changed substantially. While in 1980 the immigrant population consisted of around 95.000 people, at the start of 2007 the number had increased to 415.000 (Djuve and Kavli 2007:197), and the newest wave is dominated by labour migration. Net migration to Norway in 2007 was 40.000 people, and 104.000 residence permits were issued for purposes other than tourism or business. Of these, 72.400 were permits for work and 7.700 for studies, 17.900 permits were granted for family reunification, and 5.750 were granted to asylum seekers or refugees. Just above 6.500 people applied for asylum in 2007, an increase compared to 2006, when the number was 5.300. In the course of 2007, 2.900 people were granted residence permits after applying for asylum, which is an increase compared to the year before, when the number was 1.700. Rejections of asylum applications in 2007 amounted to 2.100, and 2.200 people were transported out of the country by the police. 443 people returned voluntarily with the assistance of the International Organisation for Migration (IOM) (UDI 2008:4, 15, 18, 21).

While migration as a topic is subject of much research in Norway, this is hardly the case for *irregular* migration. Friberg (2004) discusses ethical and practical challenges tied to quantitative research on asylum seekers who have left the reception centres. Brekke and Søholt (2005) analyse the situation for asylum seekers who have received a negative reply in their evaluation of the loss of right to keep living in reception centres, which came into effect in 2004. Even though the loss of right to live in a reception centre led to deterioration in living conditions, it did not necessarily motivate a return to countries of origin. The individuals' subjective perception of the situation in the home country was far more important (Brekke & Søholt 2005:151).

While few studies have specifically targeted irregular immigrants in Norway, people in this situation have been included in other studies, specifically in studies of prostitution. Nigerian women in prostitution have been subject of much attention and debate. While prostitution is usually the overshadowing perspective and concern when this group is discussed, they may also be seen as irregular migrants who have or are in the process of repaying their debts through one of the few income generating activities open to them (Skilbrei et al 2006, Skilbrei & Tveit 2007:28ff). The reason they owe so much money in the first place is that they were unable to migrate through regular channels, even though some have later been able to regularize their status.

In this project, we have focussed on irregular migrants from outside the Schengen area. While for instance Polish workers can also become irregular migrants by not complying with labour market regulations (Friberg & Tyldum 2007), this is a group that does not pose the same challenges in terms of research methodology as other irregular migrants. Further, in our view, single minor asylum seekers who become irregular

migrants constitute a group where there would be particular methodological and ethical challenges, and we do not include this group specifically in this project. In addition, single minor asylum seekers have been discussed to some extent in the literature. Children who are not unaccompanied, however, have not been studied and face particular challenges, as further discussed in chapter 3. O’Connell Davidson and Farrow note that the current emphasis on the vulnerability of “separated children” needs to be modified and balanced by a recognition that independent child migration can lead to positive as well as negative outcomes, but also that children who migrate with their parents are not necessarily safe from harm (O’Connell Davidson and Farrow 2007:11).

Methodological approach and ethical issues in this project

Discussion of research methods appropriate for studies on irregular migrants is one of the main topics of this report, and is treated in depth in chapter 2. This subsection, however, deals with the methodological approach for the qualitative data collection used as a foundation for the general methodological discussion.

We have approached the topic through a qualitative research design. We have been in contact with 49 key informants who deal with issues of irregular migration in a variety of capacities. We talked to police, migration and immigrant organisations, employees at reception centres, health personnel, crisis centres, Church communities and congregations, minority organisations, schools and people who assisted irregular immigrants as private persons. One goal was to establish which actors had direct contact with the target group, and who were perhaps more interested at a general level, with less practical experience. We also wished to establish whether organisations could be used as entry points for sampling in an eventual future study, and if so, which actors it would be useful to approach.

We obtained further information through test interviews with seven irregular migrants (two men and five women) and secondary but rather comprehensive information about six additional irregular immigrants (three men and three women) from people who had either assisted them or otherwise been close to them.

Irregular migrants were recruited as respondents through organisations, both Norwegian and minority organisations, and through personal contacts. As with key informants, interviews were semi-structured, with a list of topics preferably to be covered in the interview, but with the option to follow other paths of inquiry that emerged. The respondents were as a rule first informed about the project by the referring person, and was then informed again by a researcher when contact was first established by phone, all the while underlining that participation was voluntary and information given confidentially. When respondents agreed to participate we set up a meeting in a location of the respondent’s choosing, generally a public place, such as a café or in some instances, a bench in a park. The respondents were provided with written project information and contact details for the project manager and staff.

We were particularly attentive to the need for informing potential irregular migrant respondents about the fact that the study is financed and commissioned by UDI, the Norwegian Immigration Directorate. It was imperative to convey that no information about individuals would be passed on to the authorities. This requested a leap of faith from the respondents, all of whom stood at risk of being sent out of the country if identified. We also sought to further earn trust by not asking for information that could be too sensitive or potentially damaging for the respondent, for instance specifically where they lived or worked. Questions that concerned social network also proved to be somewhat sensitive, and some of the respondents were uncomfortable sharing even the most mundane details about people they lived or worked with. In many ways, the fact that UDI was financing the study created a more difficult situation in gaining trust, but on the other hand, it also forced respondents to really think about the decision of whether to participate or not. It may be that some potential respondents declined to participate based on an unfounded fear that information would be passed on to authorities, and thus declined participation on a faulty foundation. From an ethical standpoint, however, it is less problematic if people decline to participate rather than accept to participate, based on misunderstandings or flawed information. A separate matter, however, is methodological concerns. Fear of participating may be more pronounced among people who experience higher anxiety levels about being identified, and this can cause a bias in the respondent selection.

The irregular migrants approached with requests for participation were mostly motivated to participate, although some remained guarded and closed throughout the interview. Concerning the motivation for participating, some respondents were very clear in expressing that they hoped the information they shared could create more understanding for people in their situation and that participating in research could create a foundation for change in policies.

Any research that involves people who have been or are in a difficult situation must be sensitive to the potential anguish research can cause respondents. We have throughout the research been acutely aware of this and attempted, to the best of our efforts, to avoid causing trauma for our respondents by following principles of ethical interviewing. There are to our knowledge no specific guidelines for interviewing irregular migrants. However, we have found it useful to lean on guidelines developed by the World Health Organization (WHO 2003) for interviewing trafficking victims, who are also often migrants in difficult situations. While not all respondents in this study should necessarily be classified as traumatised by their migration experience, some clearly were, and some had also been exploited in labour under conditions that might well fall under the human trafficking definition. It is problematic that researchers cannot offer help beyond referring to the very basic level of health care they have the right to, as many have considerable problems. This challenge is further discussed in chapter 2.

2. Methodological and ethical challenges

In all research that involves human beings, whether in social sciences or in medicine, research methods and research ethics are inextricably bound together. The choice of method needs to take into account whether ethical standards are being upheld when using this particular approach. In this chapter we describe some of the most central concerns in each of the two areas, starting with issues that are primarily tied to methodology: how to best access respondents and collect data, and which challenges are posed by the fact that irregular migrants are a rare and elusive population. The second part of this chapter deals more specifically with ethical issues; voluntary and informed consent, use of incentives in motivating respondents' participation, the potentially vulnerable position for many respondents, and finally, research dissemination and potential consequences for respondents.

Irregular migrants in Norway and research methodology

Identification and entry points

The first challenge in conducting studies on irregular migrants in Norway is identification, or how to come into contact with potential respondents. When membership in a so-called hidden group involves stigmatisation or illegal behaviour, individuals will often refuse to cooperate or give unreliable answers to protect their privacy (Heckathorn 1997:174). Any kind of research on irregular migrants, whether qualitative or quantitative, which seeks to collect primary data from the target population runs into the first challenge of identifying respondents. As it is very difficult in Norway to target irregular migrants directly – for instance, there is no list of households that contains irregular migrants that can be used for direct sampling – it will be necessary to identify entry points or social arenas where irregular migrants can be expected to be found.

These arenas will differ between countries according to the social context and structural framework within which irregular migration takes place. For instance, Dutch researchers approached irregular migrants through known arenas for irregular work in one particular area of The Hague. Respondents were approached as they were waiting for vans to take them to work in a nearby area, and there were also other well known places where irregular migrants would meet almost every day in search of work or a place to stay, or just to chat (Engbersen et al 2006:213). In Norway there are to our knowledge no such meeting places for exchanges between people who seek or offer irregular work. Similarly, in Sweden there is an established medical clinic where irregular

migrants can seek advice and simple treatment. There is also an interactive website providing information to irregular migrant children as well as a help line children can call for information and support. Both the clinic and children's website/help line have provided substantial information about health problems and challenges that children in this situation face through reports and other dissemination (Médecins Sans Frontières 2005, www.utenpapper.nu). These types of arenas could potentially be used as access points to provide information about research to respondents. However, again, in Norway no such natural or obvious arenas for contact exist.

One of our goals in this project was precisely to explore whether alternative arenas can be identified in Norway and accessed as starting points for respondent recruitment. We therefore set out to contact immigration organizations, minority organizations and religious communities, and other types of organisations that we knew had had contact with the target group. Some of our respondents among irregular migrants were recruited through these types of entry points.

However, we did find that outside the very few organizations that deal more or less explicitly with irregular migrants, the process itself of identifying potential entry points is very time-consuming. Future studies should take this into account when budgeting. To illustrate with an example; one issue we wanted to explore was whether religious communities could be used as access points, based on the assumption that some irregular migrants may receive assistance from churches, whether at a psychological or practical level. It was also our impression, both after interviews with key informants and through the test interviews that irregular migrants would seek out churches and congregations to fulfil their spiritual needs. After approaching some of the larger and most well-known religious communities in a minority context, we found that while this avenue may not be completely closed to recruitment of respondents, it was also not likely to yield a large number of respondents if only a few entry points were accessed.

Representatives of these religious communities told us that they had rather limited experience with the target group, but suspected that some of the people coming to services might in fact be irregular migrants without choosing to reveal this to the church. In the experience of some religious communities, it is also very difficult to gain the trust of people in this situation. One religious leader described his contact with a man who had received the first negative reply to his asylum application, and now waited for the processing of his complaint about the decision. Although this man was not yet technically in any danger of being sent out of the country, he was planning for the future eventuality that he would be. He was very reluctant to give any information about himself, including where he lived, as he feared that someone might use this information against him in the future.

Another complicating factor with respect to using religious communities as entry points is the dilemma that congregations may find themselves in and that several key respondents referred to: Should they be loyal to irregular migrants who come to them for help or a loyal to the laws and norms of society in general? Some key respondents from religious communities said that while their organization as such did not assist people in this situation, it could be that individuals associated with the congregation helped irregular migrants on their own time and initiative. The clandestine nature of the

issue and of helping people who are in Norway without residence permits can mean that those assisting them are unwilling to reveal their knowledge about the topic. This may also be linked to the fact that most such organisations receive public funding, and may fear that support to irregular migrants could adversely affect future grants.

As contact with some of the bigger churches and congregations did not prove a particularly fruitful way for us to get in contact with irregular migrants, we wanted to explore the implications of approaching smaller religious organisations as well. This again proved a very time-consuming process. We obtained a list including the phone numbers and contact details of 148 religious communities that received public financial support in 2006. Within the rather limited resources of this particular project it was never a goal to contact each and every one of these organisations. However, to reach even a few proved quite demanding. One issue is that some of these organisations are rather small, and do not have set office hours. It takes a lot of calls in order to get a response. A related issue is that the phone numbers may be out-dated and are not always correct, and in some cases we ended up talking to florists or hairdressers instead.

Our conclusion is that using religious communities as a starting point may be a fruitful avenue, but that it takes a lot of time and resources. This can also reasonably be assumed to be the case for other potential entry points, such as minority organisations. A general observation is that each contact point will probably not yield a large number of irregular migrant respondents. In addition, when key respondents – from various fields - reported to be in contact with people in the target group, they would usually know only about two or three people currently in the situation. One exception to this was migration organisations, who would generally know many individuals who sought advice on their legal status.

In our opinion, should a future project seek to target entry points, it would probably be most useful to recruit quite broadly, and make sure that sufficient resources are allocated for this work, as it will be time consuming and require quite a bit of “detective work” in order to establish exactly who is likely to have contact with the target group. While migration organisations such as NOAS (Norsk Organisasjon for Asylsøkere (*Norwegian Organisation for Asylum Seekers*)) and SEIF (Selvhjelp for Innvandrere og Flyktninger (*Self-help for immigrants and refugees*)) could potentially refer information on to a relatively large number of people in the target population, it would be important also to reach people who have not sought advice from these organisations. We believe that both religious communities and minority organisations can be useful starting points for recruitment, as well as migration organisations and possibly also lawyers who deal with asylum cases. However, the willingness of these actors to cooperate with a research project will depend on how the project is perceived, i.e. what the intention is with the project. This topic is discussed in the next paragraph.

The concerns and roles of key informants

There was a considerable ambivalence among key respondents from many different organisations with respect to referring us on to irregular migrant respondents, both for this project and as a hypothetical issue for a future projects. Several expressed reluctance

or doubt because they felt that the possible policy outcome was very unclear: Would more knowledge lead to better conditions for irregular migrants, or would it contribute to more efficiency on part of the police in sending people out of the country? Key informants were very concerned with potential risks to respondents and stressed the importance of anonymity.

On the other hand, most key respondents involved in direct contact with irregular migrants also felt that it was necessary to raise the issue and make the challenges in this field visible, including the hardship that irregular migrants go through. One said;

By [building more knowledge] one could document the difficulties in living conditions and other problems for the group. Then that could be put on the table and serve as a foundation for political influence.

A future research project should therefore also pay attention to and have enough resources for trust building with key respondents or gatekeepers and seek to keep an open dialogue about the focus of the research, but also bear in mind that key respondents may have a very clear motivation to participate in order to put political pressure on decision makers.

A general observation in research concerning key informant information is that a well-designed sampling scheme for a hidden population should be based on some prior knowledge of social organisation and geographical distribution of the population in question. With no prior knowledge of where to find individuals of the survey population, or how they are likely to respond to questions from an official institution or researchers, it is unlikely that the effort will lead to good quality data. Spending time to get to know the community under study, and some of their representatives is important, both in order to design an efficient sampling strategy but also to establish trust and cooperation from the community members (Parrado et al. 2005). In a data collection scheme referred to as targeted sampling, Watters and Biernacki recommend that studies of hidden populations start out with an initial mapping (based on official data and prior research) as well as a systematic ethnographic or qualitative assessment, to uncover the groups social organisation, before quantitative data production starts (Watters and Biernacki 1989).

Data from key informants, or secondary sources, should, however, be approached with a certain caution. Although individuals engaged in NGOs, police or cultural organisations working with irregular migrants may have good knowledge about the situation of irregular migrants, organisations often to a large extent face the same problems of access and bias as researchers.

The key respondent approach to arriving at estimates and describing populations is commonly used in empirical studies on various hidden populations, including irregular migrants (see for instance UNICEF 2003; IOM 1996a). This approach is, however, associated with several sources of bias (Heckathorn, 1997). Numbers and estimates arrived at by expert opinions or involved NGOs cannot be subject to methodological scrutiny or evaluations of external actors, numbers are given weight based not on the methods used to arrive at them (i.e. registration methods, update frequency, or

coverage), but based on the authority of the person or organization that provided the estimate (Tyldum and Brunovskis 2005), Consequently, the lack of systematic approach and documentation makes data difficult to contest.

Few organisations have adequate systems for keeping registers, in certain cases they will even have made a very conscious choice not to register the legal status of people coming to them for assistance. It should not be expected that community workers are able to produce sound estimates, even if they have excellent knowledge of the arenas in which they work. Concerning estimates of numbers or population size, even if several independent actors present similar figures, this should not be taken to indicate that the number is correct. Key respondents in the same field may be influenced by each other, as they are likely to attend the same meetings and seminars, read the same sources of information and newspapers, and may also be influenced by the general perception in the society. This is not to say that key respondent interviews are of no use; key respondent interviews can give very important information, not the least on the use of services and access points for hidden populations.

Another point is that key informants do not interact with a random group of potential clients, and, particularly for hidden populations, key respondents cannot be expected to have an overview of the total population. In terms of skewed recruitment, respondents should ideally be recruited through various sources to avoid the most obvious biases. For instance, while organisations that provide legal advice may provide more respondents than other smaller entry points where contact with the target group is perhaps more sporadic, it is likely that those who are seeking advice differ from those who do not in ways we cannot predict.

Trust

A key issue for collecting data on irregular migrants is recognising when an irregular migrant would be interested in identifying himself or herself as irregular. Under which circumstances and for what reasons do irregular migrants agree to participate in research?

Our experience with the test interviews was that building trust was not an insurmountable problem. That said, all of the respondents had first been approached by someone they trusted, and our authenticity and trustworthiness had thus been validated by someone else. This, however, did not mean that they were necessarily willing to trust us 100 per cent. For instance, one of the reasons that we believe respondent recruitment will be time-consuming, is that respondents were generally unwilling to reveal even that they knew anyone else who were in the same situation as they, let alone refer us on. If this should prove to be the case in general, and based on key informant interviews we believe this is likely, it would be a substantial obstacle to any type of chain referral sampling.

In the test interviews, all the irregular migrants expressed fear of expulsion if caught by the police. Convincing potential respondents that participation and self-identification will not have negative consequences is one aspect where one should expect to see considerable differences between respondents. There is a very likely bias caused by

differences in literacy and general perception of the difference in roles between a researcher and a representative of the authorities. In line with our previous experience with trafficking victims, we found that it was much easier to explain the project and the delineation between researcher and UDI where respondents had a certain level of education (Brunovskis and Surtees 2007:82-83). This potential bias will of course be present in all research where respondents have very diversified educational levels and different backgrounds. Still, the imbalance may also be particularly pronounced when respondents can be assumed to be reluctant to participate in the first place, because of fear of negative consequences from giving information, causing fewer people to take the chance of participating.

One way of minimising the gap between researcher and respondent could be to use interviewers who belong to the same ethnic or language group as the respondents. This is an approach that has been recommended for other groups who are reluctant to participate in research, for instance Roma populations of Eastern Europe. Willingness to participate depends on whether the purpose of data collection is made clear, but also who asks. One successful effort used Roma advisors as interviewers (Bjerkan and Huitfelt 2004:24-25). The use of peer interviewers, i.e. interviewers who are in the same situation as the respondents, is a possibility that may further decrease the distance between researcher and the researched. This is an approach that has for instance been used in a study of drug injecting parents, who were interviewed by other parents with the same substance abuse problem (Elliott et al 2002). However, one practical obstacle to using other irregular migrants as interviewers would be that they do not have work permits, and can therefore not be legally employed as research assistants.

In any case, the use of same-ethnicity interviewers, regardless of legal status, is an approach that should be used cautiously with irregular migrants. While same-ethnicity networks may provide a substantial source of support, relationships can also be strained and the social group transparent, particularly with groups with few members. Key informants also warned that caution should be displayed in the choice of interpreters, as some language groups can be rather small, and respondents may worry about exposure to their ethnic community.

The process of establishing trust with the respondent and his/her network again implies that data-production will be time consuming. Whether the community of irregular migrants in general could be convinced to trust a field-organisation for a large scale survey that would require up-front identification of respondents is questionable, and would be likely to produce biased results, if any at all.

Ethical challenges in the study of irregular migrants

Voluntary and informed consent

An important principle in research is the informed and voluntary consent of respondents. In essence this means that the respondent should be free to make the

decision to participate, without any undue pressure from the researcher or from others. The respondent must also be given sufficient information about the topic of the research, who finances it, and whether there are possible consequences associated with participating. This information must be given in such a form that the researcher can reasonably assume that it is understood by the respondent.

The principle of voluntary and informed consent affects both the relationship and interaction between researcher and respondent, but also which recruitment methods are appropriate. This means that methodological choices and research ethics are closely bound together. For instance, if the respondent is in a dependent relationship with a so-called gate-keeper, or person who refers on information about a project to potential respondents, it can be very difficult for them to decline to participate. This can be the case if potential respondents are recruited through organisations that somehow assist them, which is often the case in studies of vulnerable groups. This places a particular responsibility on the researcher to convey information that non-participation will not have negative consequences.

In this particular project, which is financed by the UDI, and where the National Police Directorate was represented in the reference group, we decided in accordance with advice from the National Committees on Research Ethics, not to try to recruit respondents through any of these channels, in order to avoid confusion about the independent role of the researchers. We felt that particularly since the project was funded by UDI, there could be a danger that potential respondents could think that participation could somehow help their application process, or conversely, that non-participation could have adverse consequences. This also meant not attempting to recruit through the so-called “waiting reception centre”; Lier Ventemottak, which houses people who have received a final rejection of their asylum application, but do not cooperate on return to their country of origin. This is a group that could potentially provide very valuable information about life as an irregular migrant in Norway.

The question is whether it would be ethically sounder to try to recruit respondents in such an environment in a potential project with a different funder. This may not necessarily be the case, and will depend on the information that is given to respondents, and whether this is understood and trusted. Based on experience, some respondents with limited experience with research will associate researchers with someone representing “the state” or being in some generic official position. As previously mentioned, we found that it was much easier to explain the project and the delineation between researcher and UDI where respondents had a certain level of education, while it is quite challenging some times to explain the independent role of research for instance to someone who is illiterate. This is a considerable challenge with respect to informed consent: Just how informed does consent need to be? And what would be the consequence if people who do not possess a framework in which they can understand the role of research are systematically excluded from participating as respondents? The inevitable consequence would be that some of the most vulnerable groups would not be included, which would lead to biased data on important social conditions.

As this particular project proceeded, we spent considerable time during the initial contact with irregular migrants discussing their motivation for participating in research,

and what their expectations were. As we suspected, many had initially agreed to talk to us with a hope that it would somehow help their case. However, when we explained that it would not have any effect on their applications, one way or the other, no-one chose to decline to participate, but said that they wanted to contribute to increasing general knowledge about how people in their situation lived.

Another issue that has particular relevance in the contact between researcher and particularly irregular migrants who have been asylum seekers lies in the meaning of the life stories they share. For asylum seekers, their life stories are in many ways a currency. When interviewed by authorities, it has an enormous impact whether the story is considered trustworthy or not. Therefore, most respondents in this category will have been interviewed before, but where the premise for that interview was whether or not the person was going to be allowed to stay in Norway. This context is very important for the researcher to consider, and to be aware that the respondent may expect to interviewer at some level to pass judgement on their stories. In addition, as role of victim more often release rights than role of active agent, it does not seem unreasonable to assume that aspects of agency and control over one's own destiny may be downplayed, in order to fulfil imagined expectations. Again, this is something we have noted in many interviews with trafficking victims, where some of the same mechanisms come into play.

This dynamic of having been interviewed previously for other purposes can also, but does not necessarily have to, lead to somewhat embellished stories and victim understanding of one's own role. While researchers should keep a healthy analytical distance to what is fact, one should also not automatically assume that dramatic stories of suffering are constructed with a particular goal in mind. Another aspect is that the researcher does not necessarily need to make a decision on whether or not to believe the facts, but rather focus on how the respondent describes his or her understanding of their own situation, and how they explain choices and behaviours.

Incentives for participation

As being a respondent in research is a task with few rewards, it can be difficult to recruit respondents in general, simply because people are not necessarily interested in taking time out of their lives to answer questions. Researchers therefore sometimes use incentives to motivate participation. Incentives may for instance be that participation enters the respondents into a lottery with chances to win a prize, gifts, or they can also be financial incentives in cash. In many cases, the use of incentives do not necessarily pose a problem in terms of voluntary consent, given that the size and form of the incentive is appropriate, and not so large that it makes it impossible to turn down participation¹. The use of incentives may thus jeopardise the voluntary consent to participation because of the conditions many people in this group live under. Many irregular migrants may not feel that they can turn down an offer of money, even if they

¹ Other concerns are tied to data quality and the credibility of research when respondents are paid, but we will not discuss these topics here.

do not initially wish to identify themselves as irregular migrants. Offering financial incentives under such circumstances could therefore constitute undue pressure for participation in research. While in medical literature the use of incentives are weighed against the potential risk that research participants are subjected to, it may be more complicated to measure risk in the social sciences. There is rarely, as there can be in medical research, a risk of physical harm in participating. However, when being interviewed, there is considerable potential for discomfort tied to certain questions, not least when the respondent either is currently in or is talking about a vulnerable situation. When interviewing about traumatic experiences, there is a very real risk of re-traumatisation. Additional risk may also be tied to negative feelings emerging after the interview, as a respondent may regret having participated in the first place, or become insecure about what the information will be used for. In this light, while interviews within the social sciences rarely involve direct physical risks, they are also not altogether risk free.

The second problem is tied to the fact that there appears to be large variation among irregular migrants in terms of income levels. This means that it is near impossible to find an appropriate level of remuneration ensuring both voluntary participation and motivation for the group as a whole. Both of these factors must be taken into account when designing research projects involving this group, and it is our view that it would be inappropriate to use financial incentives for this group in Norway.

At the time of writing, there is a debate under way in the Norwegian social science research environment on whether it is ever acceptable to use financial incentives, or to pay respondents. In Norwegian social science, the more controversial position has been to use such financial incentives. However, when we discussed financial incentives with colleagues from other countries, some expressed surprise that this is seen as problematic, and argued in favour of using such incentives. They also held the position that it would be more problematic to not pay respondents for participation, and that the time respondents put into the research should be remunerated in the same way that assistants would be.

This illustrates a point that has wider relevance than just for the particular field of studies of irregular migrants: When is it appropriate to use financial incentives in order to motivate participation in research? In this particular project we took the stance that it would not be appropriate to pay respondents in this study, for several different reasons, not least because we expected that the target population would have difficulties turning down money. Therefore, the use of incentives would make voluntary consent impossible for many. On the other hand, we feel that it is important, as a matter of principle, to be open to compensating respondents who have to take time off work in order to participate, and also, obviously, to cover direct expenses associated with the interview, for instance for transportation. Omitting to compensate people for participation could exclude consenting respondents who cannot afford to lose income.

It should however be discussed whether payment of respondents is used in order to secure participation of respondents who have already consented but who would be excluded if not compensated, or whether the compensation is actually an incentive in disguise. This also leads to some very difficult decisions; again with respect to finding

the appropriate level. If payment is compensation, then strictly speaking it should be limited to the amount that is lost as a consequence of participating. However, this may lead to some uneasy decisions. For instance, as we will further describe in chapter 3, some of our respondents for this study had very poor working conditions and earned as little as NOK 20 per hour, or approximately 2.50 Euro. Would it then be appropriate to offer this same amount as compensation for participation in a one-hour interview? Or, if this was seen as an inappropriately low amount to offer, what would be the alternative? Dutch researchers conducting a qualitative study found that irregular migrant respondents were more than willing to participate when they realised that "...the remuneration we proposed to give them as thanks for their cooperation proved to be more than their daily wages" (Engbersen et al. 2006:213), but do not discuss whether this might have affected the voluntary consent for participation, nor do they report the exact level of the remuneration.

A discussion of the use of financial incentives will become even more pertinent with the growing use of research methods such as respondent-driven sampling (RDS), which is essentially a chain referral method based on a double incentive system, whereby respondents are rewarded both for their own participation, and for the number of respondents they recruit from their own network. The method is designed to produce representative data on populations where there is no sampling frame and the population is reluctant to self-identify. (The RDS method is described in detail in Heckathorn (1997) and Sagalnik & Heckathorn (2004)). This is one of the methods one could theoretically imagine used for studying irregular migrants, who are also a rare and elusive population. Former applications have been for instance with drug users, street children or street prostitutes, and recently, Polish workers in Oslo (Friberg & Tyldum 2007). While this method can work both with financial and other incentives, the precise choice of incentives is rarely discussed in relation to research ethics in the literature, nor is the level. For instance, one study applied this method to injecting drug users in the capital of Albania, Tirana and in St. Petersburg in Russia. While in Tirana respondents were given 10 Euro for their own participation and an additional 5 Euro for each respondent from their own network that they recruited, in St. Petersburg all local stakeholders rejected the idea of financial incentives. Respondents were therefore given gift packages of a comparable value. What the article does not discuss are the reasons why stakeholders were so negative to financial incentives in one field site, and not in the other, what was the reasoning behind these positions and what were the possible consequences (Stormer et al 2006:74). Similarly, in an application of the method in New Guinea, incentives were adjusted between sites according to living expenses, but again, the exact level is not described relative to the living expenses, or how the researchers arrived at an appropriate level (Yeka et al 2006:64).

A final point concerning incentives, setting the ethical considerations aside for a moment: Even if one was able to identify incentives (financial or other) that would encourage irregular migrants to identify themselves as such, there would be no way of determining whether the respondents volunteering really were irregular migrants, or "false respondents", pretending to be irregular migrants in order to get the promised financial incentives. Persons with legal residence have less to risk from participation in

an interview, and may, at least in theory, be more easily mobilised by financial incentives if the incentives were large enough. Although legal residence can be documented through valid passport or other relevant documents, lack of documentation can only be assumed, and consequently irregular status is not easily documented. In other words, if the incentives for participation are too high, there would be a risk of recruiting “false” respondents, and few possibilities to control for this.

Research with vulnerable people with very limited rights

A specific challenge that became very clear to us during the course of our interviews is the problem of respondents’ assistance needs. Normally, respondents who in the course of research are identified as being in need of assistance, for instance medical or psychological help, get an offer of follow-up through normal channels, either in public institutions or from NGOs. In our previous work with victims of trafficking, we have routinely identified such options before starting the interviews, and have in some cases also accompanied respondents to assistance organisations (see for instance Skilbrei et al 2006, Brunovskis and Surtees 2007). This is much more difficult to fulfil for irregular migrants, as the availability of assistance is extremely limited.

Our approach in this project was to engage in each case where it was obvious that the person needed help quite acutely and use our personal networks in order to set up some form of assistance, or we made sure that the respondent had someone else who was better equipped than us to provide follow-up. However, had the number of respondents been bigger than seven, this could quickly have become difficult. Still, it is hardly an option not to be prepared for interventions, as some of the situations respondents in this category find themselves in are very serious indeed.

For instance, one situation we were made aware of was that of a woman living with serious death threats from the smuggler who had brought her into the country. He kept demanding more and more money from her, and she was convinced that he was going to kill her. She was very depressed about the situation, and could not see any solutions. This information emerged very gradually through the interview, and when she did in the end tell us, she said that she was not looking for help; she just wanted someone to know in case something happened to her. We were able to set up some assistance for her, but cannot describe this in detail for reasons of anonymity. According to the police these types of blackmail situations between irregular migrants and smugglers are not uncommon, and in a future project one should be prepared for dealing with this kind of information.

This also brings up a related point; in that these types of interviews can be emotionally very draining, which must be taken into account when designing projects. Interviews should be conducted by experienced researchers. The researchers involved in this project have extensive experience researching human trafficking, both in Norway and in Eastern Europe and the Balkans, and are therefore not unaccustomed to interviews about sometimes extreme abuse, brutality and degradation. Still, some of the interviews with irregular migrants in Norway have been no less difficult, not least because of the hopelessness many respondents feel about the situation they are in.

Several spoke of suicide, which was obviously not a topic brought up by the interviewer. This is not a subject where it would be appropriate to start more large scale interviewing using research assistants, and this should also be taken into account when choosing research method.

There is no existing system for receiving people in this group who have difficulties, with the exception of acute medical problems. This means that children should not be involved directly in a study of the group. During the project period we were for instance made aware of an instance of abuse. In this specific case of persons were now out of the country, but it is not difficult to imagine that this is a situation one could encounter in a larger project, because families in this situation are often living under very stressful conditions. It is important to describe the lives and problems of children who live in this situation, but as long as it is not certain that one could find a good solution if abuse or other conditions are revealed it is not an option to interview children directly. One solution would be to use key informants. This is further discussed in the next chapter.

Research dissemination and consequences for respondents

As previously mentioned, respondents, and particularly key respondents, were very concerned with what the intentions were with this project, and how results would be presented and used. The main worry was that the research results could somehow be used to more efficiently find and return irregular migrants. There were also worries about potential political effects of an estimate of how many irregular migrants there are in Norway, in that for instance a high number could cause increased pressure towards control and return.

The effects and impact of research is a topic of particular concern for researchers doing commissioned research and applied research; two terms that are overlapping and sometimes hard to distinguish. Commissioned research will very often be applied research, in that those who commission it plan to use the results. Researchers cannot take the ethical responsibility for the intentions of those who commission research, but at the same time, need to be conscious of what the funder intends to use the research for, and take ethical responsibility for the consequences of the research output. This means in this instance to make sure that the information produced cannot be used for identifying and returning irregular migrants (Friberg 2004:20-21). Researchers must balance their responsibilities towards their respondents and their funders, with most emphasis placed on the former. This means that it is crucial to have an open dialogue with the funders regarding what will and will not be discussed as part of the publication plan.

In the present project we had an open dialogue with the UDI right from the outset of the project. The funder stated that their intention with this project was not to seek information about irregular immigrants with the intention of making returns more efficient, but to get a better overview of how this group and its living conditions could be studied, in order to create a better foundation for discussion of possible policies. The research institution and team were also clear on not wanting to provide information that

could be used for control purposes, not only for individuals but also at a group level, because of the ethical responsibility towards respondents, and not asking people to provide information that would be likely to have adverse effects for them. This means for instance omitting information about strategies for “beating the system”.

While researchers cannot be held responsible for all consequences and uses of their research, they also cannot ignore the social and political contexts in which their research takes place. Applied research often relates directly to policy making institutions or practitioners of policy as funders and initiators of studies, generally with a clear goal of what they want to use the information for. To see the researcher isolated from, or even suspended above such concerns would be to ignore a substantial part of the impact of research, and therefore also its ethical implications for the respondents. The policy outcome regarding irregular migrants in Norway is today very hard to predict. Irregular migrants hold a particular position the current public debate in Norway, and participants in this debate appear divided on whether they should be seen as criminals or vulnerable individuals in need of protection. The government’s position was summed up in December by Minister Bjarne Håkon Hansen after a series of articles in the newspaper *Aftenposten* on the conditions irregular migrants live under. The Minister expressed empathy, but was also clear that Norwegian policy is that irregular immigrants must be identified by police and returned to their home countries. He also said that they themselves were responsible when they were in exploitative and undignified situations, and that it was not an option for Norwegian authorities to condone humanitarian aid to the group, as has been requested by the Red Cross and others (*Aftenposten* 1 December 2007). Within the same week, two national newspapers² took the editorial position that irregular migrants should be given access to more comprehensive health services than what they are given today, and that this is a vulnerable group in need of protection. A number of actors, both representatives of NGOs and official offices such as the Ombudsman for Children, expressed concern that current provisions were lacking and that a population of undetermined size is living unprotected and on the margins of society.

It is a legitimate concern of a state to control its borders. However, in doing research that involves primary data collection with respondents, the researcher’s primary obligation is towards his or her respondents and that they should not suffer adverse effects from the research. This may be seen to some extent as guiding choices of research topics and approach. For instance, if research focuses on social vulnerability and how it could be alleviated, it makes very little sense to research this heterogeneous group as a whole: In building hypothetical social measures one would not be interested in people who come only for a short period on false passports, or perhaps with criminal intentions. However, social measures would in all likelihood target specific sub-groups, for instance children, or people with severe chronic diseases. In such a perspective it makes sense to study these subgroups specifically. Similarly, studies of working conditions also make sense in relation to developments in the labour market and the work against social dumping and human trafficking. The next chapter specifically deals

² *Aftenposten* and *Nationen*

with what we see as the main research agendas emerging from interviews with test respondents and key informants, and also suggests various approaches that would be appropriate in each case.

In almost all research using qualitative interviews with respondents, a major concern is to protect the respondents' anonymity. This was also the main concern of our respondents, who set as an absolute condition for participation that they must not be recognisable in the finished report. Ensuring anonymity goes beyond merely changing names or details, and can sometimes be less straightforward than one might think. Richardson and McMullan (2007) provide a very good illustration of how anonymity can be unintentionally compromised through a story of a priest who was celebrating the 50th anniversary of his ordination, and gives a speech to his friends, looking back on his life. He tells of the difficulties he faced taking his very first confession, when the man he talked to confessed to murder. He tells his friends of his anguish about what to do with this information; how to absolve him or how to give him penance, when a late-comer to the party rushes in, and apologises profusely: 'Oh, Father So-and-so, I am glad I got here. I am so sorry I am late.' He then turns to everyone in the room and says to them: 'Do you know, I was the first person whose confession he heard, when he was ordained?' (Richardson & McMullan 2007:1117).

This example illustrates very well how anonymity is not ensured merely by omitting a name, but that the meaning and significance of information will depend on what the recipient of the information already knows. In this particular project we decided to err on the side of caution and not give information about country of origin or other details that could potentially identify our respondents when we quote from the interviews. This is not least because of the limited number of respondents for the test interviews. Information about nationality would make it very easy to combine elements from different quotes, potentially providing enough information about an individual so that someone could recognise him or her. However, qualitative studies in general often involve a limited number of respondents, and some irregular migrants come from relatively small diaspora groups in Norway. Future research should therefore take this into account as well, and be very cautious in how much information and also what kind of information can be revealed. In some cases this means that the readers may get less information than they would have ideally liked. As an example, if a respondent is quoted as saying that the conditions in his or her home country are too dangerous for return, a reader will most likely want to know which country this is in order to form an opinion about the statement. For reasons of anonymity, however, this may not always be possible.

With respect to research ethics and irregular migration studies, one of the questions we were asked, and also asked ourselves before taking on this project, was whether it was ethical to research this group at all, and whether researchers should leave it alone altogether, given the uncertainties regarding outcome and uses of the information. While any research of this type must be very considerate of the myriad ethical dilemmas and seek to avoid overlap between research results and intelligence information that can be used for identification, it is simply not possible to foresee any eventuality, and this may be problematic. On the other hand, many irregular migrants are severely exploited

and live under very difficult conditions in Norway today, and to avoid producing knowledge will not help alleviate their situation. They will still be here, regardless of whether they are studied or not. Further, in the case of the important sub-group of children, it is questionable whether it is always in their best interest not to be “discovered”, as we will further discuss in chapter 3.

Finally, it is not as if information about the group is not produced already in the public consciousness. The police may already be quite accurate in identifying groups, and know a lot about strategies irregular migrants use to “beat the system”. Further, public opinion is also influenced and shaped by journalistic reports, which may range from thorough investigations to tabloid exaggeration, or political statements that may sometimes be sensationalist. Television debate programmes tend to bring together the most extreme positions, seeking to simplify an issue that in reality is complex and multifaceted. Research on this group is therefore necessary in order to provide balanced and quality assured analyses of the current situation. Ignoring the problems this group faces, will not make them go away. The question may therefore also be turned around; is it ethical *not* to produce research on irregular migrants?

3. Emerging research agendas and approaches

Irregular migration can be framed and studied in a number of different ways. It can be seen from the perspective of states' needs to protect their borders; or in a larger context as a consequence of global inequality and migration control. Another perspective could be to look at the phenomenon in terms of its effects and manifestations for those who are irregular migrants themselves. As discussed in the previous chapter, this may currently be the best approach when aiming to collect primary data from the target group, not least because irregular migrants may see it as in their interest to contribute to research with this perspective. It is for instance perhaps more questionable whether irregular migrants would want to participate in research aiming to reveal ways their strategies for staying hidden. The challenges faced may be very different for the various subgroups of irregular migrants, and some need to be approached in different ways. For instance, children's situation, which we will return to below, requires a different approach from many other topics in that children should not be targeted directly as respondents, as discussed in the previous chapter.

In our test interviews with irregular migrants we explored challenges people in this situation by their own description face, issues that we also followed up in our interviews with key respondents. Although these interviews can by no means be taken as representative of the situation of all irregular migrants in Norway, the common issues that arose based on information about 13 irregular migrants of different ages and backgrounds, as well as the concerns of key informants can point us towards some potential future research agendas. At this point, a caveat is necessary: While the paragraphs below describe what irregular migrants themselves feel are problems directly tied to their irregularity, this is not controlled with a reference population. This is to say that while some issues are without a doubt tied directly to irregular status, such as lack of access to health care, in other cases the problems may be of a more general nature and affect many others as well, although the issues are perhaps exacerbated by being an irregular migrant. These issues might for instance be mental health, known to be a problem among asylum seekers, or problems related to the labour market. It is therefore not a goal in this report to establish a direct causal relationship between the issues described and irregularity.

Daily life as an irregular migrant

At a very basic level, irregularity for a migrant is a description of the individual's legal status in relation to a state, defined for instance through the rejection of an asylum application or the illegal crossing of a border. For the individual, irregularity is also very

much about the lived reality and personal experiences, as well as identity. The consequences of irregularity are manifested in the execution of everyday tasks, and in contact with other people (Koshravi 2006:295). Daily life, its challenges and how these challenges are solved (or left unsolved) is therefore a rich source of information about how irregularity informs and shapes opportunity structures and perceptions of options among people the target group.

A methodological challenge is that in order to directly observe daily life, one would need to be present as daily tasks as carried out. This is not a likely option with this group, and the second best alternative is to ask people about their everyday life through interviews. In these settings it is important to distinguish between respondents' perception or representation of the situation and objective fact, a concern which is valid for all types of respondents, not only irregular migrants. For instance, it is not uncommon for people to say that they have not had any chance to make any money for years, only later to tell the interviewer how much they had to pay to rent a small room. These discrepancies should not, however, necessarily be taken as an attempt to misguide the interviewer; very often "making no money" may be the respondent's perception of making very little money, or making an insufficient amount of money. In any case, people's own view of their situation can provide a very valuable insight into their perception of their relation to society in general and their perceived opportunities.

One striking feature with our interviews with irregular migrants was the metaphors many of them used to describe their position in society. One said she was "behind society", another said he was "under society". One spoke of living "the black life", or "the underground life", while another said he was "living completely in the shadow". All of these descriptions were contrasted with a "normal" life, which is what they all cited as their goal, and as good as all of them described normality as having a job, having friends and being able to plan for the future. One of the most salient qualities of life as an irregular migrant is unpredictability and a feeling of powerlessness.

Asylum seekers find the process of waiting for a decision to their applications stressful, and this is further exacerbated by the fact that the waiting is open-ended (Brekke 2004:21). In the case of irregular migrants, however, the waiting is not only open-ended, but the object for their waiting is not defined – it is not clear exactly what they are waiting for, apart from a change for the better. In one sense, they are also waiting for something *not* to happen; that is, *not* to be apprehended by the police, *not* to be returned to their home country, and this becomes the main over arching goal of everyday life. This type of waiting, or perhaps more accurately avoidance, is frustrating and disempowering. There is no hope on which to peg the future, which was striking in most of the interviews when we discussed plans or even images of what would happen with our respondents:

Question: When you think about the future, what is it that you would like to do?

First and foremost, I think that anyone who is in this situation; they have a dream – to have a secure job. What I would like the most is to study.

(...)

Question: What do you think will happen?

When I came to Norway there was a hope and a hope and a hope. Now it's just getting worse and worse and worse. That hope, it isn't true, and the dream will not... It was only a dream.

Some irregular migrants will try to create a hope, where there might be none, by *making* something happen. This can be changing lawyers, in the hope that the old one just did not find the right law or application, or seeking out organisations such as NOAS or SEIF in order to get an opinion on whether they can submit a new asylum application. Several said that they had considered contacting journalists, but were at the same time apprehensive about exposure. Still, some felt that media attention could perhaps influence their cases and referred to examples of other people being allowed to stay after they had been written about in newspapers. Going to the media thus appeared to be seen as one of the last available opportunities for turning a decision around.

One of the most striking manifestations of making something happen were the public protests organised by Afghan asylum seekers, the most recent a several week long march from Trondheim to Oslo in 2007 where also irregular migrants participated. The group ended their march in front of Stortinget (the Norwegian Parliament), where they continued their quiet protest until the group was removed by the police. Half the protesters were arrested and returned to Afghanistan. The motivation of the participants was that if they were going to be sent out anyway, it was better to break free from an underground existence and come out in the open and make themselves visible to the general public.

Fear of the police affected all of our respondents to different degrees. Most said that they would check the street from the window before going out, to make sure there was no police there. One woman described how she, one evening not long after going into hiding, heard sirens and was completely convinced that it was the police who came for her. As the sound came closer she started to mentally prepare herself for the arrival of the officers, before realising that it was a passing ambulance. She said; "When I realised, I just broke down and cried without pause for 45 minutes". Since this initial episode she has lived in hiding for more than half a decade. The intense fear has subsided somewhat, but she is still very scared when she is in situations where she feels exposed.

The fear of the police and the irregular status also means that people in this group are very vulnerable to exploitation in many different forms. While irregular status is sometimes (but not always) associated with trafficking in human beings, there are also grey zones and forms of exploitation that may not traditionally have been seen as human trafficking. As previously mentioned, one of our respondents revealed that she had been subjected to extortion, violence and continued death threats from her smuggler for many years. He would turn up from time to time and demand relatively large sums of money. She said that while she was afraid of the police, she had at some point become so scared for her life that she had decided to look to them for help. However, she said, as soon as the police had entered her details into their system, all they had been concerned with had been the fact that she was not supposed to be in the country, and her appeals for help were rejected. Police say that this form of exploitation is not uncommon, and is increasingly found to take place. As this entails exploitation of

people who may be said to be in a vulnerable position, and also includes coercion, it may well fall within anti-trafficking legislation. While this has not been tested in the court system, should the definition of human trafficking be applicable in cases such as these, it could release at least limited rights for the victim; including a temporary residence and work permit within the so-called “reflection period” reserved for people who have been trafficked.

In one sense, irregular migrants are suspended in time, but still have to deal with the practicalities of daily life. The practical activities, necessary for sustaining life, are very time consuming and are carried out within a very specific framework of fear and unpredictability. Some of the most central aspects of daily life are finding work and income, finding a place to live and health concerns. In all these aspects, the social network becomes the primary source of welfare.

Social network and relationships

In order to compensate for the loss of rights and opportunities within the normal institutions, irregular migrants become very dependent on a social network. Having a social network is therefore crucial, and social capital becomes the most important currency. It was not impossible to approach the subject of social network in the interviews, but only with a certain caution. As previously mentioned, our respondents were reluctant to answer questions that could be perceived in any way to expose either other irregular migrants, or people who were helping them. Still, more general questions were tolerated. In a future project, it would be useful to include people who take part in the social networks of irregular immigrants as respondents, although it may also be time consuming to identify them. “Helpers” may hold substantial information about structural factors influencing the daily lives of irregular migrants, and how problems are solved, for instance in terms of getting access to health care. On the other hand, relationships between irregular migrants and their support network can also become strained, as discussed below, leading to the question of how people who help irregular migrants are affected by the responsibility they take on.

The social network becomes the key to finding a place to live, finding work and obtaining medical assistance. Developing a social network is therefore a survival strategy. One man had a very clear on how he went about this:

I have lived here in Norway for about two years, and a lot of the time it has been very difficult. I haven't had work or any chance to make money; I didn't have anywhere to live and there were other problems too. What I have tried to do is to live with people who know who I am and to make friends or acquainted with as many people as possible so I have someone to live with.

The importance of a social network means that social skills become a very important factor in determining the living conditions of irregular migrants. Even within the small sample of cases analysed for at this study, there was substantial variation in how successful the migrants had been in developing a security net in the form of contacts.

The respondent quoted above had a very pronounced strategy to get to know as many people as possible, and also to contact almost every organisation he came across. He listed an impressive number of actors he had talked to and who had helped him. He came across as very verbal, open and trusting, and incidentally was also the respondent with the least qualms about participating in this research project. In sharp contrast was another respondent, not far from the previously mentioned one in age or situation. This respondent had very few contacts, and did not seek out one particular social arena that many people in the same situation attended and trusted:

*[Question:] have you sometimes gone to [**]?*

No. Because I was afraid that they would inform the police, so I kept completely in the shadows.

[Question:] it is difficult to trust..?

Yes. It is difficult to trust people.

[Question:] have you had contact with organisations or individuals, or has there then anyone who supported you after you got the negative?

When I was in the reception centre I had a consultant, so the only thing is that you talk to them, but not to anyone else or organisations. That was the only thing.

For irregular migrants, social skills become crucial life skills, where being open, friendly and likeable becomes the gateway to a larger network and bettered life chances. And correspondingly, those who do not succeed socially are doing poorly in other fields as well. The dependency on social skills and network means that certain factors become mutually reinforcing, and that for instance people suffering from depression, who are unable to make social investments, may further spiral downwards, exacerbating their psychological state as well. As previously mentioned it has also been suggested that a prolonged stay in an asylum reception centre may have a negative effect on mental health and lead to depression in varying degrees, through loss of control over one's own situation and a long waiting period. Our respondents also described the time they spent at reception centres as difficult and depressing. A general observation is that asylum seekers and refugees are a group with a heightened risk for health problems, and that the combination of individual background and the asylum seeking process potentially increases the risk of developing psychological problems (Jakobsen et al 2007:13).

The respondents interviewed for this project mostly had at least some form support through their network, though it varied substantially how successful they were. However, as initially described, our sample was very limited, and in addition, the recruitment of respondents will strongly influence data on social network. Any type of chain referral starting with a support organisation or network is likely to cause a bias in being more likely to identify respondents who have a social network around them, and therefore lead to an under representation of those who live under the worst conditions. Differences may also be arbitrary, in an ongoing study of irregular migrants' use of medical care; the preliminary impressions of researchers involved in that project are that

their respondents to a much larger degree are isolated and that their mental and physical state is very poor.

A former study showed that “unreturnable” refugees who to a large extent did not have a same-ethnicity network to lean on generally lived in very bad conditions. As the refugees interviewed did not belong to a larger minority group that was somehow anchored with regular migrants who could provide jobs and general assistance, they had nowhere to turn to (Brekke and Søholt 2005:167). Among our respondents, the picture is a bit more diverse, and while same ethnicity networks are important, they are not the only source of support or opportunities.

Engbersen et al describe three different patterns of incorporation for different groups of irregular migrants, in which the essence is that solidarity increases with closeness in association. The first is “communal sharing”, in which substantial help is given to an exclusive group, often relatives or people one is otherwise obliged to help. The second is “bounded solidarity”, where support is limited and restricted, but still based on a certain sense of duty to help a fellow man. The third pattern of incorporation is “market relations”, where the main motivation is financial profit, but where there is still an asymmetrical relationship between the providers of work and services and the irregular immigrants. This relationship is also impersonal and not restricted to people within one's own ethnicity (Engbersen et al. 2006:219).

Our respondents described receiving help through all of these three forms of incorporation, but it was notable that jobs in particular were often obtained through “market relations”, in contrast to what was observed by Brekke and Søholt (2005:161ff), where the respondents expressed dependence on incorporation of the “communal sharing” or “bounded solidarity” types. The development of informal and illegal markets in the spheres of work, housing, relations and documents where irregular migrants are found have also been noted in the aforementioned Dutch study. These informal markets are classified as “bastard institutions” or “parallel institutions” that partly fulfil the same function as the formal institutions in the spheres of work, housing and relations (Engbersen et al 2006: 231). The apparent difference between our respondents and those interviewed in 2004 for Brekke and Søholt's study may therefore also theoretically come from changing structures, in that parallel institutions for finding irregular work may have become more developed in the three years that have passed between the two studies.

Well developed parallel institutions are described in The Hague. There were well known physical meeting places for the distribution of irregular work, organised transport to work places, to the degree that new arrivals among irregular migrants would chase after the vans to the work places in order to try to get jobs. Our preliminary impression is that there are no parallel institutions of any comparable magnitude or organisation in Oslo, and that these institutions are of the even more informal kind, based on personal acquaintance.

The ability to transition through the different types of incorporation and expand the social network is crucial for what kind of existence individual irregular migrants are able to create for themselves. Some people who have been irregular migrants in Norway for a very long time seemed to have been able to adapt and find more permanent solutions

than what was common in the initial phases. Length of stay therefore becomes an important factor influencing living conditions. On the other hand, some people who have stayed for a very long time had also seen a steady deterioration in all factors central to their well-being, such as health, dwelling and income. People who have found solutions where they depend heavily on their network may also find over time that this exhausts the resources and willingness to help on part of the network.

It appears to be useful to know both other irregular migrants as well as people who have a residence permits. People with residence permits were more likely to be able to provide somewhere for the irregular migrants to live, and could provide some stability by being able to help with money or food in a time of crisis. This help could be quite substantial; one respondent had been given NOK 5000 (approximately 600 Euro) for a private lawyer. Other irregular migrants, however, were a useful source of information about irregular work:

There are a lot of people in Oslo who have businesses and who sometimes need people to work for them. One of us may for instance talk to them, and they might say: "Can you find 10 people to work from me", and then I tell my friends, and they talk to their friends. Because I know that none of them have money to buy food, and that is why I think it's okay to get NOK 20 per hour, if you don't have anything to eat that night. That is why I take all of them to the man. And then we would work together for him, perhaps for a week or so, until he tells us that he doesn't need workers any more.

While relationships between irregular migrants appeared to be based on a shared destiny and mutual help, relationships with others were sometimes more strained. Key informants had observed that many irregular migrants grew very dependent on their friends and acquaintances, and that this would over time deplete the relationships and cause conflicts. Engbersen et al argue that it has become increasingly difficult for irregular migrants in the Netherlands to find formal employment and a marriage partner which used to enable them to legalise themselves. This creates greater dependency on family and acquaintances for a longer period of time, and causes regular immigrants to become more critical of irregular compatriots and family members. As a consequence, "altruistic ethnic patterns of 'communal sharing' are transforming into patterns of 'bounded solidarity' or 'informal market relations' "in which irregular immigrants are expected to contribute more" (Engbersen et al 2006: 224).

The irregular migrants also sometimes felt uncomfortable always having to depend on the kindness of others. Some of our respondents expressed that even though people were generally kind and understanding, it was difficult not to feel that they were imposing when they for instance needed a place to live. There was an imbalance in relationships when one party is always giving and the other one receiving which would also cause friction. One woman said:

I have to say I feel that a lot of people take advantage of me and treat me badly because of the difficult situation I'm in. It is very hard when someone is helping you, to set boundaries, and to tell people not to interfere. A lot of people have

been meddling in my life, demanding to know about things that are none of their business, my private life, because they have been helping me. I do feel that I have to be grateful, but sometimes it's kind of difficult.

Life as an irregular migrant challenges the norm of reciprocity in interpersonal relationships. Not being in a position where one has something to offer also means not being in a position to make demands. Being in a powerless position caused substantial frustration, not least in dealing with formal bodies, such as authorities, lawyers and organisations. As importantly, it also challenges interpersonal relationships in many ways.

Being an irregular migrant also affects relationships within families. Family members become dependent on each other and relationships may become too close for comfort. While some respondents described frustration at never being able to get any privacy; others had rather more sinister experiences of escalating violence following stressful situations and arguments. Over the past years, there has been considerable attention paid to immigrant women and their sometimes precarious position in marriages with Norwegian citizens. Crisis centres have reported receiving a large number of women finding themselves in this situation. Regarding intimate partner violence, vulnerability to abuse relates also to immigrant status, and for irregular migrant women, the threat of deportation can be a factor keeping them bound in abusive relationships (Raj and Silverman 2002: 375).

But not only immigrant women – regular or irregular - who are married to Norwegian citizens are vulnerable to violence. Violence was brought up by several of our female respondents, two had been subjected to violence themselves, while others had observed it happen to others in the same situation. The topic was also discussed with key informants. Being a victim of domestic violence is in general a hidden and lonely situation, which is further complicated if the woman is an irregular migrant in hiding with her abusive partner, increasing the level of isolation many victims of domestic violence experience. This is also a situation where it is difficult to assess the long term consequences of seeking assistance. A key informant related the story of one woman who was an irregular immigrant, having gone into hiding with her abusive and also irregular migrant husband and two children. She was badly beaten and in the end decided to seek help at a crisis centre, not least because of the effect of the violence on her children. While she and the children were there, her children's condition improved significantly, being away from their mother's abuser. However, the fact that she moved into the crisis centre made her whereabouts known to police, who apprehended the woman and her children and sent them back to the home country. Due to limited opportunities the woman saw no other option but to go back to the husband, who had already returned. The children are reportedly doing very badly as a result of their father's continued abuse of their mother, according to the key informant who is still in contact with the woman.

Irregular immigrant women in general are less likely to seek social and health services due to isolation and fear of deportation. Further constraining their inclination to seek help is a lack of awareness of the available services, lack of culturally or linguistically

competent services and the lack of awareness of domestic violence as an issue for which they can receive assistance (Raj & Silverman 2002: 385). Some of the respondents subjected to violence had, however, received assistance. But they had in common that they had been referred on to crisis centres by Norwegian acquaintances, or indeed people who more or less just happened to be around in a crisis situation and knew who to call. The women expressed surprise that such a thing as crisis centres even existed, and had never heard of anything similar in their home countries.

Work conditions and income

During the past few years there has been considerable attention to labour migration and working conditions for workers entering Norway from for instance the new EU member countries (see for instance Friberg and Tyldum 2007), as well as unregulated sectors of the labour market. The working conditions of irregular migrants are important not least with respect to human trafficking for labour exploitation. This topic should feature prominently in future research. It was relatively unproblematic to approach this issue directly in our interviews with irregular migrants. However, as with trafficking for sexual exploitation, it will be most difficult to reach those who are subjected to the worst exploitation, and biases can therefore occur. Issues of working conditions for irregular migrants would also benefit from inclusion of key informants' perspectives, for instance the Labour Inspection Authorities or others who are likely to come across the topic in the course of their work.

Working conditions and income appear to differ substantially between irregular migrants in Norway. While some of our respondents described relatively decent working conditions, others were severely exploited by "employers". Some people worked very long hours in physically straining jobs in return for a place to live. Hourly rates as low as NOK 20 (approximately € 2.50) were mentioned by several people. A related problem was not getting paid at all:

I worked in the black market sometimes, but for instance, I worked with a person for two days and he did not pay me. He said, "I will give you to money, you will get it later", but then he just didn't. And since I don't have a residence permit I can't go to the police, they will probably arrest me before they do anything about him.

[Question:] How much money were you supposed to get?

I was supposed to get NOK 25 per hour. And also, I work three days with someone else, and he also didn't pay me, he just said that I could not come to work any more. And I asked him why, and he said that I was not legally in Norway and that he was afraid that the police would come from me. But then he did not pay me my money, the money that I earned in one day, I think it was just 200 or 250.

[... Question:] So does it happen a lot that you don't get your money?

Yes, it happens a lot. There was this other guy, when I came back to ask for my

money, he said that he did not remember me and that I had never worked for him. Such are the difficulties of our lives.

Another man had a very similar experience:

I had an agreement with a man to do some painting. We agreed that he would pay me NOK 25 or 30 per hour. I worked with him for 20 days. When the time came for me to get my money, he said that he was going to deduct the cost of the working clothes and the food that I had gotten. He said that when he did this he actually lost money and that he had nothing to give me. I was angry of course, but he just said that I could go to the police or where ever if I was not happy. And of course I couldn't, the first thing they would say is that I am here illegally.

Not all irregular work appears to be quite as exploitative to the degree described by these two men. Other jobs were paid with around NOK 50 per hour, or with a kind of commission system that could yield a one-off monthly salary of up to NOK 10 000. This, however, entailed very long working days and risk of exposure to the police. While grateful for the opportunity to get a much-needed income, respondents also felt taken advantage of, and also considerable frustration at being at the mercy of their employers. A point that was raised several times was that of not being able to turn to anyone, for instance the police, when not being paid or otherwise treated badly.

At the same time, the relationship between irregular migrant and employer can be rather complex, and employers may also see themselves as taking a risk and being kind for providing the migrant with a chance to earn at least some money (Koshravi 2006:298)

Living arrangements

Irregular migrants appear to a large extent have only very temporary housing arrangements, although this depends on how long they have been in Norway and also on the degree to which they are able to make money, as well as their social network. In the initial faces at least, the migrants depend to a large extent on their network and find shelter with friends for a few days or weeks at the time. One man said:

When I got the final negative I was told by the UDI that I had to leave the country, or if they would come and arrest me. As I already told you, in my home country there are a lot of problems, so I had to leave the reception centre. I stayed 10 days with one friend, four days with another; I didn't have any money to pay rent.

Friends or extended networks are crucial for the irregular migrants in finding a place to live. As mentioned, it appears to be very common in the first stage after having left the reception centre to move quite frequently. Others were able to stay for a longer period of time in one place, but the conditions were still stressful and the respondents still depended on their network. One respondent had stayed with a friend for almost 2 years:

When we moved to Oslo, I called my friend and asked if we could stay with her. We have stayed there ever since. It is a bit stressful. I would really have liked to have my own space, but it is not possible. I share a room with my friend because she has a child. We sometimes give my friend some money, or maybe sometimes I buy some food or other things that we need, so that we also contribute.

It is possible for some to improve their dwelling over time, again depending on network. One family started out with a rather chaotic situation, but were gradually able to get an apartment for themselves:

When we first left the reception centre we lived three days here and three days there for two or three months. It was extremely stressful. Then we found a place that we could share with another man, we got one room, and paid 5000 a month. But it was very hard to live with a stranger like that, and after two months we couldn't do it any more. Then we lived in a basement, again for a couple of months. It was very difficult. Finally, through acquaintances, we were introduced to a man who had an apartment where he would let us live, in exchange for my father working for him.

Although the family was able to gradually improve their dwelling, it was not without costs. They felt acutely embarrassed by the poor conditions they were living under, particularly while living in the basement. The respondent compared this to what they had had in their home country, which they had left hoping for a better future:

When we lived in the basement it was very embarrassing when our friends came and saw how we lived. We had only this one room, and nothing to put in it, no television, nothing. When we lived in [our home country] we had our own rooms and everything we needed. We went to school, we had friends.

Health issues

One of the most pressing issues for irregular migrants is the access to medical help. Norwegian policy is to grant the right to medical assistance in acute situations, and otherwise not. It does not always seem clear where the line is drawn, and it may be that medical professionals sometimes make an effort to help patients even if they technically are not meant to do so.

The serious nature of this issue is reflected in the fact that there are several efforts under way to map and clarify the situation of irregular migrants in Norway. The Norwegian Centre for Minority Health Research (NAKMI) is in the process of conducting a study on irregular migrants and health care. The Norwegian Medical Association (NMA, Legeforeningen) will discuss the challenge of medical assistance to irregular migrants in a status report on health and medical services to non-Western immigrants³. The dilemmas medical professionals find themselves in appear to be

³ At the time of writing, this report was planned for release in May 2008.

related to the legal regulation of what kind of assistance can be given, as well as complications that occur when irregular migrant patients need costly specialist services. Internationally, the organisation Platform for International Cooperation on Undocumented Migrants (PICUM) released a report in late 2007 focussing on the legal and practical barriers encountered by undocumented migrants when trying to access health care within eleven EU Member states⁴.

The issue of health care can and should be addressed from several different perspectives, but is currently perhaps not the most pressing issue for further research since it is one of the topics that *is* actually being researched, as mentioned above. The inclusion of the perspectives of both irregular migrants and medical personnel working in different institution and in different roles are very important, not least with respect to where bottlenecks might be in the referral of patients from one institution to another.

All of our respondents reported having had medical problems, some quite serious, and key informants were also keen to underline their experiences with people who had been in a very bad medical state. These problems were both physical and psychological, and the issue of stress was raised by both irregular migrants and key informants. Respondents who needed medical attention and went to the emergency room did not report difficulties in getting help:

I did go to the emergency room once because I had some pains in my stomach. They received me well there, and I got the help I needed. They only asked for my address, which I gave them, and they also asked me why I didn't go to my regular doctor (*fastlege*⁵). I just told them I didn't have one, and they didn't ask me any more questions. I was not afraid to go there, or worried that they would call the police.

While medical personnel may not have the intention of calling the police or in other ways identifying irregular migrants, this is still a fear among people in this situation. Their perception of the risk attached to seeking out a doctor will guide their choices, and this has potentially serious consequences in terms of health care. Making the decision to see a doctor requires a basic level of trust. One key informant described the situation of one of his fellow countrymen:

I know this guy who used to be a construction worker, there had been a fight at his workplace, and he had been severely beaten, his nose was completely crushed. Because he had received a negative twice he couldn't go to the police. He didn't have a doctor who could receive him. He went two days before I was told about the episode. I contacted a lawyer, and the lawyer arranged for the doctor to examine him. In a situation like this when people are they don't dare to contact a

⁴ The report covers Austria, Belgium, France, Germany, Hungary, Italy, the Netherlands, Portugal, Spain, Sweden and the United Kingdom

⁵ Anyone registered in the National Registry as a resident of a Norwegian municipality is assigned a regular GP (*fastlege*) by the local social security office.

doctor. I think if you live like that it must be very difficult. Maybe it's something happened very suddenly they can go to the emergency room, but apart from that they don't have any access to medical attention.

It is difficult to say whether this man would have received medical attention without the intervention of the key informant. It is worth noting his dependence on someone with a network and contacts and that he would only see a doctor after a lawyer was involved. This assistance is also an expression of "bounded solidarity" as discussed in the paragraph on social networks. The fear of risking exposure when looking for medical advice was echoed by others:

At one point my father got [a serious and painful illness] and after some time we realised that we had no choice but to go to the hospital. We were really terrified and thought that this might be the time we got caught. Especially when we gave them the temporary identification number at the reception. But luckily, no one asked us anything. At one point, though, my mother and father were in the examination room and I was waiting outside. I saw two men in uniforms approaching me and for a horrible moment I thought it was the police. My thoughts were racing, "Is this it? Will they catch me now, and what about my parents, will they know what happened?" I felt my face change colour three times before I realised that they were security guards and not police and that I was safe.

Irregular migrants appeared not to be denied medical attention when they had to seek it out at the central emergency room in Oslo, which is mostly where they went, as long as they were willing to provide an address where they could be reached. It does however seem unclear whether this address needs to be a real address, and whether this is checked. In one instance, a woman shared an apartment with a friend, and they both worked in prostitution. The roommate didn't want her address to be known, and refused to let her address be used at the emergency room. In this instance, the woman was allegedly denied medical attention, a situation that was only solved after a nurse employed in prostitution outreach wrote a letter verifying the woman's identity. While it may not be the policy of the emergency room to deny access to medical help when a patient does not have money or only provides a false address, it is an open question whether irregular migrants know that this is the case. Again, the subjective perception may be more important than the real situation. One man said, when asked if he had ever needed medical attention but been unable to obtain it:

I have had pains in my abdomen and also psychological problems, but I couldn't go because I didn't have any money, and I didn't have a real address to give them.

Key informants who are involved with irregular migrants in a professional capacity outside city centres described certain frustrations and difficulties when they tried to get medical help for their clients, and the problem was not necessarily classified as acute or life-threatening. A social worker said:

It has been quite difficult to get medical help for one woman. She used to take a lot of sedatives and had a lot of psychological problems. We can't use her real name when she goes to a doctor because we can't reveal her identity. In the beginning the doctor's office was quite cooperative and let her use a false name. This way we could also get her medication, they would order it in as part of their emergency service. But after some time one of the doctors refused to let this arrangement go on. This made it very difficult at the pharmacy, where they would not give her the medication because she obviously didn't have ID papers with her false name. In the end we managed to solve the situation through personal contacts, but it was very difficult.

The issue of medication and costs is also something that impairs the health of irregular migrants. While irregular migrants may be able to get an initial assessment and treatment of acute illness, it is more difficult to follow up and to bear the costs of medication. As is noted in the section on work conditions and income, many irregular migrants are in a financially precarious situation and are often barely able to cover their daily living expenses, and consequently have no opportunity to pay for medicines. One man explained how his psychological condition had steadily deteriorated:

When I was in the reception centre I had psychological problems, so I was given pills. When I was thrown out of the reception centre I didn't have any money to buy the medication and had to stop taking it.

[Question:] so you had to stop taking medication that you needed?

Yes, because I didn't have money to pay for it.

[Question:] how did this affect your health?

It got worse, I literally couldn't sleep at night, I would stay awake all night and couldn't sleep, and then during the day I would get maybe four or five hours of sleep.

Psychological strain was described by many. The combination of felt unpredictability and hopes of a change in situation, and fear of being caught and sent out of the country is stressful.

While the irregular migrants were most concerned with serious health problems, smaller problems that went untreated were a considerable source of frustration as well. Minor ailments, such as athlete's foot, when left untreated would cause considerable irritation, and was also a reminder of the indignity of the situation. Similarly, stress-related rashes or eczema were also difficult to get rid of. Dental health caused problems; one man had pain in his teeth for a very long time, but there was nothing to do about it because of the high prices of dentists.

While these conditions may not necessarily pose serious threats to the person's health, rashes or tooth aches become almost an embodiment of the persons' irregular status, and the inability to get treatment sets them apart from the rest of the population. Not being able to use health services is also seen as further confirmation of lack of normality. One respondent was very anxious to try to create normality where there was none, and described this in connection with wanting a flu vaccination shot:

You know, I got the flu last winter and it was terrible, pains and aches all over my body. So I was thinking whether I could maybe get a vaccination this year. So I just tried to ask at a doctor's office, but it costs more than NOK 300 even to go through the door, and then you have to pay for the vaccination, so it's really out of the question. I kind of knew, but I just had to ask.

From a medical point of view there was no reason for this young and, by her own assessment, healthy woman to get a flu vaccine. However, many people who strictly speaking do not need this vaccine still choose to have it, in order to avoid the discomfort and inconvenience of a bad bout of flu. When this woman related the story to us, it appeared to be more about her irregularity and how it closes doors to her that are open to others, such as making her own choices regarding health, rather than a concern for her health as such.

“It wasn't my choice to come here” – children as irregular migrants in Norway

Given what we know about the fears and strains affecting adult irregular migrants in Norway, how do these factors influence children in the same situation? Current research and policy efforts have focussed mostly on children as single or separated from their parents as being in need of protection and care. While this is undoubtedly true, it would be misguided to believe that child migrants, and particularly children who are irregular migrants, are insulated against harmful consequences by the presence of their parents. When parents are unable to secure basic rights, be they economic, social or cultural; having their parents in the destination country does not fully protect the children (O'Connell Davidson & Farrow 2007:11).

All aspects of parents' work, living arrangements and medical state described in the sections above also affect children through shaping the environment the children find themselves in, with their parents. Health particularly cannot be seen individually and apart from its effect on entire families, even though it may be one individual who carries the initial symptoms. For instance, if a mother does not have the right to treatment for depression, it cannot be ignored that her health will affect the situation of her children as well. The physical health state of parents can also profoundly affect children, both through children having to take on a role as carers for their parents and through the concern they may have that their parents may not recover.

Children's living conditions in general cannot be seen separately from those of their parents, and this is even more striking in cases where both parents and children try to stay hidden and isolated. Children, however, also face their own challenges, separate from those of their parents. They may also have conflicting interests with their parents, and hold resentment for the situation they have been placed in, as discussed below.

Child migration in Norway has lately been focused on more in terms of children's vulnerability to exploitation and abuse by various predators or criminal networks. Less attention has been paid to how child migrants, and particularly irregular child migrants, are affected by the structural circumstances set up by Norwegian immigration policies. How are children affected by parents' health problems? What challenges do they face in terms of school attendance? What challenges do schools face when teaching children who are irregular migrants? What happens in cases of abuse – are child protection services able to follow up? How are children affected by uncertainty, given that adults appear to become ill with stress related disease and sometimes talk of suicide? These are but a few of the topics that have come up even within the limited sample of informants for this study.

As discussed in chapter 2, irregular migrant children should not be approached directly as respondents. There are several reasons for this. One is that in the present situation, researchers cannot be sure that they are able to refer children on to bodies that can help them if for instance the child tells the researcher about abuse or other circumstances that indicates that the child needs assistance. Another important reason is that it may be frightening for the child to be interviewed within a context of the child not having the required residence permits. In stead, topics of children as irregular migrants should be approached through key informant interviews and interviews with parents or others who observe children in this situation. Key informants should include at least schools, medical professionals and child protection services. While this is one of the most complex topics to approach, both methodologically and ethically, we feel that it is one of the most pressing, and that it should be given due priority in future research and policy development.

Information about child irregular migrants in various ages is part of our project material. In three excerpts we will present some aspects of the lives of pre-school children, one thirteen-year-old and one child who came to Norway as a fifteen-year-old, and who is now an adult but still an irregular immigrant, as well as other information on how children are affected by their irregular status. In light of this we will discuss the particular challenges facing children as irregular migrants in Norway.

Children under school age

The three children, all under six years old, lived 1 ½ years in hiding. It affected them deeply, they could not go out to play, and they had no day-care-centre where they could be with other children. On the rare occasions that they did go out, the youngest child, who was three years old, would be terrified if they saw a police car and cry for his mother that they had to hide, even though he did not fully understand why. The mother tried to protect the children from the realities of their situation as much as possible, but because of their living arrangements it was difficult to avoid them hearing the grown-ups discussing the situation. The eldest child, who was five, did not talk about what she heard, but became very nervous and was often angry. The middle girl became very aggressive, and would

attack other children and beat them up, telling them to get away from her house. At times the children would make some friends, but then they had to leave. This happened again and again, and it was tough on the children to repeatedly lose friends this way.

Even very young children can be deeply affected by life as irregular migrants. When parents are scared, children are sensitive to their moods and mimic their emotions. This is not just the case for children who are irregular migrants; staff at asylum reception centres described the same patterns with young children whose families were waiting for replies to their asylum applications. Children who were far young to understand would react very strongly to negative replies, with fear and sadness. Behavioural problems were described by many. Children who become irregular migrants will in the majority of cases have this kind of background, having already waited at a reception centre before some of them are taken into hiding by their parents.

A particular challenge is tied to pregnant women and children who are born into hiding. One of our respondents was pregnant at the time of the interview. She did receive medical attention, but found that the psychological stress of being an irregular migrant and the fear of the police made it difficult to take care of herself the way she felt she should have:

I've been very stressed during my pregnancy. My doctor said that I am depressed; I'm still very tired and have little energy. For a few weeks I hardly ate at all. I didn't really want any food and I could not find the energy for cooking. (...) During my darkest moments I have considered suicide. But then I have thought that I have to do it before the child is born, because I can't leave a motherless child behind.

This woman did receive medical help, and was also given at least some treatment for her depression. But it is not hard to imagine that this child, if born into the same situation of insecurity that the mother is in now, will be affected by life as an irregular migrant from the very beginning of life.

Adolescence, early teens

She has lived in Norway for more than three years, most of the time without residence permit, with her mother. She has been through some very traumatic experiences and is struggling with psychological problems. She was enrolled in school and followed classes for a year or two before she gradually started to drop out and not showing up. Her insecure situation with respect to her own and her mother's legal status combined with the long wait has made her both depressed and unmotivated at school. Over the past year she has sometimes tried to come to classes, but because she had been absent for so much time, she did not have any friends at school and fell behind the others. On the rare occasions that she did show up, she would generally leave again after lunch. Lately she has not showed

up to school at all, but neither the school nor the child protection services are able to find her. The school staff is frustrated with child protection services and say they are assigned a new case worker for the girl every time they call, and that she is slipping through their fingers. Lately they have heard that she has found friends outside school belonging to a group involved in various criminal activities.

Many parents are afraid of having their children registered in school. In our interviews we were also told of parents who went straight into hiding with their children and did not dare having any contact with official bodies. However, as the case described above illustrates, even if children are in fact allowed to go to school, this does not necessarily solve all their problems. As in the case with this girl, children may carry with them trauma that is exacerbated by the profound insecurity in the situation they are in. This makes it difficult to follow the pace of other pupils and makes the social aspects of going to school difficult as well. As with younger children, adolescents also often carry with them the earlier experience of waiting for the outcome of asylum applications before becoming irregular. Staff at a reception centre said:

We have this family here that got a negative reply, parents and two children. The older girl understood a lot. After a few days we got a call from the school, they asked us if we knew if anything had happened to their application. The girl was crying all the time at school; she had black circles under her eyes. It was very difficult for her.

It has been established that children have the right to go to school even if they do not have a residence permit. According to Norwegian laws on education schools should no longer require children's passport number or identity number in order to enrol them in school. In some cases, this has still been problematic, and several cases have been reported in the media where irregular migrant parents have tried to register their children at schools but have been rejected because they did not have a residence permit⁶. Phone calls to 9 schools in Oslo revealed that all were aware of the provision in Norwegian law for education rights of children who stay in Norway for more than three months, but that schools to some extent interpreted this in different ways. Most schools expressed that they would often not even know if a child had a residence permit or not, and said that it was difficult for teachers to know if particular children were struggling because they might be irregular immigrants. Others went further in demanding documentation that it was probable that the child would in fact stay in Norway for more than three months. This had in one particular case proven difficult, and led to a long delay in the enrolment in school for the child concerned.

⁶ See for instance Aften Aften **, Aftenposten 17 November 2007, <http://www.aftenposten.no/nyheter/iriks/article2106583.ece>

Becoming an adult as an irregular migrant, mid teens to early twenties

When she first came to Norway as an asylum seeker with her parents, she went to school, which she enjoyed very much and where she did extremely well. She was an active girl and had several different jobs after school. Her parents were convinced that they would get to stay in Norway, so when they received the final negative decision, it was a shock to all of them. She had to leave school, leave her friends, and the family was launched into moving from place to place for more than a year, before they were able to find a more permanent arrangement. She speaks Norwegian very well, unlike her parents, and has taken on the responsibility of finding help for the family. She has changed lawyers for the family four times, taken their case to all the organisations she can think of, and is always on the lookout for new information. She also works in the irregular labour market for low pay in order to get money for food. It worries her to see her father change, becoming more angry and at the same time introverted. She feels more and more alienated from him. Her mother is slipping into depression, not leaving the apartment for weeks on time, just watching television. Although she had friends when she went to school, she does not see them anymore, because she feels they have nothing in common. Most of them have moved on to higher education, which is her biggest dream as well. But she worries that it would be difficult for her to start to study because it is such a long time since she went to school. Also, she does not know anything about what the future holds. She says that it is out of the question to think about getting a boyfriend and maybe getting married. One thing would be what she could say to someone she met, that she was living here illegally? Another thing would be her family, maybe if she met someone and fell in love they would get married and she would get the right to stay here. But that would be letting her family down. She did not feel she could abandon them; after all they had been through together.

In growing into adulthood as an irregular migrant, this young woman feels that her life has grinded to a halt even before it has properly started. While her former friends are moving on with their lives, she cannot see beyond a very short time horizon. In her life, she had no sense of normalcy, and could not even imagine having a boyfriend, or in the future, a family of her own. In a sense, time has stopped and there is no progression, just one day at the time, as it has been for years and years, in a period of life when most people start to form their own identity and sense of self and belonging in society.

In order to do identity work, the individual needs a sense of future self. In addition, bereavement of a former position in the home country challenges the sense of personal identity (Brekke 2004:18, 44). This respondent would refer several times to what had been left behind in her home country, and contrast it with the miserable and unpredictable existence she had lived for years, saying; “at home we had everything – here we have nothing”. She found the poverty humiliating, and she told how she was constantly striving to keep an immaculate appearance. She asked; “When you look at me, would you be able to tell what I am?” She was also the one who said what became

the title of this sub-chapter; “It wasn’t my choice to come here”. She was clear on how she felt that this life had been forced on her, even though she knew that her parents had done what they thought was best. Still, she could not avoid feeling some resentment for having been put in this situation. At the same time, she felt a very strong obligation to help her parents and stay loyal to them, even though the family relationships were becoming increasingly strained. When children integrate in terms of language and knowledge of society and parents do not, it challenges the cohesion in the family (Brekke 2004:36). The children become responsible for dealing with the outside world, as translators, and as in the case of the respondent above, family advocates. It puts further strain on a child if the family are also irregular migrants

Motivation for staying

Judging even from our limited number of interviews, it is not easy being an irregular migrant in Norway. We have heard accounts of exploitation, violence, health problems and terrified children. People struggle through poverty, lack of appropriate housing, suicidal thoughts and more. Given the conditions they live under, which most of them found extremely difficult, why are they not leaving? What is their motivation for staying?

In light of the current Norwegian policy this question becomes pertinent. Minister for Work and Inclusion, Bjarne Håkon Hansen, stated his position in an interview:

The main challenge is to find them and send them out of Norway. Their asylum applications have been rejected, and they are staying here illegally.

[*Regarding irregular immigrants who are exploited in the irregular labour market:*] This shows that going underground is putting life on hold. They need to take in that their future is not in Norway when they have received the final negative reply. The best thing for these people is to realise that the future is about a life outside Norway, in the country they come from⁷.

The Norwegian policy is also reflected in the “motivation work” carried out in asylum reception centres with rejected asylum seekers, in which centre employees try to motivate voluntary return, which is seen as preferable to and more dignified than apprehension by the police and subsequent deportation.

In light of this, an interesting research question is precisely what motivates return, and what motivates staying. In this sub-chapter we describe what our respondents said about why they did not leave. However, methodologically, that is precisely the problem; by conducting interviews only *in Norway*, we only get information about those who did not leave. For more complex data on decision making processes, research would ideally follow the same individuals in the migration process over time, and also through

⁷ Aftenposten, 27 November 2007; “De papirløse har ingen fremtid her”

different stages of migration. When people leave, why do they leave, and where do they go? What consequences does this have for their lives and how does it impact on their further decision making? Migration takes place as processes rather than windows in time. It is therefore a methodological problem that the ones that can be accessed for interviewing at any given point are the ones that have not left. Following individuals over time and across borders would perhaps be too complicated and costly, particularly if one should want to include the experiences of people of different nationalities. One solution would be to target one group specifically, and conduct interviews in the country to which they have returned. One such project is in progress at the time of writing, in which Christian Michelsens Institutt (CMI) and the International Peace Research Institute, Oslo (PRIO) conduct a review of support for Afghans returning to Afghanistan from Norway.

Brekke and Søholt addressed the issue of motivation for staying in their evaluation of the 2004 change in policy towards failed asylum seekers. The change, which meant that no one would be allowed to stay on in a reception centre after receiving a final negative reply, was meant to motivate return. Then Minister for Local Government and Regional Development, Erna Solberg, said:

The motivation lies in that it is a big difference between what you get if you co-operate about return or not. With corporation you get to keep your place in the reception centre, the financial support and travel in dignity. Without co-operation you will not get this (Brekke and Søholt 2005:143).

One of the questions Brekke and Søholt sought to answer, was whether this reform had in fact motivated return, as intended. While they conclude that this is methodologically difficult to fully assess, they found that for many it had not, and that there were other factors more important than the loss of right to live in a reception centre that guided immigrants' choices. These factors included fear of the situation in the home country and seeing others succeed in staying (Brekke and Søholt 2005:145ff). Further, as time passes people may change and become more attached to Norway and their network here, while the ties and bonds with the home country become weaker (ibid.: 148). The authors further suggest that some groups may be more likely to leave after receiving a negative reply, because they have invested less than others in the journey here, for instance Russians and Belarusians who had left reception centres after losing the right to live there (ibid.: 146).

Our findings with respondents from other groups, both with respect to nationality and how they entered Norway are very similar to those of Brekke and Søholt. We have the same caveats; our respondents were also the ones who stayed, meaning that we cannot say what might have motivated others to leave. It is clear that some people do leave after receiving a negative reply, either through the existing channels of voluntary return or on their own, perhaps after spending some time in hiding before deciding it is not an option. Staff at a reception centre related one such example:

There was this family, who had received a negative reply. They had made an appointment with IOM the next day in order to arrange voluntary assisted return.

The next day they rang from school asking if the children had overslept, and we found their room empty. A few hours later a friend of the children's mother called us and said that they had been with her and giving her the key, which she would put in the mail for us. We didn't understand why she left this way. A few days later she called us from her home country, apologising for leaving this way. I don't know how she left; she had no passport or money. If she had gone with IOM she would have travelled for free and had a normal return.

From May 2002 until the end of October 2007, a total of 4856 people had returned to their home countries with the help of IOM Oslo's return programme⁸. Other irregular migrants try to leave with the help of smugglers, since while they realise that it will be difficult to stay in Norway, they do not wish to go to their home country. Because of the Dublin Convention they cannot go to another country taking part in this agreement, and may for instance try to go to North America in stead. Other groups who leave asylum reception centres may be those who use the asylum institute as a means to transit through Norway to other countries. It is unknown to which extent people who leave reception centres, either before or after receiving negative replies, go into hiding in Norway or leave for other countries. Developing estimates of how many irregular migrants live in Norway based on those disappearing from reception centres is therefore a risky business, and produces little more than "guesstimates".

With these limitations in mind, we return to our target group, those who did not leave, or have not yet left, to describe their explanations for why they are still in Norway. To a large extent, the respondents' goal was more about to not having to return to their home country, rather than specifically staying in Norway. Norway had not been a very explicit goal for any of them, most said they had wanted to go to a safe country, with democracy and the opportunity to live a normal life, and that they just happened to come here.

Fear

Our respondents spoke of a fear of what would happen if they returned home, and expressed very clearly that they did not see this as an alternative. For several people the fear was directly tied to concern for their personal safety:

I really can't leave and go back to [my home country], because I will not be safe there. People even in my own family have threatened me because I have converted to Christianity.

This respondent felt that the Norwegian authorities did not trust her sincerity with respect to her religious conviction, and was very frustrated. Others felt unsafe for other reasons, more attached to their personal circumstances than the state regime in their home country. One had come into a serious conflict with family members, and felt

⁸ www.iom.no

unsafe for that reason. She did not feel that local authorities would protect her. It is difficult to assess how strong individual fears are, and to what extent fear is cited as a legitimate reason for breaking Norwegian law when confronted with a researcher's questions. But in most cases, this fear seemed substantial and convincing to us. Key informants also confirmed that one woman had two serious suicide attempts behind her and was likely to at least try again if she was not allowed to stay in Norway, because she was so scared of what would happen if she was returned. She had already been ousted by her family following her divorce, which she said was considered deeply shameful. One supporter of the Afghans who participated in a hunger strike in XX explained other people's reasoning:

You know, the starting point was that people made a list of demands to the government, and said that if a decision wasn't made to let them stay, they would go on hunger strike. We [*their supporters*] were actually against the hunger strike, because we didn't want lives to be lost, and we knew that the authorities would not change their position. But they still wanted to do it, they said that if we are going to be sent back to die, we can might as well die here.

Several key informants knew of people who had tried to take their own lives, among them a young man who came to Norway as an unaccompanied minor. After his application for asylum was rejected after he had turned 18, he tried to commit suicide by drinking ammonia. As described in the subchapter on children, one of our pregnant respondents had considered the same way out of what she felt was a hopeless situation; another woman had two suicide attempts behind her.

While many respondents had fears tied to their individual circumstances, others felt that the situation in their home country was chaotic in spite of the Norwegian authorities said:

The Norwegian government thinks it knows better than us about the conditions in [our home country], but at the same time we have seen in the news what it is like there.

It is very difficult, because they say it's safe there, but all the time we hear about explosions and that people are killed. I don't know what they mean by security. If it had been like that in Oslo, could you say that it is safe to live here? There is this relativism; I think that might be the cause. If the situation was like that here, nobody would have said it is safe.

It is difficult to assess whether the situation in the home country is always as precarious as the respondents thought. Regardless of what the situation really is, the behaviours and choices of irregular migrants will still be influenced more by their own perception than any official assessments, however thorough. The subjective perception and fear becomes a much more important factor than any "objective" circumstances.

Seeing others succeed, hoping for a change

The migrants were also motivated by having seen changes in Norwegian practice in granting asylum or a temporary residence permits. This is consistent with what was found by Brekke and Søholt, as mentioned above. In their material, irregular migrants were mainly motivated by seeing others succeeding on an individual basis, i.e. having their cases treated in UNE with a positive outcome (2005:146). Our respondents referred more to general policy changes that affected whole groups of people. Several mentioned the most recent change in practice, which occurred in June 2007, was mentioned by several respondents, when, several children were given residence permits after a prolonged stay and attachment to Norway was documented (AID 2007). This change in policy had given new hope to some that maybe subsequent changes would come that applied to them. One respondent would often check the UDI web page for information in the hopes that something might have changed:

I do try to check the web page quite often, but it is difficult to understand everything because it is in Norwegian, or in complicated English that I can't understand. But when the rules were changed for families with children, I was the one to tell my friends, and several families that I know managed to get a residence permit this way, in part thanks to me. They were very happy and grateful. I only hope that there will be a change that applies to me as well.

Others also tried to keep themselves informed about possible developments in Norwegian immigration policies. News of possible developments or political suggestions become a straw to hang on to and may instil hope, while at the same time people are suspended and feel trapped into a waiting game. Political processes may also be unpredictable and the outcome may also differ from what was initially signalled. Hopes were therefore sometimes dashed, causing considerable psychological strain:

The worst thing I have experienced so far was the hope that we got last year when we heard news about plans for a new policy to grant residence permits to children who had stayed in Norway for more than three years. We have always tried to watch the news every day at seven to see if there are any new developments in immigration law in Norway, and when we heard about this, I just felt like we were saved. We even celebrated and told all our friends, who were so happy for us. We even had balloons. I contacted a lawyer who said that this was still just a suggestion and that it would take a long time for it to be passed. We were told that it was going to be discussed in Stortinget in February, and then it was postponed to March, then to April. Finally, the new rule came in June, after we had waited for maybe eight or nine months. It turned out that I was just too old for it is to apply to me, even though I came to Norway when I was only 15 years old. This was the biggest setback and disappointment that my family have ever been through. We just couldn't believe it. I have tried to contact many organizations and I have tried to make a lawyer take the case, but everyone just says that they understand that I am disappointed, and that they agree it's not fair,

but that there is nothing they can do. So this is the first time after all these years that I really feel that I am starting to lose hope.

Finding information and interpreting what it meant was described as challenging by both irregular migrants and key informants. Information would often travel through informal channels and rumours were often flying. For instance, an employee at a reception centre said that one day, members of one particular group were ecstatic; celebrating that everyone with temporary protection (MUF) would get to stay. He tried to check the UDI web pages, but found no information about this whatsoever. It turned out that the information came from a letter, which had been posted on the message board of a minority organisation. In this letter, an NGO addressed a Ministry with demands that this particular group should be allowed to stay in Norway. The reception centre employee said;

Someone had just read MUF – UDI – residence permit – and people started calling each other. Before we knew it everyone thought that this was official information. It goes really quickly.

Large investments in migration

Many of the irregular immigrants had made considerable personal and financial investments in their migration to Norway. They were therefore not likely to give up their endeavours, thereby making their struggles pointless. One young man described his journey here:

You know, I didn't come directly here. We came country by country, footpath by footpath, all the time we were illegal, and it took a lot of time from we left until we came to Norway. All the time it was illegal, and sometimes in the night we walked across the borders [to avoid the border guards]. Many times we were in deep forests and in the mountains, and we tried to hide ourselves during the day so that the police wouldn't find us, because we were illegal everywhere. I think I was in more than 10 countries before I came here.

From many parts of the world migration to Norway is both risky and costly. In interviews with Nigerian prostitutes in Oslo, it was striking to the researchers that some of them would talk with relative candour of the difficulties they faced in their current situation, but refused to talk about the journey, and particularly the stay in unofficial "migration camps" in West Africa. The reason they gave was that this period had been the most traumatic during all of their migration, even compared to a miserable life in prostitution in Oslo. One woman related her journey from Nigeria to Europe:

"It took four years before she was out of Africa, and she describes those years as hell, and she could not contact her family. Grace got out of West Africa on foot, via Mali and Morocco. She travelled alone, but met other migrants on her way.

Grace said; ‘Lots of people die on the route. We could go up to three weeks without food and sometimes we have to drink piss’ “(Skilbrei et al. 2006:27)

Most of our respondents were very reluctant to discuss just how they came to Norway, or issues of smuggling and debts. It is hard to say whether this is because they did not feel these questions were relevant to their situation, or whether they feared some sort of negative consequences if divulging use of human smugglers – for instance in loss of legitimacy in the eyes of the researcher as a “real asylum seeker”. In any case, many of them came from countries from which it is not easy to travel to Norway.

Some people who feel stuck in Norway considered trying to go to other countries, but this was not easy. The Dublin Convention means that there is no point in trying to apply for asylum in other countries covered by the agreement. One man therefore considered getting the help of human smugglers to get him into a country not part of this agreement. However, this would cost him NOK 80 000 (approximately € 10 000). He had tried to arrange this twice, but had not yet been able to finalise the deal. People around him were also very worried about his plan. Not only is it expensive but also unsafe, and difficult to find the right people.

CONCLUSION

Based on the above discussion of methodological and ethical concerns tied to research with this group, certain recommendations can be made for future project designs. At this stage, we would not recommend attempting a larger scale quantitative study of this group in Norway. Such a scheme would have had to be built on some form of chain referral, for instance Respondent Driven Sampling, due to the lack of a sampling frame. From what we have seen in this project, we believe that chain referral is unlikely to succeed, due to potential respondents' tendency towards masking their networks. Further, the use of incentives would be ethically problematic due to the difficult living conditions likely to be found among many in the group, in combination with the sensitive nature of the data one would seek to collect.

The most fruitful avenue would therefore be targeted qualitative studies, which have the advantage of being more flexible and provide more direct contact with respondents, thereby a greater chance of building trust, but on the other hand have the disadvantage in that it is hard to assess whether findings are necessarily representative for the group as a whole. As respondents in the target group are hard to come by, the recruitment strategy should be well thought through and target broadly. A good strategy would be to approach migration and minority organisations, churches and congregations, lawyers' offices, crisis centres, as well as selected medical institutions. While irregular immigrants are also believed to be found in various sectors of the irregular labour market, one should be cautious in trying to recruit respondents directly if there is a chance their status will be revealed to their surroundings. This can cause not only stress and anguish but also heightened vulnerability to exploitation, as irregular status has the potential of being used as a means of extortion or pressure. One issue that needs clarification is whether it would be ethically appropriate to recruit respondents through the authorities, such as UDI or the police. As previously mentioned, in this project, which was financed by the UDI, both the National Ethics Committee and the project team felt that recruiting through that channel, including in asylum camps, could cause confusion about the role of the researcher. For instance there could be a danger that respondents thought participation could somehow help their case, or that participation was mandatory. Such a recruitment strategy would in any case place a considerable responsibility on the researcher in providing sufficient information, but has the potential of giving very valuable information.

Ample time and resources will be needed for respondent recruitment, for several reasons. This is a population that is both hidden and elusive, in that members cannot easily be found and identified, and in addition will be reluctant to participate in research. A second reason is that a significant amount of time should be spent discussing the project with key informants and gate keepers, building trust and adjusting recruitment strategies if necessary. Further, a potential project would have to consider creating some

sort of back-up system for respondents, and particularly children, who are identified to be in a difficult situation through interviews for the project. This is very likely to happen, both in terms of medical problems and in terms of being crime victims. There is also a risk of re-traumatization through interviews, which creates a very serious responsibility on part of the researchers. Irregular migrants have very limited rights in Norway today, and for that reason, we would not recommend including children directly as respondents. If children were to be found in a difficult situation, the research team may not be able to help find a good solution. Again, sufficient resources should be set aside towards this end.

The most pressing issues in our need for knowledge lie within the health field, both physical and mental health; in the situation of children who are irregular migrants; and the situation of irregular migrants in the labour market, including what conditions they work under. Concerning health, irregular migrants have some limited rights, but it is unclear to what extent the group is able to or dare access necessary health services. The returning topic of suicide in interviews with both irregular migrants and key informants also gives great cause for concern. When it comes to children as irregular migrants the same concern prevails; whether they are able to access their rights, and not least whether their parents dare risk exposure by seeking rights for their children. A complicated issue concerns how parents' lack of rights affects their children directly through the psychosocial environment they find themselves in, not least with respect to health.

In conclusion, the best way to approach research with this group in Norway at the moment would be through targeted qualitative studies. This would have several advantages. One would be a realistic and flexible approach to respondent recruitment. The second would be that focussing on subtopics would make the context and possible use of information clearer to respondents, which could increase chances of participation. It would also form a better basis for discussion of targeted policy measures within specific fields.

Literature:

Arbeids- og inkluderingsdepartementet (AID) (2007): "Forskrift om endringer i utlendingsforskriften (sterkere vektlegging av barns tilknytning til riket, oppholdstillatelse når det foreligger praktiske hindringer for retur)"

Bjerkan, Lise and Huitfeldt, Anniken (2004): *Roma Minorities in the Czech and Slovak Republics*, Fafo-paper 2004:18

Brekke, Jan Paul (2004): *While we are waiting: Uncertainty and empowerment among asylum seekers in Sweden*, ISF Report 2004:10

Brekke, Jan Paul and Søholt, Susanne (2005): *I velferdsstatens grenseland: En evaluering av ordningen med bortfall av botilbud i mottak for personer med endelig avslag på asylsøknaden*, ISF Report 2005:005

Broeders, Dennis and Engbersen, Godfried (2006): "The Fight Against Illegal Migration: Identification Policies and Immigrants' Counterstrategies", *American Behavioral Scientist* Vol. 50(12): 1592-1609

Brunovskis, Anette og Surtees, Rebecca (2007): *Leaving the past behind? When victims of trafficking decline assistance*, Fafo-rapport, Oslo: Fafo

Brunovskis, Anette & Surtees, Rebecca (forthcoming 2008): "Agency or illness – conceptualization of trafficking victims' choices and behaviors in the assistance system", *Gender, Technology and Development*, special edition on human trafficking

Brunovskis, Anette & Tyldum, Guri (2004) *Crossing Borders: An Empirical Study of Transnational Prostitution and Trafficking in Human Beings*. Fafo report 426. Oslo: Fafo

Djuve, Anne Britt and Kavli, Hanne Cecilie (2007): "Integreringspolitikk i endring", in Dølvik, Jon Erik, Tone Fløtten, Gudmund Hernes and Jon M. Hippe (eds.): *Hamskjifte. Den norske modellen i endring*, Gyldendal Forlag, Oslo

Elliott, Eva, Alison J Watson and Ursula Harries (2002) "Harnessing expertise: involving peer interviewers in qualitative research with hard-to-reach populations", *Health Expectations* 5(2):172–178

Engbersen, Godfried, Marion van San and Arjen Leerkes (2006): "A room with a view: Irregular immigrants in the legal capital of the world", *Ethnography* vol. 7(2):209-242

Eurydice (2004): Integrating immigrant children into schools in Europe, European Commission

Friberg, Jon Horgen (2004): "Hva skjer med beboere som forlater asylmottak uten å oppgi ny adresse? Ethiske og metodiske utfordringer ved en utredning", Fafo working paper 2004:33

Friberg, Jon Horgen and Tyldum, Guri, eds. (2007): *Polonia i Oslo. En studie av arbeids- og levekår blant polakker i hovedstadsområdet*, Fafo report 2007:27

Heckathorn, Douglas (1997): "Respondent-Driven Sampling: A New Approach to the Study of Hidden Populations", *Social Problems* 44(2):174-199

Jakobsen, Marianne, Nora Sveaass, Lars Erik Eide Johansen and Elin Skogøy (2007): *Psykisk helse i mottak: Utprøving av instrumenter for kartlegging av psykisk helse hos nyankomne asylsøkere*", Nasjonalt Kunnskapscenter om vold og traumatisk stress, report 4/2007

Koshravi, S. (2006): "Territorialiserad mänsklighet: irreguljära immigranter och det nakna livet", in Svenska Offentliga Utredningar SOU(2006:37): *Om välfärdens gränser om det villkorade medborgarskapet*, Stockholm, pp. 283-310

Médecins Sans Frontières (MSF) (2005): *Experiences of Gömda in Sweden: Exclusion from health care for immigrants living without legal status*, Médecins Sans Frontières, Sweden

O'Connell Davidson, Julia and Farrow, Caitlin (2007): *Child Migration and the Construction of Vulnerability*, Save the Children, Sweden

Parrado, E. A., C. McQuiston, and C. A. Flippen. (2005): "Participatory survey research - Integrating community collaboration and quantitative methods for the study of gender and HIV risks among hispanic migrants." *Sociological Methods & Research* 34: 204-239.

Pedersen, Jon and Sommerfelt, Tone (2007): "Studying children in armed conflict: data production, social indicators and analysis", *Social Indicators Research*, vol. 84(3):251-269

Petersen, Rebecca D. and Avelardo Valdez. (2005): "Using Snowball-Based Methods in Hidden Populations to Generate a Randomized Community Sample of Gang-Affiliated Adolescents." *Youth Violence and Juvenile Justice* 3: 151-167.

Raj, Anita and Silverman, Jay (2002): "Violence Against Immigrant Women: The Roles of Culture, Context, and Legal Immigrant Status on Intimate Partner Violence", *Violence Against Women* Vol. 8(3): 367-398

- Richardson, Sue and McMullan, Miriam: "Research ethics in the UK: What can sociology learn from health?", *Sociology* vol. 41:1115-1132
- Romero-Ortuño, Román (2004): "Access to health care for illegal immigrants in the EU: Should we be concerned?" *European Journal of Health Law*, vol.11:245-272
- Rogstad, Jon (2007): "Betalte informanter", *Sosiolognytt* 4/07:3-4
- Sagalnik, Matthew and Heckathorn, Douglas (2004): "Sampling and estimation in hidden populations using respondent-driven sampling", *Sociological Methodology* 34(4): 193-240
- Skilbrei, May-Len, Marianne Tveit and Anette Brunovskis (2006): *Afrikanske drømmer på europeiske gater*, Fafo report 525
- Skilbrei, May-Len and Tveit, Marianne (2007): *Facing return. Perceptions of Repatriation among Nigerian Women in Prostitution in Norway*, Fafo report 2007:01
- Tyldum, Guri and Brunovskis, Anette (2005): "Describing the Unobserved: Methodological Challenges in Empirical Studies on Human Trafficking." *International Migration* vol. 43 (1/2)
- Utlendingsdirektoratet (UDI) (2008): *Tall og fakta 2007*
- Watters, J. K., and P. Biernacki. (1989): "Targeted Sampling - Options for the Study of Hidden Populations." *Social Problems* 36: 416-430.
- Yeka, William, Geraldine Maibanie-Michie, Dimitri Prybylski and Donn Colby (2006): "Application of respondent driven sampling to collect baseline data on FSW and MSM for HIV risk reduction interventions in two urban centres in Papua New Guinea", *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, vol. 83 no. 7:60-72

SSB report in separate file.

FRA: SSB

TIL: UDI

16.05.2008

REPORT ON:

**DEVELOPING METHODS FOR DETERMINING THE
NUMBER OF UNAUTHORIZED FOREIGNERS IN NORWAY**

Summary

This is a summary of the report on the first part of the joint research and development project funded by the Norwegian Directorate of Immigration (UDI, reference number 06/6594), developing methods for determining the numbers of unauthorized foreigners in Norway. The report is prepared by Senior Researcher Li-Chun Zhang.

A method is developed based on the data available. The expected total irregular residents population with non-EU origins is estimated to be 18196 by 1.1.2006. This constituted 0.39% of the official residents populations in Norway in 2005. The estimated lower and upper bounds of a 95% confidence interval are 10460 and 31917, respectively. Of the estimated total irregular residents, 12325 were previous asylum seekers, and the rest, 5871, were persons that had never applied for asylum. The estimated lower and upper bounds of a 95% confidence interval for the irregular residents excluding previous asylum seekers are 3352 and 10385, respectively.

Comparisons with relevant empirical results available from other EU countries suggest that the aforementioned estimates are plausible indicators of the size of the target population. It is, however, important to be aware of two basic preconditions for the results.

Firstly, there is the problem of data, which are few and difficult to extract. The details will be described in Section 3. The estimation approach is necessitated by the data that have been made available to us. Due to limited time and resources, it has not been possible to study in depth other potential data sources such as the many databases at the Police. Also, it has not been feasible to go more thoroughly through the data that may be available at UDI. A main difficulty is that the various types of potential data are not maintained for the purpose of this project, which makes test data extraction extremely costly and time-consuming. A more systematic and coordinated survey of the data sources should have a high priority in future methodological development.

Secondly, the estimation method makes use of certain model assumptions, explained in Section 5. It is important to realize that, while assumptions of various kinds are unavoidable in this case due to the nature of the problem, it is impossible to verify all the underlying assumptions beyond any empirical doubt. We therefore emphasize that one should not be overconfident in the reported estimates. Rather one should treat them as useful pieces of information that can help us towards a better overall understanding of the phenomenon of interest.

Below is a summary of the data and the model assumptions. For each country we have

m: number of unauthorized foreigners registered at UDI between May of 2005 and 2006.

n: number of foreign citizens who faced criminal charges during the calendar year 2005.

N: number of foreign-born persons of the age 18 and over, registered in the Central Population Register by 1.1.2006.

The data are prepared in aggregated table form such that no person can be identified. The aim is to estimate M, the number of irregular residents from each country, in order to arrive at the overall total by 1.1.2006. The model assumptions can briefly be described as follows:

(1) There is a relationship between M and N of the type: M is increasing with N , where the rate of increase decreases as N becomes larger. The actual rate of increase is unknown and estimated from the data.

(2) There is a relationship between m/M and n/N of the type: m/M is increasing with n/N , where the rate of increase decreases as n/N becomes larger. The actual rate of increase is independent of the rate of increase under (1) and is unknown and estimated from the data.

(3) In addition to the underlying structural assumptions in (1) and (2) we assume random variation from country to country.

The derived model for m with explanatory variables (n, N) fits well to the data, but can not verify beyond any doubt the assumed relationship between M and N . Statistical associations assumed in the model do not express any cause-effect relationships.

Jan Bjørnstad

Head of Research

Division for Statistical Methods and Standards

Statistics Norway

Sizing the irregular residents population in Norway

Li-Chun Zhang

Statistics Norway

May 16, 2008

Contents

1	Introduction	3
2	A brief overview of international experiences	4
3	Data sources in Norway	7
4	Definition of target parameter	10
5	A random effects mixed modeling approach	13
5.1	Some remarks on the data	13
5.2	A hierarchical Poisson gamma model	13
5.3	On model assumptions	15
6	Estimation results	19
6.1	Summary of results	19
6.2	On the estimation of total number of irregular residents	20
6.3	On the estimation of irregular residents excluding previous asylum seekers	23
6.4	On the estimation of irregular residents among previous asylum seekers	26
6.5	Discussion	28
7	Some topics for further development	30
A	Estimation method	31
B	Repeated captures method	33
B.1	A brief overview	33
B.2	On contagion	34
B.3	More on heterogeneity	34
B.4	Two further remarks	35
C	Single-stage link-tracing sampling	37
C.1	A graph model	37
C.2	A variation of the graph model	38
C.3	Under-coverage of initial sampling frame	39
C.4	Stratified population	40

1 Introduction

This is the report on the first part of the joint research and development project funded by the Norwegian Directorate of Immigration (UDI, reference number 06/6594), developing methods for determining the numbers of unauthorized foreigners in Norway.

A method is developed based on the data available. The expected total irregular residents population with non-EU origins is estimated to be 18196 by 1.1.2006. This constituted 0.39% of the total residents population in Norway in 2005. The estimated lower and upper bounds of a 95% confidence interval are 10460 and 31917, respectively. Of the estimated total irregular residents, 12325 were previous asylum seekers, and the rest, 5871, were persons that had never applied for asylum. The estimated lower and upper bounds of a 95% confidence interval for the irregular residents excluding previous asylum seekers are 3352 and 10385, respectively.

Comparisons with relevant empirical results available from other EU countries suggest that the aforementioned estimates are plausible indicators of the size of the target population. It is, however, important to be aware of two basic preconditions for the results.

Firstly, there is the problem of data, which are few and difficult to extract. The details will be described in Section 3. The estimation approach is necessitated by the data that have been made available to us. Due to limited time and resources, it has not been possible to study in depth other potential data sources such as the many databases at the Police. Also, it has not been feasible to go more thoroughly through the data that may be available at UDI. A main difficulty is that the various types of potential data are not maintained for the purpose of this project, which makes test data extraction extremely costly and time-consuming. A more systematic and coordinated survey of the data sources should have a high priority in future methodological development.

Secondly, the estimation method makes use of certain model assumptions, explained in Section 5. It is important to realize that, while assumptions of various kinds are unavoidable in this case due to the nature of the problem, it is impossible to verify all the underlying assumptions beyond any empirical doubt. We therefore emphasize that one should not be overconfident in the reported estimates. Rather one should treat them as useful pieces of information that can help us towards a better overall understanding of the phenomenon of interest.

The rest of the report is organized as follows. A brief summary of the data sources that have been utilized internationally for unauthorized immigrants populations is presented in Section 2. Also provided are some relevant empirical results from other western countries. In Section 3 we describe the potential data sources in Norway, and the data that have been used in this project. The target parameter of estimation is defined and discussed in Section 4. We then outline in Section 5 a random effects mixed modeling estimation approach, and describe in Section 6 how it has been applied to yield the estimates of interest. Some topics for future developments are discussed in Section 7. Appendix A provides the technical details of the estimation method. For methodological comparisons, we provide in Appendix B and C critical reviews of the two existing scientific sample-based estimation methods, namely the truncated Poisson regression based on repeated captures data and the single stage link-tracing sampling.

2 A brief overview of international experiences

Below is a summary of data sources that have been reviewed by Pinkerton, McLaughlan, and Salt (2004) and Jandl (2004), with an emphasis on the European situation.

- Population data
 - **Census:** Unauthorized foreign-born persons can be counted in a traditional census with door-to-door visits. Subjected to a post-census adjustment for under- and/or over-counting, this provides an estimated population size at the moment of census.
 - **Register of foreign-born persons:** The immigration authority can be expected to maintain a register, with varying quality, of all foreign-born persons with permanent or temporary residence permit, as well as asylum seekers and refugees.
 - **Central population register (CPR):** The CPR should ideally provide good coverage of long-term regular residents. Information on birth and death events of unauthorized residents can be expected, to a varying extent. A notable exception is Spain, where irregular immigrants have a strong incentive to register themselves. They are then eligible for social benefits such as free health care, while the data are not used for removing unauthorized residents from the country.
 - **Regularization program:** Regularization programs for undocumented migrants have been carried out in several European countries. Jandl (2004) identifies three weaknesses in the data. Firstly, not all illegal residents can or will take advantage of the regularization program. Secondly, persons who are granted a time-limited permit frequently fall back into the illegal status. Thirdly, the regularization program may generate temporary strong in-flows from neighboring countries.
 - Other **registers with partial coverage** such as a register of children at school.
- Sample data
 - **General large-scale survey:** There are several such surveys that provide at least partial coverage of the target population, including the Permanent Demographic Survey in France and the Labor Force Survey in a number of countries.
 - **Targeted survey:** There are two types of ultimate sampling units.
 - * **Unauthorized immigrants** can be sampled/traced starting from sites (or institutions) where they are expected to be present with a high probability.
 - * **Expert witnesses:** Knowledgable persons, such as officials or employers, may be asked to guess the target population size or, more likely, the proportion of irregular immigrants among their clients or branch of business. This type of data are subjective and the potential bias is ultimately not estimable.
 - **Apprehensions data:** It is often possible to separate between two sources:

- * **Border apprehensions** of persons who attempt to enter the country illegally.
- * **Common law enforcement** with apprehensions of illegal residents and workers.

Table 1: Estimated total numbers of unauthorized immigrants populations in some western countries and their approximate proportions to respective regular residents populations

Country	Total (in 1000)	Prop. (in %)	Source/Time of Reference/Brief Comments
USA	11500	3.8	Passel (2007), cf. References
EU	4500	≥ 1	Papademetriou, D.G. (2005). The "Regularization" Option in Managing Illegal Migration More Effectively: A Comparative Perspective. <i>Migration Policy Institute</i> .
Spain	700 - 800	1.7 - 1.9	Based on regularization programme in 2005.
	614	1.5	No. applications for regularization programme in 2001.
Italy	800	1.4	Workpermit.com (2006). Italy offers citizenship to illegal migrants after 5 years. <i>Estimate by the three largest Labor Unions CGIL, CISL and UILs</i> .
	700	1.2	Based on regularization programmes (2002-2003).
Netherlands	129	0.8	A 95% confidence interval: 74320 to 183912. van der Heijden <i>et al.</i> (2006). Een Schatting van het aantal in Nederland verblijvende illegale vreemdelingen in 2005. (<i>In Dutch</i>)
UK	430	0.7	Lowest estimate 310000 and highest estimate 570000. Woodbridge, J. (2005). Sizing the unauthorized (illegal) migrant population in the United Kingdom in 2001. <i>Home Office Online Report 29/05</i> .
Austria	38.5	0.48	Apprehensions in 2004, incl. smuggled persons, and illegally entering and/or residing persons.
Sweden	31	0.35	Based on temporary program for previously rejected asylum seekers in 2005 - 2006. "Arbetet med den tillfälliga utlänningslagstiftningen 2005 - 2006". (<i>In Swedish</i>)

Table 1 contains references for some empirical results on the size of various unauthorized immigrants populations in the western countries. The following observations may be worth noting. To start with, the presence of unauthorized immigrants is clearly the highest in Mediterranean countries such as Spain and Italy. There is a gradual decrease as one moves towards central and northern Europe. Thus, a country's geographic distance towards the South, which is the main origin of unauthorized migration, is an important determining factor in the size of unauthorized immigrants population in that country. It follows that the numbers or, perhaps even more directly, the proportions of unauthorized immigrants in the neighboring Scandinavian countries can be expected to provide the best indications on the corresponding figures in Norway.

However, one needs to be very careful about the target population a number refers to. For instance, the Austrian figure consists only of the illegal immigrants that have actually been apprehended and, therefore, most likely it represents only a lower limit of the true target population size. Similarly, the Swedish figure consists only of previous asylum seekers. It does not cover many other groups of irregular immigrants, such as illegal border entries or illegal workers following legal entries. Also, it is not certain that all the applicants for the temporary program were residing in the country during the reference period. More on the definition in Section 4.

The above examples also clearly show the need for methodological developments and statistical modeling in order to handle the problem. It is unrealistic to expect the data sources to have such a coverage, and the associated qualities to be of such a standard, that the target number can be produced based on simple tabulations and calculations, as is perhaps the case with the population of regular residents.

3 Data sources in Norway

Below is a summary of relevant data sources in Norway that we are aware of.

- UDI maintains a so-called DUF-register. Individuals who have cases handled at UDI are assigned a DUF identification number.
- Statistics Norway
 - Census data: The last traditional census in Norway was in 1980. The census 1990 was a combination of census in the smallest municipalities and large samples in the larger ones. The last census in 2001 was post-/internet-based and directed only at dwellings. The population statistics were produced from statistical registers.
 - Statistics Norway maintains a statistical copy of the CPR. A registered person with residence permit for 6 months or more is assigned a person identification number. A person with less than 6 months residence permit is assigned a so-called D-number.
 - All regular surveys of persons and households at Statistics Norway, including the Labor Force Survey, use the CPR as the population frame. No systematic effort is made to survey the unauthorized immigrants should they be present in the selected household.
- The police has a number of databases where one may expect to find instances of unauthorized immigrants. However, the data are not organized in a way that allows test data extraction without considerable amount of time and resources. It was not possible to study the Police data in this project, apart from those that have made their way into the databases of UDI or Statistics Norway.
- Other governmental authorities or public institutions may have registers or databases that contain cases of unauthorized immigrants. These include e.g. the register of school children, the patients records at hospitals, *etc.* A major shortcoming of such data sources is that they provide only a partial coverage of the target population. No attempt was made in this project to extract data from them.
- Various humanitarian organizations may have contacts as well as records of unauthorized immigrants. There is a confidentiality issue of whether the relevant data can be made available for statistical purposes. No attempt was made to obtain such data.

Next, we summarize the data coverage of various types of foreigners.

- **Legal residents** The CPR provides a good coverage of legal foreign residents. Since UDI grants all the residence permits, it should also be possible to trace these persons in the DUF-register at UDI. However, the CPR is presumably more updated regarding events of birth, death and, probably to a less extend, emigration.

- **Quasi-legal residents** These are persons who are authorized to stay in the country yet do not have a regular residence permit. Typical examples are asylum seekers. The quasi-legal residents have DUF-numbers in the DUF-register.
- **Short-term visitors with DUF-number** These are tourists or business travelers who need entry visa. Such visitors are not counted as residents in standard practice.
- **Foreigners with free entry** These are legal residents in the EU member states covered by the Schengen Agreement, or other countries that have special free-entry agreement with Norway. Short-term visitors among them will not enter the DUF-register, but neither are they counted as residents.
- **Unauthorized immigrants** in the DUF-register due to expulsion requests are the only observed cases of unauthorized immigrants available to this project.
- Apprehensions of **legal foreign residents**
 - In theory an expulsion request should be filed by the police for any *sentenced* foreigners regardless of the residence status, by which apprehended legal foreign residents may enter the DUF-register. In practice, there appears to be a great under-count of such legal foreign residents in the DUF-register. A reason for this may be the fact that an expulsion request in the case of a legal immigrant is rarely granted except for heavy crimes such as murder or drug trafficking. This may have caused the police to drop the expulsion requests following minor crimes.
 - To a varying extent, foreigners who have been charged or sentenced for criminal offences can be traced in the statistical data that are provided to Statistics Norway by the police. Affirmation of irregular residence status is however difficult for persons who are not registered in the CPR.

Three main conclusions emerge from the above:

1. All available data at the moment are located either at UDI or Statistics Norway.
2. Potentially useful data may be found at the police, but only at extra costs.
3. Only sample-based estimation methods are currently possible in Norway, unless major policy changes lead to the collection of relevant population data.

The following data sets have been used for the calculation of the aforementioned estimates. The data are prepared in aggregated table form, such that the individuals behind the various counts can not be identified.

- The numbers of foreign-born persons by country of origin, who were of the age 18 or over, and were registered in the CPR on the 1st of January, 2006. Producer: Statistics Norway. (Remark: Ideally we would like to have more time to find out whether there is more suitable reference population that can be used; see discussions in Subsection 5.3.)

- The numbers of foreigners by country of citizenship, who faced criminal charges during the calendar year 2005. Producer: Statistics Norway. (Remark: These are the most reliable data of apprehended foreigners available to us. Ideally, we would like to be able to separate the irregular residents from the legal ones, which is not possible at the moment for a number of technical reasons. This does not invalidate the modeling approach as we shall explain in Section 5. But it is important to watch out for possible systematic changes in the data source, if the estimation procedure is to be applied repeatedly in future.)
- The numbers of foreigners by country of citizenship, who did not have a valid permit for staying in the country. Based on expulsion requests that have been handled at UDI during the 1st of May, 2005 and the 30th of April, 2006. The numbers are further divided into those who had applied for asylum and those who had not. Producer: UDI. (Remark: At the moment it is difficult to identify who has made an expulsion request in the DUF-register. The registration of such relevant information can be improved. Similarly, routines and information concerning the status of the regular residents may be strengthened.)

The motivations for extracting these data sets and the ways by which they have been utilized in the estimation will be explained in Sections 4 - 6.

4 Definition of target parameter

The population of unauthorized immigrants is both hard to access and hard to define.

To start with, a foreign-born person may be classified according to three characteristics:

- Entry status: legal or illegal
- Residence status: legal, quasi-legal, temporary or illegal
- Working status: legal, illegal or no-work

The exact definition of the categories varies from country to country, as well as from time to time, due to the dynamism and intricacies of the immigration laws.

In this project we focus on the residence status. Our target of estimation is the size of the irregular residents population in Norway, which is the term we will use from now on. The entry and working status are subordinate dimensions. Thus, an irregular resident may or may not have entered the country illegally, and he or she may or may not be working illegally. Due to the focus on the residence status, it was decided that citizens from the following countries will be excluded from the target population:

Andorra, Austria, Belgium, Bulgaria, The Czech Republic, Cyprus, Denmark, Estonia, Finland, France, The Faroe Islands, Germany, Greenland, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherland, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Switzerland, Sweden, UK

Most of these are EU member states. The others are excluded because they are situated inside the EU zone and have a special diplomatic relationship with Norway.

Now, at any given moment, an irregular resident person must be someone who is present in the country without a legal basis. There are, however, several difficulties, of both practical and theoretical nature, that prevent us from adopting such a naturalistic (or physical) definition.

First of all, while it is in principle possible to implement the definition in a census-like mode of data collection with door-to-door visits, the associated cost is prohibitive. As reviewed above, observations of irregular residents in Norway, either at the Police or UDI, require accumulation of data over time. It is often impossible to verify the presence on a fixed reference time point of interest, such as the 1st of January, 2006. There is also a problem with person identification, which is necessary in order to distinguish between potential multiple observations and/or stays of the same person. Moreover, the legality status of a person may change, sometimes several times, over the period of data collection, and one rarely succeeds in tracing the whole history.

Next, it seems that one needs to distinguish between residence and presence. Thus, technically speaking there can be many kinds of transitory or trivial illegal presence of foreigners, but not all of them are, or should be, counted as irregular residence. For example, many applications for asylum are filed from within the country, which means that technically there is a post-entry period when the applicant has no legal ground for being present in the country. To commit oneself to

the naturalistic definition above would have required going through all such possibilities, without realistic hopes of resolving the problems given the quality of the relevant data.

Moreover, our target population is hardly static. Thus, for example, in a hypothetical situation with round-the-clock complete surveillance, we would know exactly how many irregular residents there are, respectively, on the first and second of January, 2006. The two numbers will almost surely be different. But such spurious variations are hardly of interest from our point of view in a project like this one. It can therefore be argued that a theoretical stable size is preferable in order to avoid this kind of accidental random variation.

Finally, the so-called residual method (e.g. Passel, 2007) is undoubtedly the most well studied and documented estimation procedure available at the moment. The essential relationship is summarized in the following equation:

$$U = A - L$$

where U stands for the total of unauthorized immigrants, and A stands for that of all immigrants, and L stands for the total of legal immigrants. Various adjustments of the terms on the right-hand side are necessary due to death events, emigrations, census under-counts, *etc.*. In reality only theoretical or expected values can be calculated, but not the actual figures for the particular reference period of concern. It follows that the method yields an estimate U that is of an implied, theoretical and stable nature, unlike the naturalistic definition above.

In light of these general remarks, we shall now define our target parameter as follows. Let M be the size of the irregular residents population at the time point of interest. Let N be the size of a known *reference* population at the same time point. For the estimates reported in this report, N is the number of foreign-born persons of age 18 or over, who were registered in the CPR on the 1st of January, 2006. Consider M as a random variable and N a known covariate. Denote by $f(M|N)$ the conditional probabilistic distribution of M given N . The target parameter is the *theoretical* size of irregular residents, which is defined as the conditional expectation of M given N with respect to $f(M|N)$, denoted by

$$\xi = E(M|N) \tag{1}$$

The following observations may be worth noting. First, the theoretical size is defined to be the conditional expectation of a random variable. This enables us formally to get rid of the spurious variation as long as the reference population size is held fixed. Next, the introduction of N serves two purposes: (a) it can be used as an explanatory variable of the irregular size M , and (b) it provides an interpretation of the irregular size M in analogy to N . For example, part of the idea of a theoretical size is to have a stable measure of the target population size, where the time-dependent variation in M is linked to that of N . Provided the day-to-day variation in N around the 1st of January in 2006 can be considered immaterial, the theoretical size ξ is valid not just for the 1st of January in 2006, but for a period around it. Moreover, since the chosen N is not subjected to great seasonal variations, neither is the theoretical ξ . In comparison, based on the

naturalistic definition, M is supposed to vary greatly from one time of the year to another, being perhaps the highest in the summer months, which is another kind of spurious variation that is not of importance to us.

5 A random effects mixed modeling approach

5.1 Some remarks on the data

In addition to M and N , let m be the number of irregular residents that were observed between May, 2005 and April, 2006, and let n be the number of foreign citizens who faced criminal charges in the calendar year 2005. Both have been explained before at the end of Section 3. The idea now is to develop a statistical model, which makes it possible to estimate M based on the observed N , n and m .

The accumulation of observations implies that m and n must be collected over a period of time. A calendar year seems a natural choice if the target parameter (1) is to be estimated on a yearly base. Technically speaking, however, the two types of cases do not have to be collected from the same period, or even over two periods of the same length, as long as it is possible to find a statistical model that works for the data available. Although we would have liked to examine alternative choices of the reference periods, such an option did not exist for us.

In concept, n should be a *reference* count that can plausibly be related to both m and N . With m being the number of apprehended irregular foreigners and N the number of legal foreign residents, a natural choice of n would be the number of apprehended legal foreign residents. However, as explained before, it is not possible for us to decide in all the cases whether a foreigner charged with a crime is a legal resident or not. In fact, one can be quite certain that some of these persons are irregular residents. Yet we have no choice but to use the only data that are available. However, it is important to realize that this does not cause bias in the estimator of M . In contrast, bias would have been the case had m contained legal foreign residents. Moreover, whether a statistical model using the available n is acceptable or not is a matter that can be examined empirically by looking at the actual goodness-of-fit of the model.

It is clear from the above remarks that n/N and m/M are not literally the catch rates among the reference and target populations, respectively. Moreover, they must differ for a number of reasons such that a simplistic model like $E(m/M|n, N) = n/N$ surely can not hold. Below we shall develop a random effects mixed modeling approach that makes it possible to estimate M under more general conditions.

5.2 A hierarchical Poisson gamma model

For both the target and the reference populations, let $i = 1, \dots, t$ be the index of the sub-population classified by the country of citizenship and origin, respectively. Assume that the observed number of irregular residents follows a Poisson distribution, with parameter λ_i , denoted by

$$m_i \sim \text{Poisson}(\lambda_i) \tag{2}$$

It is intuitively plausible that the parameter λ_i should depend on two other quantities: (a) the total number of irregular residents from country i , denoted by M_i , and (b) the probability of

being observed, i.e. the probability for an irregular resident to be in the DUF-register, denoted by p_i , i.e. $\lambda_i = M_i p_i$. In addition, let $u_i = M_i p_i / E(M_i p_i | n_i, N_i)$, where $E(M_i p_i | n_i, N_i)$ denotes the conditional expectation of $M_i p_i$ given n_i and N_i . The u_i is a random effect that accounts for heterogenous variation from one country to another. Together, we have

$$\lambda_i = \mu_i u_i \quad \text{where} \quad \mu_i = E(M_i p_i | n_i, N_i) = E(M_i | N_i) \cdot E(p_i | M_i, n_i, N_i) \quad (3)$$

We complete the model specification by assuming that

$$\xi_i = E(M_i | N_i) = N_i^\alpha \quad (4)$$

$$E(p_i | M_i, n_i, N_i) = E(p_i | n_i, N_i) = \left(\frac{n_i}{N_i}\right)^\beta \quad (5)$$

$$u_i \sim \text{Gamma}(1, \phi) \quad (6)$$

where $\text{Gamma}(1, \phi)$ denotes the gamma distribution with expectation $E(u_i) = 1$ and variance $V(u_i) = 1/\phi$. Together, formulae (2) - (6) define a hierarchical Poisson gamma model.

We note that the model implies that $E(m_i / M_i | M_i, n_i, N_i) = (n_i / N_i)^\beta$. The term hierarchical refers to the fact that random variation exists on two different levels. Firstly, on the population level, the Poisson parameter λ_i depends on u_i that is a random gamma-variable from one country to another. In contrast, μ_i contains the fixed effects α and β that are constant across all the countries. Secondly, given u_i (and, thus, λ_i), the observation m_i is subject to a random sampling error following the corresponding Poisson distribution.

Notice that we have modeled the expected Poisson parameter $\mu_i = E(\lambda_i)$ as a product of equations (4) and (5). Given the data available, this is necessary in order to incorporate the irregular size M_i into the model, as we are not interested in a model that only explains the observed counts m_i , for $i = 1, \dots, t$. The parameters α and β are identifiable, and the combined model for μ_i , i.e. the product of equations (4) and (5), can be tested empirically for its goodness-of-fit to the observed data. Having done that, we may use the estimate of α to derive an estimate of $\xi_i = E(M_i | N_i)$. However, in a fundamental sense, the plausibility of equation (4), or (5), can not be empirically established on its own. To put it in another way, it is conceivable that one may be able to come up with another model equation for $\mu_i = E(\lambda_i)$ that fits equally well to the observed counts m_i , for $i = 1, \dots, t$. To choose between two alternative models in such a situation, one must rely *a priori* on assumptions that can not be verified by the data directly. This is the main reason that we have warned previously against overconfidence in the reported estimates. Meanwhile, it is equally important to point out that we have not found any decisive evidence that speaks *against* the assumptions (4) and (5). Theoretical motivations for the proposed model are given below in Subsection 5.3, whereas the empirical results will be documented in Section 6.

5.3 On model assumptions

First of all, it seems natural that M_i should depend on the reference population size N_i . The lack of common social-health benefits and regular job opportunities means that an irregular resident needs a network of contact in order to survive. Moreover, the contact circle would most likely contain regular residents who have a more solid social-economic fundament. It is hard to imagine that completely closed community of irregular residents can be the norm of existence in a society like the Norwegian one. This explains the choice of the reference population, namely, foreign-born persons with age 18 or over. It seems reasonable to believe that this group should contain most of the *direct* contact with the irregular residents from the same country of origin. People with foreign roots who were born in Norway can only have contact with the country of origin through their parents or elder relatives, whereas the contact a foreign-born person has would not cease to exist although the person by now may hold a Norwegian citizenship. Finally, it seems plausible that only adults among them can act as dependable resources for the irregular residents.

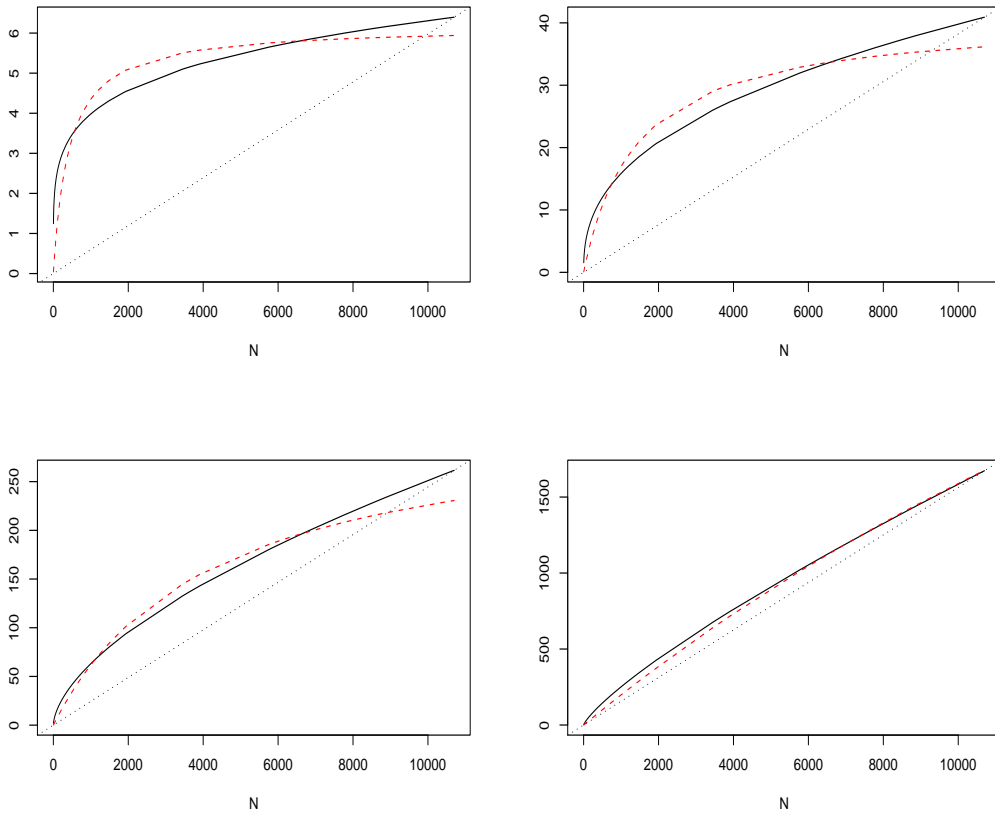


Figure 1: Illustrations of power curve $\xi = N^\alpha$ (solid) and Beveton-Holt curve $R = \nu S / (1 + \kappa S)$ for $S = N$ (dashed). Dotted lines for linear development. Top-left: $\alpha = 0.2$ and $(\nu, \kappa) = (0.015, 0.002388)$. Top-right: $\alpha = 0.4$ and $(\nu, \kappa) = (0.029, 0.000707)$. Bottom-left: $\alpha = 0.6$ and $(\nu, \kappa) = (0.076, 0.000238)$. Bottom-right: $\alpha = 0.8$ and $(\nu, \kappa) = (0.203, 0.000028)$.

In equation (4) we assume that the expected irregular size ξ_i is given by N_i^α . We expect α to have a value between 0 and 1, in which case ξ_i increases more quickly for small N_i and, then, gradually flattens out as N_i becomes large. This is known as the density dependence property that e.g. are commonly found in ecological models for wild-life animal populations. For instance, the Beverton-Holt model (Beverton and Holt, 1957) is given by

$$R = \frac{\nu S}{1 + \kappa S}$$

where S: current size of reproduction basis

R: offsprings in the next generation

κ : density dependence parameter

ν/κ : carrying capacity, i.e. a reproduction “ceiling” as S tends to infinity

The Beverton-Holt curve has a similar density dependent development as the power curve in equation (4), as S and N tend to infinity. The density dependence parameter κ regulates the rate of convergence towards the carrying capacity ν/κ , where a large κ yields quicker convergence. A constant linear relationship would be the case without the density dependence parameter, i.e. $R = \nu S$ provide $\kappa = 0$. It is possible to conceive the reference population of regular residents as the “existence basis”, and the irregular residents as a particular kind of “offsprings” that depend on the reference population. Four illustrations of the power curve N^α and the Beverton-Holt curve are given in Figure 1. Also shown is the constant linear development for comparison. It is seen that both curves exhibit the density dependence property. Moreover, similar developments over a particular range of the independent variable can be expressed using either model curve with suitably chosen parameters. The main difference is that the Beverton-Holt model assumes an asymptotic limit ν/κ for the dependent variable, whereas such a limit does not exist under equation (4) as ξ_i goes to infinity together with N_i . It is difficult to speculate about the exact nature of such asymptotic behaviors, but an absolute population “ceiling” of irregular residents does not appear necessary in our case.

Next, because by equation (5) we are modeling a rate, n_i/N_i is a natural choice of explanatory variable. Notice that we may rewrite the equation (5) on the log scale as

$$\log E(p_i|n_i, N_i) = \beta \log(n_i/N_i)$$

Both rates n_i/N_i and m_i/M_i are similar to proportions of binary outcomes. The logistic transformation would be the standard choice for such quantities, where e.g.

$$\text{logit}(p_i) = \log\{p_i/(1 - p_i)\} = \log(p_i) - \log(1 - p_i)$$

The log transformation is preferable because it enables us to combine the two model equations

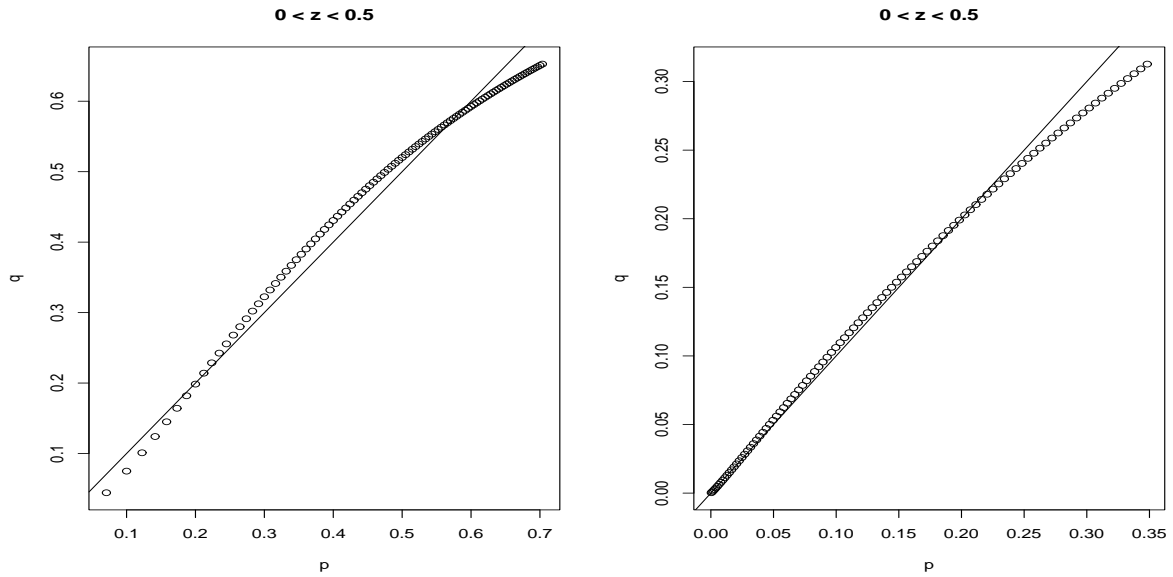


Figure 2: Illustrations of log and logit link functions. Left: $\log(p) = 0.5 \log(z)$ and $\text{logit}(q) = 1.197 + 0.806 \log(z)$. Right: $\log(p) = 1.5 \log(z)$ and $\text{logit}(q) = 0.345 + 1.611 \log(z)$.

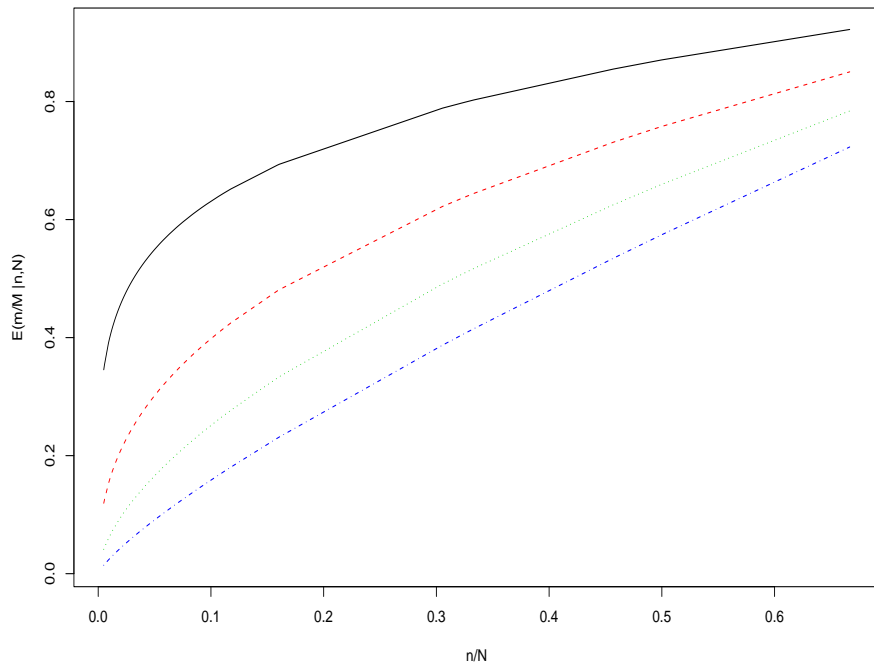


Figure 3: Illustrations of $E(m_i/M_i | n_i, N_i) = (n_i/N_i)^\beta$ for $\beta = 0.2$ (solid), $\beta = 0.4$ (dashed), $\beta = 0.6$ (dotted) and $\beta = 0.8$ (dotted and dashed), and actual n_i/N_i in the data, arranged in the increasing order.

(4) and (5) directly on the same scale to yield

$$\mu_i = N_i^\alpha \left(\frac{n_i}{N_i}\right)^\beta \quad (7)$$

Moreover, we expect the rates to be small. For any $\pi \approx 0$, we have $\pi/(1 - \pi) \approx \pi$ and $\text{logit}(\pi) \approx \log(\pi)$. Also, the two link functions can be quite similar even though it is not directly the case that $\log(\pi) \approx \text{logit}(\pi)$. Two illustrations are given in Figure 2. In each case we plot two probabilities against each other, denoted by q and p . Here we have a covariate z . On the y-axis a specific logistic model is assumed for q , while on the x-axis a specific log model is assumed for p . Figure 2 shows that for a given log link function, there exists a corresponding logistic link function which yields very similar probabilities as the covariate z varies for $0 < z < 0.5$. Finally, Figure 3 illustrates the model equation (5), i.e. $E(p_i|n_i, N_i) = E(m_i/M_i|n_i, N_i) = (n_i/N_i)^\beta$, for $\beta = 0.2, 0.4, 0.6, 0.8$. The values of n_i/N_i are the actual ones in the data available, arranged in the increasing order.

It seems plausible that the underlying assumptions for μ_i should be confined to the country of origin, and observations by country of origin make the parameters identifiable, as well as creating useful degrees of freedom in the data to allow us to estimate the precision of the resulting estimator. The introduction of the random effects by formula (6) is motivated by several important considerations. The equations (4) and (5) give us the expectation of the Poisson parameter λ_i , i.e. an overall relationship that is valid throughout the target population. It is, however, realistic to assume that there is variation from one country to another that makes the actual λ_i deviate from its expected value. Such heterogenous variation is accounted for through the random effects u_i . The assumption of gamma distribution for the random effect u_i is common in combination with the Poisson distribution of the observed count m_i . Together they form a conjugate family of distributions, in the sense that the conditional distribution of u_i given m_i is again a gamma distribution. This is very convenient for computation. The random effect u_i is restricted to have unity mean, similar to assuming zero mean for the residuals in a linear regression model. Otherwise it would imply mis-specification of the model equation for μ_i . It is possible to check on the unity-mean assumption empirically, as we will do in Section 6.

6 Estimation results

6.1 Summary of results

In this Section we apply the Poisson gamma model to derive the reported estimates. The data to be used have been defined at the end of Section 3. Recall also that the target population does not include citizens from the 33 countries listed in Section 4. The main results are summarized in Table 2 below. The relevant details and remarks are given in the sequel.

Table 2: Estimates of theoretical size $\xi = E(M|N)$ and parameters (α, β, ϕ) . Lower and upper bounds of 95% confidence interval for ξ . Standard errors of parameter estimates in parentheses.

Target Irregular Residents Population	m	n	N	$\hat{\xi}$	Lower	Upper
All	1959	5747	152496	18196	10460	31917
Without Previous Asylum Seekers	941	5747	152496	5871	3352	10385
Previous Asylum Seekers	1018	5747	152496	7631	3286	18118
	-	-	-	12325 [†]	-	-

Target Irregular Residents Population	Parameter Estimate (Standard Error)		
	$\hat{\alpha}$	$\hat{\beta}$	$\hat{\phi}$
All	0.742 (0.035)	0.692 (0.073)	3.617 (0.834)
Without Previous Asylum Seekers	0.603 (0.037)	0.599 (0.078)	5.156 (1.376)
Previous Asylum Seekers	0.641 (0.054)	0.624 (0.115)	1.218 (0.253)

The results are divided in three parts: (a) the total number of all irregular residents on January the 1st, 2006, (b) the number of irregular residents who have never applied for asylum, (c) the number of irregular residents who have been asylum seekers at some point in time. Of course,

$$\xi(a) = \xi(b) + \xi(c)$$

The estimates that are derived directly for each target population (a) - (c) do not satisfy this condition. As explained in Section 6.5, the two models with the most explanatory power for the given covariates are for the populations (a) and (b), yielding 12325 ($= 18196 - 5871$, and marked by [†] in Table 2) as the estimated number of irregular residents among previous asylum seekers.

Notice that the population (b) is further divided into 3 subgroups at UDI: (b.1) persons who have been granted a visa on false grounds, (b.2) persons who have overstayed beyond the expiring date of a visa or living permit - including those who initially do not need a visa to enter the country, and (b.3) persons who entered the country without a required visa and without being registered. We do not provide estimates for these subgroups.

6.2 On the estimation of total number of irregular residents

In the available data we had 175 countries with $N_i > 0$. Among these 92 countries satisfy the following conditions: (i) $m_i > 0$, (ii) $n_i > 0$, and (iii) $n_i/N_i < 1$. We group the remaining 83 countries together and create a pseudo-country, denoted by *Rest*. In this way the countries that initially do not satisfy the conditions (i) - (iii) can now be treated just like any other ‘observed’ data point, and it is possible to check empirically whether this leads to a worsened fit of the model. In Figure 4 we have plotted m_i against n_i for these 93 data points. The pseudo-country *Rest* (marked by “+”) appears to fit reasonably well into the pattern of the data. There is a clear outlier (marked by “X”), where the number of observed irregular residents is way beyond what can be expected based on the other countries. The outlier is left out, and the estimation is based on the remaining 91 countries, and the pseudo-country *Rest*.

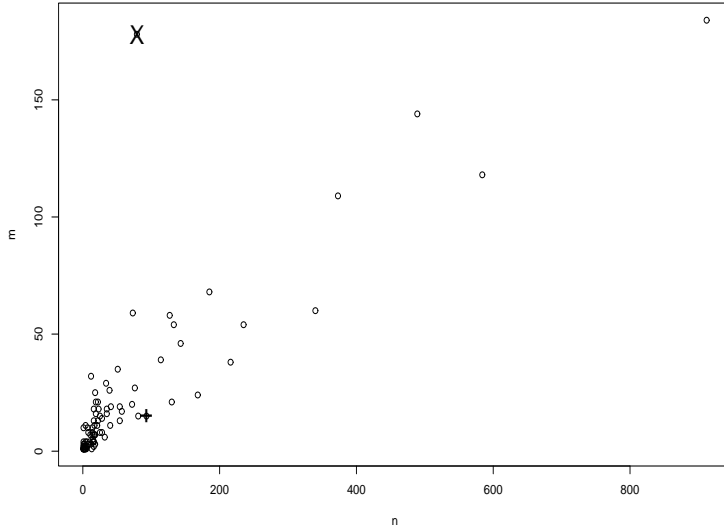


Figure 4: Scatter plot of m_i against n_i . Outlier (X) and Rest (+).

Equation (7) implies on the log scale that $\log(\mu_i/N_i) = (\alpha - 1) \log N_i + \beta \log(n_i/N_i)$. Hence, a model for $\log(m_i/N_i)$ is of the form

$$\log(m_i/N_i) = (\alpha - 1) \log N_i + \beta \log(n_i/N_i) + \epsilon_i \quad (8)$$

This provides easy means for exploring the model equation (7). In Figure 5 we have plotted $\log(m_i/N_i)$ against $\log(N_i)$ and $\log(n_i/N_i)$, respectively. In both cases there is a clear marginal linear relationship (marked by the dotted lines), as can be expected from the model assumptions underlying (7). Again, the pseudo-country *Rest* (marked by “+”) appears to fit reasonably well into the pattern of the data, while the outlier looks misplaced.

Diagnostics plots on fitting the Hierarchical Poisson gamma model to the data depicted in

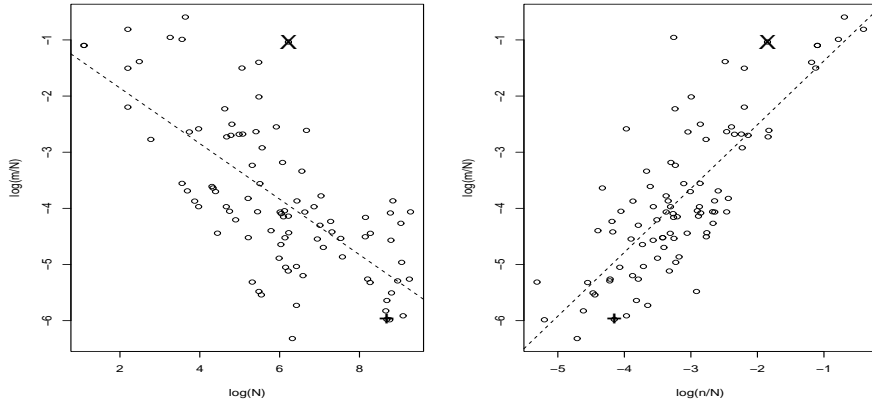


Figure 5: Exploration of model for μ_i . Rest (+). Outlier (X). Marginal linear relationship (dotted).

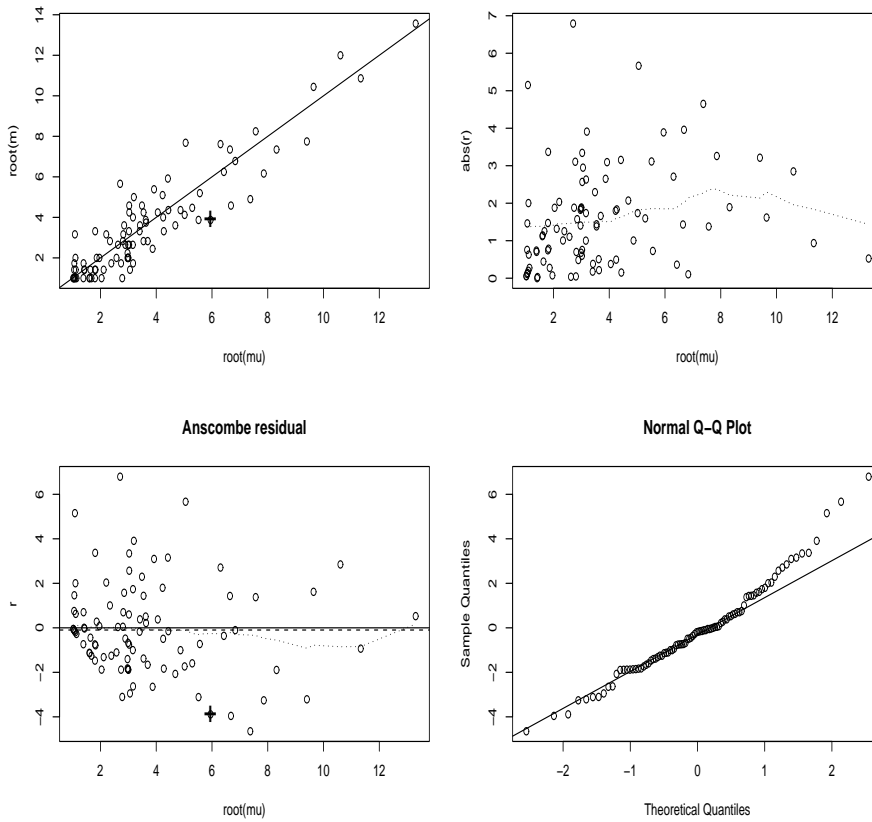


Figure 6: Model diagnostics for estimation of total irregular residents. Rest (+).

Figure 4 and 5 are given in Figure 6. In the top-left corner is the scatter plot of $\sqrt{m_i}$ against $\sqrt{\hat{\mu}_i}$, i.e. its estimated mean value. The square root transformation is used to make the points more evenly spaced over the axes. The solid line marks the equality line should these two be identical. There is no indication of bias in the model specification of μ_i .

In the bottom-left corner, the Anscombe residuals are plotted against $\sqrt{\hat{\mu}_i}$. The Anscombe residual for the Poisson distribution is given by

$$r_i = \frac{3m_i^{2/3} - 3\hat{\mu}_i^{2/3}}{2\hat{\mu}_i^{1/6}}$$

see e.g. McCullagh and Nelder (1989). The idea is to transform a non-normal random variable to a scale where the normal approximation is the best. The overall mean of the Anscombe residuals is marked by the dashed line, which is rather close to zero (marked by the solid line). In addition, the dotted line shows the running means of the residuals. Suitably specified predictor μ_i should yield a flat curve that is close to zero, which appears to be case here.

In the top-right corner the absolute Anscombe residual $|r_i|$ is plotted against $\sqrt{\hat{\mu}_i}$, together with the running means (marked by the dotted line). This provides a check of the variance assumption. Large curvature of the running means would indicate deviations from the underlying model assumption. There is no strong indication for this in the current plot.

Finally, the Q-Q normal plot in the bottom-right corner shows that the distribution of the Anscombe residuals is quite normal on the lower side of the mean, but somewhat long-tailed on the upper side. But the extent of the deviations from normality is not extreme enough to cast serious doubts on the results. In summary, the Poisson gamma model yields a reasonable fit to the data, and the pseudo-country Rest (marked by “+” in the left-hand side plots) does not constitute an abnormal data point.

The estimated number of non-EU irregular residents for all countries is 18196 (Table 2), and a 95% confidence interval is given as (10460, 31917). The parameter estimates of (α, β, ϕ) and their standard errors are given in the second block there. All the parameters are highly significant. We notice the followings.

- The estimated total is 18196. This is 0.39% of the total population in Norway in 2005, which seems plausible compared to the proportion of 0.35% for irregular residents who were previous asylum seekers in Sweden (Table 1). Still, for reasons explained before, we would like to caution against overconfidence in this particular point estimate. On the other hand, the importance of the confidence interval should not be overlooked.
- The data, the estimate and a 95% confidence interval for the pseudo-country Rest are given in Table 3. Notice that $\hat{\xi}_{Rest}/N_{rest} = 627/5913 = 0.106$ is slightly below the overall ratio $\hat{\xi}/N = 18196/152496 = 0.119$, which seems plausible. In addition, ξ is estimated to be 17802 without the pseudo-country Rest in the data, which differs by 1.3% from the estimate by subtraction, i.e. $18196 - 627 = 17569$. The estimation appears to be robust towards the

way these rest countries are handled.

Table 3: Data, estimate and 95% confidence interval for Rest and Outlier.

	m	n	N	$\hat{\xi}$	Lower	Upper
Rest	15	93	5913	627	343	1146
Outlier	178	79	502	101	65	155

- A similar summary is given for the outlier country in Table 3. Being an outlier to the model, $\hat{\xi}_{outlier}$ would not be a good prediction of the actual $M_{outlier}$. Indeed, it can be seen that $\hat{\xi}_{outlier} = 101$ is actually smaller than the observed $m_{outlier} = 178$. It should be mentioned that it is well known that the data in this country have background in certain organized illegal activities. It is reasonable to believe that this abnormal situation will not continue over time. Consequently, it can be argued that the temporary upsurge in the number of irregular residents from this outlier country should not affect the estimation of our target parameter, especially with regard to its interpretation as a theoretical, stable measure that changes smoothly over time.

6.3 On the estimation of irregular residents excluding previous asylum seekers

Among 175 countries with $N_i > 0$ there are 79 that satisfy all the following conditions: (i) $m_i > 0$, (ii) $n_i > 0$, and (iii) $n_i/N_i < 1$. As before we group the remaining countries together and create a pseudo-country, denoted by *Rest*. In Figure 7 we have plotted m_i against n_i for these 80 data points. Again, there is a clear outlier (marked by “X”), which is the same country as above. The outlier is left out, and the estimation is based on the remaining 79 data points.

In Figure 8 we have plotted $\log(m_i/N_i)$ against $\log(N_i)$ and $\log(n_i/N_i)$, respectively. In both cases there is a clear marginal linear relationship (marked by the dotted lines). The pseudo-country Rest (marked by “+”) appears to be somewhat outlying. It is thus important to keep track of its impact on the results. The outlier again looks misplaced. Diagnostics plots on fitting the Poisson gamma model are given in Figure 9. Overall the goodness-of-fit appears acceptable. In particular, the pseudo-country Rest (marked by “+” in the left-hand side plots) does not appear overly abnormal.

The estimated number of non-EU irregular residents excluding previous asylum seekers is 5871 (Table 2). A 95% confidence interval is given as (3352, 10385). All the parameter estimates are highly significant. We notice the followings.

- The estimated total without previous asylum seekers constitute about 1/3 of the estimated total of all irregular residents. No estimate of this particular sub-population has previously been available in Norway. There is very little empirical ground for comparison. However, the Schengen agreement has made it relatively easy for irregular immigrants to move across a large territory stretching from the Mediterranean shores to the Scandinavian coasts, in

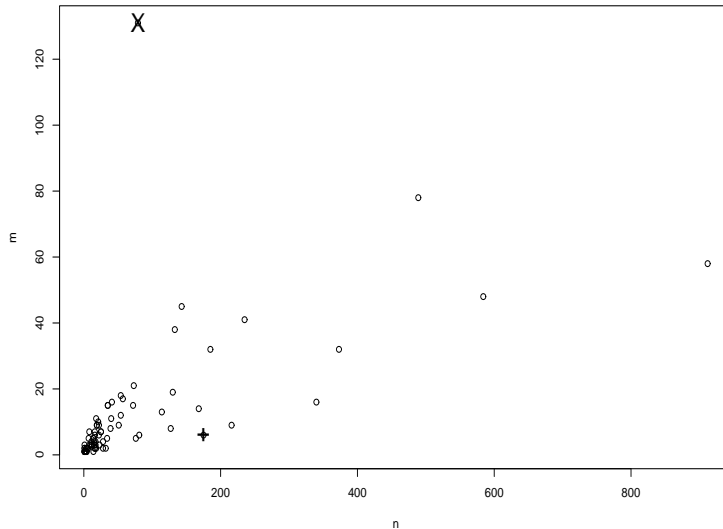


Figure 7: Scatter plot of m_i (without previous asylum seekers) against n_i . Outlier (X) and Rest (+).

the light of which the reported magnitude does not seem unlikely. Again, we would like to emphasize the importance of the confidence interval.

- A summary is given for the pseudo-country Rest in Table 4. Notice that $\hat{\xi}_{Rest}/N_{rest} = 225/7971 = 0.028$ lies below the overall ratio $\hat{\xi}/N = 5871/152496 = 0.038$. In addition, ξ is estimated to be 5868 without the pseudo-country Rest in the data, which differs by 3.9% from the estimate by subtraction, i.e. $5871 - 225 = 5646$. While the impact is somewhat larger than in the case of all irregular residents in Section 6.2, the estimation remains fairly robust towards the way the rest countries are handled.

Table 4: Data, estimate and 95% confidence interval for Rest and Outlier.

	m	n	N	$\hat{\xi}$	Lower	Upper
Rest	6	175	7971	225	118	428
Outlier	131	79	502	42	27	66

- Also given in Table 4 is a summary of the outlier country. Again, $\hat{\xi}_{outlier} = 42$ is way below the observed $m_{outlier} = 131$. The same considerations apply as in Section 6.2.

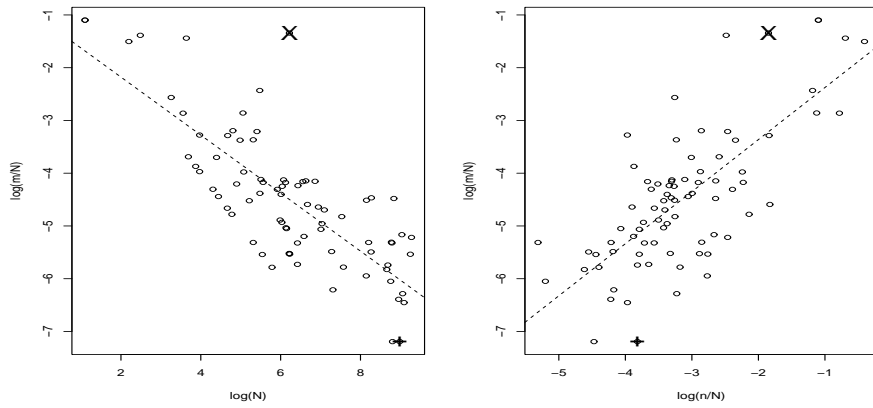


Figure 8: Exploration of model for μ_i without previous asylum seekers. Rest (+). Outlier (X). Marginal linear relationship (dotted).

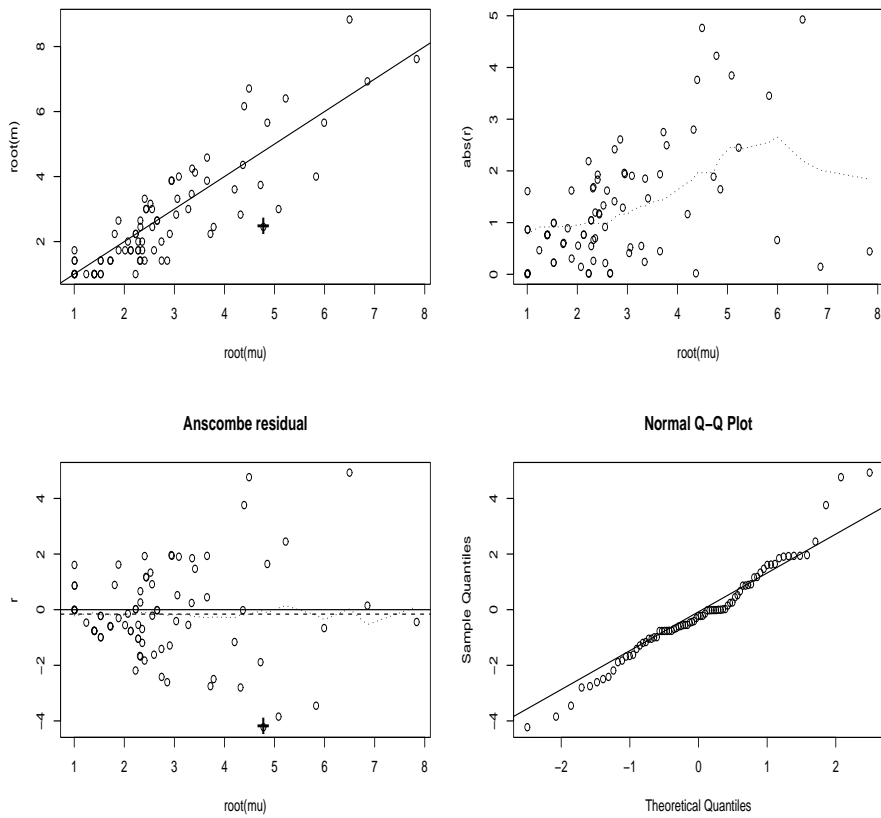


Figure 9: Model diagnostics for estimation of total without previous asylum seekers. Rest (+).

6.4 On the estimation of irregular residents among previous asylum seekers

Among 175 countries with $N_i > 0$ there are 74 that satisfy all the following conditions: (i) $m_i > 0$, (ii) $n_i > 0$, and (iii) $n_i/N_i < 1$. As before we group the remaining countries together and create a pseudo-country, denoted by *Rest*, giving altogether 75 data points.

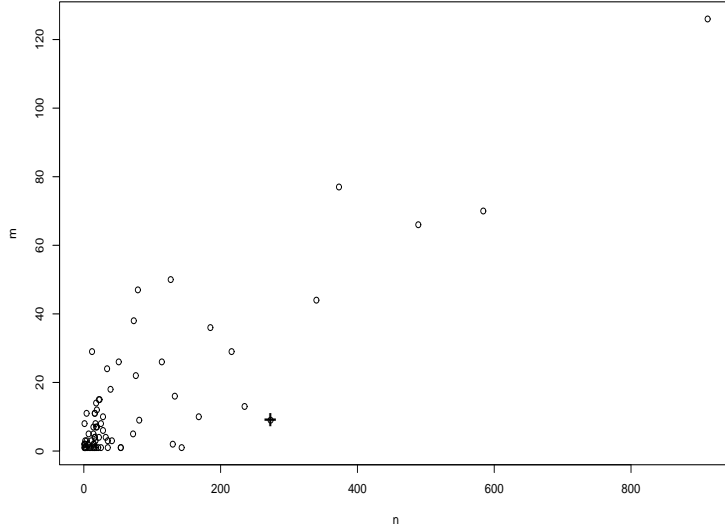


Figure 10: Scatter plot of m_i (previous asylum seekers) against n_i . Rest (+).

The various plots are given in Figure 10 - 12. They were no clear outliers at first sight. The estimated number of irregular residents among previous asylum seekers is 7631, and a 95% confidence interval is given by (3286, 18118); see Table 2. By closer look at the left-hand side plots of Figure 12 we see that there are several countries with fairly large n_i but very small m_i . In addition, the pseudo-country Rest appears somewhat outlying. We have thus carried out the estimation again, where the pseudo-country Rest was removed from the observations, together with the other two countries that had the largest negative Anscombe residuals in the bottom-left plot of Figure 12. The resulting estimate of the total and the parameter estimates are given in Table 5. The estimate of the total is raised by about 15%. Finally, there is the indirect estimate by subtraction, i.e. $\hat{\xi}(c) = \hat{\xi}(a) - \hat{\xi}(b) = 18196 - 5871 = 12325$, also given in Table 2.

Table 5: Alternative estimate for total irregular residents among previous asylum seekers and related parameter estimates. Lower and upper bounds of 95% confidence interval. Standard errors of parameter estimates in parentheses.

Previous Asylum Seekers			Parameter Estimate (Standard Error)		
$\hat{\xi}$	Lower	Upper	$\hat{\alpha}$	$\hat{\beta}$	$\hat{\phi}$
8810	3877	20431	0.659 (0.053)	0.644 (0.111)	1.432 (0.319)

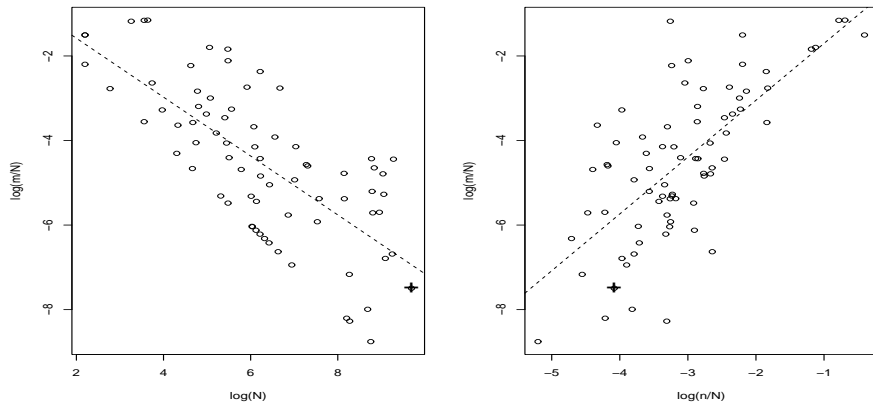


Figure 11: Exploration of model for μ_i (previous asylum seekers). Rest (+). Marginal linear relationship (dotted).

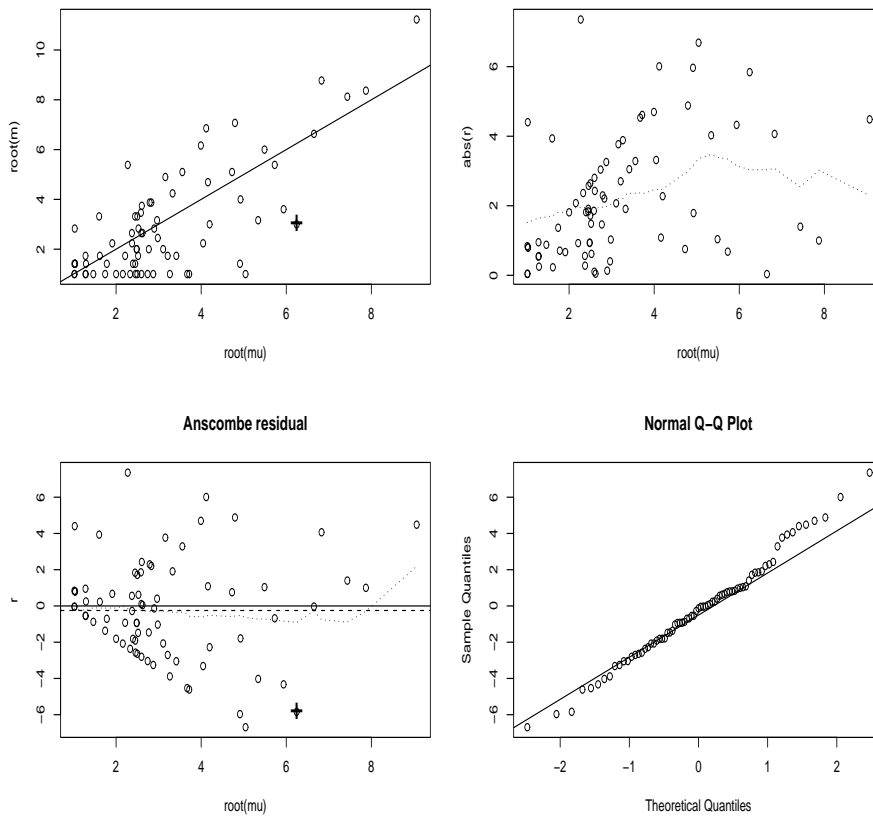


Figure 12: Model diagnostics for estimation of total among previous asylum seekers. Rest (+).

6.5 Discussion

Clearly, the main difference in the estimates of $\xi(c)$ is between the indirect and the direct estimates. This is due to the non-linear model equation (4). Generally speaking, for any given α_1 and α_2 , there does not exist another constant α such that $N^\alpha = N^{\alpha_1} + N^{\alpha_2}$ for all N . Thus, the model equation (4) is not additive in the sense that we can use it to model $\xi(a)$, $\xi(b)$ and $\xi(c)$ all at once using the *same* reference population size. It follows that the inconsistency between the indirect and direct estimates can not be solved based on the data that are currently available to us, and we have to choose, at most, two of the three direct estimates and derive the third one indirectly based on the two chosen estimates.

Table 6: Three alternative sets of estimated totals.

Scenario (I)			Scenario (II)			Scenario (III)		
$\hat{\xi}(a)$	$\hat{\xi}(b)$	$\hat{\xi}(c)$	$\hat{\xi}(a)$	$\hat{\xi}(b)$	$\hat{\xi}(c)$	$\hat{\xi}(a)$	$\hat{\xi}(b)$	$\hat{\xi}(c)$
Direct	Direct	Indirect	Direct	Indirect	Direct	Indirect	Direct	Direct
18196	5871	12325	18196	10565	7631	13502	5871	7631

The three alternative choices are shown in Table 6. The following considerations seem relevant.

- One way to check the explanatory power of the three directly estimated Poisson gamma models is to look at the estimated variance of the random effect, i.e. $\hat{V}(u_i) = 1/\hat{\phi}$. The smaller the estimate $\hat{\phi}$, the larger is the variance of the random effects, which means that less of the variation in the data is explained by the given covariates. From Table (2), $\hat{\phi}(a) = 3.617$, $\hat{\phi}(b) = 5.156$ and $\hat{\phi}(c) = 1.218$. The model for the irregular residents among previous asylum seekers is quite clearly the least powerful one.
- Scenario (II) appears unlikely since $\hat{\xi}(b) > \hat{\xi}(c)$. It is conventional wisdom that previous asylum seekers constitute the majority among the irregular residents. Take for instance Sweden in Table 1. If $\xi(b) > \xi(c)$, then the proportion of all irregular residents would have been raised to at least the same level as Netherlands and UK. This seems implausible given the more tightly regulated society and the geographic location of Sweden.
- Some measures of the numbers of previous asylum seekers are given in Tables 7 and 8. It is seen in Table 7 that in the five years between 2003 and 2007 there could have been up to 16676 previous asylum seekers who were present in the country after the deadline by which they should have left. Of course, not all of them were present on the 1st of January, 2006. Also, there could be many irregular residents among the 18475 persons in the category Others. An indication of this can be seen in Table 8. Among the 5465 persons who had applied for asylum in the year 2005, there were 1994 who were rejected and obliged to leave the country. The registered expulsion rate is only $325/1994 = 0.163$. The registered expulsion rate is even lower in the category Others, which comprises of persons whose applications were either not considered or were rejected without further consideration. In other words, an

absolute majority of persons who were not granted asylum were potential irregular residents, and there is no indication that the number of irregular residents who had been asylum seekers could not be as high as 12325 in Scenario (I).

Table 7: Categories of previous asylum seekers by year of final decision of applications.

Year	2003	2004	2005	2006	2007	Total
Asylum Granted	3135	3965	2989	2151	3962	16202
Observed Over-stayer*	5640	4070	2777	2438	1751	16676
Others	5003	5169	2759	1862	3682	18475
Total	13778	13204	8525	6451	9395	51353

Table 8: Categories of asylum seekers who had applied in year 2005

Total	Granted	Rejected and Obligated to Leave			Others
		Expulsion Registered	Expulsion Unregistered		
5465	1790	325	1669	1681	

* *An over-stayer has had the asylum application rejected. The deadline date for leaving the country is set at four weeks after the final decision if unregistered. After the deadline date, an over-stayer is observed if she/he (i) had a registered date for leaving the country, or (ii) had been located at a detention center, or (iii) had a registered private address. The registration data in the cases of (i) - (iii) have a high quality. The uncertainty is mainly associated with the deadline data in cases it is calculated.*

In summary, we have chosen to report the results of Scenario (I). In doing so we have based ourselves on the two models that have the most explanatory power, yielding 18196 as the estimated total number of irregular residents and 5871 for irregular residents excluding previous asylum seekers. There is no decisive empirical evidence against 12325 as the derived total of irregular residents among previous asylum seekers. Indeed, this derived indirect estimate falls comfortably within the directly estimated confidence interval (3286, 18118), in Table 2.

7 Some topics for further development

We have developed a general random effects mixed modeling approach for sizing the irregular residents population in Norway. Three important features are worth noting:

- The target parameter (1) is defined as the theoretical size of irregular residents population, instead of a naturalistic definition of the actual size.
- The introduction of a known reference population of the size N and a known reference count n as explanatory variables for the observed count of irregular residents.
- The use of random effects that allow for heterogenous variation beyond what can be accounted for by the fixed covariates.

While there are strong theoretical motivations for all these choices, it is equally important to notice that the existing alternative sample-based estimation methods are simply not feasible based on the data that are currently available in Norway; see Appendix B and C.

Although the modeling approach has been sufficiently established, it may be possible to improve and refine the actual model adopted for the estimation. In particular, this concerns the choice of N and n . For instance, is it possible to use some suitably defined total of asylum seekers as the reference size N for irregular residents who had previously been asylum seekers? What should then be the choice of n ? Would it be better to apply different models in each of the sub-populations?

We are only beginning to utilize the potential information in the data that are scattered around in different systems and in various forms. For instance, it may be possible to find better reference counts n in the databases at the police. There are most likely other relevant information in the DUF-register that are useful either directly or indirectly. It may be possible to strengthen the registration of such relevant information, and improve the organization of the databases, in order to make it easier to extract the information for statistical purposes. At least one should develop standardized routines for data extraction. Are there other valuable data sources apart from the ones that have been identified for this project? A systematic and fruitful survey of the various potentially useful data is crucial for further methodological developments.

It may be possible to adapt the current modeling approach to similar problems. For instance, to develop a model that can be used to estimate the number of illegal workers. Of course, this would require one to go through all the issues that we have dealt with in this report for the population of illegal workers.

A Estimation method

The target parameter and its estimator are given as, respectively,

$$\xi = \sum_{i=1}^t E(M_i|N_i) = \sum_i N_i^\alpha \quad \text{and} \quad \hat{\xi} = \sum_i N_i^{\hat{\alpha}}$$

where $\hat{\alpha}$ is the estimator of α . We shall use the maximum likelihood estimator (MLE). Denote by $L(\eta; \mathbf{m})$ the likelihood of $\eta = (\alpha, \beta, \phi)$ given m_i , for $i = 1, \dots, t$. Under the Poisson gamma model (2) - (6), we have

$$f(m_i, u_i; \eta) = \frac{e^{-\mu_i u_i} (\mu_i u_i)^{m_i}}{m_i!} \cdot \frac{\phi^\phi u_i^{\phi-1} e^{-\phi u_i}}{\Gamma(\phi)} = \frac{\mu_i^{m_i} \phi^\phi}{m_i! \Gamma(\phi)} e^{-u_i(\mu_i + \phi)} u_i^{m_i + \phi - 1}$$

where $\Gamma()$ is the gamma function. Thus,

$$\begin{aligned} f(m_i; \eta) &= \int_0^\infty f(m_i, u_i; \eta) d(u_i) \\ &= \frac{\mu_i^{m_i} \phi^\phi}{m_i! \Gamma(\phi)} \int_0^\infty e^{-(\sqrt{u_i})^2(\mu_i + \phi)} (\sqrt{u_i})^{2(m_i + \phi - 1)} 2\sqrt{u_i} d(\sqrt{u_i}) \\ &= \frac{\mu_i^{m_i} \phi^\phi}{m_i! \Gamma(\phi)} (\mu_i + \phi)^{-(m_i + \phi)} \Gamma(m_i + \phi) \end{aligned}$$

based on the identity $\int_0^\infty e^{-\gamma z^2} z^k dz = \frac{1}{2} \gamma^{-\frac{k+1}{2}} \Gamma(\frac{k+1}{2})$, with $z = \sqrt{u_i}$ and $k = 2(m_i + \phi) - 1$. Notice that, conditional on m_i , u_i has the gamma distribution with mean $(m_i + \phi)/(\mu_i + \phi)$ and variance $(m_i + \phi)/(\mu_i + \phi)^2$.

The likelihood is given by

$$L(\eta; \mathbf{m}) = \prod_{i=1}^t f(m_i; \eta)$$

The log-likelihood is thus, disregarding constant terms, given by

$$l(\eta; \mathbf{m}) = \sum_{i=1}^t l_i(\eta)$$

where

$$\begin{aligned} l_i(\eta) &= m_i \log \mu_i - (m_i + \phi) \log(\mu_i + \phi) + \log \Gamma(m_i + \phi) + \phi \log \phi - \log \Gamma(\phi) \\ &\doteq m_i \log \mu_i - (m_i + \phi) \log(\mu_i + \phi) + \phi \log \phi \\ &\quad + (m_i + \phi - 0.5) \log(m_i + \phi) - (m_i + \phi) - (\phi - 0.5) \log(\phi) + \phi \\ &= m_i \log \mu_i - (m_i + \phi) \log(\mu_i + \phi) + (m_i + \phi - 0.5) \log(m_i + \phi) + 0.5 \log \phi \end{aligned}$$

by the Stirling approximation, $\log \Gamma(z) \doteq (z - 0.5) \log(z) + 0.5 \log(2\pi) - z$.

The mean parameter μ_i is linear on the log scale, denoted by $\log \mu_i = x_i^T \gamma$ with generic vector of covariates x_i and parameters γ . Now that $l_i(\eta)$ depends on γ only through μ_i , we have

$$\frac{\partial l_i(\eta)}{\partial \gamma} = \frac{\partial l_i(\eta)}{\partial \mu_i} \frac{\partial \mu_i}{\partial \log \mu_i} \frac{\partial \log \mu_i}{\partial \gamma} = \frac{\partial l_i(\eta)}{\partial \mu_i} \mu_i x_i = \frac{m_i - \mu_i}{\mu_i + \phi} \phi x_i$$

where $\partial l_i(\eta)/\partial \mu_i = m_i/\mu_i - (m_i + \phi)/(\mu_i + \phi)$, and

$$\frac{\partial l_i(\eta)}{\partial \phi} = -\log(\mu_i + \phi) - \frac{m_i + \phi}{\mu_i + \phi} + \log(m_i + \phi) + \frac{m_i + \phi - 0.5}{m_i + \phi} + \frac{1}{2\phi}$$

Moreover,

$$\begin{aligned} \frac{\partial^2 l_i(\eta)}{\partial \gamma \partial \gamma^T} &= \frac{\partial^2 l_i(\eta)}{\partial \mu_i^2} \mu_i x_i \frac{\partial \mu_i}{\partial \gamma^T} + \frac{\partial l_i(\eta)}{\partial \mu_i} x_i \frac{\partial \mu_i}{\partial \gamma^T} = -\left(\frac{m_i + \phi}{\mu_i + \phi} \mu_i \phi\right) x_i x_i^T \\ \frac{\partial^2 l_i(\eta)}{\partial \phi^2} &= -\frac{2\mu_i + \phi - m_i}{(\mu_i + \phi)^2} + \frac{m_i + \phi + 0.5}{(m_i + \phi)^2} - \frac{1}{2\phi^2} \\ \frac{\partial^2 l_i(\eta)}{\partial \gamma \partial \phi} &= \left(\frac{\partial l_i(\eta)}{\partial \mu_i}\right) / \partial \phi \mu_i x_i = -\frac{\mu_i - m_i}{(\mu_i + \phi)^2} \mu_i x_i = \left(\frac{\partial^2 l_i(\eta)}{\partial \phi \partial \gamma^T}\right)^T \end{aligned}$$

The MLE of η , denoted by $\hat{\eta}$, is given by the solution to the likelihood equations, i.e.

$$\frac{\partial l(\eta; \mathbf{m})}{\partial \eta} = \sum_{i=1}^t \frac{\partial l_i(\eta)}{\partial \eta} = 0$$

The MLE can be obtained using the Newton-Raphson method. As the starting values we use the ordinary least square fit of the heuristic log-ratio model (8). We use the estimated α and β as the starting values for the same parameters of the Poisson-gamma model, and the inverse of the estimated $V(\epsilon_i)$ as the starting value for ϕ . The asymptotic variance-covariance matrix of the MLE is given by the inverse of $-\partial^2 l / \partial \eta \partial \eta^T$, evaluated at $\eta = \hat{\eta}$. A confidence interval (CI) for ξ can be obtained directly by plugging in the CI for α , the latter of which can be based on the asymptotic normal approximation. That is, let (c_1, c_2) be a CI for α . The corresponding CI for ξ is then given as $(\sum_i N_i^{c_1}, \sum_i N_i^{c_2})$.

B Repeated captures method

Recently, Van der Heijden, Cruyff, and Van Houwelingen (2003) and Van der Heijden, Bustami, Cruyff, Engbersen, and Van Houwelingen (2003) proposed a truncated Poisson regression approach to estimation of hidden populations, based on repeated apprehensions data in the police records. Below we provide a brief overview of the approach, and discuss some perceived obstacles that need to be resolved.

B.1 A brief overview

In the simple case the data can be arranged as a vector, denoted by N_1, N_2, N_3, \dots , where N_k is the number of persons that have been apprehended for k offences. Let $N_{obs} = \sum_{k \geq 1} N_k$ be the number of persons who have been caught at least once. Denote by N_0 the hidden target population, i.e. persons who have committed offences but are never apprehended. The total target population size is given by $N = N_0 + N_{obs}$.

Assume that the number of apprehensions of a member of the target population, denoted by y_i for $i = 1, \dots, N$, follows a Poisson distribution with parameter λ . We have

$$P(y_i = 0) = e^{-\lambda} \quad \text{and} \quad P(y_i | y_i > 0; \lambda) = \frac{P(y_i; \lambda)}{P(y_i > 0; \lambda)} = \frac{e^{-\lambda} \lambda^{y_i}}{y_i! (1 - e^{-\lambda})}$$

The parameter λ can be estimated based on the observed N_1, N_2, \dots , denoted by $\hat{\lambda}$, under the truncated Poisson distribution. This yields then $\hat{N}_0 = N_{obs} e^{-\hat{\lambda}} / (1 - e^{-\hat{\lambda}})$ and $\hat{N} = \hat{N}_0 + N_{obs}$. Alternatively, an *estimated* Horvitz-Thompson estimator is given by

$$\hat{N}_{HT} = \frac{N_{obs}}{1 - e^{-\hat{\lambda}}} = \sum_{i=1}^{N_{obs}} \frac{1}{P(y_i > 0; \hat{\lambda})}$$

Van der Heijden, Bustami, Cruyff, Engbersen, and Van Houwelingen (2003) extended the simple setting above under a truncated Poisson regression model. For $i = 1, \dots, N_{obs}$, put

$$\log(\lambda_i) = x_i^T \beta$$

where x_i is a column vector of covariates, and β contains the regression coefficients. Again, the parameters β can be estimated based on N_1, N_2, \dots , denoted by $\hat{\beta}$, giving $\hat{\lambda}_i$ for each apprehended persons. The parameter λ_i remains unknown outside the sample, for $i = 1, \dots, N_0$, unless x_i is known throughout the population. A Horvitz-Thompson type estimator is proposed, where

$$\hat{N}_{HT} = \sum_{i=1}^{N_{obs}} \frac{1}{P(y_i > 0 | x_i; \hat{\beta})} = \sum_{i=1}^{N_{obs}} \frac{1}{1 - \exp(-x_i^T \hat{\beta})}$$

B.2 On contagion

Two main assumptions have been discussed in the aforementioned papers. The first one is that the sample count of each member of the population follows a Poisson distribution. A perceived potential problem is known as contagion from the biostatistical literature: positive contagion is the case if previous apprehensions increase the probability of subsequent apprehensions; whereas negative contagion is the case if the probability decreases.

It is hard to reject contagion completely, because it would imply that apprehension has no effect at all on the behavior of the apprehended, nor the police. However, the interpretation that contagion necessarily leads to violation of the Poisson distribution needs some consideration. Obviously, this is true in cases of extreme contagion. For instance, apprehension may lead to exclusion from the population, as when an apprehended irregular immigrant is effectively expelled. In this way, extreme contagion is related to the issue of an open or closed population.

Next, if as a result of each apprehension the probability of being caught later is increased, then contagion may eventually lead to violation of the Poisson distribution. This can be explained by the genesis of the Poisson distribution as the limit of a binomial distribution with probability p and M trials, when M tends to infinity and p tends to zero in such a way that Mp tends to λ . A necessary condition here is that p should be very small, or close to zero.

In case the probability of being caught later decreases following previous apprehensions, or if the probability increases but remains very small, contagion does not necessarily lead to violation of the Poisson distribution. The probability of the binomial distribution does not have to be constant for the Poisson limit to hold. Thus, the total count of two independent binomial trials with parameters (M_1, p_1) and (M_2, p_2) , respectively, can be approximated by the Poisson distribution with parameter $\lambda = \lambda_1 + \lambda_2 = M_1p_1 + M_2p_2$, provided each binomial distribution can be approximated by a Poisson distribution with parameter λ_1 or λ_2 . Contagion implies merely that λ_2 depends on λ_1 , but not dependence between the two binomial counts.

Suppose we split the full period of data collection into sub-periods between each apprehension, and in each sub-period a number of independent Bernoulli trials take place with a sub-period specific probability that can be approximated by a Poisson distribution with sub-period specific parameter. The number of apprehensions still follows a Poisson distribution for each person, but the parameter will be different for people who are caught different numbers of times. In this way contagion may lead to a particular kind of heterogeneity in the data, which is similar to informative sampling *with* replacement. Unless one is able to specify the dependence between the sub-period parameters correctly, estimation will be biased if contagion is ignored.

B.3 More on heterogeneity

The second assumption of the truncated Poisson regression approach concerns potential heterogeneity in the individual Poisson parameters. In the simple case, the Poisson distribution is identical throughout the whole population. Under the truncated Poisson regression model, the

distribution is identical for persons with the same covariates. The homogeneity assumption is violated if there are differences in the individual Poisson parameters that can not be explained by the observed covariates. As we have argued above, heterogeneity may be caused by contagion. To discuss the matter in general terms, we believe it is helpful to make explicit two concepts that give rise to the Poisson parameter.

Over the given period of data collection, let M be the *number of exposures*, i.e. when a member of the target population is susceptible to the force of law, and let p be the *hit rate*, i.e. the probability to catch an exposed member of the population. For example, in the biological context where animals are captured repeatedly, the number of exposures can be the number of times the catchers are out in the field, and the hit rate is the probability of an animal being caught on each of those occasions. The point is that outside the field working days the animals are not exposed, i.e. not susceptible to be captured.

Van der Heijden, Cruyff, and Van Houwelingen (2003) applied the truncated Poisson regression model to estimate two hidden populations, namely, drunken drivers and persons who illegally possess firearms. However, while a person violates the law all the time she/he is in possession of illegal firearms, no one is drunk and thus violates the law every time she/he drives. So how is the population of drunken drivers defined? Anyone who has ever driven while being drunk? Now, a driver is only exposed at those times when she/he actually drives while being drunk. Since the number of exposures varies in the population, the Poisson parameter must be heterogeneous in the population beyond, say, what can be explained by age, sex and region. Meanwhile, the motivations given for estimating the population size of drunken drivers are (i) insights into the threat this population may pose on society, and (ii) measure of the workload of the police. On both accounts it seems more reasonable to define the target population as cases of drunken driving rather than drunken drivers. Yet, in order to arrive at an estimate of total cases of drunken driving based on the number of people who have ever driven while being drunk, one needs the distribution of exposures in the population. In either case the estimation seems ill-conceived.

What about an *existential* population such as the illegal firearm-owners? It seems that there are different kinds of exposure and hit rate. A person may actually use illegal firearms in a criminal act, or a person may occasionally carry an illegal weapon around just for its own satisfaction, or a person may keep illegal firearms at home all the time. Clearly, the number of exposures and the associated hit rate are quite different in these situations. The result is again a heterogeneous population of Poisson parameters, but for a reason different than contagion.

B.4 Two further remarks

An important motivation for introducing the truncated Poisson regression model is that it provides a means to account for the heterogeneous Poisson parameters through the covariates available. The proposed Horvitz-Thompson type estimator is motivated as follows. Suppose a person with covariates x is apprehended, and the probability that a person with these covariates is apprehended is estimated to be $\hat{p}_x = P(y > 0|x; \hat{\beta})$. Then, for this person, one may estimate that there are

$\hat{p}_x^{-1} - 1$ other persons outside the sample that have the same x . For this argument to hold, however, there must be other people with the same x outside the sample. Thus, for example, it is wrong when Van der Heijden, Cruyff, and Van Houwelingen (2003) include in the regression model a covariate like “age of first offence”, because if this actually means “age of first apprehension” as we have reasons to believe, then the variable exists only inside the sample. For the same reason, the truncated Poisson regression model should not include as covariates anything about a person’s recorded criminal history. But it is allowed to distinguish between different types of exposure and hit rate, say, by the type of offences.

A more difficult problem arises when the target population is clearly not closed during the data collection period, such as that of the irregular immigrants. On the one hand, assumptions of a stable and closed population appear necessary. On the other hand, how can one reconcile obviously different estimates based on samples collected in periods of *different* lengths, now that they all aim at the same number? In general, referring to the concepts of exposure and hit rate, people with different life durations in the population should have different Poisson parameters. This is yet another source of heterogeneity that needs to be taken into account.

C Single-stage link-tracing sampling

Link-tracing sampling (LTS), or snow-ball sampling, is a method that has been used for estimation of hidden and hard-to-access human populations such as drug users and homeless people. The idea is to enlarge the sample by asking the already-sampled persons to nominate other members of the target population. Successive waves are created if the nominees are subsequently asked to make nominations again. The sampling is terminated either according to some pre-specified stopping rules, or if new nominees cease to emerge. In particular, the single-stage LTS stops immediately after the persons in the initial sample have made their nominations.

In a wide range of situations the estimation is only possible using model-based methods. See Thompson and Frank (2000) for a review. Even then the requirement on data can be difficult to meet in practice. In particular, it may be difficult to identify, let alone to follow up, on the nominees, because the target population is hard to access. Here we shall consider only single-stage LTS. Each person in the initial sample is asked to make nominations of other members of the target population. The nominees are not to be identified, except for one or two most basic classification variables, whose details will be given as we proceed. Notice that the low risk of disclosure may encourage cooperation from the initial sample.

C.1 A graph model

Frank and Snijders (1994) studied a simple graph model. Consider a directed graph whose vertices represent the members of the target population, denoted by $U = \{1, \dots, N\}$ with unknown N . Denote by $s = \{1, \dots, n\}$ the initial sample of persons. Denote by an *ordered* pair (i, j) , for $i, j \in U$, an arc from i to j , if the person j is nominated by the person i . Denote by A all the arcs, i.e. nominations, that come out of the sample s , i.e. $A = \{(i, j); i \in s\}$. The data of the single-stage LTS consist then of s and A . Moreover, we shall assume that the arcs of A are not identified, except for whether $j \in s$ or not. That is, we know the identity of each person in the initial sample, but for the nominees only whether they are in the initial sample or not. A variation of the situation is when the nominee j is known to belong to a certain group of the target population.

Frank and Snijders (1994) made two basic assumptions. (I) Assume that the initial sample s arises from Bernoulli sampling from U , with unknown selection probability p . (II) Conditional on s , assume that the arc set A arises from Bernoulli sampling from all $n \times (N - 1)$ possible arcs in $\{(i, j); i \in s \text{ and } i \neq j\}$, with unknown selection probability ψ . In the case where the nominees are not completely identified, but can be classified according to whether $j \in s$ or not, let m_i be the number of nominations by i , and let r_i be the number of nominations by i that fall inside the initial sample. Let $m = \sum_{i \in s} m_i$ and $r = \sum_{i \in s} r_i$ be the respective sample totals.

We have, conditional on n , a moment estimator of N from the following two equations

$$r = n(n - 1)\psi \quad \text{and} \quad m - r = n(N - n)\psi \quad \Rightarrow \quad \tilde{N} = n + (n - 1)(m - r)/r$$

The estimator takes a prediction form, i.e. the observed number n plus the predicted number $(n-1)(m-r)/r$ outside the initial sample, where the latter can be motivated by simple expansion based on the proportional relationship $\{n(N-n)\}/\{n(n-1)\} = (m-r)/r$, which yields $(n-1)(m-r)/r$ as an estimate of $N-n$.

As a numerical example, Frank and Snijders (1994) used the data from a study of cocaine use in Rotterdam. The initial sample consisted of $n = 34$ persons. The total number of nominations were $m = 311$, of which $r = 15$ pointed into the initial sample. These yielded then $\tilde{N} = 685$.

The above graph model rests on two Bernoulli assumptions. Bernoulli sampling (I) of the initial sample may be questionable, if the actual sampling procedure “catches” some members of the target population more easily than the others. Félix-Medina and Thompson (2004) considered a generalization based on cluster sampling of *sites*, where the members of the target population have a high probability of being “caught”. Bernoulli sampling (II) of the nominees presumes connectivity of the graph, i.e. it is possible for a person i to nominate *any* member of the target population other than him-/herself. This is hard to motivate unless the target population is narrowly confined, either geographically or by other means.

C.2 A variation of the graph model

In order to allow different persons to have varying *contact circle*, with possibly different numbers of potential nominees, we now postulate a variation of the graph model.

- (i) Assume Bernoulli sampling of the initial sample, denoted by $n \sim Bin(N, p)$.
- (ii) Assume independent Poisson distribution of nominations m_i , denoted by $m_i \sim Pois(\lambda)$.
- (iii) Conditional on m_i , assume Binomial distribution of r_i , i.e. $r_i \sim Bin(m_i, (n-1)/(N-1))$.

The Poisson distribution (ii) of nominations does not assume connectivity in the population. Ideally, the target population is given by the union of the contact circles of all the persons in the initial sample. Otherwise, the initial sample suffers under-coverage, to which situation we will return later. The parameter λ can be envisaged as a product $M\psi$, where M is the size of the contact circle, and ψ is the probability of nomination. In this way, the Poisson distribution can arise as the limiting distribution of the Binomial distribution, denoted by $Bin(M, \psi)$, as M tends to infinity and ψ to zero and $M\psi$ to λ . Under the homogenous model, we assume that M and ψ are constants across the population. But heterogeneity can be introduced by allowing individual parameters $\lambda_i = M_i\psi_i$.

The conditional Binomial distribution (iii) of r_i given m_i corresponds to an assumption of *indiscrimination* when making the nominations. Since a person in the initial sample is not supposed to nominate him-/herself, the probability of the conditional Binomial distribution is $(n-1)/(N-1)$. Assumptions (ii) and (iii) are jointly equivalent to independent Poisson distributions of $r_i \sim Pois(\lambda_1)$ and $m_i - r_i \sim Pois(\lambda_2)$, where $\lambda_1/\lambda_2 = (n-1)/(N-n)$. This can be the case because, provided Bernoulli sampling (i) of the initial sample, the contact circle can fall either inside or outside of the initial sample, with expected $M_1 = M(n-1)/(N-1)$ and

$M_2 = M(N - n)/(N - 1)$ persons, respectively. Indiscrimination of nomination, i.e. constant ψ in- or outside of s , yields then $\lambda_1/\lambda_2 = (M_1\psi)/(M_2\psi) = (n - 1)/(N - n)$.

Under the homogenous sampling model, the likelihood of (N, p, λ) is given by

$$L(N, p, \lambda) \propto P(n, m, r; p, \lambda|N) = P(n; p|N)P(m; \lambda|n)P(r|m, n, N)$$

which admits a factorization between the likelihood of (N, p) and that of λ . It follows that λ is a nuisance parameter that can be ignored when the inference is focused on the size of the target population. The log-likelihood is given by

$$l(N, p) = \sum_{k=1}^n \log(N - n + k) + n \log p + (N - n) \log(1 - p) - r \log(N - 1) + (m - r) \log(1 - (n - 1)/(N - 1))$$

For maximum likelihood estimation (MLE) we have $\hat{p} = n/N$, based on the equation $\partial l/\partial p = 0$. To find the MLE of N , we need to solve, on substitution of $\hat{p} = n/N$, the following equation

$$\sum_{k=1}^n (N - n + k)^{-1} + \log(1 - p) - \frac{r}{N - 1} + \frac{(m - r)(n - 1)}{(N - 1)(N - n)} = 0$$

This can be found by numerical iterations, denoted by \hat{N} .

For the numerical example cited above, we obtain $\hat{N} = 684$, practically equal to the conditional moment estimator under the graph model, i.e. $\tilde{N} = 685$. The homogenous sampling model seems to have captured the essence of the graph model of Frank and Snijders (1994).

C.3 Under-coverage of initial sampling frame

In the above we have assumed that every member of the target population has a non-zero probability of being included in the initial sample. If not, we say the initial sampling frame has under-coverage. Meanwhile, we say the single-stage LTS has under-coverage if the target population is larger than the union of the contact circles of the initial sample. Thus, the single-stage LTS may have full coverage, even when the initial sampling frame has under-coverage. Suppose, in such a situation, the initial sampling frame is a subset of the target population, denoted by U_1 , of the size N_1 that is unknown. Assume that it is possible to distinguish the nominees who are (a) within the initial sample, whose count is given by r_{0i} , b) outside the sample but within U_1 , whose count is given by r_{1i} , and (c) outside of U_1 . Consider the following model.

- (i) Assume Bernoulli sampling of the initial sample, denoted by $n \sim Bin(N_1, p)$.
- (ii) Assume independent Poisson distribution of nominations m_i , denoted by $m_i \sim Pois(\lambda)$.
- (iii) Conditional on m_i , assume the Multinomial distribution of $(r_{0i}, r_{1i}, m_i - r_{0i} - r_{1i})$ with respective probabilities $(\theta_0, \theta_1, \theta_2) = ((n - 1)/(N - 1), (N_1 - n)/(N - 1), 1 - (N_1 - 1)/(N - 1))$.

Again, assumption (ii) and (iii) are jointly equivalent to assuming independent Poisson distributions for $(r_{0i}, r_{1i}, m_i - r_{0i} - r_{1i})$ with parameters $(\lambda_0, \lambda_1, \lambda_2)$, where $\lambda_0 : \lambda_1 : \lambda_2 = (n - 1) :$

$(N_1 - n) : (N - N_1)$. Let $r_0 = \sum_{i \in s} r_{0i}$ and $r_1 = \sum_{i \in s} r_{1i}$. The likelihood of (N_1, N, p) is given by

$$L(N_1, N, p) \propto P(n; p | N_1) P(r_0, r_1, m - r_0 - r_1 | m, n, N_1, N)$$

where the likelihood of λ factorizes away as above. The log-likelihood is given by

$$\begin{aligned} l(N_1, N, p) &= \sum_{k=1}^n \log(N_1 - n + k) + n \log p + (N_1 - p) \log(1 - p) \\ &\quad - r_0 \log(N - 1) + r_1 \log\left(\frac{N_1 - n}{N - 1}\right) + (m - r_0 - r_1) \log\left(1 - \frac{N_1 - 1}{N - 1}\right) \end{aligned}$$

C.4 Stratified population

Sometimes stratification can help to avoid under-coverage of the initial sampling frame. For instance, one may divide the country into large police districts as strata. The data necessary for estimation can be created as follows. Suppose the target population is divided into a number of strata, denoted by N_h , for $h = 1, \dots, H$, each with unknown size N_h . Suppose that it is possible to distinguish whether or not a person in the initial sample and a nominee by this person belong to the same *population* stratum. Denote by r_{hi} the number of nominees belong to U_h and denote by $m_{hi} - r_{hi}$ the number of nominees outside of U_h . Consider the following model.

- (i) Assume stratified Bernoulli sampling of s , denoted by $n_h \sim \text{Bin}(N_h, p)$, for $h = 1, \dots, H$.
- (ii) Assume independent Poisson distribution of nominations m_{hi} , denoted by $m_{hi} \sim \text{Pois}(\lambda_h)$.
- (iii) Conditional on m_{hi} , assume Binomial distribution of $r_{hi} \sim \text{Bin}(m_{hi}, (N_h - 1)/(N - 1))$.

Notice that the nominees are not required to be identified in the initial sample, but only within the population strata. Again, the likelihood of $\mathbf{N} = (N_1, \dots, N_H)$, p and $\lambda = (\lambda_1, \dots, \lambda_H)$ factorizes into that of (\mathbf{N}, p) and that of λ . Let $r_h = \sum_{i=1}^{n_h} r_{hi}$. The log-likelihood is given by

$$\begin{aligned} l(\mathbf{N}, p) &= \sum_h \sum_{k=1}^{n_h} \log(N_h - n_h + k) + n \log p + (N - n) \log(1 - p) \\ &\quad + \sum_h r_h \log(N_h/N) + \sum_h (m_h - r_h) \log(1 - N_h/N) \end{aligned}$$

References

- Beverton, R.J.H. and Holt, S.J. (1957). On the dynamics of exploited fish populations. *Fish. Invest. Minist. Agric. Fish. Food G.B.*, Ser. II 19, 533p.
- Félix-Medina, M.H. and Thompson, S.K. (2004). Combining link-tracing sampling and cluster sampling to estimate the size of hidden populations. *Journal of Official Statistics*, **20**, 19–38.
- Frank, O. and Snijders, T. (1994). Estimating the size of hidden populations using snowball sampling. *Journal of Official Statistics*, **10**, 53–67.
- Jandl, M. (2004). The estimation of illegal migration in Europe. *Studi Emigrazione/Migration Studies*, **XLI**(153), 141–155.
- McCullagh, P. and Nelder, J.A. (1989). *Generalized Linear Models*. London: Chapman and Hall.
- Passel, J.S. (2007). *Unauthorized Migrants in the United States: Estimates, Methods and Characteristics*. Organisation for Economic Co-operation and Development, DELSA/ELSA/WP2(2007)2.
- Pinkerton, C., McLaughlan, G., and Salt, J. (2004). Sizing the illegally resident population in the UK. Technical report, Migration Research Unit, University College London. Home Office Online Report 58/04, UK.
- Thompson, S.K. and Frank, O. (2000). Model-based estimation with link-tracing sampling designs. *Survey Methodology*, **26**, 87–98.
- Van der Heijden, P.G.M., Bustami, R., Cruyff, M., Engbersen, G., and Van Houwelingen, H.C. (2003). Point and interval estimation of the population size using the truncated Poisson regression model. *Statistical Modelling*, **3**, 305–322.
- Van der Heijden, P.G.M., Cruyff, M., and Van Houwelingen, H.C. (2003). Estimating the size of a criminal population from police records using the truncated Poisson regression model. *Statistica Neerlandica*, **57**, 289–304.