Sampling Refugees for an Educational Longitudinal Survey

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Abstract : In the years 2015 and 2016, in Germany more than half a million refugees were granted asylum or they were accepted being eligible for subsidiary protection. Thus, they got a residence permit. About 29% of the accepted refugees were younger than 18 years. To study education related integration issues in this group, in 2016 the large-scale survey study “Refugees in the German Educational System (ReGES)” had been established. In this study, refugee children not yet in elementary school and students in lower secondary education are surveyed. This article gives some first insights from the field of the study, details its multi-stage sampling and study design, reports gross and net sample sizes, and gives response rates. In total, more than 4,000 families were found to have more than 5,000 children of the desired population. About 2,400 refugee children and about the same number of refugee students participated in the first wave in 2017/2018. This is around 50% of the Kindergarten children’s parents and around 44% of the students, whose addresses were sampled, and an interviewer was sent to, could be interviewed. These high response rates point to the effectiveness of the study design. Additionally, they show the strong interest of the considered refugee population in the study.

Introduction

In 2015 and 2016, more than one million refugees arrived in Germany, most of them from the Middle East and Northern Africa. More than half of them were granted asylum or they were accepted as being eligible for subsidiary protection. For example, in 2015 a total of 476,649 asylum applications has been submitted to the Federal Office for Migration and Refugees. That are 273,815 more than in 2014. In 2015 overall, 158,657 asylum applications have been submitted by people from Syria, thus being the largest group of refugees (Bundesamt für Migration und Flüchtlinge, 2016). Such a large amount of people entering Germany presented huge challenges for the German population and politics. The first and foremost challenge to solve was providing accommodation, food, and goods for daily needs. The second challenge was to decide who can stay. However, the greatest challenge, which German society must deal with, concerns the integration of those who are going to stay. The allocation concerning accommodation is solved by the so called *Königsteiner Schlüssel* (Bundesamt für Migration und Flüchtlinge, 2016) which assigns quotas to each of the 16 federal states determining how many refugees the federal states must provide housing. The quotas depend on a federal state’s tax revenue as well as on the population size and are updated annually. Table 1 displays the *Königssteiner Schlüssel* for 2015. We see that only one out of

100 arriving refugees is assigned to Bremen, whereas more than 20 of them are assigned to North Rhine-Westphalia.

Table 1: Königsteiner Schlüssel 2015 according to Bundesanzeiger, Amtlicher Teil 10.12.2014 B3 (rounded).

Federal State	Quota in %	Federal State	Quota in %
Baden-Württemberg (BW)	12.86	Lower Saxony (NI)	9.32
Bavaria (BY)	15.52	North Rhine-Westphalia (NW)	21.21
Berlin (BE)	5.05	Rhineland-Palatinate (RP)	4.84
Brandenburg (BB)	3.06	Saarland (SL)	1.22
Bremen (HB)	0.96	Saxony (SN)	5.08
Hamburg (HH)	2.53	Saxony-Anhalt (ST)	2.83
Hessen (HE)	7.36	Schleswig-Holstein (SH)	3.40
Mecklenburg-Vorpommern (MV)	2.03	Thuringia (TH)	2.72

Within each of the federal states refugees are further allocated to communities (districts or cities), in sum 11,092 communities in 2015 (Statistisches Bundesamt, 2016). Within these communities, refugees are obliged to register with the immigration office (*Ausländerbehörde*). These are usually located at the city administration within cities and at districts administration within districts. Besides the immigration office, there are other possibilities for refugees to register such as for example mobile registration (*mobile Erfassung)* or reception centers (*Erstaufnahmeeinrichtungen*). Once refugees have accommodation, by law their older children must go to school and their younger children have the right to visit Kindergarten. Thus, at this point middle and long-term educational integration measures can take into effect. Examples for such measures are joint schooling with German children and language learning programs. Since educational policy is a sovereign function of the German federal states, educational policy measures may be implemented differently in the distinct federal states. For example, while in all states students are prepared to speak and understand German as working language, some states include students directly into existing classes, while other states provide extra classes for migrant and refugee students. In either case this puts an additional workload on the school's staff as well as on other resources in the educational system which are scarce anyway. To study the effectiveness of educational middle and long term programs, the overall integration success, as well as to get some insights into the in-depth impact of the refugee crises on the educational system, an appropriate study has been established: "Refugees in the German Educational System (ReGES)"[1] is a longitudinal survey to study the educational careers of refugees and the factors supporting or interfering their integration into the German society. It is hosted by the Leibniz Institute for Educational Trajectories and founded by the Federal Ministry of Education and Research. It started in 2016 and is planned to run over five years (for further information on the study see Will, Gentile, Heinritz, & von Maurice (2018). Establishing a well performing sampling design for a migrant or refugee study is a difficult endeavor demonstrated by various previous studies, see for example Frere-Smith, Luthra, & Platt (2014), Bloch (2004), or Salentin (1999). Problems arise mainly because of three reasons. First, detailed (individual level) data on migrant or refugee populations do either not exist, are defective or not (completely) accessible. In Germany, register data on migrants and refugees is limited to the use for administrative tasks only. This hinders the straightforward built up of a sampling frame for refugees. Second, migrants and refugees are often hard to reach because of language and cultural

barriers as well as because of bureaucratic obstacles (e.g. security staff in collective accommodation centers does not gain access). Finally, especially refugees are often forced to change their place of residence several times until they settle down permanently. Thus, available contact information may be invalid or is not made available. All this in combination makes the target population of the ReGES study a hard to reach population. To identify the ReGES target population, we use the German central register for foreigners (*Ausländerzentralregister, AZR*). This data base is administered and maintained by the Federal Office of Administration and constitutes the most important information base for all German authorities entrusted with foreign affairs and asylum questions.[2] The AZR includes personal data of each foreigner who is not German according to the German basic law (cp. § 116(1)). At the first glance, the AZR seems to contain all kind of information required to sample refugees. However, it does not contain any addresses only names. Furthermore, its use for research is restricted to research at the Federal Office for Migration and Refugees (BAMF). Nevertheless, on request researchers are provided special analysis. We asked for aggregated numbers of foreigners in German communities and used these AZR data to identify and sample in a first step communities with refugees. At this, sampling has been conducted proportional to the overall number of refugees in a community. In a second step, we sampled refugee addresses from the community's registers. That way, we have built a gross sample of 4,680 families with children at kindergarten age and 5,556 families with students. The parents of all of these Kindergarten children and of all of these students were contacted personally and, if participation consent was given, tried to be interviewed face to face by an interviewer speaking their native language. This was accomplished by using interview teams speaking the main languages of the refugees. (Overall, the interviewees could chose out of eight languages.) If an interviewer did not speak the mother tongue of the interviewed family, another interviewer from the same interview team could take over the interview. As an additional measure to increase participation willingness, information events were held. The main goal of these events was to inform the responsible persons in the communities about ReGES and to ask for assistance in carrying out the study. Concretely, the information events should enable the honorary and full-time staff to support refugees who have been invited to participate in ReGES (e.g. in answering questions). Additionally, responsible persons were asked to facilitate access to collective accommodation centers. This processing gave access to 4,323 families having 5,475 children of the desired population and yielded very high response rates within these families: In total, approximately 90% of all of the parents with Kindergarten children gave an interview and around 86% of all of the students. This points to the high acceptance of the study topics among the refugee population considered.

The remainder of this article is structured as follows: The next section provides an overview over recent migrant and refugee studies and the sampling rules they applied. Then, the ReGES population and the sampling design used are described in very detail. Thereafter, we give some insights into the study design and present preliminary results concerning response rates and behavior. We conclude this article with some lessons learnt.

Relevant Sampling Techniques and Other Recent Refugee and Migrant Studies

Using population registers is the gold standard for sampling entities (e.g., persons or families) from a target population. Register data are advantageous since they allow applying random sampling techniques and usually guarantee a high coverage of the population, thus ensuring samples that are representatives of their target population. The population registers relevant for the target population of ReGES are the German general population register, the German school registers, and the central register for foreigners (AZR). However, concerning sampling with each of these registers severe problems emerge. First, the information contained in the general population register in Germany does not allow for the direct

identification of refugees or people with a migration background, because information is limited to nationality, place of birth and having a second citizenship (other than German). This usually makes a screening of the sample drawn from this register necessary. Second, the general population register contains no information on the legal status or the date of arrival in Germany and it also excludes people moving within Germany who are not (yet) registered, thus, underestimating the population of recently arrived refugees. Third, the general population register in Germany is maintained at the community level and cannot directly be accessed by researchers, see also Salentin & Schmeets (2017) for further details. In contrast to the population register, school registers in Germany are available upon request via the statistical offices of the German federal states. These federal-state-specific registers can be harmonized but only provide aggregated information on the number of foreigners at the school level. However, the number of foreigners provided does not differentiate between nationalities. At the time of sampling no information on the number of immigrants or refugees was available. Thus school register data only allow for selecting schools as clusters, for example, with probability proportional to the number of foreigners. Nevertheless, the number of foreigners reported at the school level can, at best, only be a proxy for the number of migrants or refugees. After all, Germany maintains the AZR containing all non-German citizens living in Germany. However, the AZR is mainly for administrative use. Only researchers from the research centre of the BAMF can access the AZR directly, though, on request external researchers can be provided with aggregated information at the level of the immigration offices (located at the community level) and above. However, Salentin (2014) points out problems using the AZR as a basis for sampling migrants. First, the AZR does not contain address or contact information. Thus, it cannot be matched to the central population register without further ado and probably only with notable inaccuracy. For example, foreign names which are originally written in letters different than the Latin ones (e.g. in Arabic letters) might have different possible translations into Latin letters. Hence, matching them based on Latin letters is extremely error prone. Second, the AZR does not allow for generalizations to the population having migration background because naturalized citizens are not included and thus a considerable part of the population having a migration background living in Germany is not covered by the AZR. These limitations – especially the first aspect – partly apply to the refugee population, too. The second aspect is less severe for the refugee population, because this population is well covered, as soon as the refugees are registered. In summary the use of registers for sampling migrants and refugees in Germany is limited by the information contained in the register allowing for a direct identification and the accessibility of the corresponding register. For the immigrant population Salentin & Schmeets (2017, p. 16) conlude: “We consider a two-stage strategy in which first municipalities and secondly individuals are randomly sampled the best recommendation for the Netherlands and Germany.”

Municipalities relevant for establishing a migrant or refugee sample might be determined by means of area sampling methods, for more details see Valliant, Dever, & Kreuter (2013, Chapter 10). Under area sampling the geographical density of the target population is used as a sampling criterion. Area sampling is one example for multi-stage or cluster sampling, where areas are selected as primary sampling units, followed by further stages of subsampling to the ultimate stage. In ReGES, we use this procedure to select communities with refugees at the first stage and – within the selected communities – addresses from the general population register at the second stage. (The respective procedure is described in very detail below.) Along with sampling addresses from the general population register, name-based sampling methods, such as onomastics, might be used to identify migrant populations. This method uses a list of foreigner’s names and looks up matches in population registers or telephone directories, or other sampling frames containing names, see for example Salentin (2014) and Schnell, et al. (2013) for more details. However, the quality of a sample that has been created that way heavily depends on the quality of the list of foreigners’ names on the one hand as well as on the coverage of the register it is applied to (Mateos, 2007). Telephone directories in Germany, although covering Germany as a whole, do not have a good coverage of the population compared to the general population register. This is because telephone

numbers do not have to be registered and households in Germany usually refrain to register their landline or mobile phones.

One could also use linked-tracing methods (Spreen, 1992) to build up a migrant or refugee sample. Linked-tracing methods such as respondent-driven sampling, chain-referral approaches, network sampling, and snowballing are used if the members of the target population are very well connected through social ties, which is often the case for migrants and refugees. The method relies on the fact that starting from a certain part of the population the rest of the population can be accessed through its social network. The success of such methods clearly depends on the degree to which the population is connected among each other as well as on the willingness of sampled persons to share their connections within a network.

Table 2 provides a brief overview of the selected procedures together with their requirements, main advantages and disadvantages.

Table 2: Requirements, Advantages and Disadvantages of Selected Procedures for Sampling Refugees.

Sampling procedure	Requirements	Advantages	Disadvantages
Use of registers (general population register, school register, central register for foreigners)	Accessibility of registers Identification of population within the register	High coverage of the population Allows for random sampling	Some registers cannot (directly) be accessed Information contained in registers is sometimes not exhaustive
Name-based methods (onomastics)	Lists of names covering the population	Foreigners' names allow for unbiased sampling (compared to other methods) Easy to implement	Coverage depends on the quality of the list of foreigners' names and the frame (register or telephone directory) it is applied to
Area-sampling methods (multi-stage, random route, location sampling)	Area level information for the population	Area level information usually (directly) available/ accessible Cost effective	Clustering at the area level In multi-stage sampling information at the lower levels is needed
Link-tracing methods (network, snowball, respondent-driven)	Population must be well connected	Applicable in situations without registers or area level information Cost effective	Potential bias through under- or over representation

Usually, the presented methods are not used exclusively rather than in combination. Subsequently, we evaluate the effectiveness of several studies with regard to practicability and response rates, and we discuss whether it is feasible to apply (parts of) their samplign design to ReGES.

For their study on immigrants and ethnic minorities in the United Kingdom, Lynn, Nandi, Parutis, & Platt (2018) review several linked-tracing sampling methods and one quota sampling procedure. They find none of these methods being appropritate for their purpose, and use a stratified two-stage sampling approach instead. At this, they first sampled areas with a high density of migrants (known from the census). Subsequently, they draw addresses from these areas. Together with a screening procedure and robust fieldwork procedures (such as face-to-face interviews, translation of questionaires into relevant languages, and the usage of translation cards) they find their design to achieve good coverage and acceptable sample sizes.

Frere-Smith, Luthra, & Platt (2014) explore the effectiveness of respondent-driven sampling, a modified chain-referral method, for recently arrived immigrants in the United Kingdom. Because of two reasons they find this sampling method not to be suitable for generating a sample of this specific target population: first, newly arriving migrants are not well-connected among each other and second, they are very reluctant to refer their connections. This is not the case for refugees in Germany. First, they are partly situated in group accomodations and, second, they share a common interest in applying for asylum. Both factors make well-connected and open-minded groups of refugees likely.

Thus, for ReGES linked-tracing methods such as respondent-driven sampling are an option, at least within groups of refugees located at the same accomodations or nearby.

The Children of Immigrants Longitudinal Survey in Four European Countries (CILS4EU), taking place in England, Germany, Netherlands and Sweden, uses a stratified two-stage cluster sampling design selecting 480 schools together with two classes per school (Dollmann & Jacob, 2016). Its target population of school children is stratified into three strata: schools, classes, and students. The school strata are built based on the proportion of migrants per school. Schools were sampled with a probability proportional to the school size (pps). That way, larger schools were more likely to be sampled. Using this design, the CILS4EU realized an initial sample of more than twenty thousand students with a response rate of 85% in the first wave. The stratification by the proportion of migrants together with the pps sampling of schools gave access to more than 8,000 students with migration background. Although this design was successful for realising a sample of migrants, it cannot be transferred to sampling refugees in German schools. This is, as discussed earlier, because in Germany school frames provide information on the number of foreign students, and not on the number of refugee students – at least not at the time of sampling. Thus, a similar design would not guarantee a sufficient number of refugee students in the final sample. Besides this, a three stage sampling design as the one of the CILS4EU requires accessing refuguee students via their teachers and not directly through their parents. This might mean a substantial hurdle for partipating in the study.

A further study, the IAB-BAMF-SOEP survey, which focuses besides ReGES on refugees in Germany is conducted by a research community consisting of the Institute for Employment Research (IAB), the BAMF, and the German Socio-Economic Panel (SOEP). In contrast to ReGES that concentrates on young children and students, the target population of the IAB-BAMF-SOEP survey are households with refugees in general. The IAB-BAMF-SOEP survey uses the AZR as a frame for sampling refugees. Due to a collaboration with the BAMF, a direct sampling of refugee names from the AZR is possible and thus established. The sampling strategy used for this purpose is a two stage cluster approach: First,

immigration offices on the municipality level were drawn based on the AZR data. Then, in the selected municipalities for each refugee name an address had been researched from the related immigration office (Kroh, Kühne, Jacobsen, Siegert, & Siegers, 2017). In this sampling strategy, the primary sampling units are sampling points, containing (a pool of) immigration offices with a minimum of 300 target population members. The secondary sampling units are the refugees who are sampled within the immigration offices. In sum, this processing worked fine yielding a net sample of 4,527 adult and 5,438 underage refugees in 3,336 households maintaining the distribution of the target population concerning gender, age, and country of origin. The response rate at the household level is around 50% (Brücker, Rother, & Schupp, 2018).Thus, for the study aim this sampling design performed well. The SOEP design is advantageous since it avoids the usage of two different register systems (e.g. the AZR and the general population register as in ReGES) and hence potential errors related to the matching of both data sources. However, ReGES has no cooperation agreement with the BAMF. Thus, the SOEP way of sampling was not possible for ReGES.

The sampling procedures and the studies discussed above have different requirements, advantages and disadvantages. They were more or less successful within the studied contexts. As a conclusion, for our purpose we deem a two stage sampling design most appropriate where we first sample areas with high refugee numbers and then addresses. The related processing is described in the subsequent. Respondent-driven sampling within group accomodations was considered as an additional option if response rates are low – which was not the case. Thus, for ReGES this sampling strategy was not adopted.

The Population and the Sampling Design of ReGES

Since in Germany the federal states are responsible for their educational system, there are partly considerable differences between the federal states in terms of the institutional framework for the education of young refugees. This heterogeneity has to be accounted for when establishing the ReGES sample. A nationwide survey would be optimal to mimic the educational pathways of young refugees throughout Germany. However, such endeavor means locating and interviewing sufficient numbers of refugees of the targeted age groups in all of the 16 federal states in Germany –related to a disproportionate amount of effort and unreasonable expense.

Therefore ReGES focuses on five of the 16 federal states in Germany, namely Bavaria (BY), Hamburg (HH), North Rhine-Westphalia (NW), Rhineland-Palatinate (RP) and Saxony (SN). These states have been selected to represent smaller states, city states and area states as well as states in the northern, eastern, southern and western parts of Germany. Besides that, the integration of refugees into the educational system varies between these states. Moreover, these states differ in structural features on the macro level, such as population density, unemployment rate, or the proportion of the population with migration background. Focusing on children and adolescent ReGES concentrates on two key stages of education: On the one hand, early childhood education, which is very important for the acquisition of German language skills and the beginning of educational careers. The age of four to five has been found as being a crucial starting point for longitudinal studies (Berendes, et al., 2011). Accordingly, the population of the Refugee Cohort 1 (RC1) consists of children, who are at least four years old and are not yet educated in an elementary school, and their parents. On the other hand, the transition from lower secondary into academic education (Wagner, et al., 2011) or into the vocational training system (Ludwig-Mayerhofer, et al., 2011) has been found to be central to medium- and long-term integration into the labor market. At this stages, adolescents are usually around the age of 15. Thus, the population of the Refugee Cohort 2 (RC2) consists of those adolescents aged from 14 to 16 years, who are educated in lower secondary schools, and their parents.

We use four and five year old children as well as 14 and 15 year old adolescents as a conservative proxy for the target population of ReGES. This is because at the ages of four and five children are definitely not yet educated in elementary school and at the ages of 14 and 15 young refugees are surely still in lower secondary education likely to be shortly before passing to the next educational stage (i.e., higher secondary education, vocational training, or the transition system). Children who are six years old or older but who do not yet visit elementary school are also part of the RC1 target population and thus are interviewed if their families have been sampled and consent provided. Nonetheless, at the age of six and older the majority of children is expected to already visit elementary school. Likewise, adolescents aged 16 years and older are expected to have already left lower secondary education. After this educational stage, adolescent refugees are no longer part of the RC2 target population. Table 2 details the refugee numbers of the proxy population of the RC1 and RC2 target population in 2017 for the three major nationalities of recent refugees living in the federal states of Bavaria, Hamburg, North Rhine-Westphalia, Rhineland-Palatinate, and Saxony.[3]

Table 3: Number (Percent) of children by age and country of origin (AZR special request, effective: 28.02.2017).

Children at the age of	**Iraq**	**Afghanistan**	**Syria**	**Total**
4 and 5	3,146 (56.1)	2,885 (49.1)	10,005 (60.1)	**16,036 (57.0)**
14 and 15	2,466 (43.9)	2,993 (50.9)	6,635 (39.9)	**12,094 (43.0)**
Total	**5,612 (100.0)**	**5,878 (100.0)**	**16,640 (100.0)**	**28,130 (100.0)**

We see that most of the children and adolescent came from Syria (10,005 and 6,635), followed by Afghanistan (2,885 and 2,993) and Iraq (3,146 and 2,466). In sum, the proxy target population comprises 16,036 children aged four to five years and 12,094 adolescents aged 14 to 15 years. Table 3 gives the numbers of children and adolescents by federal state and location of the immigration office (i.e., districts, cities, or some other places). Please note that Hamburg (HH) has no districts because it is a city state. Besides cities or districts, refugees can also register at other places such as mobile registration units. However, as can be seen these options were not much used.

Table 4: Number (Percent) of the Proxy Target Population by Children and Adolescent as well as by Community Type and Federal State (AZR special request, effective: 28.02.2017).

	BY	**HH**	**NW**	**RP**	**SN**	**Total**
Children at the age of 4 and 5						
District	2,122 (59.0)	–	2,669 (31.4)	1,135 (67.0)	617 (52.4)	**6,543 (40.8)**
City	1,282 (35.7)	1,057 (98.7)	5,692 (67.0)	553 (32.6)	551 (46.8)	**9,135 (57.0)**

Other	192 (5.3)	14 (1.3)	136 (1.6)	7 (0.4)	9 (0.8)	**358 (2.2)**
Subtotal	***3,596 (100.0)***	***1,071 (100.0)***	***8,497 (100.0)***	***1,695 (100.0)***	***1,177 (100.0)***	***16,036 (100.0)***
Adolescents at the age of 14 and 15						
District	1,654 (57.8)	–	2,016 (32.1)	840 (65.6)	376 (46.5)	**4,886 (40.4)**
City	1,053 (36.8)	849 (99.4)	4,196 (66.7)	432 (33.7)	428 (53.0)	**6,958 (57.5)**
Other	154 (5.4)	5 (0.6)	78 (1.2)	9 (0.7)	4 (0.5)	**250 (2.1)**
Subtotal	***2,861 (100.0)***	***854 (100.0)***	***6,290 (100.0)***	***1,281 (100.0)***	***808 (100.0)***	***12,094 (100.0)***
Total	**6,457**	**1,925**	**14,787**	**2,976**	**1,985**	**28,130**

The table shows clearly that in 2017 the majority of about 57% of the refugees was registered in cities, about 40% were registered in district areas and only a small minority was registered in other immigration offices. Table 4 gives the corresponding overall numbers of immigration offices by community type and federal state.

Table 5: Number (Percent) of Immigration Offices by Community Type and Federal State (AZR special request, effective: 28.02.2017).

Community	**BY**	**HH**	**NW**	**RP**	**SN**	**Total**
District	71 (58.2)	–	31 (29.8)	24 (58.5)	10 (58.8)	**136 (47.6)**
City	25 (20.5)	1 (50.0)	51 (49.0)	12 (29.3)	3 (17.6)	**92 (32.2)**
Other	26 (21.3)	1 (50.0)	22 (21.2)	5 (12.2)	4 (23.5)	**58 (20.3)**
Total	**122 (100.0)**	**2 (100.0)**	**104 (100.0)**	**41 (99.9)**	**17 (100.0)**	**286 (100.1)**

Note: Discrepancies in summing up to 100% are due to rounding.

Combining the information provided in Table 3 and Table 4, we find that the average number of refugees registered in “other” immigration offices is negligible within the considered population. Thus, for further sampling refugees registered in this category were ignored if it was not possible to assign the respective immigration office to a district or city. Because the population can best be described and regionally identified using the AZR, ReGES applies a design similar to the IAB-BAMF-SOEP survey. Namely, a multi-stage sampling design using the communities of the immigration offices as primary sampling units.

Concretely, at the first stage we sampled 40 cities and 20 districts using pps sampling, where the sum of four to five and 14 to 15 year old refugees registered in a city's or a district's immigration office served as the measure of size. This number of cities and districts was selected to reach the targeted sample size of approximately 2,400 children for RC1 and approximately 2,400 adolescents for RC2. In doing so, the city state Hamburg has been selected with probability one. At the second stage, within districts, four communities were selected with a probability proportional to the number of inhabitants (as a proxy for the number of refugees). This resulted in a total of 80 communities within districts. Table 5 displays these numbers according to the federal states considered in ReGES.

Table 6: Number (Percent) of Selected Communities and Cities by Federal State.

	BY	HH	NW	RP	SN	Total
Communities (within districts)	20 (62.5)	–	36 (75.0)	12 (50.0)	12 (80.0)	**80 (67.7)**
City	12 (37.5)	1 (100.0)	12 (25.0)	12 (50.0)	3 (20.0)	**40 (33.3)**
Total	**32 (100.0)**	**1 (100.0)**	**48 (100.0)**	**24 (100.0)**	**15 (100.0)**	**120 (100.0)**

Within cities and communities all individuals of the target population were selected from the general population register at the second and the third stage, respectively. In detail, all persons who moved to a sampled city or community later than January 2014 and are born between September 30, 2011 and October 31, 2013 or between October 31, 2000 and October 31, 2003 are part of the sample if they have one of the following nationalities, which constitute the major refugee groups in Germany in 2015 and 2016 with a high protection rate[4]: Eritrea, Gambia, Nigeria, Somalia, Afghanistan, Iraq, Iran, Lebanon, Pakistan, and Syria. As an additional group, sampling regarded stateless people and persons with unknown nationality and citizenship because refugees are likely to be the majority of this group. We restrict the selection to people who moved to a community or city later than January 2014 because we regard the time when a person moved to a community as being a good proxy for the likelihood of having come to this community as a refugee rather than having lived in Germany for a longer time. Based on these criteria a gross sample of 18,735 addresses had been drawn and randomly divided into parts (i.e., tranches). Splitting the sample that way allowed us to counteract low response rates already during field time: For the children (RC1) the targeted numbers were already reached after 16 weeks with the first tranche. Thus, here it was not necessary to use a second tranche. In contrast, for the adolescent (RC2) after 16 weeks a second tranche had to be asked for participation as well. After further five weeks the targeted numbers were also reached in this cohort. In total, 4,680 addresses had been used for RC1 and 5,556 addresses for RC2. The sampling design of ReGES does not only select refugees. Besides them also migrants with the targeted nationalities might be part of the sample. Thus, a screening procedure was necessary to identify the desired target population. For this purpose, all sampled families that could be contacted were interviewed concerning the age, the family relations to, and the educational stage of their children. For some families already the contact with the interviewer made clear that their children are not part of ReGES's target population (e.g., because they already went to elementary school). In sum, approximately 9% of the families who could been contacted were screened out.

A Glimpse of the ReGES Study Design

After having set up the gross sample of addresses for RC1 and RC2, the parents of the target persons were contacted and informed about the study. Distinct strategies were used to motivate refugees to participate in the study. ReGES informed people who are responsible for refugees in the sampled cities or communities or work with newly arrived immigrants as well as professionals in educational institutions about the ReGES study and asked them for support. Furthermore, in 50 communities information events had been held by the survey institute[5] engaged to conduct the study and by researchers from the Leibniz Institute for Educational Trajectories. The main objective of these events was to increase the general acceptance of the study in the community. Then, as refugees are usually not very common with surveys, it was necessary to inform the people who accompany the refugees in their everyday life. That way, they could offer help if refugees had questions regarding the study. A further, important, strategy, to increase participation rates was the recruitment of interviewers who speak the main languages of the refugees. Overall, each interviewee could choose from eight languages, namely Arabic, Kurmanji, Pashto, Farsi, Tigrinya, English, French, and German. For this purpose, language cards had been provided to choose a language from. Since none of the interviewers speaks all of the offered languages, a team of interviewers speaking different languages was sent to the sampled cities or communities. If an interviewer did not speak the mother tongue of the interviewed family, another interviewer from the same interview team could take over the interview. To lower problems in understanding the screening questions interviews were conducted face-to-face and translated to the above listed languages. Nearly all the engaged interviewers have a migration background and more than 50% of them speak Arabic as native language. In almost 70% of the cases the families have been contacted by an interviewer, who speaks their mother tongue. In the remaining 30% cases, families had mainly be contacted in German or English.

Some Results from the Field

Preliminary analyses of early survey data from ReGES show that the sampling procedure presented above worked very well. Of the sampled 10,236 addresses 4,680 were assigned to RC1 and 5,556 to RC2, see Table 7. During the field period interviewers had to spend a substantive amount of time for screening whether the selected interviewee really belonged to the target population. The interviewer had to check for example, whether the target child or adolescent immigrated in fact as a refugee to Germany after the first of January of 2014. Additional preconditions were, that the target child or adolescent has been living in Germany for at least three months and that one person lives in the household who is responsible for the target child. Besides that other children or adolescent living in these households, fulfilling the requirements of belonging to the target population have been selected and interviewed, too. After establishing contact to the persons living at the sampled addresses, this screening procedure yielded a sample size of 2,666 children in RC1 and 2,809 adolescent in RC2, see Table 7

Table 7: Sample Sizes by Federal State and Refugee Cohort: Children not being in Elementary School yet (RC1) and Adolescent in Lower Secondary Education (RC2).

	Initial sample (addresses)		**After contacting & screening (target persons)**		**Realized sample (target persons)**	
	RC1	RC2	RC1	RC2	RC1	RC2
BY	594	943	254	304	229 (90.2%)	276 (90.8%)
HH	579	623	383	357	306 (79.9%)	281 (78.7%)

NW	2,694	2,911	1,627	1,615	1.500 (92.2%)	1.391 (86.1%)
RP	422	652	178	334	163 (91.6%)	287 (86.0%)
SN	391	427	224	199	207 (92.4%)	180 (90.5%)
Total	**4,680**	**5,556**	**2,666**	**2,809**	**2.405 (90.2%)**	**2.415 (86.0%)**

Note: Percentages of realized cases refer to the screened sample.

Considering the response rates among all of the sampled addresses (i.e., the initial sample before screening) we find the picture given in Table 8. Here, response rates are given according the AAPOR classification scheme specified by the American Association for Public Opinion Research (2016). We see that the response rates vary strongly between federal states. Whereas in Hamburg and North-Rhine Westphalia the response rate is around 50%, it is about 40% in Saxony, 36% in Rhineland-Palatinate, and only about 28% in Bavaria. Note that at a substantive amount of addresses (56%) no person could be contacted (41%, categories “non-eligible”, “non-contact”, and “unknown eligibility”) or no valid information for screening could be received (4%, categories “non-response: others” and “not able”) or the contacted persons refused participation at all (11%, category “refusal”).

Table 8: Number (Percent) of Realized Cases (on family level) and Response Rates According to AAPOR Classification, According to Federal State.

	BY	**HH**	**NW**	**RP**	**SN**	**Total**
Interview completed	412 (26.8)	555 (46.2)	2,662 (47.5)	367 (34.2)	327 (40.0)	**4,323 (42.2)**
Interview partial	13 (0.8)	27 (2.2)	120 (2.1)	16 (1.5)	20 (2.4)	**196 (1.9)**
Non-Eligible	374 (24.3)	92 (7.7)	443 (7.9)	162 (15.1)	76 (9.3)	**1,147 (11.2)**
Not Able	16 (1.0)	1 (0.1)	4 (0.1)	1 (0.1)	0 (0.0)	**22 (0.2)**
Non-contact	78 (5.1)	46 (3.8)	263 (4.7)	122 (11.4)	52 (6.4)	**561 (5.5)**
Refusal	204 (13.3)	49 (4.1)	708 (12.6)	95 (8.8)	77 (9.4)	**1,133 (11.1)**
Non-Response: Others	20 (1.3)	79 (6.6)	159 (2.8)	81 (7.5)	71 (8.7)	**410 (4.0)**
Unknown Eligibility	420 (27.3)	353 (29.4)	1,246 (22.2)	230 (21.4)	195 (23.8)	**2,444 (23.9)**

Total	**1,537 (100.0)**	**1,202 (100.0)**	**5,605 (100.0)**	**1,074 (100.0)**	**818 (100.0)**	**10,236 (100.0)**

Around 24% of the addresses listed by the general registration offices turned out to be invalid. That is, no target persons could be found at the addresses provided, for example, because of refugees have moved to another place with an unknown address (at least unknown to the general registration office we asked for information). The quality of the addresses is considerably bad in Bavaria and Rhineland-Palatinate. In Bavaria, 23% of the non-eligible persons were up to addresses related to non-private households such as factory buildings and sport halls. In the end, more than 6,500 addresses (all but non-eligible and unknown eligibility) remained for interviews. It turned out that the field procedures being supported by community workers and educational professionals were very effective in motivating the refugees to participate in the survey. Only 11% of the sample refused the participation in the study. Striking is the higher refusal rate in Bavaria. A key explanation for this is that in this federal state access to the refugees' housing was relatively often prohibited by the security staff. In Bavaria, this was the case in 41% of all the refusal cases compared to an average of 3% in all of the other federal states.

The first column of Table 9 details the number of families in the initial address sample received from the general population register, by nationality groups. For this representation, persons from Eritrea, Nigeria, Gambia and Somalia were collapsed into the category people from African countries. Persons from Afghanistan, Iraq, Iran, Lebanon, and Pakistan form the group of people from Middle East countries without Syrians. We see that in our initial sample the majority comes from, as expected, Syria or the Middle East region. For a large fraction of the sample the nationality is reported to be unspecified. This is not only because the information is not available in the general population register, but mainly also due to the fact that because of data privacy issues the information on nationality cannot be provided to the survey research institute. The second column of the table gives the number of families with whom an interview could be conducted according to their nationality. We see that most of the interviews have been realized with Syrian refugees and refugees of whom the nationality is unknown or was not provided. Only few interviews have been conducted with persons from African countries, while the response rate for Syrians was high. Most interviews were held in Arabic language (74%), and a quite considerable part even in German language (21%). Notably most of these refugees interviewed in German language come from the Middle East region or Syria, only very few from an African country.

Table 9: Number (Percent) of Families by Nationality and Contact Language.

Reported nationality	**Initial sample**	**Realized Sample**	**Language the families have been contacted in**							
			German	English	Arabic	Kurmanji	Farsi	Pashto	Tigrinya	**Total**
African country	245 (2.4)	29 (0.7)	12 (1.3)	6 (40.0)	5 (0.2)	0 (0.0)	0 (0.0)	0 (0.0)	6 (100.0)	**29 (100.0)**
Middle East without Syria	2,352 (23.0)	779 (18.0)	294 (32.0)	2 (13.3)	359 (11.3)	20 (35.7)	102 (74.5)	2 (40.0)	0 (0.0)	**779 (100.0)**
Syria	4,164 (40.7)	2,243 (51,9)	309 (33.6)	0 (0.0)	1,916 (60.3)	17 (30.4)	1 (0.7)	0 (0.0)	0 (0.0)	**2,243 (100.0)**
Stateless	72 (0.7)	42 (1.0)	4 (0.4)	0 (0.0)	38 (1.2)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	**42 (100.0)**

Non-German or not specified	3,403 (33.3)	1,230 (28.5)	301 (32.7)	7 (46.7)	866 (27.2)	19 (33.9)	34 (0.2)	3 (60.0)	0 (0.0)	**1,230 (100.0)**
Total	**10,236 (100.0)**	**4,323 (100.0)**	**920 (21.3)**	**15 (0.3)**	**3,184 (73.7)**	**56 (1.3)**	**137 (3.2)**	**5 (0.1)**	**6 (0.1)**	**4,323 (100.0)**

Note: Apart from the lowers row, the percentages of all of the columns sum up to 100%. Discrepancies in summing up to 100% are due to rounding.

The refugees in our sample did not make much use of the remaining languages offered (i.e., Kurmanji, Farsi, Pashto, and Tigrinya). Nevertheless, the provision of other languages is important when surveying refugees from Eritrea, Nigeria, Iran and Afghanistan. Therefore we find a strong indication that the provision of the different interview languages helped in filling the questionnaires and motivated the interviewees.

Finally, offering a wide range of interview languages also helped making the first contact with those persons, whose nationality was not specified. It is not surprising that despite offering several interview languages there were some problems in understanding the interview questions. For example, in comparison to the adolescent refugees their parents faced problems and frequently asked for help (18.4% of the interviewed parents versus 13.0% of the interviewed adolescent). A further reason for questions during the interview was probably the use of non-mother-tongue languages or languages which have no written form like Kurmanji. In any case, the advantage interviewers speaking the mother tongue of the interviewee is more than obvious. Also, the proximity of the interviewer due to speaking the same language or having a similar migration background may help in inspiring confidence for the interviewer and hence also in the survey. A further aspect pointing to the effectiveness of the applied recruiting strategy is that in more than 85% of the interviews, the interviewers found it easy to motivate the respondents for the interview (adolescent even easier than parents). In summary, 4,323 families with 5,475 children belonging to RC1 and RC2 conducted a survey. Of these valid interviews could be realized for 2,405 RC1 children yielding a response rate of 90% and for 2,415 adolescent RC2 adolescent yielding a response rate of 86% in RC2, cp. Table 7.

Lessons Learned and Summary

An ideal situation when sampling newly arrived refugees is the existence of a central register for foreigners. In Germany such a register exists, the *Ausländerzentralregister* (AZR). However, it contains only names and no addresses. Thus, for sampling, it is only of limited value. We used the German central register for foreigners to gain information about where to find clusters of refugees and to identify cities and communities to draw into the ReGES sample. All in all, we learnt that identifying relevant refugee clusters in this way worked very well. Asking the general population registers of the sampled cities and communities for the addresses of persons being likely targets of the ReGES study (determined due to nationality, age, and registration date) also worked well. However, this strategy required an additional and expensive screening step to sort out persons not being targets of ReGES, for example, migrants who already live for a long time in Germany and adolescent refugees who are not in lower secondary education. In sum, approximately 9% of all of the sampled persons had to be screened out. We found that support by community workers is of tremendous help when conducting a refugee study. Even more, we see that the provision of different language to communicate with refugees and to win their confidence is

indispensable for conducting a refugee study. In addition, going to the places where the refugees live and talk to them face-to-face helped encouraging them to participate in the study. All of the measures applied in combination yielded that high response rates we find in the ReGES study. Opposed to this, hiring interviewers not speaking the languages of the refugees might lead to notably lower response rates and answers to questionnaires might be of fewer quality. In other words, although being expensive, the engagement of native speakers is the major key factor for the success of a migrant or refugee survey.

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[2]https://www.bva.bund.de/DE/Themen/Sicherheit/Auslaenderzentralregister/auslaenderzentralregister-node.html

[3] An analysis of the AZR, effective 28.02.2017, has been requested to list the number of foreigners from Syria, Iraq, and Afghanistan aged 4 and 5 years as well as 14 and 15 years registered by the immigration offices in Bavaria, Hamburg, North Rhine-Westphalia, Rhineland-Palatinate, and Saxony.

[4] People from Russia and Turkey were not considered, even if there is a considerable number of refugees from these countries and the protection rate is not that low. That is because there is a huge amount of persons with Russian and Turkish nationality in Germany who are not refugees. Thus, the applied sampling design that assumes that most persons of the considered nationalities are refugees would not work out for refugees from Russia and Turkey.

[5] The survey institute infas “Institute for applied social sciences” had been engaged to conduct the study.

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