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Metadata

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All author bio(s)		**Charlie Parker** is Senior Lecturer at the University of Gloucestershire. She is a qualitative researcher and her research interests fall within the areas of identity and migration. She earned her PhD in Sociology at the University of Warwick, through an investigation of Britishness, citizenship and transnationalism on the British Overseas Territory of St Helena. Her research interests also include masculinity and mobility within the British armed forces. She has published in, for example, the *Journal of Geography in Higher Education, AREA, International Journal of Research Methodology*. **Sam Scott** is senior lecturer in Geography at the University of Gloucestershire, Cheltenham, UK. His research interests focus on migration, work and employment. In 2017 Sam published a book entitled 'Labour Exploitation and Work-Based Harm' with Policy Press. This drew on research funded by the ESRC (2012-2013 follow-on grant) and Joseph Rowntree

Foundation (2010-2012). Before this, Sam examined employers' attitudes to migrant and indigenous labour (Nuffield Grant, 2007-2009) and evaluated the effectiveness of the UK Gangmasters Licensing Authority (GLA) (DEFRA Grants, 2007-2009). Most recently, Sam has been looking at agricultural employment regimes and migrant integration in rural areas in the UK, US and Norway on a project funded by the *Norwegian Research Council* (2017-2021). He has also been engaged in consultancy work (2018-2019) for the UK's Director of Labour Market Enforcement (DLME).

Alistair Geddes is a Senior Lecturer in Geography in the School of Social Sciences at the University of Dundee. While primarily focused on conducting quantitative social research, several of his projects have also involved a qualitative thread. In recent years he has completed research on international mobility of UK students and on population vulnerability and mobility related to climate change. He has also worked with Sam Scott (and others) on three previous projects addressing the subject of forced labour / modern slavery in the UK, two funded by Joseph Rowntree Foundation and one by the ESRC. These studies gave insights into the drivers, varied forms and often covert nature of exploitation, grounded in interviews with migrants, many of whom faced challenging and problematic work situations.

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Snowball sampling is one of the most popular methods of sampling in qualitative research, central to which are the characteristics of networking and referral. The researchers usually start with a small number of initial contacts (seeds), who fit the research criteria and are invited to become participants within the research. The agreeable participants are then asked to recommend other contacts who fit the research criteria and who potentially might also be willing participants, who then in turn recommend other potential participants, and so on. Researchers, therefore, use their social networks to establish initial links, with sampling momentum developing from these, capturing an increasing chain of participants. Sampling usually finishes once either a target sample size or saturation point has been reached. This entry begins with a description of the conveniences of snowball sampling, followed by some criticisms and limitations of the technique. The next section provides examples of how snowball sampling is used in qualitative research projects. Subsequent sections examine instances in which snowball sampling stalls or fails to produce participants, and offers two examples of cases in which researchers successfully overcame those obstacles. The entry concludes with a look at some variants of snowball sampling that have emerged given technological advances.

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Convenience of Snowball Sampling

Due to its networking characteristics and flexibility, snowball sampling has become a popular means of recruiting research participants when seeking access to hard-to-reach populations. Such potentially unobtainable populations can have low numbers, be geographically dispersed, be unrecorded or inconspicuous, feel stigmatized and/or desire anonymity, be particularly sensitive and vulnerable, and require a degree of trust in order to become a willing participant. It should be noted, however, that snowball sampling is employed for accessing the everyday, mundane, and mainstream.

As a form of convenience sampling, snowball sampling is often combined with purposive sampling, and to a lesser extent quota sampling, whereby participants are selected based upon their specific characteristics or membership of a group. The parameters of the target population are often unknown to the researcher, so a probability sample would be impossible. Thus, as a form of convenience sampling, snowball sampling is criticized for its selection bias as well as a lack of external validity, generalisability, and representativeness.

Criticisms and Limitations

Snowball sampling faces some criticisms. As a network-based convenience form of sampling, it may be viewed negatively for not producing samples that meet the criteria of random samples in the statistical sense (i.e., it departs from probability-based sampling approaches); moreover, the basis for establishing the representativeness of samples may also be questioned. Snowball sampling is thus frequently advocated and employed by qualitative social researchers (especially interviewers and ethnographers) as a form of non-random sampling where generalisation, representativeness, and external validity are not sought after.

The dominant characteristic of the snowball sample (i.e., the referral process) is dependent on a selection bias. Initially, the sample is dependent on the researcher's personal

resources and contacts. As potential participants stem from a small number of initial seeds, the research is at risk of becoming distorted very early in the research process. The sample may become, for example, exclusively female, or all from the same ethnic background. Moreover, seeds not only require an initial awareness of others who potentially fit the research criteria, but often make their choices based upon their perception that the new recruit will be a willing and cooperative contributor. Chaim Noy (2008) argues that women are potentially over-represented within snowball sampling due to their likelihood to be more cooperative, but also due to their inability to resist the authoritative nature of a researcher's request for contacts.

Snowball Sampling and Qualitative Research

There is an abundance of research examples where a snowball sample has been used. Howard Becker's *Outsiders: Studies in the Sociology of Deviance* (1963) has become a classic example of snowballing for a hard-to-reach, 'deviant' community. Becker snowballed for marijuana users starting with his own personal contacts. Robert McNamara, in his study *Times Square Hustler: Male Prostitution in New York City* (1994), also utilised a snowball sample for accessing a guarded community, which exists on the periphery of the mainstream.

Chaim Noy (2008) reflects on his use of snowball samples, emphasizing the reliance on networking and social capital. Within one of his studies he accessed backpackers whereby a flexible and reactive sampling approach was required due to the mobility and transience of the target population. Noy also used snowballing to recruit from another mobile group, namely males who were semi-professional drivers in Jerusalem, but found it to be a less easy process than in the backpackers study, complicated by suspicions over his own positionality and by misguided expectations among those contacted about what the research could achieve. Overall, Noy argues that key social dimensions of snowballing (social networks, power relations, and social capital) have been eclipsed in more technical descriptions of the method,

and that it is viewed as a process that opens "dynamic moments where unique social knowledge of an interactional quality can be fruitfully generated" (Noy, 2008, p. 328).

Charlie Parker (2012) adopted a snowball sample approach when interviewing St. Helenians for her doctoral research on experiences and perceptions regarding Britishness, transnationalism, and citizenship. She established the initial sample whilst spending time on this British Overseas Territory, using contacts to a small number of St. Helenians she already knew as well as new contacts obtained from other interactions (i.e., when shopping, travelling on the island, and at social events). However, the snowball sample was more crucial when accessing St. Helenians now residing in the United Kingdom. Participants on-island were asked to recommend emigrants from St. Helena they knew of, who were then contacted once the researcher had returned to the United Kingdom. One limitation of the research was that only St. Helenians who maintained links with other St. Helenians were able to be recruited, thus creating a sampling bias that eliminated all those who had severed ties.

Xetura Woodley (Woodley & Lockard, 2016) notes the criticisms associated with snowball sampling, yet remains a firm advocate for such sampling due to its ability to access hard-to-reach groups and previously unheard voices, highlighting how more traditional methods have previously alienated minorities and sensitive groups. Woodley's doctoral research on Black women educators affirmed the necessity for social networking. Following some dead-end and limited leads, Woodley found one of her most fruitful leads to be her own hairdresser. She argues that the power of social networking is imperative for counter-narratives to be told.

Common Barriers: When the Snowball Fails to Roll

One problem with using a snowball sample is when the snowball fails to roll. In other words, new participants are not recruited due to a lack of recommendations or a lack of willing participants. There are various reasons why this may happen. Possible barriers to obtaining a

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snowball sample are when the researchers are perceived negatively as outsiders, meddlers, or snoopers and when the research participants are from a community that is characteristically tight-knit and loyal. Furthermore, barriers occur when the research topic is considered to be sensitive and possibly problematic in nature, and subsequently participation in the research is considered too risky by potential participants.

Within her research on older adult drug users, Jaime Waters (2015) identified four sets of limitations:

1. when potential participants view the topic being researched as too personal and private within their lives, so they do not wish to disclose any information. Although snowballing is often advocated for the study of sensitive topics, Waters argues a snowball sample is more likely to be successful when the topic is not extremely sensitive.

2. when potential participants perceive risks with participation, not only to themselves, but for those they recommend. Participants could question their anonymity and confidentiality (even when assured) if they were worried about exposure to employers, colleagues, and family members.

3. when characteristics such as age and nationality differ between the researcher and the potential participant.

4. when there is weak or even no social relations within the study population. In other words, a substantial network needs to exist for recommendations to be made.

Distinctions have been made between topics hidden due to stigmatisation, marginalisation, or exclusion, and those that involve the social elite and so are actively concealed (Noy, 2008). Researchers have to be diligent and ensure that recommended participants actually fit the research criteria and are not spurious decoys.

When the Snowball Fails to Roll: Two Case Studies

If the snowball fails to roll—that is, networking does not gain momentum—then there may be adaptations the researcher can consider. As with the research of Woodley and Lockard (2016), rather than relying on strong or tight-knit social ties for securing interviewee recruitment, the researcher could network using weaker connections to less familiar acquaintances and other opportunistic interactions.

One example in which a snowball failed to roll was on the topic of workers' experiences of exploitation in the food industry (Scott, Craig, & Geddes, 2012). Thirteen interviewers were recruited, all of whom were considered to be 'insiders' to the target population consisting largely of migrant workers, for an overall target sample size of 60 interviews. These interviewers were selected based on their nationality, many being from the same countries as migrant workers with whom interviews were sought, and also following from discussion of their links into the target population (e.g., knowledge of fellow nationals working on farms, in food processing factories, kitchens, restaurants, or take-aways). However, only three interviews were subsequently achieved within the originally envisaged timeframe.

Upon reflection, although the interviewers had been selected based on certain affinities with the research participants, class position was another important factor that had not been accounted for. Most of the interviewers were young, middle-class professionals, and in this regard there were class differences from the workers with whom interviews were sought, who were doing lower-wage, lower-skill manual work. Thus, the social capital between the interviewers and the study population was less than initially envisaged. Additionally, difficulties recruiting participants were compounded by the topic (worker exploitation by employers). Exploitation exists in many forms, and must be assessed individually and by comparison of subjective accounts against a limited set of standards,

indicators, and guidance. Even if the prospective research participants perceived themselves as victims of exploitation (and at times this was questionable), they could be reluctant to divulge details on their own experiences. In some cases, there was an unwillingness to disclose information for fear of reprisal being meted out by employers, despite assurances of anonymity and confidentiality. In other situations, the sense of unwillingness was generated more by a feeling of shame and embarrassment that interviewees felt they had brought on themselves (and to their families) as a result of ending up in poor employment situations. Thus, an important aspect of the difficulties encountered in obtaining a successful snowball sample in this case was that the target population (exploited workers) did not appear to maintain strong contact with others who might have been able to help or call further attention to their circumstances. They were largely isolated, and usually silent in their experiences of exploitation.

Eventually, the barriers were overcome to some extent via assistance from a range of local organisations and institutions to which the potential participants were connected (e.g., women's groups and churches) rather than relying on referrals from other workers (or employers). Additionally, this approach also involved increasing payments made to the interviewees for their efforts. Snowballing through the weak ties just described was more challenging and time-consuming, and the ingenuity, perseverance, and effort required needed to be recognised and rewarded within the research process.

The second example in which a snowball failed to roll is a qualitative research project involving military workplace identities, focusing specifically on themes of culture, hyper-masculinity, and mobility. For this study, the recruitment of 40 participants who had left the military within the previous two years was seen as an achievable target within an 18-month study period.

The intention was to snowball from the researcher's own family network, as two members of the family had recently left the armed forces. Both family members were interviewed successfully, and provided several other contacts to approach. Interviews with five others were carried out within a few weeks of one another and the snowball initially appeared promising. However, promises of information from among those five never materialised, despite multiple requests. As a result, further snowball chain-building ceased.

Perhaps the characteristics of having a female academic, trying to snowball with a small group of all-male ex-military interviewees may have contributed to the reluctance for future recommendations. The researcher was informed that whilst the existing participants were aware of others who fit the research criteria, those others were likely to be too rude, crude, improper, or even aggressive within an interview situation and so the participants refused to recommend such leads. Additionally, the researcher sensed a remaining allegiance to military peers. In other words, military and ex-military may constitute an elitist group (Noy, 2008), with non-elites prevented from penetrating the culture via the judgements of gatekeepers. Furthermore, having recently left the military, some participants indicated a desire to actively loosen network connections to former military acquaintances so they did not want to risk rekindling former connections.

The problem of access was eventually overcome by the researcher making the most of weak connections and interactions. For example, a new involvement with a parent-child group, the overhearing of a conversation in a local gym, and being offered contacts from work colleagues each became fruitful leads, the latter of which led to a request being made through the Facebook page of a colleague who was ex-military. The snowball sample via online social networking was where the momentum of the snowball sample eventually gathered substantial speed and success, including numerous contacts with ex-military women.

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Snowball Sampling and Its Variants

Within the use of snowball sampling has been an increase in the use of social media platforms. For example, Fabiola Baltar and Ignasi Brunet (2012) used a virtual snowball sampling method via social media (i.e., Facebook) to identify the relatively small population of Argentinean immigrant entrepreneurs who are geographically dispersed. They make the point that there is a lack of a sampling frame for this population due to Argentinean immigrant entrepreneurs typically having dual-nationality status, rendering many invisible in official statistics. Baltar and Brunet noted that although they could not consider their sample to be random, their approach did include some 'random elements' (i.e., the random selection of the virtual groups selected for contact, and the contact of every member within that group). They confirmed whilst they could not claim generalizability, they could claim representativeness.

Whilst Baltar and Brunet accept the selection bias within their study (i.e., their target population were Internet and Facebook users), they enhanced their sample by asking online participants to recommend offline participants, thus moving beyond the constraints of Facebook. They argued that this optimized their access to a hard-to-reach population. However, whilst the online aspect of the sample elicited the most responses, the offline aspect of their sample detected the most entrepreneurs. Overall, they claim their use of an online snowball sample increased their sample size and representativeness, albeit at the cost of probability. (See Baltar & Brunet, 2011, for the advantages and disadvantages of using online snowball methods as well as examples.)

Although often associated with qualitative research, the academic literature actually reflects two distinct epistemological positions. Snowball sampling has also been utilised within quantitative research. In the 1950s and 1960s, snowball sampling was specifically linked to the study of social networks. Douglas Heckathorn (2011) provides a useful

overview of the tensions within academic literature regarding the transition from snowballing, which enables a probability sample, to snowballing being limited to a convenience sample. Snowball sampling falls under the umbrella term of 'chain-referral sampling', within which alternative forms of snowballing have emerged such as link-tracing or respondent-driven sampling (RDS) for making quantitative, statistical inferences, with assured probability.

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