Who takes care of grandma?
Insights from a survey using RDS on the living and working conditions of 24-hour Polish care workers

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Venice, 19. November 2019
Structure

Background

Implementing RDS

Preliminary Findings

Discussion
Motivation

• Increasing demand for paid care work
• “Estimations” of 100,000–800,000 informal care workers in private households (ZQP: 2016)
• But: de facto no reliable knowledge about those workers
Motivation

Pflegekräfte

Sklavinnen, die uns pflegen

Beleidigt, geschlagen, keine Freizeit: Hunderttausende Osteuropäerinnen versorgen in deutschen Haushalten Menschen. Das ist meist verboten, wird aber selten verfolgt.

Von Daniel Drepper


AUS DER ZEIT NR. 34/2016

Zu Hause gepflegt werden? Für viele ist diese Vorstellung angenehm
Project Goals

- Standardized survey of 24h-care workers in Berlin
  - Demographics
  - Working conditions
  - Prevalence of illicit employment
  - …
- A valid (in a statistical sense) description of target population ("representativeness")
- Implementing “Respondent-Driven Sampling” (RDS)
Respondent-Driven Sampling

• Chain referrals/snowball sampling:
  • Purposive selection of ‘seeds’
  • ‘Seeds’ then recruit respondents from the target population
  • Respondents recruit further respondents

• Preconditions for success
  • Incentives (primary and secondary)
  • Reciprocity/trust
  • Monitoring fieldwork
  • Collection of data on the network size

• Weighting procedures
Statistical requirements for RDS

Assumptions

- „Small-world“-characteristics in the target population
- Accurate reporting of network size
- Random peer recruiting
- Recruitment via „1st-Order-Markov-Chain“

→ selection probability as a function of individuals’ network size
→ estimation of unbiased parameters in target population
Formative assessment

• Identifying target population
  • “live-ins” (originally: any type of care work)
  • currently working in Berlin (originally: Berlin & Brandenburg)
  • Polish origin (originally: any nationality/migration background)

• Designing the questionnaire

• Pretesting

• Selecting the interview site

• Setting up logistics, e.g.,
  https://www.pflegestudie-berlin.de/

• Sample size calculations (# of coupons & # seeds)
Designing coupons

**BADANIA NA TEMAT OPIEKI**

Ten kupon otrzymali Państwo od osoby, która już wzięła udział w naszej ankiestie dotyczącej całodobowej opieki. Państwo również mogą wziąć udział w naszym badaniu i zarobić do 72 zł (co najmniej 40 zł), jeśli spełniają Państwo wszystkie warunki uczestnictwa:

- pracują Państwo przy całodobowej opiece w Berlinie
- mają polskie pochodzenie
- jeszcze nie upłynęło

Udział trwa ok. 45 minut

**POKWITOWANIE KUPONU**

<table>
<thead>
<tr>
<th>05 / 3100 / 0000 / 0000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inicjały znajomych</td>
</tr>
<tr>
<td>Otrzyma Państwo kuponu z następującymi numerami identyfikacyjnymi:</td>
</tr>
<tr>
<td>05 / 3110 / 0000 / 0000</td>
</tr>
<tr>
<td>05 / 3112 / 0000 / 0000</td>
</tr>
<tr>
<td>05 / 3110 / 0000 / 0000</td>
</tr>
<tr>
<td>05 / 3140 / 0000 / 0000</td>
</tr>
</tbody>
</table>

**Zarabianie pieniędzy dzięki kuponom:**
Jak przedstawiono w filmie animowanym, prosimy rozdać otrzymane kuponu osobom, które spełniają następujące warunki uczestnictwa:

- pracują w Berlinie przy całodobowej opiece
- mają polskie pochodzenie

Za każdą zwrobowaną osobę otrzymają Państwo 8 zł. Nie otrzymują Państwo żadnych dodatkowych pieniędzy, jeśli:

- osoba nie weźmie udziału lub
- minie termin 31.01.2019.

Numery zrealizowanych kuponów znajdą Państwo pod adresem:
www.pflegestudie-berlin.de
Pytania prosimy kierować pod:
+49(0)16 287 011 48
pflegestudie-berlin@gmx.de
Proszę płacić pokwitowania.
Description of the sample

N: 200

- Number of observations: 200
- Node labels: 01, 02, 03, 04, 05, 06, 07, 08, 09, 10
- Node colors and sizes indicate different categories
- The network diagram visualizes relationships among the sample members

Legend:
- Green: Category 1
- Blue: Category 2
- Purple: Category 3
- Yellow: Category 4
- Red: Category 5
- Gray: Category 6
- Blue-green: Category 7
Date, day of the week, and time of the survey
Where do our respondents come from?
Who are the 24-h live-ins?
Gender, age, education, and qualifications

![Graph showing the distribution of participants by gender, age, education, and qualifications.](image-url)
How and with whom do they live?
Living situation (Berlin/Poland) and family situation

![Graph showing living situations and family situations for participants in Naiv, RDS I, and RDS II categories.]

- Own room: 166 participants (Naiv: 3, RDS I: 3, RDS II: 28)
- Shared room: 3 participants (Naiv: 3, RDS I: 14, RDS II: 63)
- Outside the house: 148 participants (Naiv: 14, RDS I: 14, RDS II: 49)
- Homeowner in PL: 148 participants (Naiv: 33, RDS I: 14, RDS II: 33)
- Renting in PL: 3 participants (Naiv: 3, RDS I: 14, RDS II: 63)
- Living with relatives/friends in PL: 14 participants (Naiv: 14, RDS I: 14, RDS II: 33)
- Living alone in PL: 28 participants (Naiv: 28, RDS I: 14, RDS II: 63)
- 2-person household in PL: 63 participants (Naiv: 20, RDS I: 49, RDS II: 33)
- 3-person household in PL: 49 participants (Naiv: 20, RDS I: 33, RDS II: 20)
- 4+-person household in PL: 33 participants (Naiv: 9, RDS I: 20, RDS II: 9)
- No children in PL: 116 participants (Naiv: 20, RDS I: 20, RDS II: 9)
- 1 child in PL: 20 participants (Naiv: 20, RDS I: 20, RDS II: 9)
- 2+ children in PL: 9 participants (Naiv: 9, RDS I: 20, RDS II: 9)
Who are their “clients”?
Age, care needs, and family situation of carees

![Graph showing the distribution of age groups, care needs, and family situations of carees across Naiv, RDS I, and RDS II.]

- Age groups: 60-69, 70-79, 80-89, 90-101
- Care needs: Confined to bed, Dementia, Wheelchair, Blind, None of these
- Family situations: Serious, Average, Mild, Don't know, Living alone, Living with partner
What work do they do?

Housework duties

- Doing the dishes (by hand) 95%
- Ironing 126%
- Putting the dishes into/out of the dishwasher 133%
- Dusting 134%
- Vacuuming/Wiping the floor 139%
- Shopping and/or running errands 169%
- Doing the laundry 174%
- Taking out the bins 182%
- Preparing meals 191%

Legend:
- Naiv
- RDS I
- RDS II
What work do they do?

Care-related duties

The diagram illustrates the care-related duties performed by participants in different groups. The percentage of participants involved in each activity is shown, with three groups: Naiv, RDS I, and RDS II. Activities include:

- None of these
- Cleaning and maintenance of catheters
- Breathing exercises
- Changing the patient's position
- Exercises to help mobilize muscles/joints
- Cutting/filing nails
- Memory training
- Assistance at night
- Oral/dental hygiene
- Toilet assistance
- Body hygiene
- Getting dressed

The percentages range from 0% to 161% for each activity across the three groups.
What work do they do?

Medical care

- Medical port maintenance
- Enemas
- Changing catheters/bladder irrigation
- Clearing upper airways
- Injections
- Ostomy care
- Treating bedsores
- Inhalations
- Measuring the blood sugar
- Wound care/changing bandages
- Putting on/taking off compression stockings
- None of these
- Taking the blood pressure
- Preparing/administering medicine

% of participants

- Naiv
- RDS I
- RDS II
How does their work supplement care by others? Cooperation with care services and relatives

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Naiv</th>
<th>RDS I</th>
<th>RDS II</th>
</tr>
</thead>
<tbody>
<tr>
<td>No outpatient care</td>
<td>168</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once a week</td>
<td>6</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Twice a week</td>
<td>4</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Three times a week</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Four times a week</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Five times a week</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Six times a week</td>
<td>0</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Every day</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never/No relatives</td>
<td>44</td>
<td>29</td>
<td>27</td>
</tr>
<tr>
<td>Almost daily</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A few times a week</td>
<td>27</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Once a week</td>
<td>65</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Every two weeks</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Once a month</td>
<td>16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What are their working hours?
Free time during the work assignment

<table>
<thead>
<tr>
<th>Description</th>
<th>Naiv</th>
<th>RDS I</th>
<th>RDS II</th>
</tr>
</thead>
<tbody>
<tr>
<td>No breaks last work day</td>
<td>26</td>
<td>48</td>
<td>90</td>
</tr>
<tr>
<td>A &lt;2h break last work day</td>
<td>29</td>
<td>103</td>
<td>60</td>
</tr>
<tr>
<td>A 2-3h break last work day</td>
<td>18</td>
<td>57</td>
<td>40</td>
</tr>
<tr>
<td>A &gt;3h break last work day</td>
<td>9</td>
<td>18</td>
<td>7</td>
</tr>
<tr>
<td>No days off</td>
<td>56</td>
<td>23</td>
<td>13</td>
</tr>
<tr>
<td>One day off</td>
<td>9</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>Two days off</td>
<td>9</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>More than two days off</td>
<td>9</td>
<td>7</td>
<td>13</td>
</tr>
</tbody>
</table>

% of participants
How do they find their jobs?
Means of finding work

<table>
<thead>
<tr>
<th>First job through an agency</th>
<th>Current job through an agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>First job through a contact</td>
<td>Current job through a contact</td>
</tr>
<tr>
<td>First job through the media</td>
<td>Current through the media</td>
</tr>
</tbody>
</table>

% of participants

- Naiv
- RDS I
- RDS II
How are they employed?
Form of contract and contractual parties

- Written contract
- No written contract
- Explicit refusal
- Contract with the agency
- Contract with the client
- Contract with the relatives
- Instructions from the agency
- No work instructions

<table>
<thead>
<tr>
<th></th>
<th>Naiv</th>
<th>RDS I</th>
<th>RDS II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written contract</td>
<td>146</td>
<td>29</td>
<td>21</td>
</tr>
<tr>
<td>No written contract</td>
<td>105</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Explicit refusal</td>
<td>146</td>
<td>21</td>
<td>23</td>
</tr>
<tr>
<td>Contract with the agency</td>
<td>79</td>
<td>24</td>
<td>29</td>
</tr>
<tr>
<td>Contract with the client</td>
<td>14</td>
<td>14</td>
<td>40</td>
</tr>
<tr>
<td>Contract with the relatives</td>
<td>23</td>
<td>23</td>
<td>79</td>
</tr>
<tr>
<td>Instructions from the agency</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>
How much do they earn?
Income situation

<table>
<thead>
<tr>
<th>Income Range</th>
<th>Naiv</th>
<th>RDS I</th>
<th>RDS II</th>
</tr>
</thead>
<tbody>
<tr>
<td>800-999 EUR</td>
<td>6</td>
<td>38</td>
<td>118</td>
</tr>
<tr>
<td>1000-1299 EUR</td>
<td>63</td>
<td>118</td>
<td>118</td>
</tr>
<tr>
<td>1300+ EUR</td>
<td>118</td>
<td>118</td>
<td>3</td>
</tr>
<tr>
<td>Free accommodation</td>
<td>186</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Partial reimbursement</td>
<td>25</td>
<td>25</td>
<td>3</td>
</tr>
<tr>
<td>No charge</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Free dining</td>
<td>169</td>
<td>169</td>
<td>25</td>
</tr>
<tr>
<td>Partial reimbursement</td>
<td>169</td>
<td>169</td>
<td>3</td>
</tr>
<tr>
<td>No charge</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Reimbursement for travel</td>
<td>129</td>
<td>129</td>
<td>36</td>
</tr>
<tr>
<td>Partial reimbursement</td>
<td>129</td>
<td>129</td>
<td>36</td>
</tr>
<tr>
<td>No charge</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
</tbody>
</table>
Are their indications of illicit employment?

Social security

- German health insurance
  - No German health insurance
    - Don't know
  - A1 certificate
    - No A1 certificate
      - Don't know
  - German social insurance number
    - No German social insurance number
      - Don't know
  - No business registration
    - Business registered in Poland
    - Business registered in Germany
      - Don't know

<table>
<thead>
<tr>
<th></th>
<th>Naiv</th>
<th>RDS I</th>
<th>RDS II</th>
</tr>
</thead>
<tbody>
<tr>
<td>German health insurance</td>
<td>71</td>
<td>110</td>
<td>8</td>
</tr>
<tr>
<td>No German health insurance</td>
<td>8</td>
<td>46</td>
<td>44</td>
</tr>
<tr>
<td>Don't know</td>
<td>8</td>
<td>35</td>
<td>34</td>
</tr>
<tr>
<td>A1 certificate</td>
<td>44</td>
<td>35</td>
<td>52</td>
</tr>
<tr>
<td>No A1 certificate</td>
<td>46</td>
<td>35</td>
<td>52</td>
</tr>
<tr>
<td>Don't know</td>
<td>35</td>
<td>52</td>
<td>44</td>
</tr>
<tr>
<td>German social insurance number</td>
<td>124</td>
<td>52</td>
<td>52</td>
</tr>
<tr>
<td>No German social insurance number</td>
<td>19</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>Don't know</td>
<td>19</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>No business registration</td>
<td>124</td>
<td>124</td>
<td>124</td>
</tr>
<tr>
<td>Business registered in Poland</td>
<td>22</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Business registered in Germany</td>
<td>21</td>
<td>21</td>
<td>21</td>
</tr>
</tbody>
</table>

% of participants
How happy are they?
Life satisfaction in general

- Family life
  - Very satisfied
  - Rather satisfied
  - Moderate
  - Rather dissatisfied
  - Very dissatisfied

- Life satisfaction
  - Very satisfied
  - Rather satisfied
  - Moderate
  - Rather dissatisfied
  - Very dissatisfied

- Standard of living
  - Very satisfied
  - Rather satisfied
  - Moderate
  - Rather dissatisfied
  - Very dissatisfied

% of participants

- Naiv
- RDS I
- RDS II

Graph showing distribution of responses for family life, life satisfaction, and standard of living.
How happy are they?
Satisfaction with the work situation

Payment

<table>
<thead>
<tr>
<th>Level</th>
<th>Naiv</th>
<th>RDS I</th>
<th>RDS II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very satisfied</td>
<td>37</td>
<td>99</td>
<td>47</td>
</tr>
<tr>
<td>Rather satisfied</td>
<td>5</td>
<td>2</td>
<td>64</td>
</tr>
<tr>
<td>Moderate</td>
<td>28</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Rather dissatisfied</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Very dissatisfied</td>
<td>0</td>
<td>15</td>
<td>30</td>
</tr>
</tbody>
</table>

Relationship with client

<table>
<thead>
<tr>
<th>Level</th>
<th>Naiv</th>
<th>RDS I</th>
<th>RDS II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very satisfied</td>
<td>64</td>
<td>89</td>
<td>28</td>
</tr>
<tr>
<td>Rather satisfied</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Moderate</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Rather dissatisfied</td>
<td>0</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>Very dissatisfied</td>
<td>0</td>
<td>15</td>
<td>30</td>
</tr>
</tbody>
</table>
Implications of preliminary findings based on RDS survey

- Substantial findings (Important: Polish live-ins in Berlin!)
  - Live-ins as an alternative to care services?
  - Attractive for the clients?
  - Attractive for the workers?
  - Social inequalities in care work & old age?
  - Social security?

- Implementation of RDS
  - Considerable time restrictions of the respondents
  - Large primary incentives necessary
  - Unresolved problem of non-monetary incentives
  - Unresolved problem of verifying whether the respondents belong to the target population
  - High time flexibility in organization of fieldwork (staff!)
  - Financial flexibility essential
  - Patience<
Thank you for your attention

Appendix

1. RDS design
2. Derivation of the number of cases
3. Simulation of the expected sample size
4. Further reading
Sample design

Seed

Survey?

Yes → Recruit?

Resp.

Survey?

Yes

No → Stop

Yes → PI

No → Stop

Yes → SI

No → Stop

PI

SI
Desired number of cases

Number of cases is chosen in a way that the estimator $\hat{\pi}$ does not deviate (with probability of 95%) more than $d$ from the population parameter.

\[
n = \text{Deff} \cdot \frac{Z_{1-\alpha}^2 \cdot \pi (1 - \pi)}{d^2}
\]  

(1)

with $Z_{1-\alpha}^2 \approx 1.96$ and Deff $\approx 2$ (Design effect).

At $\pi = 0.5$ (worst-case scenario) and precision of $d = 0.05$,

\[
n = 2 \cdot \frac{1.96^2 \cdot 0.5^2}{0.05^2} = 768
\]  

(2)

With 768 cases, the estimates are likely less than 5 percentage points off.
Expected realized sample size

With \( s \) seeds, \( c \) coupons issued, and a recruitment success rate of \( r \), the number of cases after \( W \) recruitment waves is:

\[
n_{W,s,c,r} = \sum_{w=1}^{W} (s - 1.6) \cdot (c \cdot r)^{w-1}
\] (3)

where the number of unsuccessful seeds has been set to 1.6 (average of RDS samples performed so far; WHO 2013: 70)

→ Simulation results on the next slide
Simulation

Respondents after ... waves

In case of acceptance of 1.6 unsuccessful Seeds

Recruitment success
- 60%
- 50%
- 40%
- 33%

Number of respondents in realised sample

# Wave