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► To cite this version:

Andrea Schmidt-Pokrzywniak, Andreas Stang. Study of return rate and return time of undeliverable postal letters. *European Journal of Epidemiology*, 2010, 25 (7), pp.467-470. 10.1007/s10654-010-9463-3 . hal-00594926

HAL Id: hal-00594926

<https://hal.science/hal-00594926>

Submitted on 22 May 2011

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Study of return rate and return time of undeliverable postal letters

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Received: 7 December 2009 / Accepted: 29 April 2010 / Published online: 22 May 2010
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Abstract Postal questionnaires are widely used to collect data in health research and epidemiologic studies. One problem related to mail surveys is the availability of an up-to-date and accurate list of people in the population from which to draw the sample for the survey. For the identification of incorrect postal addresses it is important that all incorrectly addressed mails are returned as undeliverable. This study examines the proportion of unreturned postal letters that were sent to incorrect addresses. We sent 339 letters to existing addresses throughout Germany, but used fictional names name of persons. Three hundred and three letters (98.2%) were returned as undeliverable. The return rates only slightly differed by layout of the envelopes, region and deliverer.

Keywords Response · Undeliverable letters · Epidemiological studies

Abbreviations

mm Millimeter

SE Standard error

Introduction

Postal questionnaires are widely used to collect data in health research and epidemiologic studies. They are often

the only financially viable option when collecting information from a large, geographically dispersed population. However, a common weakness of mail surveys is low response, which is a potential threat to the validity of the study results [1, 2]. To maximize response, several strategies have been developed. These include, for instance, an attractive format of the questionnaire, the use of monetary incentives, and different modes of delivery of the postal questionnaires to the target population [2, 3].

Methodological studies have examined several factors that influence nonresponse [4]. A common cause of non-participation may be anxiety for to lose personal integrity [5]. In an epidemiological study of respiratory illness in Norway, incorrect postal addresses were the main reasons of non-participation, 64% of the nonrespondents were not resident at the mailing address [6]. One problem related to mail surveys is the availability of an up-to-date and accurate list of people in the population from which to draw the sample for the survey. Sometimes the mailing lists are incomplete or out of date (excluding people who have recently moved into the survey area or including people who have moved away). For the identification of incorrect postal addresses it is important that all incorrectly addressed mails are returned by the post office (Deutsche Post) or other delivery services as undeliverable. If undeliverable mails are not returned, investigators may erroneously assume nonresponse for people who actually were never reached. To our knowledge, only Sandler and Holland examined the proportion of nonrespondents who never received the mail, because of incorrect addresses. They found all letters mailed to an invalid address were returned, whereas 13.3% of the letters sent to fictitious people were not [7]. The purpose of this study was to examine the proportion of unreturned postal letters that were sent to incorrect addresses.

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Furthermore, we wanted to examine the influence of layout features of the envelopes on the return rates.

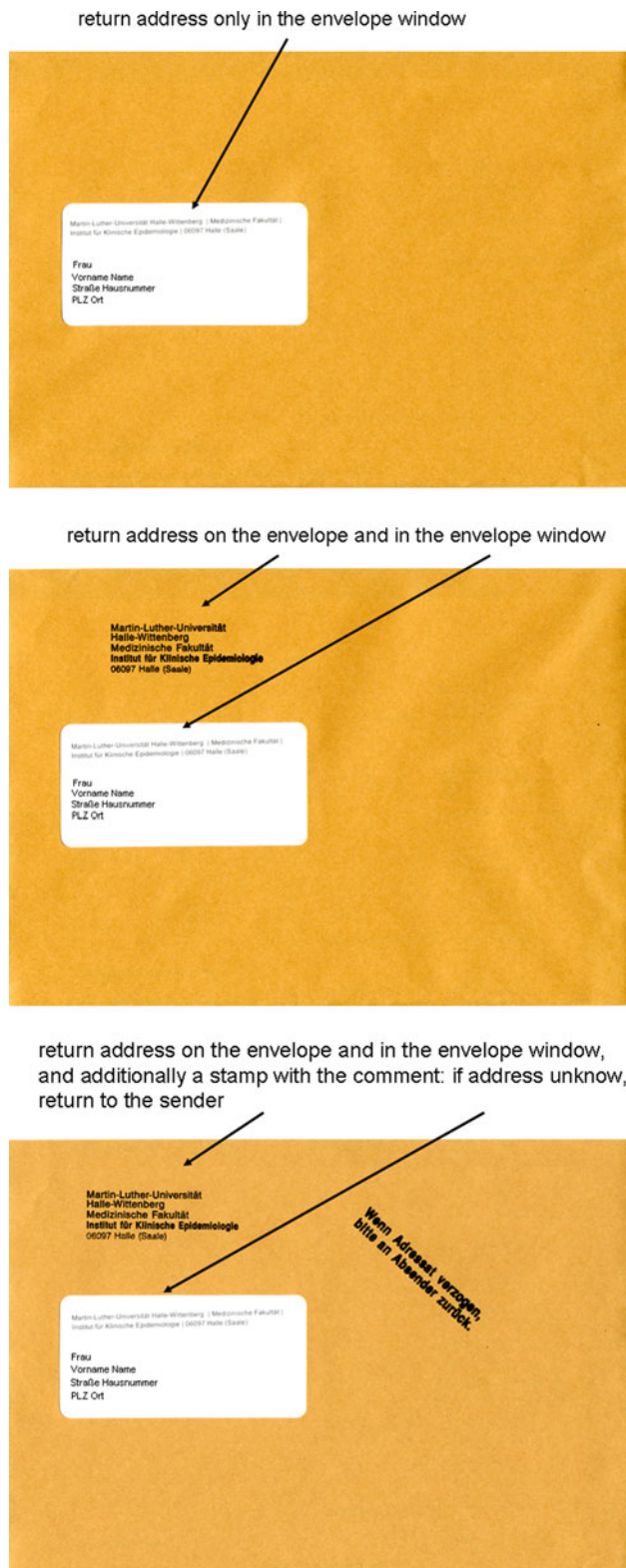


Fig. 1 Three types of envelope layouts

Methods

To make general statement about the proportion of return letters with incorrect addresses in Germany we used the sample points (113 communities and cities) of the German National Examination Survey 1998—a representative cross-sectional study of the population in unified Germany [8]. We sent 339 letters (3 in each community or city) to existing addresses (existing city, street, and street number), but we used fictional names of persons that were not registered under the corresponding address according to public phone directories. The fictional names were common German names (male and female) and surnames. Generally we used the surnames: Kluttig, Heinig and Schenk. We used these names because they are common, but not too prevalent. All letters were sent on January 26, 2009.

We sent three different types of envelopes to addresses within each sampling point. Type 1 included the addresser only above the addressee field of the envelope. Type 2 envelopes additionally included a stamp of the full institute name and address. Finally, type 3 envelopes were additionally stamped including the following text: "if undeliverable, return to sender" (Fig. 1).

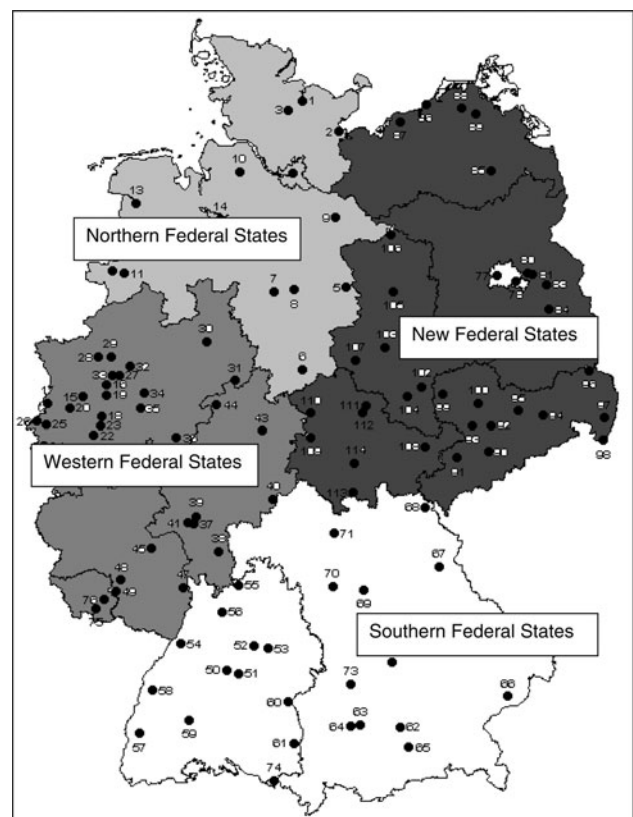


Fig. 2 Geographical distribution of 113 sampling points among 16 federal German States and geographical grouping of sampling points

To calculate the proportion of return of letters with incorrect addresses we grouped the sample points from the 16 Federal German States in four groups:

1. New Federal States: Berlin, Brandenburg, Saxony Anhalt, Saxony, Thuringia, Mecklenburg-West Pomerania.
2. Northern Federal States: Schleswig-Holstein, Lower Saxony, Hamburg, Bremen.
3. Western Federal States: North-Rhine-Westphalia, Hesse, Rhineland Palatinate, Saarland.
4. Southern Federal States: Baden Wurttemberg, Bavaria (Fig. 2).

We could not calculate the proportion of return letters stratified by deliverer as we did not know which deliverer (Federal Post, private deliverers) received the letters. All letters were sent from a post office, from where they were either delivered via Federal Post or private deliverers. Only with the return of undeliverable letters which had a postmark of the deliverer on them would we see who had delivered them. Of the letters which were not returned it would therefore not be said which deliverer was responsible.

Results

Three hundred and three letters (98.2%) were returned as undeliverable. The return rates only slightly differed by

layout of the envelopes, region and deliverer. The median time difference between sending the letters and receiving the letters as undeliverable (return time) was 5 days. The median return time was somewhat modified by the layout of the envelopes, region of sampling points, and type of deliverer. For example, the median return time was 4 days for the Federal deliverer “Deutsche Post” and was 8 days for the “Mitteldeutscher Zustelldienst”, a private delivery service. The median return time for letters sent to Southern Germany was 4 days as opposed to 7 days for the New Federal States and Northern Germany. Overall, after 1 week (7 days) 81% of the undeliverable letters were returned (Table 1). Stratified by layout the return rate after 7 days varied between 68 (layout 3) and 97% (layout 1).

Discussion

The success of any study depends—among other factors—on achieving a high response. Non-response to contact letters within postal surveys may be due to several factors. People might have died or moved away before the letter reached them, people might refuse without informing the investigators, and people may not be reached because their postal address contained errors. If letters with incorrect addresses are returned by the deliverer, investigators will

Table 1 Response proportion of letters sent to fictitious people returned as undeliverable stratified by layout, region and deliverer

	Response		Return rate after 7 days (%)	Median	Response time [days]	
	<i>N</i>	% (SE) ^a			10./90. Percentile	Minimum/Maximum
<i>Mailed letters N = 339</i>						
Return letters	333	98.2 (0.7)	81.4	5	3/9	2/18
Layout ^b						
1	112	99.1 (0.9)	96.5	4	3/7	2/12
2	111	98.3 (1.2)	79.7	4	2/9	2/18
3	110	97.3 (1.5)	68.1	7	5/10	2/18
Region						
New Federal States ^c	107	96.4 (1.8)	58.6	7	3/10	2/18
Northern Federal States ^d	42	100 (0)	88.1	7	3/10	2/10
Western Federal States ^e	111	100 (0)	93.7	5	2/7	2/10
Southern Federal States ^f	73	97.3 (1.9)	93.3	4	2/7	2/12
Deliverer						
Deutsche Post	267			4	2/7	2/12
Mitteldeutscher Zustelldienst	66			8	7/15	4/18

^a Standard error

^b Layout 1: included the addresser only above the addressee field of the envelope. Layout 2: envelopes additionally included a stamp of the full institute name and address. Layout 3: envelopes were additionally stamped including the following text: “if undeliverable, return to sender”

^c Berlin, Brandenburg, Saxony Anhalt, Saxony, Thuringia, Mecklenburg-West Pomerania

^d Schleswig-Holstein, Lower Saxony, Hamburg, Bremen

^e North Rhine-Westphalia, Hesse, Rhineland Palatinate, Saarland

^f Baden Wurttemberg, Bavaria

be able to discern these address errors. Our study shows that return rates of undeliverable addresses are substantial and are close to 100% under the conditions of our study setting.

If address lists for mailed surveys are out of date and therefore not correct, the investigator will have no assurance that the questionnaire has reached the invited study person unless the letter is returned as undeliverable. In our study the return rate for letters sent to fictitious persons was very high—98% of the definitely undeliverable letters were returned with only little variation by Federal States of Germany. Only the return time differs by deliverer. The median return time for letters sent by the Federal deliverer “Deutsche Post” was 4 days as opposed to 8 days by the private delivery service “Mitteldeutscher Zustelldienst”. In conclusion, study investigators in Germany can be sure that incorrectly addressed letters will mostly be returned by the deliverer.

There are some factors that limit our results. Firstly, as all letters were sent on 1 day in 2009, we could not study the influence of seasons (like holiday season) that might influence return rates. For example, during summer 2009, the Federal Post reduced the number of post men considerably so that delivery times increased and maybe also return rates of undeliverable letters decreased. Secondly, this study does not reflect exactly the situation normally found in studies in epidemiology. In epidemiological studies, addresses of potential study subjects are retrieved from the population registries. It does happen that potential subjects do not live at the address any more, usually because their address was not changed when moving away, but most always a real person by that name has lived at the address which might yield more letters not returned.

Thirdly, we studied some layout features of the letters and restricted the size of the letters to DIN C5 (162 mm times 229 mm). It is difficult to speculate how much letter size may influence return proportions of undeliverable letters.

Conflict of interest statement No conflicting relationship exists for any author.

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