

COMPLIANCE BEHAVIOR IN NETWORKS:  
EVIDENCE FROM A FIELD EXPERIMENT  
**Supplementary Appendix**

(For Online Publication)

Francesco Drago, Friederike Mengel, and Christian Traxler

This version: July 17, 2018

## Supplementary Appendix I: Survey

This Appendix reports details on the design and results of a survey which we implemented in cooperation with a professional online survey provider. The company maintains a sample that is representative for Austria’s adult population (age > 20 years). Subjects from this sample are incentivized to regularly participate in surveys. From this pool we invited random subsamples – staggered over different days and stratified according to population size – to participate in our survey. To avoid that the sample would be dominated by participants from urban areas (and to cover a sufficiently high number of respondents from small municipalities), we set a quota for participants from large municipalities at  $N = 500$  and an overall sample target of  $N = 1,850$ .<sup>34</sup>

The survey first asked participants about their housing situation and the population size of the municipality they live in. The main questions followed thereafter:<sup>35</sup> we asked about (a) the geographic distance to as well as (b) the communication frequency with their closest, their second-, and their third-closest neighbor (in terms of geographic distance, i.e., ‘measured by the door-to-door distance’). In doing so, the survey randomly varied the sequence in which questions on the first-, second- or third-closest neighbor were asked. To compare the responses to these questions with a benchmark, we also asked about the communication intensity with their best friend from work/school. The survey then turned to the content of communication. Here we asked how common certain topics are in the communication with neighbors and whether they are willing to pass on relevant information to neighbors (to ‘warn’ them). The survey concluded with questions on age, gender, highest education and occupational status.

Our data cover a total of 1,841 completed questionnaires.<sup>36</sup> The co Summary statistics for background characteristics of the survey participants are provided in Table S.1. The respondents have an average age of almost 40 years, 58% are female, 19% have a high (university/college), 30% a low level of education. More than two-thirds of the respondents are working, 8% are still in education and another 8% are retired. 55% of the survey participants live in single family houses. Our sample weights (see above) are reflected in a share of 73% living in ‘small municipality’ (with less than 5,000 inhabitants).

---

<sup>34</sup>The quota implied that, once 500 participants from large municipalities completed the survey, other subjects from such municipalities were no longer invited to participate.

<sup>35</sup>The specific wording of the key questions is presented below.

<sup>36</sup>The completion rate – i.e., the fraction of individuals who completed all survey questions conditional on starting it – was 96.59%. This high percentage reflects the incentives for the survey companies panel participants, who are paid according to *completed* surveys.

Table S.1: Summary Statistics

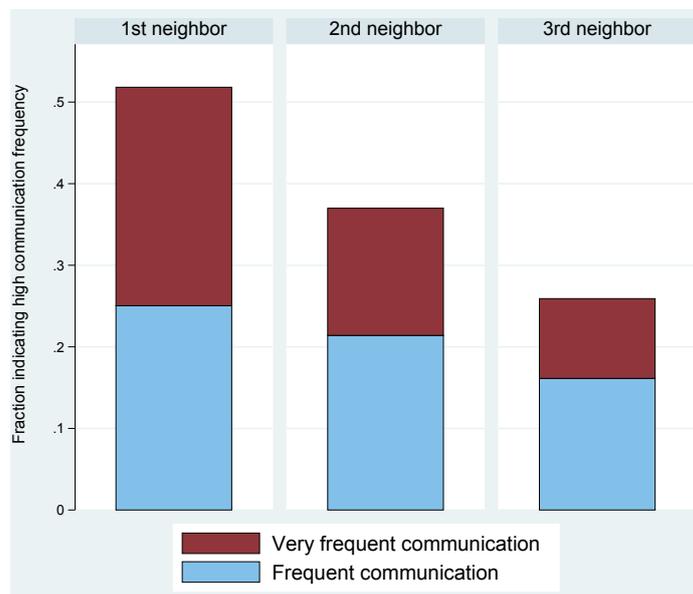
	mean	SD
Age	39.70	12.15
Female	0.58	0.49
Education High	0.19	0.39
Education Low	0.30	0.46
Occ Working	0.68	0.47
Occ School	0.08	0.27
Occ Retired	0.08	0.27
1-Family Housing	0.55	0.50
Small Municip	0.73	0.45

*Notes:* Summary statistics (mean and standard deviation) for the survey sample ( $N = 1,841$ ).

## Survey Results

**(1) Communication Frequencies.** Figure S.1 (which is a re-scaled version of Panel (a) from Figure 1) presents a first key result from the survey. It shows how interaction frequencies decline from the first- to the second- and to the third-closest neighbor. While 52% indicate frequent or very frequent communication with their closest neighbor, the number drops to 37% for the second- and 26% for the third-closest neighbor. Note that this pattern is not an artefact of the sequence at which we asked these questions; it is equally observed for all (random) sequences.<sup>37</sup>

Figure S.1: Communication frequencies with neighbors



*Notes:* The figure presents the fraction of respondents indicating high communication frequencies with their first-, second- and third-closest neighbor (in geographical terms).

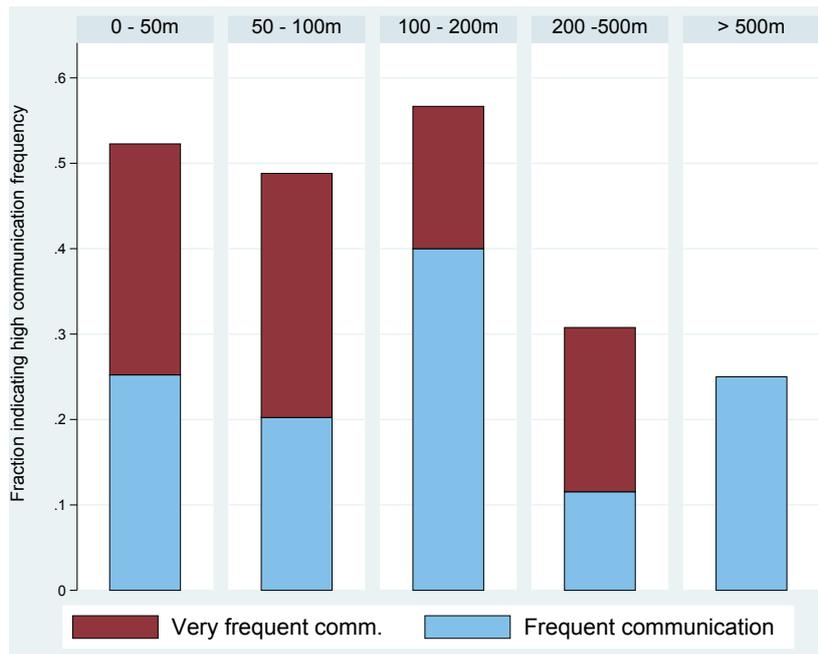
A different way to illustrate how communication intensities decline with distance is provided by Figure S.2 (which is a re-scaled version of Panel (b) from Figure 1). It displays the communication frequency with first-order neighbors (i.e., the closest neighbor) that live either more or less close. The figure suggests that there is more frequent communication with (first-order) neighbors who are

<sup>37</sup>Details on this and all further results are available from the authors upon request.

more close rather than with the more distant ones. For a distance up to 200 meters, between 49 and 56% indicate frequent or very frequent communication with their FON. Beyond 200 [500] meters, this rate drops to 31% [25%]. Non-parametric as well as parametric tests (based on probit as well as ordered probit estimates) indicate that this drop in communication frequencies at 200 meters is statistically significant.

A similar decline in the communication intensity is observed if we focus on the share of respondents indicating very frequent communication (indicated by the dark red bars in Figure S.2). For a distance below 100 meters, this rate is between 27 and 29%. Beyond 100 meters it drops to 17–18% and then, for a distance beyond 500 meters, to zero.

Figure S.2: Communication frequencies and distance



Notes: The figure presents the fraction of respondents indicating high communication frequencies with their first-closest neighbor as a function of the geographic distance to this neighbor.

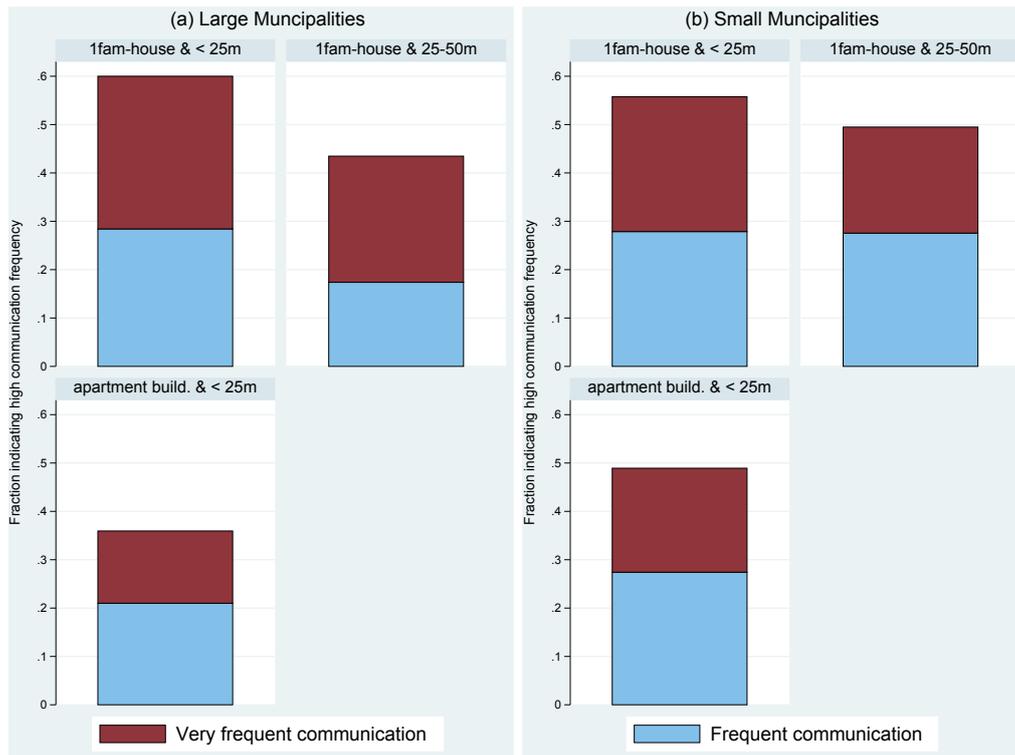
Figures S.1 and S.2 document that communication frequencies among neighbors are declining with distance – both, for the distance to a given ‘closest’ neighbor as well as when we move from the first- to the second- and to the third-closest neighbor. While this finding is very robust, our data also reveal a systematic deviation from this negative link between distance and communication intensity that is related to the housing structure. The point is illustrated in Figure S.3, which again presents communication frequencies with first-order neighbors.

Panel (a) of Figure S.3 focuses on respondents from ‘larger municipalities’ (with more than 5,000 inhabitants). The two bar-charts on top of panel (a) show responses from individuals living in single-family houses ( $N = 127$ ). In line with the result from above, it illustrates that communication frequencies decline with the distance to the neighbor. The bar-chart at the bottom of panel (a) considers individuals from multi-unit apartment buildings ( $N = 376$ ). For this subset, *all* first-order neighbors live very close to them (i.e., within 25 meters). At the same time, however, they indicate *less frequent* communication as compared to those who have a first-order neighbor with a distance of more than 25 meters (which, naturally, are people not living in apartment blocks but in single-family

houses): comparing the top right with the bottom left bar graph from panel (a), we observe that the share reporting frequent or very frequent communication with their FON declines from 44 to 36%. The fraction reporting very frequent communication (indicated by the dark-red bars) falls from 26 to 15%.

In this case, communication frequencies are therefore *not declining* but rather increasing in geographic distance. Intuitively speaking, this is driven by people in apartment buildings who, by definition, live very close to each other and, at the same time, communicate with their neighbors fairly infrequently. This pattern would cause a problem for the geographic network approach introduced in Section 4, which computes networks based on geographic distance between neighbors. In large, urban municipalities, we would treat households from apartment buildings as one (very close) network while we would probably assign two more distant households living in single-family houses (e.g., in suburban areas) into two different networks. In both instances we would very likely make a mistake: in the former, the high geographic proximity is correlated with a lower communication intensity; in the latter, there might be frequent interaction among the neighbors (from single family houses), despite the higher distance. To wrap up, the survey data suggest that the application of our geographic network approach is problematic for urban areas.

Figure S.3: Housing structure and municipality size



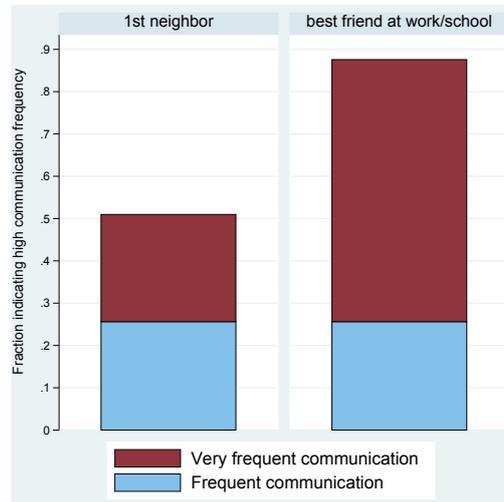
Notes: The figure presents the fraction of respondents indicating high communication frequencies with their first-closest neighbor as a function of the geographic distance to this neighbor. Panel (a) presents the responses for ‘large municipalities’, panel (b) for ‘smaller municipalities’ (with more or less than 5,000 inhabitants, respectively). Both panels differentiate between the distance to the nearest neighbor as well as the housing structure (apartment building vs. single-family housing).

In a next step, we explore whether apartment buildings from smaller, more rural municipalities – where multi-unit buildings are clearly less frequent but still present – also induce problems for the negative correlation between distance and communication frequencies. This point is addressed in panel (b) of Figure S.3. The two bar-charts on top of panel (b), which focus on respondents

living in single-family houses ( $N = 752$ ), show that – consistently with the results from above – communication frequencies are declining when we compare those with very close ( $< 25$  meters) and close (25–50 meters) first-order neighbors. What is more interesting, however, is the fact that in small municipalities, the respondents living in apartment buildings ( $N = 186$ ) report almost identical communication frequencies. This point is captured in the lower left part of panel (b): 49% state that they frequently or very frequently talk to their most proximate neighbor from their apartment building. The response pattern is almost identical which the ones observed for respondents who live in single-family houses with the closest neighbor in the 25-50 meters range.

For small Austrian municipalities, the ‘closeness’ of neighbors in apartment buildings is thus not aligned with a lower interaction frequency. As becomes clear from the comparison of the lower bar-graphs of panel (a) and panel (b), this is in stark contrast to the outcome for large municipalities. In the latter type of municipalities, where apartment buildings tend to be larger and more anonymous, only 36% of respondents from apartment buildings report frequent or very frequent communication with their FONs. In small municipalities it is 49%.

Figure S.4: Communication frequencies for FON and best friend from school/work



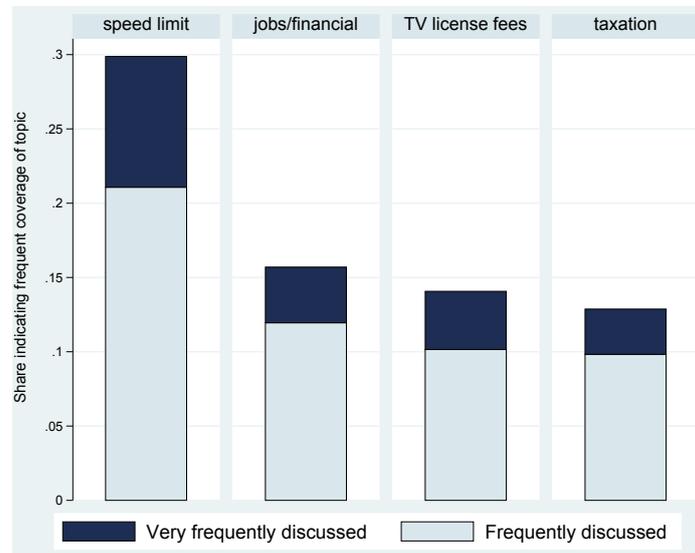
*Notes:* For the subsample that is either employed or in education ( $N = 1,393$ ), the figure compares the fraction of respondents indicating high communication frequency with their first-order neighbors as well as their ‘best friend’ from school/work.

We conclude our analysis of communication patterns by assessing whether the reported communication frequencies among neighbors are particularly high or low. To do so, we have a brief look at reported communication frequencies with the ‘best friend’ from school/work. Figure S.4 presents the results. Among the subsample that is either working or in education ( $N = 1,393$ ), 51% report frequent or very frequent communication with their FON. Among the same sample, almost 88% say they frequently or very frequently talk to their best friend from school/work. Hence, the fraction indicating a high or very high communication frequency with FONs is roughly 60% lower as compared to the communication pattern among friends. The figure further reveals that it is mainly the fraction reporting very frequent communication which declines (from 62 to 25%) when we compare the best friend to the FON.

**(2) Communication Content.** Let us now turn to the content of the communication. The data from the survey indicate that TV license fees are, in general, a topic that is not too often addressed

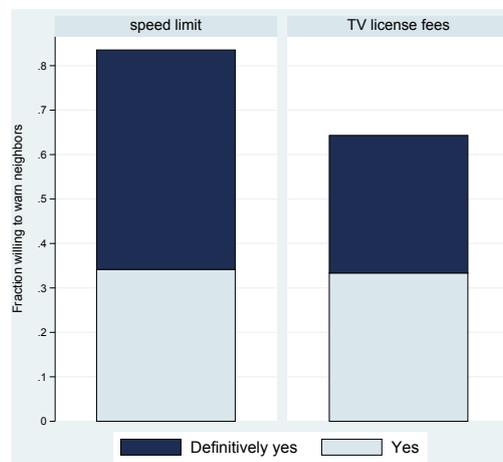
in the communication with neighbors. The responses presented in Figure S.5 suggest that license fees are an equally (un)common topic such as, for instance, discussions on financial opportunities and job offers or discussions related to taxation issues.

Figure S.5: Communication topics



Notes: The figure presents the fraction of respondents indicating how frequently certain topics – (i) experiences with the enforcement of speed limits, (ii) financial opportunities or job offers, (iii) experiences with TV license fees or (iv) taxation – are discussed with neighbors.

Figure S.6: Willingness to pass on information



Notes: The figure presents the fraction of respondents indicating that they are willing to share relevant information – on speed controls or TV license fee mailings – with their neighbors (to ‘warn’ them).

The survey further reveals, however, that people *are* willing to pass on information on TV license fee to their neighbors, once some relevant news arrives. This point is illustrated in Figure S.6, which indicates the fraction of respondents who would share (i) information about a recent experience of a speed control or (ii) information about receiving a FIS mailing (which indicates a possible inspection) with their neighbors. More than 80% would warn their neighbors about speed controls and roughly two-thirds would communicate about the license fee inspection risk after receiving a FIS mailing. The evidence therefore suggests that, while license fees are not the most common

topic of communication, neighbors are certainly willing to initiate communication after receiving a mailing.

## Main Survey Questions

Think of your neighbors which live closest to you in geographical terms. Consider the neighboring household which - measured by the door-to-door distance - is the [ most/second/third ] closest to you.<sup>38</sup>

- How far is this neighbor's household from your house?

< 50 meters / 50-100 meters / 100-200 meters / 200-500 meters / > 500 meters

- How often do you communicate with this neighbor?

very frequently / frequently / sometimes / rarely / very rarely

- Now think of your best friend from work/school. How often do you communicate with this friend?

very frequently / frequently / sometimes / rarely / very rarely

- When you talk with your neighbors, how often do you discuss...

... financial opportunities or job offers?

... experiences with taxation (filing, audits, etc.)?

... experiences with the enforcement of speed limits (e.g., speed camera controls)?

... experiences with TV license fees (FIS mailings, inspections, etc.)?

very frequently / frequently / sometimes / rarely / very rarely

- Suppose you are stopped by the police for speeding somewhere in your region. Would you share this information with a neighbor ('warn him/her'), when you meet him/her afterwards?

definitely yes / yes / no / definitely no

- Suppose you are not paying TV license fees and you receive a letter which indicates a possible inspection. Would you share this information with a neighbor ('warn him/her'), when you meet him/her afterwards?

definitely yes / yes / no / definitely no

---

<sup>38</sup>To produce random sequences, the part in squared brackets was randomly varied. Note further that for households living in apartment buildings, the survey questions were framed differently. In particular, we asked the following (again in random sequences): Consider now the neighboring household in your building which - measured by the door-to-door distance - is the closest to you. (Here we did not ask for the geographic door-to-door distance but only for the communication frequency.) Consider now the neighboring household not living in your apartment building which - measured by the door-to-door distance - is the closest/second closest to you.

## Supplementary Appendix II: Text and Layout of Mailings

### Baseline Mailing (FIS' Standard Cover Letter)

Dear Mr. X,

*You listen to radio, you watch TV? Then you are aware of the program variety offered by Austrian Public Broadcasting. The provision of these services, however, requires funding. Therefore, everybody who owns a radio or a TV has to pay license fees. It is the task of FIS Fee Information Service GmbH to ensure that all TV and radio consumers pay these fees.*

**Our data base does not show a registration of TV or radio equipment at your address.** This can have several reasons:

- We may have made a mistake in our data base and you are already registered at FIS. **In this case, we apologize in advance.**
- Your registration data may have changed, e.g., due to a move or a name change (marriage), and our computer system cannot match the data with your registration.
- You may not hold a radio or a TV at this address and therefore do not have to register anything.
- Maybe you have just forgotten to register your TV or radio.

We are legally obliged to clarify this issue and kindly ask you to answer our questions – even if you have already registered at FIS. On the back of this letter you find a response form. **Please fill in this form and send it back within the next 14 days.**

[1]

We thank you for your cooperation. If you require further information, please call our service hotline at 0810 00 10 80 (Monday to Friday, 8.00 am to 9.00 pm, Saturday from 9.00 am to 5.00 pm) or visit our web page at [www.orf-gis.at](http://www.orf-gis.at). Kind regards, your FIS-Team.

### Threat Mailing

The threat treatment includes the following paragraph at position [1] of the cover letter:

**If you do not respond to this letter, a staff member of FIS will contact you in order to request information from you personally.** If you refuse to provide information or if there is a well-founded suspicion that you provide disinformation, FIS is obligated to order an inquiry by the responsible federal authorities. Please keep in mind that in this case you may face legal consequences and considerable costs.

# Original Copy of Threat Mailing



GEBÜHREN INFO SERVICE

GIS GMBH, 1051 Wien, Postfach 1999, DMMD210 60084178

Herrn

60084178  
DMMD210

Handelskammer Österreich  
Am Hofmarkt 120  
1150 Wien

Wien, 27. September 2005

## SIE HÖREN RADIO, SIE SEHEN FERN?

Sehr geehrter Herr ,

Sie hören Radio, Sie sehen fern? Dann kennen Sie die vielfältigen Programme, die Ihnen der ORF täglich bietet. Diese Leistungen kosten Geld. Aufgabe der GIS Gebühren Info Service GmbH ist es, dafür zu sorgen, dass alle Konsumenten von Radio und Fernsehen Gebühren zahlen. Denn sobald man ein Rundfunkempfangsgerät besitzt, sind Gebühren zu bezahlen.

### Unter Ihrer Anschrift finden wir keine Meldung von Rundfunkempfangsgeräten in unserer Datenbank.

Das kann verschiedene Gründe haben:

- Vielleicht ist uns ein Fehler in der Datenverwaltung unterlaufen und wir dürfen Sie bereits zu unseren Kunden zählen. **In diesem Fall bitten wir schon jetzt um Entschuldigung!**
- Vielleicht haben sich Ihre Kundendaten geändert, etwa durch Übersiedlung oder Namensänderung (Heirat), und unsere EDV kann Ihre Daten nicht zuordnen.
- Vielleicht haben Sie keine Rundfunkempfangseinrichtungen unter dieser Adresse und sind daher auch nicht meldepflichtig.
- Vielleicht haben Sie aber einfach nur vergessen, Ihre Geräte anzumelden.

Wir sind von Gesetz wegen verpflichtet nachzufragen und bitten Sie deshalb, unsere Fragen zu beantworten - in jedem Fall, auch wenn Sie bereits Kunde sind. Eine Rückantwort ist auf der Rückseite dieses Schreibens vorbereitet. **Bitte füllen Sie diese aus und schicken Sie den Bogen innerhalb von 14 Tagen im Antwortkuvert an uns zurück.**

**Sollten Sie auf dieses Schreiben nicht reagieren, wird Sie demnächst ein Mitarbeiter der GIS kontaktieren, um eine persönliche Auskunft zu erhalten.** Verweigern Sie diese oder besteht der begründete Verdacht, dass Sie eine falsche Auskunft erteilt haben, hat die GIS eine Überprüfung der Gebührenpflicht seitens der zuständigen Bundesverwaltungsbehörde zu veranlassen. Bedenken Sie bitte, dass Ihnen in diesem Fall rechtliche Konsequenzen sowie erhebliche finanzielle Kosten entstehen können.

Wir danken Ihnen für Ihre Mithilfe. Wenn Sie weitere Informationen wünschen, können Sie uns unter der Service-Hotline **0810 00 10 80** (Montag bis Freitag von 8.00 bis 21.00 Uhr, Samstag von 9.00 bis 17.00 Uhr) anrufen oder uns im Internet besuchen: [www.orf-gis.at](http://www.orf-gis.at).

Mit freundlichen Grüßen



GIS GEBÜHREN INFO SERVICE GMBH

1051 Wien, Postfach 1999 • Service-Hotline: **0810 00 10 80** • E-Mail: [gis.office@orf-gis.at](mailto:gis.office@orf-gis.at) • Internet: [www.orf-gis.at](http://www.orf-gis.at)  
DVR 0997285 • Sitz: Wien, Österreich • PSK Konto Nr. 7 503 146, BLZ 60 000 • Fbg: Handelsgericht Wien • Firmenbuch Nr. 174 754 t