THE EFFECTS OF MOBILITY ON NEIGHBORHOOD SOCIAL TIES[1]

Gundi Knies, ISER University of Essex

Abstract

This research examines the strength of people's ties with close neighbors and the sensitivity thereof to changes in residential mobility, access to modes of public and private transport, and changes in the availability of modern communications technologies using the German Socio-economic Panel Study (SOEP). All forms of mobility have increased over time and are negatively associated with visiting neighbors. With further increases in mobility, close neighbors may become less relevant. Nevertheless, presently the incidence of visits with neighbors is sizeable; in contrast to the frequent assertion in the literature that the neighborhood is of no importance.

JEL Classification: J19, R29, Y8, Z13

Keywords: Neighborhood, Social interactions, Mobility, Transport, Internet, Family ties

[1] I thank Simon Burgess and Carol Propper for their comments and suggestions. This research also benefited from comments by Nick Buck and Paul Gregg, and as well as participants at workshops held at the Institute for Social and Economic Research (ISER University of Essex) and the ISQOLS 2008 conference. The bulk of this research was completed with the support from doctoral student scholarships awarded by DIW Berlin and the Centre for Market and Public Organisation (CMPO University of Bristol).

INTRODUCTION

The concern that the local community may disappear due to increases in mobility has been prevalent for many decades. In the work of Tönnies (1887), Durkheim (1893) and Simmel (1908) we already find the argument that urbanization, specialization, and bureaucratization lead to socially more heterogeneous and physically more mobile societies in which the sense of community and solidarity is lost.[2] A few decades later, Wirth (1938) predicted that with larger shares of the population living in metropolitan than in rural areas and with rural lifestyles increasingly mirroring urban lifestyles, the larger and more heterogeneous urban populations will make it possible for people to choose their social contacts based on common interests rather than a common locality. More recently, access to public transportation and telecommunications have been argued to make distance less of a constraint in maintaining contacts to like minded people who may not live next door (Aronson 1971; Wellman 1979; Wellman 2001a). The erosion of the importance of place is also picked up in the debate about the effects of globalization (Bauman 2000; Beck 1986; Giddens 1991; Sennett 1998). As people are expected to move around to find jobs, it becomes more difficult to establish neighborhood social ties because of high residential turnover. Rational individuals would thus avoid nurturing neighborhood contacts, while seeking nevertheless to avoid social isolation.[3] This amplifies the original prediction that the sense of community will disappear (Wellman and Leighton 1979), suggesting that social contacts overall will remain important in the future, but neighbors will not.

Given the long history of claims that residential mobility and access to transport and modern communication technologies have a negative effect on neighborhood social ties, the aim of this research is to provide some empirical evidence on the relative importance of each of these. There is in fact a long and rich tradition of research in the social sciences devoted to describing and explaining social participation. Studies have looked at the effects on social participation of residential mobility (e.g., Kasarda and Janowitz 1974; Sampson 2001), physical mobility—i.e., the effects of access to private or public transport—(e.g., Kenyon, Rafferty and Lyons 2003), and virtual mobility—i.e., the effects of modern communication technologies (e.g., Shklovski, Kraut and Rainie

[2] These classic examples did not refer specifically to local communities. However, given that social interactions at that time were predominantly among people in a common locality, the loss of a sense of community at the local level is implicit in the argument.

[3] For a review of the importance of being socially embedded on personal well-being see Diener, Ed, E. M. Suh, Richard E. Lucas, and H. L. Smith. 1999. "Subjective well-being: Three decades of progress." *Psychological Bulletin* 125:276-302.

2004). Much less is known, however, about the joint impact of these aspects on people's ties with their local community, and their relative importance. While we may expect that residential mobility and physical mobility increased gradually, communication technology use can be expected to have produced the most marked and sudden effect on social interactions—mainly because of the speed with which the Internet entered peoples' lives. Has the Internet affected people's social relations with their neighbors over and above other changes in mobility that may have occurred? Furthermore, are there differential impacts of mobility on the social relations with neighbors than on relationships with other people?

The structure of this article is as follows. I will first review empirical studies that have looked at the predictors of neighboring in general and at its associations with residential, physical and virtual mobility more specifically (Section 2). Section 3 describes that data used and Section 4 details the methodology employed. Empirical results are presented in Section 5. Section 6 concludes.

LITERATURE REVIEW

Neighborhood social ties have been studied extensively for their role in shaping the social structure of societies (e.g., Mayntz 1958; Park and Burgess 1925; Warner et al. 1963) and also for their potential role in delivering support (e.g., Etzioni 1993; Jacobson 1986; Sampson, Morenoff and Earls 1999; Schmitt 2005; Unger and Wandersman 1985). Common indicators of social ties with neighbors in the quantitative literature are the prevalence of support provided by neighbors and of visits between neighbors. Lee and Campbell (1999, p. 127), for instance, find that neighbors sometimes "(borrow) something small like a cup of sugar", "(receive) assistance in a minor emergency", "(get) a hand with home repairs", or "(obtain) needed information". Visits with neighbors are less common (Schmitt 2005)[4], but may be regarded as an indicator that neighborhood ties may be strong enough to function even in (emotionally/financially) more difficult situations than these. Among the characteristics that have been shown to influence

[4] Analyses for Germany suggest that most neighbors prefer not to interact socially with each other and, in many cases, consciously seek to be distant, see Vierecke, Kurt Dieter. 1972. *Nachbarschaft. Ein Beitrag zur Stadtsoziologie*. Cologne: Verlag J. P. Bachem, Weber, Max. 1958. *Wirtschaft und Gesellschaft*. Tübingen, Zapf, Katrin, Karolus Heinz Heil, and Justus Rudolph. 1969. *Stadt am Stadtrand. Eine vergleichende Untersuchung in vier Münchner Neubausiedlungen*. Frankfurt: Europäische Verlagsanstalt.

visiting are the size of the local community, the population density, social class, and the stage in the lifecycle (Kasarda and Janowitz 1974; Sampson 2001; Vierecke 1972).

Residential mobility and neighborhood social ties

A number of studies have examined the effects of both micro- and macro-level residential mobility on neighborhood social ties (Kasarda and Janowitz 1974; Sampson 2001; Vierecke 1972). They operationalize residential mobility as length of residence and homeownership status. If communities form naturally as a by-product of daily routines (see Logan and Spitze 1994, p. 458), the argument goes, people who have lived in the neighborhood for longer have invested more in local ties and this lowers the probability to be residentially mobile (Belot and Ermisch 2006).

Recent (and frequent) movers not only have had little time to get to know their neighbors but they maintain ties to friends and family living elsewhere (Kling and Liebman 2004; Pelizäus-Hoffmeister 2001; Shklovski 2007). Homeowners, due to the expected length of residence, may be willing to invest more in nurturing contacts with new neighbors (Tobey, Wetherell and Brigham 1990). The perceived density of social ties in the neighborhood[5] and already existing ties to a particular neighborhood (for instance, family, relatives or friends living in the area) may also play a role in the choice process.

Physical mobility and neighborhood social ties

Of the three mobility-related aspects that are analyzed here in their impact on social interactions between neighbors, people's access to public transport and/or to a private mode of transportation (such as an own car) is the least-researched subject. Kenyon, Rafferty and Lyons (Kenyon, Rafferty and Lyons 2003) tackle the subject indirectly when they look at the effects of transportation inaccessibility on social exclusion. Lack of access prevents people from a wide range of activities and allows them to engage in activities less frequently and with a greater likelihood in their neighborhood. People with good access to private or public transport – such as individuals in higher professions (Mayntz 1958) - will travel greater distances, other things being equal, and thus be away

[5] A person willing to buy a house may, for instance, take the homeownership rate in the neighborhood as an indicator of neighbors' willingness to invest in neighborhood social ties. See Ioannides, Yannis M., and Jeffrey E. Zabel. 2002. "Interactions, neighborhood selection and housing demand." in *Department of Economics Working Paper*. Medford: Tufts University, —. 2003. "Neighborhood effects and housing demand." *Journal of Applied Econometrics* 18:563-584.

from their immediate neighborhoods more often.[6] The risks of social exclusion due to lack of access to transportation is particularly marked for the elderly, low-wage workers, and children and teenagers in low-income families (Pickup and Giuliano 2005).

Virtual mobility and neighborhood social ties

There has been a plethora of research into the social repercussions of Internet use but without providing stringent results (for a review of this literature see Nie 2001; Shklovski, Kraut and Rainie 2004). In particular, there is little empirical evidence on the effects of Internet use on social interactions between neighbors. Wellman (2001a; 2001b), for instance, investigates whether communities have disappeared due to Internet use (which is not confirmed by the empirical evidence) but relaxes the definition of 'community' to include a non-physical dimension.

The effects of virtual mobility may be quite complex. Internet use may benefit the establishment and nurturing of social contacts with neighbors (as suggested by Matei and Ball-Rokeach 2001). However, there is the risk that online social ties substitute for face-to-face interactions with people who are principally within physical reach. We might not expect any effect of Internet use on social interactions with neighbors. If anything, we might expect (heavy) Internet users to simply have less time for personal contact.

DATA

This research is based on data derived of the German Socio-Economic Panel Study (SOEP). The SOEP is a continuing longitudinal general topic social survey of the population living in Germany. The salient features of the study include household composition, employment, well-being and living standards. The survey started in 1984 and individuals and their households were followed annually.[7]

This analysis focuses on information on the frequency of social visits with neighbors which was collected in 1994, 1999 and 2004. Some other key information required for this analysis is not available for the same waves (see Table 1) so I pooled data of consecutive waves (1994 & 1995, 1998 & 1999, and 2003 & 2004). To assure that the information on visiting with neighbors and the mobility portfolios refer to the same

[6] At least when the attractiveness of the more distant destination outweighs the disutility of the additional time and money spent to reach it. A more distant place might be more attractive, for instance, because family and friends, to whom close social ties exist, live there.

[7] Further information is available at http://www.diw.de/english/soep_overview/33899.html.

location I include in my sample only those individuals who lived in the same place at the month of the interviews for the respective pooled waves.

Table 1
Availability of data on social interactions with neighbors and of mobility indicators in the SOEP 1994-2004

Indicator		1994		1999		2004	
		1994	*1995*	*1998*	*1999*	*2003*	*2004*
Visiting with neighbors		x	n.a.	n.a.	x	n.a.	x
Visiting with family		x	n.a.	n.a.	x	n.a.	x
Residential mobility		x	(x)	(x)	x	(x)	x
Physical mobility	- private	n.a.	x	x	n.a.	x	n.a.
	- public	n.a.	n.a.	x	n.a.	x	n.a.
Virtual mobility		n.a.	n.a.	n.a.	x*	x	n.a.
Neighborhood characteristics		x	n.a.	n.a.	x	n.a.	x
Individual characteristics		x	(x)	(x)	x	(x)	x

Notes: The denotation is as follows: x = indicators that are available. (x)= available but not used; n.a. = not available in the respective year; x*= constructed on the basis of data collected in 2001.

Sample members in 1999 and 2004 have lived in the neighborhood for at least about a year when they provide information on visiting with neighbors (because this information is collected in the second of the two consecutive waves). In contrast, sample members in 1994 may have moved to the neighborhood very recently. If there is a correlation between the visiting propensity and the length of residence, we may observe a decline in visiting with neighbors from 1994 to 1999 because of the different sample and not because of greater mobility. We can ignore this potential problem for two reasons: First, the problem can only be marginal because the overall number of moves within any year is low in Germany. Second, because SOEP does not provide information on all kinds of mobility in 1994 I can only use data for 1999 and 2004 for multivariate analyses. In these later two years the problem does not exist.

Pooling of data from two consecutive waves of the panel study also implies that only individuals who have provided information in those two years will be included in the analysis. In the descriptive analysis I will deal with the possible bias which sample attrition may cause by employing longitudinal population weights rather than cross-sectional weights (even when the information used is taken from just one wave). In the multivariate regression models I will ignore sample attrition.

Finally, between 1999 and 2004 the SOEP introduced two new samples (Sample F and Sample G, respectively). To keep the 1999 and 2004 samples comparable I exclude these

samples from the 2004 sample. The resulting sample sizes are 11,260 (1994), 11,681 (1999), and 10,717 (2004) individuals.

Descriptions and summary statistics of the variables used in this analysis are provided in Appendixes 1 -3.

Setting the Scene: Changes in Visiting and Mobility 1994-2004

The data indicate that the prevalence of visiting with neighbors is sizeable (Table 2). More than half of the population visits with neighbors at least occasionally. 43 percent claim never to visit with neighbors. While the share of non-visitors has remained fairly constant over time, the number of people claiming to visit frequently with neighbors has significantly fallen. This implies that it may be the frequency of visits which may have suffered from increases in mobility and not visits per se. This idea is supported by the distribution of the frequency of visits for only those people who do visit with neighbors.

Table 2
Percent of the population that visits with neighbors and with family, by frequency of visits 1994, 1999 and 2004.

	Visits with Neighbors			**Visits with Family**		
	1994	***1999***	***2004***	***1994***	***1999***	***2004***
never	42.0	43.2	43.5	2.5	2.1	3.0
less than once a month	13.2	13.5	15.4	21.8	20.8	21.1
at least once a month	16.6	15.6	17.0	30.6	29.5	30.1
at least once a week	20.2	21.5	19.3	37.8	40.2	38.7
almost daily	8.0	6.2	4.8	7.3	7.4	7.2
Visitors only	**Visits with Neighbors**			**Visits with Family**		
	1994	***1999***	***2004***	***1994***	***1999***	***2004***
less than once a month	22.8	23.8	27.2	22.3	21.3	21.7
at least once a month	28.6	27.4	30.2	31.4	30.1	31.0
at least once a week	34.9	37.9	34.1	38.8	41.1	39.9
almost daily	13.7	10.9	8.5	7.5	7.6	7.4

Source: SOEP 21. Author's calculations.

With respect to changes in mobility, the data show that the population has become more residentially, physically and virtually mobile (Table 3). The share of the population that lived in the neighborhood for at least 5 or 10 years has declined by 4 percentage points. Parallel to this, more people had good access to transportation in 2004 than in 1994 – on most measures of physical mobility there have been increases of at least 3

percentage points[8]. Yet the greatest rise has occurred in terms of virtual mobility. In 1999, 16 percent of the population had access to the Internet at home. In 2004 this figure was 42 percent. This represents an increase of 260 percent.

Table 3
Residential, physical and virtual mobility, 1994, 1999 and 2004.

			Percent of the population		
			1994	**1999**	**2004**
Residential Mobility	Length of stay in the Neighbourhood[1]	*at least two years*	92.5	89.5	91.5
		at least five years	76.2	70.8	72.3
		at least ten years	57.0	55.2	53.3
Physical Mobility[2]	Car	*not available*	31.3	31.9	28.0
		occasionally available	11.1	10.3	9.5
		always available	57.6	57.7	62.4
	Bus	*available*	-	86.3	87.8
	Metro	*available*	-	18.7	21.9
	Train	*available*	-	36.2	41.1
	Taxi	*available*	-	11.0	18.2
Virtual Mobility	Internet	*users*	-	15.9	42.1

Source: SOEP 21. Author's calculations.

Table 4 shows how these changes in mobility are associated with changes in the visiting behavior. For all types of mobility the data suggest that individuals who may be regarded more mobile are systematically less likely to be frequent visitors with their neighbors. The share of visitors has declined among both residentially more mobile and less mobile people, but more among the former. Among physically mobile people we observe an over-proportionate decline in visiting people compared to the entire sample. Finally, the results for virtual mobility suggest that a lower share of Internet users visits with neighbors than Internet non-users. However, there is no decline in visiting with neighbors for Internet users, while the share of non-users that visit with neighbors has fallen by four percentage points. In other words, it may not be the virtually mobile people who changed their visiting behavior, but the others.

[8] In contrast to the other modes of public transportation, increased access to shared taxis may indeed reflect a reduction in physical mobility and not an increase therein. Shared taxis may have replaced a formerly underused bus line, and to use this service, people have to call to book well in advance of the planned journey.

Table 4
Percentage of the population that frequently visits with neighbors and with family by residential, virtual and physical mobility

		Visits with Neighbors		
		1994	**1999**	**2004**
Residential Mobility				
Homeownership	*non-owner*	27.5	25.7	22.1
	owner	29.1	29.8	25.9
Length of stay in the neighborhood	*less than two years*	20.2	21.7	20.6
	at least two years	29.0	28.5	24.4
	less than five years	26.6	24.7	21.0
	at least five years	28.8	29.0	25.3
	less than ten years	26.3	25.7	22.1
	at least ten years	29.8	29.4	25.8
Physical Mobility				
Car	*not available*	32.9	31.4	25.7
	occasionally available	27.1	26.7	24.4
	always available	25.9	25.9	23.3
Bus	*not available*	-	25.1	26.6
	available	-	28.1	23.8
Metro	*not available*	-	28.5	25.7
	available	-	23.6	18.6
Train	*not available*	-	28.5	25.8
	available	-	26.2	21.6
Taxi	*not available*	-	27.7	24.0
	available	-	27.6	24.9
Virtual Mobility				
Internet	*non- users*	-	29.9	25.3
	users	-	21.8	22.3
Entire Population				
		28.2	27.4	24.0

Source: SOEP 21. Author's calculations.

METHODOLOGY

This research investigates whether mobility-related aspects of postmodern life have a negative impact on social visits with neighbors and to what extent. I estimate multivariate models to examine the influence of residential, physical and virtual mobility while at the same time controlling for other things associated with visiting. In the absence of any formally stated theoretical model that could indicate which additional socio-economic and demographic characteristics have to be in the model, my strategy is to first estimate models with as few explanatory variables as possible. I then add more controls in order to absorb as much heterogeneity as possible.

The hypotheses regarding the effects of mobility on visiting with neighbors are as follows. *Residentially mobile* individuals visit less with neighbors because their past investment into the neighborhood community is lower and the costs of future investments are higher. *Physically mobile* individuals visit less with neighbors because higher mobility allows greater independence from the local environment. *Virtually mobile* individuals have less face-to-face contact with neighbors because Internet use takes time away from the individual that could be spent visiting.

The statistical approach is as follows. The dependent variable is dummy variable which equal one if an individual visits with his/her neighbors frequently and zero otherwise. Appropriate model choices are the logit or the probit model where the dependent variable y_i can take two values, here

$$y_i \begin{cases} 0 = \textit{does not visit with neighbours frequently} \\ 1 = \textit{does visit with neighbours frequently} \end{cases}$$

The logit model can be derived as a latent variable model, a linear probability model or as a discrete choice model (Long and Freese 2003, p.110f.). In the terminology of the latent variable model, we assume that there is an unobserved propensity of an individual to visit frequently with neighbors, denoted y_i^*, which takes any value between -∞ and +∞. Let y_i^* be defined as a function of a set of characteristics that stand for an individual's residential, physical and virtual mobility, denoted $Z_{1i} - Z_{3i}$, other characteristics of the individual, denoted X_i, and characteristics of the neighborhood, denoted N_i, that have been suggested to be determinants of social interactions between neighbors.

$$y_i^* = \alpha + \beta' X_i + \gamma' Z_{1i} + \delta' Z_{2i} + \varsigma' Z_{3i} + \eta' \mathrm{N}_i + \varepsilon_i$$

Apart from y_i^* and the error term, all variables are observed. The model can be estimated when we link the latent variable y_i^* with the observed binary outcomes in our dataset. We hereby assume that cases with positive values of y_i^* are observed as y_i=1 and cases with non-positive values of y_i^* are observed as y_i=0. Put mathematically

$$y_i = \begin{cases} 0 \; if \; y_i^* \le 0 \\ 1 \; if \; y_i^* > 0 \end{cases}$$

The probability of observing a positive outcome therefore equals:

$$\Pr(y_i = 1 \mid X_i, Z_{1i}, Z_{2i}, Z_{3i}, N_i)$$
$$= \Pr(y_i^* > 0 \mid X_i, Z_{1i}, Z_{2i}, Z_{3i}, N_i)$$

Long and Freese (2003) show that the probability of a positive outcome is the cumulative density function of the error terms given the values of the independent variables:

$$\Pr(y_i = 1 \mid X_i, Z_{1i}, Z_{2i}, Z_{3i}, N_i)$$
$$= F(\alpha + \beta' X_i + \gamma' Z_{1i} + \delta' Z_{2i} + \varsigma' Z_{3i} + \eta' N_i)$$

The cumulative density function can be specified as following the normal (probit model) or the logistic (logit model). We employ the logistic cumulative density function.

Estimation of these models then is straightforward, and we hypothesize that if increases in mobility prevent social interactions with neighbors, the γ, δ and ς-coefficients should be negative and statistically significant.

Endogeneity Problems

The results may be problematic because of endogeneity problems with the mobility measures. If individuals have chosen to live in a neighborhood with good access to public transportation in order to be able to 'get away' from the neighborhood, it may not be access to public transport per se that causes less contact with neighbors but the individual's location preference. People may also have chosen to move away from a neighborhood in which they did not make friends among the neighbors and may then have moved to a neighborhood in which they think the chances of making friends are higher (because the neighbors appear to be available for social interactions). Conversely, people who prefer to have their privacy may have consciously chosen to live in a neighborhood in which the neighbors appear to be particularly mobile and not interested in socializing.

To isolate some of these selection effects I test the hypothesis that physical and residential mobility effects in models for individuals, who may not have chosen the neighborhood in which they live, mirror that of the entire sample. I will assume that this is the case for individuals that are aged 16-29 and who are still living in their parent's household.

The problem of selection may also exist for virtual mobility. Early users of the Internet may be systematically different from the rest of the population which is problematic if these differences also determine the visiting behavior. The effects of Internet use of the particular user type can be separated from the effect of Internet use per se by interacting Internet use with those characteristics that are over-represented in the online community at 1999.[9] If selection is driving the virtual mobility effect, the effect of Internet use on visiting with neighbors will change substantially.

Unobserved Heterogeneity

The longitudinal structure of the dataset permits to make some controls for those unobserved characteristics of the individual that do not change over time. I estimate random effects models which use both the cross-sectional and the longitudinal information in the data.[10] We expect that the mobility-related effects on visiting with neighbors remain negative in the panel models.

Effects of Mobility on Visiting Family

A particular feature of this study is that we directly compare the effects of mobility on visiting with neighbors with that on visiting with family. This comparison is valuable because theory predicts that the effects of residential and physical mobility work in opposite directions (as long as the relevant family member does not live in the same neighborhood as the individual[11]). Frequent and recent movers have been shown to maintain close links to their families (by phone, email and post) rather than establishing contacts to new neighbors (e.g., Pelizäus-Hoffmeister 2001), and poor access to public transport prohibits face-to-face interactions with family members that live outside the neighborhood (e.g., Kenyon, Rafferty and Lyons 2003). The effects of virtual mobility, on the other hand, should be in the same direction, that is, Internet use takes away time from the individual to engage in face-to-face interactions with both neighbors and family. Thus, unless the results of our baseline

---

[9] Namely living in West Germany, being male ARD/ZDF-Arbeitsgruppe Multimedia. 1999. "ARD/ZDF-Online-Studie 1999: Wird Online Alltagsmedium?" *Media Perspektiven* 8:401-414., being 'young' (aged 16-29)van Eimeren, Birgit, and Heinz Gerhard. 2000. "ARD/ZDF-Online-Studie 2000: Gebrauchswert entscheidet über Internetnutzung." *Media Perspektiven* 8:338-349., and having an upper secondary school-leaving degree, see ECIN. 2002. "Digital Divide in Deutschland: ein Ost-West-Problem?" http://www.ecin.de/news/2002/06/05/04363.

[10] For a statistical representation of the models see Frees, Edward W. 2004. *Longitudinal and panel data: analysis and applications in the social sciences*: Cambridge University Press.

[11] Roughly ten percent of the German population have family neighbors, see Appendix 4.

models are confounded due to some unobserved characteristic that affect visiting with neighbors and not visiting with family, we can be more confident with the identified mobility effects if these effects turn to the opposite sign when we switch the dependent variable from visiting neighbors to visiting family.

Extension: The Impact of Having Mobile Neighbors

The decision over how much time to allocate to visiting neighbors is not at the individual's own discretion but also depends on how much time the neighbors are willing and able to allocate to this activity[12]. Having more mobile neighbors may also lead people who have a strong orientation towards visiting others towards visiting with family instead or because people visit so much with their family, they have no time to visit with their neighbors. It may therefore be more appropriate to model the two outcomes jointly rather than separate using a bivariate probit, i.e. an extension of the probit model (see Greene 2003).

FINDINGS

Associations between Mobility and Visiting Behavior

Table 5 shows the results of multivariate logit models for the outcome 'frequently visiting with neighbors' in 1999 and 2004. The first set of models only control for mobility indicators, showing that eight out of nine relevant coefficients that we expect to be negative are indeed negative. The only effect that goes in the opposite direction from what theory suggests is the positive effect of having good access to shared taxis (in both years). As argued above, this may be because shared taxis may actually stand for poor access to more flexible modes of transportation. Note that the effects of having access to modes of public transport on visiting in these parsimonious models are not just confounded effects of living in a city (easy access to the metro) or in a village (easy access to shared taxis). There is an effect of living in larger communities but controlling for it does not change the direction of the effects of transportation (see Appendix 5).

[12] For empirical evidence on the role of neighborhood residential mobility for cohesion see Sampson, Robert J. 1988. "Local friendship ties and community attachment in mass society: A multilevel systematic approach." *American Sociological Review* 53:766-802, —. 2001. "Linking the micro- and macrolevel dimensions of community social organisation." *Social Forces* 70:43-64.

Table 5
Mobility effects on visiting with neighbors, 1999 and 2004.

	All persons		Young persons aged 16-29 living with parents	
	1999	**2004**	**1999**	**2004**
Rented accommodation	-0.01	-0.01	-0.09	0.12
Length of stay in flat (comparison group: more than 10 years)				
less than 3 years	-0.45**	-0.38**	-0.95*	-0.63
3-5 years	-0.1	-0.18*	-0.46	-0.62*
6-10 years	-0.17*	-0.08	-0.13	0.01
Always access to own car	-0.14**	-0.05	*(dropped)*	*(dropped)*
Easy access to bus	-0.01	-0.06	0.11	-0.1
Easy access to metro	-0.29**	-0.25**	0.03	-0.34
Easy access to trains	-0.14**	-0.08	-0.01	0.16
Easy access to shared taxis	0.04	0.03	-0.11	-0.2
Uses the Internet at home	-0.44**	-0.05	-0.51**	-0.13
Constant	-0.55**	-0.83**	-0.68*	-0.87**
Log Likelihood	-4319.4	-4635.3	-490.5	-517.5
Observations	7,250	8,280	824	942

Notes: * significant at the 0.05 level. ** Significant at the 0.01 level.
Source: SOEP 21. Author's calculations.

However - as shown in Table 5 - the effect of access to transportation disappears when we restrict the sample to individuals aged 16-29 and living with parent(s). The results for residential mobility are also inconclusive for this sample, which suggests that some of the negative associations observed in the whole sample might be driven by neighborhood selection. The effects of virtual mobility, on the other hand, are more marked and remain statistically significant in the sub-sample of individuals who may not have chosen the particular neighborhood they live in. However, this sample is very small and also quite different from the entire population in terms of key socio-economic and demographic characteristics that may influence both visiting and being mobile.

The Effects of Socio-economic Characteristics and Mobility on Visiting Neighbors

Among the characteristics that have been suggested in the empirical and theoretical literature to have an impact on people's visiting behavior are age, income, employment status and education, and the household context. Table 6 reports the results of cross-sectional models for 1999 and 2004 that include controls for all of these alongside people's mobility portfolio.

Socio-economic characteristics

The results confirm that older people and families with young children are more likely to visit neighbors (e.g., Feiring and Lewis 1991). The same is true for less affluent people for who visiting neighbors at home may substitute for more expensive activities like eating out, traveling or going to the cinema. The assertion that unemployed people visit more because they have more time (see, e.g., Paugam and Russel 2000) finds no support. Cultural socialization within school (degree), the family (nationality) and the political system (East Germany), however, appears to strongly influence people's visiting behavior. Compared to those individuals who have a lower secondary school degree, graduates of more advanced school tracks have a lower probability of frequently visiting with neighbors. Germans also visit with neighbors much less than others. Finally, people living in the former East Germany were less likely to visit with neighbors in the earlier period. A possible explanation may be that people in East Germany trusted their neighbors less and a culture of visiting could not be established under the GDR regime which sanctioned people that got organized socially or politically. This effect disappeared over time, however, which is an interesting fact about the process of social assimilation between people in East and West Germany.

Mobility

The leading hypothesis that greater mobility is associated with less visiting is still supported when socio-economic characteristics are controlled for. The effect of residential mobility is in the hypothesized negative direction and the effects of how long individuals have lived in their accommodation are highly significant in both years. The effects of physical mobility on visiting are ambiguous (like they were in the parsimonious models) and do not systematically support the hypothesis that higher mobility leads to less visiting with neighbors.

The effect of virtual mobility drops substantially from 0.51 to 0.29 when we control for socio-economic characteristics. The effect also changes over time. In the first period there is a statistically significant negative effect, but this effect disappeared in 2004. A possible explanation for this may be that the more people use the Internet, the less negative implications this has for their frequency of visiting others. It may also be that the community of Internet users looks different in terms of socio-economic characteristics in these two years and that the effects may be the result of selection. The selection hypothesis finds no support from models including interaction terms for

characteristics of early-users and Internet use (see Appendix 6). Dropping 'typical' early users from the sample also does not change the results.

Table 6
Mobility effects on visiting with neighbors, 1999 and 2004.

	1999	2004
Rented accommodation	-0.08	-0.07
Length of stay in flat (comparison group: more than 10 years)		
less than 3 years	-0.48**	-0.50**
3-5 years	-0.14	-0.28**
6-10 years	-0.23**	-0.16*
Always access to own car	-0.03	0.01
Easy access to bus	0.02	-0.03
Easy access to metro	-0.22**	-0.19*
Easy access to trains	-0.08	-0.02
Easy access to shared taxis	0.05	0.05
Uses the Internet at home	-0.29**	0.03
Size of township (comparison group: village/small town)		
mid-sized town	-0.20**	-0.28**
city	-0.18*	-0.16*
Age	-0.02*	-0.02
$Age^2/100$	0.02*	0.02
Annual equivalised household income (log)	-0.30**	-0.23**
Male head/spouse employed	0.03	0.03
Female head/spouse employed	-0.06	-0.08
Highest school-leaving degree (comparison group: lower secondary school)		
intermediate school (Real.)	-0.09	-0.09
technical school (Fach-Abi)	-0.17	-0.22
upper secondary school (Abi)	-0.26**	-0.25**
none of the above	-0.01	-0.33**
German	-0.36**	-0.35**
Baby in household	-0.14	0.28
Kindergarten child in household	0.11	0.37**
Primary school child in household	0.14	0.23**
West Germany	0.18**	0.13
Constant	2.84**	2.01**
Log Likelihood	-4264.2	-4575.8
Observations	7,250	8,280

Notes: * significant at the 0.05 level. ** Significant at the 0.01 level.
Source: SOEP 21. Author's calculations.

Unobserved Heterogeneity

Table 7 reports the results of random-effects panel models[13] with controls for only mobility-related variables and – given its high significance in the cross-sectional models – community size. In addition, I fitted models that include controls for socio-economic and demographic characteristics of the individual and his/her household. It can be seen that the majority of the mobility-related effects are negative and statistically significant, which lends strong support for the hypothesis that residential, physical and virtual mobility lead to less visiting with neighbors. The associations between Internet use and visiting, which were highly significant and negative in 1999, are also highly significant and negative in the panel models for 1999.

Table 7
Random effects panel models for visiting with neighbors.

	Mobility + Community size controls	Full set of controls
Rented accommodation	0.08	-0.03
Length of stay in flat (comparison group: more than 10 years)		
less than 3 years	-0.58**	-0.70**
3-5 years	-0.15	-0.27**
6-10 years	-0.20**	-0.30**
Always access to own car	-0.17**	-0.08
Easy access to bus	-0.06	-0.05
Easy access to metro	-0.32**	-0.29**
Easy access to trains	-0.19**	-0.14*
Easy access to shared taxis	0.07	0.07
Uses the Internet at home	-0.38**	-0.30**
Size of township (comparison group: village/small town)		
mid-sized town	-0.22**	-0.24**
city	-0.19*	-0.19*
Constant	-0.87**	3.84**
Observations	7,250	7,250

Notes: * Significant at the 0.05 level. ** Significant at the 0.01 level.
Source: SOEP 21. Author's calculations.

The Effects of Mobility on Visiting Family

All models were also fitted for the outcome "visiting with family". Selected findings are reported in Table 8. The effects of mobility on visiting with family point in the hypothesized direction: There are positive associations between being more residentially mobile and visiting with family, and this is statistically highly significant. The results on

[13] I also estimated fixed-effects models. Results are reported in Appendix 7.

the association with different modes of transportation are inconclusive and statistically not significant. Finally, there is a strong and statistically significant negative effect of having Internet access at home in both years.

The effects of socio-economic characteristics on visiting are very similar irrespective of the outcome variable (not reported). The only notable differences are that there is no effect of community size on visiting with family, and that there is a negative effect of the male head of the household being employed on visiting with family. Family visits are also about twice as likely as visits with neighbors when a child of kindergarten age lives in the household. Since we do not know anything about where the relevant family lives, it is difficult to explain this difference.

Table 8
Effects of mobility and socio-economic characteristics on visiting with family

	1999		2004		Random Effects	
	Mobility + Community size controls	Full set of controls	Mobility + Community size controls	Full set of controls	Mobility + Community size controls	Full set of controls
Rented accommodation	0.11*	-0.05	0.18**	0.1	0.22**	0.14*
Length of residence (comp. group: more than 10 years)						
less than 3 years	0.30**	0.27**	0.43**	0.28**	0.46**	0.34**
3-5 years	0.24**	0.21**	0.13*	-0.02	0.33**	0.20*
6-10 years	0.17**	0.11	0.15**	0.07	0.23**	0.13
Always access to own car	-0.14**	0	0.03	0.14**	-0.08	0.01
Easy access to bus	0.17	0.20*	0.14	0.16	0.24*	0.27**
Easy access to metro	-0.26**	-0.26**	-0.22**	-0.24**	-0.31**	-0.28**
Easy access to trains	-0.05	0.03	-0.01	0.05	-0.02	0.05
Easy access to shared taxis	-0.11	-0.12	-0.01	-0.01	-0.06	-0.06
Uses the Internet at home	-0.54**	-0.34**	-0.22**	-0.13*	-0.47**	-0.38**
Constant	0.09	2.23**	-0.02	1.65**	-0.28*	2.93**
Observations	7,248	7,248	8,290	8,290	7,248	7,248

Notes: * significant at the 0.05 level. ** significant at the 0.01 level.
Source: SOEP 21. Author's calculations.

Overall, this suggests that the hypotheses regarding the effects of residential mobility and virtual mobility on visiting are supported. The hypothesis that greater physical mobility leads to less visiting with neighbors and more visiting with family is not supported by the empirical evidence.

Extension: The Impact of Having Mobile Neighbors

Finally, we may ask how much of an effect on visiting with neighbors and with family there is of having more residentially, physically and virtually mobile neighbors. Controlling for visiting with neighbors, the associations between own mobility and visiting with family are in the hypothesized direction and, as we would have expected, there are no neighborhood mobility effects.[14] The only two mobility indicators that appear to make a significant difference to whether or not people visit frequently with their neighbors are length of residence in the neighborhood and how much one's neighbors are orientated towards using the Internet. The bivariate probit is highly significant.[15] Note that these results may not be robust to unobserved heterogeneity both at the personal and the neighborhood level.

Table 9
Bivariate probit regressions of the effect of own mobility and neighbors' mobility on visiting with neighbors and family, 2004.

	Visiting with Neighbors	Visiting with Family
Rented accommodation	-0.03	0.08*
Length of stay in flat (comparison group: more than 10 years)		
less than 3 years	-0.28**	0.15*
3-5 years	-0.18**	-0.02
6-10 years	-0.11**	0.04
Always access to own car	0.01	0.08*
Uses the Internet at home	0.02	-0.08*
Neighbors' Mobility		
Has residentially more mobile neighbors	-0.01	0
Has physically more mobile neighbors	0	0.01
Has virtually more mobile neighbors	-0.02**	-0.01
Size of township (comparison group: village/small town)		
mid-sized town	-0.16**	-0.03
city	-0.11*	-0.04
Constant	1.18**	1.04**
Log Likelihood	-9753.15	
Observations	7958	
Rho	0.11**	

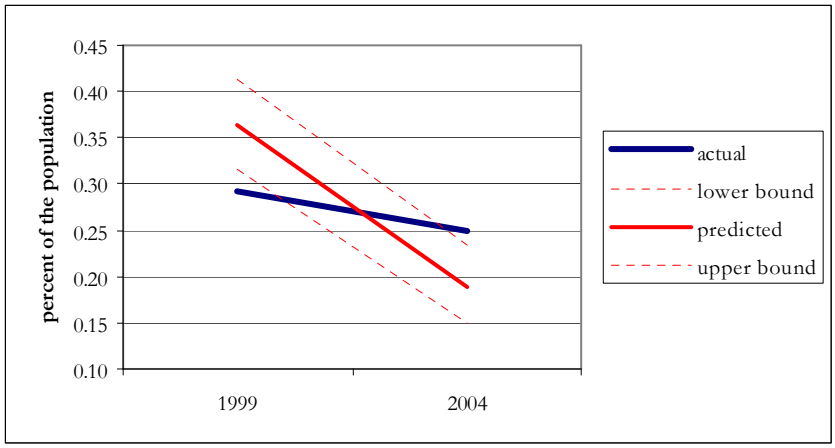
Notes: * Significant at the 0.05 level. ** Significant at the 0.01 level.
Source: SOEP 21. Author's calculations.

[14] If the family lives outside the neighborhood, it is the family's mobility that should affect visits with the family, not the neighbors'.
[15] As indicated by the ancillary indicator *Rho* (Chi^2 =33.81, df=1, p=0.00).

Illustrations of the Effects of Increases in Mobility on the Probability of Visiting with Neighbors and Family

Figure 1 illustrates how substantive the changes in mobility are relative to the aggregate change in visiting by comparing the actual observed change in visiting with that we would observe if the completely immobile persons we observe in 1999 had become completely mobile in 2004. The actual proportion of persons visiting with neighbors in 1999 and 2004 are 29 percent and 25 percent, respectively. The predicted decline is much higher than these 4 percentage points - from 32 percent to 15 percent.[16]

Figure 1
Difference between actual change in visiting with neighbors from 1999 to 2004 and predicted change due to increases in mobility



The results obtained in the multivariate models can also be used to calculate the visiting probabilities for a number of stylized individuals. I calculated the probabilities for six stylized individuals[17] on the basis of the random effects logit models.

The visiting probabilities of Case 5 and Case 6 indicate the range of the size of all mobility effects taken together, i.e., when people are either 'completely immobile' (Case 5) or 'completely mobile' (Case 6). Cases 2, 3 and 4 compared to Case 5 show the effect of being residentially (Case 2), physically (Case 3) or virtually mobile (Case 4) compared to not being mobile at all (Case 5). The visiting probabilities of Case 1 are that of an average sample member in 1999.

[16] In fact, we predict the likelihood to visit for people that do neither exist in our sample nor in the real world as we fix all individual characteristics that do not relate to mobility at the sample mean in 1999. This implies, for instance, that people's gender is not male or female but the proportion of females observed in the 1999 sample.
[17] Appendix 8 lists the characteristics of these.

Table 10 shows that the probability of visiting with family is higher than the probability of visiting with neighbors for each stylized individual. The average individual, for instance, has a 31 percent probability of visiting frequently with neighbors and a 51 percent probability of visiting frequently with family. Completely mobile individual has a more than 50 percent lower probability of visiting with neighbors than the completely immobile (17 compared to 37 percent). The probability of visiting with family is virtually the same for both cases (46 compared to 45 percent). This is due to the fact that some forms of mobility increase the probability of visiting with family and some decrease it.

Table 10
Predicted probabilities for visiting with neighbors and family for six stylized individuals.

	Visiting with Neighbors	**Visiting with Family**
Case 1: Average person	0.20	0.54
Case 2: Highly residentially mobile, no other mobility	0.16	0.55
Case 3: Highly physically mobile, no other mobility	0.19	0.43
Case 4: Highly virtually mobile, no other mobility	0.22	0.35
Case 5: Entirely immobile	0.28	0.44
Case 6: Entirely mobile	0.08	0.45

Source: SOEP 21. Author's calculations.

Table 11 displays the differences between the visiting probabilities of our completely immobile individual (Case 5) and each of the other cases. These differences can be interpreted as the effects of increases in the respective mobility. All stylized individuals that are more mobile than Case 5 have a lower probability of visiting with their neighbors. The probability of visiting with neighbors would fall most if our completely immobile individual became completely mobile (20 percentage points). On the other hand, all stylized individuals except the virtually mobile individual have a higher probability than Case 5 of visiting with family.

Of the three different kinds of mobility, it is residential mobility that leads to the biggest fall in the probability of visiting with neighbors (12 percentage points), but this change in mobility is also associated with the biggest rise in the probability to visit with family (12 percentage points). Physical mobility is associated with a fall of nine percentage points in visiting neighbors and with no change in the probability of visiting with family. Virtual mobility leads to a decline of six percentage points in the probability of visiting with neighbors and of nine percentage points in the probability of visiting with family.

The negative effects of higher residential and physical mobility on visiting with neighbors are to some extent compensated for, but not outweighed, by their positive effects on visiting with family. The negative effects of Internet use on visiting with both family and neighbors add up to a total decline of 15 percentage points in the probability of visiting.

Table 11
Difference in the probability of visiting with neighbors and with family between an entirely immobile individual (Case 5) and more mobile individuals (Cases 1-4, Case 6). In percentage points.

	'Effect' on Probability to Visit with Neighbors	'Effect' on Probability to Visit with Family
Average increase in mobility (Case 1 – Case 5)	-0.08	0.10
Increase in residential mobility (Case 2 – Case 5)	-0.12	0.12
Increase in physical mobility (Case 3 – Case 5)	-0.09	-0.00
Increase in virtual mobility (Case 4 – Case 5)	-0.06	-0.09
Increase in all forms of mobility (Case 6 – Case 5)	-0.20	0.02

Source: SOEP 21. Author's calculations.

Conclusions

Mobility has been suggested to undermine the importance of peoples' local circumstances for their social lives and personal well-being for many decades. To test empirically whether this is indeed the case - and to what extend - I matched data from a number of different sources to shed light on the effects of increases in residential, physical and virtual mobility on peoples' social relations with neighbors and, for comparison, family.

The results confirm that increases in mobility are associated with a lower probability of visiting with neighbors. But mobile individuals are also more likely to visit with family. Virtually mobile individuals are less likely to visit with either. These effects are robust to controlling for unobserved individual heterogeneity.

Since increases in mobility are associated not only with declines in visiting with neighbors but also with increases in visiting with family, I calculated the probabilities of a number of stylized individuals frequently visiting with family and neighbors. Of the three types of mobility, residential mobility leads to the biggest fall in the probability of visiting with neighbors and, conversely, to the biggest rise in the probability of visiting with family. Physical mobility is associated with the second biggest fall in the probability of visiting neighbors and with no change in the probability of visiting family.

The negative effects of residential and, to a lesser extent, physical mobility on visiting with neighbors are counteracted by their positive effects on visiting with family. Virtual mobility, however, leads to an equal-sized decline in the probability of visiting with both neighbors and family. This is alarming given that connecting everyone in Germany to the Internet is an expressed political goal. Since 2001, every school in Germany has been connected to the Internet, which means that in the future, every young person will use the Internet at some point during their education. Furthermore, as Internet access expands and prices for the connection and technical equipment drop, more people will likely have access at home. In 2006, 60 percent of the population is already using the Internet, and this percentage can be expected to increase in the future. Hence, there might be scope for further declines in visiting with neighbors and with family. However, our results also show that the effects of Internet use have become less significant over time, which suggests that this effect may not persist.

Overall, this analysis shows that neighborhood ties are more at risk than family ties when people become more residentially, physically and virtually mobile. This may be due to the social norm that people should be on good terms with their family and make a visit every now and then. Such norms do not exist, at least in Germany, for neighborhood social relations. On the contrary, our literature review of community studies in Germany has shown that the social norm is *not* to have close contacts to neighbors but, rather, to keep them distant.

REFERENCES

ARD/ZDF-Arbeitsgruppe Multimedia. 1999. "ARD/ZDF-Online-Studie 1999: Wird Online Alltagsmedium?" *Media Perspektiven* 8:401-414.

Aronson, Sidney H. 1971. "The sociology of the telephone." *International Journal of Comparative Sociology* 12:153-167.

Bauman, Zygmunt. 2000. *Liquid Modernity*. Cambridge: Polity Press.

Beck, Ulrich. 1986. *Risk society: towards a new modernity (Translated from the German "Risikogesellschaft" published by Suhrkamp in 1986)*. New Delhi: Sage.

Belot, Michèle, and John Ermisch. 2006. "Friendship ties and geographical mobility, evidence from the BHPS." in *ISER Working Paper*. Colchester: University of Essex.

Diener, Ed, E. M. Suh, Richard E. Lucas, and H. L. Smith. 1999. "Subjective well-being: Three decades of progress." *Psychological Bulletin* 125:276-302.

Durkheim, Emile. 1893. *The division of labour in society*. New York: Macmillan.

ECIN. 2002. "Digital Divide in Deutschland: ein Ost-West-Problem?" http://www.ecin.de/news/2002/06/05/04363.

Etzioni, Armitai. 1993. *The spirit of the community. Rights, responsibilities and the communitarian agenda*. New York: Crown Publishers.

Feiring, Candice, and Michael Lewis. 1991. "The development of social networks from early to middle childhood: gender differences and the relation to school competence." *Sex Roles* 25:237-253.

Frees, Edward W. 2004. *Longitudinal and panel data: analysis and applications in the social sciences*: Cambridge University Press.

Giddens, Anthony. 1991. *Modernity and Self Identity*. Cambridge: Polity Press.

Greene, William H. 2003. *Econometric analysis*. New Jersey: Prentice Hall.

Ioannides, Yannis M., and Jeffrey E. Zabel. 2002. "Interactions, neighborhood selection and housing demand." in *Department of Economics Working Paper*. Medford: Tufts University.

—. 2003. "Neighborhood effects and housing demand." *Journal of Applied Econometrics* 18:563-584.

Jacobson, David E. 1986. "Types and timing of social support." *Journal of Health and Social Behavior* 27:250-264.

Kasarda, John D., and Morris Janowitz. 1974. "Community attachment in mass society." *American Sociological Review* 39.

Kenyon, Susan, Jackie Rafferty, and Glenn Lyons. 2003. "Social Exclusion and Transport: A role for virtual accessibility in the alleviation of mobility related social exclusion?" *Journal of Social Policy* 32:317-338.

Kling, Jeffrey R., and Jeffrey B. Liebman. 2004. "Experimental analysis of neighborhood effects on youth."

Lee, Barrett A., and Karen E. Campbell. 1999. "Neighbor networks of black and white Americans." Pp. 119-146 in *Networks in the global village. Life in contemporary communities*, edited by Barry Wellman. Colorado & Oxford: Westview Press.

Logan, John R., and Glenna D. Spitze. 1994. "Family neighbors." *American Journal of Sociology* 100:453-476.

Long, J. Scott, and Jeremy Freese. 2003. *Regression models for categorical dependent variables using STATA*. College Station, Texas: Stata Press.

Matei, Sorin, and Sandra J. Ball-Rokeach. 2001. "Real and virtual social ties. Connections if everyday lives of seven ethnic neighbourhoods." *American Behavioral Scientist* 45:550-564.

Mayntz, Renate. 1958. *Soziale Schichtung und sozialer Wandel in einer Industriegemeinde: Eine soziologische Untersuchung der Stadt Euskirchen*. Stuttgart: Enke.

Nie, N. H. 2001. "Sociability, interpersonal relations, and the Internet - Reconciling conflicting findings." *American Behavioral Scientist* 45:420-435.

Park, Robert E., and Ernest W. Burgess. 1925. *The city. Suggestions for investigation of human behaviour in the urban environment.* Chicago: Chicago University Press.

Paugam, Serge, and Helga Russel. 2000. "The effects of employment precarity and unemployment on social isolation." Pp. 243-264 in *Welfare regimes and the experience of unemployment in Europe.*, edited by D. Gallie and Serge Paugam. Oxford: Oxford University Press.

Pelizäus-Hoffmeister, Helga. 2001. *Mobilität: Chance oder Risiko für soziale Beziehungen? Soziale Netzwerke unter den Bedingungen räumlicher Mobilität - das Beispiel freie JournalistInnen*. Obladen: Leske + Budrich.

Pickup, Laurie, and Genevieve Giuliano. 2005. "Transport and social exclusion in the US." in *Social dimensions of sustainable transport: Transatlantic perspectives.*, edited by Kieran Donaghy, Stefan Poppelreuter, and Georg Rudinger. London: Ashgate.

Sampson, Robert J. 1988. "Local friendship ties and community attachment in mass society: A multilevel systematic approach." *American Sociological Review* 53:766-802.

—. 2001. "Linking the micro- and macrolevel dimensions of community social organisation." *Social Forces* 70:43-64.

Sampson, Robert J., Jeffrey D. Morenoff, and Felton Earls. 1999. " Beyond Social Capital: Spatial Dynamics of Collective Efficacy for Children." *American Sociological Review* 64: 633-660.

Schmitt, Christoph. 2005. "Informelle soziale Beziehungen." in *Berichterstattung zur sozio-oekonomischen Entwicklung in Deutschland. Arbeit und Lebensweisen. Erster Bericht.*, edited by Soziologisches Forschungsinstitut / IAB SOFI, Institut fuer Arbeitsmarkt- u. Berufsforschung / ISF Institut fuer Sozialwissenschaftliche Forschung Munich/ INIFES, Internationales Institut fuer empirische Sozialfkonomie. Wiesbaden: VS Verlag fuer Sozialwissenschaften.

Sennett, Richard. 1998. *The corrosion of character: The personal consequences of work in the New Capitalism*. New York: WW Norton Press.

Shklovski, Irina. 2007. "Residential mobility, technology and social ties." Pp. 130 in *School of Computer Science*. Pittsburgh: Carnegy Mellon University.

Shklovski, Irina, Robert Kraut, and Lee Rainie. 2004. "The Internet and social participation: Contrasting cross-sectional and longitudinal analyses." *Journal of Computer-Mediated Communication* 10.

Simmel, Georg. 1908. "Group expansion and the development of individuality." Pp. 251-293 in *Georg Simmel: On Individuality and social forms.*, edited by D. N. Levine. Chicago: University of Chicago Press.

Tobey, Ronald, Charles Wetherell, and Jay Brigham. 1990. "Moving out and settling in: Residential mobility, home owning, and the public enframing of citizenship, 1921-1950." *American Historical Review* 95:1395-1422.

Tönnies, Ferdinand. 1887. *Community and association*. London: Routledge & Kegan Paul.
Unger, Donald G. , and Abraham Wandersman. 1985. "The importance of neighbors: The social, cognitive, and affective components of neighboring." *American Journal of Community Psychology* 13.
van Eimeren, Birgit, and Heinz Gerhard. 2000. "ARD/ZDF-Online-Studie 2000: Gebrauchswert entscheidet über Internetnutzung." *Media Perspektiven* 8:338-349.
Vierecke, Kurt Dieter. 1972. *Nachbarschaft. Ein Beitrag zur Stadtsoziologie*. Cologne: Verlag J. P. Bachem.
Warner, W. Lloyd, J. O. Low, Paul S. Lunt, and Leo Srole. 1963. *Yankee City - The social life of a modern community*. New Haven and London: Yale University Press.
Weber, Max. 1958. *Wirtschaft und Gesellschaft*. Tübingen.
Wellman, Barry. 1979. "The community question. The intimate networks of East Yorkers." *American Journal of Sociology* 84:1201-1231.
—. 2001a. "The persistence and transformation of community: from neighbourhood groups to social networks." Pp. 1-96. Toronto.
—. 2001b. "Physical Place and Cyberplace: The Rise of Personalized Networking." *International Journal of Urban and Regional Research* 25:227-252.
Wellman, Barry, and Barry Leighton. 1979. "Networks, neighborhoods, and communities." *Urban Affairs Quarterly* 14:363-390.
Wirth, Louis. 1938. "Urbanism as a way of life." *American Journal of Sociology* 44:1-24.
Zapf, Katrin, Karolus Heinz Heil, and Justus Rudolph. 1969. *Stadt am Stadtrand. Eine vergleichende Untersuchung in vier Münchner Neubausiedlungen.* Frankfurt: Europäische Verlagsanstalt.

Appendix

Appendix 1
Description of variables used in the multivariate models 1994 and 1999

Variable Name	Description
Visiting with neighbors	The response to the question addressed at the head of household in 1994, 1999 and 2004: "Do you have neighbors with whom you get on so well that you visit each other?", and if answered affirmatively, the response to the question "How often do you visit each other usually?" The four answer categories are [1] almost daily, [2] at least once a week, [3] at least once a month, and [4] less than once a month. We combine the information from the two variables to create a fifth category to the latter variable, which equals zero if no visits with neighbors take place. We assign the information provided by the head of household to all other members of the household, and create a dummy variable that indicates whether visits with neighbors do take place at least weekly [1] or not [0].
Visiting with family	The response to the question addressed at individuals in 1995, 1998 and 2003: "How often do you visit with family members or relatives?" The term 'visit with' refers to visits at either home, and we refer to all relatives outside the respondent's household as 'family'. The individual can choose between five different answer categories: [1] daily, [2] once per week, [3] once per month, [4] less than once per month, and [5] never. We create a dummy variable that captures whether visits with family and relatives take place at least once a week [1] or not [0].
Residential Mobility	A) Length of time an individual has lived at the current address. We actually measure the date when the individual moved in, so higher values on this measure represent a shorter length of stay in the current neighborhood, and indicate greater mobility. B) Dummy variable that flags whether or not a person lives in rented accommodation.
Physical Mobility	A) In 1998 and 2003, respondents were asked: "What types of public transportation are available in your town or city of residence? If available, please indicate if access to this mode of transportation is good or poor and whether you use it regularly or occasionally." The list of modes of transportation includes buses, metros, trams, trains, and shared taxis. We employ as our measure of physical mobility a set of dummy variables about easy access to the respective mode. B) The SOEP surveys of 1995, 1998 and 2003 provide information on the availability of a car. The question reads "Do you always or at least sometimes have access to a car for your personal use?" and the answer categories are [0] no, [1] yes, sometimes, and [2] yes, always. We create a dummy variable on always having access to a car.
Virtual Mobility	In 2000, individuals were asked "Do you use a computer or Internet at home or at work (or in your education)?", and individuals could tick boxes for whether they used the Internet at home, at work, or not at all. In 2001 respondents were asked "Do you use a computer or Internet at home or at work? If yes, since when?" In 2003, the question about Internet use at home is integrated in a battery of questions relating to how individuals spend their time. Individuals were asked whether they use the Internet at home [1] daily, [2] at least once a week, [3] at least once a month, [4] seldom, or [5] never. We use the 2001 information to establish whether or not an individual uses the Internet at home in 1999. For 2004, we generated a dummy that equals one if an individual uses the Internet at home in 2003 and zero otherwise.
Household context	In terms of the household context we control for whether or not children are present. We distinguish whether or not individuals live in a household unit with a baby (aged 0-2), a child of kindergarten-age (3-5), or a child of primary-school age (6-11).
Employment status	We do not control for the individual's employment status but for whether or not the head of household or his/her spouse are employed. This is because we suspect that the time available for either adult head of household to visit with neighbors is more important in determining the family's contact with neighbors than, for instance, whether the 20-year-old son works (recall that the information on visiting with neighbors is collected on the household level, not the individual level). Theory suggests that it is the female partners who are most likely to monitor the families' social contacts, so we differentiate between whether or not the female or male head/spouse of head in the household is employed.

Education	The indicator is provided by the SOEP Group in the wave-specific 'pgen' datasets, and the categories are '*Hauptschulabschluss*' (lower secondary school), '*Realschulabschluss*' (intermediate school), '*Fachabitur*' (technical school), '*Abitur*' (upper secondary school) and '*none of these/ not yet /dropped out without a certificate*' (none of the above).
Annual per capita household income (log)	The annual household income information is taken from the Cross-National-Equivalent-File (CNEF) instrument of the SOEP.[18] Annual household incomes are deflated by adult-equivalents. Using the old OECD scale (also called Oxford scale)[19] we assigned a weight of 1 to the first adult in the household, a weight of 0.7 to every other member of the household above the age of 14, and a weight of 0.5 for each member of the household below the age of 14.
Neighborhood context	We control for the size of the community and differentiate between villages/small towns which comprise up to 20,000 inhabitants, mid-sized towns of 20,000-100,000 inhabitants, and cities with more than 100,000 inhabitants.[20]
Having residentially more mobile neighbors	This variable is provided by Microm GmbH and expresses how much fluctuation there is in the neighborhood population compared to all neighborhoods. It takes the values [1] lowest fluctuation, [2] far below average fluctuation, [3] below average fluctuation, [4] slightly below average fluctuation [5] average fluctuation, and so forth until [9] highest fluctuation. The average size of the neighborhood is 28 households.
Having physically more mobile neighbors	This variable is provided by Microm GmbH and expresses how the car density in the neighborhood compares to that in all neighborhoods. It takes the values [1] lowest density, [2] far below average density, [3] below average density, [4] slightly below average density [5] average density, and so forth until [9] highest density. The average size of the neighborhood is 28 households.
Having virtually more mobile neighbors	This variable is provided by Microm GmbH and expresses how affine the neighborhood population is for Internet use compared to that in all neighborhoods. It takes the values [1] lowest affinity, [2] far below average affinity, [3] below average affinity, [4] slightly below average affinity [5] average affinity, and so forth until [9] highest affinity. The average size of the neighborhood is 28 households.

[18] Compare http://www.human.cornell.edu/pam/SOEP/equiv/g-equiv2.pdf , p. 9ff.

[19] See http://www.oecd.org/dataoecd/61/52/35411111.pdf for further information. Downloaded 30 October 2006.

[20] We also tested whether the type of house people live in impacts on their socialising with neighbours but no significant effects were found. Therefore, we did not include any of the results here.

Appendix 2
Summary statistics of variables used in the multivariate analyses 1999 and 2004

	1999				2004			
	Mean[1]	*Standard Deviation*	*Min*	*Max*	*Mean*[1]	*Standard Deviation*	*Min*	*Max*
Frequent visits with neighbors	0.3	0.5	0	1	0.2	0.4	0	1
Lives in own flat	0.5	0.5	0	1	0.6	0.5	0	1
Year moved into property	1983	14.1	1904	1998	1987	14.8	1907	2003
Length of stay in flat								
less than 3 years	0.1	0.3	0	1	0.1	0.3	0	1
3-5 years	0.2	0.4	0	1	0.2	0.4	0	1
6-10 years	0.2	0.4	0	1	0.2	0.4	0	1
more than 10 years	0.5	0.5	0	1	0.6	0.5	0	1
Access to own car								
no access	0.3	0.5	0	1	0.2	0.4	0	1
occasionally	0.1	0.3	0	1	0.1	0.3	0	1
always	0.6	0.5	0	1	0.7	0.5	0	1
Easy access to bus	0.9	0.3	0	1	0.9	0.3	0	1
Easy access to metro	0.2	0.4	0	1	0.2	0.4	0	1
Easy access to train	0.4	0.5	0	1	0.5	0.5	0	1
Easy access to shared taxi	0.2	0.4	0	1	0.2	0.4	0	1
Access to Internet	0.2	0.4	0	1	0.5	0.5	0	1
Lives in …								
village/small town	0.5	0.5	0	1	0.5	0.5	0	1
mid-sized town	0.3	0.4	0	1	0.3	0.4	0	1
city	0.3	0.4	0	1	0.3	0.5	0	1
Age	47.9	16.2	17	96	49.5	16.5	19	96
Annual equivalised household income (log)	9.5	0.4	6.7	11.8	9.7	0.5	7.0	13.7
German	0.9	0.3	0	1	0.9	0.3	0	1
Lives in West Germany	0.7	0.4	0	1	0.8	0.4	0	1

Continues next page

Appendix 3
Summary statistics of variables used in the multivariate analyses 1999 and 2004

	1999				2004			
	Mean[1]	*Standard Deviation*	*Min*	*Max*	*Mean*[1]	*Standard Deviation*	*Min*	*Max*
Highest school-leaving degree								
lower secondary school	0.4	0.5	0	1	0.4	0.5	0	1
intermediate school	0.3	0.4	0	1	0.3	0.5	0	1
technical school	0.1	0.3	0	1	0.2	0.4	0	1
upper secondary school	0.1	0.4	0	1	0.1	0.3	0	1
Employed	0.6	0.5	0	1	0.7	0.5	0	1
Female head/spouse is employed	0.4	0.5	0	1	0.7	0.5	0	1
Male head/spouse is employed	0.6	0.5	0	1	0.6	0.5	0	1
Baby in household	0.03	0.2	0	1	0.02	0.1	0	1
Kindergarten child in household	0.1	0.3	0	1	0.1	0.2	0	1
Primary school child in household	0.2	0.4	0	1	0.1	0.3	0	1

Notes: 1 Values reported for dummy variables refer to number of observations for which this outcome is true. Multiplied by 100 this number refers to percent of the population.
Source: SOEP 21. Author's calculations.

Appendix 4
Percent of the population that has relatives in their neighborhood/house, 1996 and 2001.

	1996		2001	
	percent with family neighbors	*unweighted frequency*	*percent with family neighbors*	*unweighted frequency*
1st order relatives (parents, siblings, sons or daughters)	9.6	11,787	9.2	19,945
Other relatives	8.0	9,793	8.0	15,955

Source: SOEP 21. Author's calculations.

Appendix 5
The effect of adding community size controls on the mobility effects on visiting with neighbors and family, 1999 and 2004.

	Visiting with Neighbors		Visiting with Family	
	1999	**2004**	**1999**	**2004**
Homeowner	-0.03	-0.02	-0.09	-0.18**
Length of stay in flat (comparison group: more than 10 years)				
less than 3 years	-0.46**	-0.39**	0.30**	0.43**
3-5 years	-0.11	-0.17*	0.25**	0.13*
6-10 years	-0.17*	-0.09	0.17**	0.15**
Always access to own car	-0.15**	-0.05	-0.14**	0.03
Easy access to bus	0	-0.04	0.16	0.14
Easy access to metro	-0.24**	-0.21**	-0.27**	-0.23**
Easy access to trains	-0.14*	-0.07	-0.06	-0.01
Easy access to shared taxis	0.06	0.05	-0.12	-0.01
Uses the Internet at home	-0.43**	-0.05	-0.55**	-0.22**
Size of township (comparison group: village/small town)				
mid-sized town	-0.15*	-0.27**	0.13*	-0.01
city	-0.16*	-0.17*	0.07	0.02
Constant	-0.47**	-0.74**	0.04	-0.02
Log Likelihood	-4,626.1	-4,318.7	-4,947.8	-5,699.1
Observations	7,250	8,280	7,248	8,290

Notes: * significant at the 0.05 level. ** Significant at the 0.01 level.
Source: SOEP 21. Author's calculations.

Appendix 6
Disentangling the effect of virtual mobility on visiting with neighbors, 1999 and 2004. Coefficients on Internet use interacted with individual characteristics that are associated with a high Internet affinity

1999	**A**	**B**	**C**	**D**	**E**	**F**
Uses the Internet at home	-0.30**	-0.45*	-0.26	-0.35**	-0.31**	-0.31**
West Germany		0.16*				
Internet user in West Germany		0.19				
Male			0.06			
Male Internet user			-0.07			
Upper secondary school (Abi)				-0.34**		
Internet user with upper secondary school degree				0.21		
Young					-0.04	
Young Internet user					0.03	
Young male with upper secondary school degree in West Germany /'net affine type'						-0.22
Young male Internet user with upper secondary school degree in West Germany/ 'typical user'						0.51
Constant	2.86**	2.89**	2.86**	2.84**	2.86**	2.86**
Log Likelihood	-4,265.5	-4,265.0	-4,265.4	-4,264.9	-4,265.5	-4,265.2
Observations	7,250	7,250	7,250	7,250	7,250	7,250
2004	**A**	**B**	**C**	**D**	**E**	**F**
Uses the Internet at home	0.03	-0.13	0.03	0.02	0	0.03
West Germany[1)]		0.02				
Internet user in West Germany		0.21				
Male			-0.05			
Male Internet user			0			
Upper secondary school (Abi) [1)]				-0.28		
Internet user with upper secondary school degree				0.02		
Young					-0.52**	
Young Internet user					0.21	
Young male with upper secondary school degree in West Germany /'net affine type'						0.48
Young male Internet user with upper secondary school degree in West Germany/ 'typical user'						-0.28
Constant	2.87**	2.99**	2.87**	2.86**	2.87**	2.87**
Log Likelihood	-4,572.7	-4,571.2	-4,572.7	-4,572.7	-4,571.9	-4,572.6
Observations	8,280	8,280	8,280	8,280	8,280	8,280

Notes: * significant at the 0.05 level. ** Significant at the 0.01 level.
Source: SOEP 21. Author's calculations.

Appendix 7
Fixed-effects models for visiting with neighbors and family.

	Visiting with Neighbors		Visiting with Family	
Lives in own flat	-0.11	-0.06	-0.35*	-0.29
Length of stay in flat (comparison group: more than 10 years)				
less than 3 years	-0.23	-0.26	0.42**	0.28
3-5 years	0.09	0.02	0.31**	0.21
6-10 years	0.06	0.02	0.15	0.06
Always access to own car	-0.04	-0.04	0.08	0.09
Easy access to bus	-0.06	-0.1	0.1	0.09
Easy access to metro	0.14	0.15	-0.12	-0.14
Easy access to trains	0.05	0.03	0.16	0.15
Easy access to shared taxis	0.11	0.1	-0.1	-0.09
Uses the Internet at home	-0.31**	-0.21	-0.06	-0.01
Size of township (comparison group: village/small town)				
mid-sized town	-0.53	-0.54	0.17	0.2
city	0.19	0.26	0.48	0.55
West Germany	-0.28	-0.27	-0.62	-0.5
Annual equivalised household income (log)		-0.23		-0.12
Male head/spouse employed		0.04		-0.01
Female head/spouse employed		-0.09		-0.15
Kindergarten child in household		0.47**		1.03**
Primary school child in household		0.36**		0.24*
Observations	3,680	3,680	4,242	4,240
Number of never changing person id	1,840	1,840	2,121	2,120

Notes: * Significant at the 0.05 level. ** Significant at the 0.01 level.
Source: SOEP 21. Author's calculations.

Appendix 8
Characteristics of stylized individuals.

Case 1	An average individual (given mean characteristics of sample members in 1999) is a homeowner, has lived in his/her flat for more than 10 years, has a car, has good access to bus lines but to no other public transportation, lives in a village/small town, the male head/spouse of the household is employed, the female head/spouse of the household is not employed, has no child of kindergarten age, has no child of primary school age, lives in West Germany, is 48 years old (age2/100=25.51), his/her logged equivalent household income is 9.4979.
Case 2	Mobility related variables are set to 'least mobile'; characteristics of residential mobility are set to 'most mobile', all others as for the average individual.
Case 3	Mobility related variables are set to 'least mobile'; characteristics of physical mobility are set to 'most mobile', all others as for the average individual.
Case 4	Mobility related variables are set to 'least mobile'; characteristics of virtual mobility are set to 'most mobile', all others as for the average individual.
Case 5	All mobility related variables are set to 'least mobile', all others as for the average individual.
Case 6	All mobility related variables are set to 'most mobile', all others as for the average individual.