

Article

Digitization as a Driver for Rural Development—An Indicative Description of German Coworking Space Users

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Abstract: Background: The urban-rural land divide is visible through where people choose to work. This article aims to detect how, where and why people use rural coworking spaces instead of or in addition to working in urban areas. Methods: The research relied on both documented evidence and a structured survey among users of coworking spaces. Results: We found that the choice of working in rural coworking spaces draws on certain benefits and opportunities for its users, such as avoiding social isolation, separating private and professional life, reducing the commuting. An additional benefit for rural towns and villages is that the presence of a coworking space can make the location more vital, lively and attractive. Conclusions (and recommendations): Coworking space could partially bridge the urban-rural land divide. However, understanding this requires more insights in the behavior of rural coworking space users. Further research could look into modelling cause-effect relations and predicting coworking user behavior and the effect on their environment.

Keywords: rural development; rural land use; remote work; coworking spaces; digitization; urban-rural divide; town center revitalization



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1. Introduction

The structure of the article is as follows: we first describe the framework of spatial disparities, the role of work, and the development of remote work in Section 1. In Section 2 we formulate and focus the research question. In Section 3 we describe the methodology through which we address the research question. In Section 4 we display the results of the survey, in Section 5 we discuss the findings from the survey with the literature and finally in Section 6 we formulate conclusions on the findings, limitations and an outlook.

The research on why, where and how urban and rural disparities exist addresses different causes and impacts, such as the differences in health [1,2], education [3] and social services. Most prominently in the urban-rural divide discourse is however the demographic disparity [4,5]. Processes of urbanization in developed and developing countries are showing more or less the same trend, characterized by massive urban growth, rural exodus, urban sprawling—the consumption of land or change of land use [6–9], traffic jams and many other problems, in different stages [10–12]. Such demographic changes result in significant problems in allocations and conversions of land use and land cover, and ultimately land rights and restrictions. Cities and urban agglomerations are growing and the number of their inhabitants are increasing since the first wave of industrialization, faster and faster in the last decades in nearly every part of the world—the so called urbanization process [13]. This leads to a higher demand of land for housing [14] on one hand and a shrinking proportion of living space per person [15,16], due to the rising rental and purchase prices, on the other hand. Meanwhile the living space per person in rural region is higher [17] and growing.

Stimulated by advancements in agricultural science, mechanization and industrialization, the workforce which is needed to feed the population, has been shrinking [18] since decades, especially in developed countries. This reflects the “push” for people to leave

rural regions alongside beside the “pull” of urban regions and major cities [19]. Small rural towns and villages are also suffering from automobile traffic, the growth of commercial and residential areas on the outskirts of towns [20], and the simultaneous vacancy and closure of stores and pubs in inner-city areas—the so called Donut-Effect [21–24].

Germany is a country in an advanced stage of development [25,26]. Yet, in several fields of society (economy, democracy, science etc.) it exhibits an advanced stage in rural-urban disparity as well [27]. From the perspective of spatial planning, the problem of demographic disparities between rural and urban region has led to heated debates and contested assessment frameworks. The indicators which are used and the results related to spatial development vary, but the general insight is that spatial inequality is the manifestation of the disparity [28,29]. There is both spatial inequality between German regions [30] and there is a lack of spatial justice [31]. Other countries, such as France or the U.S.A. exhibit similar spatial disparity challenges [32,33], which leads internationally to polarization among EU-member states for example [34]. In Germany, political actors have gradually become aware of these trends and have therefore formulated a policy of “equal living conditions in urban and rural areas”, which needs to be implemented at different administrative and institutional levels of the federal states. At a highest administrative level, the target “to preserve coherent living conditions” is formulated in the constitution of the German Federal Republic (GG Art. 72 Abs. 2 Nr. 3) from 1949 [35]. In 1994 the formulation was modified to “production of equivalent living conditions” [36]. In the coalition agreement of the present German administration the target of equivalent living conditions is articulated as well [37]. It led to a report of a government commission with programmatic recommendations for action [38] by the Federal Ministry of the Interior, Building and Community; the Federal Ministry of Food and Agriculture and Family Affairs, Senior Citizens, Women and Youth. At the level of the European Union, support programs for rural development such as LEADER were introduced in the 1990s [39].

Taking into account that local economic strength, the labor market and incomes contribute to the local economy by the generation tax yields, the spending capacity for the people who live there, is the main driver for disparities and divide, the spatial distribution of local economic strength and work is essential for development and equivalent living conditions.

A key to bridge the urban rural divide could be the allocation of work from urban regions to rural regions. The possibility of remote work means that knowledge-based work is no longer necessarily tied to a specific location. A relatively new phenomenon is coworking spaces in which teleworking is performed.

This research aims to detect the habits and demands of users of rural coworking spaces and to estimate and assess the influence on local offers and services for mobility, consumption, shopping, catering, social and cultural. Based on these aims we formulate the following research questions:

1. Which amenities co-workers asked for in rural coworking spaces?
2. How can co-workers in rural-coworking spaces be described according their personal and professional characteristics?
3. How do coworking facilities in rural areas and their users influence local offers, services for mobility, consumption, shopping, catering, social and cultural life?

2. Literature Review

Drivers of spatial disparities in Germany constitute the variations in regional economic strength, availability and spatial distribution of jobs [40], wages and corporate earnings which contribute to the local economy [41]. They entail prosperity, tax yields for the local and regional authorities and spending capacity for the people who live there [42]. Depending on the tax system regional authorities and municipalities receive financial inflows [43,44]. It seems that there is a general link between regional disparities caused by economic strength or weakness, jobs, income and tax yields [45].

Reasons for migration and the decision where to live rely on a complex decision-making process. From a conceptual standpoint, Ravenstein developed the concept of “push and pull” [46] as a trigger for migration. Widely referred are the 4 classes or types structured by Petersen [47], i.e., Primitive, Forced/Impelled, Mass, Free. In this case it can be focused on “Free” migration forced by higher aspirations or a rational choice, because migration due to natural disaster, war or collective behavior could be unconsidered do not take place at the moment in Germany [48].

These base factors play an important role in peoples’ decisions where to live. Especially in Germany, rational choices in life and career planning are often made [49,50]. At crucial turning points in life, such as choices for education, in the professional domains and careers, types of jobs or founding a family [51] they make a decision with spatial impact [52]. The conditions in such rational choices are that before a family is founded, an income has to be ensured [53] and a professional career needs to be established [50]. Due to the availability of birth control pills and better education of women, women have become more independent and the decision to found a family has become a more ‘rational choice’ as opposed to discretionary or random choice or fate (going with the flow) [49]. Many of the complex decisions about the place where to live are directly or indirectly related or influenced by job or educational opportunities [54]. “Work as the basis of human existence” is examined and considered by sociologists and philosopher like Habermas and Marcuse [55]. From an economical perspective, especially classic economists such as Adam Smith and Karl Marx have considered such work decision rationalities [56,57].

In case of better education and job opportunities in cities und agglomerations—Ravenstein would call it a “pull” [46]—people moving there from rural, less dense and less promising—referring to Ravenstein a “push”—regions [51]. This leads to a kind of vicious circle of depopulation, mainly by people who aspire better job opportunities to combat their declining spending capacity, decreasing entrepreneurship opportunities and growing lack of public services in regions and municipalities outside of major and/or university cities [58]. Declining number of inhabitants in this regions could fall below the technical function threshold of facilities of general interest [59] and jeopardize their economic viability [48,60].

The growing rural urban disparities are described in various publications [27,61]. At the same time a majority of people answer the question where they want to live with “villages, small towns” and the “country side” as a survey on behalf of the BHW Bausparkasse (Building and loan association) [62,63] and the German public television and radio broadcaster ARD [64]. Some studies predict a trend that more people want to and will live in small towns and rural regions. This trends are titled e.g., “Progressive Provinzen” [65,66], “KoDorf” [67] or “Urbane Dörfer” [68].

With the contact limitation due to the Covid-19 pandemic the amount of work which is done remotely was increasing rapidly [69–71], in relation to moderate growth in the past years [72,73]. People indicate that they want to continue working remote [74]. That could amplify the trend people moving from major cities to more rural towns as it is indicated in reporting for Germany [75,76] and for North-America too [77,78]. However, some authors are still skeptical if that will baffle the main trend of urbanization [79].

Wouldn’t that be an opportunity to combine the wish of more country life and rurality on the one hand and the need of educated, well paid people in rural regions on the other hand to reduce or turn around the trend of rural exodus? So-called “knowledge workers” [80,81], usually an academically educated professional with specific knowledge and skills, combined with a professional social network are currently demanded at the labor market [82]. Richard Florida describes this group of human resources as the ‘creative class’ [83]. Knowledge, thought or brainpower is mostly non-physical. Without physical demand this kind of work is easy to transfer to another place and transmit the result to another. Thought work or knowledge work often requires access to knowledge repositories, such as libraries, archives, etc. Knowledge management deals with the nature, management,

distribution and generation of knowledge, among other things from an entrepreneurial perspective [84,85].

Before the internet was established and before an increasing amount of information was provided by websites, database, virtual libraries etc. accessing information and knowledge required a physical presence or process by entering a library or an archive, finding and reading the desired Information in a book, report or document—or obtain the requested information in some lists, schedules, directories or the like. Today, a huge amount of knowledge and information is accessible via the internet on server, databases, virtual and digital libraries [86] and through social knowledge networks [87].

The idea of remote work was already practiced in the early 1960s, be it however in an analog manner using paper and pencil from home [72]. In the late 1960s the concept of communication substitute transportation was developed [88] and expanded in the 1970s as a substitute for the increasing business travel [89] and eminently by the oil crises [90]. Remote work or Telecommuting [91], which in German is often called “Home Office”, could be operated from home. Workers save time by avoiding the daily commute or also just for a single day per week or month by working from home. However, that kind of remote work entail some negative effects or problems. Homes often are missing a separate room equipped with ergonomic office furniture for remote work from home [92]. Beside this, working from home could stress people, due to the double task of work and family, if they live in a family home. If they live alone the can feel lonely and disregarded [93–95]. Coworking spaces as a place between home and work could be a “third place” as described by Oldenburg [96] enlarging social contacts.

An alternative to operate the remote work from home is to perform in a coworking space. The term “coworking” was invented in 1999 by Bernard DeKovan and the first “coworking space” was opened 2005 in San Francisco by Brat Neuberg [97,98]. A coworking space is a kind of office space where people work at the same location on their own project or tasks and have the opportunity to network, socialize or cooperate with their “space mates”. The concept of coworking was well described by Clay Spinuzzi in 2012 [99]. Coworking spaces provides options of collaboration and knowledge sharing, brainstorming and creativity [100]. Janet Merkel described coworking as “Coworking is hence not just about working ‘alone together’ or ‘alongside each other’ in a flexible and mostly affordable office space. It is also underpinned by a normative cultural model that promotes five values: community, collaboration, openness, diversity, and sustainability.” [101]. Coworking spaces were mostly founded by free lancers, but nowadays this form of work is increasingly used by employees as well [102]. While founder of early coworking spaces were often locally engaged people, in recent years large, professional operators such as WeWork and Mindspace have discovered the market for themselves and offer desks in coworking spaces [103].

The social isolation, which comes along with working remote from home, also underlined by research regarding the impact of Covid-19 pandemic [104], could be tackled by working together in a common space, such as a coworking spaces [105]. At this point we should clarify that in Germany working remote from home is called “homeoffice”, “home office” or “Tele-Heimarbeit” [90]. Just working not at the employers office is called “Telearbeit” or in recent years “Mobiles Arbeiten” [106]. In recent years the size and number of coworking spaces is increasing [107,108], not only in cities in rural regions in Germany as well [109,110]. The trend of rural coworking spaces is taken up by policies and some promotion initiatives are introduced [111,112].

Distance and occupied time for the daily commute is increasing since years [113,114]. However, generally remote work save time by avoiding the commute which can be used for other purpose, as spending time with family, friends or for sports, being active in a local club. These benefits lead to different preferable results from the perspective of spatial planning. The main benefit could be a declining mobility demand and a reduction of traffic. The commute is increasing since years [115] an reached an average of 10.5 km [116] one way each day, notable the amount of a commute over 50 km increase more strongly [116].

Reducing the demand of mobility for work, the traffic systems (roads, public transport etc.) could be relieved by avoiding the daily commute, reduce it to occasional or periodical commute. If a presence for a meeting is needed the employee can travel for this specific to be there in time e.g., 13:00 o'clock and avoid the rush hour in the morning. This could spread the traffic volume over time and diminish the pressure on the traffic systems [117,118].

Further the saved time could be spent with the family or with friends and improve the work-life-balance (WLB), but could also generate stress [106]. "Entgrenzung der Arbeit"—delimitation of work is a broader topic of changes in the field of work to which remote work contributes substantially [94,119].

Not only because of online shopping, but also because of the high commuting share to distant office districts and the paths traveled, most of which do not lead past traditional village or small-town retail locations, town and city centers suffer from a lack of liveliness, a shrinking range of products and services, and consequently from vacancies [120–123]. Due to increasing distances between home and work, mobility in rural areas is dominated by the use of motor vehicles [124–126]. Another effect of the increasing distance between the location of residence and the location of work leads to multi-local lifestyle [127,128].

Recent publications see an opportunity for the revitalization of rural areas through coworking spaces [112], what probably support an allocation of knowledge work to small towns.

Coworking spaces, whether in inner cities or rural areas, usually offer different types of workplaces. The majority, however, are mostly open office structures, with different desks in an open space setting. Just a small amount of desks are located in smaller units as private, single or double offices [129]. The open structure encourages contact, exchange between the users, what is a major opportunity of coworking spaces related to working from home. However, this open structure has difficulties regarding the acoustic [130–132], if people want to work concentrated and undisturbed, make a phone call or participate in a videoconference [132,133].

3. Methodology

The case search and selection process aimed to receive a broad picture of coworking spaces outside of major and university cities. This implied using the criteria "belongs not to the territory of a major city" [134]. This process enabled a broader insight into the concept, excluding major German cities such as Berlin, Hamburg, Munich, and Kaiserslautern (population >100,030 [135]), but including smaller cities and the surrounding and hinterland of major cities. We decided not to use the definition of the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR—Bundesinstitut für Bau-, Stadt- und Raumforschung) for rural area [136] as the measurement for our investigation, for two reasons: first we want to exclude in our survey only the typical environment of coworking space which are usually to find in major cities and second we want to include as much as potential respondents as possible. This also considers that users of coworking spaces tend to not respond on surveys, because they feel to be over investigated. Due to that we chose a simple and short online survey to reach as few respondents as possible.

The survey structure was such that it should become possible to reveal the volume and type of demands and preferences of users—and what could be the impact of a growing quantity of remote workers in rural coworking spaces on their vicinity. The survey contained different categories of questions (Table 1). The first section addressed the use of coworking spaces and their services. The second section investigated the spatial relation of the coworking space. The third section regarded the vicinity of the coworking space. The fourth and the fifth section asked for personal information and profession of the coworker. Table 1 provides these details.

Table 1. Categories of the survey.

Category	Aim	Question
use of coworking spaces and their services	Investigate intensity, interval, duration and service	<p>Do you use different coworking spaces? Which coworking spaces are they? (Please enter the name and address of the coworking spaces)</p> <p>How long have you been using the above coworking spaces (yyyy,mm)? How often do you use a work opportunity in a coworking space? On average, how many hours do they use the work opportunity in a coworking space per day of use? What type of workspace do you prefer to use in the coworking space? In which room is the workplace you use usually located? What offers besides a pure workplace do you use in the coworking spaces? What other offers from the coworking space would you like to see?</p>
spatial relation and mobility	Investigate the spatial relation and mobility/transportation	<p>First and second residence (town, postcode, street, house number) Which means of transport do you usually use to cover the distance between your home and the coworking space? How long do you need for the distance (hh:mm)?</p>
vicinity of the coworking space	detect offers and services in the vicinity	<p>Which offers in the vicinity of your coworking spaces do you use? (Multiple answers possible) What offers besides a pure workplace do you use in the coworking spaces? How much more would you be willing to spend on products or services in the vicinity of the coworking space compared to out-of-town offers?</p>
Profession of the coworker	Kind of employment/entrepreneurially, relation to "home office", support by the employer	<p>What kind of (gainful) activity do you do? How much are your regular weekly working hours? In which industry/area are you employed or entrepreneurially active? What share of the costs for your workplace in the coworking space is borne by your employer? How open was your employer to you providing your work leadership in a coworking space? Do you also-or have you previously-worked in a home office? What are the advantages of working in coworking spaces compared to working in a home office? What are the advantages of working in coworking spaces compared to working at a company location? What prompted you to work in a coworking space?</p>

We used different types of questions: closed, multiple-choice questions to make it easy and fast to answer the questions for the respondents. Rating scale questions were used to get a quick and easy to answer overview on e.g., duration, willingness to spend etc. Considering the expected low response rate, we decided to ask mostly open-ended questions to get answers to unusual options or singular types.

An online survey was executed between end of February and April 2020, addressed to respondents who were directly related to rural coworking spaces. The operators of 80 rural coworking spaces were contacted via email and asked to distribute the link to the survey to their user and tenants. The first email contact was followed up by phone calls and follow-up emails. From that group, initially 13 operators confirmed to distribute the survey among their users and tenants.

4. Results

4.1. Responses

The survey was answered by 36 persons, of which four answers were unreliable and therefore excluded. Unfortunately, this number of responses is rather low. We only received answers from tenants or users of 12 coworking spaces. It is not clear why the number of responses was that low as well. Possibly, the spreading of the corona virus and the officially issued lockdown from the middle of March 2020 [137] restrained operators and tenants from distributing and answering the questionnaire. Nevertheless, we consider the responses, which we did obtain still relevant and appropriate, as they still provide a general picture and some first clues regarding the research question. The subsequent sections provide the results. The respondents came from coworking spaces spread over Germany, from the northeast to southwest and southeast. The respondents were located in remote and shrinking cities, which recently dropped below the limit of major city and small villages of a few hundred inhabitants.

We do not know to how many tenants the coworking space operators forwarded our survey, hence we cannot provide a typical response rate.

4.2. Summary of Responses

One quarter of the respondents indicated using more than one coworking space. 7% use three coworking spaces and one is using five coworking spaces. Some of the people who use several coworking space are working in different countries, such as Switzerland and Germany or Austria and Germany. One of the coworking space is frequently in major cities, while the other used coworking space is in more rural regions, but there are exceptions, where people use more than two coworking spaces, although the majority are located in more rural regions ($n = 32$).

A majority of 41% use their main coworking space for 1 year, 28% for 2 year and only single person are using their primary coworking space for 6 or 9 years. If they are using more than one coworking space, the second most common used coworking space is in use for 1 year ($n = 29$) (Figure 1).

Less than one third (28%) of the respondents indicate that they are using coworking spaces each day. The same amount of people state that they are using the coworking space 3 days a week. Nearly one third (31%) of people are using coworking spaces 1 or 2 times a week. And 14% are using a coworking space 1 or times in a month ($n = 29$) (Figure 2).

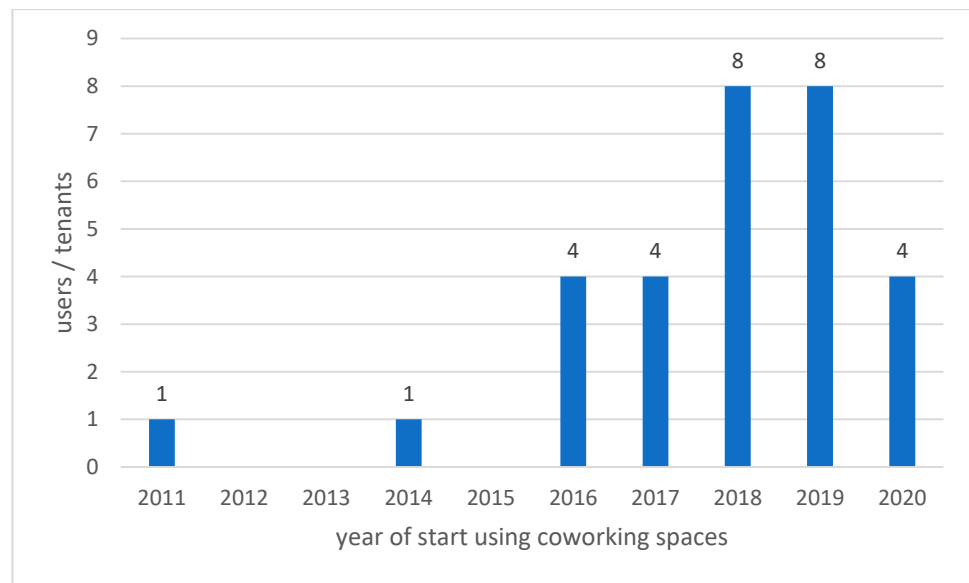


Figure 1. Start year of the work in coworking spaces.

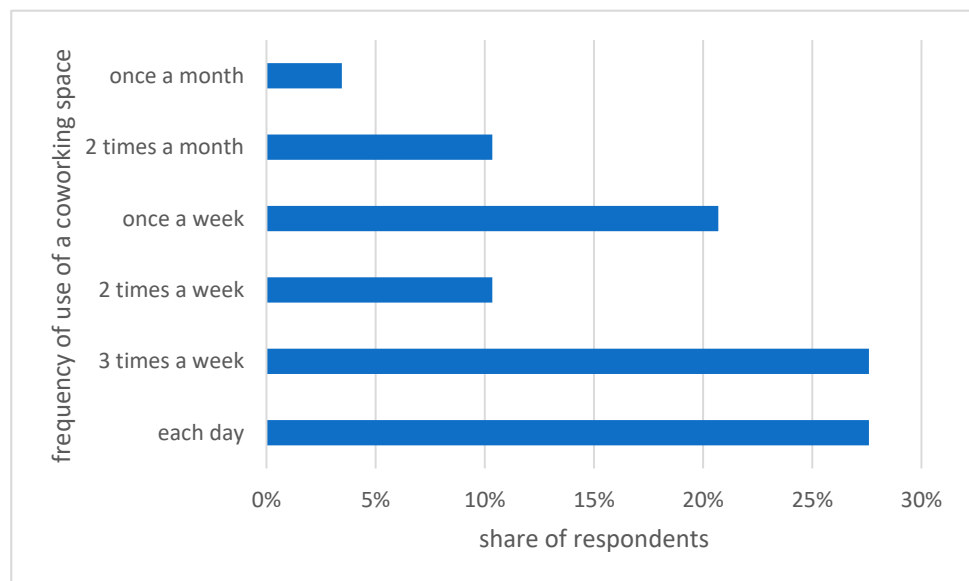


Figure 2. Frequency of use per week or month.

Some 10% of the respondents spend less than 4 h per day spend in a coworking space, whereas 11% spend 4 to 6 h in a coworking space, but most (41%) of the respondents spend 6 to 8 h in a coworking space. 14% of the respondents spend 8 to 10 h in a coworking space and the same amount stay more than 10 h in the coworking space (n = 29).

Most (46%) people work at a fixed or dedicated desk. Additionally, 21% also have a specific own desk, but during their absence, this desk is also usable for others. Nearly a third are working at various desks, so called 'hot desk' (n = 28). A majority of the tenants have a fixed desk, and hot desk users mentioned that they would like to have a fixed desk, if they would not have another desk somewhere else.

A majority of 64% are working in an open space office. 21% of the tenants have their desk in a dual office and 14% are working in a single office (n = 29).

Nearly every user (93%) of a coworking space utilizes the kitchen in the coworking spaces. Printer, WLAN/LAN and social place/meeting point are used by about 80%. Nearly 70% are using conference rooms for 4 to 10 people, 35% are using conference rooms

for more than 10 people. A postal address is used by 35%. Two participants mentioned that they are using telephone boxes, to be undisturbed while calling. A single person mentioned lunch service, social events and training are be used (n = 29).

Service as noise protection, carsharing, lockers cubicles are mentioned one time. Multiple named are conference technic, team/social events, café/mess and back office. One person is desiring more colleagues (n = 12).

Nearly half of the respondents (49%) are using a car to get to the coworking space. 7% are going by public transport, 23% are riding a bike and 21% get there by foot. Due to weather conditions or the location of each cowering space, different means of transportation may be used on different days. Taking this into account, multiple responses are possible. Approximately 40% state that they need 10 min commuting time to travel to the coworking space. 11% need only 5 minutes to get there. 14% need 15 min and 18% are 30 min on the way. Another 14% need more than 30 min to get to the coworking space. Two people indicate that their traveling commuting time extends by more than one third, when they go by bicycle instead of by car (Figure 3).

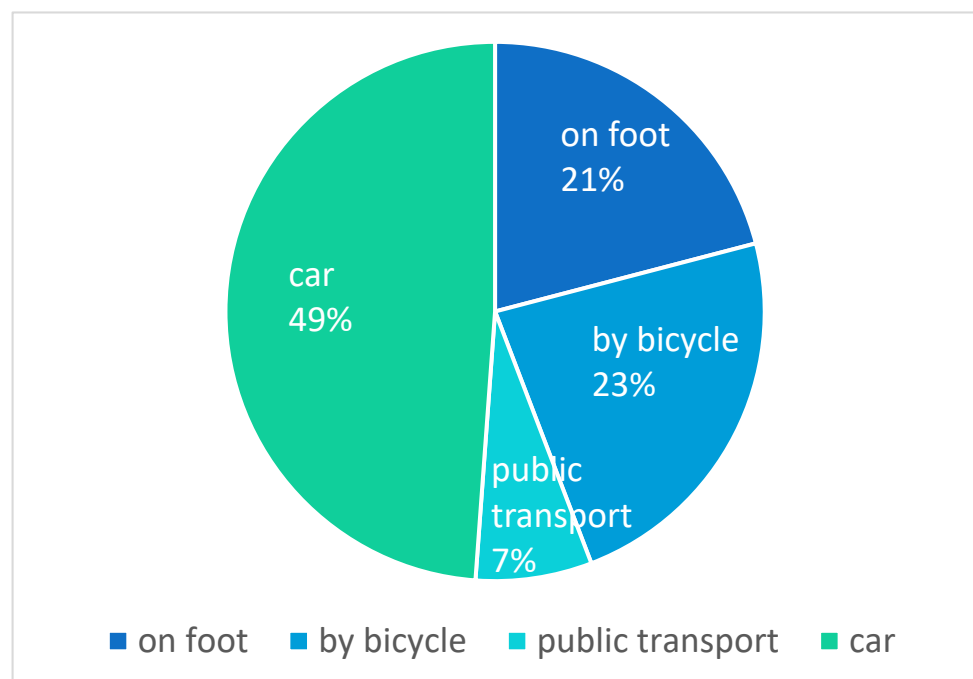


Figure 3. Means of transportation/modal split.

Some tenants of coworking spaces are traveling around and visit different coworking spaces at more than 150 km distance from their residence. Nearly a quarter of the respondents are using two coworking spaces, some are using up to five coworking spaces. Some are switching between commuting by car, bicycle or afoot, even if this doubles or triples their commuting time. It can be assumed that the traveling means depends on weather conditions [138]. Some of the tenants are using two or more coworking spaces, one close to their residence and another one in larger towns (Figure 4). The point shown in Figure 4 is that people may use different coworking spaces at different times, for different reasons and under different circumstances and related to the distance between residence and coworking space the respondents are using different modes of travel.

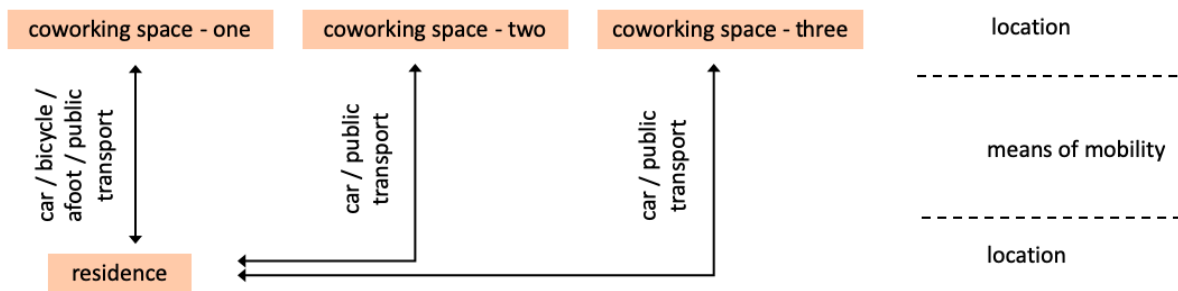


Figure 4. Conjunction of workplace and residence by means of transportation.

The most used services in the vicinity are bakeries, which 89% of the users visit. They spend 5 € per day at most, although some (19%) spend more than 5 € in bakeries. 67% are visiting restaurants or taverns and spend there up to 5 € (22%), from 6 to 10 € (44%) and up to 20 € (33%) per day. 56% of the tenants are going to supermarkets/grocery stores and spend there 20 to 30 € (10%), 10 to 20 € (26%) or up to 10 € (64%) each day. 29.6% of the tenants are going to kiosks, all of them spent less than 5 € each day. Small quantities (4%) are using laundries, childcare, post office and medical practices in the vicinity of the coworking space. Single named are e.g., fishmonger, town hall or drugstore (n = 23).

In response to the question “How much more would you be willing to spend on products or services in the vicinity of the coworking space compared to out-of-town offerings?” 22% of the respondents indicate not being willing to spend more for central offer or service related to an out-of-town offer. However, 55% would spend 5 to 25% more than an out-of-town offer. And another 22% are willing to spent more than 40% up to 50% above the price of out-of-town offers.

Approximately 41% of the tenants of the coworking spaces work for an employer. Others are freelancer or companies using the coworking space as a company headquarter. Some responded being an association/club or volunteer (n = 27) (Figure 5).

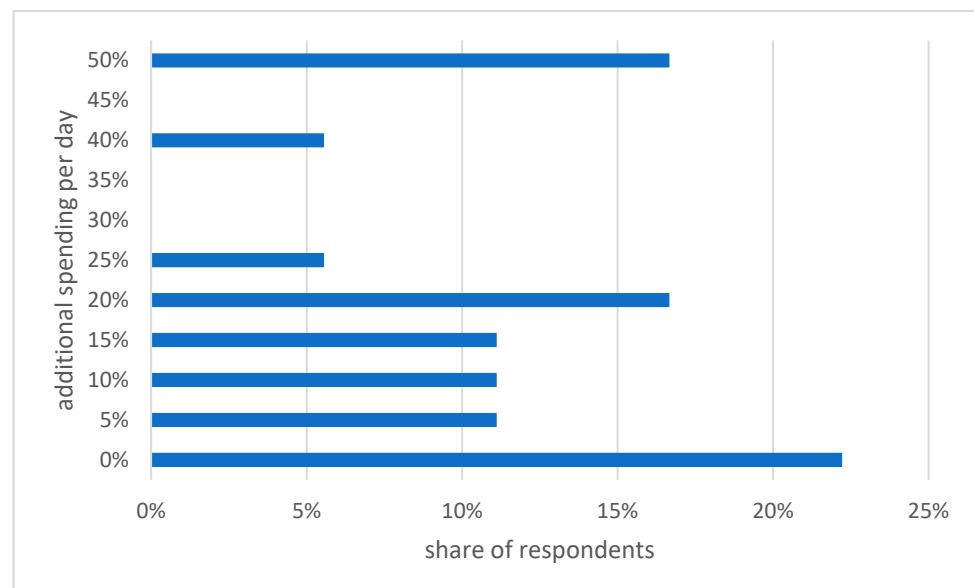


Figure 5. Willingness to spend more on products or services in the vicinity of the coworking space compared to out-of-town offerings.

The largest group (41%) of the coworkers have between 37 up to 40 regular working hours, which corresponds to regular full employment hours in the frame of the German Working Time Act [106]. A group of 20% are regular working between 10 and 30 hours, which indicates a part time employment [107]. Out of this group a majority of more than

60% is working 30 hours per week, some only work 10 hours per week. Indicated by the reduced working hours, it could be assumed that this group of workforce is occupied by other things, like childcare, care of relatives or they have only a part-time position [108]. At the other end of the scale are a group of workers (22%) that state to work regular 50 to 60 hours per week. Considering the Working Time Act [106], this must be a group of freelancers or entrepreneurs ($n = 27$) (Figure 6).

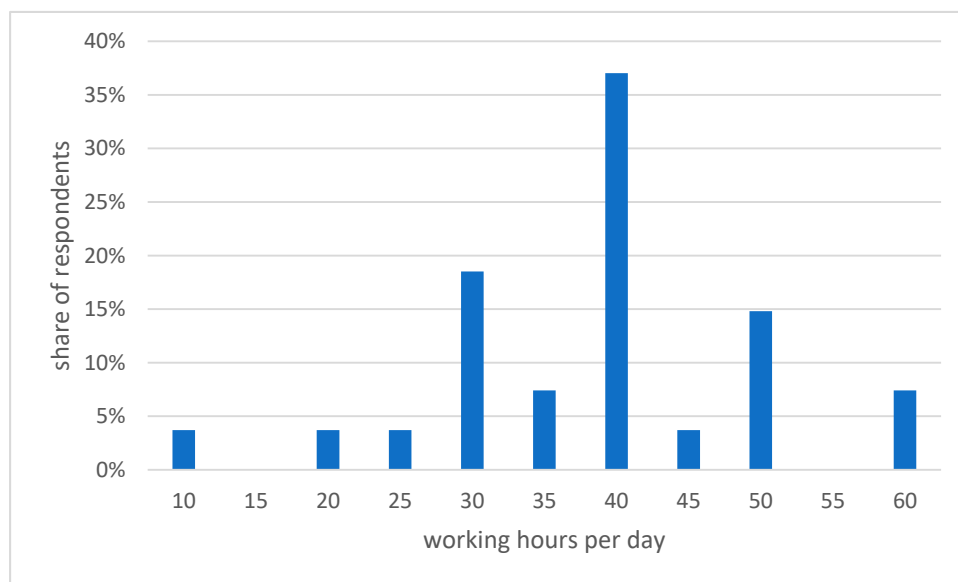


Figure 6. Regular weekly working hours of the tenants of the coworking space.

5. Discussion

The initial findings confirm that location of work and economic activity significantly affects complex spatial relations [41–44] as indicated in the Introduction. As long as wage labor or entrepreneurship is needed to afford life, the location of work is very important and also spatially related to many other aspects of life [113]. The relevancy of the spatial relation of people depends on the life phase, but is dominated by their primary relation to work, education, supplemented by shopping, leisure, sports, social services and child care, amongst others [113]. The work commuting is the main reason to travel [113]. Remote work could reduce the time for commuting [117]. There are also negative effects of remote work, such as social isolation, feeling disregarded or the stress from unseparated private and professional life [94,95]. Considering that, to be able to reach performance levels in a coworking space to a similar extent as in a conventional working place, it is necessary to make it to a kind of a “third place” [96]. If this third place is located close to the place of residence, it could reduce the daily commute [93,116,117], allocated spending capacity [120] and increase the vividness in rural villages and small towns [121,122].

Given these theoretical findings and hypotheses, the core questions remain: (1) which amenities coworkers asked for in rural coworking spaces, (2) how can coworkers in rural coworking spaces be described according their personal and professional characteristics (3) how do coworking facilities in rural areas and their users influence local offers, services for mobility, consumption, shopping, catering, social and cultural life? We elaborate on each of these in the following subsections.

(1) Which amenities coworkers asked for in rural coworking spaces?

As the empirical survey results show, those respondents who work in a coworking space outside of a major city also tend to execute their job in more than one coworking space only (see Figure 4). Some are clearly traveling around in a larger region and are using several coworking spaces. If they are using more than one coworking spaces at least one of them is located in a major city. It seems that a relation to a major city is still relevant for

coworkers and that these types of respondents value the need to travel as a crucial part of their job, to meet people in real. In these cases, it seems that the coworking spaces act as a linking point in local networks.

Most coworkers are renting a fix desk in an open space [99], but they are also missing the opportunity to separate in particular to make telephone calls or to work undisturbed. This indicates a demand of variation in the work environment, not only variations from day to day, what several of the participants already experience, also variation during the day. There is a demand for variation in the exchange with others as well as apart from others, such as for concentrated work or undisturbed calls. The demand of noise protection indicates a similar need. Especially in open spaces, tenants seem to be disturbed by noise, presumably from other users. This is classical critique on acoustics in open spaces offices [130]. For certain types of work, these office forms are rather unsuitable [131,132]. On one hand the users in our survey indicates a demand of noise protection and separation—as often in open plan offices [133]—on the other hand they express a desire to meet and network, what also correlate with the literature [129]. It would therefore make sense to offer different types of workstations, one for concentrated, undisturbed work and one for networking. A crucial aspect of using multiple work spaces is apparently not so much related to the facilities offered by the work spaces, but by the specifics of the location where coworkers are going to—such as specific locations or surroundings which make the meetings different than simply by regular communication means.

(2) How can coworkers in rural coworking spaces be described according their personal and professional characteristics?

With 41% the share of employed coworker in this survey is higher than the average numbers in coworking spaces [102]. That could indicate that tenants avoid commuting to headquarters of remote employers, save time for the commuting, relieve traffic infrastructure and with that reduce the CO₂ emission. Considering the increasing traveling distance and time [114,116], it is an advantage to avoid the commuting at least on some days of the week. A majority of the respondents are driving to the coworking space by car, only a small amount could go by bike or on foot (see Figure 3). Reasons for this variation could be a lower population density at certain locations, which increases the catching area for such a coworking space, as long as the number of users of rural coworking spaces is still low. Only a small group of users live so close that they can walk or take the bike. It is typical for rural regions that longer travel distances between home and destination are covered by car [124,126]. Only short distance commuters are saving time saving if it is done on foot or by bicycle [125]. The background of people is also broad. One can find freelancers, entrepreneurs and various types of employees in rural coworking spaces. The age distribution is broader than in coworking spaces in an urban environment [103]. This might be related to the motivation to use rural coworking spaces as a means to spare the traveling time to a distant company office.

(3) How do coworking facilities in rural areas and their users influence local offers, services for mobility, consumption, shopping, catering, social and cultural life?

The usage of the coworking space is temporarily during the day and during the week (see Figure 2). That indicates that work is also operated somewhere else, implying a multi-local lifestyle [127], during travel, at the employers office or at home. Not all regular working hours are used for work. Perhaps the time is also used for childcare, leisure or social engagement. The time which is spent on other activities than working is not only used to recover from and for work, but also to pursue other goals in life. With the saved time, people could get more engaged in social commitments, contribute to associations or similar activities. Their presence in the rural town could thus be higher, resorting in more vitality and vividness in the center of the village and small towns [22,126,127].

Coworking spaces in a rural context are more or less a new form of telecommuting [91]. Most tenants use their main coworking space for 1 or 2 year (see Figure 1). The invention of coworking as a concept started from 1995. The term coworking was introduced in 1999 and the first so designated coworking space opened in 2005 in San Francisco [98]. The number

of coworking spaces are increasing rapidly since 2005, mainly in agglomerations. In rural regions, towns or villages are existing some coworking spaces for some time [109]. Since the last 2–3 years the number of coworking spaces outside of major cities is growing rapidly.

The responses reveal that the tenants of coworking spaces use several offers and services, like bakeries, supermarkets, kiosk and taverns or restaurants in the vicinity of the coworking space, nearly each day, where they spend up to 30 € per day. With the rising number of tenants in coworking spaces a considerable spending capacity is available in vicinity of the coworking space. Arriving and leaving the coworking space, as well as the lunch break at the neighboring restaurant or butcher, increase the presence of people—not cars—in public spaces and thus provide more liveliness. In future research it would be interesting to find out, if that potential really reaches local stores, services, groceries and enrich the vitality of their vicinity. Possibly, coworking spaces will bring enough purchasing power to local centers, if they are located there, to enable any retailers that may still be present to generate substantial turnover and continue to exist. Small supermarkets, grocery stores or retailers in the central locations of towns and small cities have been suffering for years from competition with newly established, large-scale retailers on the outskirts of settlements [121]. Vacant, historic buildings can also be converted into coworking spaces and thus find a new use (Figures 7 and 8).



Figure 7. Coworking space in a village, former hayloft, exterior view.



Figure 8. Coworking space in a village, former hayloft, interior view.

In the political program of action “Unser Plan für Deutschland-Gleichwertige Lebensverhältnisse überall” were measures recommended to improve equivalent living conditions, including the support of coworking spaces [38]. Some regional development agencies already provide funding programs, partly direct for coworking spaces [111,112]. However, the eligi-

bility criteria so far do not seem to take into account the impact of each location—in-town or in commercial areas.

6. Conclusions

The research aim was to detect the habit and demands of users of rural coworking spaces and assess the influence on local offers and services for mobility, consumption, shopping, catering, social and cultural. We found that in order to operate remote work in a rural area a coworking space provides several benefits and opportunities for the user/tenant, such as avoiding social isolation, separating private and professional life, avoiding or reducing the commute sometimes. In addition, from a perspective of the municipality a coworking space located in the village or town center support local offers from retailer and services, like grocery stores, bakeries, butcheries, restaurants and cafes—and provide their vicinity with passers-by frequency and vividness. The increasing turnover of local retailers and services could make them more profitable and secure their survival.

These findings are relevant, for several reasons and related to e.g., the increasing distance between residence and workplace [116], the increasing share of remote work, which is growing since years. This brings stress to people and to town centers [21]. When located in the town center, coworking spaces can bring liveliness and spending capacity back to the heart of those towns, which are suffering from the donut-effect. Further research should investigate under which conditions which types of public space, retail and services in the vicinity coworking space are beneficial. So far it seems reasonable that coworking spaces in rural towns should be located at a central location, where daily goods and services are available and where the tenants of the coworking space can contribute to vividness and vitality of the town and to the turnover—and with that maybe to longer persist of the resident suppliers.

With the contact limitation and lockdown due to the Virus Covid-19 the share of remote work got a boost [69–71] and am majority of employees would prefer to continue working remote [70,74]. That will increase remote work [71], people could move to remote rural towns, avoiding high rents and dense populated major cities, work from home or in an rural coworking space. Coming research should find out, if this group of working people tends to work from home, which are usually larger in the countryside and offer more space [17] for domestic study—or would this people go for a desk in an coworking space in the town center?

One of the main influence factors on land management is the kind of land use [6–8]. Depending on the share of work which is done closed to the place of residence and the question where people settle (see Section 1. Introduction) the use of land is strong influenced [9]. Will this trend to remote work lead to a higher demand on settlement area and land consumption at the outskirts of major cities or will this trend bring liveliness, vitality, spending capacity and inhabitants back to rural town centers?

The findings exhibit some limitations, which necessitate further research. As the survey could not trace under which conditions coworking space user opt for increasing or decreasing their economic spending, subsequent research and empirical investigations could investigate the behavior of coworking tenants related to means of transport, their consumer behavior and how the vicinity of coworking spaces get influenced by the presence of coworking spaces and their tenants. Additionally, the survey results could not provide sufficient input for constructing a theoretical cause-effect relational model. Such a construction would require a more extensive data collection, which would investigate the variations in impact of coworking spaces on their surroundings. This includes amongst others how it affects land demand and supply. Practical research into trends of coworking given the experiences due to the crises by the virus Covid-19 and the issued contact restrictions.

There are a number of issues which would require an extension of the investigation to truly understand the causes and effects. First, the conditions under which knowledge workers either live in rural areas, or previously guided their decision to move to rural areas may be a crucial factor for the decision to opt for coworking spaces. Secondly, the workload

conducted at a coworking space may differ based on the available facilities. Thirdly, it still remains unclear to which extent supporting conditions, such as access to basic amenities and connections to socio-cultural aspects play a role. Fourthly, what the current research could not find out was whether there exists trend that brings liveliness, vitality, spending capacity and inhabitants back to rural town centers? And will this help to reverse or stop the growth of the “Donut” [22,24] around the towns and villages. Finally, the relations of coworking spaces to the urban-rural divide, urban-rural land use and spatial justice issues needs further empirical research.

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