

TIME BUDGET OF INHABITANTS OF LARGE CITIES IN POLAND DURING THE COVID-19 PANDEMIC

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Abstract

Introduction. The aim of the research is to determine the structure of the day – the time devoted to various activities – of the inhabitants of large cities in Poland during the COVID-19 pandemic, taking into account the workweek-weekend cycle. **Material and methods.** Time budget studies – using qualitative research methods (structured interview, including self-reporting) – were conducted in December 2020 among residents of selected 9 large cities in Poland. The research was based on self-reporting by the respondents for one week. The results were analysed using three parameters: the average duration of the activity, the average time of performing the activity, the percentage of people performing the activity. **Results.** The daytime structure of inhabitants of large cities during the pandemic included 9.19 h (39% day time) for physiological activities, 8.30 h (36%) for duties, 5.49 h (24%) for leisure time and 0.20 h (1%) for commute. Relative to the 2013 GUS survey, there was a decrease in the amount of time spent commuting to work/school (72% decrease), physiological needs (15% decrease) and housework (15% decrease). More time than before the pandemic (51% increase in the amount of time) was devoted to work, and leisure time was spent on sports and recreation (125% increase in the amount of time) and using mass media (16%). **Conclusions.** COVID-19 pandemic and the associated restrictions have significantly impacted our daily lives and how we use our time.

Key words: time budget, COVID-19, city, workweek, weekend

Introduction

The structure of a time budget is shaped by many factors, both internal and external as well as subjective and objective ones, which most often have the character of interrelated conditions. They may result from the needs of an individual, his/her demographic features, professional and economic situation, and many other elements. In the year 2020, one of the factors that significantly affected people's time budget was the emergence and development of the COVID-19 pandemic.

As the analysis of the literature on the subject shows, the concept of "time budget" is often understood intuitively and is most often associated with an attempt to answer the question: how do people spend their time? According to Harvey [1, 2] – one of the most important researchers of this issue – time use research is the study of how people use their time, the study which shows what activities people do. Likewise, in the study by Pięta [3] we find time budget definition, indicating that it is "summary of the time spent on different life activities". The term of time budget studies is also applied to calculations of specific activities in aggregated time used over the entire day [4, 5].

Research on the use of time comes from the second decade of the last century, i.e. from the mid-1960s. However, according to Szalai [6], the first study by George Bevans comes from 1913. Since then time use research has been widely used to study both objective and subjective aspects of human behaviour in a wide variety of fields and purposes. In recent years, the methodology has become more and more sophisticated, both in terms of collection and analysis of the data [7]. In the literature we can find a few important review studies of time-use research dedicated to investigating how people spend their time [7, 8, 9].

Research conducted in the field of time use budget have diverse applications. Some of them are related to consumer behaviour [10, 11], mass media/Internet use [12, 13, 14] or assessing the quality of life [15, 16, 17]. One of the important subjects of scientific research is analysing leisure activities [10, 18, 19, 20, 21]. At the wider scale of analysis, time use budget data enable examining aspects of social structure and conducting national and international comparisons [22]. International organizations, such as the United Nations, European Union, International Labour Organization, also recommend the regular collection of time use statistics [23].

A lot of time use research studies illustrate applications of different methodologies. The methods of time budget research essentially rely on conducting surveys or interviews. One of the earliest time use surveys was conducted in Russia by Strumilin in 1922 [24]. The first purpose-designed multinational comparative time budget data collection was carried out in the mid-1960s. This large-scale study (twelve countries: Belgium, Bulgaria, Czechoslovakia, Hungary, Peru, Poland, Germany, France, United Kingdom, USA, USSR, Yugoslavia) was related to metropolitan areas [8, 25]. The methodology developed in this study was an important point of reference for most of the next time use surveys [4].

The above-mentioned methods are often supplemented or replaced by the self-registration method: the time diaries [25, 26]. Time-diary data provides a complete sequential record of all activities of individuals for a period of 24 hours or longer [27]. Time-diary researchers focus on activities and the context of activities that occupy time and on providing a sequential and comprehensive account of daily life. As it is emphasised in the literature [28, 29], time diaries are considered to be the most

reliable and accurate data collection instrument to obtain information on the activity patterns of populations. In Polish literature [3, 30, 31] we can also find the research technique that involves keeping a daily time observation card which is called "a photograph of the schedule of activities".

As it is indicated by Harms, Gershuny [4], an overall advantage of a time budget is its more accurate time use measurement than by stylised data and the temporal location of an activity within a day. The UN also underlines that "time-use statistics offer a unique tool for exploring a wide range of policy concerns including social change; division of labour; allocation of time for household work; the estimation of the value of household production; transportation; leisure and recreation; pension plans; and health-care programmes, among others" [32]. It should also be remembered that quantitative/statistical-based knowledge about the use of time for all activities from the labour market to the leisure world is of central importance not only for an individual but also for the economy, for governmental economic and social policy, and the society [5]. That is one of the reasons why a significant number of countries regularly conduct national surveys on time use.

In Poland, research on time budgeting was undertaken in the 1950s. So far, the widest range of analyses on a national scale can be found in studies conducted every several years or more by the Central Statistical Office (GUS). The first nation-wide time budget survey was conducted by GUS in 1968/1969. Subsequent surveys were carried out in 1975/1976, 1984, 1996 (a pilot study), 2003/2004 and 2013 [33]. These studies provide information on the organisation of time and activities undertaken during the day.

The Covid-19 pandemic has had a significant impact on our lives, including our time management throughout the day. The undertaken research completed the research gap related to the determination of the time budget in changed conditions resulting from the spread of the Covid-19 pandemic. The aim of the research presented below is to determine the structure of the day – the time devoted to various activities – of inhabitants of large cities in Poland during the COVID-19 pandemic, taking into account the workweek-weekend cycle.

Material and methods

Time budget studies of the population of Polish cities during the COVID-19 pandemic were conducted in December 2020 among inhabitants of selected large cities (population greater than 300,000): Bydgoszcz, Gdańsk, Lublin, Łódź, Kraków, Poznań, Szczecin, Warszawa, Wrocław. The choice of the largest cities as the study area was related to their higher population density (higher risk of infection) and higher building density (greater isolation from open space and natural assets in lockdown conditions) than in rural areas or small cities [34]. The research was conducted on 71 inhabitants of the analysed cities. The sample was selected on the basis of availability – it was based on convenience sampling. The small sample size was dictated by the exploratory nature of the study (its purpose was to compile material that would provide a starting point for further in-depth analysis).

Time budget research was based on self-reporting by the respondents for one week – seven consecutive days (five weekdays and two weekend days). Respondents entered the total amount of time spent on individual activities during the day on a self-reporting sheet [35].

The questionnaire of time budget identified 34 types of activities, which for analytical purposes were divided into 11

groups within 4 categories: PHYSIOLOGICAL NEEDS (sleep, eating and drinking, washing and dressing), DUTIES, LEISURE TIME, COMMUTE (e.g. to work/school). Two of these categories – DUTIES and LEISURE TIME – were analysed in groups of activities. The DUTIES category included the following groups: work, study, housework, other duties, and other voluntary activities (e.g., voluntary work in organizations/associations, informal assistance to other people, religious practices and activities). Among the activities included in the LEISURE TIME category, the following groups were taken into account: use of mass media (including the Internet) and reading books, social life and entertainment, personal passions (hobbies) and participation in sports and recreation. The time budget scheme was prepared with reference to the activities identified in the recent GUS analysis [33].

On the basis of the source data obtained, the results of the research were processed in a way allowing for the determination of parameters characterising its use within the framework of individual activities that are components of the time budget. For this purpose, three parameters, most commonly reported in the literature and used in GUS reports, were used: the average duration of the activity (arithmetic average for one person participating in the survey), the average time of performing the activity (arithmetic average for one person performing the activity) and the percentage of people performing the activity [33, 3]. They were calculated according to the following formulas:

1) Average duration of the activity (for one person taking the test)

$$\bar{X}_a = \frac{\sum_{i=1}^n X_{a,i}}{n}$$

where:

\bar{X}_a – average duration of activity 'a' per person participating in the study,

$X_{a,i}$ – time of performing activity "a" by the i-th person,

n – the number of people participating in the study.

2) Average time of performing the activity (for one person performing the activity)

$$\bar{x}_a = \frac{\sum_{i=1}^n x_{a,i}}{n_a}; n_a < n$$

where:

\bar{x}_a – average time of performing activity 'a' per participant,

$x_{a,i}$ – time of performing activity "a" by the i-th person,

n_a – number of persons performing activity 'a',

n – the number of people participating in the study;

where $n_a = n$, then the average duration time = the average time of performing the activity.

3) Percentage of people performing the activity

$$n'_a = \frac{n_a}{n} \times 100\%$$

where:

n'_a – percentage of individuals performing activity 'a',

n_a – number of persons performing activity 'a',

n – the number of people taking part in the survey.

The results were also presented using box plots. The box extends from the first quartile (Q1) to the third (Q3) with the median (Me) marked. The whiskers extend from the minimum to the maximum, and if there are outliers, they range 1.5 of the 1.5* quartile spread (Q3-Q1).

Pearson's linear correlation coefficients (r) were also calculated in the statistical analysis. In this way, the time spent on

individual activity groups on weekdays-weekend, and between activity groups was compared. Those that were statistically significant (p -value < 0.05) were summarised in the matrices. In the analysis of the results, it was assumed that the correlation was weak when the absolute value of r was in the range of 0.2-0.4, moderate to 0.7 and quite strong to 0.9.

In order to determine the changes which occurred in the structure of the time budget of the inhabitants of large Polish cities as a result of the COVID-19 pandemic (in comparison with earlier results), the results obtained were compared with the weighted average results of the GUS surveys for cities of 200,000-500,000 and over 500,000 inhabitants. The analyses covered activities within 11 separate activity groups.

Results

The ongoing analysis of respondents' time budgets during the COVID-19 pandemic first presents averaged time budgets across the week by category and group. The budget of workweek and weekends were then compared – in the same divisions.

Week time-use

Respondents – inhabitants of large cities in Poland during the COVID-19 pandemic spent an average of 39% of time (9.19 h) per day on PHYSIOLOGICAL NEEDS, 36% (8.30 h) on DUTIES and 24% of time (5.49 h) on LEISURE TIME. About 1% (0.20 h) per day was spent on COMMUTE. The median was almost exactly equal to the mean.

Taking a closer look, it can be noticed that in the category of PHYSIOLOGICAL NEEDS the time was less varied – the standard deviation was 1.10 h, while in the categories of DUTIES and LEISURE TIME – 2.28 h and 2.10 h, respectively. It should be noted that in these categories there was also a very large range between the minimum and maximum values (Fig. 1).

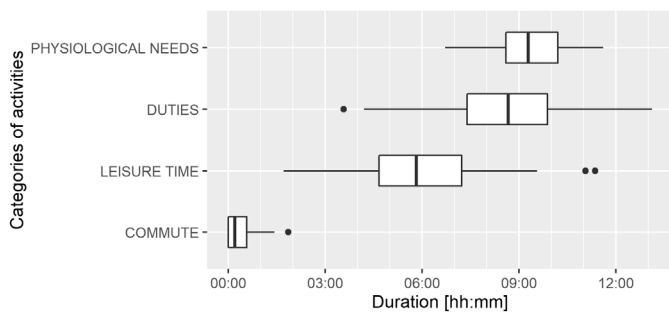


Figure 1. Time budget by categories (week)

When detailing the analysis to the level of groups, one can see the activities on which the most time was spent in each category. In the category of PHYSIOLOGICAL NEEDS, sleep was dominating (7.24 hours). In the category of DUTIES – work – during the study period, 82% of the respondents spent time on it, and the average time of performance was 5.31 h (average duration was 4.30 h). The time for studying was spent by 34% of the respondents – the average time spent studying was 2 hours, and the duration was 0.40 hours. However, in this group there were many outliers – reaching even more than 7.30 h. In this category, the time devoted to housework was also significant – realised by all respondents – the average time devoted to them was 2.48 h (12% of the day), with the share for individual persons varying from 0.30 h to almost 9 h (Fig. 2).

In the category of LEISURE TIME activities, most time was devoted to mass media (3 hours on average with a standard deviation of 1.26 hours); on average, slightly more than an hour was devoted to social life and sports and recreation. These activities were performed by approximately 95% of the respondents.

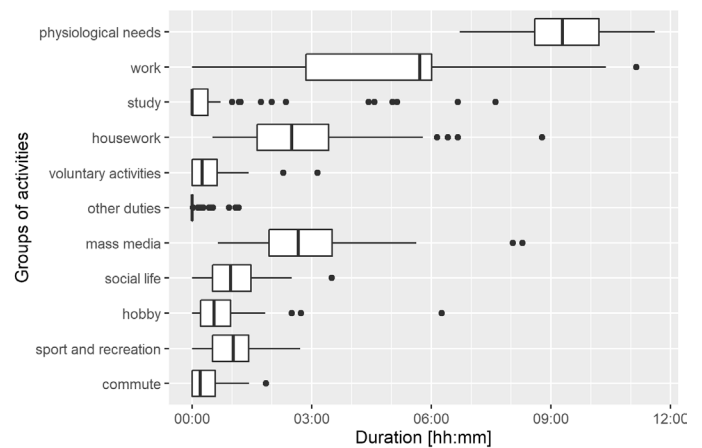
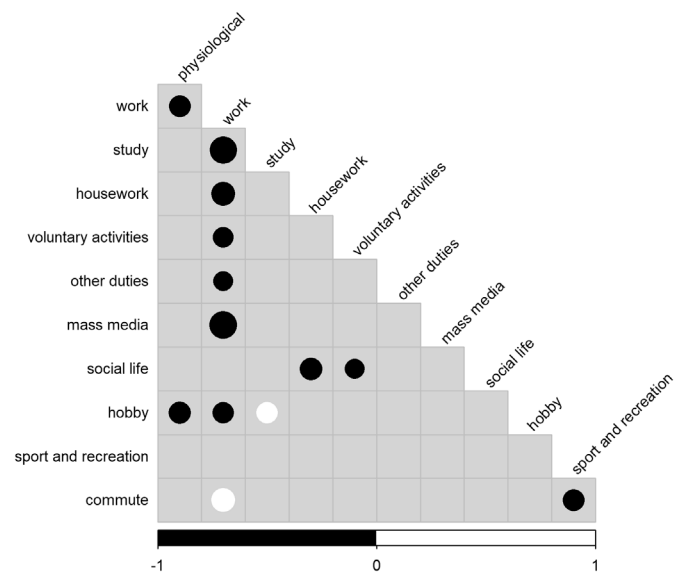


Figure 2. Time budget by groups (week)

For time spent on groups of activities during the whole week, correlations between work and most other groups (except social life and sport and recreation) were statistically significant (p -value < 0.05) (Fig. 3). Significant correlations also occurred between leisure time activities and those selected from other groups. In total, statistically significant correlations were found in 13 pairs. Weak positive correlations were found between work and commuting ($r = 0.35$) and studying and hobbies ($r = 0.28$). On the other hand, moderate correlations occurred among negative correlations: study and work ($r = -0.46$) and work and mass media ($r = -0.47$). The others belonged to the weakly negative ones.



Only statistically significant (p -value < 0.05) are marked.

Figure 3. Correlation matrix for activity groups (week)

Workweek and weekend – comparison

On working days, the largest share of respondents' time in the structure of time by category was devoted to behaviours belonging to DUTIES (40% on average) and PHYSIOLOGICAL NEEDS (38%). LEISURE TIME activities accounted for 20% of the time, and COMMUTE activities for 2% (Fig. 4).

On the other hand, during weekends, most time was spent on PHYSIOLOGICAL NEEDS (42%), on LEISURE TIME activities – 34%. DUTIES consumed almost 24%, and COMMUTE 0.5%. However, on weekdays, 62% of the respondents devoted any time to COMMUTE, while on weekends only 23% of them.

Looking at PHYSIOLOGICAL NEEDS in more detail, it was noted that the difference in time spent on them on weekdays and weekends is largely due to longer sleep (by 0.42 h on average) and time spent eating (by 0.16 h on average).

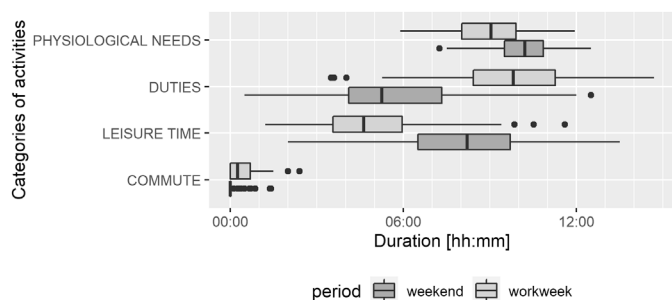
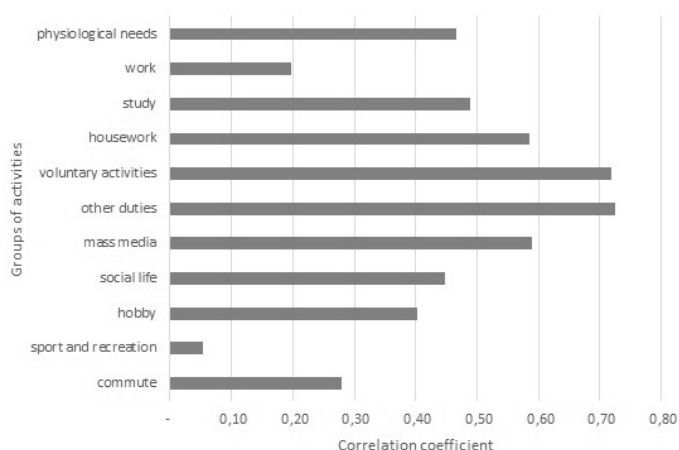


Figure 4. Time budget by categories (workweek and weekend)

When analysing the differences in the structure of the time budget between workweeks and weekends, it can be noted that the correlation coefficients between the same groups of activities are always positive and for most groups are in the range of 0.4-0.6 (Fig. 5). For voluntary activities and other duties they are above 0.7. It is low for commute (0.28). For two groups (work and sport and recreation), the correlation coefficient was statistically insignificant (p-value > 0.05). Such results indicate that in most groups of behaviours (apart from work and commuting), respondents who spend a lot of time on e.g. housework during the week, also do so at weekends.



For groups: work and sport and recreation, the correlation coefficient was statistically insignificant (p-value > 0.05).

Figure 5. Correlation coefficients between time spent on the same groups of activities during weekend and workweeks

For most respondents, the time spent working is reflected by the division into working days and non-working days. On working days, 82% of the respondents worked (an average of 7.07 hours). At weekends, 35% of the respondents worked (for an average of 3.32 hours), and they were also the people who worked during the week (Fig. 6).

32% of the respondents spent time studying on weekdays and 17% did so at weekends (those who spent time studying at weekends also did so during the week). The average time spent doing this activity did not vary much and was 2.30 h and 2.02 h, respectively.

In the group of activities that included housework, it was observed that during weekends respondents devoted one-third more time to them than on weekdays, with a similar standard deviation (approximately 1.50 hours). Activities from this group were undertaken by almost all respondents in both analysed periods.

On weekdays, the group of behaviours involving voluntary activities (including religious practices) took an average of 0.37 hours (half of the respondents), and 1 hour at weekends (62% of the respondents). On weekdays the amount of time devoted to both work in organizations and religious practices was similar and amounted to about 0.30 hours each, while at weekends religious practices took an average of 0.42 hours, and volunteering 0.26 hours.

All groups of LEISURE TIME activities took more time at weekends than on weekdays. All respondents devoted more time at weekends than on weekdays to mass media (the same was true only for physiological needs). Minima and maxima as well as the standard deviation were similar, while significantly more time was devoted to activities in this group at weekends (median half higher – 3.30, average duration by 28%). By activities, on average (by persons realising these forms) 2 hours were devoted to television at weekends (92%), 0.57 hours to the Internet (87%), and 0.50 hours to reading (86%). On weekdays, watching TV took an average of 1.16 hours, the Internet 0.52 hours, reading 0.43 hours. The percentages were similar.

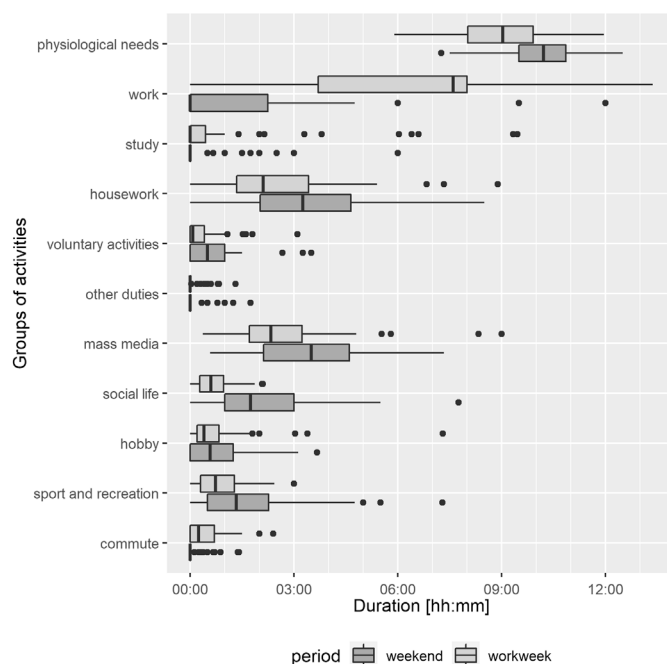


Figure 6. Time budget by groups (workweek and weekend)

About 90% of the respondents (86% on weekdays and 92% at weekends) devoted their time to social life in both examined periods. Much more time was spent at weekends – 2.15 hours (0.46 hours on weekdays), with a maximum of 7 hours (2 hours on weekdays).

There was a slightly smaller, but also clear difference in the group of activities related to sports and recreation. On average, this was 0.56 h on weekdays and 2.03 h at weekends. The percentage on weekdays was slightly higher than at weekends (86% and 82%, respectively).

Of the LEISURE TIME activities, the smallest differences between days of the week were in the group of behaviours related to personal passions (during the week, the average duration was 0.49 h and at weekends it was 1.10 h. Interestingly, the percentage during the week was significantly higher (85%) than at weekends (70%).

When analysing the time spent performing particular groups of activities on working days, only 7 statistically significant correlations were found (Fig. 7). Of these, only 1 was moderately positive: between work and commuting ($r = 0.42$). The others were weakly negative, e.g. between work and housework (-0.38), social life and voluntary activities (-0.34), or commute and housework (-0.31).

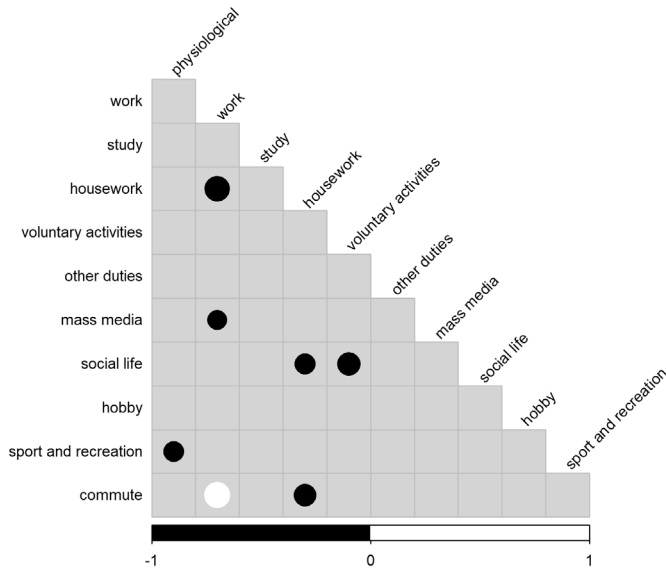


Figure 7. Correlation matrix for activity groups (workweek)

There were 13 statistically significant correlations for time spent performing particular groups of activities at weekends, with the correlations distributed slightly differently than for the whole week (Fig. 8). Four weak positive correlations were found between work and commute ($r = 0.34$), mass media and physiological needs, mass media and other duties, study and hobby (those studying more also devoted more time to hobbies). In terms of negative correlations, three moderate ones were found, all between work and mass media (-0.54), studying (-0.45) and housework (-0.41). The remaining 8 statistically significant ones were weakly negative (Fig. 8).

Discussion

During the COVID-19 pandemic, people were forced to spend a great amount of time at home, with individuals having to quickly adapt behaviourally to new circumstances and devel-

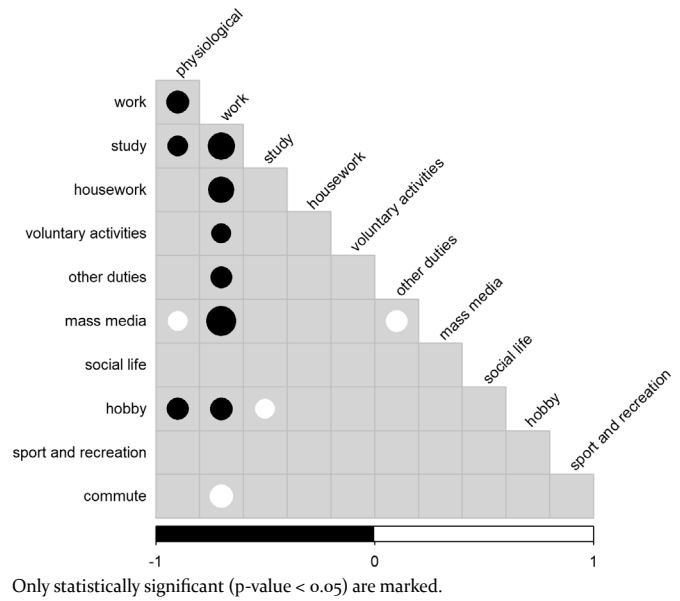


Figure 8. Correlation matrix for activity groups (weekend)

op new routines. This naturally involved a reallocation of time use. People around the world experienced a sharp reduction in recreational activities, prohibiting shopping, day trips, going to places of entertainment, direct social interaction, and most activities in public places [36].

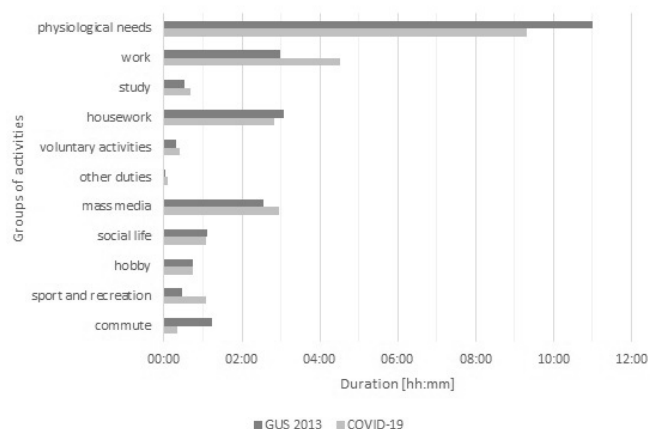
The results of the study provide a basis for comparative analyses relating to life before the pandemic [33]. It is also a starting point for determining the impact of COVID-19 on the lives of Poles. Nevertheless, due to the small sample size, the following comparison with the GUS data from 2013 should be treated as approximate.

During the pandemic, respondents spent less time on physiological needs (1.41 h) and housework (0.15 h, a decrease by 15% and 8%, respectively). A major change in many people's lives due to the need to work/learn remotely was related to the lack of commuting to work/school. On average, the time spent on this activity decreased by 0.53 h – 72% (Fig. 9).

Significantly more time than before the pandemic (1.31 h) was devoted to work – an increase by 51%. In leisure time, more time was devoted to sport and recreation (0.35 h) and using mass media (0.25 h). These activities were connected with the need to stay at home. According to the interviews, leisure time was used actively – mainly for individual physical exercises/fitness or passively – mainly for watching TV/films. Relating these activities to the time before the pandemic, an increase in the amount of time was noted at the level of 125% in the case of sport and recreation, and 16% in the case of media use.

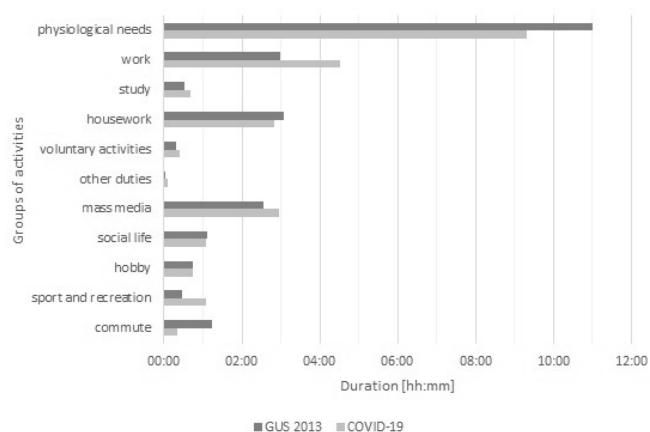
A somewhat different picture of the comparison of the time spent on particular activities was obtained when analysing the average time of performing the activity (by persons who took up a given activity). In this case, apart from media use (an increase by 4 minutes) and other duties (an increase by 26 minutes), all other activities showed a decrease in the amount of time devoted to them. The greatest change was observed in study (-2.59 h) and work (-2.14 h) (fig. 10).

The obtained results concerning the use of time are also confirmed by research conducted in other countries. Reduction in time devoted to education during the pandemic and lockdown is also confirmed by studies conducted in Great Britain [37] – average total time for secondary school students decreased from



Due to the small sample size, the following comparison should be treated as approximate.

Figure 9. Average duration of activities in 2013 and during the pandemic



Due to the small sample size, the following comparison should be treated as approximate.

Figure 10. Average time of performing the activities in 2013 and during the pandemic

6.59 h before lockdown to 4.15 h during lockdown. In Ecuador, it was also found that most students established similar daily routines around education, although during educational time some of them were working or doing household tasks instead [38]. Furthermore, it was confirmed that during the lockdown, less time was spent on personal care [37] but more time was devoted to screen use [39]. For example, in the case of adolescents, the frequency of social media use and shows increased after COVID-19. The largest response category before the crisis was 2-3 h per day (31.1%), while the largest response category after the crisis began was 5-10 h (35.4%) [40]. Also, virtual interactions with friends became an important part of the day for young people, as they took 2.22 h [41].

In addition, many people were looking for "new activities" to fill up the time previously devoted to other activities, such as going out with friends or playing sports, due to the need to stay at home during the COVID-19 pandemic. Some of them were replaced, e.g. with online meetings, new hobbies or activities, e.g. home physical activity supported by digital media [42]. However, it was emphasised that these activities took less time than before the pandemic – a lot of time was wasted. Moreover, some of them realised that they had more time, but only 29% felt that this time was of better quality [39].

In addition, pandemic research shows that while many individuals were able to continue working from home, others experienced furloughs or loss of employment [43], and many had to take on increased childcare responsibilities [44, 45].

Conclusions

1. The daytime structure of inhabitants of large cities during the pandemic included 9.19 h (39% day time) for PHYSIOLOGICAL ACTIVITIES, 8.30 h (36%) for DUTIES, 5.49 h (24%) for LEISURE TIME and 0.20 h (1%) for COMMUTE.
2. There was relatively little variation in the time spent on PHYSIOLOGICAL ACTIVITIES, with a standard deviation of 1.10 h. More time was spent on these activities at weekends, which was associated with more time devoted to sleeping and eating.
3. In the DUTIES category, inhabitants of large Polish cities were mainly occupied by work (5.31 h), study (2.00 h) and housework (2.48 h). What is worth emphasising is that the duties were performed by all respondents. This category also shows the greatest difference in the amount of time devoted to duties between working days and weekends (40% and 24% of the time, respectively).
4. In the LEISURE TIME category, the most time (2.57 h) was spent on mass media. It should be noted that all groups of activities in this category took more time at weekends than on weekdays, especially in the case of social life, recreation and sport.
5. In the COMMUTE category, which includes the smallest amount of time per day (0.20), 62% of the respondents spent time commuting on weekdays, and only 23% at weekends.
6. Due to the limitations of the study – caused mainly by a small sample size – further research should concern a larger group, and should also be extended to the inhabitants of Poland in general, and not only to large cities.

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References

1. Harvey A.S. (1993). Guidelines for time use data collection. *Social Indicators Research* 30(2-3), 197-228. DOI: 10.1007/0-306-47155-8_2.
2. Harvey A.S. (2002). Time-use metadata. *Transportation Research Record: Journal of the Transportation Research Board* 1804(1), 67-76. DOI:10.3141/1804-10.
3. Pięta J. (2014). *Free time pedagogy*. Nowy Dwór Mazowiecki: Wydawnictwo Naukowe FREL. [in Polish]
4. Harms T., Gershuny J. (2009). *Time budgets and time use. Working Paper Series of the Council for Social and Economic Data (RatSWD)*. German Council for Social and Economic Data. Retrieved June 15, 2021, from https://www.konsortswd.de/wp-content/uploads/RatSWD_WP_65.pdf
5. Merz J. (2009). *Time use and time budgets – improvements, future challenges and recommendations*. FFB-Discussion Paper 78, Research Institute on Professions (Forschungsinstitut Freie Berufe (FFB)), LEUPHANA University Lüne-

- burg. Retrieved June 5, 2021, from <https://ftp.iza.org/dp4358.pdf>.
6. Szalai A. (1984). The concept of time budget research. In: A.S. Harvey, A. Szalai, D.H. Elliott, P.J. Stone, S. Clark (eds), *Time budget research: an ISSC workbook in comparative analysis* (pp. 17-35). Frankfurt: Campus Verlag.
 7. Pentland W.E., Harvey A.S., Lawton M.P., McColl M.A. (2002). *Time use research in the Social Sciences*. Boston: Springer. DOI: 10.1007/b107540.
 8. Andorka R. (1987). Time budgets and their uses. *Annual Review of Sociology* 13, 149-164. DOI: 10.1146/annurev.so.13.080187.001053.
 9. Michelson W.H. (2015). *Time use: Expanding explanation in the social sciences*. New York: Taylor & Francis. DOI: 10.4324/9781315631561.
 10. Glorieux I., Laurijssen I., Minnen J., van Tienoven T.P. (2010). In search of the harried leisure class in contemporary society: Time-use surveys and patterns of leisure time consumption. *Journal of Consumer Policy* 33(2), 163-181. DOI: 10.1007/s10603-010-9124-7.
 11. Bronnenberg B., Klein T.J., Xu Y. (2020). *Consumer time budgets and grocery shopping behavior*. CEPR Discussion Papers. Retrieved June 5, 2021, from http://tilburgeconomics.nl/seg/images/kleintob/BKX_time_budgets.pdf.
 12. Hornik J., Schlinger M.J. (1981). Allocation of time to the mass media. *Journal of Consumer Research* 7(4), 343-355. DOI: 10.1086/208824.
 13. de Haan J., Huysmans F. (2002). Differences in time use between internet users and nonusers in the Netherlands. *It & Society* 1(2), 67-85.
 14. Zang X., Ha L. (2015). Time budget, news search time cost, and news media choice. *Time & Society* 24(2), 201-220. DOI: 10.1177/0961463X15579579.
 15. Böhnke P. (2005). *First European quality-of-life survey: Life satisfaction, happiness and sense of belonging*. Luxembourg, UK: Office for Official Publications of the European Communities.
 16. Cho H.K., Lee K.Y., Lee Y.S., Kim O.S., Lee S.M. et al. (2009). Time use and quality of life of the Korean rural poor. *Social Indicators Research* 93, 223-227. DOI: 10.1007/s11205-008-9374-9.
 17. Jia H., Lubetkin E.I. (2009). Time trends and seasonal patterns of health-related quality of life among U.S. adults. *Public Health Reports* 124(5), 692-701. DOI: 10.1177/003335490912400511.
 18. Hawes D.K. (1987). Time budgets and consumer leisure-time behavior: A eleven-year-later replication and extension (Part I – Females). In M. Wallendorf, P. Anderson (eds), *Advances in Consumer Research* 14 (pp. 543-547), US: Provo.
 19. Clark S.M., Harvey A.S., Shaw S.M. (1990). Time use and leisure: Subjective and objective aspects. *Social Indicators Research* 23, 337-352. DOI: 10.1007/BF00572528.
 20. Codina N., Pestana J.V. (2019). Time matters differently in leisure experience for men and women: Leisure dedication and time perspective. *International Journal of Environmental Research and Public Health* 16, 2513. DOI: 10.3390/ijerph16142513.
 21. Gershuny J., Harms T. (2019). Time and physical activity. In J. Gershuny, O. Sullivan (eds), *What we really do all day: Insights from the Centre for Time Use Research*. London: Penguin.
 22. Cornwell B., Gershuny J., Sullivan O. (2019). The social structure of time: Emerging trends and new directions. *Annual Review of Sociology* 45, 301-320. DOI: 10.1146/annurev-soc-073018-022416.
 23. United Nations (2017). *International Classification of Activities for Time-Use Statistics*. Retrieved June 5, 2021, from <https://unstats.un.org/unsd/demographic-social/time-use/icatus-2016/>.
 24. Mespoulet M., Rundell E. (2015). *Housework and constructing socialism in the USSR according to time-use surveys*. *Clio. Women, Gender, History* 41, 21-40. Retrieved June 30, 2021, from <https://www.jstor.org/stable/26273628>.
 25. Gershuny J., Smith R. (1995). *Report to the Central Statistical Office on the development of a simple diary schedule October 1995*. OPCS Omnibus: review of the first six months. London: OPCS.
 26. Berthoud R., Gershuny J. (2000). *Seven years in the lives of british families: Evidence on the dynamics of social change from the british household panel survey*. Bristol, Avon: Polity.
 27. Chatzitheochari S., Fisher K., Gilbert E., Calderwood L., Huskinson T. et al. (2018). Using new technologies for time diary data collection: Instrument design and data quality findings from a mixed-mode pilot survey. *Social Indicators Research* 137(1), 379-390. DOI: 10.1007/s11205-017-1569-5.
 28. Robinson J., Godbey G.C. (1997). *Time for life: The surprising ways americans use their time*. Pennsylvania: Pennsylvania University Press, University Park.
 29. Michelson W. (2005). *Time use: Expanding the explanatory power of the social sciences boulder*. Colorado/London: Paradigm Publishers, Boulder.
 30. Wnuk-Lipiński E. (1972). *Work and leisure within a time budget*. Wrocław: Wydawnictwo Polskiej Akademii Nauk, Zakład Narodowy im. Ossolińskich. [in Polish]
 31. Kolny B. (2014). Selected quantitative methods of researching consumer behaviour on the market of leisure services – theory and application. In E. Gatnar, G. Maciejewski (eds), *Quantitative methods in marketing research* (pp. 80-89), Katowice: Studia Ekonomiczne. [in Polish]
 32. United Nations (2017). *Allocation of time and time use*. Retrieved June 12, 2021, from <https://unstats.un.org/unsd/demographic/sconcerns/tuse/tul.aspx>.
 33. Central Statistical Office (2015). *Time use survey 2013. Statistical information and elaborations*. Retrieved June 3, 2021, from <https://stat.gov.pl/en/topics/living-conditions/living-conditions/time-use-survey-2013-the-second-part-including-the-first-part,6,3.html>. [in Polish]
 34. Zajadacz A. (2020). Changes in leisure time budget and leisure behaviour of residents of large cities as a result of COVID-19 pandemic. *Turystyka i Rekreacja, Studia i Prace* 23. [in Polish]
 35. Krukowska R., Piotrowski K. (2021). Free time budget. In A. Zajadacz (ed.), *Changes in leisure time budget and leisure behaviour of residents of large cities as a result of COVID-19 pandemic*. *Turystyka i Rekreacja, Studia i Prace* 23, 28-47. [in Polish]
 36. Brodeur A., Clark A.E., Fleche S., Powdthavee N. (2020). *Assessing the impact of the coronavirus lockdown on unhappiness, loneliness, and boredom using Google Trends*. arXiv:200412129. Retrieved June 5, 2021, from <https://arxiv.org/abs/2004.12129>
 37. Andrew A., Cattan S., Costa Dias M., Farquharson Ch., Kraftman L. et al. (2020). Inequalities in children's experiences of home learning during the COVID-19 lockdown in England. *Fiscal Studies* 41(3), 653-683. DOI: 10.1111/1475-5890.12240.

38. Asanov I., Flores F., McKenzie D., Mensmann M., Schulte M. (2021). Remote-learning, time-use, and mental health of Ecuadorian high-school students during the COVID-19 quarantine. *World Development* 138, 1-9. DOI: 10.1016/j.worlddev.2020.105225.
39. Brindal E., Ryan J.C., Kakoschke N., Golley S., Zajac I.T., Wiggins B. (2021). Individual differences and changes in lifestyle behaviours predict decreased subjective well-being during COVID-19 restrictions in an Australian sample. *Journal of Public Health*, Online ahead of print. DOI: 10.1093/pubmed/fdab040.
40. Ellis W.E., Dumas T.M., Forbes L.M. (2020). Physically isolated but socially connected: Psychological adjustment and stress among adolescents during the initial COVID-19 crisis. *Canadian Journal of Behavioural Science* 52(3), 177-187. DOI: 10.1037/cbs0000215.
41. Wray-Lake L., Wilf S., Kwan J.Y., Oosterhoff B. (2020). Adolescence during a pandemic: Examining US adolescents' time use and family and peer relationships during COVID-19. *PsyArXiv*. PrePrint October 1. DOI: 10.31234/osf.io/7vab6.
42. Mutz M., Müller J., Reimers A.K. (2021). Use of Digital Media for Home-Based Sports Activities during the COVID-19 Pandemic: Results from the German SPOVID Survey. *International Journal of Environmental Research and Public Health* 18, 4409. DOI: 10.3390/ijerph18094409.
43. Deshpande A. (2020). The Covid-19 Pandemic and lockdown: First order effects on gender gaps in employment and domestic time use in India. *GLO Discussion Paper Series* 607, 1-23.
44. Collins C., Landivar L.Ch., Ruppanner L., Scarborough W.J. (2020). COVID-19 and the gender gap in work hours. *Gender, Work & Organization* 28(S1), 101-112. DOI: 10.1111/gwao.12506.
45. Zhou M., Hertog E., Kolpashnikova K., Kan M.Y. (2020). *Lockdown in the UK: Why women and especially single mothers are disadvantaged*. GenTime, COVID-19 Report, Retrieved September 12, 2021, from https://4b260e93-fb34-4544-bf39-f3f8e5ba8546.filesusr.com/ugd/ale98b_6b24c-cf9ddf74779a8ed9a2e7edc8b58.pdf.

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