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CURRENT AND PAST TRENDS IN PHYSICAL ACTIVITY IN FOUR OECD COUNTRIES

Empirical Results from Time Use Surveys in Canada, France, Germany and the United States

Sahara Graf and Michele Cecchini***

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Authorised for publication by Stefano Scarpetta, Director, Directorate for Employment, Labour and Social Affairs

(*) OECD, Directorate for Employment, Labour and Social Affairs, Health Division
(**) Consultant to the OECD

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Abstract

Physical inactivity and sedentary behaviours have been rising throughout the OECD in recent decades. Lack of physical activity and excessive sedentary behaviour are well-known risk factors for non-communicable diseases, such as heart diseases, stroke, diabetes, and osteoporosis. As such, reducing physical inactivity and sedentary behaviours and increasing daily physical activity has become a crucial public health issue. Using nationally representative time use surveys, this paper presents the trends in physical activity (PA) and sedentary behaviours over time, in Canada, France, Germany and the United States. A particular focus of this analysis is placed on sport activities.

Men and women spend between 80 and 105 minutes daily in physical activities, with women spending more time in domestic physical activity, and men more time in sports. Participation in sport activities has been increasing over time, but no global trend for time spent in sports is visible; additionally, women are consistently less likely than men to report engagement in sport activities. Meanwhile, participation in active travel has been decreasing, displaying no overall trend for duration either. Education-based inequalities for sports participation are higher in men than in women, while income-based inequalities for sports are higher in women than in men. Men and women with a low level of income are more likely to report active travel in all countries. Additional MET (metabolic equivalent) hours spent in sports and non-sports leisure PA, domestic PA, and active travel are all associated with an increase in total PA, while work-related PA as well as other activities are associated with a decrease in total PA. At the individual level, an increase in time spent in all previously mentioned activities is associated with a decrease in total time spent in sedentary behaviours.

Résumé

L'inactivité physique ainsi que les comportements sédentaires sont en hausse dans l'OCDE, et ce depuis plusieurs décennies. Le manque d'activité physique et une sédentarité excessive sont des facteurs de risque bien connus des maladies non-transmissibles, telles que les maladies du cœur, les accidents vasculaires cérébraux, le diabète, et l'ostéoporose. Ainsi, la réduction de l'inactivité physique et des activités sédentaires et l'augmentation de l'activité physique quotidienne sont devenues des questions majeures de santé publique. À l'aide d'enquêtes emploi du temps représentatives au niveau national, ce papier présente les tendances en termes d'activité physique et de comportements sédentaires au cours du temps, en Allemagne, au Canada, aux États-Unis, et en France. Cette analyse s'intéresse en particulier aux activités physiques sportives.

Les hommes et les femmes consacrent entre 80 à 105 minutes à l'activité physique, selon le pays, les femmes consacrant plus de temps à l'activité physique ménagère, et les hommes au sport. La participation aux activités sportives a augmenté au cours du temps, sans qu'aucune tendance globale en terme de temps consacré à ces activités ne soit visible. De plus, les femmes ont systématiquement moins de chances de déclarer participer à des activités sportives. Les déplacements actifs (tels que la marche ou le vélo comme moyen de transport) sont en baisse, sans non plus afficher de tendance globale en terme de durée. Les inégalités de participation au sport basées sur l'éducation sont plus élevées chez les hommes que les femmes, tandis que les inégalités basées sur le revenu sont plus élevées chez les femmes que chez les hommes. Les individus ayant un faible niveau de revenus ont plus de chances de déclarer une activité de transport actif que les personnes au revenu élevé, et ce dans tous les pays étudiés. L'augmentation du nombre de MET heures consacrées à l'activité physique de loisirs sportive, non sportive, ménagère, et de transport, est associée à une hausse de l'activité physique totale. Au contraire, l'activité physique professionnelle ainsi que les activités autres sont liées à une baisse de l'activité physique totale. Enfin, la hausse du temps consacré à toutes les activités précédemment nommées est liée à une baisse du temps total consacré aux activités sédentaires.

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1. Introduction

1.1. The evolution of living conditions has led to changes in physical activity behaviours

1. Lifestyles in developed countries have drastically changed in recent decades. New technologies in transportation, communications, but also entertainment, have allowed (or compelled) societies to reduce the amount of physical labour and activity performed in everyday life (Hallal et al., 2012[1]; Owen et al., 2010[2]). Urbanisation as well as globalisation have also contributed to change the way people lead their lives today (Hu, 2011[3]; Monda et al., 2007[4]). These transformations lave led to a rise in physical inactivity, as well as in sedentary behaviours (SB) (Box 1.1).

Box 1.1. Physical inactivity and sedentary behaviours

Although closely interrelated, physical inactivity and sedentary behaviour have different meanings and cannot be used interchangeably. Physical inactivity is defined as performing insufficient amounts of physical activity (PA) over a given period of time, as in not meeting specific PA guidelines (Sedentary Behaviour Research Network, 2012[5]), such as the World Health Organization (WHO) recommendations for PA (WHO, 2010[6]), or other national recommendations. Instead, SB represents any waking behaviour (i.e. not including sleep) which is characterised by low energy expenditure, such as sitting, lying down, etc.

The WHO recommendations on physical activity for adults aged 18 to 64 are as follows:

1. Adults aged 18–64 years should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week, or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity.

2. Aerobic activity should be performed in bouts of at least 10 minutes duration.

3. For additional health benefits, adults should increase their moderate-intensity aerobic physical activity to 300 minutes per week, or engage in 150 minutes of vigorous-intensity aerobic physical activity per week, or an equivalent combination of moderate- and vigorous-intensity activity.

4. Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week.

2. Behavioural changes have crept into people's lives through the use of cars rather than active transportation, for example, or by turning to more sedentary occupations rather than moderate- or vigorous-intensity jobs. For instance, in the United States, the prevalence of goods-producing and agriculture jobs, which are usually more physically active, decreased from 38% and 10% to 19% and 3% respectively between 1960 and 2008, while the prevalence of service occupations, which are usually more sedentary, increased from

52% to 78% (Church et al., 2011[7]). A six-year-long study published in 2017 showed that in France, over one third of adults aged 18 to 79 don't meet the WHO requirements for PA, while the share rises to two thirds in children aged 11 to 17 (Anses, 2017[8]). Furthermore, over 80% of adults aged 18 to 79 are excessively sedentary. Meanwhile, in Canada, only 18% of adults met the Canadian Physical Activity guidelines in 2014-2015 (Statistics Canada, 2017[9]), and in Germany, 46% of women and 51% of men met the WHO recommendations for PA in 2014, according to a Eurostat report (Eurostat, 2017[10]). In 2008, the share of the world's population living in urban areas reached 50%, and has been increasing ever since (54.3% in 2016) (World Bank, 2018[11]). Living in cities has been shown to discourage PA through overcrowding, high-volume traffic, poor air quality, and more (WHO, 2010[12]).

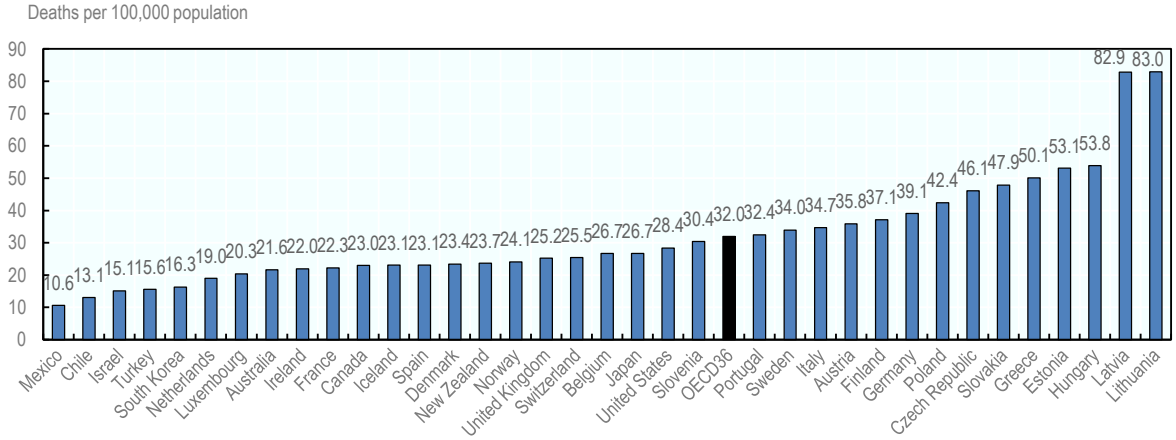
3. Consequently, physical inactivity has increasingly become a global issue, and has even been dubbed "the biggest public health problem of the 21st century (Blair, 2009[13]). The WHO is currently developing a draft global action plan on PA, to combat these rising unhealthy behaviours around the world (WHO, 2017[14]).

1.2. Lack of physical activity and excessive sedentary behaviours can lead to negative health outcomes

4. It is widely established that lack of PA as well as excessive SB are risk factors for non-communicable diseases (Booth, Roberts and Laye, 2012[15]; Lee et al., 2012[16]; Gakidou et al., 2017[17]). Physical inactivity has been linked to heart diseases, stroke, hypertension, type 2 diabetes, as well as osteoporosis (Kruk, 2014[18]), while SB has been linked to an increased risk for all-cause mortality (Lee et al., 2012[16]), as well as mortality from and incidence of cardiovascular disease and cancer (Biswas et al., 2015[19]).

5. In 2016, low PA caused on average 32.0 deaths per 100,000 population in the OECD, ranging from just over 10 in Mexico to over 50 in Greece, Estonia, and Hungary, and reaching 83 in Latvia and Lithuania (Figure 1.1). Overall, low PA caused 336,700 deaths throughout the OECD (IHME, 2016[20]), the highest numbers being in Japan (33,600) and the United States (91,700), and the lowest in Iceland (76) and Luxembourg (117) (IHME, 2016[20]). This amounts to 3.4% of all deaths in the region, with the highest shares in the Czech Republic (4.5%), Slovakia (4.8%), Latvia (5.8%), and Lithuania (6.0%), and the lowest in Mexico (2.1%), as well as Chile and the Netherlands (2.2%). Worldwide, low PA was the cause of just over 1.37 million deaths in 2016, up from 1.16 in 2006 (Gakidou et al., 2017[17]).

Figure 1.1. Across the OECD, an average of 32.0 deaths per 100,000 population were attributable to low physical activity in 2016



Note: The OECD average has not been weighted. "Low physical activity" refers to the IHME definition: "Less than 8,000 metabolic equivalent (MET)-minutes per week, with one MET being the energy spent while sitting quietly."
Source: Global Burden of Disease Study 2016. Global Burden of Disease Study 2016 (GBD 2016) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2016.

6. There is also increasing evidence pointing to SB as a distinct risk factor, independent of PA levels, for multiple health outcomes such as mortality (all-cause and cardiovascular disease-related), certain types of cancer, and diabetes (Thorp et al., 2011[21]; Katzmarzyk et al., 2009[22]; Wijndaele et al., 2011[23]). Furthermore, increased risk of cardiovascular disease, mental disorders and hypertension have been shown to be associated with time spent in SB, independent of PA time. This means that too much sitting and too little Moderate- to Vigorous-Physical Activity (MVPA) represent separate and distinct risk factors (Sedentary Behaviour Research Network, 2012[5]). In other words, high amounts of MVPA are not sufficient to counteract the negative effects of SB.

1.3. Physical inactivity has an economic cost

7. Beyond the health burden of low PA, studies have shown that those who are physically active have lower medical costs (Tsuji et al., 2003[24]; Pratt, Macera and Wang, 2000[25]), and those who are physically inactive are more likely to call on medical professionals such as family physicians, nurses, and specialists (Sari, 2009[26]). It is estimated that physical inactivity cost the United Kingdom National Health System £0.9 billion in 2006-07 (i.e. about 1% of the healthcare costs) (Scarborough et al., 2011[27]), while the cost to public health insurance in the Czech Republic in 2008 was 0.4% of total health care cost (Maresova, 2014[28]). Furthermore, the direct cost of physical inactivity in New Zealand in 2010 was estimated at NZD 614 million dollars, corresponding to about 4% of the expenditure on health (Wellington Regional Strategy, 2013[29]).

8. At the global level, the total economic burden caused by physical inactivity is substantial. In 2013, physical inactivity costed healthcare systems $ (INT$) 53.8 billion (i.e. 0.64% of global health expenditure in the same year), of which 31.2 billion was paid for by the public sector, 12.9 billion by the private sector, and 9.7 billion by households. Furthermore, PA-related deaths contributed to $13.7 billion in productivity losses, amounting to a total cost of $67.5 billion from low PA. This burden is unequally distributed

across regions, with high-income countries bearing a larger proportion of the economic burden (80.9% of health-care costs, and 60.4% of indirect costs), while low- and middle-income countries have a larger proportion of the worldwide disease burden (75% of disability-adjusted life years (DALYs)) (Ding et al., 2016[30]).

1.4. Studying physical activity and sedentary behaviour

9. Understanding the type of PA that people carry out as well as the determinants of participation is crucial to figuring out how to increase PA participation and decrease SB. Following the WHO (Bull et al., 2004[31]) as well as the SLOTH model (Sleep, Leisure, Occupation, Transportation, and Home-based activities) (Pratt et al., 2004[32]), PA can be split into four domains:

- Occupation: this category includes all PA that is carried out at the workplace.
- Domestic: this category includes all PA that is carried out at home (housework), such as cleaning, mowing the lawn, etc.
- Leisure and sport: this category includes all sport activities, as well as leisure PA that doesn't qualify as sports, such as walking the dog or playing with children.
- Transportation: this category includes all PA carried out for transportation purposes, meaning travelling from one point to another.

10. Studies of the distinct contributions of domain-specific PA to overall PA have shown that the different domains have different impacts on a person's health. For example, leisure and active travel PA have been shown to aid mental health and wellbeing, while domestic and occupational PA improve lower mental wellbeing in those with long-term illnesses (Mason, Curl and Kearns, 2016[33]). Transportation, leisure time, and total PA are inversely associated with several inflammatory biomarkers, while no such relationship was demonstrated for domestic PA (Bauman et al., 2012[34]). Reduction in all-cause mortality through increase of PA is larger in women than men, and the effect is stronger for leisure and domestic PA rather than occupational and transport-related PA (Samitz, Egger and Zwahlen, 2011[35]). Breaking down PA into different domains is therefore necessary to fully understand its association with different determinants and outcomes.

11. Replacing sedentary time as well as light PA time with an equal amount of MVPA is associated with more favourable cardio-metabolic outcomes (such as body-mass index (BMI) and cholesterol), while replacing sedentary time with light PA has no effect (Hamer, Stamatakis and Steptoe, 2014[36]). Furthermore, the association of sedentary time with health outcomes may depend on the types and intensity of activities that are being replaced by sedentary time.

12. At the same time, various factors modify the probability of having an active lifestyle. For example, Garcia, Lera-López and Suárez (2011[37]) calculated that the probability of participating in sports follows a U-shaped curve, with a first peak occurring during the youth. Participation then decreases with age, and reaches its minimum at age 33. However, demand for sports (as in time spent participating in sports) tends to increase again with ageing and people who decide to participate in sports allocate more time to this activity as they age. Parents' participation in sports tends to fall with the number of school-aged children, while having children in young age increases time spent doing sports. Furthermore, being married increases the probability of doing sports for women, while it decreases the probability for men. As such, the participation in sports and the time allocated

to the activity depends on two different decisions, which are explained by different variables (age, gender, number of children, hours worked, and more).

13. Finally, previous studies have evaluated that participation in PA depends on more than individual-level characteristics. Total PA is positively associated with walkability of the living environment, access to recreation facilities, but negatively associated with living in less urbanised areas (Van Holle et al., 2012[38]). Leisure PA is also positively associated with access to recreation facilities, as well as general safety and traffic- and crime-related safety.

14. This study aims to understand patterns of PA and SB over time. To achieve this objective, this paper explores the use of a rich set of methodological approaches on nationally-representative time use surveys from four OECD countries.

2. Data and methods

2.1. Time use surveys allow to record a person's activities for a period of 24 hours

15. Time use surveys (TUS) have a long history, as the first record goes back to the turn of the 20th century (Fisher and Gershuny, 2013[39]). Time diary studies as we know them today are mostly derived from the Szalai model (Szalai, 1972[40]), who developed a standard instrument that was adopted by the twelve countries which participated in the first cross-national study. Since then, several additional efforts have been made to harmonise time use data and their collection, such as the Harmonised European Time-Use Study, which was devised by a Eurostat working party in the late 1990s (Eurostat, 2009[41]), and the UN International Classification of Activities for Time Use Statistics (ICATUS).

16. TUS allow to precisely identify how individual spend their day. The respondent records, usually in 5-, 10-, or 15-minute increments, all the activities carried out in a 24–hour period. The surveys may provide complementary information about the activities carried out, e.g. goal of the activity, place, other persons present, secondary activity (another activity carried out at the same time, for instance having lunch while watching television), use of technology, and more. Different activities are defined depending on the survey, therefore providing different levels of precision.

17. The analyses in this paper were carried out using time use surveys from four OECD countries: Canada, France, Germany and the United States. Data were collected through either time use diaries (France and Germany), or Computer-Assisted Telephone Interviews (CATI) (Canada and the United States).

18. Despite the harmonisation efforts, the cross-country comparability of TUS remains far from being perfect, due to a number of methodological and measurement issues including, for example, use of different time slots or recording of activities in different days of the week, different data collection methods, recording of secondary activities and others. In addition, it should be noted that the classification of the activities used to carry out the analyses presented in this paper do not strictly follow the standard classification normally used by the OECD, due to the specific objectives of this analysis. Therefore, some of the estimates presented in this paper are not fully comparable to those presented in other analyses produced by the OECD. These limitation and others are further discussed in Section 4. of this Health Working Paper.

2.2. Data sources

19. Analyses on daily time use in terms of PA and SB were conducted on data from Canada, France, Germany and the United States (Table 2.1). More detailed information about the data and activity codes are available in Annex A.

Table 2.1. Description of data sources used in the study

Country	Name of database	Carried out by:	Survey years and number of observations	Method of recording	Total number of observations
Canada	General Social Survey (GSS)	Statistics Canada	2005 (19,559), 2010 (15,324), 2015 (16,967)	CATI	51,850
France	Enquête Emploi du Temps (EDT)	Institut National de la Statistique et des Études Économiques (INSEE)	2009-10 (26,445)	Time-use diary	26,445
Germany	Erhebung zur Zeitverwendung (ZVE)	Destatis	2001 (29,706), 2012 (27,141)	Time-use diary	56,847
United States	American Time Use Survey (ATUS)	Bureau of Labor Statistics (BLS)	2003 (18,254), 2008 (10,878), 2013 (9,401), 2016 (8,825)	CATI	47,358

2.3. Methods for analysis

20. To assess and evaluate the intensity of the activities performed by the respondents, Metabolic Equivalent (MET) values were assigned to all activities. The MET is a physiological measure that expresses the energy cost of an activity[1]; it can therefore be used to represent the physical intensity of an activity. The activities in the time use surveys were assigned a MET value using Tudor-Locke et al. (2009[42]), which provides a MET value for all activities in the American Time Use Survey (ATUS).

21. Physical activities were defined as all activities with MET≥3, and sedentary behaviours were defined as all activities such as 1≤MET<2. The activities were split into nine different categories: PA includes four different activity categories, SB includes two, and three activity categories are of less interest to this study (Table 2.2). It was not possible to extract physical activity performed while at work, as the different databases did not contain sufficient information on the activities carried out while at work. However, in France and the United States, it was possible to assign a MET value to each occupation, revealing the overall physical intensity of time spent at work, using Tudor-Locke et al. (2011[43]). Additional information concerning the data and how it was formatted is available in Annex A.

Table 2.2. Activity categories used throughout the analysis

Physical activities	Sedentary activities	Others
Leisure sport physical activities	Sedentary behaviours	Sleep
Leisure non sport physical activities	Motorised travel	Work
Domestic physical activity		Other activities
Active travel		

Source: Authors' analysis of time use data.

[1] MET is defined as the ratio of the metabolic rate (corresponding to the rate of energy consumption) during a specific physical activity task, to a reference metabolic rate equivalent to sitting at rest. This means that, for example, engaging in the activity of walking at normal speed (which has a MET value of about 3) requires three times the energy that a person would consume sitting at rest.

22. To study trends in physical activity, several statistical analyses were performed. More specifically, the following analyses were carried out:

- Weighted descriptive statistics were run to assess the amount of time spent in different activities within different sub-samples of the population.
- Income- and education-based inequalities were computed using the Relative Index of Inequality (RII); for instance, if the education-based RII for women for sports is 1.5, then women with a high level of education are 1.5 times more likely to report this activity than those with a low level of education.
- Logistic regressions were used to assess whether participation in an activity changed over time.
- To assess whether the amount of time spent in activities significantly evolved over time, Ordinary Least Squares (OLS) regressions were run.
- Weighted Poisson regressions were used to evaluate the individual characteristics that affect participation in sports activities, through Relative Risks (RR). If the RR for gender is 0.85, then women are 15% less likely to report sports activities than men.
- OLS regressions were again used to study the characteristics of individuals who report higher enjoyability scores for different activities (in France).
- The association between different activity categories was also studied. The goal was to answer the following question: "How does total PA/total SB evolve when domestic PA/leisure PA/etc increases or decreases?". Generalised Linear Models (GLM) with a gamma family and log link were used to assess the impact of category-based PA (MET hours) on total PA (MET hours). OLS regressions were used to assess the association with total sedentary time (minutes). Following the regressions, the marginal effects of the different activities on total PA and total SB, by age category, were computed.

23. Details on the methods and analyses are available in Annex B.

3. Physical and sedentary activities in four OECD countries

3.1. Men and women spend between 80 and 105 minutes in physical activities daily

24. Throughout the OECD countries studied, the amount of time spent in PA can differ by country and gender. While adult[2] women aged between 18 and 65 tend to spend more time overall in physical activities[3] (except in Canada, although the gap is small), results show that this is largely due to a gap in time spent in domestic PA, ranging from 5 minutes in Canada to 27 minutes in France (Figure 3.1, Figure 3.2, Figure 3.3, Figure 3.4)[4]. Gender gaps are also visible in leisure physical activities, with men aged between 18 and 64 consistently spending more time in these activities. Men and women spend approximately the same amount of time in daily active travel, while men spend approximately 10 minutes more in motorised travel than women do.

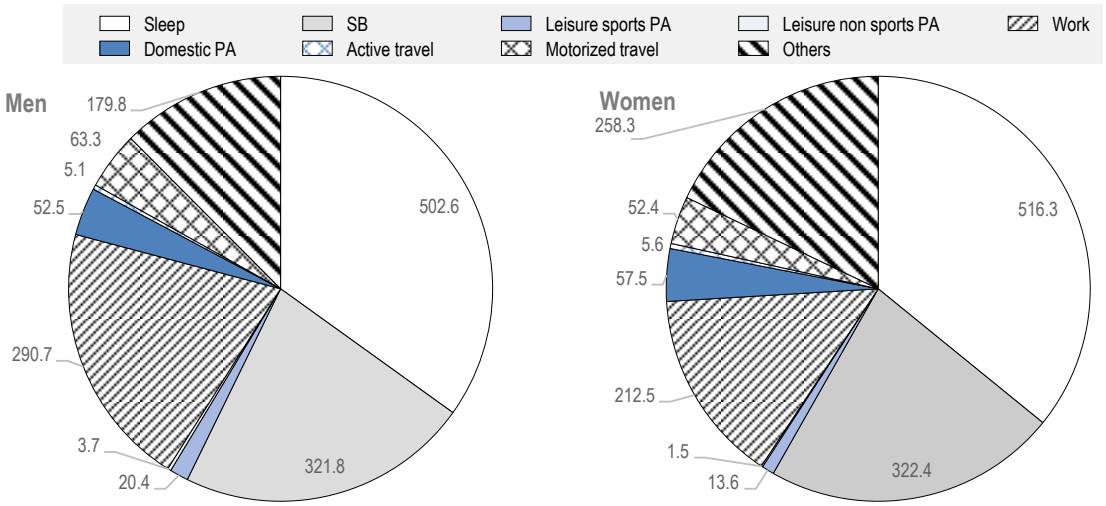
25. As several data points are available for Canada, Germany and the United States, it is also interesting to observe the time trends in PA and SB in these countries. Full descriptive statistics of mean time spent in each activity category are available in Annex C.

[2] Throughout this Health Working Paper, whenever analyses refer to the adult population, this means people aged 18-64 only. People aged 65 and over are instead excluded from the analyses.

[3] PA includes both sports and non-sports leisure PA, active travel, and domestic PA. Work-related PA is not included because insufficient information regarding time spent at work was available in the databases.

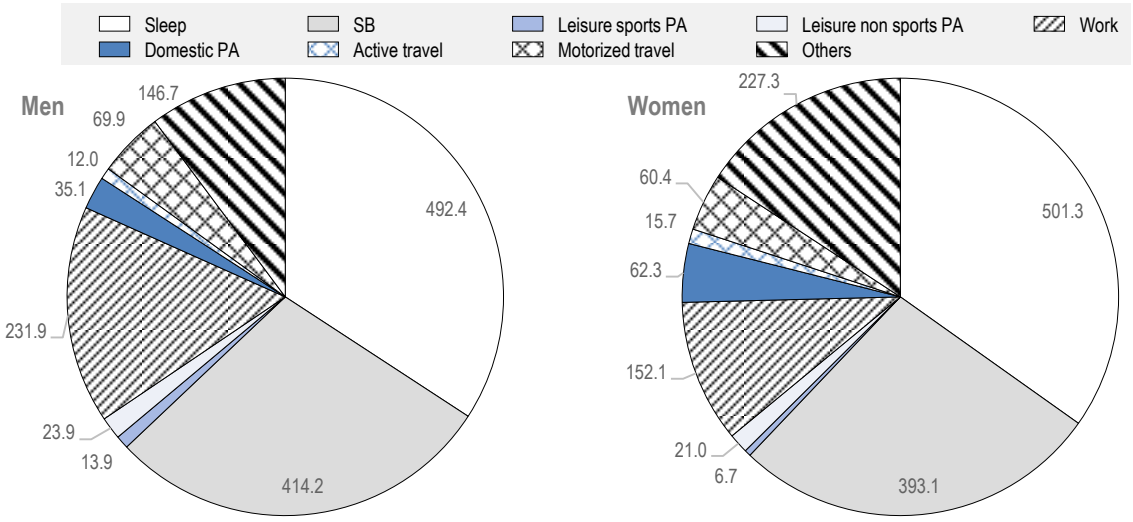
[4] Work activities were accounted for separately to the sedentary/active categorisation, as there was no way to know how active an individual is at their job in Canada and Germany. Additionally, there was only one MET value for occupation in France and the United States, which allows to assess how active one's job is overall, but does not account for variations throughout the day.

Figure 3.1. In Canada, in 2015, both men and women spent approximately 1 hour and 20 minutes in physical activities



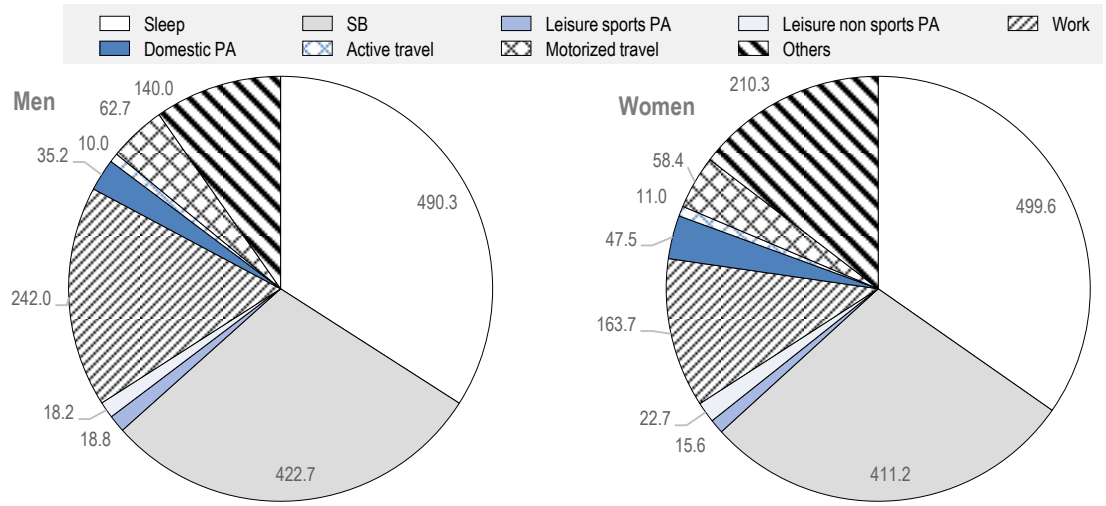
Note: Numbers represent average minutes spent in each activity category per day. Data refer to individuals aged 25 to 64 in 2015.
Source: Authors' analysis of time use data.

Figure 3.2. In France, in 2009, men spent just under one hour and a half in PA, while women dedicated 1 hour and 45 minutes to such activities



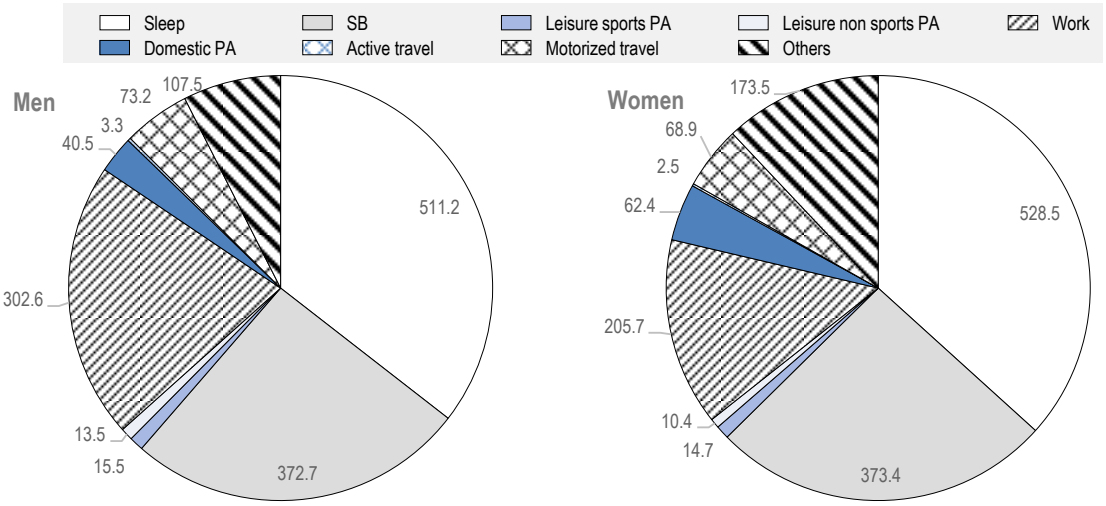
Note: Numbers represent average minutes spent in each activity category per day. Data refer to individuals aged 18 to 64 in 2009.
Source: Authors' analysis of time use data.

Figure 3.3. In Germany, in 2012, men spent about 1 hour and 20 minutes in physical activities, while women spent about 1 hour and 35 minutes in such activities



Note: Numbers represent average minutes spent in each activity category per day. Data refer to individuals aged 18 to 64 in 2012.
Source: Authors' analysis of time use data.

Figure 3.4. In the United States, in 2016, men spent nearly 1 hour and 15 minutes daily in PA, while women dedicated one hour and a half to such activities

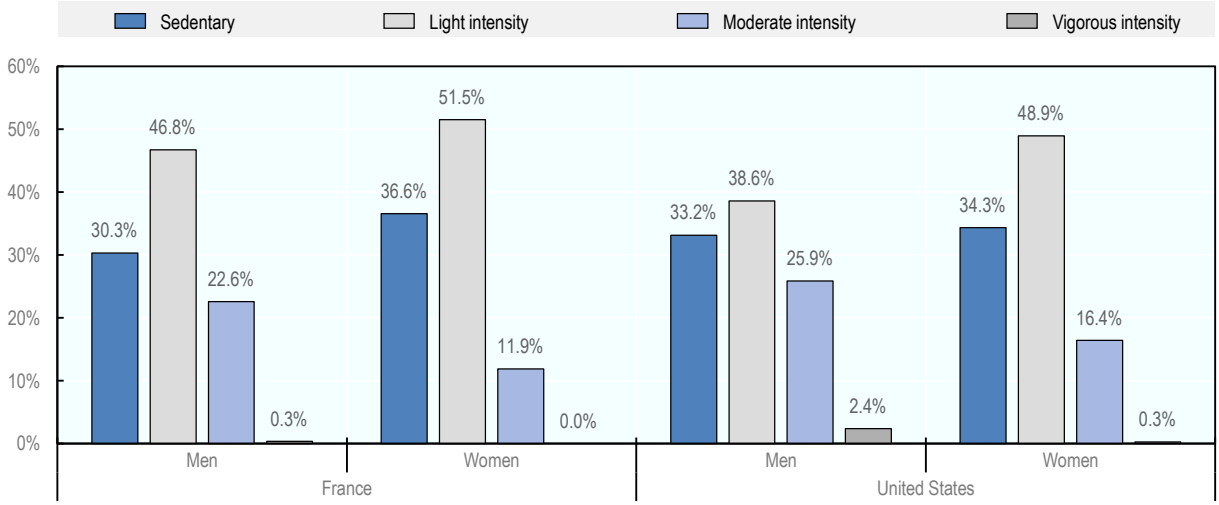


Note: Numbers represent average minutes spent in each activity category per day. Data refer to individuals aged 18 to 64 in 2016.
Source: Authors' analysis of time use data.

26. In the United States and France, most adults occupy sedentary (1≤MET<2) or light-intensity (2≤MET<3) jobs, with only 11.9% of women in France and 16.4% of women in the United States in moderate-intensity occupations (3≤MET<6), relative to 22.6% and 25.9% of men respectively (Figure 3.5). Very few men and women occupy vigorous-intensity jobs (MET≥6). Historical data show that in the United States, the share of men in sedentary jobs increased by nearly 6 percentages points between 2003 and 2016, while the

shares of men in low-, moderate- and vigorous-intensity jobs all dropped (see Annex D). Meanwhile, the share of women in moderate-intensity jobs increased slightly, while the share of women in low-intensity jobs decreased marginally.

Figure 3.5. A large majority of adults (especially women) occupy sedentary or low-intensity jobs



Note: Data refer to individuals aged 18-64 in 2009 in France and 2016 in the United States. Sedentary refers to 1≤MET<2, light intensity refers to 2≤MET<3, moderate intensity refers to 3≤MET<6, and vigorous intensity refers to MET≥6.
Source: Authors' analysis of time use data.

3.2. Participation in sport activities has been overall increasing, while participation in active travel has been decreasing

27. The rate of participation in different physical activities (i.e. the share of people that report participation in physical activity), as well as the average time spent in these physical activities within the population that reports participation in these activities, were computed (see Figure 3.6, Figure 3.7, Figure 3.8, Figure 3.9). Regressions were run to assess the statistical significance of change over time (see regression results in Annex E).

28. Overall, across countries, the shares of men and women reporting sport activities have been increasing over time, while no global trend in terms of time spent in such activities is discernible. No universal trend for either participation or time spent in leisure non-sports PA can be seen across countries. Overall, the shares of men and women who report both active and motorised travel have decreased over time. No global trend for time spent in active travel can be seen, while time spent in motorised travel seems stable. Detailed results are available in Annex G, and main results in each country are in Box 3.1.

Box 3.1. Main results on participation and duration of physical activities

Canada:

- Time spent in sports has decreased (132 minutes in 2005 versus 109 in 2015 for men, and 98 in 2005 versus 82 in 2015 for women), but the share of people participating has increased over time (14.7% to 18.7% in men, and 11.5% to 16.6% in women).
- Time spent in active travel has also increased (31 minutes to 43 in men, and 30 to 44 in women), but fewer people than before are participating in active travel (15.4% to 12% in men, and 18.3% to 12.5% in women).

France:

- In 2009, 11.5% of men and only 7.8% of women reported sport activities, with men reporting about 120 minutes daily and women just under 90 minutes.
- More women than men reported active travel (29% versus 22.4%), but both spent approximately 54 minutes daily in active travel.

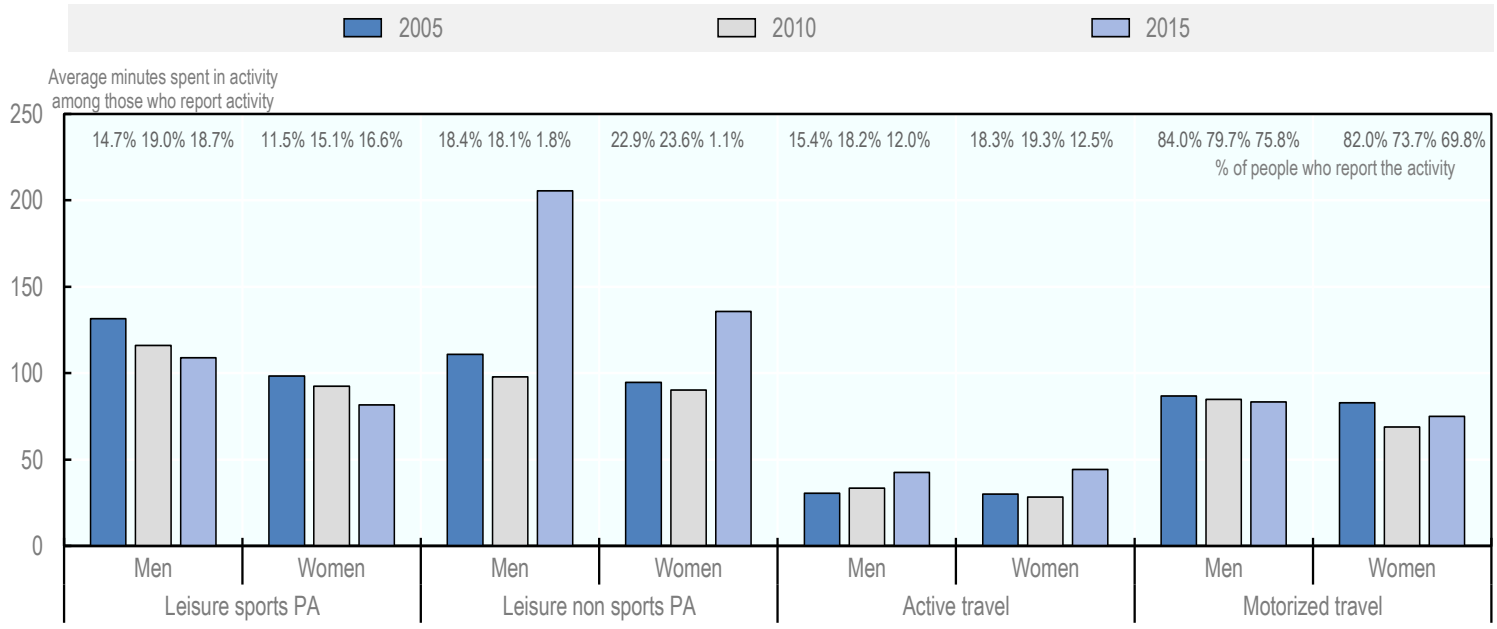
Germany:

- Participation in sports increased from 14% in men and 15.3% in women in 2001 to 17% and 16.2% respectively in 2012. Time spent in sports activities also increased (98 minutes and 73 minutes in 2001 to 111 and 97 in 2012, for men and women respectively).
- Participation in active travel dropped between 2001 and 2012 in Germany, from 35.8% of men and 39.6% of women to 25.3% and 28.3%. Time spent in active travel decreased as well.

United States:

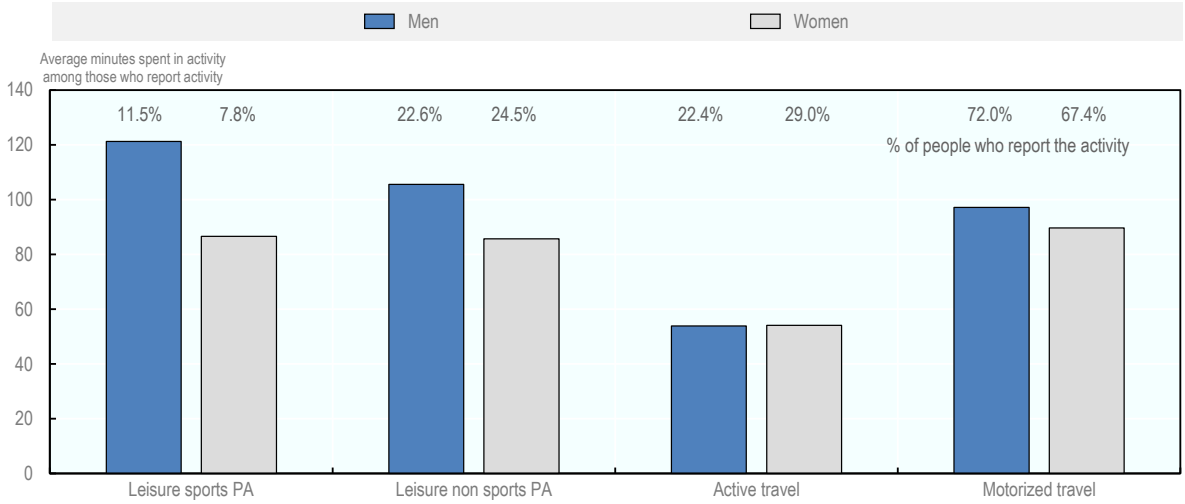
- Participation in sports increased over time for men and women, from 14.7% and 15.2% in 2003 to 19.4% and 20.1%, respectively. However, time spent in sport activities dropped in men, from 95 minutes in 2003 to 80 minutes in 2016.
- Fewer women reported active travel in 2016, at 10.5%, down from 13.4% in 2003. Duration has remained stable, at 25-30 minutes daily in men, and 20-25 minutes daily in women.

Figure 3.6. Participation in sports activities has been rising in Canada, but time dedicated to sports has dropped



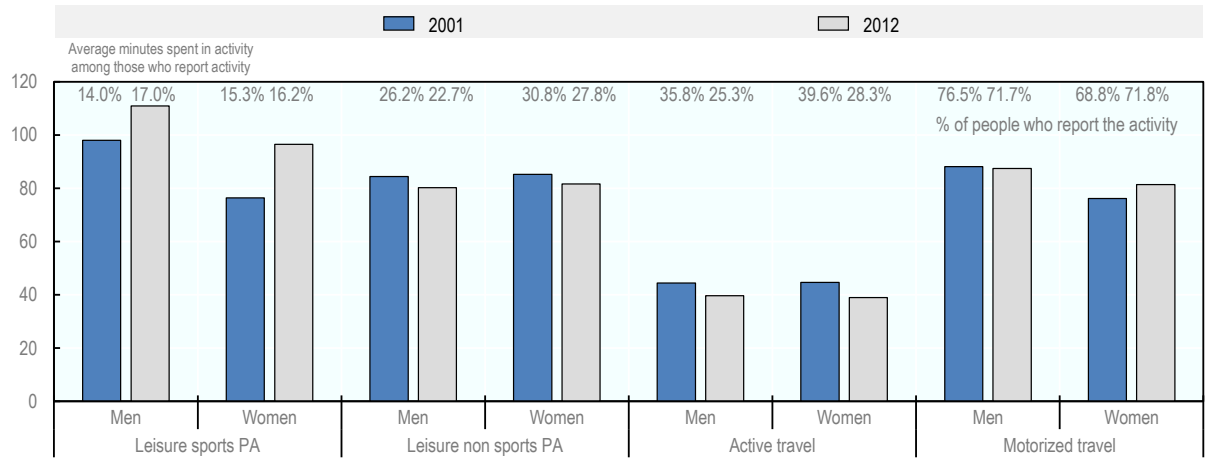
Note: Data refer to adults aged 18-64 in 2005 and 2010, and 25-64 in 2015 (please note that different age groups may explain part of the difference in the results). Percentages in the chart refer to the share of individuals who report the activity category. The average only includes those who report the activity, that is those with a duration of at least 1 minute.
Source: Authors' analysis of time use data.

Figure 3.7. In France, more men report sport activities, while more women report leisure non-sport physical activities and active travel



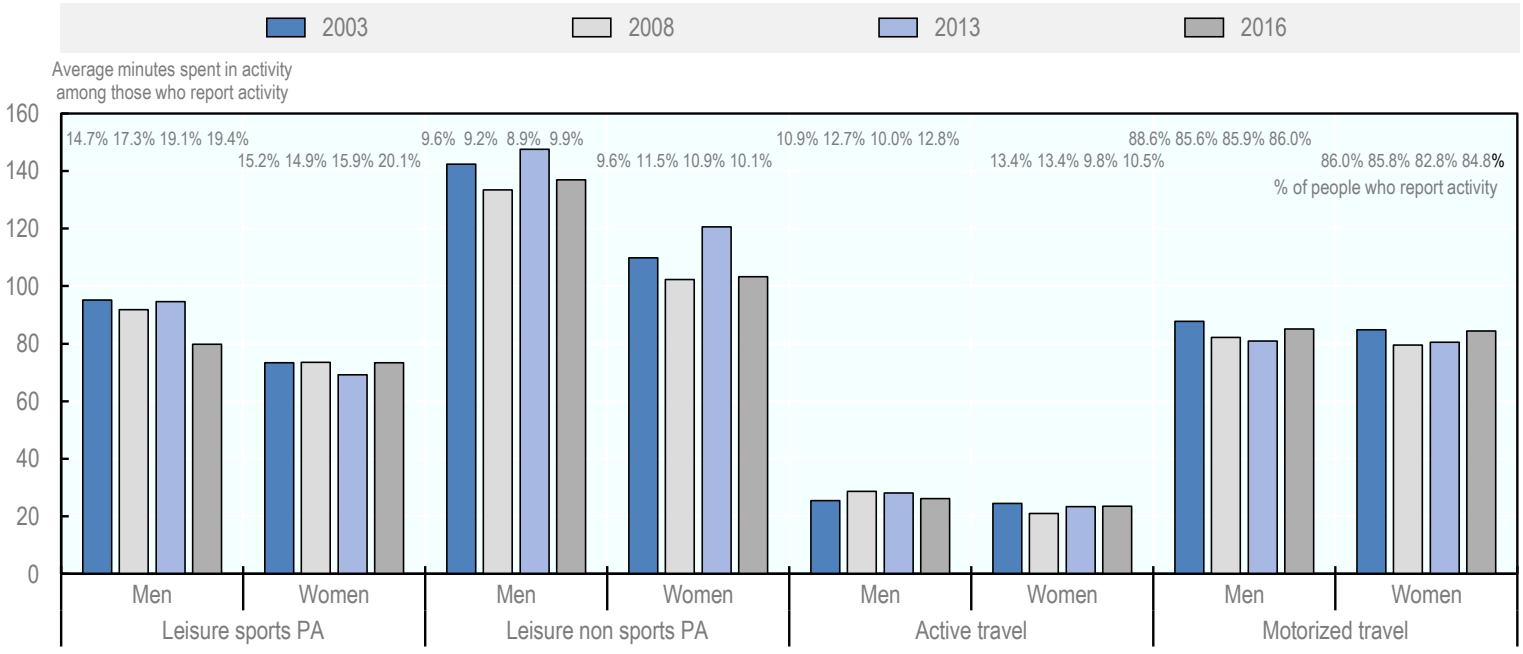
Note: Data refer to adults aged 18-64 in 2009. Percentages in the chart refer to the share of individuals who report the activity category. The average only includes those who report the activity, that is those with a duration of at least 1 minute.
Source: Authors' analysis of time use data.

Figure 3.8. In Germany, participation and time dedicated to sport have risen, while they have dropped for active travel



Note: Data refer to adults aged 18-64 in 2001 and 2012. Percentages in the chart refer to the share of individuals who report the activity category. The average only includes those who report the activity, that is those with a duration of at least 1 minute.
Source: Authors' analysis of time use data.

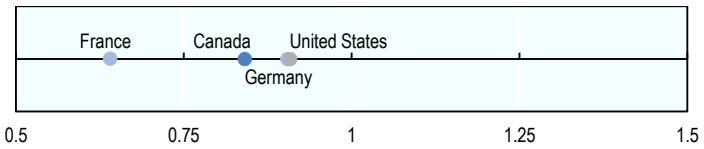
Figure 3.9. Participation in sport has increased in the United States, but duration has decreased in men, and remained constant in women



Note: Data refer to adults aged 18-64, in 2003, 2008, 2013 and 2016. Percentages in the chart refer to the share of individuals who report the activity category. The average only includes those who report the activity, that is those with a duration of at least 1 minute.
Source: Authors' analysis of time use data.

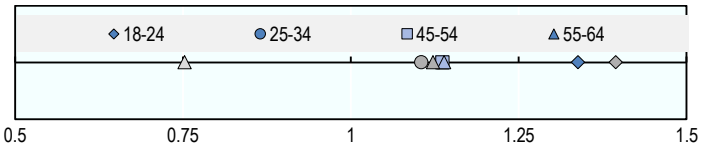
29. Furthermore, Poisson regression results show that women are consistently less likely than men to report participation in sports activities: 10% less likely in Germany and the United States, 16% less likely to in Canada, and up to 36% less likely to in France (Figure 3.10). In some countries, those aged 18-24, 25-34, and 45-54 are more likely to report sports activities than those aged 35-44 (Figure 3.11). In Germany and the United States, those aged 55-64 are also more likely to report these activities, while they are less likely to in France. Finally, in Canada and Germany, individuals working full-time are less likely to report sports than those not working (Figure 3.12), while in the United States, those working both full- and part-time are less likely to report sports. People with no tertiary education are also less likely to report sports activities: -19% in Germany, -29% in Canada, -37% in the United States, and -42% in France (see full results in Annex F). Finally, those in the lowest household income quintile are less likely to report these activities in Canada, France and Germany, while those in the highest household income quintile are more likely to, in Canada, Germany and the United States.

Figure 3.10. Relative risk for women



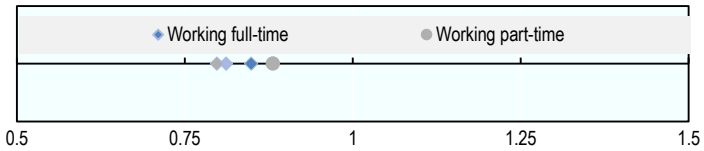
Note: Risk is relative to men.
Source: Authors' analysis of time use data.

Figure 3.11. Relative risk by age group



Note: Each country is displayed in a different colour: France is light grey, the United States are dark grey, Germany is light blue, and Canada is dark blue. Risk is relative to individuals aged 35-44.
Source: Authors' analysis of time use data.

Figure 3.12. Relative risk by employment status



Note: Each country is displayed in a different colour: France is light grey, the United States are dark grey, Germany is light blue, and Canada is dark blue. Risk is relative to those who are not employed.
Source: Authors' analysis of time use data.

Note: Only statistically significant results are reported in the charts. Relative risk represents the probability of reporting a certain characteristic or behaviour relative to a reference group. For example, in the United States, the RR for women 0.9; therefore, women are 1-0.9=10% less likely to report sports than men. The RR for individuals aged 18-24 in the United States is 1.4; therefore, those aged 18-24 are 40% more likely to report sports than those aged 35-44.

3.3. Inequalities in PA based on education and income have risen overall

30. The relative index of inequality was computed for both level of education and level of household income (Figure 3.13 and Figure 3.14). Four activity categories were analysed: leisure sports PA, leisure non-sports PA, active travel, and motorised (sedentary) travel. Education-based inequalities compare those with a tertiary level of education to those without a tertiary level, while income-based inequalities compare those in the highest quintile of household income to those in the lowest quintile.

31. Overall, inequalities based on level of income or education increased over time in the four OECD countries studied, and the inequalities by level of education are higher than those by level of income. Inequalities for leisure sports PA show an increasing trend in Canada, Germany and the United States – inequality based on level of education tends to be stronger in men than in women, while inequality based on level of income tends to be stronger in women than in men. Inequality in leisure non-sports PA participation based on level of education has been quite stable in women, while inequality has overall been decreasing for men. Meanwhile, inequality by level of income has been increasing for both men and women, and is overall higher in women than in men. France is the only country where inequality for leisure non-sports PA favours those with a low level of income, who are more likely to report these activities than those with a high level of income. The trends of both income- and education-based inequalities in active travel are overall increasing (except in the United States, where income-based inequalities have been decreasing over time, as the index gets closer to 1). Inequalities by level of education are either higher in men or very similar between both genders, while they are all quite similar by level of income. In all countries, the inequalities by level of income for active travel favour those in the lowest income quintile, who are consistently more likely to report active travel relative to those in the highest quintile. Finally, the trend in inequality for motorised travel by level of education is stable globally, while the trend for inequalities by level of income is increasing. The RII by level of education is similar in both men and women, while the RII by level of income is consistently stronger in men. Detailed results are available in Annex H, and main results in each country are in Box 3.2.

Box 3.2. Main results on education- and income-based inequalities for physical activities

Canada:

- Education-based inequalities for sports participation increased over time - men and women with tertiary education were 3 times more likely to report sports during the day than those without such education, in 2015.
- Income-based inequalities are not as strong - men in the highest income quintile are 1.7 times more likely to report sports than men in the lowest quintile, while the number rises to 2 for women. Men and women with a low level of income are more likely to participate in active travel than men and women with a high level of income, and the inequality rose between 2005 and 2015.

France:

- Women with tertiary education are 6 times more likely to report sports activities than women with no such education, while their male counterparts are 4 times more likely to. Level of education does not seem associated with active travel in women, while men with tertiary education are slightly more likely to report active travel than men with no tertiary education.
- Men and women in the highest income quintile are approximately twice as likely to report sports than those in the lowest quintile. Income is inversely associated with active travel and leisure non-sports PA.

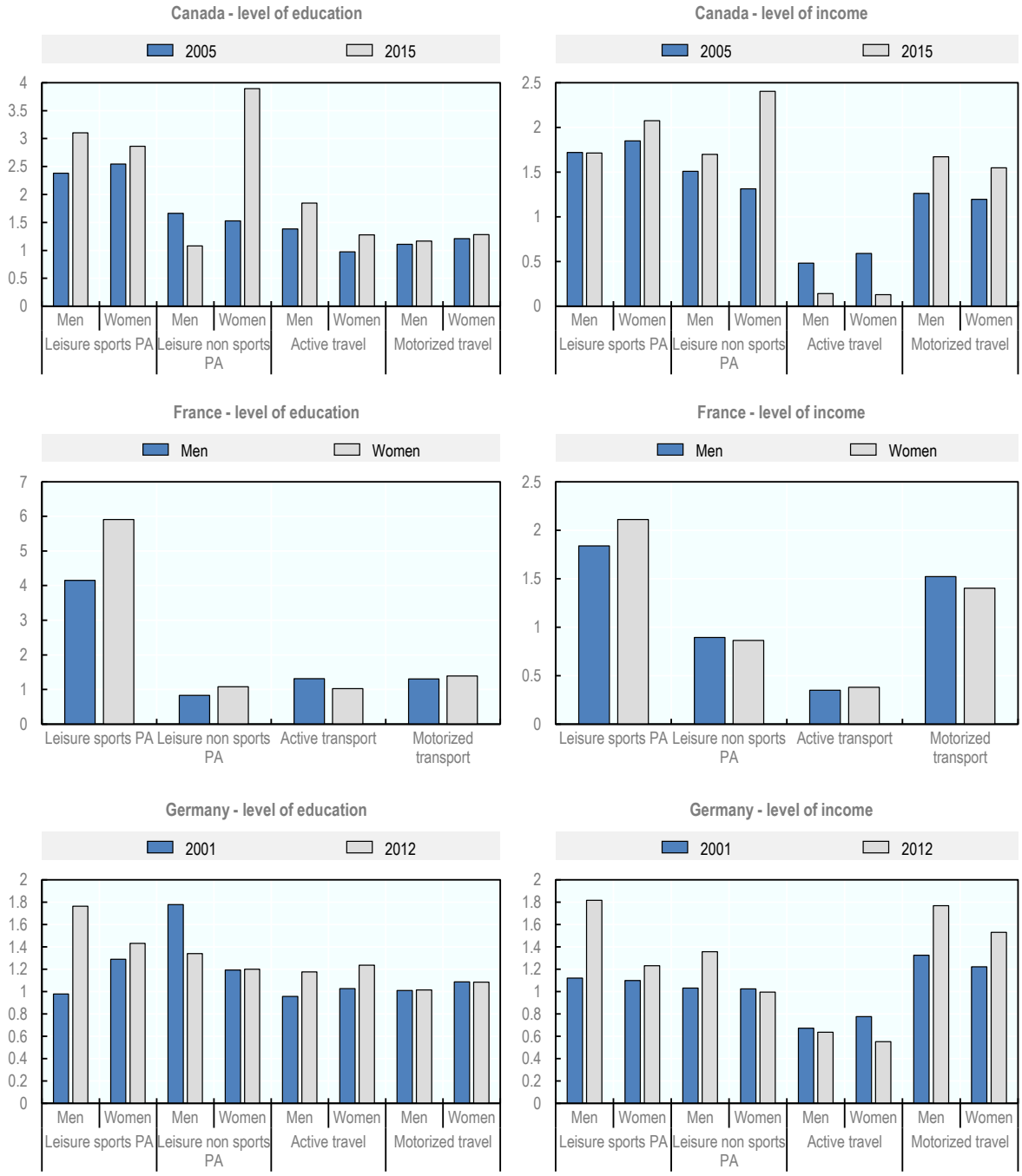
Germany:

- Education-based inequalities for sports participation in men rose sharply between 2001 and 2012, from 1 to 1.8. Meanwhile, inequalities for leisure non-sports PA decreased in men (from 1.8 to 1.3), while they remained stable for women (at 1.2).
- Income-based inequalities for sports participation also rose for men, to 1.8 in 2012. Germany shows the strongest income-based inequalities for motorised travel, at 1.8 for men and 1.5 for women (up from 1.3 and 1.2 in 2001, respectively).

United States:

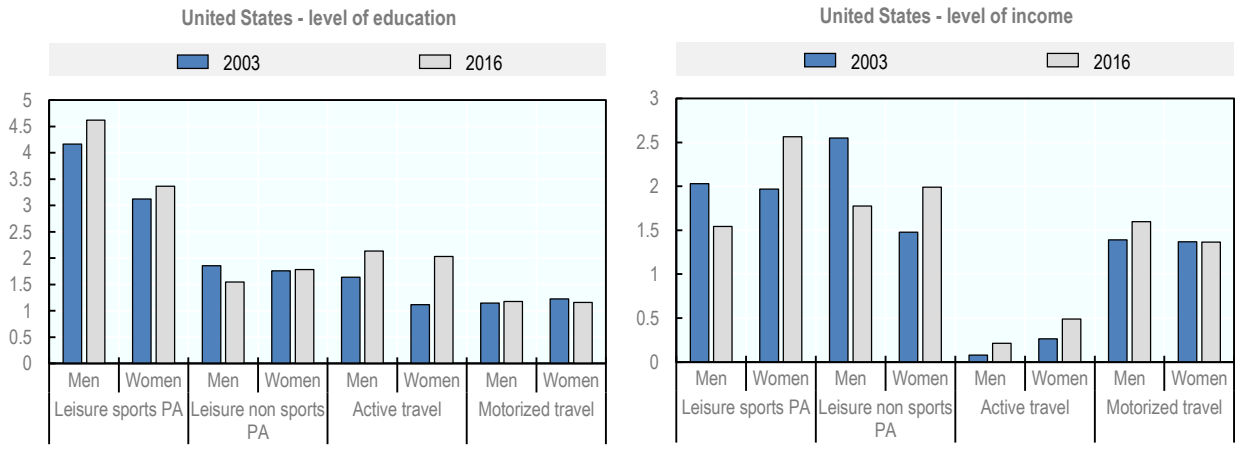
- Inequality by level of education is strongest in sports, at 4.6 for men and 3.4 for women, reflecting a slight increase between 2003 and 2016. Inequality for active travel rose for both men and women between 2003 and 2016, from 1.6 and 1.1 to approximately 2 for both genders.
- Income-based inequalities for sports dropped between 2003 and 2016 for men, from 2 to 1.5, while they rose for women, from 2 to 2.6. The trend is similar for leisure non-sports PA. Men and women with a low level of income are much more likely to report active travel, as in the other countries.

Figure 3.13. Relative index of inequality in Canada, France and Germany



Note: Data refer to individuals aged 18-64 in France (2009), Germany (2001 and 2012), and Canada (2005), and 25-64 in Canada (2015). The RII represents the relative probability of reporting a certain activity among those with tertiary education or in the highest income quintile relative to those without tertiary education or in the lowest income quintile, respectively. If the RII is smaller than 1, then those with tertiary education/in the highest income quintile are less likely than those without tertiary education/in the lowest income quintile to report a certain activity.
Source: Authors' analysis of time use data.

Figure 3.14. Relative index of inequality in the United States

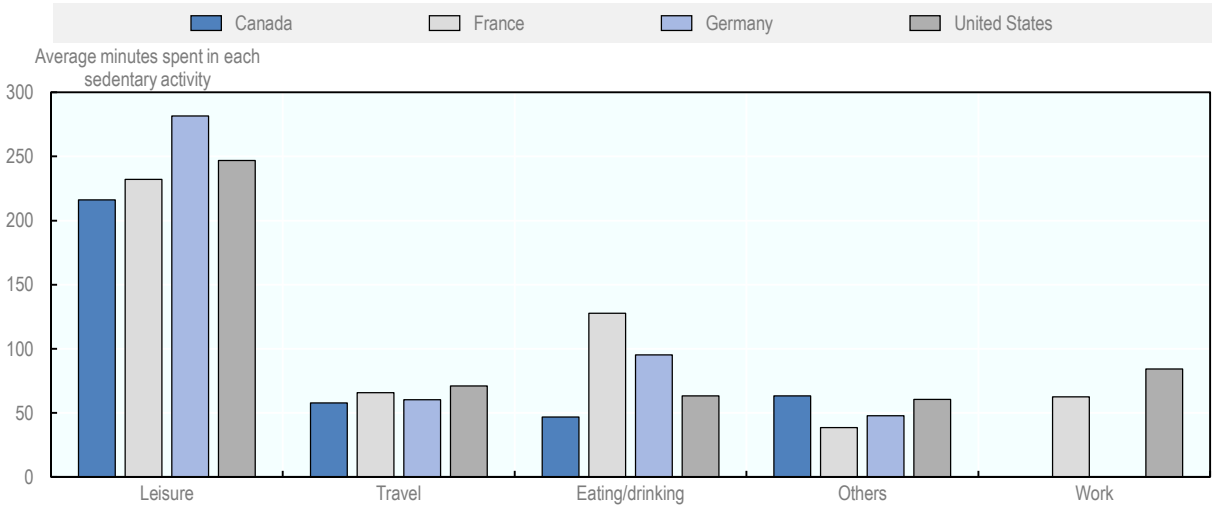


Note: Data refer to individuals aged 18-64 in 2003 and 2016. The RII represents the relative probability of reporting a certain activity among those with tertiary education or in the highest income quintile relative to those without tertiary education or in the lowest income quintile, respectively. If the RII is smaller than 1, then those with tertiary education/in the highest income quintile are less likely than those without tertiary education/in the lowest income quintile to report a certain activity.
Source: Authors' analysis of time use data.

3.4. Adults spend most of their sedentary time in leisure activities

32. The manner in which adults spend their sedentary time can vary by country (Figure 3.15). For instance, adults in Germany report the largest amount of sedentary leisure time, at just over 280 minutes (nearly 4 hours and 45 minutes), followed by the United States, at nearly 250 minutes (4 hours and 10 minutes). France comes in third, at 232 minutes (about 3 hours and 50 minutes), and Canadians are last, at 216 minutes (just over 3 hours and 30 minutes); however, French adults report by far the largest amount of sedentary time spent eating and drinking, at over 2 hours daily. They are far ahead of the German, who report 30 minutes less per day, American people, who report just over an hour daily, and the Canadians, who report the least time eating, at 47 minutes per day. Time spent in motorised travel varies much less between countries, from a low of 58 minutes per day in Canada to 71 minutes in the United States. As occupational MET values were only available for France and the United States, sedentary occupational time is only available for these two countries. French adults report an average of just over one hour per day, while American adults report 84 minutes. It must be noted that as only one MET value is available for occupational time, these numbers actually represent the average amount of time spent at work for adults whose occupation is sedentary.

Figure 3.15. Most sedentary time is spent in leisure activities



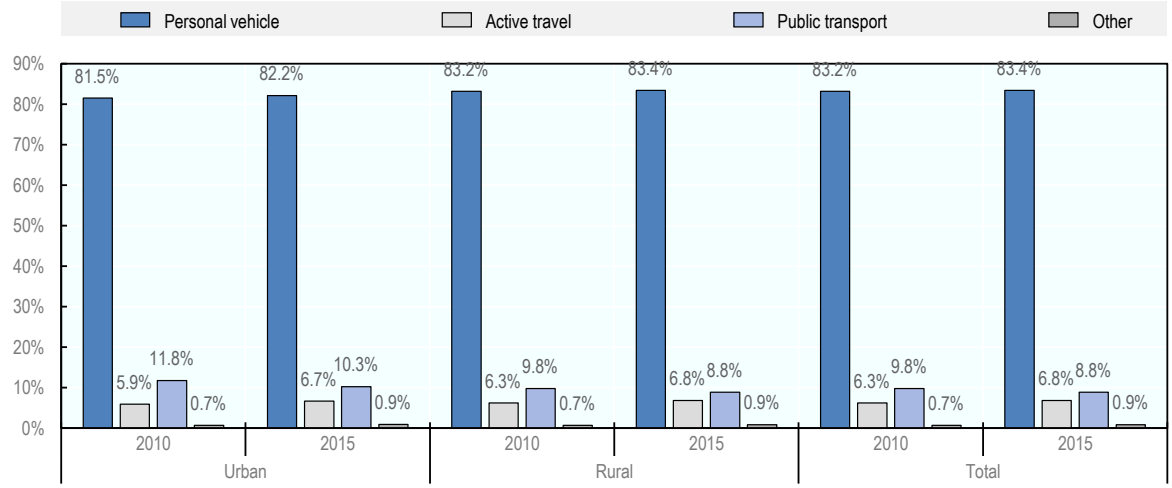
Note: Data refer to individuals aged 18-64 in France (2009), Germany (2012) and the United States (2016), and 25-64 in Canada (2015).
Source: Authors' analysis of time use data.

3.5. Mode of transport for commuting varies by place of residence in France, but not in Canada

33. The data from France (2009) and Canada (2010 and 2015) contain information on commuting patterns in the population. In Canada, commuting patterns vary little over time and by area of residence (Figure 3.16). Overall, in 2015, 83% of adults commuted using their own vehicle, 7% walked or biked to work, 9% used public transport, and 1% used other modes of transportation to go to work. The share of people using public transport is slightly higher in adults living in an urban area, while the share of people using their own vehicle was slightly higher in adults living in a rural area. Between 2010 and 2015, active travel increased marginally, while public transport slightly decreased.

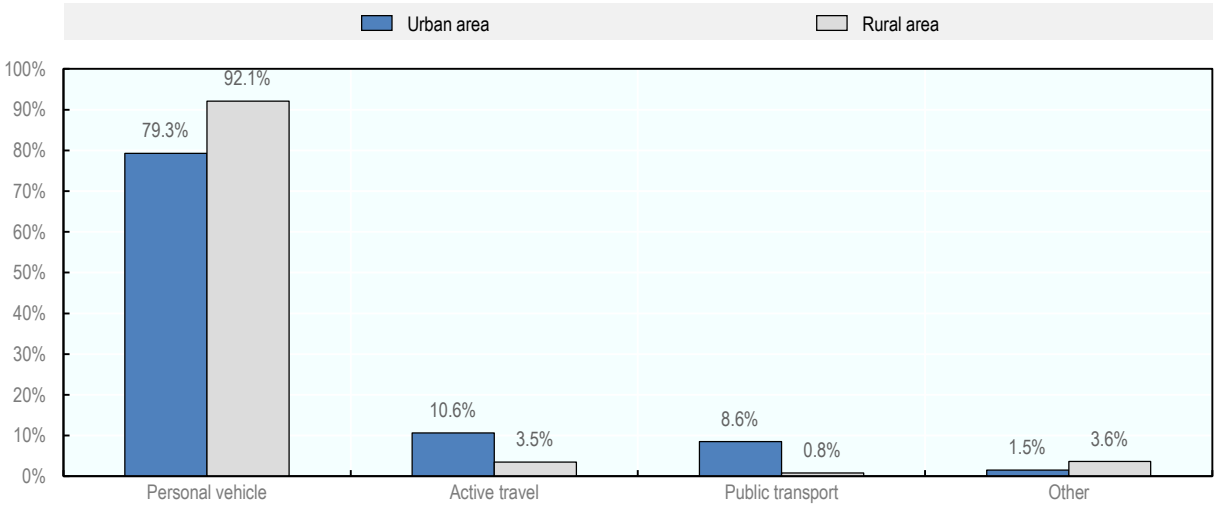
34. In France, results differ much more by area of residence (Figure 3.17). While 92% of those living in a rural area reported using a personal vehicle to commute in 2009, the rate is lower than 80% for adults living in an urban area. Active travel and use of public transport are much more prevalent in urban areas, at 10.6% and 8.6% respectively versus 3.5% and 0.8% in rural areas.

Figure 3.16. Commuting patterns in Canada do not vary much over time and place of residence



Note: Data refer to employed individuals aged 18-64 (2010) and 25-64 (2015) who report only one mode of transportation for daily commute. Data do not include those who work from home.
Source: Authors' analysis of time use data.

Figure 3.17. Commuting patterns in France vary strongly by place of residence



Note: Data refer to employed individuals aged 18-64 in 2009 who report only one mode of transportation for daily commute. Data do not include those who work from home.
Source: Authors' analysis of time use data.

3.6. Leisure physical activities are overall most enjoyed by adults

35. Different types of variables pertaining to well-being during certain activities and enjoyability of activities were available for Canada (2005), France (2009) and the United States (2013).

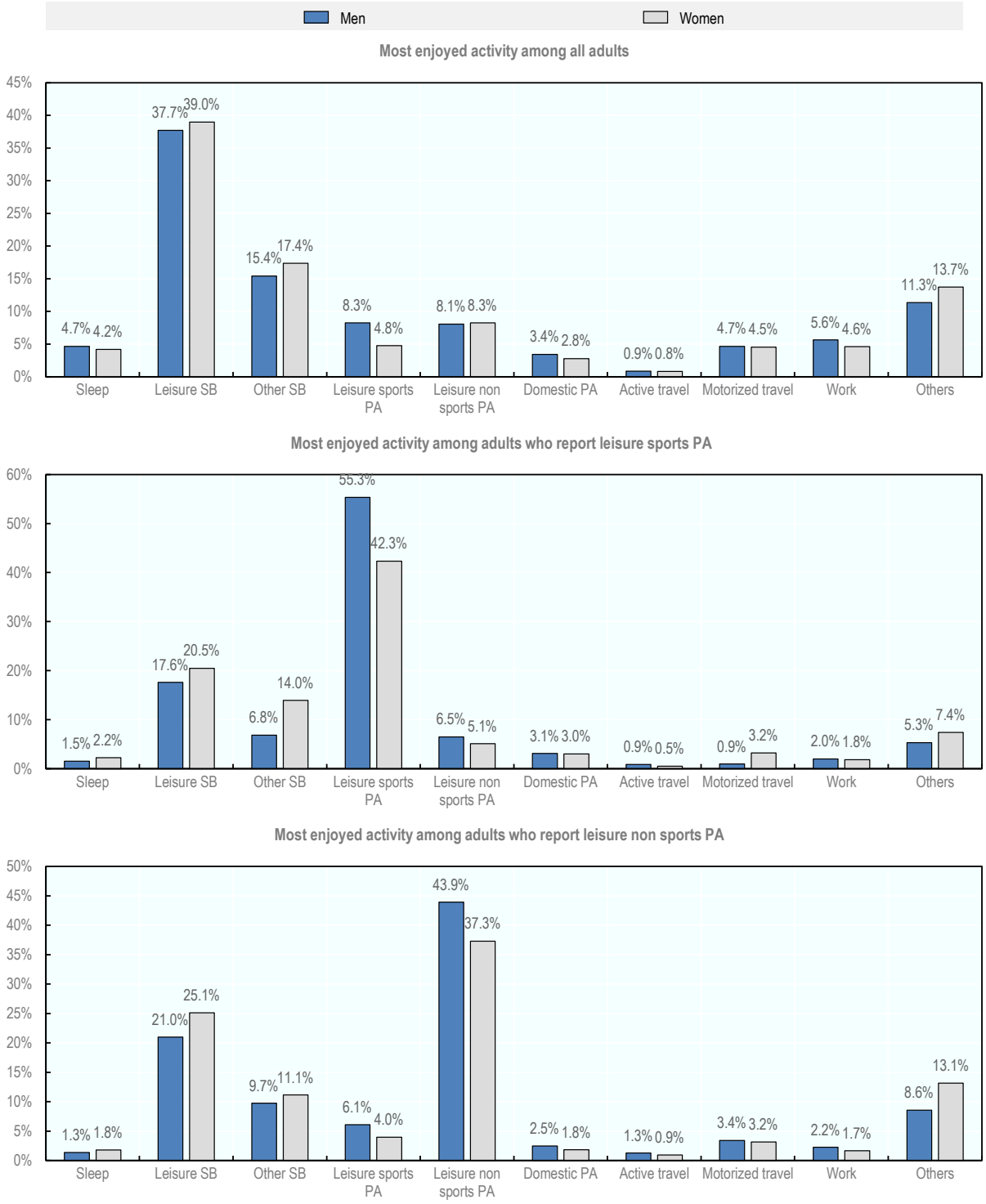
36. In Canada, the 2005 survey included questions on which activity respondents most enjoyed throughout their day. Overall, when studying all adults in the sample, the most enjoyed activity by far is leisure SB, with 39% of women reporting this as their favourite activity, and nearly 38% of men doing so as well (Figure 3.18). In this population, only 8.3% of men and 4.8% of women report leisure sports PA as their favourite activity, and 8.1% and 8.3% respectively report leisure non-sports PA as their favourite activity. However, when studying only those who report either sports or leisure non-sports PA throughout their day, the rate of enjoyability of these activities increases sharply. Among men and women who report sports in their day, 55.3% and 42.3% respectively declare this activity as the most enjoyable, while the rates for leisure SB decline distinctly. Despite this increase, men still report higher rates of enjoyability of these activities than women do. A similar pattern occurs for leisure non-sports PA, with 43.9% of men and 37.3% of women reporting this as their most enjoyable activity. The gender gap is lower here, as it was when studying the entire population.

37. In France, a subsample of respondents was selected to grade all activities completed throughout the day, on a scale ranging from -3 (unpleasant) to +3 (pleasant). Leisure PA obtains the highest average scores, at approximately 2.5 for both men and women for sports and non-sports PA (Figure 3.19). Meanwhile, work and motorised travel obtain the lowest scores, while domestic PA in women obtains the lowest score overall, and displays the strongest gender gap out of all activities. Additionally, regression results show that individuals with a lower level of income or education are more likely to give leisure sports PA a higher enjoyability score; women are also more likely to find such activities pleasant (see Annex I for full results).

38. In the United States, the survey for 2013 included questions on enjoyability and well-being during three random activities selected throughout the day. Respondents were asked to give a score from 0 to 6 for six different feelings during the activities: how sad, happy, tired, stressed they felt, and how painful and meaningful the activity was for them. Leisure physical activities obtain the highest scores for meaningfulness and happiness during the activity, as well as the lowest scores for sadness and stress (Figure 3.20). Leisure non-sports PA also has the lowest score for pain, while leisure sports PA has the highest score for this same indicator. Non-leisure SB displays the lowest score for happiness, as well as the highest scores for sadness and tiredness; meanwhile, motorised and active travel show low meaningfulness and pain scores. Work is the most stressful activity, and it has high tiredness and sadness scores, as well as a low happiness score.

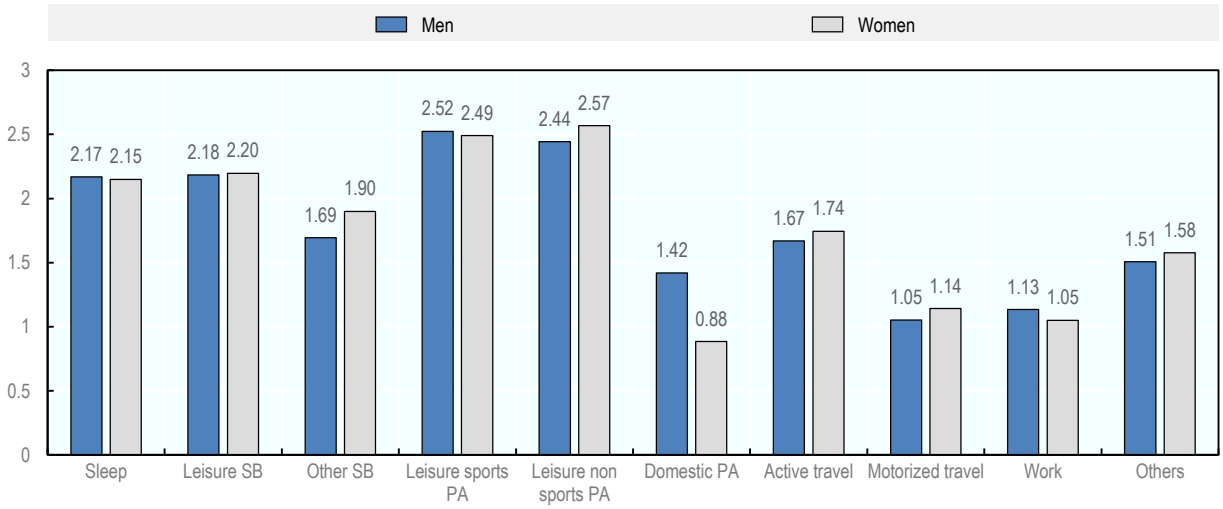
39. Overall, leisure PA are the most enjoyed activities (although enjoyability is measured differently in each survey). In Canada, those who participate in sports or leisure non-sports PA report they are the activities they most enjoyed throughout their day. In France, these activities also obtain the highest average scores. In this country, women, as well as individuals with low income or education, are more likely to report a higher enjoyability score for leisure PA. In the United States, leisure physical activities are those that lead to the most happiness and are the most meaningful.

Figure 3.18. Most enjoyed activity among adults in Canada in 2005



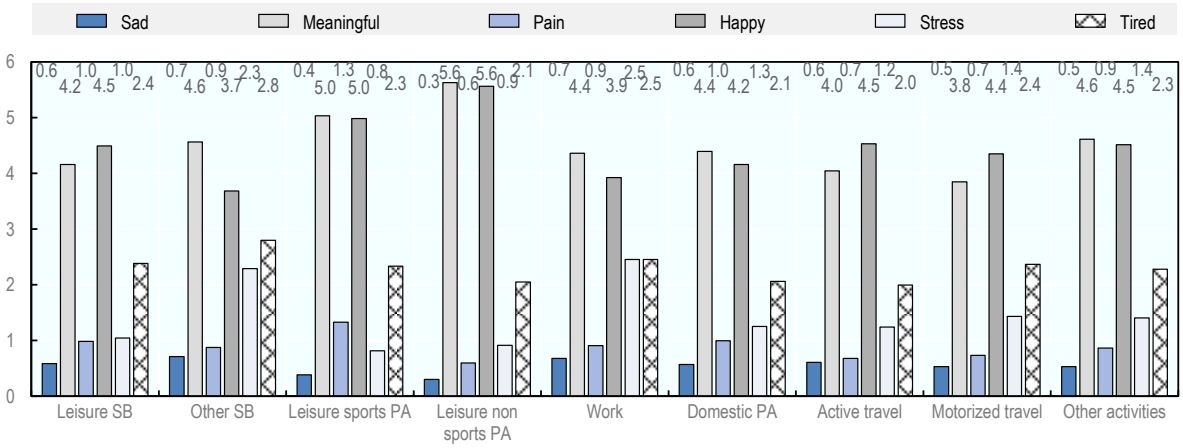
Note: Data refer to individuals aged 25-64 in 2015. The percentages represent the share of people who reported a certain activity as their favourite, out of all the activities.
Source: Authors' analysis of time use data.

Figure 3.19. Men and women in France most enjoy leisure physical activities



Note: Data refer to individuals aged 18-64 in 2009. The numbers represent the average grade given for different types of activities, from -3 (unpleasant) to +3 (pleasant), within a subsample of the respondents, for all activities carried out during the day.
Source: Authors' analysis of time use data

Figure 3.20. Leisure physical activities obtain the highest scores for happiness and meaningfulness in the United States



Note: Data refer to individuals aged 18-64 in 2013.
Source: Authors' analysis of time use data.

3.7. What are the effects of different activities on total physical and sedentary activities?

40. Regressions were run to determine the effect of additional time spent in different activities on total PA and total SB during the day. The marginal effects of different activities on total PA (MET hours) and total SB (minutes) were computed, fixed at the three defined age groups: ages 18-29, ages 30-49, and ages 50-64 (Table 3.1, Table 3.2, Table 3.3, and Table 3.4). A marginal effect represents the effect of an increase by one unit of a covariate on the explained variable. For instance, in Canada, one additional MET hour of sports in those aged 18-29 is associated with an increase of 2.464 MET hours of daily total PA (Table 3.1).

41. Overall, marginal effects on total PA are similar between countries. The marginal effects of sports activities (MET hours) on total MET hours of PA throughout the day range from approximately 0.5 to 0.7 for all age groups, reaching 0.84 for ages 50-64 in the United States, 0.88 for ages 30-49 in France, 1.00 for ages 18-29 in Germany, and 2.46 for ages 18-29 in Canada. The marginal effects of leisure non-sports PA are similar, ranging from 0.44 for ages 50-64 in the United States to 0.75 for ages 18-29 in France and Germany. The marginal effect of work-related PA is always negative. The effect is smallest for those aged 18-29 in France, and those aged 30-64 in the United States, at about -0.20. The effects are largest, for all age groups, in Canada, as they range from -0.67 for those aged 30-49 to -1.66 for those aged 50-64. The marginal effect of domestic PA ranges from 1.06 in Germany to 2.28 in Canada for individuals aged 18-29, from 0.67 in Germany to 1.46 in Canada for individuals aged 30-49, and from 0.61 in Germany to 1.79 in the United States for individuals aged 50-64. The marginal effects for active travel do not vary much within each country, except in France (0.51 for those aged 18-29, 1.58 for those aged 30-49, and 0.71 for those aged 50-64). In Canada, the effects go from 0.56 to 0.71, while they range from 0.84 to 0.89 in Germany, and 0.64 to 0.70 in the United States. The marginal effects for "other activities" are small in comparison to all other categories, and often non-statistically significant. In Canada, one additional MET hour of "other activities" leads to a decrease in total PA ranging from -0.067 to -0.16 MET hours of total PA. The marginal effect for those aged 50-64 is -0.20 in France, -0.07 in Germany, and -0.047 in the United States. The effect is positive only for those aged 18-29 in Germany, at 0.26.

42. Marginal effects on total SB are also comparable between countries. All marginal effects are negative, meaning that every extra MET hour in any activity category leads to a decrease in the total minutes spent in SB throughout the day. The marginal effects of sport activities on total SB range from -1.86 to -3.04 in Canada, -2.75 to -4.17 in France, -2.29 to -6.16 in Germany, and -2.50 to -4.51 in the United States. The effect of leisure non-sports PA is lowest, overall, for those aged 50-64 (especially in Germany), and ranges from -1.20 to -5.58. The marginal effects of work-related PA on total SB are large, at approximately -9.0 in France and -10.0 in the United States for all age groups, and ranging from -11.23 to -27.71 in Canada, and -7.47 to -15.89 in Germany. The marginal effects of domestic PA range from -4.57 to -7.52 in Canada, -5.79 to -9.27 in France, -6.96 to -16.80 in Germany, and -6.10 to -9.20 in the United States. Active travel has the strongest marginal effects in the United States, at -10.65 for those aged 18-29, -11.96 for those aged 30-49, and -14.96 for those aged 50-64. They otherwise range from -6.19 to -9.29 in Canada, -6.51 to -8.83 in France, and -3.61 to -8.23 in Germany. Finally, the marginal effects of "other activities" on total SB are all statistically significant, unlike for total PA. They go from -7.12 for individuals aged 30-49 in the United States to -17.96 for individuals aged 18-29 in Germany.

Table 3.1. Marginal effects for Canada

	Physical activity (MET hours)						Sedentary behaviour (minutes)					
	Leisure sports PA	Leisure non sports PA	Work-related PA	Domestic PA	Active travel	Other activities	Leisure sports PA	Leisure non sports PA	Work-related PA	Domestic PA	Active travel	Other activities
Ages 18-29	2.464***	0.572***	-0.968***	2.276***	0.707***	-0.0674***	-3.041***	-5.346***	-23.95**	-7.523***	-9.292***	-11.83***
	(3.30)	(15.12)	(-3.40)	(4.75)	(9.12)	(-4.09)	(-5.25)	(-5.96)	(-3.22)	(-13.68)	(-5.68)	(-32.90)
Ages 30-49	0.730***	0.539***	-0.674***	1.460***	0.654***	-0.0835***	-1.858***	-4.586***	-11.23***	-4.568***	-7.734***	-8.652***
	(12.11)	(25.89)	(-4.26)	(10.95)	(13.76)	(-6.56)	(-5.82)	(-9.98)	(-3.33)	(-18.91)	(-5.38)	(-35.72)
Ages 50-64	0.529***	0.502***	-1.659***	1.189***	0.561***	-0.155***	-2.782***	-4.248***	-27.71***	-6.547***	-6.191**	-10.23***
	(16.01)	(20.16)	(-4.90)	(11.85)	(7.77)	(-10.00)	(-6.57)	(-6.83)	(-4.51)	(-27.32)	(-3.13)	(-36.14)
N	24,147	24,147	6,363	24,147	24,147	24,147	24,147	24,147	6,363	24,147	24,147	24,147

Note: Data refer to individuals aged 18-64 in Canada in 2005 and 2010, and aged 25-64 in 2015. * signifies significant at the 5% level, ** signifies significant at the 1% level, and *** signifies significant at the 0.1% level. Results for physical activity refer to a generalised linear regression with gamma family and log link, and results for sedentary behaviour refer to a OLS regression. *Source*: Authors' analysis of time use data.

Table 3.2. Marginal effects for France

	Physical activity (MET hours)						Sedentary behaviour (minutes)					
	Leisure sports PA	Leisure non sports PA	Work-related PA	Domestic PA	Active travel	Other activities	Leisure sports PA	Leisure non sports PA	Work-related PA	Domestic PA	Active travel	Other activities
Ages 18-29	0.694***	0.750***	-0.185***	1.527**	0.508**	-0.00106	-4.166***	-6.599***	-9.802***	-9.271***	-6.508***	-12.19***
	(7.38)	(12.95)	(-4.56)	(2.71)	(3.04)	(-0.03)	(-6.30)	(-5.51)	(-13.46)	(-7.60)	(-4.61)	(-15.85)
Ages 30-49	0.878***	0.741***	-0.318***	1.137***	1.583**	-0.0281	-2.925***	-3.496***	-8.959***	-5.793***	-6.785***	-8.609***
	(11.75)	(24.93)	(-15.55)	(10.43)	(2.95)	(-1.19)	(-6.42)	(-5.91)	(-25.84)	(-11.89)	(-5.45)	(-20.34)
Ages 50-64	0.569***	0.606***	-0.287***	0.716***	0.707***	-0.199***	-2.753***	-5.584***	-9.460***	-7.496***	-8.826***	-11.80***
	(16.70)	(26.87)	(-9.91)	(21.22)	(10.72)	(-6.73)	(-5.52)	(-10.46)	(-18.62)	(-16.81)	(-5.46)	(-23.61)
N	10,773	10,773	4,786	10,773	10,773	10,773	10,773	10,773	4,786	10,773	10,773	10,773

Note: Data refer to individuals aged 18-64 in France in 2009. * signifies significant at the 5% level, ** signifies significant at the 1% level, and *** signifies significant at the 0.1% level. Results for physical activity refer to a generalised linear regression with gamma family and log link, and results for sedentary behaviour refer to a OLS regression. *Source*: Authors' analysis of time use data.

Table 3.3. Marginal effects for Germany

	Physical activity (MET hours)						Sedentary behaviour (minutes)					
	Leisure sports PA	Leisure non sports PA	Work-related PA	Domestic PA	Active travel	Other activities	Leisure sports PA	Leisure non sports PA	Work-related PA	Domestic PA	Active travel	Other activities
Ages 18-29	1.002***	0.747***	-0.130	1.056***	0.883***	0.262***	-6.157***	-14.90***	-15.89**	-16.80***	-3.610*	-17.96***
	(10.57)	(17.85)	(-0.53)	(11.04)	(15.81)	(6.31)	(-8.12)	(-12.16)	(-3.09)	(-12.90)	(-2.42)	(-22.14)
Ages 30-49	0.737***	0.655***	-0.369***	0.672***	0.837***	0.0345	-2.286***	-5.894***	-7.470***	-6.963***	-6.431***	-10.44***
	(29.98)	(35.87)	(-3.39)	(35.69)	(30.01)	(1.77)	(-5.55)	(-10.78)	(-3.58)	(-18.06)	(-8.62)	(-25.07)
Ages 50-64	0.706***	0.625***	-0.391*	0.610***	0.888***	-0.0741**	-4.131***	-1.203	-12.79*	-7.372***	-8.234***	-9.290***
	(20.54)	(23.05)	(-1.99)	(29.30)	(23.42)	(-2.81)	(-9.16)	(-1.58)	(-2.11)	(-16.87)	(-9.41)	(-17.66)
N	12,908	12,908	4,571	12,908	12,908	12,908	12,908	12,908	4,571	12,908	12,908	12,908

Note: Data refer to individuals aged 18-64 in Germany in 2001 and 2012. * signifies significant at the 5% level, ** signifies significant at the 1% level, and *** signifies significant at the 0.1% level. Results for physical activity refer to a generalised linear regression with gamma family and log link, and results for sedentary behaviour refer to a OLS regression.
Source: Authors' analysis of time use data.

Table 3.4. Marginal effects for the United States

	Physical activity (MET hours)						Sedentary behaviour (minutes)					
	Leisure sports PA	Leisure non sports PA	Work-related PA	Domestic PA	Active travel	Other activities	Leisure sports PA	Leisure non sports PA	Work-related PA	Domestic PA	Active travel	Other activities
Ages 18-29	0.716***	0.531***	-0.229***	1.474***	0.696***	-0.0167	-2.497***	-7.731***	-10.09***	-9.201***	-10.65***	-9.688***
	(8.81)	(14.37)	(-11.65)	(9.21)	(8.73)	(-0.72)	(-4.79)	(-15.43)	(-29.58)	(-20.62)	(-4.08)	(-19.43)
Ages 30-49	0.701***	0.523***	-0.195***	1.204***	0.669***	-0.0162	-2.501***	-5.651***	-9.447***	-6.097***	-11.96***	-7.118***
	(16.40)	(28.06)	(-15.38)	(17.14)	(12.81)	(-1.29)	(-8.05)	(-16.45)	(-46.53)	(-31.45)	(-6.25)	(-25.25)
Ages 50-64	0.835***	0.443***	-0.204***	1.791***	0.642***	-0.0469**	-4.508***	-5.141***	-10.30***	-8.116***	-14.96***	-9.706***
	(8.75)	(19.08)	(-14.15)	(9.45)	(8.53)	(-2.67)	(-9.96)	(-9.38)	(-37.63)	(-34.33)	(-5.67)	(-25.33)
N	33,451	33,451	12,544	33,451	33,451	33,451	33,451	33,451	12,544	33,451	33,451	33,451

Note: Data refer to individuals aged 18-64 in the United States in 2003, 2008, 2013 and 2016. * signifies significant at the 5% level, ** signifies significant at the 1% level, and *** signifies significant at the 0.1% level. Results for physical activity refer to a generalised linear regression with gamma family and log link, and results for sedentary behaviour refer to a OLS regression.
Source: Authors' analysis of time use data.

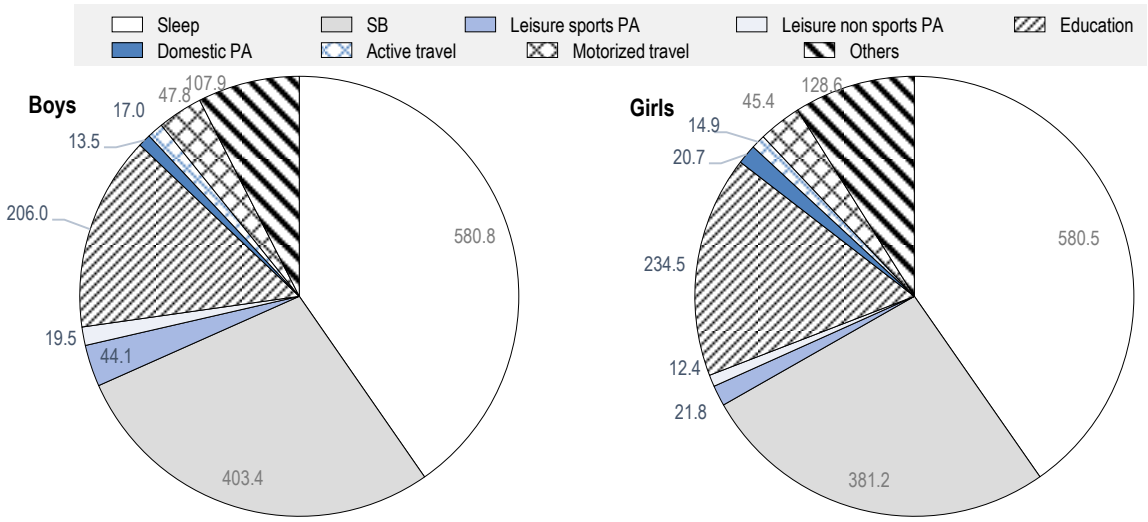
3.8. How do children spend their time?

3.8.1. Boys tend to spend more time than girls in leisure physical activities

43. Data on children under the age of 18 are available for France and Germany. In France, data concern 757 boys and girls aged 11 to 17 years old (survey year 2009), while in Germany, data concern 4,713 boys and girls aged 10 to 17 years old (survey year 2012). French results must be interpreted keeping the small sample size in mind.

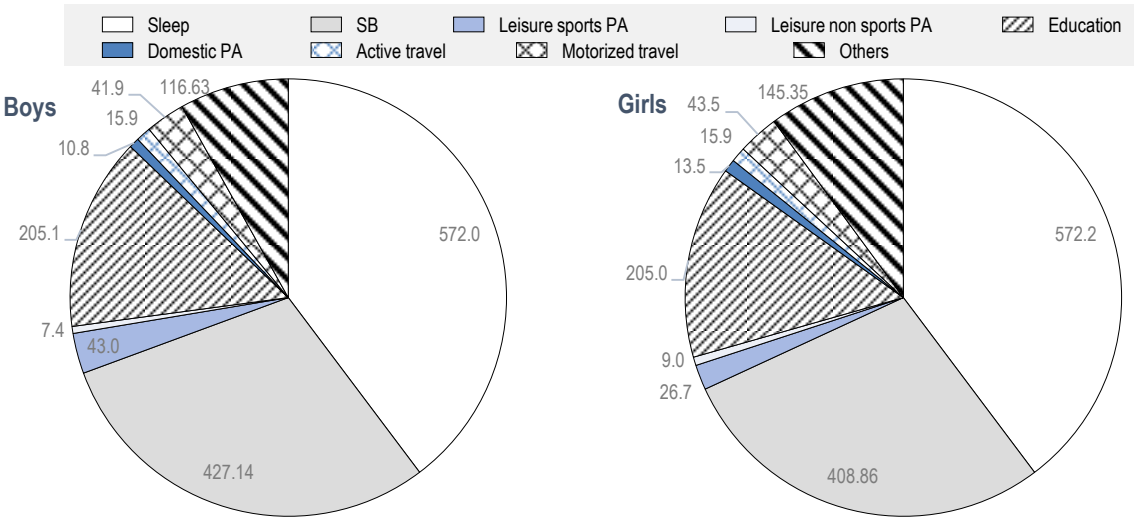
44. Boys and girls spend similar amounts of time sleeping in France, as well as in motorised and active travel (Figure 3.21). However, boys clearly spend more time in sport and leisure non-sport PA, and are slightly more sedentary, while girls spend more time in domestic physical activities. A similar pattern is visible for boys and girls in Germany (Figure 3.22), although boys and girls spend approximately the same amount of time in leisure non-sports PA.

Figure 3.21. Girls in France spend more time in domestic PA, while boys spend more time in leisure PA



Note: Data refer to individuals aged 11-17 in 2009.
Source: Authors' analysis of time use data.

Figure 3.22. Boys and girls in Germany spend the same amount of time in leisure non-sports PA, but boys spend more time in leisure sports PA



Note: Data refer to individuals aged 10-17 years old in 2012.
Source: Authors' analysis of time use data.

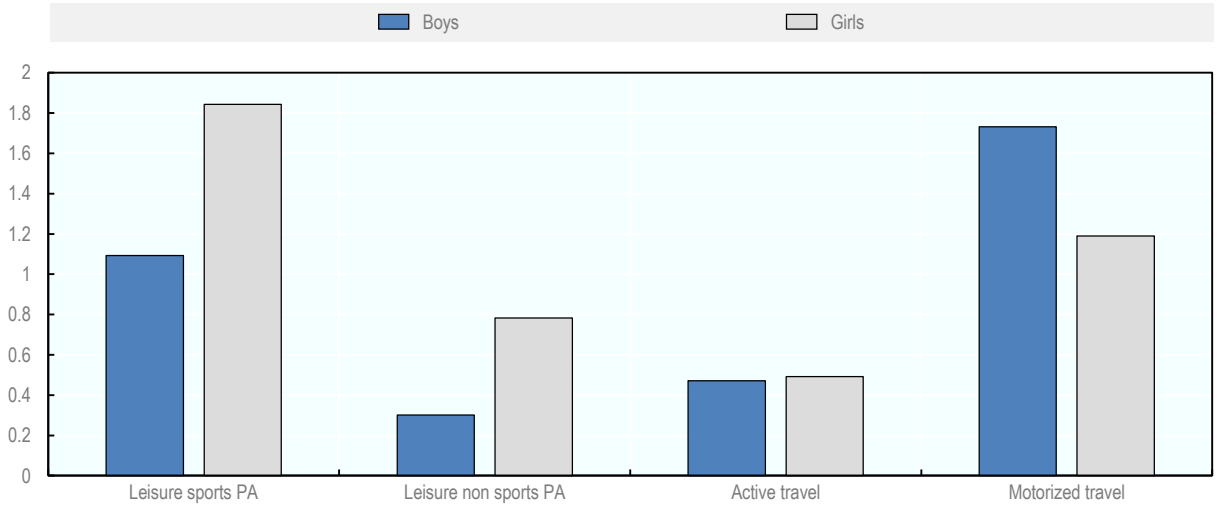
3.8.2. Inequalities in physical activities in children

45. The RII for children is not available by level of education, as the majority of children under the age of 18 report no tertiary education.

46. In France, level of income is clearly associated with participation in leisure sports PA in girls under the age of 18, as those in the highest household income quintile were 1.8 times more likely to report these activities than those in the lowest quintile (Figure 3.23). The association is much weaker in boys. The association of level of income with leisure non-sports PA favours boys and girls with a low level of income, as they are more likely to report these physical activities than those in the highest quintile. Boys and girls in the lowest quintile are twice as likely as those with a high level of household income to report active travel throughout the day. Finally, having a high level of income increases the likelihood of motorised transport, although the effect is much stronger in boys than in girls.

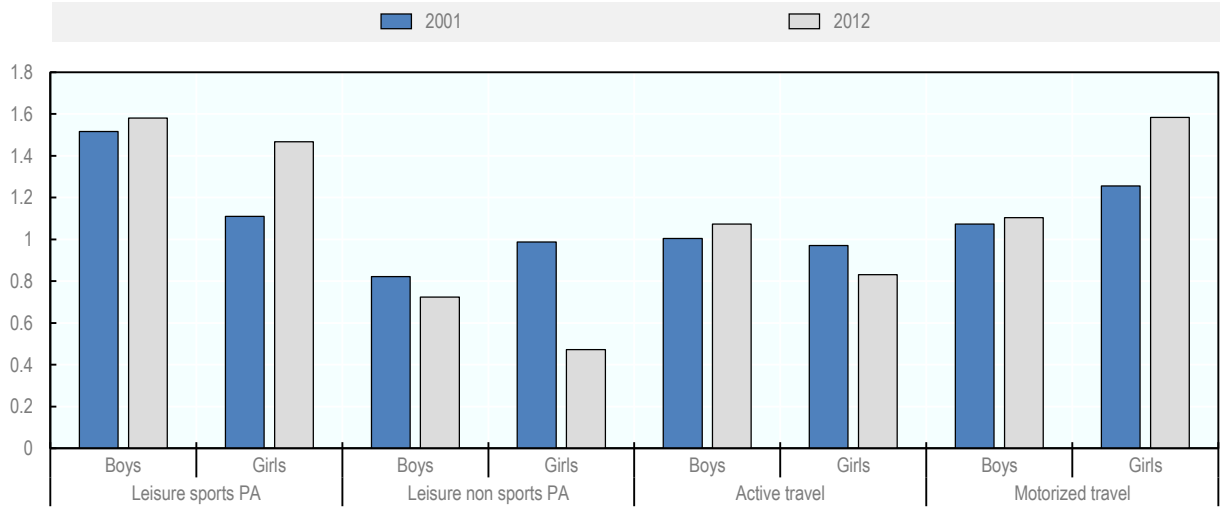
47. In Germany, inequalities by level of income evolved between 2001 and 2012 (Figure 3.24). Although the association of income with sport activities did not increase much for boys, remaining around 1.5, the index increased for girls, from 1.1 in 2001 to 1.5 in 2012. Similarly, inequalities have also increased for leisure non-sports PA, as the index decreased but remains under 1 for both boys and girls, meaning that those with a low level of household income are increasingly more likely to report these activities. Again, the change is stronger in girls, for whom the index decreased from 1 (reflecting no association of income with leisure non-sports PA) to 0.5 (meaning that girls in the lowest quintile are twice as likely to report these activities than those in the highest quintile). While the RII for active travel for boys has slightly increased since 2001, it remains close to 1, reflecting no association. However, through a decrease of the RII in girls, those with a low level of income are now slightly more likely to report such activities than those with a high level of income. Finally, both boys and girls in the highest income quintile are more likely to report motorised travel, although the increase between 2001 and 2012 is much steeper in girls, and in 2012, the RII was much higher in girls (at nearly 1.6) than in boys (at 1.1).

Figure 3.23. In France, girls with a higher level of household income are more likely to report leisure sports PA, while the association is the opposite for leisure non-sports PA



Note: Data refer to individuals aged 11-17 in France in 2009. The RII represents the relative probability of reporting a certain activity among those in the highest income quintile relative to those in the lowest income quintile. For example, a RII of 1.8 means that those in the highest income quintile are 80% more likely to report a certain activity relative to those in the lowest income quintile. If the RII is smaller than 1, then those with in the highest income quintile are less likely than those in the lowest income quintile to report a certain activity.
Source: Authors' analysis of time use data.

Figure 3.24. Inequalities by level of income in Germany have overall increased since 2001, especially in girls



Note: Data refer to individuals aged 10-17 in Germany in 2001 and 2012. The RII represents the relative probability of reporting a certain activity among those in the highest income quintile relative to those in the lowest income quintile. For example, a RII of 1.8 means that those in the highest income quintile are 80% more likely to report a certain activity relative to those in the lowest income quintile. If the RII is smaller than 1, then those with in the highest income quintile are less likely than those in the lowest income quintile to report a certain activity.
Source: Authors' analysis of time use data.

4. Discussion

Strengths of study

48. Nationally representative time use surveys from four OECD countries were used throughout this study. Data over several time periods were available for three of the countries. Few studies assessing the validity and reliability of time use surveys are available; one such study does however report acceptable measurement properties for assessing non-occupational sedentary and physical activity behaviour, with less clear results for light-intensity activity (van der Ploeg et al., 2010[44]). Nevertheless, time use studies are widely used in the literature, to study for instance paid and unpaid work done by men and women (Sayer, 2005[45]; Krantz-Kent, 2009[46]), elder care (Chari et al., 2015[47]), sleep (Chatzitheochari and Arber, 2009[48]; Basner et al., 2007[49]), use of information technology (Robinson and Martin, 2010[50]), home production and wages (Hersch, 2009[51]) and of course physical activity and sedentary behaviours (Ng and Popkin, 2012[52]).

Limitations of study

49. Although all surveys used contained sufficient activity categories for analysis, the number of categories varies greatly between and sometimes within countries (over time), from 64 in Canada (2015) to 431 in the United States (all years). As such, these differences in data must be taken into account when comparing results between survey years within, as well as between, countries.

50. Furthermore, only the French and German surveys contained data on children, aged 11-17 in France and 10-17 in Germany. We were therefore not able to analyse trends in children in all countries.

51. An outside study (Tudor-Locke et al., 2009[42]) was used to convert the different activities into their respective MET value, based on the American data. A certain number of activities in the Canadian, French, and German data had no obvious counterpart in Tudor-Locke et al. (2009[42]). When this occurred, a MET value from the Compendium of Physical Activities was used. This MET value is accurate, but this imputation implies a potential discrepancy with the MET values from Tudor-Locke et al. (2009[42]). More information about this procedure is available in Annex A, paragraph 12.

52. While a number of studies and institutions define a sedentary behaviour as a waking behaviour done in a sitting or reclining position such that MET≤1.5 (Sedentary Behaviour Research Network, 2012[5]), we defined sedentary activities as those with MET values between 1 and 2. This limits comparability, and must be taken into consideration when reading this paper.

53. The time use surveys used in this study account for time spent at work, however, no details on this activity are available. As such, detailed physical activity while at work is not available. This caveat was partially bypassed in France and the United States, thanks to the detailed occupational code available in the data, as well as Tudor-Locke et al. (2011[43]). In these two countries, an individual work MET value was attributed to each individual, based on this occupational code. It does not however account for variation in activity throughout the work day, and does not fully compensate for the lack of information on work time activities. No such code was available in Canada and Germany; therefore, no information on physical activity while at work is available for these two countries.

54. A further limitation of this study concerns the comparability of the presented results with other OECD work using TUS. More specifically, it should be noted that the classification of the activities used in this paper do not strictly follow the standard classification normally used by the OECD. The biggest differences can be found in the classification of sport and work activities. As an example, the standard OECD classification includes working-related travelling as part of the working activities while, in this paper, this activity is coded as part of the time spend on transportation. Because of these modifications in coding, some of the estimates presented in this paper are not fully comparable to those presented in other analyses produced by the OECD.

5. Conclusions

1. Various statistical analyses aiming to assess the trends in physical activity were run on data extracted from nationally representative time use surveys in four OECD countries. Results show that adult men and women spend on average between 80 and 105 minutes in PA daily. Women tend to spend more time in PA than men, but this mostly stems from the large gender gap in domestic PA, ranging from 5 minutes (Canada) to 27 minutes (France). Meanwhile, men consistently spend more time than women in leisure PA, and are statistically more likely to report sports activities than women. Overall, the share of people reporting participation in sports has been increasing over time, but no global trend for time spent in these activities can be seen – time dedicated to sports has dropped in the United States and Canada, but increased in Germany. Additionally, the share of people reporting active travel has been decreasing, but no trend for time spent in these activities is visible either – time in active travel increased in Canada, decreased in Germany, and remained stable in the United States.

2. In France and the United States, most individuals occupy sedentary or light-intensity jobs. Historical data from the United States show that the share of men in sedentary jobs increased by nearly 6 percentage points between 2003 and 2016, while the shares of men in low-, moderate- and vigorous-intensity jobs dropped.

3. Education- and income-based relative indexes of inequality reveal that inequalities for sports, leisure non-sports PA, active travel, and motorised travel have been increasing over time. Level of education shows a stronger correlation with physical activity participation than level of income, as inequalities are higher overall. However, education-based inequalities for sports are higher in men than in women, while income-based inequalities for sports are higher in women than in men. In France, those in the lowest income quintile are more likely to report leisure non-sports PA, which is not the case in any of the other countries studied. In all countries, those in the lowest quintile are more likely to report active travel, relative to those in the highest quintile.

4. The effect of additional sports PA, non-sports PA, work-related PA, domestic PA, active travel, and other activities on total PA and total SB were computed. Globally, additional leisure PA (sports and non-sports), domestic PA, and active travel all increase total PA. Additional MET hours spent in other activities as well as work-related PA, however, are associated with to a decrease in total PA. The marginal effects of all activity categories on total SB are negative, meaning that an increase in all aforementioned activities is associated with a decrease in total time spent in SB.

5. In children under 18, boys in France and Germany spend more time in sports activities than girls, and are slightly more sedentary. Meanwhile, girls spend more time than boys in domestic PA. Income-based inequalities reveal that boys and girls in the highest household income quintile are more likely to report sports, while boys and girls in the lowest quintile are more likely to report leisure non-sports PA. Inequalities for girls in Germany have strongly evolved over time, increasing for all activities.

Annex A. Data

Data sources

6. Data from Canada cover years 2005, 2010 and 2015, and were drawn from the Statistics Canada General Social Survey (GSS) cycles number 19 (2005), 24 (2010), and 29 (2015-2016) (Statistics Canada, 2017[53]). They include 51,850 observations over all three survey years, with 19,559 in 2005, 15,324 in 2010, and 16,967 in 2015. The number of activities defined in each wave differs, with 181 in 2005, 265 in 2010, and 64 in 2015. Activities are recorded from 4am to 4am, and episodes last however long the activity in question lasts – the episode does not end until the respondent changes activity.

7. Data from France were drawn from the 2009-10 wave of the Enquête Emploi du Temps (EDT), carried out by the Institut National de la Statistique et des Etudes Économiques (INSEE). The data for 2009-2010 include a total of 26,445 distinct time diaries and 15,691 individuals (in this survey, a sub-sample of individuals completed two time diaries). There are 139 distinct activities. This wave includes a module on quality of life (named the Stiglitz module), which records whether the daily activities were pleasant or unpleasant for an upsample of survey respondents. Data collection for France is done through one or several different types of diaries (depmondayending on which modules the respondent takes part in), in which the respondent can insert activities in ten-minute increments, from midnight to midnight. In these data, all episodes last ten minutes, no matter whether the activity changes or not.

8. Data from Germany are from two waves of the German time-use survey, Erhebung zur Zeitverwendung (ZVE), carried out by Destatis. The data cover survey years 2001-02 and 2012-13, with 29,706 unique diaries and 10,039 respondents in 2001-02, and 27,141 diaries and 9,051 individuals in 2012-13. The 2001-02 wave includes 279 activities, while the 2012-13 wave includes 151 activities. The data for Germany were collected in the same way as for France, through time-use diaries.

9. Data for the United States were drawn from the American Time Use Survey (ATUS), which has been carried out annually by the Bureau of Labor Statistics (BLS) since 2003 (BLS, n.d.[54]). We included survey years 2003 (20,720 respondents), 2008 (12,723 respondents), 2013 (11,385 respondents) and 2016 (10,493 respondents), thus including 55,321 individuals. Activities are classified into 17 major categories, each having two additional levels of detail (the number of final activities in each major category varies). The activities included in the data evolved from 2003 to 2016, however the data used in this study were drawn from the multi-year database, and as such were already harmonised into 431 categories (BLS, 2017[55]). Episodes are recorded from 4am to 4am, and last the duration of the activity in question (as for the Canadian data).

Data analysis and formatting

How did we measure physical and sedentary activities?

10. The time-use surveys used throughout this study provided us with all activities carried out by respondents in a 24-hour period (or more, depending on the survey). Using Tudor-Locke et al. (2009[42]; 2011[43]), we were able to assign a Metabolic Equivalent (MET) value to each of these activities. One MET is the amount of oxygen consumed while sitting at rest, and is equal to approximately 3.5mL O_2/kg/min (1.2 kcal/min for a 70kg

person) (Jetté, Sidney and Blümchen, 1990[56]). It is defined as the ratio of a person's working metabolic rate to their resting (basal) metabolic rate. More broadly, this concept allows to measure the intensity and energy spent while carrying out an activity. As such, we were able to assess the physical intensity of all activities in the time-use data.

11. Tudor-Locke et al. (2009[42]) assign a MET value to each activity in the 2003 wave of the ATUS, which was the first wave of the series. They do so using the Compendium of Physical Activities (Ainsworth et al., 2011[57]), an online database which records the MET values for hundreds of activities in 21 different categories. We linked each activity in the 2003 ATUS wave to the MET values provided in Tudor-Locke et al. (2009[42]), and were able to apply them to the other national surveys, as different TUS usually use similar activity categories. Nevertheless, the ATUS does tend to be more precise than other surveys; when an activity in another survey had a broader definition than the original ATUS activity, we computed the mean MET value of all activities which could logically be included (see Table 5.1 for examples).

Table 5.1. Examples of ATUS activity codes used to compute MET values for French activity codes

Activity code in French TUS data	ATUS activity codes used to compute MET value
614: Jeux de balles et ballons: foot, rugby, basket, tennis, golf, bowling, hockey, pétanque…	130102: Playing baseball 130103: Playing basketball 130107: Bowling 130113: Playing football 130114: Golfing 130117: Playing hockey 130120: Playing racquet sports 130123: Playing rugby 130126: Playing soccer 130127: Softball 130130: Playing volleyball
342: Gestion du ménage: faire ses comptes, courrier administratif	20901: Financial management 20902: Household & personal organization and planning 20903: Household & personal mail & messages (except e-mail) 20904: Household & personal e-mail and messages

Source: Modified from Emploi du Temps (EDT) 2009-2010 (INSEE, ADISP-CMH) and American Time Use Survey (Bureau of Labor Statistics).

12. Some activities in the Canadian, French, and German databases did not have a direct counterpart in the ATUS, and therefore in Tudor-Locke et al. (2009[42]). When this occurred, a MET value was instead extracted from the Compendium of Physical Activities (Ainsworth et al., 2011[57]). This occurred for eight activities in Canada in 2005 (out of 181), for eight activities (the same ones) in 2010 (out of 625 activities), and for three activities in 2015 (out of 64). There happened fewer times in 2015 because some activities had been grouped together. Two activities (out of 139) were extracted from the Compendium of PA for France. In Germany, three activities (out of 279) were extracted from the Compendium for 2001, and two activities (out of 151) were extracted for 2012.

13. A limit of TUS data is that they usually do not account for activities carried out while at work. Therefore, if a respondent reports being at work from 8am to 3pm, for example, the data will not provide any additional information as to the activities carried out during this time. As such, time periods while respondents were at work were not linked to any MET values in our data. To close this gap, we used MET values assigned to each American census occupation code from the 2002 classification (Tudor-Locke et al.,

2011[43]). To account for changes between the 2002 classification (used in the study) and the 2010 classification (used in the ATUS), we converted the codes in the ATUS back into the 2002 classification, to allow us to properly assign MET values. We were able to use these MET values for the French data also, by linking the French occupational codes to the American census codes. We were not able to associate MET values to work activities in the Canadian and German data as no detailed occupational code was included in the data.

Data formatting

14. To determine time spent in different PA and SB activities, we classified all activities available in each database into different categories, using the MET values associated with each activity (Table 5.2). These categories may contain physical activities only (active travel, domestic PA, sports and non-sports leisure PA), sedentary activities only (sedentary behaviours, motorised travel), or both (work). While most studies and institutions use a threshold of 1.5 METs to classify sedentary behaviours (Sedentary Behaviour Research Network, 2012[5]), we defined sedentary activities as those with MET values between 1 and 2 (Table 5.2). "Other activities" contains activities with 2≤MET<3.

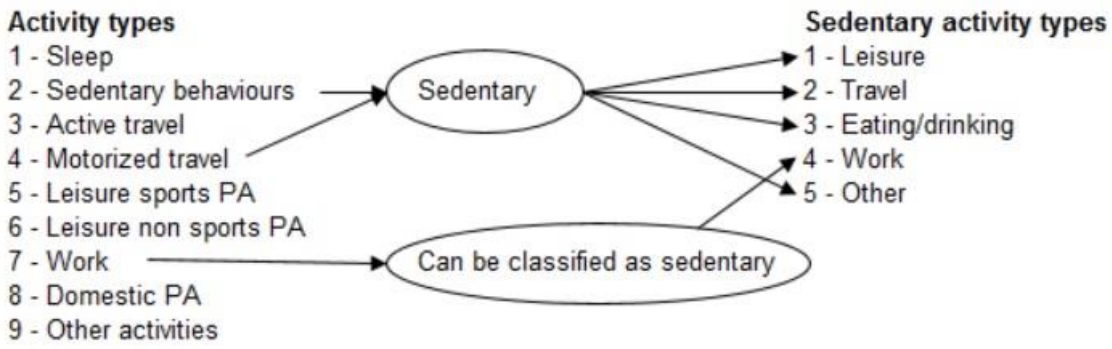
Table 5.2. Activity categories used for analysis

Type of activity	Description
Sleep	Defined using the sleep code
Sedentary behaviours	Activities with 1≤MET<2 that do not fit in other categories
Leisure sports physical activity	Leisure activities with MET≥3 that are sports
Leisure non sports physical activity	Leisure activities with MET≥3 that are not sports (hunting, fishing, physically-intense volunteering, etc.), or walking for leisure
Work	Defined using the work codes
Domestic physical activity	Household/garden work with MET≥3
Active travel	Travel by foot or bike
Motorised travel	Travel using motorised vehicles
Other activity	All activities which don't fit in the above categories (and are not of interest in the study)

Source: Authors' analysis of time use data

15. Activities were first classified into these nine categories. Where secondary/tertiary activities were available (secondary activities in France and Germany, and secondary and tertiary in Canada in 2010 and 2015), the activity with the highest MET value was selected as the main activity. In France and Germany, the secondary activity codes were the same as the primary activity codes, whereas in Canada only a subset of activities were available as secondary and tertiary. A second classification, to study time spent in sedentary activities, was also constructed (Figure 5.1).

Figure 5.1. Activity categories used for the analyses



Note: PA = Physical Activity.

Table 5.3. Activity codes for Canada (2005)

	Activity codes
Sleep	450: Night sleep/essential sleep
Sedentary behaviours	460: Naps/lying down; 872: Pleasure drives (as passenger); 873: Other pleasure drives (eg on a tour bus); 411: Private prayer, meditation and other informal spiritual activities; 480: Other personal care or private activities (eg washroom activities, sex); 900: Listening to the radio; 470: Relaxing, thinking, resting, smoking; 320: Personal care services (barbers, beauticians); 980: Other media or communication; 911: Watching scheduled TV programming; 912: Watching TV recorded programming/time shifted viewing; 913: Watching rented, purchased or downloaded movies; 914: Other television viewing; 920: Listening to CDs, cassette tapes or records; 230: Reading/talking/conversation with children; 410: Personal medical care (at home); 050: Meals/snacks at work; 060: Idle time before/after work; 151: Mending clothes/shoe care; 152: Dressmaking, sewing (for self or household member); 340: Adults medical and dental care (outside home); 430: Meals/snacks/coffee at home (include take out eaten at home); 431: Other meals/snacks/coffee (eg at cottage, park, picnic, hotel); 440: Meals at restaurant; 540: Meals/snacks/coffee at school; 600: Professional, union and general meetings; 620: Child, youth, family organizations (eg choir practice, church socials); 642: Meals, snacks/coffee at religious service; 651: Fraternal and social organizations (eg Lions' club); 652: Support groups (eg Al-Anon, AA, Weight Watchers); 661: Meals/snacks/coffee at place of volunteer work; 701: Professional sports events; 702: Amateur sports events; 711: Pop music concert; 730: Classical music concerts, opera, ballet, theatre; 742: Art galleries (art exhibition); 743: Heritage sites (archaeological sites); 753: Other socializing (eg at malls); 754: Meals/snacks/coffee at an institutional residence (excluding restaurants); 841: Home crafts done mainly for pleasure (sewing, needlework); 861: Games, cards, puzzles, board games; 863: Computer use - general (excluding surfing the net); 864: Surfing the net (as a leisure activity); 865: Computer use - email (writing and reading email); 866: Participating in chat groups; 867: Computer use - other internet communication; 950: Talking, conversation with household members only (face to face); 951: Telephone conversation; 370: Waiting for purchases or services; 220: Helping/teaching/reprimanding; 931: Reading books; 932: Reading magazines, pamphlets, bulletins, newsletters; 940: Reading newspapers; 961: Reading personal mail (including flyers and advertisements); 362: Other repair and cleaning services (dry cleaner, TV repair, furnace); 780: Other social gatherings; 282: Help and other care - household adults; 361: Automotive maintenance and repair services (car wash, oil change, tire rotation); 530: Homework (course, career, self-development); 610: Political, civic activity (eg voting, jury duty, city council, donating blood); 680: Other organizational, voluntary and religious activity; 640: Religious services/prayer/Bible readings; 350: Other professional service (lawyer, veterinarian); Financial services (banking, insurance, loans, taxes, financial consulting); 260: Unpaid babysitting of household children; 281: Help and other care - household children; 676: Correspondence assistance (letters, bills, forms); 550: Breaks/waiting for class; 962: Writing/typing letters, sending greeting cards (not including use of email); 181: Household administration; 500: Full-time classes; 511: Other classes (part-time); 512: Credit courses on TV; 842: Domestic home crafts done for sale or exchange; 751: Socializing at a private residence (no meal); 752: Socializing at a private residence (with meal); 760: Socializing at bars, clubs; 310: Shopping for durable household goods; 302: Everyday goods and products (clothing, gas, etc.); 673: Unpaid babysitting of household children
Leisure sports PA	806: Bowling, pool, ping-pong, pinball; 810: Other sports (eg frisbee, catch, track & field, skateboarding); 803: Golf, miniature golf; 807: Exercises, yoga, weight lifting; 811: Hunting (as sport); 812: Fishing (as sport); 809: Rowing, canoeing, kayaking, wind surfing, sailing; 815: Horseback riding, rodeo, jumping, dressage; 804: Swimming, water-skiing; 805: Skiing, ice skating, sledding, curling, snowboarding; 801: Football, basketball, baseball, volleyball, hockey, soccer, field hockey; 808: Judo, boxing, wrestling, fencing; 822: Bicycling; 802: Tennis, squash, racquetball, paddleball
Leisure non sports PA	023: Unpaid work in a family business or farm; 677: Unpaid help for a family business or farm; 240: Playing with children; 850: Music, theatre, dance; 880: Other leisure activity; 800: Coaching sports competitively or leisurely (unpaid); 813: Boating (motorboats and rowboats); 821: Walking, hiking, jogging, running
Work	040: Waiting/delays at work, during work hours; 070: Coffee/other breaks at work; 022: Looking for work; 011: Work for pay at main job; 012: Work for pay at other job(s); 021: Overtime work
Domestic PA	120: Indoor cleaning; 171: Gardening/grounds maintenance; 161: Interior maintenance and repair; 184: Unpacking groceries; 185: Packing or unpacking luggage and/or car; 186: Packing and unpacking for a move of the household; 672: House maintenance and repair assistance; 173: Care of house plants; 130: Outdoor cleaning (garbage, snow removal, garage); 164: Other home improvements; 162: Exterior maintenance and repair of home; 182: Stacking and cutting firewood

	Activity codes
Travel (motorised or active)	030: Travel during work; 090: Travel to/from paid work; 190: Travel to/from unpaid household work; 291: Travel to/from personal care activities for household children; 292: Travel to/from personal care activities for household adults; 390: Travel to/from shopping or obtaining services; 491: Travel to/from restaurant meals; 492: Travel to/from other personal care activities; 590: Travel to/from school education activities; 674: Transportation assistance to someone other than a household member; 691: Travel to/from civic and voluntary activity; 692: Travel to/from religious services; 791: Travel to/from attending sports, movies or other entertainment events or visit sites; 792: Travel to/from socializing at private residences; 793: Travel to/from other socializing (bars, hospitals, weddings); 891: Travel to/from participation in active sport/outdoor activities; 892: Travel to/from coaching activities; 893: Travel to/from hobbies or for the sale of crafts; 894: Travel to/from other leisure activities; 990: Travel to/from media or communication activities
Other activities	380: Other shopping and services; 250: Medical/emotional care of household children; 871: Pleasure drives (as the driver); 140: Laundry, ironing, folding; 080: Other work activity; 301: Grocery store, market, convenience store; 400: Washing, dressing; 713: Zoos, botanical gardens, planetarium, observatory; 720: Movies/film at a theatre/cinema, art films, drive-in movies; 741: Museums (exclusively art museums); 332: Government services; 580: Other study; 101: Meal preparation; 304: Renting a video; 831: Hobbies done mainly for pleasure (painting, sketching, photography); 832: Hobbies done for sale or exchange; 675: Care for disabled or ill; 272: Medical/emotional care of household adults; 678: Other unpaid work/help; 770: Casino, bingo, arcade; 271: Personal care of household adults; 303: Take-out food; 660: Volunteer work (organizations); 102: Baking, preserving food, home brewing, etc.; 520: Special lectures (occasional outside regular work or school); 560: Leisure and special interest classes; 816: Other outdoor activities/excursions (picnic, car rally, bird watching); 200: Baby care/child care (infant to 4 years old); 213: Personal care for children of the household; 712: Fairs, circuses, parades, amusement parks, ice follies; 814: Camping; 110: Food (or meal) clean-up; 211: Putting the children to bed; 212: Getting children ready for school; 671: Housework and cooking assistance; 172: Pet care (walking, grooming, feeding); 682: Video games/computer games; 163: Vehicle maintenance; 183: Other domestic/household work
Other codes	001: Missing gap in time; 002: Refusals

Source: Modified from General Social Survey Cycle 19 (Statistics Canada).

Table 5.4. Activity codes for Canada (2010)

	Activity codes
Sleep	450.0: Sleep; 33: Sleeping
Sedentary behaviours	50.0: Meals/snacks at work; 60.0: Idle time before/after work; 80.1: Selling goods and services on the internet (eg. eBay); 151.0: Mending clothes/shoe care; 152.0: Dressmaking, sewing (for self or household member); 181.2: Searching internet for recipe; 181.3: Financial administration for the household; 220.0: Helping/teaching/reprimanding; 230.1: Reading with children; 230.2: Talking/conversation with children; 250.2: Emotional care of household children; 260.0: Unpaid babysitting of household children; 281.1: Visiting child care/school establishments; 281.2: Associated communications related to child care/school activities; 281.8: Other educational help for household children; 282.1: Visiting school establishments for household adults; 282.2: Associated communication related to school activities; 282.9: Other help for household adults; 302.2: Reading/research for purchasing everyday goods; 302.3: Purchasing everyday goods and services on the internet; 310.2: Reading/research for purchasing everyday goods; 310.3: Purchasing durable household goods on the internet; 320.0: Personal care services (barbers, beauticians); 331.0: Financial services (banking, insurance, loans, taxes, financial consulting); 332.1: Government services (post office, police, driver's licence, EI, welfare); 340.1: Adult medical and dental care (outside home), including having prescriptions filled: 340.2: Adult medical care (inside home); 350.1: Professional service (lawyer, vet): 350.2: Dwelling renovation (eg. contractors, plumbers, architect); 350.3: Private mail service (eg. Fedex); 350.9: Other professional service, n.e.c.; 361.0: Automotive maintenance and repair services (car wash, oil change, tire rotation); 362: Other repair and cleaning services (dry cleaner, TV repair, furnace); 370: Waiting for purchases or services; 380.2: Checking into and out of hotel, motel or B&B; 380.9: Other shopping and services; 410.1: Personal medical care (at home) - by self; 410.2: Personal medical care (at home) - administered by household member; 410.3: Personal medical care (at home) - administered by non-household member (unpaid); 411.0: Private prayer, meditation and other informal spiritual activities; 430.0: Meals/snacks/coffee at home (include take out eaten at home); 431.0: Other meals/snacks/coffee (eg at cottage, park, picnic, hotel); 440.0: Meals at restaurant; 460.0: Naps/lying down; 470.0: Relaxing, thinking, resting, smoking; 480.0: Other personal care or private activities (eg washroom activities, sex); 500.0: Full-time classes; 511.0: Other classes (part-time); 512.0: Credit courses on TV; 530.1: Homework (course, career, special development); 530.2: Using the internet for research/homework; 540.0: Meals/snacks/coffee at school; 550.0: Breaks/waiting for class; 600.0: Professional, union and general meetings; 610.0: Political, civic activity (eg voting, jury duty, city council, donating blood); 620.0: Child, youth, family organizations (eg scout leader, school volunteer); 630.0: Religious meetings, organizations (eg choir practice, church socials); 640.0: Religious services/prayer/Bible readings; 642.0: Meals/snacks/coffee at religious service; 651.0: Fraternal and social organizations (eg Lions' club); 652.0: Support groups (eg Al-Anon, AA, Weight Watchers); 660.1: Volunteer work (organizations) - organizing and planning; 660.2: Volunteer work (organizations) - fundraising; 660.9: Volunteer work (organizations) - other volunteer work; 661.0: Meals/snacks/coffee at place of volunteer work; 673.3: Education related help to non-household children; 673.4: Looking after non-household children as primary activity; 673.5: Reading/talking with non-household children; 673.9: Other unpaid help provided to non-household children; 675.3: Education related help to non-household adult: 676.0: Correspondence assistance (letters, bills, forms); 680.1: Other organizational and voluntary activity; 680.2: Other religious activity; 701.0: Professional sports events; 702.0: Amateur sports events; 711.0: Pop music concert; 730.0: Classical music concerts, opera, ballet, theatre; 742.0: Art galleries (art exhibition); 743.0: Heritage sites (archaeological sites); 751.0: Socializing at a private residence (no meal); 752.0: Socializing at a private residence (with meal); 753.0: Other socializing (eg at malls); 754.0: Meals/snacks/coffee at an institutional residence (excluding restaurants); 760.0: Socializing at bars, clubs; 780.1: Sporting and entertainment events, nec.; 780.2: Other non-sporting and non-entertainment vents, nec.; 841.0: Home crafts done mainly for pleasure (sewing, needlework); 842.0: Domestic home crafts done for sale or exchange; 861.0: Games, cards, puzzles, board games; 862.1: Playing video games/computer games; 863.0: Computer use - general (excluding surfing the net); 864.0: Surfing the net (as a leisure activity); 865.0: Computer use - email (writing and reading email); 866.0: Participating in chat groups; 867.1: Participating in social network sites (Facebook, Myspace); 867.9: Participating in other internet communication; 872.0: Pleasure drives (as passenger); 873.0: Other pleasure drives (eg on a tour bus); 900.0: Listening to the radio; 900.1: Listening to radio online; 900.2: Other radio listening; 911.0: Watching scheduled TV programming; 912.0: Watching TV recorded programming/time shifted viewing; 913.0: Watching rented, purchased or downloaded movies; 914.1: Watching TV online (including podcasts); 914.9: Other TV viewing (video recorded home movies); 920.0: Listening to CDs, cassette tapes or records; 931.0: Reading books; 932.1: Reading magazines, pamphlets, bulletins, newsletters; 932.2: Reading online: magazines, pamphlets, bulletins, newsletters; 940.1: Reading newspapers (actual paper copy); 940.2: Reading newspapers (online); 950.0: Talking, conversation with household member only (face to face); 951.1: Talking on the phone (excluding work); 951.2: Text messaging using a cell-phone - sending a text message; 951.3: Text messaging using a cell-phone - receiving a text message; 961.0: Reading personal mail (including flyers and advertisements); 962.0: Writing/typing letters, sending greeting cards (not including use of email); 980.1: Downloading and/or ripping music and/or movies to computer for media use; 980.9: Other media or communication; 11: Talking, conversation (not on phone); 12: Radio listening; 13: Watching TV, rented movies; 14: Eating and drinking; 16: Reading (books, newspapers); 18: Listening to MP3 players, CD's, cassette tapes or records; 19: Talking on the phone; 20: Computer use (excluding email, chat groups, social networking); 21: E-mail, chat groups, social networking; 22: Sending or receiving text messages; 23: Adult care; 24: Work and school-related activities; 27: Personal care, personal activities; 28: Games, cards, puzzles; 29: Relaxing, thinking, resting, smoking; 30: Household management/organization; 31: Errands; 34: Praying, meditation, bible reading; 36: Socializing

Leisure sports PA	801.1: Football; 801.2: Field hockey; 801.3: Baseball or softball; 801.4: Soccer; 801.5: Volleyball; 801.6: Hockey; 801.7: Basketball; 802.1: Tennis; 802.2: Squash, racquetball, paddleball; 803.1: Golf; 803.2: Golf, miniature golf; 804.1: Swimming; 804.2: Water-skiing; 805.1: Ice skating; 805.2: Downhill skiing or snowboarding; 805.3: Other skiing, sledding, curling; 806.1: Bowling; 806.2: Pool, ping-pong, pinball; 807.1: Home exercises; 807.2: Weight-training; 807.3: Exercise class or aerobics; 807.4: Yoga; 808.0: Judo, boxing, wrestling, fencing; 809.0: Rowing, canoeing, kayaking, wind surfing, sailing; 810.1: In-line skating or rollerblading; 810.9: Other sports (frisbee, catch, track & field, skateboarding); 811.0: Hunting (as sport); 812.0: Fishing (as sport); 815.0: Horseback riding, rodeo, jumping, dressage; 821.2: Jogging, running; 822.0: Bicycling; 862.2: Video games/exercise based games (eg. Wii, Exertris, Dance Dance Revolution); 32: Physical exercise / outdoor excursions
Leisure non sports PA	23.0: Unpaid work in a family business or farm; 240.0: Play with children; 660.4: Volunteer work (organization) - building structures, indoor/outdoor maintenance and repair; 671.2: Animal and pet care for non-household pets; 672.0: House maintenance and repair assistance; 677.0: Unpaid help for a family business or farm; 800: Coaching sports competitively or leisurely 'unpaid); 813.0: Boating (motorboats and rowboats); 821.1: Walking; 821.3: Hiking; 850.2: Popular or social dance; 880.0: Other leisure activity
Work	11.0: Work for pay at main job; 12.0: Work for pay at other job(s); 21.0: Overtime work; 22.0: Looking for work; 40.0: Waiting/delays at work during working hours; 70.0: Coffee/other breaks at work; 80.9: Other work activities
Domestic PA	120.0: Indoor cleaning; 130.0: Outdoor cleaning (garbage, snow removal, garage); 131.0: Interior maintenance and repair; 162.0: Exterior maintenance and repair of home; 164.0: Other home improvements; 171.1: Gardening; 171.2: Grounds maintenance; 173.0: Care of house plants; 182.0: Stacking and cutting firewood; 184.0: Unpacking groceries; 185.0: Packing or unpacking luggage and/or car; 186.0: Packing and unpacking for a move of the household; 15: Domestic work (meal preparation and clean-up, cleaning, laundry)
Travel (motorized or active)	30.0: Travel during work; 90.0: Travel to/from paid work; 190.0: Travel to/from unpaid household work: 291.0: Travel to/from personal care activities for household children; 292.0: Travel to/from personal care activities for household adults; 390: Travel to/from shopping or obtaining services; 491.0: Travel to/from restaurant meals; 492.0: Travel to/from other personal care activities; 590.0: Travel to/from school education activities; 691.0: Travel to/from civic and voluntary activity; 692.0: Travel to/from religious services; 791.0: Travel to/from attending sports, movies, or other entertainment events or visit sites; 792.0: Travel to/from socializing at private residences; 793.0: Travel to/from other socializing (bars, hospitals, weddings); 891.0: Travel to/from participation in active sport/outdoor activities; 892.0: Travel to/from coaching activities; 893.0: Travel to/from hobbies or for the sale of crafts; 894.0: Travel to/from other leisure activities; 990.0: Travel to/from media or communication activities
Other activities	80.2: Other income-generating activities; 80.3: Security procedures related to paid work; 101.0: Meal preparation; 102.0: Baking, preserving food, home brewing, etc.; 110.0: Food (or meal) clean-up; 140.0: Laundry, ironing, folding; 163.0: Vehicle maintenance; 181.1: Household management (organizing/planning activities, etc.); 183.0: Other domestic/household work; 200.1: Child care (infant to 4 years old); 200.2: Food preparation for child under 5 years of age; 200.3: Feeding the child (infant to 4 years old); 211.0: Putting the children to bed; 212.0: Getting children ready for school; 213.0: Personal care for children of the household; 250.1: Medical care of household children; 271.1: Personal care of household adults; 271.2: Education-related help for household adults; 271.3: Looking after household adults as primary activity; 272.1: Medical care of household adults; 272.2: Emotional care of household adults; 281.9: Other non-educational help for household children; 301.0: Grocery store, market, convenience store: 302.1: Shopping for gas; 302.4: Shopping for plants/flowers for home landscaping; 302.9: Shopping for other everyday goods; 303.0: Take-out food; 304.0: Renting a video; 310.1: Shopping for durable household goods; 332.2: Visiting the library; 380.1: Shopping at garage sale, yard sale, flea market, auction; 380.3: Shopping for hobby equipment or supplies; 380.4: Security procedures related to shopping activities; 400.0: Washing, dressing; 520.0: Special lectures (occasional outside regular work or school); 560.1: Leisure and special interest classes; 560.2: Self-developments (eg. parenting, Lamaze, self-defence); 580.1: Security procedures related to educational activities; 580.9: Other educational related activities; 660.3: Volunteer work (organizations) - collecting and delivery of goods; 660.5: Volunteer work (organizations) - food presentation, preparation and clean-up; 671.1: Housework or cooking assistance; 673.1: Personal care provided to non-household children; 673.2: Medical care provided to non-household children; 674.0: Transportation assistance to someone other than a household member; 675.1: Personal care provided to non-household adults; 675.2: Medical care provided to non-household adult; 675.4: Looking after non-household adult as primary activity; 675.9: Other unpaid help provided to non-household adult; 678.0: Other unpaid work/help; 712.0: Fairs, circuses, parades, amusement parks, ice follies; 713.0: Zoos, botanical gardens, planetarium, observatory; 720.0: Movies/films at a theatre/cinema, art films, drive-in movies; 741.0: Museums (excluding art museums); 770.0: Casino, bingo, arcade: 814.0: Camping; 816.0: Other outdoor activities/excursions (picnic, car rally, bird watching); 831.0: Hobbies done mainly for pleasure (painting, sketching, photography); 832.0: Hobbies done for sale or exchange; 850.1: Singing or playing music, theatre; 871.0: Pleasure drives (as the driver); 17: Childcare; 26: Pet care/interaction; 35: Hobbies and home craft
Other codes	96: No simultaneous activity reported; 97: Not asked; 98: Not stated; 99: Don't know

Note: "n.e.c" stands for "not elsewhere classified".
Source: Modified from General Social Survey Cycle 24 (Statistics Canada).

Table 5.5. Activity codes for Canada (2015)

	Activity codes
Sleep	1: Sleeping, napping, resting, relaxing, sick in bed
Sedentary behaviours	2: Personal care > personal hygiene, praying, spiritual activities, meditating, sexual activities; 3: Health professional visit, consultation; 4: Self-administered medical care > taking blood pressure, sugar level, medication, treatment; 6: Eating or drinking > meals, snacks, drinks; 9: Looking for work; 12: Break or lunch; 13: Schooling full-time/part-time - on site; 14: Schooling full-time/part-time - online; 15: Homework or studying; 20: Laundry, ironing, folding, sewing, shoe care; 28: Accompanying to or from school, bus stop, sports, activities, parent school meeting or appointments; 30: Accompanying to or from school, bus stop, sports, activities, parent school meeting or appointments; 32: Accompanying to or from appointments, shopping; 35: Accompanying to or from appointments, shopping; 38: Shopping for services > legal services, financial services, vehicle maintenance; 39: Researching for goods or services; 40: Selling of goods and services; 41: Socializing or communicating - using any type of technology > phone, email, social media, Skype; 43: Organizational activities; 45: Religious activities; 46: Civic participation > voting jury duty; 54: Attending sporting events; 56: Arts and hobbies > drawing, painting, crafting, playing an instrument, dancing, collecting, knitting, photography, board and card games, gambling; 57: Leisure activity > walking, pleasure driving, bird watching; 58: Reading > online or paper version books, periodicals, newspapers, letters; 59: Writing > letters, cards, books, poems; 60: Watching TV or videos; 61: Listening to music or radio; 63: Other activity > waiting time, free time, insomnia, thinking, smoking; 101: Eating or drinking; 106: Social interaction such as talking or conversing; 107: Social networking, texting, emailing; 108: Reading; 109: Watching TV or videos; 110: Listening to music or radio; 111: General computer use; 112: Hobbies
Leisure sports PA	47: Exercising; 48: Organized recreational sports; 49: Competitive sports (indoor or outdoor); 50: Outdoor sports (non-competitive) > skiing, skating, swimming, tennis, football, baseball
Leisure non sports PA	51: Outdoor activities > fishing, hunting; 52: Coaching or administering sports
Work	8: Paid work; 11: Paid training; 12: Break or lunch
Domestic PA	19: Taking out garbage, recycling, compost, unpacking goods; 21: Repair, painting or renovation; 23: Unpacking groceries, packing and unpacking luggage for travel and/or boxes for a move; 24: Outdoor maintenance > car repair, ground maintenance, snow removal, cutting grass; 25: Planting (picking), maintaining, cleaning garden, caring for house plants; 102: Housework
Travel (motorized or active)	7: Transport to or from activity
Other activities	5: Meal, lunch, or snack preparation; 7: Transport to or from activity; 10: Other income-generating activities; 16: Self-development or leisure and special interest classes; 17: Preserving foods > baking, freezing, sealing, packing foods; 18: Indoor house cleaning, dish washing, tidying; 22: Organizing, planning, paying bills; 26: Pet care > feeding, walking, grooming, playing; 27: Personal care, getting ready for school, supervising homework, reading, playing, reprimanding, educational, emotional help; 29: Helping with homework, playing, reprimanding, educational, personal care, getting ready for school, emotional help; 31: Washing, dressing, care giving, financial management; 33: Supervision, feeding, talking, accompanying; 34: Preparing meals, cleaning, care giving, financial and household management, indoor or outdoor maintenance; 36: Helping relatives, friends, neighbours, acquaintances > exclude: caregiving; 37: Shopping for or buying goods > gasoline, groceries, clothing, car; 44: Voluntary work: 53: Attending cinema, exhibitions, library, concerts, theatre, entertainment events; 55: Visiting museums, art galleries, heritage sites, zoos, observatories; 62: Use of technology > general computer use, video games, internet, art or music production; 100: Preparing meals, 103: Parenting, care or assistance to others; 104: Organizing, planning or paying bills; 105: Pet care
Other codes	95: Uncodable / unknown activity; 113: Other; 996: Valid skip; 999: Not stated

Source: Modified from General Social Survey Cycle 29 (Statistics Canada).

Table 5.6. Activity codes for France (2009)

	Activity codes
Sleep	111: Sommeil
Sedentary behaviour	123: Soins personnels hors du domicile, faits par une personne hors ménage; 124: Soins personnels à domicile, faits par une personne hors ménage; 132: Soins médicaux faits par un professionnel, reçus hors du domicile; 133: Soins médicaux faits par un professionnel, reçus à domicile; 141: Repas à domicile, seul ou avec des personnes du ménage; 142: Repas sur le lieu de travail, seul; 143: Repas hors domicile et hors lieu de travail, seul ou avec des personnes du ménage; 144: Repas à domicile, avec au moins une personne du ménage; 145: Repas sur le lieu de travail, avec d'autres personnes (y c. personnes du ménage); 146: Repas hors domicile et hors lieu de travail, avec au moins une personne hors ménage; 151: Activités personnelles; 261: Cours suivis dans le cadre de ses études; 262: Devoirs et études; 263: Pauses, récréations, attentes sur le lieu d'études; 272: Autres cours: auto-école, cours de cuisine, de couture... Hors études et formation professionnelle, hors pratiques sportives et artistiques; 342: Gestion du ménage: faire ses comptes, courrier administratif; 361: Recours aux services administratifs (banques, avocats, notaires, démarches administratives (CAF)...), hors recherche d'emploi; 412: Accompagner un enfant de son ménage, l'attendre (hors trajets); 421: Surveillance des devoirs et leçons; 422: Conversations, lectures non scolaires; 432: Accompagner, tenir compagnie à un adulte de son ménage; 510: Réceptions et sorties associatives; 511: Visite chez des amis, de la famille hors ménage (hors repas); 512: Recevoir chez soi des amis, de la famille hors ménage (hors repas); 513: Autres sorties, avec au moins une personne hors famille; 514: Autres sorties, avec sa famille uniquement (hors promenades); 521: Conversation; 522: Conversations téléphoniques (hors professionnelles et domestiques); 523: Courrier personnel (hors professionnel et domestique); 524: Autres contacts et sociabilité (y c. échanges de cadeaux); 531: Pratiques et lectures religieuses; 532: Cimetière, enterrements; 533: Cérémonies civiles (y c. mariages SAI, anniversaires, dîners de Noël ou autres fêtes, réveillons); 541: Activités civiques, politiques (vote); 542: Réunions ou rencontres à responsabilités dans une association; 625: Plage, camping; 626: Activités liées à un sport: se préparer, attendre, nettoyer le matériel, se changer (vestiaire)...; 627: Promenades motorisées: en voiture, deux-roues ou bateau à moteur; 631: Lecture, sans autre indication; 632: Lecture de livres; 633: Lecture de journaux (y c. sur internet); 634: Regarder la télévision (y c. sur internet); 635: Regarder une vidéo, un DVD; 636: Écouter la radio (y c. sur internet ou par la télé); 637: Écouter de la musique enregistrée, enregistrer de la musique; 638: Écouter de la musique, sans autre indication; 641: Ne rien faire, flâner, réfléchir, fumer, se détendre, se reposer; 651: Assister à un événement sportif; 655: Spectacles: théâtre et concerts, opéra, café-théâtre, spectacles de rue, cirque, fête de la musique...; 662: Jeux de société, de cartes, d'arcade, d'intérieur ou d'extérieur; 663: Jeux de hasard, d'argent, PMU; 664: Collections; 667: Jeux sans autre indication et autres jeux; 668: Autres loisirs solitaires (voir exemples); 669: Loisirs, sans autre indication; 671: Jeux sur console ou ordinateur; 673: Surf sur internet, visite de sites pour s'informer (hors journaux); 674: Communication sur internet; 678: "Ordinateur" sans autre indication et autres activités sur ordinateur; 911: Enquête INSEE (visite enquêteur, remplissage du carnet)
Leisure sports PA	612: Course à pied, jogging, footing; 613: Vélo et glisse non-aquatique: ski, patins à roulettes, skateboard, patinage; 614: Jeux de balles et ballons: foot, rugby, basket, tennis, golf, bowling, hockey, pétanque...; 615: Gym, culture physique hors du domicile: musculation, aérobic, yoga, stretching...; 616: Gym, culture physique à domicile; musculation, aérobic, yoga, stretching; 617: Sports d'eau: natation, voile, surf, aviron...; 619: Autres sports (arts martiaux, escrime, équitation, moto, kart, escalade, frisbee...) et "sport" sans autre indication
Leisure non sports PA	385: promener le chien; 423: Jeux et activités à domicile; 424: Jeux et activités hors du domicile; 621: Promenades hors du domicile, randonnées; 622: Promenades à domicile (dans son propre jardin); 623: Pêche, chasse; 624: Cueillette de baies et plantes (hors du domicile)
Work	211: Travail normal professionnel, hors du domicile; 212: Travail normal professionnel, à domicile; 214: Travaux connexes des agriculteurs; 221: Participation à l'activité d'un autre membre du ménage; 223: Autre travail (secondaire, non déclaré); 231: Pauses, pots, non-travail de type "loisir" ou "sociabilité" sur le lieu de travail; 232: Grève et débrayages; 233: Non-travail sur le lieu de travail, lié au travail: se préparer, se changer, attendre le début du travail (y c. pannes); 234: Réunions et activités syndicales; 241: Recherche d'emploi (ANPE, consultation d'annonces...), 251: Formation professionnelle
Domestic PA	322: Rangement des courses, chargement et déchargement de la voiture; 323: Rangement et nettoyage extérieur; 324: Ménage et rangement (intérieur de la maison); 331: Lavage du linge (y c. le trier, le mettre dans/sortir de la machine à laver, l'étendre); 332: Repassage; 334: Couture, tricot, crochet, cirage et lavage des chaussures; 335: Rangement des vêtements, préparer son sac, sa valise; 341: Chauffage, eau (couper le bois, charger le charbon, allumer le feu); 343: Autres activités d'entretien de la maison; 344: Déménagement (hors professionnel); 371: Gros travaux de construction: maçonnerie, plomberie, menuiserie, charpente, carrelage...; 372: Aménagement et décoration de la maison (petits travaux); 373: Entretien et réparation d'objets; 374: Réparations et travaux d'entretien relatifs aux voitures, 2 roues et bateaux; 382: Jardinage; 383: S'occuper des animaux domestiques: animaux de basse-cour et autres animaux à usage productif (hors travail professionnel); 384: S'occuper des animaux de compagnie
Travel (motorized or active)	810: Trajets à but associatif; 811: Trajets domicile-travail ou domicile-lieu d'études; 812: Autres trajets (hors trajets pendant le travail); 813: Trajets liés aux enfants; 819: Trajets pour un autre ménage

Other activities	112: Alité, malade; 113: Temps autour du sommeil: insomnies, grasses matinées...; 121: Hygiène personnelle (y c. soins personnels faits par soi-même ou un membre du ménage); 122: S'habiller, se déshabiller; 131: Soins médicaux faits à soi-même (ou par un membre du ménage); 213: Trajet pendant le travail (c'est-à-dire hors trajets domicile-travail); 264: Stages (uniquement ceux qui font partie d'une formation, en cours d'études); 271: Formations non directement professionnelles (cours pris pour soi ou pour changer de travail, congés formation...); 311: Cuisine; préparation et cuisson des aliments, épluchage; 312: Lavage de la vaisselle + rangement de la vaisselle, débarrasser la table; 313: Mettre la table, servir le repas; 351: Achats de biens de consommation, shopping; 352: Achats de services marchands (hors soins personnels); 381: Créations artistiques, comprend: la sculpture, peinture, littérature, etc.; 399: Autres activités domestiques, y c. "aides" aux voisins et amis sans autre indication; 411: S'occuper d'enfants de son ménage (hors soins médicaux); 413: Soins médicaux aux enfants de son ménage, à domicile; 414: Autres: bisous, câlins, gronderies... à un enfant de son ménage; 419: S'occuper d'enfants (y c. accompagner, soins médicaux, câlins...) pour un autre ménage; 420: Jeux et instruction (activités inclues dans 421 à 424, but associatif); 429: Jeux et instruction (activités inclues dans 421 à 424), pour un autre ménage; 431: Soins aux adultes de son ménage, aide pour activités personnelles ou physiologiques (toilette, repas, habillement); 433: Autres aides à un membre adulte de son ménage; 439: Soins aux adultes d'un autre ménage; 653: Cinéma; 654: Musées, expositions; 656: Bibliothèque, médiathèque; 658: Autres visites, manifestations culturelles ou commerciales; 661: Faire de la musique, de la danse, du théâtre; 665: Faire ou regarder des photos, des films (y c. les retoucher, les graver, les classer...); 672: Programmation, installation, réparation d'ordinateurs
Other codes	999: Plage horaire vide ou impossible à classer (y. c. "diverses activités")

Note: "y.c." stands for "y compris".
Source: Modified from Emploi du Temps (EDT) 2009-2010 (INSEE, ADISP-CMH).

Table 5.7. Activity codes for Germany (2001)

	Activity codes
Sleep	010: Undefined activities; 011: Sleep
Sedentary behaviours	000: Activities not specified; 012: Sick in bed; 020: Undefined activities; 021: Meals; 030: Undefined activities; 039: Other clearly defined activities; 210: Undefined activities; 211: Lessons and lectures; 212: Breaks in school/university time; 220: Undefined activities; 221: Attendance of additional lessons and courses outside the curriculum; 222: Visiting information events; 223: Learning in self-organized groups; 224: Self-learning (books); 225: Self-learning (computer); 226: Self-learning (internet); 227: Self-learning (TV/video/radio); 229: Other clearly defined activities; 230: Undefined activities; 231: Attendance of lessons for personal reasons; 232: Visiting information events; 233: Learning in self-organized groups; 234: Self-learning (books); 235: Self-learning (computer); 236: Self-learning (internet); 237: Self-learning (TV/video/radio); 238: Miscellaneous self-learning); 239: Other clearly defined activities; 240: Undefined activities; 241: Attendance of lessons and courses; 242: Attendance of information events; 243: Learning in self-organized groups; 244: Self-learning (books); 245: Self-learning (computer); 246: Self-learning (internet); 247: Self-learning (TV/video/radio); 248: Miscellaneous self-learning; 249: Other clearly defined activities; 330: Undefined activities; 332: Ironing; 333: Manufacture of textiles; 334: Repair of textiles; 360: Undefined activities; 362: Personal visit/utilization of official offices; 363: Personal services; 364: Medical services; 369: Other clearly defined activities; 370: Undefined activities; 371: Budget planning and organisation; 372: Teleshopping, shopping on the phone; 373: Shopping via internet, e-banking; 382: Homework supervision; 384: Conversations with own children or children living in the household; 386: Accompanying child (appointments etc); 388: Reading/telling stories; 390: Undefined activities; 391: Support for adult household members; 392: Nursing and care of sick or disabled persons; 410: Undefined activities; 412: Volunteer work and support; 426: Insurance, governmental and commercial insurance; 427: Talking, advice; 434: Financial assistance; 440: Undefined activities; 441: Political and social assemblies; 442: Participation in religious activities/ceremonies; 443: Prayer, other spiritual activities; 449: Other clearly defined activities; 500: Undefined activities; 510: Undefined activities; 511: Talking; 512: Visiting/receiving a visit; 513: Family celebrations and parties of a private nature; 514: Phone calls; 519: Other clearly defined activities; 520: Undefined activities; 522: Theatre, concerts; 525: Sporting events; 527: Going out (cafés, bars, bistros, pubs, etc.); 529: Other clearly defined activities; 530: Undefined activities; 531: Resting; 532: Killing time; 650: Undefined activities; 651: Rest time during sports activities; 700: Undefined activities; 713: Literature and writing; 719: Other clearly defined activities; 721: Collecting activities; 725: Correspondence; 729: Other clearly defined activities; 730: Undefined activities; 731: Board games, 732: Games alone; 733: Computer games; 739: Other clearly defined activities; 800: Undefined activities; 810: Undefined activities; 811: Reading newspapers; 812: Reading magazines; 813: Reading books; 814: Being read to aloud; 819: Other clearly defined activities; 820: Undefined activities; 821: Watching TV; 822: Watching videos; 830: Undefined activities; 831: Listening to radio; 832: Listening to music, 833: Listening to music in a private circle; 840: Undefined activities; 841: Programming, installing and repairing computers; 842: Gaining information through computer; 843: Communicating through computer; 849: Other clearly defined activities; 995: Completing the diary
Leisure sports PA	600: Undefined activities; 610: Undefined activities; 613: Jogging; 614: Cycling; 616: Ball games; 619: Fitness, aerobics; 639: Other clearly defined activities; 632: Skiing, ice skating, tobogganing, ice hockey, inline skating, skateboarding; 633: Ball games, racquet sports; 634: Gymnastics, physical relaxation exercises; 635: Swimming, aqua gym, rowing, canoeing, sailing, surfing; 639: Martial arts, bowling, dancing, shooting, track & field, horseback riding, other sports
Leisure non sports PA	346: Walking the dog; 383: Playing and sports with own children or children of the household; 631: Walking, hiking; 640: Hunting and fishing, collecting berries, mushrooms, and herbs, and other activities
Work	100: Unspecified employment; 110: Unspecified activities; 111: Paid working time at main job; 120: Unspecified employment; 121: Paid working time at second job; 130: Undefined activities; 131: Attending classes for the job (seminars, courses, conferences, etc.); 132: Visiting information events, etc.; 133: Learning in self-organized groups; 134: Self-learning (books); 135: Self-learning (computer); 136: Self-learning (internet use); 137: Self-learning (TV/video/radio); 138: Miscellaneous self-learning; 139: Other clearly defined activities; 140: Undefined activities; 141: Unpaid work outside of working hours; 142: Unpaid work for other employed person; 143: Internship; 149: Other clearly defined activities; 150: Undefined activities; 151: Job search through employment offices; 152: Personal job search; 159: Other clearly defined activities; 161: Break during work hours (main and secondary job)
Domestic PA	320: Undefined activities; 321: Cleaning the house; 322: Cleaning the yard, cellar, garage, waste disposal; 323: Heating; 340: Undefined activities; 341: Outdoor plant care; 342: Indoor plant care; 343: Plant care without location; 349: Other clearly defined activities; 350: Undefined activities: 351: house construction and renovation; 352: Apartment repairs; 353: Manufacture, major repairs of household equipment: 354: Maintenance and minor repairs of household objects; 359: Other clearly defined activities; 422: Gardening; 429: Repair and construction; 430: Repair and maintenance of vehicles; 431: Animal care

Travel (motorized or active)	901: Travel related to personal activities; 911: Travel related to main job; 912: Travel related to secondary job; 913: Travel related to education during work hours; 919: Travel related to other work activities; 921: Travel related to school/university; 922: Travel related to additional qualifications; 929: Travel related to other qualification activities; 931: Travel related to home, gardening and animal care; 932: Travel related to building and craftsmanship; 933: Travel related to shopping and third-party services; 934: Travel related to child care; 935: Travel related to support for adult household members; 936: Travel related to non-household adult support; 939: Travel related to other household management and family care activities; 941: Travel related to volunteer activities; 942: Travel related to informal help for other households; 944: Travel related to meeting attendance; 949: Travel related to other informal help or volunteer activities; 951: Travel related to social contacts; 952: Travel related to entertainment and culture; 953: Travel related to sporting events; 959: Travel related to other social life and entertainment activities; 961: Travel related to sports and exercise; 971: Travel related to arts, hobbies and games; 981: Travel related to media; 990: Unidentified travel; 991: Travel for leisure; 992: Travel related to vacationing; 993: Travel related to second home
Other activities	031: Washing or dressing; 200: Undefined activities; 219: Other clearly defined activities; 300: Undefined activities; 310: Undefined activities; 311: Preparing meals; 312: Baking; 313: Washing dishes, setting and clearing the table; 314: Preserving foods; 319: Other clearly defined activities; 324: Setting up/preparations in the household; 329: Other clearly defined activities; 331: Washing; 339: Other clearly defined activities; 344: Livestock care; 345: Pet care; 347: Animal care (livestock or pet); 355: Vehicle repair and maintenance; 361: Shopping; 379: Other clearly defined activities; 380: Undefined activities: 381: Supervision of child; 385: Cuddling with child; 387: Care for sick child; 389: Other clearly defined activities; 400: Undefined activities; 411: Volunteer work for an organization; 419: Other clearly defined activities; 420: Undefined activities; 421: Childcare; 423: Cleaning up, tidying; 424: Shopping and errands; 425: Support for friends, neighbours, relatives; 428: Nursing care for the elderly or the sick; 432: Preparation of meals; 433: Transport and removals; 439: Other clearly defined activities; 521: Cinema; 523: Art exhibitions and museums; 524: Library; 526: Trips, zoo, circus, amusement parks, funfairs, sightseeing, etc.; 710: Undefined activities; 711: Visual and artisan arts; 712: Performing arts, making music; 720: Undefined activities; 722: Model making and handicrafts; 723: Filming/photography; 724: Experimenting (eg electrical, chemistry set); 734: Gambling
Other codes	998: Unspecified free time; 999: Undefined activities

Note: Activity titles were translated from German.
Source: Modified from Erhebung zur Zeitverwendung.2001-2002 (Destatis).

Table 5.8. Activity codes for Germany (2012)

	Activity codes
Sleep	110: Sleep
Sedentary behaviours	120: Food and drink; 132: Sick in bed/sick; 139: Other activities in personal range; 311: German; 312: Foreign language; 313: Mathematics/natural sciences/media/computer science; 314: Art/music; 315: Social sciences; 319: Other subjects; 321: Pre- and post-school time; 329: Other childcare services in the school; 330: Different working groups at school; 341: Course at university; 353: Preparation and follow-up of teaching events for the school; 354: Homework / self-learning / private homework help / tutoring for school; 361: Qualification/continuing education outside working hours (for personal reasons or for the job); 362: Breaks at school; 363: Free hours/idle time at school; 364: Breaks and free periods/idle times in college; 432: Ironing; 433: Production of textiles; 434: Repairing/changing textiles; 464: Authority/use of service companies or administrative bodies; 465: Use of person-linked services; 466: Medical services; 469: Other activities in the area of shopping and use of third-party services; 472: Homework help/giving instructions (household child); 474: Conversations with children in the household; 475: Accompanying a child/taking appointments with the child (household child); 476: Reading to children/telling stories (household child); 480: Support/care/support of adult household members; 520: Support of other households; 531: Political and social gatherings; 532: Participation in religious activities/ceremonies, prayers, and spiritual relaxation; 539: Other activities in the field of attendance of meetings; 611: Talks; 612: Telephone calls (and SMS); 622: Theatre/concerts/opera/musical theatre; 625: Sporting events; 627: Going out (cafés, pubs, disco, restaurants); 629: Other entertainment and culture; 630: Rest/relax; 641: Visiting/receiving a visit; 642: Family celebrations and festivities of a private nature; 649: Other activities related to social life and entertainment activities; 752: Correspondence (except communication via computer/smartphone and mobile phone); 759: Other technical and other hobbies); 761: Board games and games with other people (inside or outside); 762: Games alone, gambling; 763: Computer games; 769: Other games; 811: Newspapers (paper or online); 812: Magazines (paper or online); 813: Reading (paper or online); 814: Listening to someone reading aloud; 815: Miscellaneous (paper or online); 819: Reading (no further description); 820: TV and video/DVD; 830: Listening to the radio, music, or other; 841: Programming, installing and repairing the computer/smartphone; 842: Gaining information through the computer/smartphone; 843: Communication via the computer/smartphone; 844: Activities with the computer/smartphone; 849: Unspecified activities with the computer/smartphone; 997: Completing time use diary
Leisure sports PA	716: Gymnastics/fitness/ballet and dancing; 717: Water sports; 712: Jogging/Nordic walking/hiking; 715: ball games; 719: Other physical activities (sports and outdoor activities); 713: Cycling and skating
Leisure non sports PA	446: Dog walk; 711: Going for a walk; 473: Games and sports with children of the household; 790: Hunting, fishing, collecting berries, mushrooms or herbs
Work	245: Break during work hours (main and secondary); 242: Job search; 249: Other activities in connection with employment; 241: Qualification/training for the job during work hours; 244: Internship as part of employment; 210: Main employment; 220: Secondary employment; 230: Gainful employment (excluding main and secondary employment); 243: Unpaid job
Domestic PA	421: Cleaning/tidying up the apartment; 422: Cleaning of yard/cellar/garage and waste disposal; 441: Plant care outside (gardening); 442: Plant care indoors; 443: Plant care without location; 429: Other activities for house and apartment maintenance; 454: Maintenance and minor repairs of household items; 451: House construction and maintenance; 452: Home repairs, renovation; 459: Other construction and crafts activities; 453: Manufacture/maintenance/major repairs of a household furnishings; 423: Heating
Travel (motorized or active)	921: Travel from home to business; 922: Travel for part-time employment; 923: Travel for gainful employment; 929: Travel for other work activities; 931: Travel for school; 934: Travel for college; 939: Travel for other education activities; 941: Travel for housekeeping, gardening and animal care activities; 945: Travel for building and craft activities; 946: Travel for shopping and third-party services; 947: Travel for childcare; 948: Travel for support of adult household members; 949: Travel for other activities in the area of housekeeping and care; 951: Travel for volunteering; 952: Travel for supporting other households; 953: Travel for participation in meetings; 959: Travel for other activities associated with volunteering, support, assembly; 961: Travel for social activities; 962: Travel for entertainment and culture; 969: Travel for other social and entertainment activities; 970: Travel for sports/hobbies/games; 980: Travel for media usage; 991: Other travel time; 992: Other/undefined travel times

Other activities	131: Wash and dress; 317: Sports; 349: Other activities in the area of university; 369: Other activities in the area of qualifications/education; 411: Preparing meals; 412: Baking; 413: Washing the dishes, clearing and setting the table; 414: Preserving foods; 419: Other activities related to meal preparation; 431: Laundry; 439: Other activities in the manufacture/repair/modification of textiles area; 444: Farm aninmal care; 445: Pet care; 449: Other gardening/plant and animal care; 455: Vehicle repair and maintenance; 461: Shopping (not by phone or internet); 471: Personal hygiene and supervision of a child in the home; 479: Other childcare activities in the household; 491: Different set-up activities and preparations in the household; 492: Budget planning and organization (also using computer/smartphone/internet/telephone); 499: Other activities related to household maintenance and family care; 510: Volunteering; 621: Cinema; 623: Art exhibitions and museums; 624: Libraries; 626: Excursions/zoo/circus/amusement parks/funfair; 730: Setup time for sports activities; 740: Visual/crafts/performing and literary arts and music making
Other codes	998: Indefinite free time; 999: Indefinite time use

Note: Activity titles were translated from German.
Source: Modified from Erhebung zur Zeitverwendung.2012-2013 (Destatis).

Table 5.9. Activity codes for the United States (2003, 2008, 2013, 2016)

	Activity codes
Sleep	10101: Sleeping; 10199: Sleeping, n.e.c
Sedentary behaviours	10102: Sleeplessness; 10301: Health-related self-care; 10399: Self-care, n.e.c; 10401: Personal/private activities; 10499: Personal activities, n.e.c; 10501: Personal emergencies; 10599: Personal care emergencies, n.e.c; 20901: Financial management; 20903: Household and personal mail and messages (except e-mail); 20904: Household and personal e-mail and messages; 30102: Reading to/with household children; 30104: Arts and crafts with household children; 30186: Talking with/listening to household children; 30108: Organization and planning for household children; 30109: Looking after household children (as a primary activity); 30110: Attending household children's events; 30111: Waiting for/with household children; 30201: Homework (household children); 30202: Meetings and school conferences (household children); 30203: Home schooling of household children; 30204: Waiting associated with household children's education; 30299: Activities related to household child's education, n.e.c; 30302: Obtaining medical care for household children; 30303: Waiting associated with household children's health; 30404: Obtaining medical and care services for household adult; 30405: Waiting associated with caring for household adult; 30502: Organization and planning for household adults; 30504: Waiting associated with helping household adults: 30599: Helping household adults, n.e.c; 40102: Reading to/with non-household children; 40104: Arts and crafts with non-household children; 40186: Talking with/listening to non-household children; 40108: Organization and planning for non-household children; 40109: Looking after non household children (as primary activity); 40110: Attending non household children's events; 40111: Waiting for/with non-household children; 40112: Dropping off/picking up non household children; 40201: Homework (non-household children); 40202: Meetings and school conferences (non-household children); 40203: Home schooling of non-household children; 40204: Waiting associated with non-household children's education; 40299: Activities related to non-household child's education, n.e.c; 40302: Obtaining medical care for non-household children; 40303: Waiting associated with non-household children's health; 40404: Obtaining medical and care services for non-household adult; 40405: Waiting associated with caring for non-household adults; 40505: Financial management assistance for non-household adults: 40506: Household management and paperwork assistance for non-household adults; 40508: Waiting associated with helping non household adults; 60101: Taking class for degree, certification, or licensure; 60103: Waiting associated with taking classes; 60201: Extracurricular club activities; 60203: Extracurricular student government activities; 60289: Education-related extracurricular activities, n.e.c; 60301: Research/homework for class for degree, certification or licensure; 60302: Research/homework for class for personal interest; 60303: Waiting associated with research/homework; 60399: Administrative for education, n.e.c; 60401: Administrative activities: class for degree, certification, or licensure; 70105: Waiting associated with shopping; 70201: Comparison shopping; 70299: Researching purchases, 80101: Using paid childcare services; 80102: Waiting associated with purchasing childcare services; 80199: Using paid childcare services, n.e.c; 80201: Banking; 80202: Using other financial services; 80203: Waiting associated with banking/financial services; 80299: Using financial services and baking, n.e.c; 80301: Using legal services; 80302: Waiting associated with legal services; 80399: Using legal services, n.e.c; 80401: Using health and care services outside the home; 80402: Using in-home health and care services; 80403: Waiting associated with medical services; 80499: Using medical services, n.e.c; 80501: Using personal care services; 80502: Waiting associated with personal care services; 80599: Using personal care services, n.e.c; 80602: Waiting associated with purchasing/selling real estate; n.e.c; 80701: Using veterinary services; 80702: Waiting associated with veterinary services; 80799: Using veterinary services, n.e.c; 89999: Professional and personal services, n.e.c; 90101: Using interior cleaning services; 90102: Using meal preparation services; 90104: Waiting associated with using household services; 90199: Using household services, n.e.c; 90201: Using home maintenance/repair/décor/construction services; 90202: Waiting associated with home maintenance/repair/décor/construction; 90299: Using home maintenance/repair/décor/construction services, n.e.c; 90301:Using pet services; 90302: Waiting associated with pet services; 90399: Using pet services, n.e.c; 90401: Using lawn and garden services; 90402: Waiting associated with using lawn and garden services; 90499: Using lawn and garden services, n.e.c; 90501: Using vehicle maintenance or repair services; 90502: Waiting associated with vehicle maintenance or repair services; 90599: Using vehicle maintenance and repair services, n.e.c; 99999: Using household services, n.e.c; 100101: Using police and fire services; 100102: Using social services; 100103: Obtaining licenses and paying fines, fees, taxes; 100199: Using government services, n.e.c; 100201: Civic obligations and participation; 100299: Civic obligations and participation, n.e.c; 109999: Government services, n.e.c; 110101: Eating and drinking; 110199: Eating and drinking, n.e.c; 110281: Waiting associated with eating and drinking; 110289: Waiting associated with eating and drinking, n.e.c; 119999: Eating and drinking, n.e.c; 120101: Socializing and communicating with others; 120199: Socializing and communicating, n.e.c; 120201: Attending or hosting parties/receptions/ceremonies; 120202: Attending meetings for personal interest (not volunteering); 120299: Attending/hosting social events, n.e.c; 120301: Relaxing, thinking; 120302: Tobacco and drug use; 120303: Television and movies (not religious); 120304: Television (religious); 120305: Listening to the radio; 120306: listening to/playing music (not radio); 120307: Playing games; 120308: Computer use for leisure (excl. games); 120310: Collecting as a hobby; 120312: Reading for personal interest; 120313: Writing for personal interest; 120399: Relaxing and leisure, n.e.c; 120401: Attending performing arts; 120499: Security procedures relative to arts and entertainment; 120501: Waiting associated with socializing and communicating; 120502: Waiting associated with attending/hosting social events; 120503: Waiting associated with relaxing/leisure; 120504: Waiting associated arts and entertainment; 120599: Waiting associated with socializing, n.e.c; 129999: Socializing, relaxing, and leisure, n.e.c; 130201: Watching aerobics; 130202: Watching baseball; 130203: Watching basketball; 130204: Watching biking; 130205: Watching billiards; 130206: Watching boating; 130207: Watching bowling; 130208: Watching climbing, spelunking, caving; 130209: Watching dancing; 130210: Watching equestrian sports; 130211: Watching fencing; 130212: Watching fishing; 130213: Watching football; 130214: Watching golfing; 130215: Watching

	gymnastics; 130216: Watching hockey; 130217: Watching martial arts; 130218: Watching racquet sports; 130219: Watching rodeo competitions; 130220: Watching rollerblading; 130221: Watching rugby; 130222: Watching running; 130223: Watching skiing, ice skating, snowboarding; 130224: Watching soccer; 130225: Watching softball; 130226: Watching vehicle touring/racing; 130227: Watching volleyball; 130228: Watching walking; 130229: Watching water sports; 130230: Watching weightlifting/strength training; 130231: Watching people work out, unspecified; 130232: Watching wrestling; 130299: Attending sporting events, n.e.c; 130301: Waiting related to playing sports or exercising; 130302: Waiting related to attending sporting events; 130399: Waiting associated with sports, exercise, and recreation, n.e.c; 140101: Attending religious services; 140102: Participation in religious practices; 140103: Waiting associated with religious and spiritual activities; 140104: Security procedures relative to religious and spiritual activities; 149999: Religious and spiritual activities, n.e.c; 150101: Computer use; 150102: Organizing and preparing; 150103: Reading; 150104: Telephone calls (except hotline counselling); 150105: Writing; 150106: Fundraising; 150199: Administrative and support activities, n.e.c; 150402: Serving at volunteer events and cultural activities; 150501: Attending meetings, conferences and training; 150599: Attending meetings, conferences, and training, n.e.c; 160101: Telephone call to/from family members; 160102: Telephone calls to/from friends, neighbours, or acquaintances; 160103: Telephone calls to/from education services providers; 160104: Telephone calls to/from salespeople; 160105: Telephone calls to/from professional or personal care services providers; 160106: Telephone calls to/from household services providers; 160107: Telephone calls to/from paid child or adult care providers; 160108: Telephone calls to/from government officials; 169989: Telephone calls, n.e.c
Leisure sports PA	30105: Playing sports with household children; 130101: Doing aerobics; 130102: Playing baseball; 130103: Playing basketball; 130104: Biking; 130107: Bowling; 130108: Climbing, spelunking, caving; 130109: Dancing; 130110: Equestrian sports; 130111: Fencing; 130113: Playing football; 130114: Golfing; 130115: Doing gymnastics; 130117: Playing hockey; 130119: Martial arts; 130120: Racquet sports; 130121: Rodeo competitions; 130122: Rollerblading; 130123: Playing rugby; 130125: Skiing, ice skating, snowboarding; 130126: Playing soccer; 130127: Softball; 130128: Using cardiovascular equipment; 130129: Vehicle touring/racing; 130130: Playing volleyball; 130132: Participating in water sports; 130133: Weightlifting/strength training; 130134: Working out, unspecified; 130135: Wrestling; 130136: Doing yoga; 130199: Playing sports, n.e.c; 139999: Sports, exercise, and recreation, n.e.c;
Leisure non sports PA	30103: Playing with household children, not sports; 130105: Playing billiards; 130106: Boating; 130112: Fishing; 130116: Hiking; 130118: Hunting; 130124: Running; 130131: Walking; 150301: Building houses, wildlife sites, and other structures; 150302: Indoor and outdoor maintenance, repair, and clean-up; 150399: Indoor and outdoor maintenance, building and clean-up activities, n.e.c;
Work	50101: Work, main job; 50102: Work, other job(s); 50103: Security procedures related to work; 50189: Working, n.e.c; 50201: Socializing, relaxing, and leisure as part of job; 50202: Eating and drinking as part of job; 50203: Sports and exercise as part of job; 50204: Security procedures as part of job; 50289: Work-related activities, n.e.c; 50301: Income-generating hobbies, crafts, and food; 50302: Income-generating performances; 50303: Income-generating services; 50304: Income-generating rental property activities; 50389: Other income-generating activities, n.e.c; 50481: Job search activities; 50403: Job interviewing; 50404: Waiting associated with job search or interview; 50405: Security procedures relating to job search/interviewing; 50499: Job search and interviewing, n.e.c; 59999: Work and work-related activities, n.e.c;
Domestic PA	20101: Interior cleaning; 20104: Storing interior household items, including food; 20301: Interior arrangement, decoration, and repairs; 20302: Building and repairing furniture; 20303: Heating and cooling; 20399: Interior maintenance, repair and decoration, n.e.c; 20401: Exterior cleaning; 20402: Exterior repair, improvements and decoration; 20499: Exterior maintenance, repair and decoration, n.e.c; 20501: Lawn, garden, and houseplant care; 20599: Lawn and garden, n.e.c; 20801: Appliance, tool, and toy set-up, repair, and maintenance; 20899: Appliances and tools, n.e.c; 40502: House and lawn maintenance and repair assistance for non-household adults; 40503: Animal and pet care assistance for non-household adults; 40504: Vehicle and appliance maintenance/repair assistance for non-household adults;
Travel (motorized or active)	180101: Travel related to personal care; 180199: Travel related to personal care, n.e.c; 180280: Travel related to household activities; 180381: Travel related to caring for and helping household children; 180382: Travel related to caring for and helping household adults; 180399: Travel related to caring for and helping household members, n.e.c; 180481: Travel related to caring for and helping non-household children; 180482: Travel related to caring for and helping non-household adults; 180499: Travel related to caring for and helping non-household members, n.e.c; 180501: Travel related to working; 180502: Travel related to work-related activities; 180589: Travel related to work, n.e.c; 180601: Travel related to taking class; 180682: Travel related to education (except taking class); 180699: Travel related to education, n.e.c; 180701: Travel related to grocery shopping; 180782: Travel related to shopping (except grocery shopping); 180801: Travel related to using childcare services; 180802: Travel related to using financial services and banking; 180803: Travel related to using legal services; 180804: Travel related to using medical services; 180805: Travel related to using personal care services; 180806: Travel related to using real estate services; 180807: Travel related to using veterinary services; 180899: Travel related to using professional and personal care services, n.e.c; 180901: Travel related to using household services; 180902: Travel related to using home maintenance/repair/décor/construction services; 180903: Travel related to using pet services (not veterinary); 180904: Travel related to using lawn and garden services; 180905: Travel related to using vehicle maintenance and repair services; 180999: Travel related to using household services, n.e.c; 181081: Travel related to using government services; 181002: Travel related to civic obligations and participation; 181099: Travel related to government services and civic obligations, n.e.c; 181101: Travel related to eating and drinking; 181199: Travel related to eating and drinking, n.e.c; 181201: Travel related to socializing and communicating; 181202: Travel related to attending or hosting social events; 181283: Travel related to relaxing and leisure; 181204: Travel related to arts and entertainment; 181299: Travel related to socializing, relaxing, and leisure, n.e.c; 181301: Travel related to participating in sports/exercise/recreation; 181302: Travel related to attending sporting/recreational events; 181399: Travel related to sports, exercise and recreation, n.e.c; 181401: Travel related to religious/spiritual practices; 181499: Travel related to religious/spiritual activities, n.e.c; 181501: Travel related to volunteering; 181599: Travel

	related to volunteer activities, n.e.c; 181601: Travel related to phone calls; 181699: Travel related to phone calls, n.e.c; 181801: Security procedures related to traveling; 181899: Security procedures related to traveling, n.e.c; 189999: Traveling, n.e.c
Other activities	10201: Washing, dressing and grooming oneself; 10299: Grooming, n.e.c; 20102: Laundry; 20103: Sewing, repairing and maintaining textiles; 20199: Housework, n.e.c; 20201: Food and drink preparation; 20202: Food presentation; 20203: Kitchen and food clean-up; 20299: Food and drink preparation, presentation and cleaning up; 20502: Ponds, pools, and hot tubs; 20681: Care for animals and pets (not veterinary care); 20699: Pet and animal care, n.e.c; 20701: Vehicle repair and maintenance (by self); 20799: Vehicles, n.e.c; 20902: Household and personal organization and planning; 20905: Home security; 20999: Household management, n.e.c; 29999: Household activities, n.e.c; 30101: Physical care for household children; 30112: Picking up/dropping off household children; 30199: Caring for and helping household children, n.e.c; 30301: Providing medical care to household children; 30399: Activities related to household child's health, n.e.c; 30401: Physical care for household adults; 30402: Looking after household adult (as primary activity); 30403: Providing medical care to household adult; 30499: Caring for household adults, n.e.c; 30501: Helping household adults: 30503: Picking up/dropping off household adult; 39999: Caring for and helping household members, n.e.c; 40101: Physical care for non-household children; 40199: Caring for and helping non household children; 40301: Providing medical care to non-household children; 40399: Activities related to non-household child's health, n.e.c; 40401: Physical care for non-household adults; 40402: Looking after non household adult (as primary activity); 40403: Providing medical care to non-household adult; 40499: Caring for non-household adults, n.e.c; 40501: Housework, cooking, and shopping assistance for non-household adults; 40507: Picking up/dropping off non household adult; 40599: Helping non household adults, n.e.c; 49999: Caring for and helping non household members, n.e.c; 60102: Taking class for personal interest; 60104: Security procedures relative to taking classes; 60199: Taking class, n.e.c; 60202: Extracurricular music and performance activities; 60402: Administrative activities: class for personal interest; 60403: Waiting associated with administrative activities (education); 60499: Administrative for education, n.e.c; 69999: Education, n.e.c; 70101: Grocery shopping; 70102: Purchasing gas; 70103: Purchasing food (not groceries); 70104: Shopping, except groceries, food and gas; 70199: Shopping, n.e.c; 70301: Security procedures relative to consumer purchases; 70399: Security procedures relative to consumer purchases, n.e.c; 79999: Consumer purchases, n.e.c; 80601: Activities relative to purchasing/selling real estate; 80699: Using real estate services n.e.c; 80801: Security procedures relative to professional/personal services; 80899: Security procedures relative to professional/personal services, n.e.c; 90103: Using clothing repair and cleaning services; 100381: Waiting associated with using government services; 100383: Waiting associated with civic obligations and participation; 100399: Waiting associated with government services or civic obligations, n.e.c; 100401: Security procedures relative to government services/civic obligations; 100499: Security procedures relative to government services/civic obligations, n.e.c; 120309: Arts and crafts as a hobby; 120311: Hobbies, except arts and crafts and collecting; 120402: Attending museums; 120403: Attending movies/film; 120404: Attending gambling establishments; 120405: Security procedures relative to arts and entertainment; 130401: Security related to playing sports or exercising; 130402: Security related to attending sporting events; 130499: Security related to sports, exercise, and recreation, n.e.c; 140105: Religious education activities; 150201: Food preparation, presentation, clean-up; 150202: Collecting and delivering clothing and other goods; 150203: Providing care; 150204: Teaching, leading, counselling, mentoring; 150299: Social service and care activities, n.e.c; 150401: Performing; 150499: Participation in performance and cultural activities, n.e.c; 150601: Public health activities; 150602: Public safety activities; 150699: Public health and safety activities, n.e.c;
Other codes	500101: Insufficient detail in verbatim; 500103: Missing travel or destination; 500104: Recorded simultaneous activities incorrectly; 500105: Respondent refused to provide information/"none of your business"; 500106: Gap/can't remember; 500107: Unable to code activity at first tier; 509989: Data code, n.e.c

Note: "n.e.c" stands for "not elsewhere classified".
Source: Modified from American Time Use Survey multi-year edition (Bureau of Labor Statistics).

Annex B. **Methods for analysis**

16. Descriptive statistics were run to compute the mean minutes spent in each activity category for different population groups. These analyses were weighted using the appropriate weighting variables described in the data documentations. The weighted shares of individuals reporting different activities throughout their diary day were also computed.

17. The number of MET-minutes per day spent in each activity category were computed by multiplying the MET value of an activity by the duration of the activity (Equation 5.1).

$$MET\ minutes = MET\ value\ of\ activity * duration(minutes) \quad \textbf{Equation 5.1}$$

18. This gives an idea of the total amount of energy expended during the activity. Therefore, there are several ways to expend the same amount of energy. For instance, to expend 120 MET-minutes, one can either participate in a 4 MET activity for 30 minutes, or a 8 MET activity for 15 minutes. MET-minutes can be converted into MET-hours by dividing the amount by 60. The Physical Advisory Committee recommends in their 2008 report at least 500-1000 MET-minutes expended through PA per week, which is about 70-140 MET-minutes per day (Physical Activity Guidelines Advisory Committee, 2008[58]).

19. Inequalities for participation in different physical and sedentary activities were computed, based on gender, level of education and level of household income, using the relative index of inequality. This index can be used when working with socio-economic variables which can be ordered hierarchically. More information about this index can be found in Sassi et al. (2009[59]).

20. Different types of regressions were run throughout this study. When analysing participation in different activities over time, as well as the average time spent in each activity by those who report them, regressions were used to assess whether change over time was significant or not. To assess whether time spent in the activity had significantly changed over time, the following weighted Ordinary Least Squares (OLS) regression was run (Equation 5.2).

$$time\_activity = year + \varepsilon \quad \textbf{Equation 5.2}$$

21. To assess whether participation in each activity has significantly changed over time, the following logistic regression was run (Equation 5.3).

$$participation\_activity = year\_id + \varepsilon \quad \textbf{Equation 5.3}$$

22. Where $participation\_activity$ is a binary variable. Each regression was run separately for each gender, and the OLS regression only includes those who report the activity in question.

23. Weighted Poisson regressions were run to study the characteristics of respondents most likely to participate in leisure sports PA (Equation 5.4).

$$participation\_activity = gender + age\_group + education + household\_income + marital\_status + employment\_status + \epsilon$$ **Equation 5.4**

24. To study the characteristics of individuals who reported higher enjoyability scores for different activities in France, we ran OLS regressions for each activity category (Equation 5.5).

$$enjoy\_score = gender + age\_group + household\_income + education + \varepsilon$$ **Equation 5.5**

25. A total of nine OLS regressions were run, each including only the respondents who reported each individual activity.

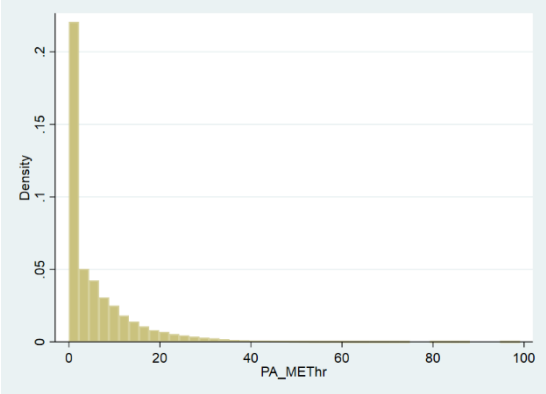
26. Additional analyses were run to evaluate the impact of physical activity performed in different categories on total PA and total SB. Two types of regressions were used, depending on the exogenous explained variable: total MET hours of daily PA, and total time (minutes) spent in SB. In the United States and Canada, the exogenous variables (PA_METhr and SB_time) refer to only one diary day. In France, two diary days were recorded, while in Germany, three diary days were recorded. Therefore, in these two countries, the two exogenous variables refer to the average values over all days recorded.

27. Preliminary analyses revealed that the distributions of total MET hours of PA are very skewed to the right, in all countries studied (see Figure 5.2, Figure 5.3, Figure 5.4, and Figure 5.5). Therefore, we ran GLMs with a gamma family and log link to assess the impact of category-based PA (MET hours) on total PA (MET hours). The regressions account for heteroscedasticity. The distributions for time spent in SB were much less skewed, and appear more normally distributed (Figure 5.6, Figure 5.7, Figure 5.8, and Figure 5.9). Therefore, OLS regression models were run, which also account for heteroscedasticity. The explanatory variables included are the same in all regressions, and are based on availability in each survey. Variables indicating time spent in six activity categories were used, one by one, in the regressions. As such, six regressions were run for PA_METhr, and six for SB_time, in each country. The regressions for total MET hours of physical activity daily are in Equation 5.6 to Equation 5.9. In all regressions involving work-related PA, only individuals who are employed full-time, outside of agriculture, energy, construction, mining, and forestry were included. This exclusion was done to study only those working full-time in sedentary jobs, as these results will also be used to study the effects of public policies aiming to increase physical activity at work, In Canada and the United States, weekend days were excluded, as it was assumed that most people work from Mondays to

Fridays. In France and Germany, the average data needed to include at least one weekday, so as to make sure that work time was included.

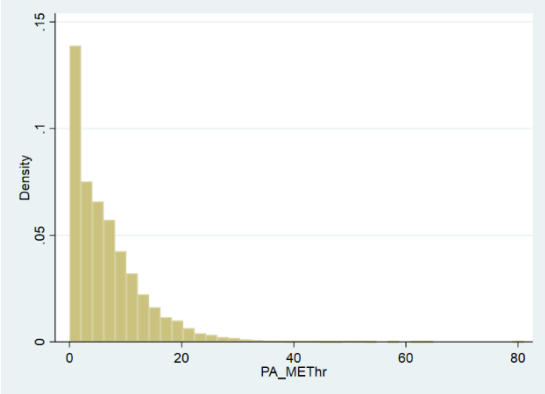
28. After the regressions, the marginal effects of each type of activity on total SB time and total MET hours of PA were computed for three different age groups.

Figure 5.2. Distribution of MET hours of physical activity in Canada



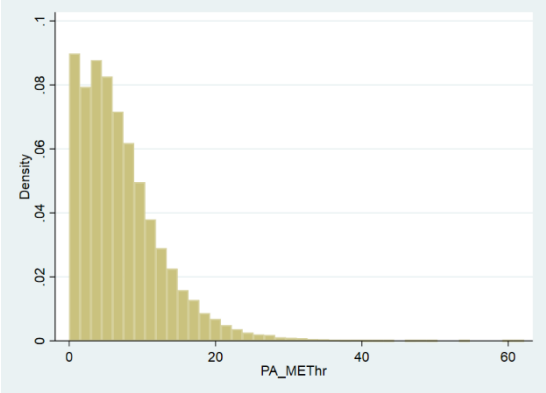
Note: Data refer to individuals aged 18-64 in Canada in 2005 and 2010, and 25-64 in 2015.
Source: Authors' analysis of time use data.

Figure 5.3. Distribution of MET hours of physical activity in France



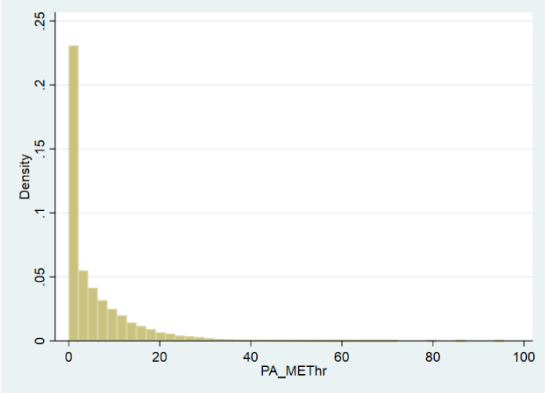
Note: Data refer to individuals aged 18-64 in France in 2009.
Source: Authors' analysis of time use data.

Figure 5.4. Distribution of MET hours of physical activity in Germany



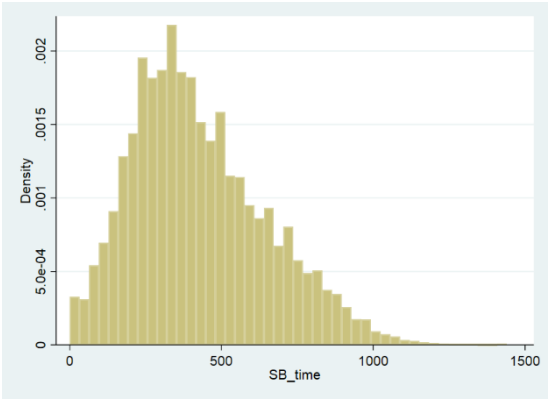
Note: Data refer to individuals aged 18-64 in Germany in 2001 and 2012.
Source: Authors' analysis of time use data.

Figure 5.5. Distribution of MET hours of physical activity in the United States



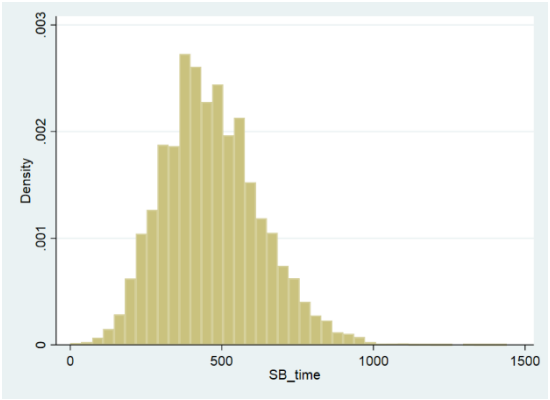
Note: Data refer to individuals aged 18-64 in the United States in 2003, 2008, 2013 and 2016.
Source: Authors' analysis of time use data.

Figure 5.6. Distribution of minutes of sedentary behaviour in Canada



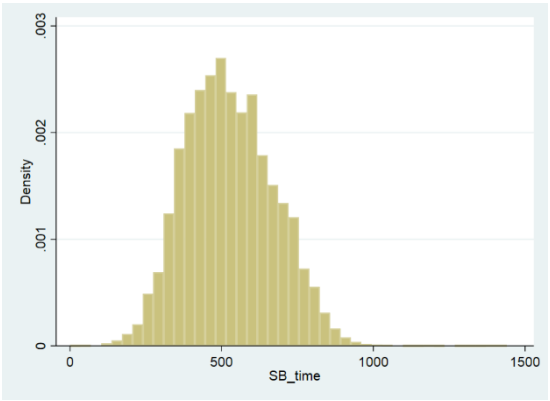
Note: Data refer to individuals aged 18-64 in Canada in 2005 and 2010, and 25-64 in 2015.
Source: Authors' analysis of time use data.

Figure 5.7. Distribution of minutes of sedentary behaviour in France



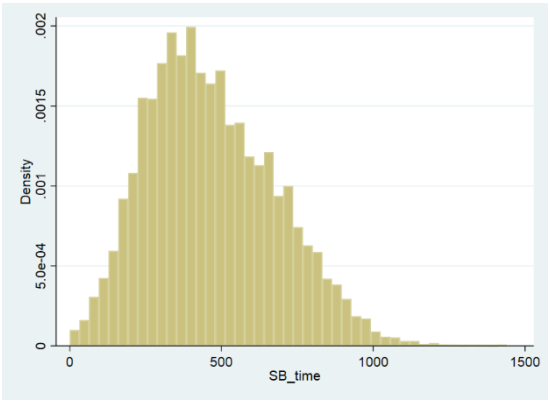
Note: Data refer to individuals aged 18-64 in France in 2009.
Source: Authors' analysis of time use data.

Figure 5.8. Distribution of minutes of sedentary behaviour in Germany



Note: Data refer to individuals aged 18-64 in Germany in 2001 and 2012.
Source: Authors' analysis of time use data.

Figure 5.9. Distribution of minutes of sedentary behaviour in the United States



Note: Data refer to individuals aged 18-64 in the United States in 2003, 2008, 2013 and 2016.
Source: Authors' analysis of time use data.

Canada	$PA\_MET = MET\_act2 * age\_gr + gender + income + education + mar\_status + SAH + hh\_size + rural + empl\_status + ENF3 + chronic + num\_child + weekend\_days$	**Equation 5.6**
France	$PA\_MET = MET\_act2 * age\_gr + gender + income + education + mar\_status + SAH + hh\_size + rural + empl\_status + own\_car + ENF14 + weekend + year\_id$	**Equation 5.7**
Germany	$PA\_MET = MET\_act2 * age\_gr + gender + income + education + mar\_status + hh\_size + empl\_status + own\_car + weekend\_days + year\_id$	**Equation 5.8**
United States	$PA\_MET = MET\_act2 * age\_gr + gender + income + education + mar\_status + hh\_size + rural + empl\_status + ENF18 + weekend + year\_id$	**Equation 5.9**

Annex C. Descriptive statistics in all countries and years

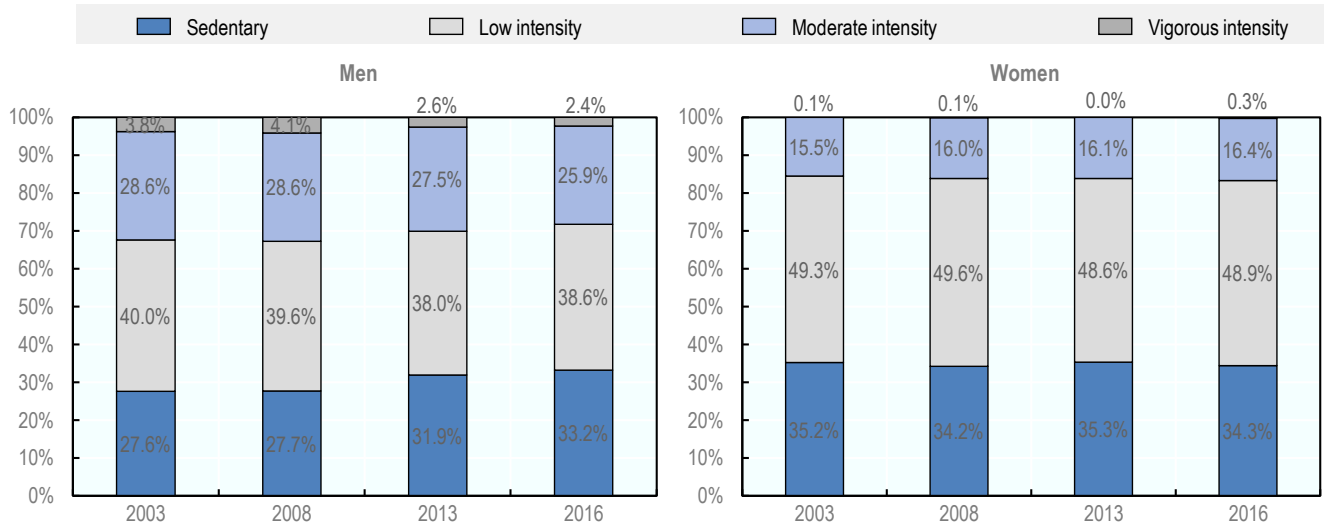
Table 5.10. Weighted average minutes spent in each activity category for adults aged 18-64 over time

	Canada				France				Germany				United States			
	2005				2009				2001				2003			
	Men		Women		Men		Women		Men		Women		Men		Women	
	Mean	Std.	Mean	Std.	Mean	Std.	Mean	Std.	Mean	Std.	Mean	Std.	Mean	Std.	Mean	Std.
Sleep	488.22	1.90	496.52	1.61	492.38	2.03	501.28	2.09	500.71	1.33	508.61	1.06	497.78	2.19	515.90	1.84
Sedentary behaviours	387.01	3.35	392.43	2.80	414.20	4.06	393.09	3.53	470.98	2.21	471.81	1.80	380.19	3.42	368.63	2.75
Leisure sports PA	19.39	0.90	11.30	0.52	13.89	0.90	6.74	0.42	15.84	0.50	12.71	0.38	14.00	0.64	11.14	0.52
Leisure non sports PA	20.34	0.90	21.68	0.75	23.90	1.94	21.00	0.76	22.26	0.54	24.48	0.54	13.60	0.87	10.59	0.53
Work	294.52	4.09	205.53	3.29	231.85	4.71	152.13	3.73	170.71	2.71	94.54	2.09	302.46	4.31	203.34	3.53
Domestic PA	46.14	1.52	63.44	1.37	35.06	1.11	62.33	1.20	49.19	0.97	57.80	0.82	50.41	1.61	72.27	1.46
Active travel	4.72	0.24	5.51	0.25	12.05	0.61	15.72	0.60	17.44	0.39	18.82	0.34	2.77	0.28	3.27	0.22
Motorized travel	72.92	1.18	68.10	0.98	69.93	1.44	60.39	1.27	60.27	0.86	45.15	0.66	77.74	1.31	72.97	1.00
Other	106.76	1.59	175.49	1.84	146.74	2.08	227.33	2.55	132.59	1.25	206.07	1.30	101.05	1.46	181.90	1.79
	2010								2012				2008			
Sleep	483.07	2.29	495.92	2.00					490.34	1.75	499.59	1.31	502.94	2.92	509.01	2.85
Sedentary behaviours	374.61	4.22	347.97	3.53					422.68	2.82	411.21	2.14	380.33	4.65	385.88	4.75
Leisure sports PA	22.09	1.20	13.95	0.86					18.83	0.78	15.59	0.56	15.91	1.03	10.93	0.66
Leisure non sports PA	17.69	0.90	21.29	0.94					18.19	0.56	22.69	0.54	12.27	1.44	11.71	0.81
Work	267.40	4.97	197.32	3.96					242.04	3.63	163.65	2.79	307.94	6.02	215.73	5.27
Domestic PA	44.48	1.66	53.43	1.50					35.23	0.88	47.53	0.76	45.41	2.02	63.69	1.89
Active travel	6.12	0.42	5.47	0.26					10.02	0.37	11.05	0.27	3.65	0.41	2.82	0.23
Motorized travel	67.56	1.47	53.23	1.12					62.71	1.04	58.44	0.84	70.37	1.47	68.25	1.38
Other	157.00	2.72	251.43	3.02					139.96	1.43	210.25	1.44	101.18	2.00	171.98	2.45
	2015												2013			
Sleep	502.62	2.58	516.27	2.22									512.82	3.20	525.99	2.74
Sedentary behaviours	321.83	3.93	322.40	3.61									388.15	5.61	383.19	4.44
Leisure sports PA	20.41	1.15	13.58	0.67									18.02	1.35	11.00	0.66
Leisure non sports PA	3.73	0.57	1.53	0.29									13.07	1.52	13.09	1.07
Work	290.73	5.40	212.45	4.47									286.62	6.33	202.74	5.47
Domestic PA	52.50	2.16	57.54	1.84									43.95	2.21	65.13	2.25
Active travel	5.12	0.46	5.56	0.63									2.80	0.31	2.28	0.27
Motorized travel	63.25	1.44	52.41	1.11									69.52	1.59	66.56	1.37
Other	179.81	3.24	258.26	3.60									105.06	2.04	170.02	2.43
													2016			
Sleep													511.20	3.28	528.47	3.29
Sedentary behaviours													372.75	5.51	373.40	4.92
Leisure sports PA													15.46	0.95	14.74	0.94
Leisure non sports PA													13.51	1.48	10.40	0.79
Work													302.58	6.76	205.68	5.72
Domestic PA													40.46	1.96	62.41	2.20
Active travel													3.34	0.36	2.48	0.24
Motorized travel													73.22	1.71	68.94	1.54
Other													107.47	2.43	173.47	2.62

Note: Data refer to individuals aged 18-64 in France, Germany and the United States, and individuals aged 25-64 in Canada in 2015 and 18-64 in 2005 and 2010.
Source: Authors' analysis of time use data.

Annex D. Evolution of job intensity over time in the United States

Figure 5.10. Evolution of job intensity of time in the United States



Note: Data refer to individuals aged 18-64. Sedentary refers to 1≤MET<2, low intensity refers to 2≤MET<3, moderate intensity refers to 3≤MET<6, and vigorous intensity refers to MET≥6
Source: Authors' analysis of time use data.

Annex E. **Regression results for time trends**

Table 5.11. Ordinary Least Squares regression on time duration of different activities among those who report each activity in Canada

Men								
	Leisure sports PA		Leisure non sports PA		Active travel		Motorized travel	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
year_id	-2.2194 ***	0.5845	1.8710	1.1235	1.1621 ***	0.2926	-0.3401	0.2083
constant	4579.704 ***	1174.91	-3648.038	2255.285	-2300.539 ***	587.3792	768.6707	418.5461
Women								
	Leisure sports PA		Leisure non sports PA		Active travel		Motorized travel	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
year_id	-1.7049 ***	0.4008	0.1669	0.7225	1.2627 **	0.4284	-0.8515 ***	0.1703
constant	3517.778 ***	805.7878	-241.6457	1450.21	-2504.55 **	859.851	1788.11 ***	342.265

Note: Data refer to individuals aged 18-64 in 2005 and 2010 and 25-64 in 2015 in Canada. * signifies significant at the 5% level, ** signifies significant at the 1% level, and *** signifies significant at the 0.1% level.
Source: Authors' analysis of time use data.

Table 5.12. Logistic regression on participation in different activities in Canada

Men								
	Leisure sports PA		Leisure non sports PA		Active travel		Motorized travel	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
year_id	0.0212 ***	0.0050	-0.1484 ***	0.0062	-0.0311 ***	0.0052	-0.0448 ***	0.0046
constant	-44.1868 ***	10.1146	296.2093 ***	12.5180	60.7533 ***	10.5263	91.4161 ***	9.1765
Women								
	Leisure sports PA		Leisure non sports PA		Active travel		Motorized travel	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
year_id	0.0442 ***	0.0048	-0.1680 ***	0.0053	-0.0436 ***	0.0046	-0.0671 ***	0.0039
constant	-90.6463 ***	9.6543	335.915 ***	10.6621	85.9795 ***	9.1844	135.958 ***	7.8927

Note: Data refer to individuals aged 18-64 in 2005 and 2010 and 25-64 in 2015 in Canada. * signifies significant at the 5% level, ** signifies significant at the 1% level, and *** signifies significant at the 0.1% level.
Source: Authors' analysis of time use data.

Table 5.13. Ordinary Least Squares regression on time duration of different activities among those who report each activity in Germany

Men								
	Leisure sports PA		Leisure non sports PA		Active travel		Motorized travel	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
year_id	1.1711 **	0.3582	-0.3901	0.2040	-0.4307 **	0.1295	-0.0550	0.1558
constant	-2245.44 **	718.5493	864.9841 *	409.3784	906.1562 ***	259.77	198.0599	312.617
Women								
	Leisure sports PA		Leisure non sports PA		Active travel		Motorized travel	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
year_id	1.8814 ***	0.2948	-0.3468 *	0.1725	-0.5168 ***	0.0903	0.4995	0.1303
constant	-3687.423 ***	591.346	779.7097 *	346.207	1078.646 ***	181.21	-923.322	261.355

Note: Data refer to individuals aged 18-64 I 2001 and 2012 in Germany. * signifies significant at the 5% level, ** signifies significant at the 1% level, and *** signifies significant at the 0.1% level. *Source*: Authors' analysis of time use data.

Table 5.14. Logistic regression on participation in different activities in Germany

Men								
	Leisure sports PA		Leisure non sports PA		Active travel		Motorized travel	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
year_id	0.0254 ***	0.0038	-0.0082 **	0.0031	-0.0481 ***	0.0030	-0.0253 ***	0.0031
constant	-52.7265 ***	7.5281	15.5037 *	6.1468	95.4967 ***	6.1031	51.7864 ***	6.2463
Women								
	Leisure sports PA		Leisure non sports PA		Active travel		Motorized travel	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
year_id	0.0010 **	0.0033	-0.0080 **	0.0027	-0.04940 ***	0.0026	0.0051	0.0027
constant	-21.6875 **	6.7150	15.276 **	5.3852	98.4576 ***	5.2661	-9.3692	5.3731

Note: Data refer to individuals aged 18-64 I 2001 and 2012 in Germany. * signifies significant at the 5% level, ** signifies significant at the 1% level, and *** signifies significant at the 0.1% level. *Source*: Authors' analysis of time use data.

Table 5.15. Ordinary Least Squares regression on time duration of different activities among those who report each activity in the United States

Men								
	Leisure sports PA		Leisure non sports PA		Active travel		Motorized travel	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
year_id	-0.9451 **	0.3388	-0.0287	0.9331	0.0349	0.2309	-0.2531	0.1622
constant	1989.978 **	680.594	197.4859	1873.536	-43.1115	464.2593	592.7776	325.8935
Women								
	Leisure sports PA		Leisure non sports PA		Active travel		Motorized travel	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
year_id	-0.0953	0.2885	0.1146	0.4739	-0.0257	0.1495	-0.2394	0.1365
constant	264.0858	579.6427	-121.4466	951.7171	74.6187	300.3196	562.6798 *	274.1172

Note: Data refer to individuals aged 18-64 in 2003, 2008, 2013 and 2016 in the United States. * signifies significant at the 5% level, ** signifies significant at the 1% level, and *** signifies significant at the 0.1% level. *Source*: Authors' analysis of time use data.

Table 5.16. Logistic regression on participation in different activities in the United States

Men								
	Leisure sports PA		Leisure non sports PA		Active travel		Motorized travel	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
year_id	0.0197 ***	0.004	-0.0015	0.0048	0.0053	0.0048	-0.0196 ***	0.0043
constant	-41.1997 ***	8.0182	0.8881	9.6166	-12.78652	9.7208	41.0873 ***	8.6245
Women								
	Leisure sports PA		Leisure non sports PA		Active travel		Motorized travel	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
year_id	0.0168 ***	0.0039	0.0086 *	0.0043	-0.0176 ***	0.0044	-0.0149 ***	0.0038
constant	-35.4820 ***	7.78118	-19.2613 *	8.6008	33.1598 ***	8.8713	31.6223 ***	7.6856

Note: Data refer to individuals aged 18-64 in 2003, 2008, 2013 and 2016 in the United States. * signifies significant at the 5% level, ** signifies significant at the 1% level, and *** signifies significant at the 0.1% level. *Source*: Authors' analysis of time use data.

Annex F. Regression results for sport participation

Table 5.17. Poisson regression on participation in physical sport activities during the day

	Canada		France		Germany		United States	
	RR	S.E.	RR	S.E.	RR	S.E.	RR	S.E.
Gender								
Men	ref.		ref.		ref.		ref.	
Women	0.8405 ***	0.0310	0.6405 ***		0.9041 *	0.0424	0.9083 **	0.0324
Age group								
18-24	1.3385 ***	0.1113	1.1412	0.1664	1.1241	0.1028	1.394 ***	0.1056
25-34	1.0623	0.0560	0.8611	0.0976	0.9283	0.0757	1.1049 *	0.0534
35-44	ref.		ref.		ref.		ref.	
45-54	0.9856	0.0505	0.8486	0.0957	1.1364 *	0.0634	1.0350	0.0480
55-64	1.0385	0.0530	0.7529 *	0.0860	1.1391 *	0.0702	1.1228 *	0.0540
Level of education								
No tertiary education	ref.		ref.		ref.		ref.	
Tertiary education	1.4010 ***	0.0567	1.7080 ***	0.1550	1.2314 ***	0.0548	1.5925 ***	0.0622
Level of household income								
Low	0.7044 ***	0.0483	0.6782 *	0.1070	0.7030 **	0.0823	0.9672	0.0975
Medium-low	0.8799 *	0.0536	0.8825	0.1207	0.8716	0.0851	0.9023	0.0844
Medium	ref.		ref.		ref.		ref.	
Medium-high	1.0624	0.0681	1.0476	0.1200	1.0506	0.0822	1.1553 *	0.0768
High	1.2693 ***	0.0646	1.0647	0.1324	1.1907 *	0.0901	1.4710 ***	0.0896
Marital status								
Single	ref.		ref.		ref.		ref.	
Married/common law	0.7957 ***	0.0385	0.7897 *	0.0891	0.7883 ***	0.0492	1.0131	0.0483
Other	0.8962	0.0627	0.8017	0.1460	1.0130	0.0781	0.8598 *	0.0538
Employment status								
Not working	ref.		ref.		ref.		ref.	
Working full-time	0.8490 ***	0.0372	0.8625	0.0852	0.8117 ***	0.0415	0.7982 ***	0.0366
Working part-time	1.0154	0.0725	0.7778	0.1064	1.0196	0.0649	0.8809 *	0.0530
Year								
2001	NA		NA		ref.			
2003	NA		NA		NA		ref.	
2005	ref.		NA		NA			
2008	NA		NA		NA		1.0252	0.0458
2010	1.0688	0.0483	NA		NA			
2012	NA		NA		1.0456	0.0391		
2013	NA		NA		NA		1.0820	0.0478
2015	1.1028 *	0.0490	NA		NA			
2016	NA		NA		NA		1.2000 ***	0.0536
Constant	0.1601 ***	0.0135	0.0919 ***	0.0144	0.1724 ***	0.0168	0.1138 ***	0.0095

Note: Data refer to individuals aged 18-64, and 25-64 in Canada in 2015. RR signifies "relative risk", S.E. signifies "standard error", NA signifies "not applicable", and ref. signifies "reference". * signifies significant at the 5% level, ** signifies significant at the 1% level, and *** signifies significant at the 0.1% level.
Source: Authors' analysis of time use data.

Annex G. Time trends in physical activity participation and duration

29. In Canada, the share of people who report different activities as well as the average time spent in these activities has evolved over time (Figure 3.6). A statistically significant decreasing trend in time spent in sport activities can be seen in both men and women, with men reporting 132 minutes daily in 2005 versus 109 in 2015, and women reporting 98 minutes versus 82. However, a significant increase in the share of men and women who report such activities is also visible, from 14.7% and 11.5% in 2005 in men and women respectively, to 18.7% and 16.6% in 2015. Such a trend is not visible for leisure non-sports PA – however, this activity category is biased from the change in activity categories in the 2015 data, which makes the results from this survey year potentially erroneous compared to the other survey years (see Table 5.3, Table 5.4, and Table 5.5 for the different activities in the category in each wave). This survey year aside, very little change is visible between 2005 and 2010, although time spent in leisure non-sports PA significantly decreases in men. Time men and women spend in active travel shows clear significant increases between 2005 and 2015, from 31 minutes to 43 in men and 30 to 44 in women. This being said, the rate of participation shows significant decreases for both genders, from 15.4% in 2005 to 12% in 2015 for men, and 18.3% in 2005 to 12.5% in 2015 for women. Therefore, those who report active travel report longer durations, but the share of people actually reporting such activities has been on the decline. Finally, time spent in motorized travel has remained stable since 2005 for men, at approximately 85 minutes daily; however, the trend is significantly decreasing in women, from 83 minutes in 2005 to 75 in 2015. In addition to this decline in duration, the share of men and women reporting motorized travel has also been dropping, from 84% and 82% in 2005 to 75.8% and 69.8% in men and women respectively.

30. No time trend is available for France, as only data for 2009-10 were available. In 2009, 11.5% of men reported leisure sports PA, versus only 7.8% of women (Figure 3.7). Furthermore, men spent much more time in this activity, reporting just over 120 minutes daily, relative to just under 90 minutes in women. However, slightly more women than men reported leisure non-sports PA – despite this, men still spent about 20 minutes more in this activity than women. While more women than men reported active travel, both men and women spent approximately 54 minutes in this activity in a day. Finally, slightly more men reported motorized travel, and those who did spent about 97 minutes in this activity, versus 90 minutes for women.

31. In Germany, participation and time spent in sport activities significantly increased for both men and women between 2001 and 2012 (Figure 3.8). While 14% of men and 15.3% of women reported sport activities in 2001, the rates had increased to 17% and 16.2% respectively in 2012. Furthermore, men and women reported 98 and 73 minutes in sport activities in 2001, while these numbers reached 111 and 97 minutes respectively in 2015. Time spent in leisure non-sports PA has not changed significantly for men since 2001, while women report a significant decrease between 2001 and 2012. Additionally, both men and women display significantly lower participation rates in 2012 than in 2001, from 26.2% and 30.8% in 2001 to 22.7% and 27.8% in 2012 respectively. Active travel significantly dropped between 2001 and 2012 in Germany, both in terms of participation rate and duration of the activity. While 35.8% of men and 39.6% of women reported this activity in 2001, only 25.3% and 28.3% did so in 2012, respectively. The decline in duration is less sharp, but still present. Finally, motorized travel evolved differently in men and

women between 2001 and 2012. Although participation dropped and duration remained stable in men, participation as well as duration increased in women. Despite this, duration is still lower in women than in men, and participation rates in both genders are nearly identical.

32. The United States display less change over time than other countries (Figure 3.9). The only significant change in duration concerns men who report sport activities: average duration decreased from 95 minutes in 2003 to 80 minutes in 2016. Duration has remained constant in women. Despite this, participation rates in sport activities increased for both genders, from 14.7% to 19.4% in men and 15.2% to 20.1% in women. Duration of non-leisure sports PA shows no significant or obvious trend in either women or men, but participation rates in women display a significant increase over time. Meanwhile, participation rates for men have remained quite stable since 2003. Duration of active travel is stable in both men (at 25-30 minutes) and women (20-25 minutes daily). However, the share of women reporting such activities shows a significant decrease, down from 13.4% in 2003 to 10.5% in 2016. Similarly, in 2016, men and women still spent approximately the same amount of time in motorized travel as in 2003, at about 80 minutes per day. However, the shares of men and women reporting motorized travel have decreased since 2003, from 88.6% and 86% in men and women respectively, to 86% and 84.8% in 2016.

Annex H. Trends in income- and education-based inequalities in physical activity

33. In Canada, inequalities by level of education are strongest for leisure sports PA as well as leisure non-sports PA (women only) (Figure 3.13). These inequalities increased between 2005 and 2015, as men and women with tertiary education in 2015 are approximately 3 times more likely to report leisure sports PA than those without tertiary education. Women with a high level of education are also nearly 4 times more likely than their low-education counterparts to report leisure non-sports PA, which is more than double the rate in 2005. Meanwhile, inequalities in men for leisure non-sports PA have nearly vanished. Men with a tertiary level of education are 1.8 times more likely to report active travel during the day than men without tertiary education. The gap is not as strong in women, but the inequality also increased. Finally, level of education seems very weakly associated with the probability of reporting motorized travel during the day in Canada, although there is was slight increase in inequality between 2005 and 2015, for both men and women.

34. Inequalities by level of income in Canada do not reveal disparities as strong as those by level of education. The index for leisure sports PA has not evolved for men, remaining at approximately 1.7, while it has slightly increased for women, as those in the highest income quintile are now just over twice as likely to report leisure sports PA than women in the lowest quintile. Men with a high level of income are more likely to report leisure non-sports PA than those with a low level of household income, and the inequality has slightly increased since 2005. However, the rise is not as substantial as for women, for whom the index now lies at nearly 2.5. The RII for motorized travel has risen for both men and women since 2005, and now resides at 1.5 for women and 1.7 for men. Active travel is the only activity that those in the lowest income quintile are more likely to. This index has decreased between 2005 and 2015, meaning that the income gap has risen as well.

35. As was the case for Canada, inequalities in France are strongest for sports PA: women with a tertiary level of education are nearly 6 times more likely to report these activities than those without, while men with a high level of education are approximately 4 times more likely to. The RIIs by level of education for the other activities are much closer to 1. Indeed, it seems that men with a low level of education are only slightly more likely to report leisure non-sports PA, while the variable does not seem associated with these activities in women. Men with a high level of education are slightly more likely to report active travel, while again, education does not seem associated with active travel in women. Finally, men and women with a high level of education are about 1.3-1.4 times more likely to report motorized travel than those with a low level of education.

36. The association of household income with leisure sports PA is much weaker than for level of education, in France, as men and women in the highest income quintile are about twice as likely to report these activities as those in the lowest quintile. Income is inversely associated with leisure non-sports PA and active transport, as men and women with a low level of income are more likely to report these activities than their high-income counterparts. Finally, the index by income for motorized transport is similar to the index by level of education, with men and women with a high level of income 1.4-1.5 times more likely to report motorized travel throughout the day.

37. In Germany, in 2012, men with a high level of education were 1.8 times more likely to report leisure sports PA, relative to men with a low level of education. This index increased sharply between 2001 and 2012, as it was close to 1 in 2001, reflecting no inequality. Although the inequality for leisure sports PA has also increased for women, the difference is much smaller: from 1.3 in 2001 to 1.4 in 2012. The RII for leisure non-sport PA decreased for men, from 1.8 in 2001 to 1.3 in 2001. It has not changed for women: those with a tertiary level of education remain 1.2 times more likely to report leisure non-sports PA than women without such education. Meanwhile, men and women with a high level of education are about 1.2 times more likely to report active travel, while level of education seems only weakly associated with motorized travel.

38. As was the case by level of education, inequalities by level of income for leisure sports PA in Germany have strongly increased for men, reaching about 1.8. The index has only slightly increased for women, from 1.1 in 2001 to 1.2 in 2012. Inequality for non-leisure sports PA has also increased for men, reaching 1.4 in 2012, while it has remained stable and inexistent for women. Inequalities for motorized travel by level of income are the strongest, as the index reached 1.8 for men and 1.5 for women, relative to 1.3 and 1.2 in 2001, respectively. Finally, men and women in the highest income quintile are less likely to report active travel than those in the lowest income quintile.

39. Men and women with a high level of education in the United States were 4.6 and 3.4 times more likely than those with a low level of education to leisure report sports PA, respectively, in 2016 (Figure 3.14). This reflects a slight increase since 2003 for both genders. Inequalities are much weaker for all other activities, at 1.6 and 1.8 for men and women respectively for leisure non-sports PA, and approximately 2 for active travel. Inequalities for active travel have increased for both men and women since 2003, when the indices were 1.6 and 1.1 respectively – while women used to be less affected by level of education, they are now just as affected as men. Finally, level of education shows a weak association with participation in motorized travel, as men and women with a high level of education are about 1.2 times more likely to report such activities than those with a low level of education.

40. Inequalities by level of income in the United States are overall smaller than by level of education. While the RII for leisure sports PA for men decreased from 2 to 1.5 between 2003 and 2016, the index has increased for women, from 2 to 2.6. The trend is similar for leisure non-sports PA, with inequalities among women stronger in 2016 than in 2003, and weaker in men. The RII for motorized travel has remained more or less stable for both men and women, at 1.6 for men and 1.4 for women in 2016. As was the case in all other countries, men and women in the lowest income quintile are much more likely to report active travel than those in the highest income quintile.

Annex I. Results from regressions on enjoyability score in France

Table 5.18. Ordinary Least Squares regression on enjoyability score for different activities in France (table 1/2)

	Sleep		Leisure SB		Other SB		Leisure sports PA		Leisure non-sports PA	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Gender										
Male	ref.		ref.				ref.		ref.	
Female	-0.0148	0.0124	0.2211 ***	0.0242	0.0338 *	0.0156	0.1723 ***	0.04221	0.1126 ***	0.0314
Age group										
18-24	-0.1783 ***	0.0214	-0.6948 ***	0.0422	-0.2271 ***	0.0300	0.0454	0.0903	-0.085	0.0565
25-34	0.01241	0.0146	-0.1327 ***	0.0324	-0.0089	0.0186	-0.1913 *	0.0805	-0.0096	0.0385
35-44	ref.		ref.				ref.		ref.	
45-54	-0.2599 ***	0.0152	-0.1123 ***	0.0291	-0.0207	0.0196	0.1651 *	0.0700	0.0166	0.0344
55-64	-0.3330 ***	0.0167	0.0750 *	0.0295	-0.0524 **	0.0190	0.2162 **	0.0743	0.0745 *	0.0343
Household income										
Low	0.0333	0.0266	0.2163 ***	0.0398	0.1019 **	0.0304	0.5918 ***	0.0967	-0.1273 *	0.0499
Medium-low	0.1327 ***	0.0202	0.2384 ***	0.0404	0.0766 **	0.0224	0.7139 ***	0.0759	-0.0967 *	0.0387
Medium	ref.		ref.				ref.		ref.	
Medium-high	-0.0660 **	0.0190	-0.2148 ***	0.0340	-0.0371 *	0.0183	-0.2233 **	0.0742	-0.1928 ***	0.0453
High	-0.1117 ***	0.0200	-0.4816 ***	0.0342	-0.1430 ***	0.0217	-0.1345 *	0.0667	-0.2205 ***	0.0470
Level of education										
No tertiary education	ref.		ref.				ref.		ref.	
Tertiary education	-0.2639 ***	0.0125	-0.0581 *	0.024153	-0.1368 ***	0.0153	-0.2313 ***	0.0537	0.0467	0.0287
Marital status										
Single	ref.		ref.				ref.		ref.	
Married/common law	0.2417 ***	0.0162	0.3705 ***	0.0333	-0.1209 ***	0.0181	0.2634 ***	0.0573	0.0461	0.0402
Other	0.0079	0.0261	-0.0577	0.0570	-0.3106 ***	0.0259	-0.1274	0.0752	-0.0395	0.0506
Employment status										
Not working	ref.		ref.				ref.		ref.	
Full-time	0.0709 ***	0.0142	0.3908 ***	0.0263	0.1323 ***	0.0162	0.1994 **	0.0716	-0.0381	0.0339
Part-time	0.0222	0.0172	0.1876 ***	0.0357	0.1249 ***	0.0191	0.1665	0.1648	0.2095 ***	0.0338
Constant	2.2185 ***	0.0237	1.6153 ***	0.0432	2.3099 ***	0.0248	2.1069 ***	0.0959	2.4916 ***	0.0516

Note: Data refer to individuals aged 18-64 in France in 2009. * signifies significant at the 5% level, ** signifies significant at the 1% level, and *** signifies significant at the 0.1% level.
Source: Authors' analysis of time use data.

Table 5.19. Ordinary Least Squares regression on enjoyability score for different activities in France (table 2/2)

	Work		Domestic PA		Active travel		Motorized travel		Other activities	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Gender										
Male	ref.		ref.		ref.		ref.		ref.	
Female	-0.0278	0.0239	-0.3720 ***	0.0361	0.0060	0.0659	0.0961 *	0.0388	0.0774 **	0.0239
Age group										
18-24	-0.1783 ***	0.0214	-0.6948 ***	0.0422	-0.2271 ***	0.0300	0.0454	0.0903	-0.085	0.0565
25-34	0.01241	0.0146	-0.1327 ***	0.0324	-0.0089	0.0186	-0.1913 *	0.0805	-0.0096	0.0385
35-44	ref.		ref.				ref.		ref.	
45-54	-0.2599 ***	0.0152	-0.1123 ***	0.0291	-0.0207	0.0196	0.1651 *	0.0700	0.0166	0.0344
55-64	-0.3330 ***	0.0167	0.0750 *	0.029	-0.0524 **	0.0190	0.2162 **	0.0743	0.0745 *	0.0343
Household income										
Low	-0.4415 ***	0.0678	0.5430 ***	0.0716	-0.2623 *	0.1065	0.0039	0.0830	0.2259 ***	0.0416
Medium-low	-0.1893 ***	0.0430	0.2204 ***	0.0539	-0.0697	0.0983	0.1593 *	0.0687	0.1234 ***	0.0350
Medium	ref.		ref.		ref.		ref.		ref.	
Medium-high	-0.2305 ***	0.0409	-0.0479	0.0469	-0.2793 **	0.1058	-0.4562 ***	0.0665	-0.1481 ***	0.0323
High	0.2136 ***	0.0376	-0.3217 ***	0.0535	-0.0151	0.1129	-0.2979 ***	0.0617	-0.1279 ***	0.0337
Level of education										
No tertiary education	ref.		ref.		ref.		ref.		ref.	
Tertiary education	-0.3142 ***	0.0231	-0.2081 ***	0.0394	-0.4663 ***	0.0810	-0.5311 ***	0.0418	-0.2264 ***	0.0251
Marital status										
Single	ref.		ref.		ref.		ref.		ref.	
Married/common law	-0.0250	0.0344	0.0652	0.0603	0.3031 **	0.0949	0.1106	0.0592	0.0938 **	0.0355
Other	-0.2445 ***	0.0624	-0.2478 **	0.0788	-0.0182	0.1533	-0.4463 ***	0.1082	-0.2146 ***	0.0517
Employment status										
Not working	ref.		ref.		ref.		ref.		ref.	
Full-time	-0.6309 ***	0.0429	0.2823 ***	0.0434	-0.2959 **	0.0865	-0.1009 *	0.0476	-0.0080	0.0271
Part-time	-0.3263 ***	0.0544	-0.1819 **	0.0524	-0.2312 **	0.0868	-0.1865 **	0.0697	-0.1061 **	0.0305
Constant	1.7824 ***	0.0537	1.4822 ***	0.0823	1.9020 ***	0.1518	1.5281 ***	0.0833	1.5908 ***	0.0518

Note: Data refer to individuals aged 18-64 in France in 2009. * signifies significant at the 5% level, ** signifies significant at the 1% level, and *** signifies significant at the 0.1% level.
Source: Authors' analysis of time use data.

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