The Epidemiology of Domain-Specific Physical Activity in New Zealand Adults: A Nationally Representative Cross-Sectional Survey

Ryan Gage, Anja Mizdrak, Justin Richards, Adrian Bauman, Melissa McLeod, Rhys Jones, Alistair Woodward, and Caroline Shaw

1Department of Public Health, University of Otago, Wellington, New Zealand; 2Sport New Zealand, Wellington, New Zealand; 3Faculty of Health, Victoria University of Wellington, Wellington, New Zealand; 4Sydney School of Public Health, The University of Sydney, Sydney, NSW, Australia; 5Te Kupenga Hauora Māori, The University of Auckland, Auckland, New Zealand; 6Epidemiology and Biostatistics, The University of Auckland, Auckland, New Zealand

Background: Surveillance of domain-specific physical activity (PA) helps to target interventions to promote PA. We examined the sociodemographic correlates of domain-specific PA in New Zealand adults. Methods: A nationally representative sample of 13,887 adults completed the International PA Questionnaire—long form in 2019/20. Three measures of total and domain-specific (leisure, travel, home, and work) PA were calculated: (1) weekly participation, (2) mean weekly metabolic energy equivalent minutes (MET-min), and (3) median weekly MET-min among those who undertook PA. Results were weighted to the New Zealand adult population. Results: The average contribution of domain-specific activity to total PA was 37.5% for work activities (participation = 43.6%; median participating MET-min = 2790), 31.9% for home activities (participation = 82.2%; median participating MET-min = 1185), 19.4% for leisure activities (participation = 64.7%; median participating MET-min = 933), and 11.2% for travel activities (participation = 64.0%; median MET-min among participants = 495). Women accumulated more home PA and less work PA than men. Total PA was higher in middle-aged adults, with diverse patterns by age within domains. Māori accumulated less leisure PA than New Zealand Europeans but higher total PA. Asian groups reported lower PA across all domains. Higher area deprivation was negatively associated with leisure PA. Socioeconomic patterns varied by measure. For example, gender was not associated with total PA participation, but men accumulated higher MET-min when taking part in PA than women. Conclusions: Inequalities in PA varied by domain and sociodemographic group. These results should be used to inform interventions to improve PA.

Keywords: physical activity, epidemiology, surveillance, inequality, IPAQ

Physical activity (PA) is associated with reduced all-cause mortality, improved mental and cognitive health, and reduced incidence of cardiovascular disease, type 2 diabetes, and several cancers. However, around one in two New Zealand (NZ) adults fail to meet World Health Organization guidelines of at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity PA per week. Levels of PA are also unevenly distributed in NZ, and globally, with generally higher levels of inactivity among women and older adults.

Increasing PA requires understanding how populations accumulate PA, where inequalities exist, and what interventions are likely to be effective, particularly for those who are less active. Regular surveillance of domain-specific PA can help answer some of these questions. Globally, this has been done using standardized, validated questionnaires, most commonly the International PA Questionnaire (IPAQ) or Global PA Questionnaire (GPAQ). The IPAQ measures PA that occurs in 4 domains, work, transport, household, and leisure; whereas GPAQ measures the same 4 domains but combines work and household activities.

Although the primary function of both IPAQ and GPAQ is to enable consistent monitoring of PA over time, identifying the levels of PA within each domain also has importance for policymakers as some of the benefits of PA may be domain specific. Whereas leisure and travel activities have been associated with improved health, less research has been done on household PA, although the studies that have been done generally showed a positive association. For occupational PA, recent reviews have reported an inverse association between high levels of occupational PA and mental health and a positive association for early mortality in men. Mechanisms for this “paradox” may include the lack of agency in performing work PA, the duration and repetitive nature of work-related PA, its correlation with raised blood pressure, and the possible displacement of leisure PA. However, inadequate control of confounding factors, such as smoking and socioeconomic status, may also be important.

Research using IPAQ and GPAQ has revealed much about the patterning of domain-specific activity. An analysis of GPAQ data from 104 countries showed that, on average, work/household PA contributed more than half of total PA (52%), followed by travel activities (36%) and leisure activities (12%). The study found variations in domain-specific PA by country, with higher leisure PA in high-income countries and higher work/household and travel PA in low-income countries. Socioeconomic correlates vary by country and domain, but common findings include higher
leisure, travel, and work PA among men4,17 (but higher contribution of travel in women16); higher home PA in women and older adults9,11,18; lower work PA in older adults18–20; and lower leisure PA with increasing socioeconomic deprivation.18,21

Despite growth in the global surveillance of domain-specific PA, little has come from nationally representative NZ samples. Surveillance that has been done in NZ has focused separately on total PA, leisure PA, and active travel (in the context of broader household travel patterns).22–24 Other research on domain-specific PA has used nonrepresentative samples and has not stratified results by important sociodemographic factors.25–27

When looking at previous reports of domain-specific PA, several outcome measures have been used. Many studies have used means as a summary statistic.16,17 Means enable the straightforward calculation of absolute and relative contribution of domain-specific PA. However, as the distribution of PA tends to be positively skewed, small numbers of highly active individuals can bias estimates.28 Two alternatives—generally used together—are participation rates and the amount of activity among those who participate in a given domain.18,27 For example, one study found higher participation in travel PA among older adults despite this group spending less time undertaking PA in this domain.27 This approach yields more specific data to inform intervention than means but is less useful for calculating the relative contribution of domain-specific PA. Using both these measures may, therefore, reveal important insights in the pattern of PA.

In 2019, a national survey of leisure PA (Active NZ) was expanded to include IPAQ-long form (IPAQ-L), allowing the assessment of domain-specific PA in a representative sample of NZ adults. Using these data, we aimed to describe the epidemiology of total and domain-specific PA in NZ. Our objective was to address 3 distinct policy-relevant questions: (1) What is the mean absolute and relative contribution of each domain to total PA? (2) What are the participation rates in total and domain-specific PA? (3) What are the median levels of PA among those who undertake PA in a given domain? We further explored each of these questions across different sociodemographic groups in NZ.

Methods

Study Design

Active NZ is a continuous nationally representative cross-sectional survey of PA in NZ undertaken by Sport NZ Ihi Aotearoa. Although traditionally focused on leisure-time PA, the survey was expanded in 2019 to include the IPAQ-L. Recruitment in Active NZ uses a multistage probability sampling design to capture a representative sample of NZ adults.29 In 2019/20, participants were sampled from 144 strata corresponding to age, ethnicity, and area deprivation. Some population groups, for example, men, were oversampled to account for differential low response in previous surveys; survey weights were subsequently developed to account for differential selection and response by stratum. Further information on the sampling design is available in Sport NZ Ihi Aotearoa documentation.29 Ethical approval for this analysis was granted by the University of Otago Human Ethics Committee (HD20/081).

Participants

A total of 15,223 adults responded to the Active NZ survey from July 2019 to March 2020. The current study processed data from 15,016 participants who completed the IPAQ-L questionnaire (additional processing to exclude outliers is described later).

Survey Instrument

Participants self-completed the standard, unmodified version of IPAQ-L30 online or on paper. The questionnaire asked participants to identify the weekly frequency and duration (in minutes) of PA across 4 domains: leisure, travel, home, and work (see examples in Supplementary Material S1 [available online]). Participants were asked to exclude activity done for <10 minutes at a time.

Data Processing

Established IPAQ-L processing methods31 were adapted to clean the survey responses (for a summary of the cleaning rules used in current study, see Supplementary Material S1 [available online]). Participants were excluded if they reported either (1) >7 days per week in any activity (n = 571, 3.8%) or (2) >960 minutes per day of absolute PA averaged over the week (ie, leaving <8 h/d for sleep; n = 558, 3.9%). The final analytical sample comprised 13,877 participants (see flow diagram in Figure 1). Weekly metabolic energy equivalent minutes (MET-min) were calculated by multiplying the frequency and duration responses by respective MET scores for each activity (see Supplementary Material S1 [available online]). MET scores corresponded to the intensity of each activity and were based on previous estimates.32 To account for unreasonably high levels of PA, values of 180 minutes per day or greater for individual activities (eg, vigorous activities at work) were further winsorized to 180 minutes. Supplementary Material S2 (available online) shows the frequency at which data were winsorized, what activities it related to, and the demographic to whom it applied. Just over one-quarter of participants (27.9%) had at least one activity...
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winsorized. Winsorization was more common for work activities (about 10%) than home activities (about 5%), travel activities (about 2%), and leisure activities (about 2%). Generally, demographic groups that reported higher levels of overall PA, for example, men, were more likely to have at least one activity winsorized.

Outcome Measures

Preliminary analysis identified a positive skew in the distribution of total and domain-specific weekly MET-min (see Supplementary Material S3 [available online]). In light of this (and our review of the literature), 3 measures were evaluated to capture the spread of PA. The first measure, mean weekly MET-min, was calculated to identify the average levels of total and domain-specific PA and the relative contribution of domain-specific PA to total activity. The second measure, weekly participation rates, represented the proportion of adults who reported any PA (total or domain specific). The third output, median weekly MET-min among participants, described the amount of PA among those who took part in a given domain (ie, excluding nonparticipants).

Analyses

Data were analyzed in 2 stages, both using StataSE/17 (StataCorp LLC). First, descriptive statistics for the 3 outcome measures were calculated for the NZ adult population and stratified by several demographic factors. Weights were applied in all analyses to account for the stratified sampling design (discussed earlier). Mean weekly MET-min per week and weekly participation are reported with 95% confidence intervals. Median weekly MET-min among PA participants is reported with lower (25th) and upper (75th) quartiles and as box plots in graphical outputs. Gender among PA participants is reported with lower (25th) and upper (95th) quartiles and as box plots in graphical outputs. Gender, age, ethnicity, and Middle Eastern). As per standard practice in NZ, total response ethnicity was used for reporting, meaning that a participant who identified in more than one ethnic group would be included in each of those groups. Socioeconomic deprivation was measured using New Zealand Index of Deprivation (2018), an area-based measure of deprivation34 grouped into 5 quintiles.

Second, to explore the influence of confounding on socioeconomic patterns in domain-specific PA, a series of multiple regression models were built to supplement the descriptive (unadjusted) data. Analyses used linear regression for mean weekly PA, Poisson regression for weekly participation, and quantile regression (least absolute value modeling) for median weekly PA among participants. Adjustment for confounding followed national NZ health surveys, with gender adjusted for age, ethnicity adjusted for age and gender, and neighborhood deprivation adjusted for age, gender, and ethnicity. In these analyses, ethnicity was recoded to prioritized classifications in which individuals were classified into one ethnic group in the following priority order: Māori, Pacific, Asian, Other, and NZ European/Pākeha.

Results

Sample Characteristics

The unweighted and weighted sample characteristics are shown in Table 1. When compared with the weighted percentages, the

Table 1 Sample Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Group</th>
<th>Unweighted (N = 13,887)</th>
<th>Weighted (N = 16,430)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Women</td>
<td>7664 (55.6)</td>
<td>8193 (52.3)</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>6092 (44.2)</td>
<td>7425 (47.4)</td>
</tr>
<tr>
<td></td>
<td>Nonbinary</td>
<td>27 (0.2)</td>
<td>42 (0.3)</td>
</tr>
<tr>
<td>Age, y</td>
<td>18–24</td>
<td>1601 (11.5)</td>
<td>1991 (12.6)</td>
</tr>
<tr>
<td></td>
<td>25–34</td>
<td>1175 (8.5)</td>
<td>2465 (15.6)</td>
</tr>
<tr>
<td></td>
<td>35–49</td>
<td>4053 (29.2)</td>
<td>4312 (27.3)</td>
</tr>
<tr>
<td></td>
<td>50–64</td>
<td>3394 (24.4)</td>
<td>3928 (24.8)</td>
</tr>
<tr>
<td></td>
<td>65+</td>
<td>3664 (26.4)</td>
<td>3115 (19.7)</td>
</tr>
<tr>
<td>Ethnicitya,b</td>
<td>New Zealand European</td>
<td>11,523 (85.7)</td>
<td>12,376 (80.7)</td>
</tr>
<tr>
<td></td>
<td>Māori</td>
<td>1321 (9.8)</td>
<td>1686 (11.0)</td>
</tr>
<tr>
<td></td>
<td>Pacific</td>
<td>321 (2.4)</td>
<td>785 (5.1)</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>1146 (8.5)</td>
<td>1856 (12.1)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>303 (2.3)</td>
<td>356 (2.3)</td>
</tr>
<tr>
<td>NZDep quintilec</td>
<td>1 (least deprived)</td>
<td>3579 (25.8)</td>
<td>3831 (24.2)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>3070 (22.1)</td>
<td>3467 (21.9)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2875 (20.7)</td>
<td>3253 (20.6)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>2452 (17.7)</td>
<td>2876 (18.2)</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>1911 (13.8)</td>
<td>2384 (15.1)</td>
</tr>
</tbody>
</table>

Note: Values are presented as numbers (%).

aGender not reported for 104 and ethnicity not reported for 436 participants. bTotal response ethnic groups are used. Total >100% because people identifying with multiple ethnic group are counted in each of these groups. cNZDep: New Zealand Index of Deprivation (2018).
unweighted sample slightly underrepresented men (44.2%), younger adults (18–24 y: 11.5%, 25–34 y: 8.5%), Pacific (2.3%), Asian groups (8.3%), and those living in areas of higher socioeconomic deprivation (13.8% in the highest deprivation quintile). Around one in 10 participants (8.0%) reported that they belonged to more than one ethnic group, with a higher percentage of multiple ethnicities reported by Māori (62.9%) and Pacific (54.8%).

Overall Patterns in PA

Total mean weekly MET-min was 5053, weekly participation in any domain was 96.2%, and median weekly MET-min among participants was 3639. In terms of mean weekly MET-min, work PA contributed most to total PA (37.5%), followed by home PA (31.9%), leisure PA (19.4%), and travel PA (11.2%; see Figure 2 and Supplementary Material S5 [available online] for values in table form). Participation rates, in contrast, were lowest for work PA (43.6%), highest for home PA (82.2%), and similar for travel PA (64.0%) and leisure PA (64.7%). For those who participated in PA in a specific domain, median weekly MET-min was 2790, 933, 1185, and 495, respectively, for work, leisure, household, and travel domains.

Sociodemographic Patterns in PA

Differences in domain-specific PA were found for all sociodemographic groups (see Figure 3). For each outcome measure, patterns by sociodemographic groups persisted after adjustment for confounding (see adjusted differences in Supplementary Material S6 [available online]); consequently, only unadjusted values are reported.

Gender

Mean weekly PA was greater in men (5704 MET-min) than women (4474 MET-min), although weekly participation by gender was similar, at over 95% in both genders (Figure 4). Men who participated in PA had higher median weekly MET-min (4109 among the 96.1% who took part) than women (3300 among the 96.5% who took part). Within domains, participation was similar for leisure and travel PA. However, women had lower participation in work PA (38.1%) compared with men (49.8%). This was the reverse for home PA (84.6% in women and 79.6% in men). Differences in median weekly MET-min were seen in all domains (even those where participation levels were the same) but most strongly in the work domain (3600 in men and 2148 in women).

Age

Mean weekly PA was greatest in middle-aged adults (Figure 5). Weekly participation (in any PA) was similar by age, except for the oldest age group (93.1%, compared with around 97% in the younger age groups). Within domains, participation in leisure PA was greater in middle-aged adults and lower in older adults. Participation in home PA was positively associated with age, whereas participation in work PA was lower in those aged 65+ years (21.4%, compared with just over 40% at other ages). Time spent doing PA by age (if people participated in it) was similar for leisure and work domains but greater in older age groups for home and travel PA.

Although total PA was greatest in middle-aged adults, exclusion of work PA resulted in a positive association by age, with higher PA in the oldest age group (mean weekly MET-min = 3731) compared with the youngest (mean weekly MET-min = 2311; see Supplementary Material S7 [available online]).

Ethnicity

Figure 6 shows the patterns in domain-specific PA outcomes by ethnicity using the total response output for ethnic groups. The
results shown in this figure cannot be directly compared by ethnicity as there is overlap from the 8.0% of adults who reported multiple ethnicities, although the patterns shown (and described next) were similar to those found using the prioritized output for ethnic groups (see Supplementary Material S6 [available online]).

For the Māori group, mean weekly PA (5605 MET-min/wk) was greater than other ethnic groups. Within domains, the Māori group had lower weekly leisure PA than the NZ European group both in terms of participation (participation rates: 62.2% vs 68.0%) and MET-min when participating (total response values: 889 vs 990). Travel PA participation was also lower in the Māori group than the NZ European group (60.9% vs 65.5%), although the Māori group accumulated more MET-min when participating in travel PA than the NZ European group (median = 594 vs 495). Median MET-min for those participating in home PA was also higher in the Māori group (1365 vs 1230) despite similar participation in this domain to the NZ European group.

The Pacific group had similar patterns of domain-specific PA to the Māori group, with lower participation and participating MET-min in leisure PA and lower participation in travel PA compared with the NZ European group. Like the Māori group, those in the Pacific group who participated in home PA reported doing more PA in this domain than the NZ European group (median MET-min = 1470 vs 1230 in the NZ Europeans). The same was true for work PA (median MET-min = 3600 vs 2628 among the NZ European group).

Mean weekly PA was lower in the Asian group (3939 MET-min) than the other ethnic groups. Within domains, PA outcomes in the Asian group were lower than the NZ European group (and most other ethnic groups) for all 3 measures with the exception of travel PA participation.

**Neighborhood Deprivation**

There was no clear association between total PA and socioeconomic deprivation (Figure 7), although those in the most deprived quintile achieved higher mean weekly MET-min, higher median weekly MET-min when participating, and lower overall participation rates. Within domains, leisure PA was inversely associated with socioeconomic deprivation, particularly for participation rates (56.6% in the highest socioeconomic deprivation quintile vs 68.7% in the lowest). Median weekly MET-min of work PA among those who did it was positively associated with socioeconomic deprivation.
Figure 4 — Mean domain-specific MET-min per week (95% CI), participation (95% CI), and median MET-min per week by gender. CI indicates confidence interval; MET-min, metabolic energy equivalent minutes.
deprivation (3564 in the most deprived quintile vs 2316 in the least deprived quintile) despite similar participation rates by socioeconomic deprivation. Those in the most deprived quintile were also less likely to participate in travel PA (60.0% compared with 64.7% in the least deprived quartile), although there was no patterning in participating MET-min per week. Home PA participation was stable by New Zealand Index of Deprivation, but participating MET-min per week in home PA, like work PA, was higher in the most deprived group (1350 in the most deprived and 1140 in the least deprived).

**Discussion**

This study shows almost universal participation in at least one PA domain each week among NZ adults. The main sources of PA when looking at overall means were work and home PA, comprising around two-thirds, with leisure and travel making up 19.4% and 11.1%, respectively. The high contribution of work and household activity to total PA is consistent with an analysis of GPAQ data from 104 countries, although compared with global averages, leisure PA accounted for a greater proportion (19% vs 12%) and travel PA a smaller proportion (11% vs 36%). Higher leisure activity is consistent with other high-income nations and could be explained by factors such as high levels of urbanization and access to and investment in PA infrastructure. Low travel PA likely reflects NZ’s prioritization and investment in land transport, which has contributed to one of the highest car ownership rates in the world and low active travel mode share. When breaking down domain-specific activity by weekly participation and, among participants, median weekly MET-min, we found significant
inequalities by gender, age, ethnicity, and area deprivation. These are discussed next in light of existing research and implications for policy.

Lower overall PA in women, along with higher home PA and lower work, leisure, and travel PA than men, is consistent with previous research.⁴,⁹,¹¹,¹⁷,¹⁸ The differences in work PA may have important policy implications given evidence that occupational PA may not confer the same health benefits as nonoccupational PA.¹²,¹³ Importantly, if limited to nonoccupational PA, our results suggest a similar overall activity between women (mean = 3163) and men (mean = 3153). This emphasizes the importance of distinguishing domain-specific activities as estimates of global disease burden may not include all domains. Interestingly, gender was not associated with participation rates in overall and leisure PA, with lower means among women owing to women achieving fewer MET-min when participating. This aligns with NZ data for leisure PA²³ but contrasts with global research, which shows higher levels in men for both measures.¹⁸,²⁷ Lower time spent in leisure PA may relate to the nature (eg, type or duration) of activities that women engage in. For example, NZ research shows that women are less likely to participate in competitive sports and activities than men but are more likely to do activities such as group classes, playing games (eg, with children), and swimming.²³ Given the well-established benefits of leisure PA, policy in NZ should focus on ways to increase the participating MET-min in women.

Higher PA in middle-aged adults contrasts to the negative association of PA with age found in most countries.¹⁷,⁴¹,⁴² Although PA was lower in the oldest age group (65+ y), this difference was minimal and did not apply to participating MET-min. Furthermore, if work PA is excluded, a positive linear

Figure 6 — Domain-specific weekly mean MET-min (95% CI), participation (95% CI), and median MET-min per week by ethnicity. CI indicates confidence interval; MET-min, metabolic energy equivalent minutes.
association emerges with higher PA in the oldest age group. This builds on recent research in Scottish adults where the exclusion of work PA negated an inverse association between age and PA. Given mixed findings on the health benefits of work PA, this further reinforces the importance of identifying the absolute and relative contributions of each domain.

Higher total PA among Māori (despite lower leisure PA) aligns with other NZ data. Interestingly, higher total PA among Māori was not explained by higher participation rates but by high levels of activity among Māori who took part in PA, particularly in home and travel activities. Few studies have explored reasons behind ethnic differences in PA in NZ. Ross and Hamlin suggested that relatively high levels of PA among Māori could be explained by several sociocultural and policy factors, such as the maintenance of traditionally active lifestyles and, since 1987, policy support for Māori sport and physical recreation. However, as nationwide surveys of PA in NZ were only initiated in 1997, it is difficult to discern the longer term effect of these factors. The importance of policy support for Māori sport and physical recreation is also questionable given that leisure is the one domain wherein Māori PA is lower than NZ Europeans. More research on sociocultural and environmental determinants of PA would be valuable to fill these gaps.

For Asian groups, low PA was found across all domains and measures, indicating both low participation rates and low activity among those who participate. This aligns with previous research in developed countries. It also aligns with NZ data on children, suggesting that such inequalities may start early in life. These findings reaffirm the importance of resource allocation to increase

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**Figure 7** — Domain-specific weekly mean MET-min (95% CI), participation (95% CI), and median MET-min per week by socioeconomic deprivation quintile (NZDep2018). CI indicates confidence interval; MET-min, metabolic energy equivalent minutes; NZDep2018, New Zealand Index of Deprivation (2018).
PA in Asian groups in NZ as well as research on the potential barriers to participation. Such research should include adequate sampling to reflect the diversity of this group (which generally aggregates first-, second-, and third-generation immigrants and multiple cultural heritages). Few NZ studies have investigated barriers to PA among Asian groups, although overseas research suggests that generation, cultural norms, and language are important in addition to common barriers like cost. 47–51

Although few studies of domain-specific activity explore patterns by area deprivation, our findings align with previous studies showing that education and individual-level deprivation are positively associated with leisure PA and negatively associated with work PA. 18,21 An interesting finding was lower travel PA participation among those in the highest deprivation quintile. This contrasts with international and some other local research, 27,52 and further investigation is needed. A plausible explanation may be lower access to active travel infrastructure in less deprived neighborhoods, coupled with high rates of car ownership in NZ.

In addition to these NZ-specific implications, our study has 4 generic implications for PA surveillance and equity. First, it shows that policy to increase domain-specific PA can work through 2 pathways: increasing participation in a domain and/or increasing the amount of activity people are doing within it. As nonparticipants stand to gain more health benefits from an increase in PA, 28,53 focusing on nonparticipants may be particularly important. Second, it builds on previous research suggesting that only reporting total and leisure PA can miss important patterns in other domains. 18,54 Third, it shows the importance of multisectoral action to improve PA given that numerous organizations have mandates relating to PA domains. For example, in addition to benefiting PA, the benefits of active travel infrastructure would extend to air pollution, traffic, environmental sustainability, and equity. Finally, the demographic differences show that the equity impacts of policies should be thought through carefully. For example, interventions targeting work PA would have different effects across the sociodemographic spectrum; most likely, they would benefit those who are sedentary at work and who tend to be of higher socioeconomic position with higher leisure PA. Paradoxically, for those who are highly active at work, a more appropriate intervention may be harm minimization to prevent injury from high workloads or strategies to counter the displacement of leisure PA.

Strengths and Limitations

This work fills a knowledge gap in NZ given that previous research on domain-specific PA has used small samples, focused on one or 2 domains, and not reported patterns by population subgroups. 25–27 The collection of data over 9 months of the year also reduces the influence of seasonality, which likely affects some domains more than others, for example, active travel in winter. 55

Reporting PA in terms of MET-min per week has advantages as it accounts for the intensity of different activities. However, uncertainty exists around the relative health benefits of activities done at different intensities. 56 Moreover, the MET scores assigned to IPAQ activities are estimates and encompass an average across a range of activities, which could vary by sociodemographic group.

The IPAQ-L, which splits home and work activities, was advantageous compared with GPAQ given the subgroup patterning in these domains (eg, by gender and age). However, IPAQ-L has been shown to overestimate PA compared with objective measures. 6 Although we winsorized activities to a maximum of 3 hours, our findings, on balance, suggest higher levels of PA than previous data in this area, for example, around 50% higher participation in travel PA. 57 It is plausible that overestimation is greater for work and household PA, which are less structured than leisure and transport activities. For example, someone who works as a laborer may engage in vigorous activity at certain points during their working day but with regular punctuation by lower intensity activity and sedentary time. Even with winsorization of activities to a maximum of 3 hours, this may result in overestimation if that person reports their total work time rather than specific estimates for work activities.

A key limitation in this study is that we did not account for intersectionality. For example, we did not explore whether gender, ethnicity, and socioeconomic deprivation “intersect” with one another in terms of PA outcomes. Research drawing on intersectionality theory is useful for illuminating the connections between relevant socioeconomic variables and informing resource allocation 58,59 and would be a valuable addition to future research on domain-specific activity.

Conclusions

This study describes domain-specific PA in NZ adults using a nationally representative sample. Most adults participated in at least one type of PA each week, though there were substantial differences in PA by domain and sociodemographic group. The findings reveal 2 pathways through which inequalities in PA arise: (1) participation and (2) the amount of activity among those who take part. Interventions to increase PA and reduce inequalities in PA should focus on both of these pathways. At a methodological level, this study shows that measuring total and leisure PA alone can miss important patterns in other domains.

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