Results from Aotearoa New Zealand's 2022 Report Card on Physical Activity for Children and Youth: A call to address inequities in health-promoting activities

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\textbf{Abstract}

\textbf{Background:} This article reports the methods and findings for Aotearoa New Zealand's 2022 Report Card on Physical Activity for Children and Youth indicators, and on inequities within these indicators.

\textbf{Methods:} Grades were assigned to indicators using the Active Healthy Kids Global Alliance criteria depending on data availability, and inequities reported based on gender, ethnicity, disability status, area-level socioeconomic deprivation, urbanicity, and school year. Two additional indicators were included in this report card: Sleep, and Physical literacy.

\textbf{Results:} Grades were assigned to indicators as follows: Overall physical activity: C\textsuperscript{+}, Organised sport and physical activity: B-, Physical literacy: B, Active transportation: D, Sedentary behaviours: C-, Sleep: B\textsuperscript{+}/C, Whānau (family) and peers: D, School: C\textsuperscript{+}, Government: A. Inequities across all socio-demographic variables were observed. An ‘inconclusive’ grade was assigned to the Active play, Physical fitness, and Community and Environment indicators due to insufficient data.

\textbf{Conclusion:} It is imperative that targeted, comprehensive, and population-specific approaches are implemented to support health-promoting physical activity behaviours and reduce inequities among children and youth in Aotearoa. There is a need to promote all dimensions of physical activity (overall activity, active play, recreation, organised sport, active transportation) and the reduction of screen time through policy, research, evidence-based social marketing campaigns, and urban design. Regular, nationally representative surveys that enable the consistent and regular measurement of key Report Card indicators are needed.

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1. \textbf{Introduction}

Physical activity (PA) is essential for health, development, and wellbeing in children and youth, and offers a range of benefits associated with physical and mental health and wellbeing,\textsuperscript{1–9} social connections and support,\textsuperscript{10–14} cognition, academic achievement,
and physical literacy. Yet, many children and youth, globally and in Aotearoa New Zealand (hereafter Aotearoa), are insufficiently active. Beyond PA, integrating sedentary behaviours and sleep alongside PA as a part of 24-h movement behaviour guidelines is becoming increasingly common. Though the proportion of children meeting age-specific sleep recommendations in Aotearoa appears both stable and favorable, sedentary time is high and has increased over time, which is concerning given the harmful impact of prolonged sedentary behaviour on health.

Schools, active transportation (AT), organised sport and play have been considered as important parts in children and youth accumulating physical activity. Schools are widely recognised settings for PA promotion via the provision of sporting opportunities, physical education (PE), promoting PA during breaks in learning, and AT to and from school. For example, introduction of at least half an hour a day, on average, of PE within schools in Aotearoa would reduce both overall physical inactivity and inequalities. AT (i.e., walking or wheeling to places) is associated with higher levels of health-promoting PA and improved health outcomes. It is worth noting that while AT can be accumulated across various settings, most evidence has explored rates of children’s travel to and/or from school. Organised sport participation makes a considerable contribution to children and youth meeting PA recommendations, and has independent positive associations with wellbeing. Risky, outdoor play has been identified as a potential attraction to engage children in PA, potentially increasing them to value and take responsibility for engaging in physical activity, play, and AT can each help children to develop physical literacy, defined as the motivation, confidence, physical competence, knowledge, and understanding required by participants that allows them to value and take responsibility for engaging in physical activity and sport for life.

A socio-ecological approach recognizes the impact that interconnected interpersonal, environmental, and policy factors have on PA. With respect to interpersonal factors, social support is an integral facilitator of PA in children and youth, with those whose parents and peers are physically active are more likely to be active themselves. The environments in which children and youth live, work and play can have significant impacts on their PA behaviours and health. Having appropriate infrastructure (e.g., footpaths, bike lanes, trails), availability of quality PA destinations (e.g., parks, playgrounds, facilities), easy access to places of importance, and safe places to be active are all important facilitators of PA in children and youth. Finally, government policies and strategic priorities play an important role in PA promotion.

This article details methods and findings from the fourth Report Card for Physical Activity for Children and Youth in Aotearoa (hereafter ‘2022 Report Card’), with the previous report cards published in 2014, 2016, and 2018 as part of the Active Healthy Kids Global Alliance’s (AHKGA’s) Global Matrix. Report Cards are useful for raising awareness and advocating for policies and environments that promote health and wellbeing for children and youth. The 2022 AHKGA Report Cards assign grades across ten indicators (overall PA, organised sport and PA, active play, AT, sedentary behaviours, physical fitness, family and peers, school, community and environment, government) using consistent benchmarking criteria where possible (Table 1). In addition, Aotearoa’s 2022 Report Card includes two new indicators - physical literacy and sleep - which are not yet included as AHKGA indicators. A particular focus of Aotearoa’s 2022 Report Card was on identifying inequalities in physical activity participation among children and youth, where possible, by stratifying grades based on a range of socio-demographic characteristics.

2. Methods

Indicators and their benchmarking criteria are outlined in Supplement 1. We aimed to align criteria as closely as possible with the AHKGA criteria, but ultimately our criteria were dependent on data availability (Table 2, Supplement 2). Data sources from 2019 to March 2020 (signalling the arrival of COVID-19 to Aotearoa) were identified through previous report cards, networks, and academic and grey literature. Data sources used to derive grades included several national surveys detailed in Table 2, along with personal communication with stakeholders. Data were requested where not publicly available. Where possible, we explored differences by gender, ethnicity, disability status, and area-level socio-economic status, urbanicity, and age (using school year). Grades were determined based on the proportion meeting established benchmarking criteria and approved by the working group. Details on the measurement and categorisation of demographic characteristics are provided in Supplement 2.

3. Results

Indicator grades and the rationale for these are outlined below, and the report card cover is provided in Fig. 1. Table 3 shows the final grades, and grades for previous years’ report cards. Table 4 shows the proportion of children and youth meeting guidelines for physical activity, sleep, and sedentary behaviours by socio-demographic characteristics.

3.1. Overall physical activity (C+)

The overall physical activity grade was assigned drawing upon Active NZ Young People Survey data. Overall, 58.1% of children and youth participated in ≥420 min/week of moderate-to-vigorous physical activity (MVPA), with a smaller proportion of girls meeting the threshold than boys or children and youth of another gender. A higher proportion of children of Māori and European ethnicities participated in ≥420 min/week of MVPA than children of other ethnicities. Children and youth of Asian ethnicities had considerably lower levels of MVPA than other ethnic groups. A smaller proportion of children (school years 0–6; 5–10 years of age) and older youth (school years 11–13; 15–17 years of age) participated in ≥420 min/week of MVPA than children and youth in school years 7–10 (11–14 years of age). The proportion of children and youth participating in ≥420 min/week of MVPA did not differ based on disability. A higher proportion of children and youth residing in areas of lower socio-economic deprivation accumulated the recommended level of MVPA compared with children and youth residing in areas of higher deprivation. A smaller proportion of children and youth residing in main urban areas accumulated the recommended level of MVPA than children and youth residing in less urbanised areas.

3.2. Sedentary behaviours (C-)

The sedentary behaviours grade was assigned drawing upon Active NZ Young People Survey data. Overall, 42.9% of children and youth met the threshold of having ≤2hrs/day of screen time (including watching television; watching movies; on a computer, cellphone, tablet, or PlayStation or Xbox) outside of school or work, on a normal weekday or normal weekend day. A higher proportion of boys and girls met screen time recommendations than children and youth of another gender. A smaller proportion of disabled children and youth met screen time recommendations compared to non-disabled children and youth. A lower proportion of children and youth residing in higher socio-economic deprivation areas met
Overall, 74.6% met age specific sleep recommendations, and was highest among those identifying as Maori. The proportion of children and youth identifying as another gender met sleep recommendations. A considerably smaller proportion of children and youth of other ethnicities met sleep recommendations compared to boys or girls. The proportion of children and youth meeting sedentary behaviour recommendations was substantially lower with increasing age. A higher proportion of children and youth of European, Pasifika, and ‘other’ ethnicities met sedentary behaviour recommendations than children of Maori, Asian, and Middle Eastern, Latin American, and African (MELAA) ethnicities.

3.3. Sleep (B+)

The sleep grade was assigned drawing upon Active NZ Young People Survey data. Overall, 74.6% met age specific sleep recommendations. A considerably smaller proportion of children and youth identifying as another gender met sleep recommendations compared to boys or girls. The proportion of children and youth meeting sleep recommendations varied considerably by ethnicity, and was highest among those identifying as ‘other’ ethnicities, followed by children of European, Maori, Asian, MELAA, and Pasifika ethnicities. More non-disabled children and youth met sleep recommendations compared with disabled children and youth. A lower proportion of children and youth from areas of high socio-economic deprivation met sleep recommendations than children and youth from areas of mid to low deprivation. Indication of a trend towards increased likelihood of meeting sleep recommendations with decreasing urbanicity was found. The proportion of children and youth who met sleep recommendations lowered with advancing school year.

3.4. Organised sport and physical activity (B-)

The organised sport and physical activity grade was assigned drawing upon Active NZ Young People Survey data. Overall, 66.4% had participated in organised sport (competition or tournament, or training with a coach/instructor, excluding participation at school) in the past 7 days. A similar proportion of girls and boys participated in organised sport, and considerably fewer children and youth identifying as another gender participated in organised sport. A higher proportion of Pasifika and Maori children and youth engaged in organised sport than children of MELAA, European, or Asian ethnicities. A considerably smaller proportion of children and youth of other ethnicities engaged in organised sport than children of MELAA, European, or Asian ethnicities.

3.5. Physical literacy (B)

The physical literacy grade was assigned drawing upon Active NZ Young People Survey data. The physical literacy grade was determined based on the proportion of children and youth who reported agreement (on average) to questions regarding each of the

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### Table 1

| Grade | % Meeting criteria | Interpretation |
|-------|--------------------|----------------|
| A+    | 94–100             | We are succeeding with a large majority of children and youth |
| A     | 87–93              | We are succeeding with well over half of children and youth |
| A-    | 80–86              | We are succeeding with about half of children and youth |
| B+    | 74–79              | We are succeeding with less than half but some children and youth |
| B     | 67–73              | We are succeeding with very few children and youth |
| B-    | 60–66              | We are succeeding with very few children and youth |
| C+    | 54–59              | We are succeeding with very few children and youth |
| C     | 47–53              | We are succeeding with very few children and youth |
| C-    | 40–46              | We are succeeding with very few children and youth |
| D+    | 34–39              | We are succeeding with very few children and youth |
| D     | 27–33              | We are succeeding with very few children and youth |
| D-    | 20–26              | We are succeeding with very few children and youth |
| F     | <20                | We are succeeding with very few children and youth |
| INC   | Incomplete         | Incomplete—insufficient or inadequate information to assign a grade |

### Table 2

| Source Description Indicator(s) | Source Description Indicator(s) |
|---------------------------------|---------------------------------|
| Sport New Zealand Ihi Aotearoa (Sport NZ) Active NZ Young People Survey - 2019 | - Survey (households adults assist where necessary) - ~6000 young people – data weighted according to socio-demographic characteristics - January 2019–March 2020 |
| The NZ Health Survey - 2019/2020 | - Home interview - Active transportation |
| NZ Travel Survey - 2019/2020 | - Home interview/travel diary/travel logs (GPS) |
| NZ Secondary School Sport Census | - Reported by secondary school sports coordinators |

Note. NZ – Aotearoa New Zealand; * Active NZ Young People Survey data were merged with Active NZ Adult Survey.
physical literacy components (motivation, confidence, competence, understanding, value, and engagement). Overall, 69.9% reported agreement with a similar proportion of girls and boys and considerably lower proportion of those identifying as another gender reporting agreement. A similar proportion of European, Maori, Pasifika, and MELAA children and youth reported agreement. A lower proportion of those identifying as Asian or ‘other’ ethnicities reported agreement than those from other ethnic groups. A higher proportion of non-disabled children and youth reported agreement compared to disabled children and youth. The proportion who reported agreement decreased slightly with increasing levels of socio-economic deprivation; however, there were few differences in physical literacy based on urbanicity. The proportion who reported agreement was lower among those in school years 11–13 compared with those in lower school years.

3.6. School (C+)

As of 2022, Aotearoa does not have guidelines regarding the amount of PE required, but PE is compulsory for students in Years 1 through 10 (ages 5–15 years). From year 11 onwards PE is optional, and the proportion of children and youth enrolled in PE or Health & PE as subjects declines considerably based on 2019 Ministry of Education data: 87.8% of Year 9–10 students, 42.8% of Year 11 students, 28.7% of Year 12 students, and 20.9% of Year 13 students. The school indicator grade was based on the average (55.0%) of the proportion of students meaningfully engaged in school sport according to the 2019 NZ Secondary School Sports Census (51.0%), and the proportion of children and youth who had been active in PE or class at school in the last seven days according to the Active NZ Young Peoples survey (59.0%). A smaller proportion identifying as non-binary had been active in PE or class at school in the last seven days. A higher proportion of children and youth of Pasifika, Maori, and MELAA ethnicities had been active in PE or class at school in the last seven days compared to European, Asian, and “Other” ethnicity children and youth. Activity in PE or class at school in the last seven days did not differ between disabled and non-disabled children and youth. A higher proportion of children and youth residing in high socio-economic deprivation areas had been active in PE or class at school in the last seven days. The proportion who had been active in PE or class at school in the last seven days did not differ based on urbanicity. The proportion who had been active in PE or class at school in the last seven days was highest among those in school years 7–10, followed by those in years 0–6, with a considerably smaller proportion of those in years 11–13 reporting that they had been active in PE or class at school in the last seven days.

3.7. Active play (INC)

An inconclusive grade was assigned for active play due to lack of sufficient data that align with the 2022 AHKGA criteria. Using the same criteria as used in Aotearoa’s previous report card, 80.8% of children and youth reported engaging in physical activities (including sports) playing alone and/or playing or hanging out with

Table 3

| Indicator                        | 2022 Grade | 2018 Grade | 2016 Grade | 2014 Grade |
|----------------------------------|------------|------------|------------|------------|
| Overall physical activity        | C⁺         | D⁻         | B⁻         | B          |
| Sedentary behaviours             | C⁻         | D⁻         | C⁻         | B⁻         |
| Sleep                            | B⁺         | N/A        | N/A        | N/A        |
| Organised sport and physical activity | B⁻     | B⁻         | C⁺         | B⁻         |
| Physical literacy                | B          | N/A        | N/A        | N/A        |
| School                           | C⁺         | N/A        | N/A        | B⁻         |
| Active Play                      | INC        | C⁺         | B⁻         | C⁻         |
| Family/whānau and peers          | D          | C⁻         | C⁻         | C⁻         |
| Community and environment        | INC        | B⁻         | B⁻         | C⁻         |
| Active transportation            | D          | C⁻         | C⁻         | C⁻         |
| Government                       | A          | B⁻         | B⁻         | INC        |

Note. INC = Inconclusive due to insufficient evidence available, grade not assigned; N/A = not applicable, grade not calculated.
朋友或家庭在过去的七天里，以A级的评分

3.8. 家庭/whanau和 peers (D)

家庭/whanau和peers的评分是基于2019年/2020年Active NZ Young People Survey数据。[51]家庭/whanau和peers的评分是基于对家庭成员的参与情况的评估，包括对A和HKG的建议，这些建议侧重于对运动的推荐。

3.9. 社区和环境 (INC)

社区和环境被赋予了一个不明确的等级，因为对及时分析的需求不足。使用的标准用于前一份报告卡没有被重复过，也没有对排名标准进行其他排名标准（如儿童和家长的期望）进行排名。从全国范围内的研究中获得的关于活跃区域使用的信息（绿地、蓝色空间、PA设施）提供了某些但没有直接相关的信息。

3.10. 活跃交通 (D)

活跃交通可以被记录在一系列的范围中，最多证据显示在家庭中和/或从学校。活跃交通的等级是根据在2019年/2020年获得的数据中，通过从三个国家的数据来源中确定的百分比。

- NZ Health Survey 2019/2020[52] - 42.4% of children and youth aged 5–14 years

- NZ Household Travel Survey 2019/2020[53] - 22.6% of children and youth aged 5–17 years

- Active NZ Young People Survey 2019/2020[54] - 29.0% of children and youth aged 8–14 years

一个较小比例的女性（28.4%）使用AT，男性（34.1%）。一个较小比例的儿童和来自太平洋（24.8%）和亚洲（33.2%）等族裔的儿童使用AT，而欧洲（32.2%）和Maori（33.7%）等族裔的儿童使用AT。AT没有应用在有残疾或社会经济低收入的人。一个较小比例的儿童在活跃区域使用AT，而这些区域在城市区域使用AT，而这些区域在城市区域使用AT，而这些区域在城市区域使用AT（17.7% vs. 28.7%）。与儿童（学年：11岁）相比，13岁和17岁时的儿童更不容易使用AT（29.9% [5–9 years] vs. 33.9% [10–14 years] vs. 21.7% [15–17 years]）。

3.11. 政府 (A)

在活跃娱乐和活跃体育领域进行投资（2019/2020），旨在活跃的儿童和年轻人口中，这与Aotearoa（地方政府、中央政府、参与、博彩、商业、大学和慈善机构）的战略方向。自治区在城市区域的覆盖范围为活跃区域提供证据。在城市区域提供证据。

### Table 4

| Characteristic | Category | Number (%) of participants | Overall physical activity | Sedentary behaviours | Sleep | Organised sport and physical activity | Physical literacy | School |
|---------------|----------|-----------------------------|---------------------------|----------------------|-------|---------------------------------------|----------------|--------|
|               |          |                             | % Grade % Grade          | % Grade % Grade      | % Grade % Grade                             | % Grade % Grade | % Grade |
| OVERALL       |          |                             |                          |                      |       |                                       |                |
| Gender        | Girls    | 2978 (49.8)                 | 58.1 C-                  | 42.9 C-              | B     | 74.6 66.4 B-                          | 69.9 B         | 59.0 C- |
|               | Boys     | 2963 (50.0)                 | 61.6 B-                  | 42.7 C-              | B     | 76.3 66.9 B-                          | 71.0 B         | 59.3 C- |
|               | Another gender | 13 (0.2)             | 61.5 B-                  | 143 F D              | 38.5 50.0 C   | 46.2 C- 35.7 D-                |                |
| Ethnicitya    | Māori    | 1373 (23.2)                 | 62.7 B-                  | 38.3 D              | B     | 73.1 70.6 B-                          | 71.2 B         | 64 B-   |
|               | European | 3328 (56.2)                 | 61.0 B-                  | 46.4 C              | B     | 78.5 65.0 B-                          | 71.2 B         | 56.8 C- |
|               | Pasifika | 484 (8.2)                   | 51.2 C                  | 40.8 C              | B     | 60.5 73.4 B                          | 71.5 B         | 66.7 B   |
|               | Asian    | 639 (10.8)                  | 41.0 C-                 | 38.7 D              | B     | 69.4 61.3 B-                          | 59.9 C-        | 55.6 C- |
|               | MELAAa   | 66 (1.1)                    | 47.7 C                  | 33.8 D              | B     | 66.7 65.2 B-                          | 74.2 B         | 63.6 B- |
|               | Other ethnicities | 27 (0.5)          | 55.6 C-                 | 44.4 D              | A     | 80.8 42.3 C-                          | 61.5 B-        | 22.2 D-  |
| Disability statusb | Non-disabled | 5410 (90.9) | 58.3 C-                 | 43.6 D              | B     | 75.9 66.6 B-                          | 70.5 B         | 59.0 C- |
|               | Disabled | 543 (9.1)                   | 53.2 C                  | 27.8 D              | B     | 62.3 64.5 B-                          | 55.7 C-        | 58.6 C- |
| Area-level socioeconomic deprivationc | Low deprivation | 2303 (38.7) | 61.5 B-                 | 44.5 C              | B     | 77.4 65.5 B-                          | 73.8 B         | 56.6 C- |
|               | MTD deprivation | 2192 (36.8) | 58.6 C+                 | 46.0 C              | B     | 74.8 64.9 B-                          | 68.8 B         | 58.1 C+ |
|               | High deprivation | 1458 (24.5) | 51.9 C                  | 35.9 D              | B     | 69.9 70.2 B-                          | 65.4 B         | 64.2 B- |
| Urbanicity    | Main urban (≥30k people) | 3865 (65.0) | 56.4 C-                 | 42.1 C              | B     | 73.8 66.3 B-                          | 69.1 B         | 59.0 C- |
|               | Secondary urban (<1k people) | 947 (15.9) | 61.9 B-                 | 44.4 C              | B     | 74.6 64.4 B-                          | 69.8 B         | 57.5 C- |
| School year   | Rural    | 1135 (19.1)                 | 60.5 B-                  | 45 C-               | B     | 77.3 68.5 B-                          | 72.2 B         | 59.9 C- |
|               | 0-6 (~5–10 years) | 2737 (46.0) | 59.9 C+                 | 61.1 B              | A     | 81.4 69.4 B-                          | 70.2 B         | 63.9 B+ |
|               | 7-10 (~11–14 years) | 2104 (35.3) | 61.7 B-                 | 35.7 D              | B     | 71.4 74.3 B+                          | 72.6 B         | 67.5 B   |
|               | 11-13 (~15–17 years) | 1113 (18.7) | 46.8 C-                 | 11.9 F              | C     | 63.9 44.2 C-                          | 63.9 B-        | 30.8 D  |

Notes.

a. Participants could choose more than one ethnicity.

b. MELAA – Middle Eastern, Latin American, and African.

c. Classified using the Washington Short Set.

d. Classified using NZDep.
assessments and reporting on the performance of its investment into the sector, fund independent evaluations of all major initiatives to inform a reshape of the initiative and/or continuation/cessation of funding.57

4. Discussion

Encouraging lifelong participation in PA is essential for health and wellbeing. Some positives can be gleaned from our findings, particularly that more than half of children and youth meet PA recommendations. However, these results, and comparison with 2018 grades below demonstrate that much work is needed to address inequities with targeted and population-specific strategies that support PA participation for all children and youth in Aotearoa.

The grade for overall PA increased from D- in 2018 to C+, a change largely attributable to using the global PA recommendations that state children and youth should accumulate an average of 60 min of PA each day as opposed to earlier recommendations (including Aotearoa’s) that state at least 60 min of PA should be accumulated each day. Inclusion of strength training recommendations for children and youth should be considered in future iterations of these report cards. With respect to sedentary behaviours, the grade improved slightly from a D to a C-.

In recognition of Aotearoa’s recent adoption of guidelines that incorporate PA, sedentary behaviours, and sleep we included sleep in our report card for the first time which was assigned a B+ grade. More work is needed to better measure sedentary behaviours and understand the nuance of what constitutes and supports quality sleep for children and youth. Adoption of 24 h movement guidelines is commendable, but further work is needed to disseminate these guidelines and the ‘sit less, move more, and sleep well’ message, to the extent that Canada has done for all age groups. Moreover, evidence-based strategies that simultaneously promote PA, sleep and limiting sedentary behaviours whilst acknowledging these behaviours vary based on socio-demographic characteristics are needed.

The school indicator grade dropped from B- to C+. Schools play an important role in facilitating PA participation across a range of areas, including travel to and from school, PE, and sport. The AT grade continued a downward trend declining from C- to D. Less than a third of children and youth use AT to get to and from school, highlighting an opportunity for substantial improvement. Strategies to increase AT, such as reducing distance to school (e.g., through zoning policies and strategies to increase cycling rates), policies that influence socio-cultural norms and improve supporting infrastructure for children and youth to move safely around their neighborhoods are crucial.

The organised sport grade declined from B to B-. Sport comprises a considerable portion of the PA accumulated by children and youth and participating in sport has been linked with better wellbeing. Providing children and youth quality experiences that positively engage them as they age is crucial to improving physical literacy and promoting lifelong PA participation. Sport NZ has prioritized physical literacy in recent years, and unlike physical fitness, national data were available for physical literacy. It is positive that the responses of many children indicated high self-perceived physical literacy, but children and youth of Asian ethnicities, disabled children and youth, and older children and youth did not fare as well as others. Given the association between physical literacy and PA participation and that physical literacy encompasses a range of components, further research is warranted to understand which components may be contributing to these inequities to inform decision making regarding efforts to intervene to address PA inequities.

Assigning grades for the active play, family/whanau and peers, and community and environment indicators was hampered by the lack of suitable data. Active play is important for child and youth development, but the available data do not provide a clear indication of participation levels and therefore we reported an inconclusive grade. Further work to refine the measurement of active play and determine evidence-based thresholds for benchmarking criteria is needed. Close social networks play an important role in shaping PA behaviours of children and youth, but the available data do not provide a clear indication of existing levels of support from family and friends. Instead, we based our grade purely on the PA levels of household adults of children and youth, which is a relatively poor indicator. Future work to integrate appropriate measures and evidence-based thresholds for peer and family support pertaining to PA is needed. The community and environment (built, natural, and social) are critical determinants of PA behaviours of children and youth, but there was a paucity of up-to-date data to assess this indicator. Updated data procurement and analyses of relevant community and environment determinants of PA is needed. Since the 2018 report card, there has been significant central and local government investment in PA and sport initiatives, with Sport NZ playing a key role. The government indicator improved from B- to A. While there seems to be a disconnect between the improvement of this indicator others, time is needed for initiatives to demonstrate a population-wide effect.

4.1. Inequities

Differences based on ethnicity varied across indicators, though children and youth of Asian ethnicities appeared to fare less favorably compared to those of other ethnicities for several indicators. Numerous inequities were found for disabled children and youth. Inequities based on socioeconomic deprivation varied across indicators. Participants who were of ‘another gender’ tended to fare less favorably than boys and girls, though findings may be biased by a small number of these participants, highlighting the need for further research. Differences based on urbanicity were minimal, though those residing in main urban areas fared less favorably in relation to overall PA. Generally, the proportion of children and youth meeting most criteria tended to decrease with increasing age. Further investigation of inequities is warranted, especially inequities based on intersecting characteristics.

4.2. Limitations

Overall, data sources, data availability, and benchmarking criteria and thresholds have differed across time and countries. In some instances, differences are positive and reflect improvements in data quality (e.g. the introduction of the Active NZ Young People Survey) or criteria (e.g. new PA recommendations for children and youth). Regardless, caution is warranted when making comparisons in grades between countries, and between time points for the Aotearoa Report Cards.

Though we stratified grades based on socio-demographic characteristics, there remains room for improvement. For example, though we examined differences based on urbanicity, geographical distribution of children and youth was not considered. Other important socio-demographic characteristics that PA inequities have been reported to exist based upon in the past, such as sexual orientation, are not measured in the datasets we used. The exclusion or lack of acknowledgement of children and youth intellectual disabilities within datasets has also been noted in a tangential piece of work, and we only looked at inequities based on single characteristics as opposed to intersecting characteristics which can provide greater insight. Moreover, our sample is not necessarily representative of the wider population of children and youth.
youth in Aotearoa, with those from certain groups (e.g. disabled children and youth) underrepresented. For example, the proportion of our sample considered to have a disability is far below previous estimates reported for children and youth,\textsuperscript{70} though different assessment methods for identifying disability status were used. A lack of high quality data for all children and youth in Aotearoa and particularly for those experiencing inequities is an ongoing issue.\textsuperscript{71} Although whenever possible we used weighted data to ensure our results were as representative as possible, this was not possible for all data sources. Thus, the current findings must be treated with caution, as there is the possibility of systemic error and variation over time in the metrics used as well as the sampling and recruitment processes applied within each of the data sources we used. Despite these limitations, taking steps to report on inequities and identifying limitations in the existing data sources provides an important starting point for a discussion as to how to address them.

Although this report card is for the 2022 time period, grades presented all pertain to data collected prior to the arrival of COVID-19 to Aotearoa in March 2020. Future work will explore shifts in PA that may have occurred during the current pandemic as well as changes specifically related to periods of lockdown and whether the inequities evident in the report card have persisted, reduced, or worsened.

5. Conclusion

The three key recommendations from the 2018 Report Card\textsuperscript{22} remain unchanged. We have added a fourth recommendation in the 2022 Report Card, which has highlighted a range of inequities across PA dimensions and sociodemographic characteristics.

1. Develop and implement regular nationally representative surveys that enable the consistent and regular measurement of key PA indicators (and others).

2. AT to school is an important contributor to health but rates are low. Investment in multi-sectoral approaches including urban planning, school and community-led initiatives and social marketing campaigns is recommended.

3. Promote all dimensions of PA (overall activity, active play, recreation, organised sport, AT) and the reduction of screen time through policy, research, evidence-based social marketing campaigns, and urban design.

4. It is imperative that targeted, comprehensive, and population-specific approaches are implemented to support health-promoting PA behaviours and reduce inequities among children and youth in Aotearoa.

Declaration of competing interest

Sandra Mandic is the founder and the director of the research consultancy AGILE Research Ltd. (www.agileresearch.nz) and Principal Advisor Transport Strategy at Wellington City Council (Wellington, New Zealand). Other authors have no conflicts of interest. The authors otherwise declare no conflict of interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jesf.2022.10.009.

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