

Results From Mexico's 2016 Report Card on Physical Activity for Children and Youth

Karla I. Galaviz, Mabel Aguilar Arroyo, Inés González-Casanova, Martín Francisco González Villalobos, Alejandra Jáuregui, Edna Jáuregui Ulloa, Selene Pacheco Miranda, Marcela Pérez Rodríguez, Ricardo Alejandro Retano Pelayo, and Juan Ricardo López-Taylor

Background: The 2016 Mexican Report Card on Physical Activity for Children and Youth aims to assess how Mexico is doing in terms of providing physical activity (PA) opportunities for Mexican children and youth. The purpose of this article is to summarize results from the Mexican 2016 Report Card. **Methods:** A literature search was conducted in Spanish and English languages using major databases, and complemented with a review of government/nongovernment documents, websites, and national health surveys. Information on the 9 indicators outlined in the Global Matrix of Report Card Grades was extracted. A team of Mexican experts met to discuss and assign a grade on each indicator based on the best available evidence and established benchmarks. **Results:** Daily behaviors grades were Overall PA (C), Organized Sport Participation (D), Active Play (D-), Active Transportation (C), and Sedentary Behavior (D). For Settings and Sources of Influence, grades were Family and Peers (INC), School (D-), and Community and Environment (D). Strategies and Investments grades were Government Strategies (C) and Non-Government (F). **Conclusions:** PA and sedentary behaviors among Mexican children and youth remain below the recommended levels. Government and communities are far from providing appropriate and sufficient physical activity opportunities for children and youth.

Keywords: adolescent, policy, public health, surveillance

Physical inactivity among children and youth has reached alarming proportions across the globe.^{1,2} In Mexico, physical inactivity among children and youth has increased 47% in the last 6 years.³ The amount of time Mexican children and youth spend in sedentary behaviors is also alarmingly high.³ This is concerning given that physical inactivity is associated with the development of noncommunicable diseases,⁴ leads to higher healthcare costs,⁵ and is the fourth leading risk factor for global mortality.⁶ Because physical activity (PA) among children and youth can help protect against these health threats,⁷⁻⁹ providing opportunities for this population to be active is imperative.

The ParticipACTION Report Card on Physical Activity for Children and Youth¹⁰ has been a successful model for influencing policies, programs and campaigns aimed at improving PA opportunities for children and youth.^{11,12} Based on this model, Mexico launched its first report card in 2012¹³ sponsored by the CAMBIO

program,¹⁴ and its second report card in 2014.¹⁵ Results from these report cards showed that a high proportion of Mexican children and youth were insufficiently active, spent more than 2 hours in front of a screen, and lacked PA opportunities. These report cards also showed that data on PA, on the different sources that influence this behavior, and on the impact of existing policies and programs were scarce.^{13,15}

The purpose of this paper is to summarize the results of the 2016 Mexican Report Card. Using the best available evidence, Mexico's report card aims to assess how the country is doing in terms of providing PA opportunities for children and youth. The 2016 Mexican Report Card is part of the Global Matrix of Grades 2.0, which summarizes report card grades from several countries.

Methods

The 2016 Mexican Report Card working group included 11 experts from academic institutions in Mexico and the United States, and from governmental agencies such as the Jalisco Secretary of Health. The team's work consisted of identifying PA-related data sources, examining the data, and assigning grades based on established benchmarks as described below.

In the Spring of 2016, the team conducted a literature search to identify national surveys, peer-reviewed literature, and gray literature such as government and nongovernment reports and online content related to PA. In most cases, data were from 2013–2015; however, older sources were relied upon for indicators where new data were not available. The main sources of data were the National Health and Nutrition Survey (ENSANUT) 2012,³ government documents from the National Commission on Physical Culture and Sports (CONADE),¹⁶ census data from the National Institute

Galaviz and González-Casanova are with the Hubert Dept of Global Health, Rollins School of Public Health, Emory University, USA. Arroyo is with the Physical Education and Integral Health Center, ITESO, Mexico. Villalobos and Pelayo are with the Human Movement Sciences Department, Health Sciences University Center, University of Guadalajara, Mexico. Jáuregui and Miranda are with the Nutrition and Health Research Center, National Institute of Public Health, Mexico. Jáuregui Ulloa is with the Jalisco Secretary of Health, Mexico. Rodríguez is with the Clinical Research Education Center, National Institute of Social Security, Mexico. López-Taylor is with the Institute of Physical Activity and Sports Applied Sciences, Human Movement Sciences Dept, Health Sciences University Center, University of Guadalajara, Mexico. Galaviz (kgalavi@emory.edu) is corresponding author.

of Statistics and Geography (INEGI),^{17,18} documents from National Secretaries (eg, Health, Education, Agriculture, Social Development),^{19,20} and legislative documents (eg, General Law on Physical Culture and Sports).²¹

Published academic articles were identified using major databases including Academic Search Complete, EBSCO host, Web of Science and Medline for English articles, and on SCIELO, Cochrane México, and *Biblioteca Virtual en Salud* for Spanish articles. Articles reporting data on Mexican populations 1 to 25 years of age published from 2013–2015 were included. This age range was employed to increase the number of studies examined and to include studies that employed wide age ranges (eg, high school or college studies).

The Report Card synthesized data from these sources to inform the indicator grades. Consistent with the Global Matrix of Report Card Grades,²² 9 indicators grouped in 3 categories were graded: Daily Behaviors (Overall Physical Activity, Organized Sport and Physical Activity Participation, Active Play, Active Transportation, Sedentary Behavior); Settings and Sources of Influence (Family and Peers, School, Community and Environment); and Strategies and Investments (Government and Nongovernment). National data took precedence over regional data and objectively measured data took precedence over subjectively measured data. When possible, we considered trends over time and the presence of age and gender disparities to inform the grades.

The grading scheme for the Mexican Report Card was based on the national grading system (0–10), where numbers below 5 represent failing grades and numbers above 6 represent approbatory grades.²³ The corresponding letters for each grade were also included to facilitate comparisons with other country report cards. Grades for each indicator were assigned by consensus during a meeting held by Mexico's Report Card team. For each indicator, the grade was determined by comparing current data against a predefined benchmark or optimal scenario. The grades were based on the proportion of children and youth who were meeting established benchmarks: 9 to 10 = A (81% to 100%), 7 to 8 = B (61% to 80%), 5 to 6 = C (41% to 60%); 3 to 4 = D (21% to 40%), 0 to 2 = F (0% to 20%), and *INC* (incomplete due to a lack of data).

Four members of the team selected the theme for this edition. Because this is the first time that a theme is assigned, the consen-

sus was to start with a phrase that could encompass all indicators. Different themes were proposed and discussed; the selected theme is aimed to appeal the general public and is a call to action to help children and youth get active.

Results and Discussion

Grades assigned for the 2012, 2014, and 2016 Mexican Report Cards are summarized in Table 1. The front page of the 2016 Mexican Report Card is presented in Figure 1.

Overall Physical Activity Level: C (6)

National data from ENSANUT 2012 show that 59% of Mexican adolescents between 15 to 18 years are meeting the PA recommendation of at least 60 minutes of moderate-to-vigorous physical activity (MVPA) per day.^{4,24} One study employing accelerometers shows that, on average, children spend between 37 and 52 minutes of MVPA per week.²⁵ In line with this, studies employing PA questionnaires show that children spend less than 1 hour per day on physical activities.^{26,27} Accelerometry data show that girls have higher PA levels than boys,²⁸ while self-reported data show that boys have higher PA levels than girls,²⁹ and almost double the energy expenditure.³⁰ This grade was decreased from C+ to C reflecting the fact that available national estimates have not been updated, that gender differences exist, and individual study data show that Mexican children and youth engage in PA levels that are below the recommended levels.

Organized Sports and Physical Activity Participation: D (4)

According to ENSANUT 2012, 41% of children 10 to 14 years of age participated in 1 or more organized sports in the previous 12 months, while 59% did not participate in organized sports.³ A multistate study showed that among 1509 children aged 6 to 11 years, 47% participated in sports and 40% in organized physical activities (eg, dance classes).³¹ Regarding competitive sports, the National Youth Olympic Games are held every year in Mexico,

Table 1 Grades According to Physical Activity Indicator in the 2012, 2014, and 2016 Mexican Report Cards

Indicator	2012 Letter Grades*	2014 Letter Grades	2016 Letter Grades
Overall Physical Activity Levels	C	C+	C
Organized Sport Participation	INC	D	D
Active Play	Not included	INC	D-
Active Transportation	INC	B-	C
Sedentary Behavior	C	D	D
Family and Peers	INC	INC	INC
School	D-	D	D-
Community and the Built Environment	INC	F	D
Government Strategies	B-	C	C
Nongovernment Strategies	Not included	Not included	F

* Letter grades were used in this table to facilitate comparison with other report cards. For the number grades please see the results section. Abbreviations: INC, incomplete.



Figure 1 — Front cover of the 2016 Mexican Report Card on Physical Activity for Children and Youth.

where children and youth between 10 and 18 years old from every state in the country compete in 46 sport disciplines.³² According to reports from CONADE, about 4 million athletes around Mexico participated in the qualifying events, and 25,051 athletes competed in the 2015 games.³² Regarding gender differences, a study among 17- to 19-year-old youth (n = 881) from the state of Jalisco showed that 56% of the sample did not participate in sports in the last 12 months, and that girls had the lowest sports participation levels.³³ Similarly, a study among 7-year-old children (n = 172) from Mexico City showed that boys spent 2.1 hours per week doing sports, while girls spent 1.4 hours per week.³⁴ The grade for this indicator remains a *D* because about half of Mexican children and youth still do not participate in organized sports and physical activities and given that girls have the lowest participation levels.

Active Play: *D-* (3)

This indicator was not graded in the 2014 Mexican Report Card because data were lacking. For this edition, we identified 4 studies that provided data to compare against the benchmark: the proportion of children and youth who engage in unstructured, self-directed active play for several hours a day. A study among 9- to 12-year-old children from the state of Morelos (n = 239) shows that children spend between 1.8 and 2.3 hours per day in active play.³⁵ Further, a study among 2- to 5-year-olds from Mexico City (n = 306) reports that children engage in ~3.8 hours per day of active play.³⁶ A study

including 6- to 14-year-old Mestizo (mixed race; n = 61) and Tarahumara (Indigenous race; n = 50) children reports that 45% of Tarahumara children spend >4 hours per week in active play compared with 27% of Mestizo children.³⁷ Finally, a multicity study (Guadalajara, Mexico City and Puerto Vallarta) among 1509 children aged 6 to 11 years shows that 76% engage in outdoor play at least 1 day per week.³¹ A grade of *D-* was assigned because, although from small studies employing different definitions of active play, data show that children are not engaging in several hours of active play per day. Echoing previous calls,^{38,39} we emphasize the need to promote unstructured, self-directed outdoor play among Mexican children.

Active Transportation: *C* (5)

The benchmark for this indicator is the proportion of children and youth who use active transportation to get to and from places. According to INEGI 2015 Census data, 54.8% of children 3 years and older walk to school and 1.5% ride bicycles.⁴⁰ In contrast, a study among 10- to 14-year-old children (n = 213) from Mexico City shows that 54.4% and 69.1% use public transport or a car, respectively, to go to school.⁴¹ This grade was decreased from *B-* to *C* because estimates are lower than those reported in ENSANUT 2012, which show that 66% of children 10 to 14 years walk to school.³ We recognize that the age groups included in INEGI and ENSANUT are different, which may contribute to the differences observed (eg, younger children may not walk to school alone). Because INEGI census data are more methodologically sound and most up-to-date that ENSANUT data, the grade was based on INEGI data.

Sedentary Behavior: *D* (4)

As in the previous report card, national data on sedentary behavior comes from ENSANUT 2012. The survey shows that 67% of 10- to 18-year-old children and youth spend more than 2 hours per day in front of a screen, with higher levels observed among urban than rural children (73% vs. 51%).^{3,42} The most recent self-reported data show that 3- to 12-year-old children spend between 1.6 and 2.9 hours per day in front of a screen,^{27,43,44} while adolescents older than 12 years spend between 7.5 and 14.4 hours per week in front of a screen.⁴⁵ A study from Mexico City shows that 7-year-old children (n = 173) watch, on average, between 4.9 and 5.3 television programs per day.³⁴ Overall, girls exhibit higher levels of sedentary behavior than boys^{33,34,46} and accelerometry data show that girls spend 73.4% of their awake time in sedentary activities.⁴⁷ The grade for this indicator remains a *D* because the time children and youth spend in sedentary activities remains above the recommended levels, especially among girls.

Family and Peers: *INC*

As in the 2012 and 2014 Mexican Report Cards, a grade could not be assigned this year. Data on the influence of family and peers on Mexican children and youth PA are lacking.

School: *D-* (3)

The benchmarks for this indicator are the proportion of students that are offered at least 60 minutes of physical education per week, and the proportion of schools with PA programs or policies. Regarding physical education, national data show that only 36.3% of children attending public schools receive 1 hour of physical education per week.⁴⁸ Further, the INEGI basic education census 2013 showed that

there are 207,682 basic education schools (preschool, elementary and high school), while only 96,000 physical education teachers.⁴⁹ Regarding PA opportunities in schools, the National Food Health Strategy,⁵⁰ which introduced school-based PA promotion strategies, was discontinued. In addition, an accelerometry study showed that 13- to 15-year-old girls ($n = 72$) spend more than 90% of the school recess time in activities of light or sedentary intensities.⁴⁷ Reflecting on the low proportion of children receiving physical education and the discontinuation of a national school-based strategy, the grade was decreased from *D* to *D-*.

Community and the Built Environment: *D* (4)

The proportion of communities/cities with infrastructure that promotes PA is the benchmark for this indicator. INEGI census data show that 33% of neighborhoods in Mexico have sidewalks and trees and that 45% have public lighting.⁵¹ In terms of available spaces to engage in PA, a national study across 78 cities found that each city has approximately 41.4 m² of green space or green areas per habitant.⁵² However, parental neighborhood safety concerns are prevalent as data from INEGI 2015 census show that 67.9% of Mexican adults stopped allowing their children to go outside.⁵³

The Institute of Policies for Transportation and Development reports that 30 cities across Mexico are classified as *Ciclociudades*, that is, cities with cycling infrastructure.⁵⁴ Community programs to promote active transportation such as *Via Recreativa*⁵⁵ and *Muevete en Bici*⁵⁶ have also been implemented, though their effectiveness and scalability remain unknown. Finally, according to the National Census of Sports Infrastructure, there are 51,595 sports facilities across the 31 Mexican states,¹⁶ but data on the reach and usage of these facilities were not found. Recognizing that more national data on PA infrastructure is available and that more attention is being paid to the built environment and the community, this grade was improved from *F* to *D*.

Government: 6 (C)

Evidence of leadership and commitment, allocated funds and resources, and policies directed at promoting children and youth PA are benchmarks for this indicator. The National Food Health Strategy⁵⁰ was replaced by President Peña Nieto's National Strategy to Prevent Obesity and Diabetes.⁵⁷ This new policy introduces public health strategies to promote healthy lifestyles, strategies to improve detection and management of diabetes, and food labeling and fiscal regulations to reduce consumption of unhealthy foods among children.⁵⁷ President Peña Nieto also introduced 2 PA promotion programs as part of the National Program for Physical Culture and Sports: the *Ponte al 100* program which focuses on assessing the functional capacity of children and providing individual recommendations to improve it; and, the *Muevete en 30* program which focuses on promoting PA among children and adults.⁵⁸

Other government initiatives implemented in Mexico include improvement of public transit infrastructure, Sunday open streets programs for bicyclists and pedestrians (ie, *Ciclovias*), the pedestrianization of streets, and the introduction of bicycle sharing programs and public bicycle parking.⁵⁹ Regarding fund allocation, the 2014–2018 National Program for Physical Culture and Sports shows that the budget allocated to PA promotion was \$180 million in 2013 and \$202 million Mexican pesos in 2014.⁶⁰ This translates in \$1.6 and \$1.8 Mexican pesos per person in 2013 and 2014, respectively. Although “physical activity policy” has been introduced in Mexico, leadership from the public health sector is lacking, the focus has

been other than to increase the level of PA, and the impact of these policies has not been assessed.⁵⁹ Thus, the grade for this indicator remains a *C*.

Nongovernment Strategies: *F* (2)

This is the first time this indicator was graded. The same benchmarks used for the government indicator were used here. The implementation of *Ponte al 100* program is being supported by nongovernment organizations⁶¹ and the physical capacities of 2,300,000 children have been evaluated to date. Other large scale initiatives such as those organized by *Fundacion Carlos Slim*⁶² have been implemented but these have focused on promoting engagement in competitive sports among a small proportion of children, over short periods of time. Information about the funds and resources allocated to these programs was not found. One positive aspect is that most of these programs target low-income children with the overall purpose of keeping them off the streets. Whether such programs help improve children physical capacities or sport participation is unknown. Because nongovernment programs are delivered at a small scale, reach small proportions of children and their impact is unknown, we assigned a grade of *F*.

¡Se nos va el avión! The results of the 2016 Mexican Report Card on Physical Activity for Children and Youth indicate grades need to be improved for all indicators where data are available. Specifically, PA and sedentary behaviors among Mexican children and youth remain below the respective recommended references. Sports participation, active transportation and active free play are also under optimal levels. Initiatives to improve PA opportunities in the school and community are lacking. Finally, the impact of existing government and nongovernment PA promotion initiatives have not been assessed and government investments for PA promotion are scarce.

The theme of the 2016 Mexican Report Card is *¡Se nos va el avión! Es hora de activar a nuestros niños*. This theme was selected to bring attention to the current PA situation of Mexican children. The saying “*se te va el avión*” is used in Mexico to call out a person who is distracted and is going to miss an opportunity unless he/she acts quickly. “*El avión*” is also the name of a game in Mexico (Hopscotch); hence, the phrase suggests we are forgetting, or not paying enough attention to, PA. The second part of the phrase (it is time to get our children active) represents a call to action to work toward improving PA for Mexican children and youth.

Strengths and Limitations

The 2016 Mexican Report Card was strengthened by a diverse group of experts in the different areas addressed in the report card. Team members expanded the breadth and depth of the present report card by identifying national data sources, information and resources that were not included in previous versions.

Because of the limited data available, only 8 of the 9 indicators could be graded. As in previous years, there was insufficient information to grade the Family and Peers indicator. Although we found 4 publications reporting on interventions including families, these did not provide information on family support, parental modeling, or family PA participation. No peer-related studies were found.

Although 8 indicators were graded, grades should be interpreted in light of the following limitations. The PA and sedentary behavior grades were based on ENSANUT 2012 data, which are off-dated and focus on older children (10–18 years old). The behavioral data examined (PA, sedentary behavior, active transportation) are

mainly self-reported, which are prone to information bias and may lead to overestimation of behavior prevalence. We have considered this when assigning grades and examined objective data when possible to better inform our conclusions. Indeed 2 small studies using accelerometry were examined in the present Report Card, which suggests objective PA data are starting to emerge. Most of the published studies examined lacked national representation and/or adequate research methodology. Although active play was graded for the first time, diverse definitions and measures were employed in the examined studies, suggesting there is no clarity on how to define/measure this behavior. Finally, information about government investments was obtained from a single program where data were available (*Ponte al 100*), and other budgetary reports may have been missed.

Data to better inform future report card grades is still needed. Overall, a surveillance system that includes better monitoring and collection methods to obtain national, reliable, high-quality, PA data is needed in Mexico. Data on the influence of family and peers on Mexican children and youth PA are lacking. Further, information around availability and usage of PA opportunities in schools and communities is still needed. Information about nongovernment investments is also needed. Finally, evidence about the implementation and effectiveness of current policies and programs is lacking, which prevents us from assessing their potential to promote PA among children and youth.

Conclusion

PA and sedentary behaviors among Mexican children and youth remain below the respective recommended references. To combat this, grades for all indicators where data are available need to be improved. Families, teachers, researchers, and policy makers must work together to provide better PA opportunities for children and youth in all settings. This report card can serve as a tool to stimulate debate and motivate policy and program development around PA in Mexico.

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