Prevalence of children walking to school and related barriers— United States, 2017

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Abstract

Children and adolescents can engage in an active lifestyle by walking to school; however, several barriers may limit this behavior. This study estimates the prevalence of walking to school and related barriers as reported by U.S. parents. Data from the 2017 *SummerStyles*, a Web-based survey conducted on a nationwide sample of U.S. adults, were analyzed in 2017. Parents of children aged 5–18 years (n = 1137) were asked whether their youngest child walked to or from school during a usual school week and what barriers make this difficult. Frequencies are presented overall and by parent characteristics. About 1 in 6 parents (16.5%) reported their youngest child walks to or from school at least once during a usual week. Prevalence differed by parental race/ethnicity, marital status, region, and distance from school. The most common barrier was living too far away (51.3%), followed by traffic-related danger (46.2%), weather (16.6%), "other" barrier (14.7%), crime (11.3%), and school policy (4.7%). The frequency at which parents reported certain barriers varied by their child's walking status, distance to school, age of youngest child, race/ethnicity, education level, household income, and metropolitan statistical area status. However, the relative ranking of barriers did not differ by these characteristics. Prevalence of walking to school is low in the U.S., and living too far away and traffic-related danger are common barriers reported by parents. Implementing Safe Routes to School programs and other initiatives that utilize strategies to overcome locally-relevant barriers could help increase the prevalence of children walking to school.

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Conflicts of interest
None

Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention

1.   Introduction

Regular physical activity in children and adolescents promotes health and fitness (U.S. Department of Health and Human Services, 2008). Compared to those who are inactive, physically active youth have higher levels of cardiorespiratory fitness, stronger muscles and bones, lower body fatness, and reduced symptoms of anxiety and depression (U.S. Department of Health and Human Services, 2008). With >95% of the estimated 54 million school-aged youth in the U.S. enrolled in school (National Center for Education Statistics, 2015), active transportation to school holds substantial potential for increasing youth physical activity (Physical Activity Guidelines for Americans Midcourse Report Subcommittee of the President's Council on Fitness Sports & Nutrition, 2012; U.S. Department of Health and Human Services, 2015; Centers for Disease Control and Prevention, 2005; McDonald et al., 2011). Active transportation is part of the comprehensive, whole-of-school approach to promoting youth physical activity recommended by the Centers for Disease Control and Prevention and Institute of Medicine (Institute of Medicine, 2013; Centers for Disease Control and Prevention, 2011). In particular, walking is an easy way for most people to incorporate more physical activity into their daily routines (U.S. Department of Health and Human Services, 2015). Despite these benefits, estimates from the National Household Transportation Survey suggest the proportion of students who walk or bike to school has decreased since 1969 (McDonald et al., 2011; McDonald, 2007).

Since parents are known to influence children's physical activity and transportation modes, understanding their perspectives on barriers to walking to school can inform the development of strategies to promote walking to school (Mendoza et al., 2014). The most recent nationwide parent-reported data on walking to school and related barriers are from 2004 (Centers for Disease Control and Prevention, 2005), which found that approximately 17% of U.S. parents reported that their child walked to or from school at least once per week during a usual week. This study also uses nationwide parent-reported data from 2017 to provide an update on the prevalence of walking to school and related barriers. These findings can be used to monitor trends in walking to school and inform approaches to overcoming barriers.

2.   Methods

2.1.   Study sample

The 2017 ConsumerStyles database comprises a series of web-based surveys from GfK's KnowledgePanel® that randomly recruits panel members using probability-based sampling. The *SpringStyles* survey was sent to a random sample of adults (aged   18 years) and a supplemental sample of adults with children. Data are from the *SummerStyles* survey that was sent to 5586 adults who previously completed the *SpringStyles* survey

(4107 respondents; response rate = 74%). Respondents received reward points worth approximately $10 and admission into a monthly sweepstakes.

Of the 4107 respondents from the 2017 *SummerStyles*, 1232 reported having a school-aged child (5–18 years old). Respondents were excluded for missing demographic ($n = 55$) and walking-related ($n = 40$) data, for a final analytic sample of 1137 respondents.

2.2. Measures

To determine walking to school behavior, parents were asked: "*During a usual school week, how many times does your youngest child who is between 5 and 18 years of age walk to or from school?*" To assess barriers to walking to school, parents were asked: "*Which, if any, of the following makes it difficult for your child to walk or bike to school?*" Respondents were able to select all that apply and available options were, "*Too dangerous because of the traffic,*" "*Too dangerous because of the crime,*" "*Live too far away,*" "*No protection from the weather,*" "*The school does not allow it,*" "*Other reasons,*" or "*It is not difficult for my child to walk or bike to school.*"

Respondent characteristics included distance to school, sex of parent, age of parent, age of youngest child, race/ethnicity, marital status, education level, household income, region, and metropolitan statistical area (MSA) status (metro MSA or nonmetro MSA) (U.S. Census Bureau).

2.3. Statistical analysis

Prevalence and 95% confidence intervals (CIs) of reporting a child walking to or from school and barriers were calculated overall, by respondent characteristics, and whether or not the child walked to or from school where appropriate. Adult data were weighted to match U.S. Current Population Survey proportions for sex, age, household income, race/ethnicity, household size, education level, region, and MSA status. Adjusted Wald tests, pairwise t-tests, and orthogonal polynomial contrasts were used to identify significant (p-value < 0.05) differences and trends by select characteristics. Analyses were conducted in 2018 using SUDAAN Version 11.0 (Research Triangle Institute, Research Triangle Park, NC). This analysis was exempt from institutional review board approval because personal identifiers were not included in the data file.

3. Results

Overall, 16.5% of parents reported that their youngest school aged child walked to or from school at least once per week during a usual week (Table 1). Almost half of parents (47.4%) that lived   0.25 miles from school reported having a youngest child walk to or from school. Prevalence decreased significantly as distance to school increased. Additionally, prevalence was greater among non-whites (21.8%) compared to whites (13.7%), among parents who were not married (24.8%) compared to those who were married/partnered (14.9%), and lower among those living in the South (8.7%) compared to those in the Northeast (20.8%), Midwest (21.0%), and West (21.2%).

The most common barrier reported among all parents was living too far away (51.3%), followed by traffic-related danger (46.2%), weather (16.6%), an "other" barrier (14.7%), crime (11.3%), and school policy (4.7%) (Table 2). In addition, 14.9% (95% CI = 12.6%–17.4%) selected, "It is not difficult for my child to walk or bike to school." Prevalence of traffic-related danger and living too far away as reported barriers was greater among respondents whose child did not walk to school compared to those whose child did so. In addition, the prevalence of reported barriers varied by distance to school (traffic-related danger, living too far away, other reasons); age of youngest child (traffic-related danger, other reasons); race/ethnicity (crime); education level (living too far away, weather, other reasons); household income (traffic-related danger, crime); region (traffic-related danger, living too far away, weather); and MSA status (traffic-related danger, school policy).

4. Discussion

In 2017, only 1 in 6 parents in the U.S. reported that their youngest child walks to or from school and 1 in 2 reported living too far from school as a barrier. The prevalence of reported barriers to walking to school varied by multiple parental characteristics, as well as distance to school. Understanding how these barriers may vary between parents with different demographic characteristics can help identify opportunities to address barriers and increase walking to school.

When the same questions were asked on the 2004 Styles survey, approximately 17% of U.S. parents reported that their child walked to or from school at least once per week during a usual week (Centers for Disease Control and Prevention, 2005). The Styles survey has changed in sampling methodology and survey administration since 2004, which precludes direct statistical comparison. Nevertheless, at both time points, results were weighted to population totals, and the present findings suggest that the prevalence of children walking to school has remained relatively unchanged since 2004. Findings also suggest that while the ranking of barriers did not change between years, the prevalence of certain barriers shifted from 2004, including living too far away (2004: 61.5%, 95% CI = 58.8%–64.1%) and traffic-related danger (2004: 30.4%, 95% CI = 27.9%–33.0%) (Centers for Disease Control and Prevention, 2005). The National Household Transportation Survey (NHTS) also collects information on walking to school (McDonald et al., 2011; McDonald, 2007). Using 2009 NHTS data, an estimated 9.0% of students aged 5–18 years reported walking to school (McDonald et al., 2011). This estimate is lower than the present findings, which may in part be due to differences in sample design, survey questions, and survey administration (e.g., mode and respondent). For example, while the *SummerStyles* survey asked parents how frequently their oldest child walked to school in a usual week, the NHTS asked students directly about how they got to school that day (McDonald et al., 2011). Additional studies may help elucidate how self-reported data from children compare to parents.

We observed that the prevalence of walking to school and certain barriers varied by several characteristics including distance to school, region, MSA status, and race/ethnicity. Our study confirms previous research identifying that living closer to school is associated with more children walking to school in the U.S. (Mendoza et al., 2014; Su et al., 2013); however, such studies have often been limited to specific communities or states and do

not permit regional or geographic comparisons. Our study is unique in identifying that the prevalence of certain barriers varied by geographic region, MSA status, or both. Future studies examining the underlying factors influencing these patterns can help inform more local efforts to overcome barriers and increase walking to school. In addition, our findings suggest that while more non-white parents reported that their youngest child walks to school compared to white parents, they were also more likely to report crime as a barrier to walking. Future research may seek to better understand the complex relationship between demographics, barriers, and walking to school.

The most commonly reported barriers in our study were living too far away and traffic-related danger, and both were more prevalent among parents whose youngest child did not walk to school compared to those whose youngest child did. These findings suggest that both distance to school and traffic safety may be particularly important determinants of child active transportation behavior, and strategies that aim to help overcome these barriers or perceptions of these barriers may be especially helpful in promoting walking to school. Our findings also identified that the prevalence of traffic-related danger varied by distance to school, region, and MSA status. These findings can help practitioners prioritize strategies to address traffic-related barriers in communities with similar demographic characteristics, although more local level data would be useful to help identify local needs related to the presence and perceptions of these barriers to develop relevant and effective solutions.

Understanding how policies, such as school siting and minimum standards for school property size, formulas to determine school funding, and existing land use policies, contribute to the observed differences in reported barriers may be an important next question to address (Council of Educational Facility Planners International & U.S. Environmental Protection Agency, 2004). Through supportive design principles, practices, and policies, the design of communities can be enhanced so that schools, residences, worksites, and other places that people regularly use are nearby, which is often considered <1 mile (U.S. Department of Health and Human Services, 2015; Watson et al., 2015).

The nationwide Safe Routes to School (SRTS) initiative promotes students walking or biking to school by addressing barriers through the "six Es" (evaluation, engineering, education, encouragement, enforcement, and equity) (Safe Routes to School National Partnership, 2015). SRTS programs have been shown to be effective in increasing rates of active transportation to and from school among students (Stewart et al., 2014) and are often tailored to meet local needs. For example, to address distance and perceived safety barriers, schools can organize "walking school buses" where adult escorts meet children at stops within a mile of the school and walk together (Safe Routes to School National Partnership and California Department of Health, 2016). Families, and even school buses, can drop children off at a "walking school bus" stop. The SRTS initiative has increased its presence nationally, with elementary school participation in SRTS programs increasing between 2006 and 07 (14.2%) and 2012–13 (21.8%) (Turner et al., 2014). The suggested decrease in parents reporting distance to school as a barrier between 2004 and 2017 may indicate progress made by such initiatives. However, given the increase in parents reporting traffic-related danger as a barrier, and unchanged prevalence of children walking to school, implementing additional strategies may be necessary. For example, several low-cost or no-

cost strategies have been associated with more students walking or biking to school, such as paid or volunteer crossing guards that can help mitigate traffic-related danger (Everett Jones and Sliwa, 2016). These strategies may be particularly relevant in elementary schools, given our finding that the prevalence of traffic-related danger was greater among respondents whose youngest child was aged 5–11 years compared to those whose youngest child was aged 12–17 years.

Several limitations merit discussion. First, the use of an internet panel survey may introduce potential selection bias. However, previous research has found a general equivalence between results from random-digit dialed and panel approaches (Fisher and Kane, 2004). Second, data were self-reported and subject to recall and social desirability bias. Third, questions used to assess walking to school and barriers do not have any information to confirm their reliability and validity. Lastly, additional barriers to walking to school likely exist beyond those addressed in the survey, which is an important area for future research in order to develop locally-relevant strategies.

5. Conclusion

In 2017, approximately 1 in 6 parents in the U.S. reported that their youngest child walks to or from school, with living too far from school being the most common barrier. Strategies to overcome locally-relevant barriers could help more children walk to school.

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Highlights

- 1 in 6 parents (16.5%) report that their youngest child walks to or from school.

- Walking differed by distance to school, race/ethnicity, marital status, and region.

- Commonly reported barriers were living far away (51%) and traffic concerns (46%).

- Certain barriers were more commonly reported by parents of a child who did not walk.

Table 1.

Prevalence of child walking to or from school by distance to school and parent characteristics, SummerStyles 2017

	Sample size	Child walks to or from school	
Parent characteristics	**N**	**%**	**(95% CI)**
Total	1137	16.5	(14.1, 19.3)
Distance to school			
<1 mile	353	39.7	(33.9, 45.8) [*]
<0.25 miles	143	47.4	(37.9, 57.1) [**]
0.25–<0.5 miles	86	37.9	(26.7, 50.6)
0.5–<1 miles	124	30.8	(22.7, 40.4)
1 mile	784	5.5	(3.8, 7.9)
1–<2 miles	222	12.5	(8.3, 18.3)
2 miles	562	2.6	(1.3, 5.3)
Sex			
Men	515	13.7	(10.7, 17.5)
Women	622	18.7	(15.2, 22.8)
Age of parent (yrs)			
18–44	620	16.2	(13.1, 19.9)
45	517	17.1	(13.5, 21.4)
Age of youngest child (yrs)			
5–11	580	16.2	(13.0, 20.0)
12–17	557	17.1	(13.5, 21.3)
Race/ethnicity			
White	833	13.7	(11.2, 16.6) [***]
Non-white[a]	304	21.8	(16.8, 27.8)
Marital status			
Married/partnered	977	14.9	(12.5, 17.8) [***]
Not married	160	24.8	(17.5, 33.9)
Education level			
High school graduate or less	320	19.4	(14.6, 25.3)
Some college	348	14.9	(10.9, 19.9)
College graduate or more	469	15.4	(11.9, 19.6)
Income			
<$25,000	110	18.9	(11.8, 28.9)
$25,000–$39,999	143	15.3	(9.3, 24.4)
$40,000–$59,999	169	19.3	(13.2, 27.3)
$60,000	715	15.5	(12.6, 18.9)
Region			
Northeast	212	20.8	(14.9, 28.3) [***]
Midwest	297	21	(15.6, 27.5)

Parent characteristics	Sample size N	Child walks to or from school %	(95% CI)
South	404	8.7	(5.9, 12.6)
West	224	21.2	(15.9, 27.6)
MSA status			
Non-metro	151	13.5	(7.8, 22.3)
Metro	986	17	(14.4, 20.0)

Abbreviations: CI = confidence interval.

[a] Due to small sample sizes, the following groups were combined: non-Hispanic black (n=96), Hispanic ($n = 139$), and non-Hispanic other ($n = 69$).

[*] Significant difference ($p < 0.05$) in distribution between <1 mile and 1 mile based on Adjusted Wald tests.

[**] Significant linear trend ($p < 0.05$) between <0.25 miles, 0.25–<0.5 miles, 0.5–<1 miles, 1–<2 miles, and 2 miles.

[***] Significant difference ($p < 0.05$) in distribution based on Adjusted Wald tests.

Table 2.

Prevalence of reported barriers[a] for child walking to or from school, SummerStyles 2017 (N = 1137)

Characteristics	Too dangerous because of traffic		Too dangerous because of crime		Live too far away		No protection from the weather		The school does not allow it		Other reasons	
	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
Total	46.2	(42.9, 49.6)	11.3	(9.2, 13.8)	51.3	(47.9, 54.6)	16.6	(14.4, 19.2)	4.7	(3.5, 6.3)	14.7	(12.4, 17.3)
Child walks to or from school												
Yes	19.6	(13.2, 28.0)*	9.4	(4.7, 17.8)	5.5	(2.2, 13.4)*	17.7	(11.9, 25.5)	2.4	(0.4, 11.5)	10.3	(5.9, 17.4)
No	51.5	(47.8, 55.1)	11.7	(9.5, 14.3)	60.3	(56.7, 63.8)	16.4	(14.0, 19.1)	5.1	(3.8, 6.8)	15.6	(13.1, 18.5)
Distance to school												
<1 mile	38.1	(32.3, 44.1)*	12.0	(8.3, 17.0)	10.4	(7.2, 14.8)*	14.6	(10.9, 19.3)	3.1	(1.6, 5.9)	22.9	(18.3, 28.2)*
1 mile	50.1	(46.1, 54.1)	11.0	(8.6, 13.9)	70.6	(66.8, 74.2)	17.6	(14.8, 20.7)	5.4	(3.9, 7.5)	10.8	(8.4, 13.8)
Sex												
Men	46.4	(41.4, 51.4)	10.9	(8.0, 14.8)	51.2	(46.2, 56.3)	15.3	(12.2, 19.0)	4.7	(2.9, 7.4)	15.9	(12.3, 20.3)
Women	46.1	(41.7, 50.6)	11.6	(8.9, 15.0)	51.3	(46.8, 55.7)	17.7	(14.6, 21.20)	4.6	(3.2, 6.7)	13.8	(11.0, 17.1)
Age of parent (yrs)												
18–44	48.2	(43.8, 52.7)	12.4	(9.6, 15.9)	51.4	(46.9, 55.8)	17.4	(14.4, 20.9)	4.9	(3.3, 7.3)	15.5	(12.5, 19.2)
45	42.8	(38.0, 47.7)	9.4	(6.9, 12.8)	51.1	(46.2, 56.0)	15.3	(12.2, 19.0)	4.2	(2.8, 6.3)	13.3	(10.3, 16.9)
Age of youngest child (yrs)												
5–11	49.1	(44.5, 53.6)*	12.3	(9.5, 15.9)	50.0	(45.4, 54.6)	16.1	(13.0, 19.6)	4.8	(3.2, 7.2)	16.5	(13.2, 20.3)*
12–17	41.6	(37.0, 46.3)	9.6	(7.1, 12.9)	53.3	(48.6, 58.0)	17.5	(14.4, 21.2)	4.4	(2.9, 6.5)	11.8	(9.3, 14.9)
Race/ethnicity												
White	44.6	(40.8, 48.4)	8.1	(6.1, 10.6)*	52.0	(48.1, 55.8)	17.8	(15.0, 20.9)	5.3	(3.8, 7.4)	15.8	(13.0, 19.0)
Non-white[b]	49.2	(42.9, 55.6)	17.3	(13.0, 22.7)	50.0	(43.6, 56.3)	14.5	(10.8, 19.1)	3.4	(1.8, 6.4)	12.7	(9.1, 17.5)
Marital status												
Married/partnered	46.4	(42.9, 50.0)	10.8	(8.6, 13.4)	51.7	(48.1, 55.3)	17.1	(14.7, 19.9)	4.5	(33.3, 6.0)	14.7	(12.3, 17.5)
Not married	45.1	(36.3, 54.1)	13.9	(8.7, 21.5)	48.9	(40.0, 57.9)	14.0	(8.8, 21.5)	5.8	(2.5, 12.9)	14.7	(9.1, 22.9)
Education level												
High school graduate or less	44.3	(38.1, 50.7)	11.9	(8.4, 16.7)	43.5	(37.4, 49.9)**	13.7	(10.1, 18.3)***	4.0	(2.4, 6.7)	16.7	(12.3, 22.3)*
Some college	47.8	(41.8, 53.8)	14.5	(10.3, 20.0)	54.7	(48.7, 60.5)	22.5	(17.9, 27.8)	6.0	(3.5, 10.0)	17.9	(13.5, 23.2)

Characteristics	Too dangerous because of traffic		Too dangerous because of crime		Live too far away		No protection from the weather		The school does not allow it		Other reasons	
	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
College graduate or more	46.6	(41.5, 51.8)	8.6	(6.0, 12.2)	55.0	(49.9, 60.1)	14.9	(11.7, 18.8)	4.3	(2.6, 6.8)	10.9	(8.2, 14.4)
Income												
<$25,000	38.6	(29.1, 49.0)***	12.2	(6.9, 20.9)***	50.5	(40.1, 60.9)	18.9	(12.3, 27.9)	5.1	(1.9, 13.1)	18.7	(11.3, 29.4)
$25,000–$39,999	64.9	(55.7, 73.1)	20.3	(13.4, 29.5)	47.1	(37.8, 56.6)	21.2	(14.6, 29.8)	5.8	(2.5, 13.1)	14.8	(9.5, 22.2)
$40,000–$59,999	47.9	(39.2, 56.6)	15.2	(9.6, 23.1)	43.2	(34.9, 51.9)	18.6	(12.9, 26.0)	2.8	(1.3, 6.0)	20.0	(13.6, 28.3)
$60,000	43.9	(39.8, 48.0)	8.3	(6.1, 11.2)	54.2	(50.1, 58.3)	14.6	(12.0, 17.7)	4.8	(3.4, 6.7)	12.5	(10.0, 15.4)
Region												
Northeast	49.2	(41.5, 56.9)*	6.5	(3.4, 12.1)	54.7	(46.9, 62.2)*	18.1	(13.1, 24.5)*	6.2	(3.7, 10.4)	11.0	(7.1, 16.6)
Midwest	39.4	(33.2, 45.9)	10.3	(6.7, 15.7)	49.1	(42.5, 55.7)	16.6	(12.3, 21.8)	5.0	(2.7, 9.2)	15.5	(10.8, 21.6)
South	52.0	(46.5, 57.5)	11.7	(8.6, 15.8)	56.4	(50.9, 61.8)	20.6	(16.6, 25.3)	4.9	(3.2, 7.6)	15.1	(11.5, 19.6)
West	42.3	(35.0, 50.1)	15.7	(10.6, 22.6)	42.1	(34.8, 49.7)	8.2	(5.0, 13.3)	2.4	(0.8, 7.3)	16.0	(11.5, 21.9)
MSA status												
Non-metro	36.3	(27.8, 45.7)*	8.8	(4.6, 16.3)	49.4	(40.1, 58.7)	13.2	(8.6, 19.9)	1.4	(0.5, 3.7)*	17.1	(10.4, 26.8)
Metro	47.8	(44.2, 51.4)	11.7	(9.4, 14.4)	51.6	(48.0, 55.1)	17.1	(14.7, 19.9)	5.2	(3.8, 7.0)	14.3	(12.0, 17.0)

Abbreviations: CI = confidence interval.

[a] To assess barriers to walking to school, parents were asked: "Which, if any, of the following makes it difficult for your child to walk or bike to school?" Respondents were able to select all that apply and available responses were, "too dangerous because of the traffic," "too dangerous because of the crime," "live too far away," "no protection from the weather," "the school does not allow it," "other reasons," or "it is not difficult for my child to walk or bike to school."

[b] Due to small sample sizes, the following groups were combined: non-Hispanic black ($n = 96$), Hispanic ($n = 139$), and non-Hispanic other ($n = 69$).

*
Significant difference ($p < 0.05$) in distribution, based on Adjusted Wald tests.

**
Significant linear trend ($p < 0.05$).

***
Significant quadratic trend ($p < 0.05$).