

A First Look: Trends in Walking and Cycling in the United States 2001–2017



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Update of: Pucher, J., Buehler, R., Merom, D., Baumann, A. 2011. “Walking and Cycling in the United States, 2001-2009: Evidence from the National Household Travel Surveys,” *American Journal of Public Health*, December 2011, Vol. 101, No. S1, pp. S310-S317.

Part of the analysis
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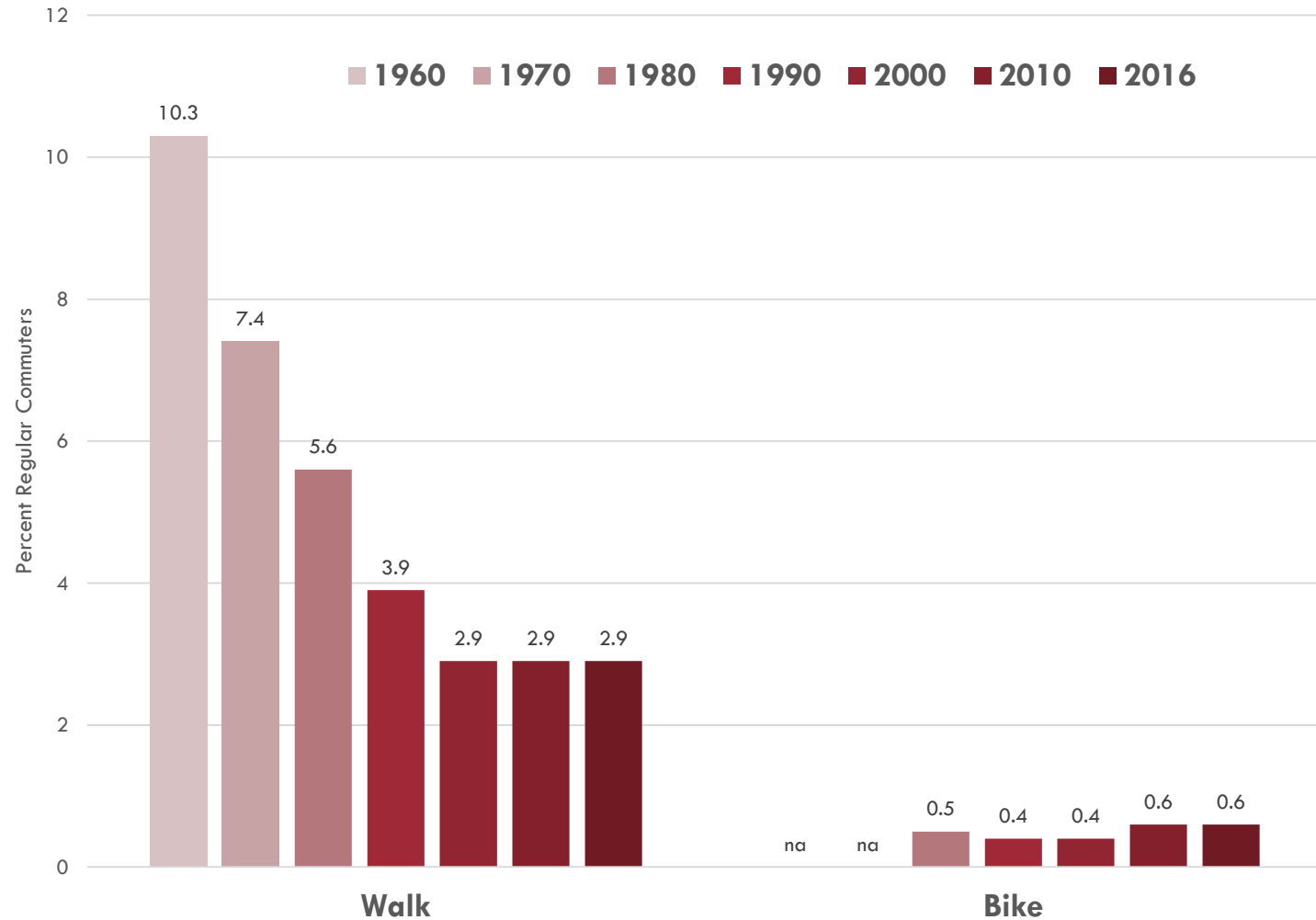


Prepared for: National Household Travel Survey (NHTS) Data for
Transportation Applications Workshop, August 2018

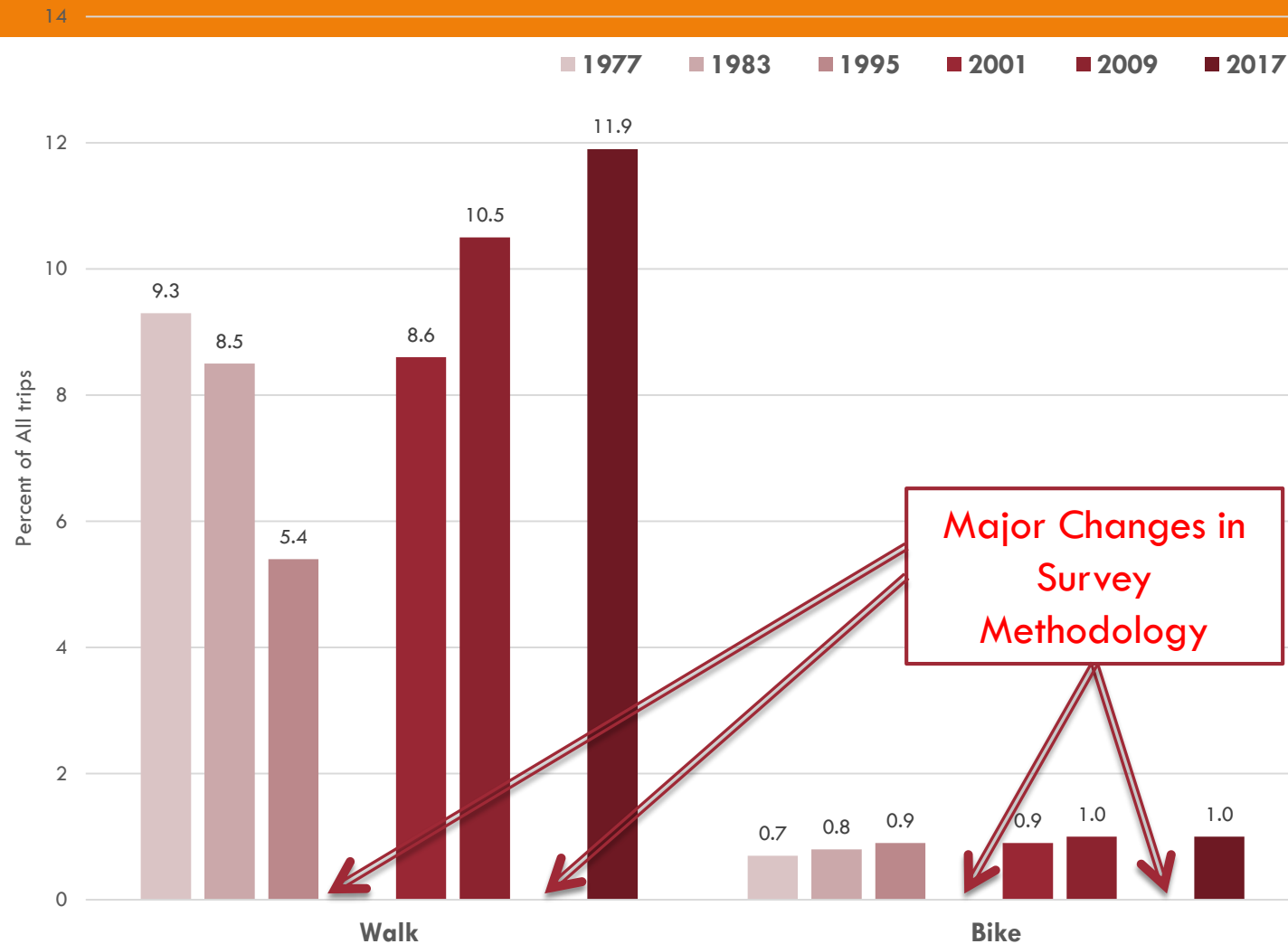
Walking and cycling are healthy and sustainable means of transport

- Contribute to daily physical activity, aerobic fitness, and cardiovascular health
- Help to protect against obesity, diabetes, and various other diseases
- Can improve individual health and help to reduce air pollution, carbon emissions, congestion, noise, and traffic dangers
- Important to monitor rates of walking and cycling over time and to assess differences among population subgroups

Rates of walking to work have declined sharply in the USA since 1960



Trends for walking and cycling for all trip purposes



Are rates of walking and cycling rising or stagnating?

- **Used the three most recent NHTS surveys to measure changes in active travel in the United States from 2001 to 2017**

- **Analyzed the NHTS data on walking and cycling from:**
 - trip-based perspective of travel behavior
 - public health perspective of population physical activity rates
 - methodology developed by Merom et al. (2010)
for public health analysis of travel surveys

Some major differences between NHTS 2001 / 2009 / 2017

- Random digit dialing '01 / '09; address based '17
- CATI and PAPI '01 / '09; online submission added '17
- Splitting of round/loop trips '01 / '09; not '17
- Children younger than 5 included in '01
- 'Complete household' criterion: 100% '17 (vs. 50%)
- Overall response rates: '01 41%; '09 20%; '17 16%

Methods

- Splitting loop trips for 2017
- Excluding <5 for 2001

- Trip based analysis:
 - ▣ Mode share of daily trips for walking and cycling
- Person based analysis:
 - ▣ Aggregate trip characteristics (number and duration), match to the trip maker, and add to the person dataset
- Daily physical activity analysis:
 - ▣ [1] any walking or cycling and [2] 30 minutes or more of walking and cycling

Total Number & Duration Walking and Cycling Trips per Year, 2001, 2009, 2017

| | 2001 | | 2009 | | 2017 | | Difference | | | |
|-------------------------------|------------|---------|------------|---------|------------|---------|------------|-----------|-----------|--|
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | 2001-2009 | 2009-2017 | 2001-2017 | |
| NUMBER OF TRIPS | | | | | | | | | | |
| <i>Billion Trips</i> | | | | | | | | | | |
| Walking | 35 | 34-37 | 41 | 39-43 | 45 | 43-47 | 6 | 4 | 10 | |
| Cycling | 3.3 | 3.0-3.6 | 4.1 | 3.7-4.4 | 3.8 | 3.4-4.2 | 1 | 0 | 1 | |
| DURATION | | | | | | | | | | |
| <i>Billion Minutes</i> | | | | | | | | | | |
| Walking | 535 | 510-560 | 614 | 578-650 | 621 | 596-647 | 79 | 7 | 86 | |
| Cycling | 77 | 68-86 | 80 | 71-89 | 78 | 70-87 | 3 | -2 | 2 | |

Per-Capita Annual Walking and Cycling Trips and Duration, 2001, 2009, 2017

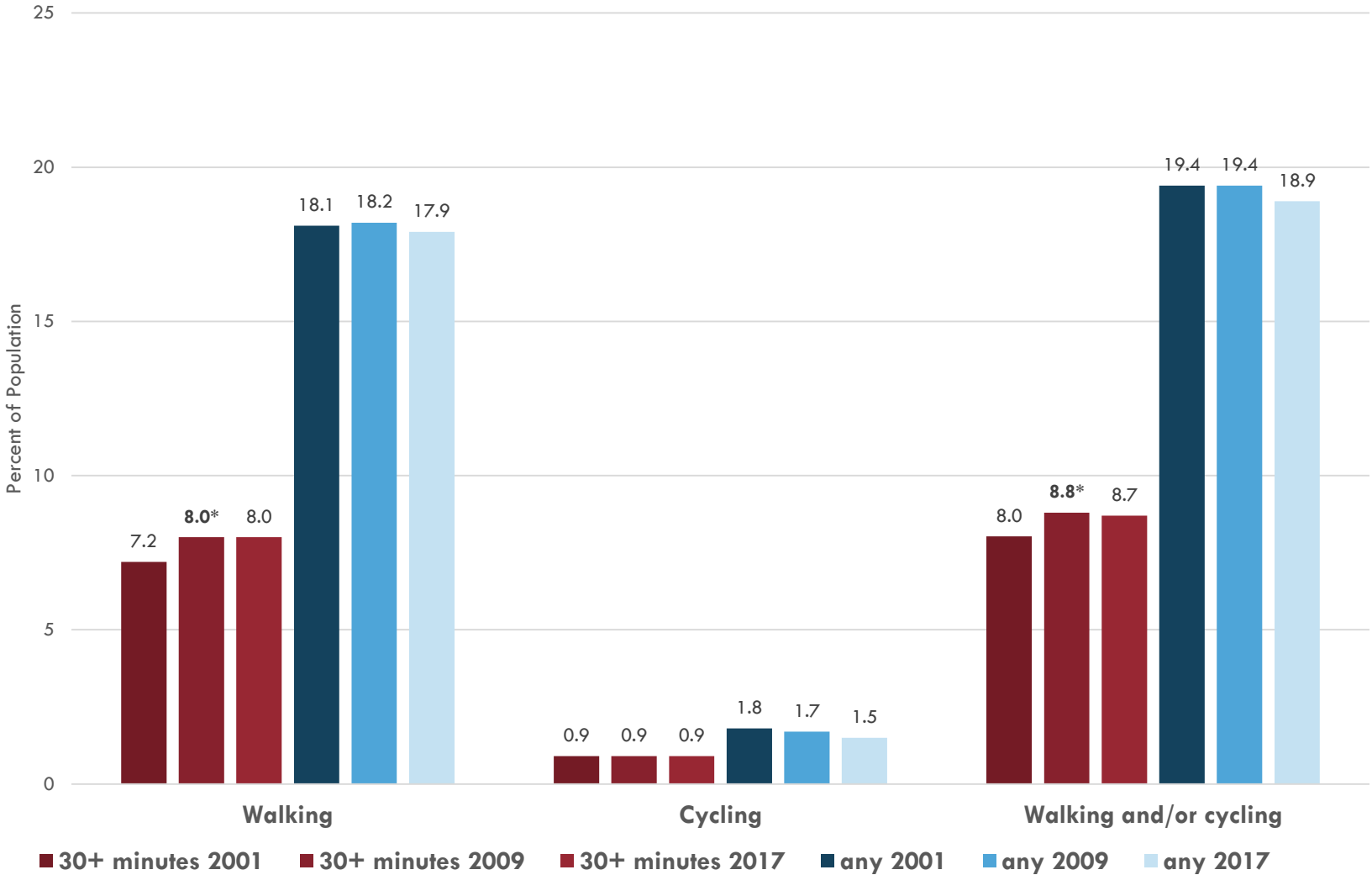
| | 2001 | | 2009 | | 2017 | | Difference | | |
|---|------------|----------|------------|----------|------------|----------|------------|-----------|-----------|
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | 2001-2009 | 2009-2017 | 2001-2017 |
| NUMBER OF TRIPS | | | | | | | | | |
| <i>Trips per capita per year</i> | | | | | | | | | |
| Walking | 169 | 163-174 | 185 | 179-193 | 179 | 174-185 | 16 | -6 | 10 |
| Cycling | 12 | 11 to 13 | 14 | 12 to 16 | 12 | 11 to 13 | 2 | -2 | 0 |
| DURATION | | | | | | | | | |
| <i>Hours per capita per year</i> | | | | | | | | | |
| Walking | 31 | 29-32 | 35 | 33-37 | 34 | 32-35 | 4 | -1 | 3 |
| Cycling | 4.5 | 4.0-5.0 | 4.5 | 4.0-5.1 | 4.3 | 3.8-4.8 | 0.0 | -0.2 | -0.2 |

* P<0.05

Note. Excludes respondents younger than 5 years.

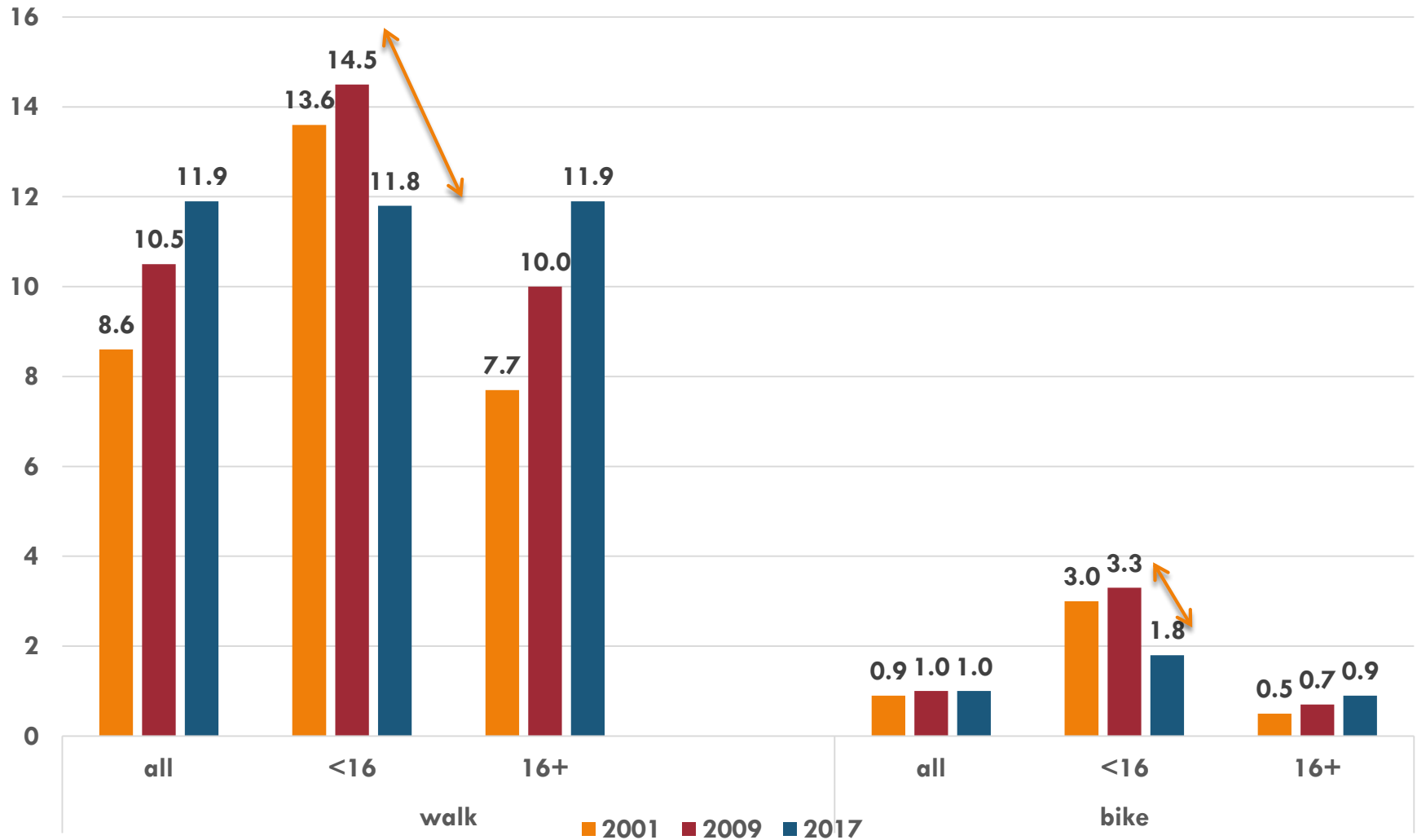
Source: Calculated by the author based on NHTS 2001, 2009, 2017

Proportion of Americans Reporting 'Any' and '30 Minutes' of Walking & Cycling on Their Travel Day



Source: Calculated by the authors based on NHTS 2001, 2009, 2017; P<=0.05

Trend in Share of Daily Trips by Foot and Bicycle 2001-2017 (for <16, 16+, & all)



Number & Duration Walking and Cycling Trips per Year, 2001, 2009, 2017 for <16yrs

5-15 Year-Old Share of all Bike Trips: 40% in '09; 22% in '17

| | 2001 | | 2009 | | 2017 | | Difference | | |
|-------------------------------|------------|---------|------------|---------|------------|---------|------------|-------------|-------------|
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | 2001-2009 | 2009-2017 | 2001-2017 |
| NUMBER OF TRIPS | | | | | | | | | |
| <i>Billion Trips</i> | | | | | | | | | |
| Walking | 7.6 | 7.1-8.2 | 6.9 | 6.3-7.5 | 5.5 | 5.0-6.0 | -0.7 | -1.4 | -2.1 |
| Cycling | 1.7 | 1.5-1.9 | 1.6 | 1.4-1.9 | 0.8 | 0.7-1.0 | -0.1 | -0.8 | -0.9 |
| DURATION | | | | | | | | | |
| <i>Billion Minutes</i> | | | | | | | | | |
| Walking | 98 | 86-110 | 95 | 81-109 | 75 | 65-86 | -3 | -20 | -23 |
| Cycling | 36 | 30-42 | 23 | 18-27 | 13 | 9 to 16 | -13 | -10 | -23 |

* P<0.05

Note. Excludes respondents younger than 5 years.

Source: Calculated by the author based on NHTS 2001, 2009, 2017

Annual Walking and Cycling Trips and Duration per Capita, 2001, 2009, 2017 for <16 yrs

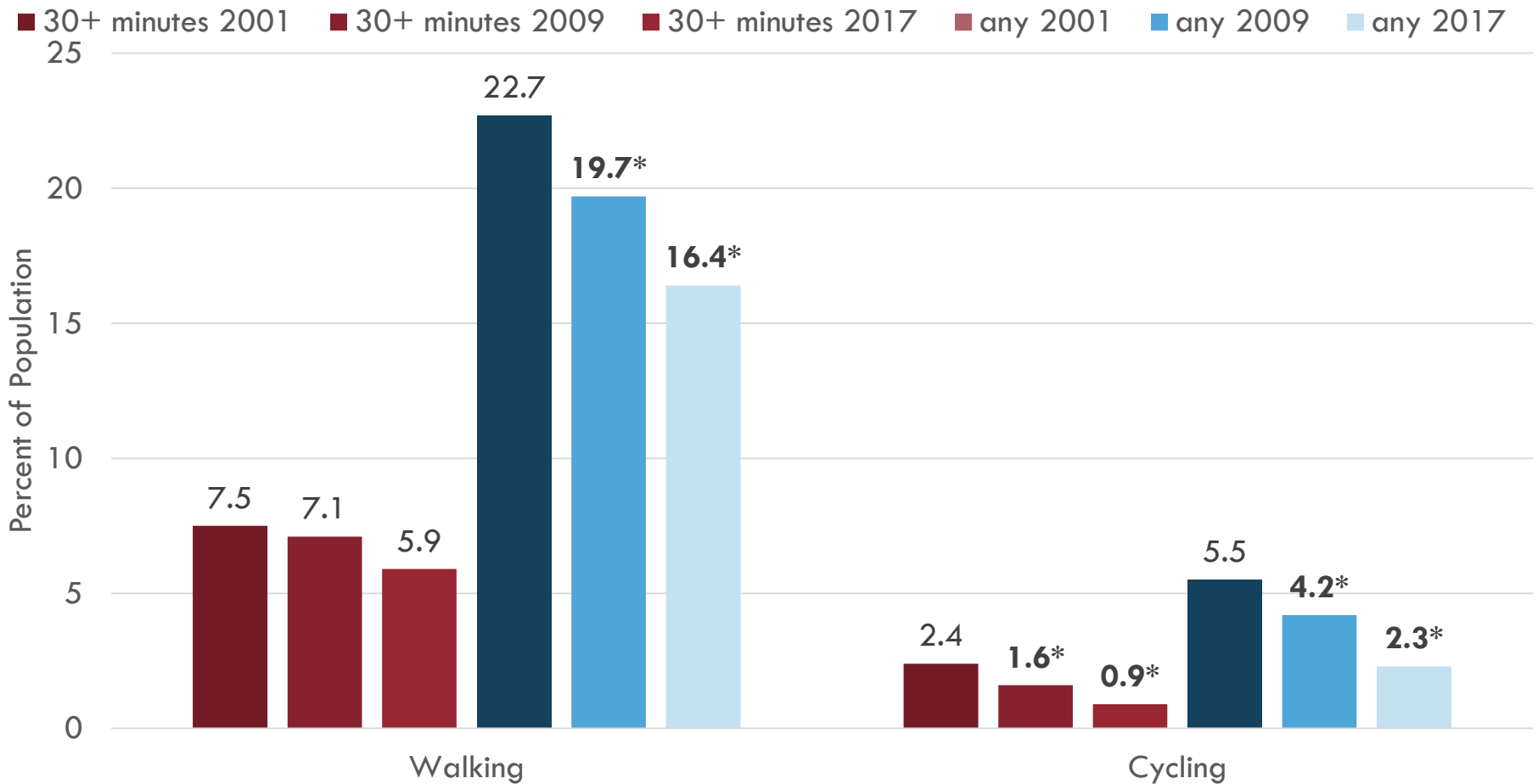
| | 2001 | | 2009 | | 2017 | | Difference | | |
|----------------------------------|------------|----------|------------|---------|------------|---------|------------|------------|------------|
| | Mean | 95% CI | Mean | 95% CI | Mean | 95% CI | 2001-2009 | 2009-2017 | 2001-2017 |
| NUMBER OF TRIPS | | | | | | | | | |
| <i>Trips per capita per year</i> | | | | | | | | | |
| Walking | 168 | 158-179 | 152 | 140-163 | 111 | 102-121 | -16 | -41 | -57 |
| Cycling | 36 | 32-41 | 35 | 27-43 | 16 | 13-19 | -1 | -19 | -20 |
| DURATION | | | | | | | | | |
| <i>Hours per capita per year</i> | | | | | | | | | |
| Walking | 35 | 31-40 | 35 | 29-40 | 28 | 24-32 | -1 | -7 | -8 |
| Cycling | 13 | 10 to 15 | 8 | 6 to 10 | 5 | 3 to 6 | -5 | -3 | -8 |

* P<0.05

Note. Excludes respondents younger than 5 years.

Source: Calculated by the author based on NHTS 2001, 2009, 2017

Proportion of 5-15 Year Olds Reporting Any or 30 Minutes of Walking or Cycling per Day



Trends in Walking 2001, 2009, 2017 (p<.05)

| | 2001 - 2009 | 2009 - 2017 | 2001 - 2017 |
|--|-------------|-------------|-------------|
| Mode Share (percent. points) | +1.9 | +1.4 | +3.3 |
| Total Trips per year (billion) | +6 | +4 | +10 |
| Minutes per year (billion) | +79 | -- | +86 |
| Trips per Capita per Year | +16 | -- | +10 |
| Hours per Capita per Year | +4 | -- | +3 |
| Any per Day (pop share) | -- | -- | -- |
| 30+ Minutes per Day (pop share) | +0.8 | -- | +0.8 |

Trends in Cycling 2001, 2009, 2017 (p<.05)

| | 2001 - 2009 | 2009 - 2017 | 2001 - 2017 |
|--|-------------|-------------|-------------|
| Mode Share (percent. points) | -- | -- | -- |
| Total Trips per year (billion) | +1 | -- | -- |
| Minutes per year (billion) | -- | -- | -- |
| Trips per Capita per Year | -- | -- | -- |
| Hours per Capita per Year | -- | -- | -- |
| Any per Day (pop share) | -- | -- | -- |
| 30+ Minutes per Day (pop share) | -- | -- | -- |

Trends in Walking 2001, 2009, 2017 (p<.05)

5-15 year olds

| | 2001 - 2009 | 2009 - 2017 | 2001 - 2017 |
|--|-------------|-------------|-------------|
| Mode Share (percent. points) | +0.9 | -2.7 | -1.8 |
| Total Trips per year (billion) | -- | -1 | -2 |
| Minutes per year (billion) | -- | -- | -23 |
| Trips per Capita per Year | -- | -41 | -57 |
| Hours per Capita per Year | -- | -- | -- |
| Any per Day (pop share) | -3.0 | -3.3 | -6.3 |
| 30+ Minutes per Day (pop share) | -- | -- | -- |

Trends in Cycling 2001, 2009, 2017 (p<.05)

5-15 year olds

| | 2001 - 2009 | 2009 - 2017 | 2001 - 2017 |
|---------------------------------|-------------|-------------|-------------|
| Mode Share (percent. points) | -- | -1.5 | -1.2 |
| Total Trips per year (billion) | -- | -1 | -1 |
| Minutes per year (billion) | -13 | -10 | -23 |
| Trips per Capita per Year | -1 | -19 | -20 |
| Hours per Capita per Year | -5 | -3 | -8 |
| Any per Day (pop share) | -1.3 | -1.9 | -3.2 |
| 30+ Minutes per Day (pop share) | -0.8 | -0.7 | -1.5 |

Concluding Thoughts

- Stagnation of active travel between 2009 and 2017
 - Some increases in walking 2009-2017;
 - Strongest increases in walking 2001-2009;
- Decreases in active travel for 5-15 year olds 2009-2017
 - Some decreases even longer term, esp. for cycling
 - Why decreases in active travel of 5-15 year olds?
 - Methods, societal trend, policy changes needed?
- Only implicitly and not fully shown here: increases in active travel (particularly cycling) among adults
- Caution: preliminary results!

For more details, please contact the authors:

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For previous analysis please see:

Pucher J, Buehler R, Merom D, Bauman A. Walking and Cycling in the United States, 2001-2009: Evidence from the National Household Travel Surveys. American Journal of Public Health. Vol.101, July 2011.