Finding Measurement Needs for Youth Active Travel to School
in the United States

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Background

Increasing active travel to school (ATS) could reduce the deficit in youth physical activity participation; however, surveillance of ATS in the United States is limited. Surveillance of ATS contributes to understanding children's physical activity, is influenced by context, and occurs within communities. The National Collaborative on Childhood Obesity Research (NCCOR)—a public-private partnership among the National Institutes of Health, the Centers for Disease Control and Prevention (CDC), the Robert Wood Johnson Foundation, and the US Department of Agriculture—formed a scientific workgroup to investigate surveillance of youth ATS in North America.

FIGURE 1.
Selected Milestones in US Physical Activity Surveillance

2015 — *Step it Up! The Surgeon General's Call to Action to Promote Walking and Walkable Communities* | U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

2016 — Strategic Priorities for Physical Activity Surveillance in the United States (expert roundtable publication, *Medicine & Science in Sports and Exercise*) | CDC/AMERICAN COLLEGE OF SPORTS MEDICINE

2017 — Expert meeting to identify actions to improve US physical activity surveillance and approaches to implement those actions | NATIONAL ACADEMIES OF MEDICINE (NASEM)

Physical activity workgroup formed | NCCOR

2018 — Systematic review of North American ATS surveillance conducted | NCCOR

2019 — Implementing Strategies to Enhance Public Health Surveillance of Physical Activity in the United States *(National Academies Press)* | NASEM

2020 — Improving Surveillance of Youth Active Travel to School (expert workshop) | NCCOR

2021 — Improving Surveillance of Youth Active Travel to School (white paper) | NCCOR

Systematic Review of Active Travel to School Surveillance in the United States and Canada *(Journal of Healthy Eating and Active Living)* | NCCOR

2022 — Improving Active Travel to School and its Surveillance: an Overlooked Opportunity in Health Promotion and Chronic Disease Prevention *(Translational Behavioral Medicine)* | NCCOR

FIGURE 2.
Definitions of Key Terms Used

ACTIVE TRAVEL TO SCHOOL (ATS) includes physically active modes of travel to and from school, such as walking, biking, or non-motorized rolling. ATS is one way that youth can incorporate physical activity into their daily schedule and get closer to meeting physical activity guidelines.

ENVIRONMENTS are contexts that influence more than one individual. Examples include built and social environments, both of which 1) influence community and individual health behaviors such as physical activity and 2) are experienced at multiple scales (e.g., homes, neighborhoods, and towns and cities):

- **Built environment:** the physical makeup of where we live, learn, work, and play—e.g., schools, streets and sidewalks, open spaces, and transportation options.
- **Social environments:** the immediate physical surroundings, social relationships, and cultural milieus within which defined groups of people function and interact.

POLICY refers to laws, regulations, procedures, administrative actions, incentives, or voluntary practices of governments and other institutions.

DOMAIN refers to different classes of constructs that are important for surveillance of ATS, including behaviors, environments, and policies and programs, as well as contextual factors that potentially impact each.

LEVEL refers to the scale at which a metric or surveillance system is implemented, such as the school, school district, state, or national level.

Review of Existing Surveillance of Youth ATS and Measures Used to Assess ATS

- In 2018, NCCOR worked with researchers at the University of North Carolina at Chapel Hill to conduct a systematic review that described existing surveillance of youth ATS and identified measures that have been used to assess ATS.
- Only four (three of which are Canadian) surveillance systems met the review's structured definition for ATS surveillance, which was based on CDC's definition of public health surveillance and emphasized ongoing assessment of outcomes over time and use of consistent assessment measures and methods: National Household Travel Survey, Transport Tomorrow Survey, Quebec Longitudinal Study of Child Development, and Compass Survey.

NCCOR Expert Workshop

- In October 2020, NCCOR convened a virtual workshop titled "Improving Surveillance of Youth Active Travel to School" to explore key challenges related to surveillance and measurement of youth ATS. They also developed a participant survey to inform next steps and recommendations for ATS surveillance.
- The workshop convened leading experts to identify gaps in existing surveillance systems, pinpoint needs of system users (e.g., government officials, school administrators), and develop practical strategies and solutions to address those needs and strengthen surveillance where gaps exist.

Commentary on Active Travel to School

- The NCCOR workgroup published a commentary in *Translational Behavioral Medicine* that offered insights into strengthening surveillance and data collection of ATS behavior as well as ATS environmental, policy, and program supports.

Insights on Strengthening Surveillance

- Building on existing surveillance systems offers efficiency.
- Self-reported measures and survey data are relevant and feasible for surveillance of ATS behavior. *(See Figure 3)*
- Research using objective measurements of the ATS route can inform surveillance of actual barriers to active transport in the local built environment. *(See Figure 4)*
- Measures of perceived built environment support for ATS complement GIS and research collected environmental data. *(See Figures 4, 5 & 6)*
- Including ATS policy and program supports in surveillance efforts at the local and state level can provide data on potential levers for enabling ATS and promoting child health.
- Equity considerations are not sufficiently incorporated into metrics, methods, and analysis of existing surveillance systems.
- Ideal timing for surveillance will depend on how quickly features change.
- Informative data linkage requires data from appropriate geographies.
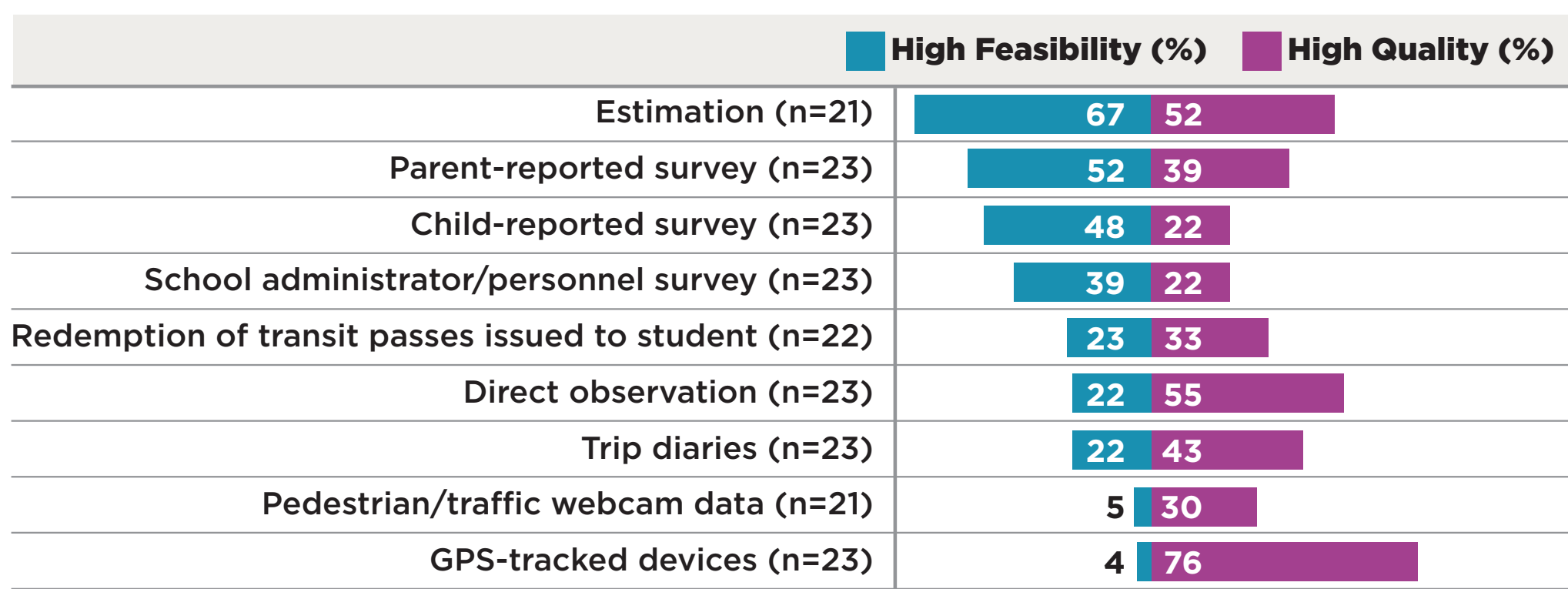
FIGURE 3.
Metrics of ATS Behavior

	High Feasibility (%)	High Quality (%)
Estimation (n=21)	67	52
Parent-reported survey (n=23)	52	39
Child-reported survey (n=23)	48	22
School administrator/personnel survey (n=23)	39	22
Redemption of transit passes issued to student (n=22)	23	33
Direct observation (n=23)	22	55
Trip diaries (n=23)	22	43
Pedestrian/traffic webcam data (n=21)	5	30
GPS-tracked devices (n=23)	4	76

FIGURE 4.
Route Attributes: Data Sources for Objective and Perceived Measures

Objective Attributes: Global position systems (GPS), Direct observation, Maps, Geographic information systems (GIS)

Perceived Attributes: Surveys, Focus groups, Interviews
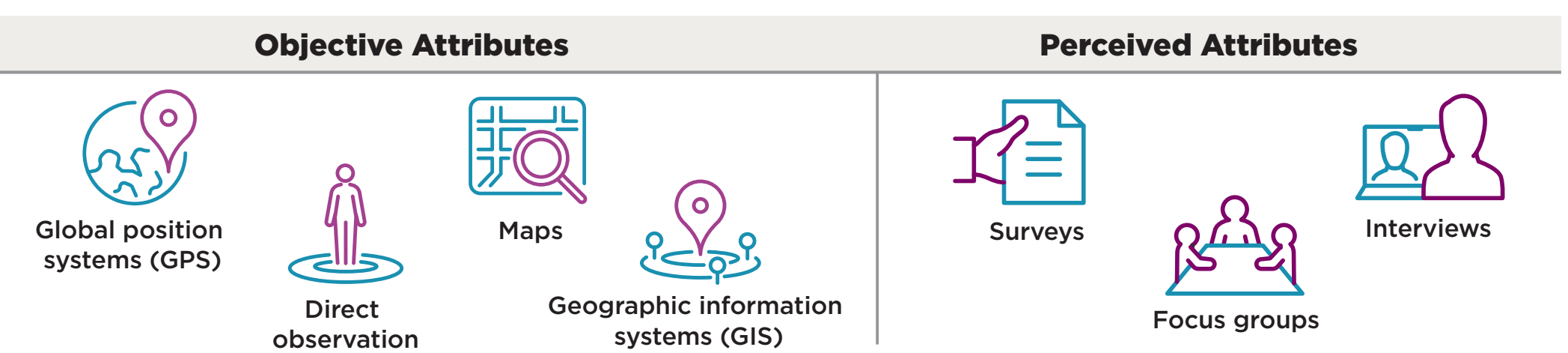
FIGURE 5.
Environmental Support Metrics: Traffic/Route Safety

	High Feasibility (%)	High Quality (%)
Speed limits near school (n=23)	83	43
Perception of safety along route (n=22)	48	35
Crash or "near miss" data during school commuting hours to identify collision hotspots (n=23)	30	26
Measuring unsafe crossings as potential ATS-limiting segments (n=22)	5	24
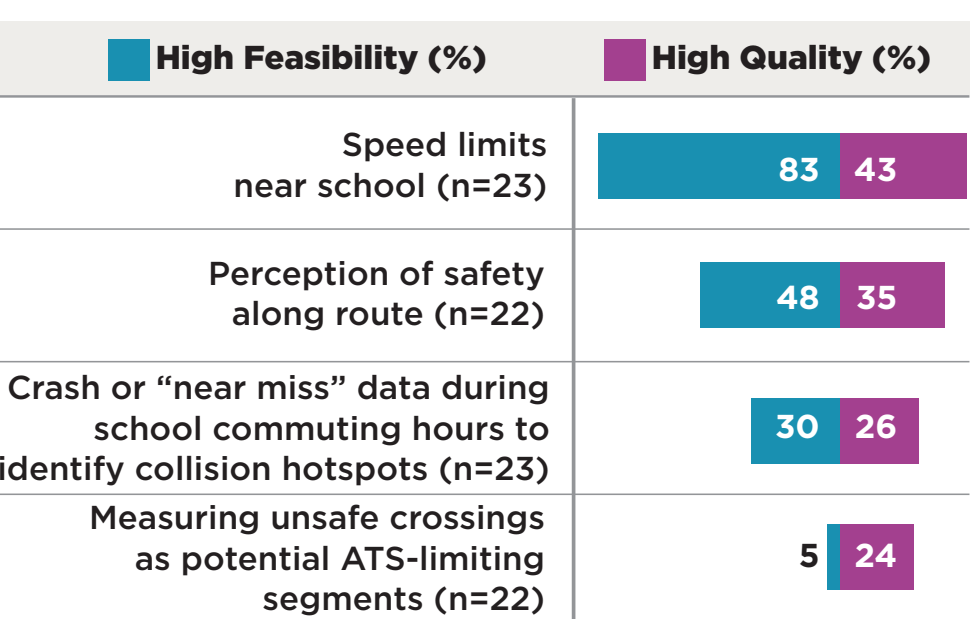
FIGURE 6.
Environmental Support Metrics: Macro-scale (e.g., land use mix, walkability, bikeability)

	High Feasibility (%)	High Quality (%)
Objective measures (e.g., Google Street View, audit tools) (n=21)	52	57
Perceived measures (survey) (n=21)	43	33
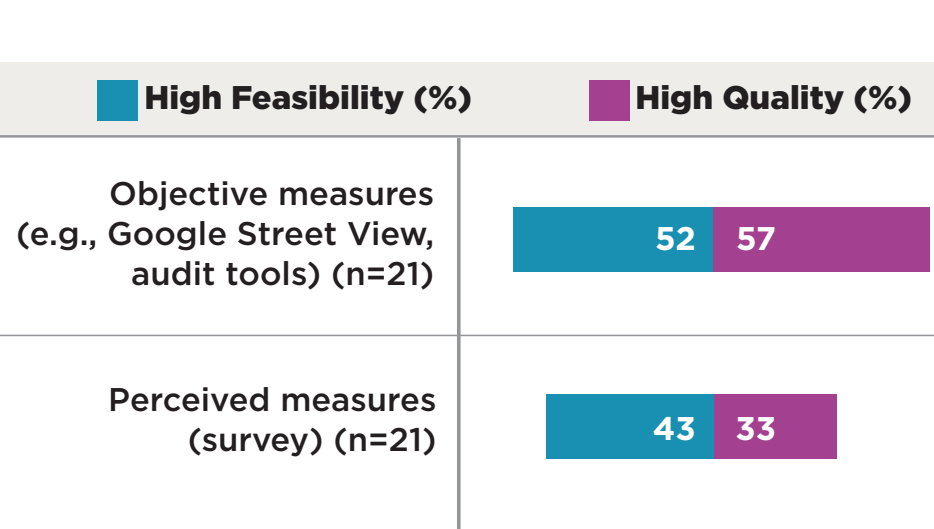
Conclusions

- Better surveillance data could contribute to top-down development of policies such as improving infrastructure for ATS, but also to efforts at the neighborhood and school level to develop policies for better safety and connectivity.
- Surveillance of ATS across multiple levels can enable research on the contribution of this behavior to overall physical activity and health among youth.
- Comparative analysis of ATS in multiple countries and more complete understanding of healthy school neighborhoods could advance child health.

How can I learn more?
Visit the NCCOR website at **www.nccor.org/physical-activity/ATS** to learn more about the history of the ATS project and discover a suite of recently published resources to advance research in this area.

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