

Improving Surveillance of Youth Active Travel to School

WHITE PAPER



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Executive Summary

Background

The National Collaborative on Childhood Obesity Research (NCCOR) is a public-private partnership of four leading research funders—the Centers for Disease Control and Prevention (CDC), National Institutes of Health (NIH), Robert Wood Johnson Foundation (RWJF), and the U.S. Department of Agriculture (USDA)—that addresses childhood obesity through research and evaluation and dissemination of research findings. A key priority for NCCOR has been to promote the common use of valid, standardized measures and methods across childhood obesity research, evaluation, and surveillance efforts.

In 2017, NCCOR's physical activity workgroup launched the [Youth Active Travel to School \(ATS\) Surveillance Initiative](#), which aims to improve public health surveillance of youth ATS across three key domains: youth ATS behaviors, environmental supports for ATS, and policy and program supports for ATS. An NCCOR-commissioned 2018 [systematic review](#) found that few youth ATS surveillance systems exist in North America, and that concurrent monitoring of other ATS-related features in these systems is limited (for the built environment) or absent (for supporting policies and programs such as Safe Routes to School). 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 and developed a participant survey to inform next steps and recommendations for ATS surveillance.

Workshop and Post-Workshop Survey Aims

The workshop convened leading experts to identify gaps in existing surveillance systems, pinpoint needs of these systems' users (e.g., government officials, school administrators), and develop practical strategies and solutions to address those needs and strengthen surveillance where gaps exist. The workshop also took steps toward identifying a set of recommended metrics to measure youth ATS behaviors and related environmental supports and policy and program

supports, with a focus on linking behavioral measures to those supports. The post-workshop survey asked respondents to prioritize metrics discussed during the workshop for the three domains of ATS. They also ranked various methods of measurement for those metrics in terms of feasibility and quality and identified contextual factors that have the greatest influence on ATS behaviors and thus should be prioritized for surveillance.

Highlights from the Workshop and Post-Workshop Survey

Through workshop presentations and breakout sessions, participants agreed that incorporating questions about ATS-related behaviors into existing surveillance systems would enable monitoring of changes over time, and that concurrently capturing information related to built environments and ATS policies and programs may help inform efforts to promote ATS and increase youth physical activity. Workshop participants emphasized the importance of 1) sustained funding for surveillance of youth ATS and 2) measuring key metrics across the same jurisdictional levels (i.e., state, county, census tract) to enable linking of behavioral data with environmental supports and policy and program supports. Participants also highlighted the importance of incorporating equity considerations into surveillance metrics and the measurement methods, as well as into the analysis of data collected.

In the post-workshop survey, participants unanimously identified mode of travel to/from school as the most important metric for surveillance of ATS behaviors. Participants also identified the five most important metrics for surveillance of environmental supports and of policy and program supports (see Key Summary Points box). The most important contextual factors were parent/family demographics; child demographics; parent/family behaviors; type of school attended; community culture/norms related to driving and active transportation; violence or crime; and parent-reported barriers to ATS. Much overlap existed between the methods of measurement ranked as highest feasibility and highest quality for many of the priority metrics.



FIGURE 1 KEY SUMMARY POINTS

- An NCCOR-commissioned systematic review found that few youth ATS surveillance systems exist in North America and that concurrent monitoring of other ATS-related features in these systems is limited (for the built environment) or absent (for supporting policies and programs such as Safe Routes to School).
- NCCOR convened a virtual workshop in October 2020 to explore key challenges related to surveillance and measurement of youth ATS.
- Incorporating questions about ATS-related behaviors, environmental supports, and policy and program supports into other existing surveillance systems would enable monitoring of changes over time and is more feasible than implementing separate, additional data collection efforts.
- Appropriately geocoded data is critical to enable linking data on individual behaviors with data on environmental supports and policy and program supports.
- According to workshop participants, the ATS metrics to prioritize in surveillance are:

BEHAVIORS:



Mode of travel to/from school

ENVIRONMENTAL SUPPORTS:



Traffic/route safety

Distance from home to school

Micro-scale built environment supports

Macro-scale built environment supports

Time spent traveling to/from school

PROGRAM AND POLICY SUPPORTS:



Adoption of Safe Routes to School and other programs

Zoning/land use policies establishing pedestrian-oriented communities and requiring sidewalks, crosswalks, and bike lanes

Adult presence

Speed zones around schools

State funding for AT/ATS programs

Significance

It is anticipated that these recommendations will inform and advance ATS research and surveillance as a priority topic area within overall physical activity surveillance. Improved monitoring of youth engagement in ATS behaviors (including participation in ATS programs), along with built environment supports and policy and

program supports for ATS, will help establish baseline data where needed and track implementation and evaluation of interventions, programs, and policies that aim to increase physical activity through ATS. NCCOR aims for these efforts, along with other strategic activities, to facilitate research and interventions that help reduce childhood obesity.

Background

One of the ways NCCOR pursues its mission to accelerate progress in reducing childhood obesity is by developing tools that help build capacity for research and surveillance. A key priority related to this objective is supporting development of high-quality, standardized surveillance resources for researchers and practitioners. Surveillance is a core public health function that involves ongoing systematic collection, analysis, and interpretation of outcome-specific data that can be used for planning, implementation, and evaluation of public health programs. Surveillance of physical activity has long been used to establish baseline data and to track implementation and evaluation of interventions, programs, and policies that aim to increase physical activity.

NCCOR's Catalogue of Surveillance Systems includes more than 100 publicly available datasets used for childhood obesity research, and its Measures Registry is an extensive list of measures currently used for childhood obesity research in the field. Among the gaps that exist in these compilations are metrics to measure youth active travel to school (ATS) behaviors and the supports for those behaviors related to the built environment, social environment, and policies and programs. NCCOR launched its Youth Active Travel to School Surveillance Initiative to improve public health surveillance of youth ATS across these three domains (ATS behaviors, environmental supports, and policy and program supports). The project aligns with NCCOR's goal to work with partners to integrate childhood obesity priorities with synergistic initiatives.

To address key challenges related to measurement and surveillance of youth ATS, NCCOR commissioned a systematic review of North American ATS surveillance in 2018 and hosted a virtual workshop on October 14–15, 2020. Recognizing the limited feasibility of launching an ATS-focused surveillance system, the workshop aimed to identify opportunities in existing surveillance systems, pinpoint needs of these systems' users, and develop practical solutions to address these needs and strengthen surveillance where gaps exist. The workshop also took steps toward developing a set of recommended metrics to measure youth ATS behaviors and related

environmental and policy and program supports, with a focus on linking behavioral measures to provide context and identify equity implications related to ATS behaviors and available supports.

This white paper summarizes NCCOR's 2018–2020 efforts to improve surveillance of ATS behaviors, environmental supports, and policy and program supports.



FIGURE 2 DEFINITIONS OF KEY TERMS USED IN THIS WHITE PAPER

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.

Introduction to the NCCOR Youth Active Travel to School (ATS) Surveillance Initiative

NCCOR's Youth ATS Surveillance Initiative was preceded by several key activities to advance surveillance of physical activity in the United States (timeline graphic). In 2015, *Step It Up! The Surgeon General's Call to Action to Promote Walking and Walkable Communities* highlighted gaps in physical activity surveillance, including regular monitoring of walking behavior and neighborhood supports for walking in school and community settings.² Shortly after, an expert group convened by the Centers for Disease Control and Prevention (CDC) and the American College of Sports Medicine (ACSM) developed strategic priority areas for enhancing physical activity surveillance.³ This was followed by a separate expert group meeting in 2017 to identify specific actions that could improve U.S. physical activity surveillance and to suggest approaches for implementing those actions.⁴

Also in 2017, NCCOR formed a physical activity workgroup to foster cross-NCCOR planning and engagement. The workgroup's three projects, including the Youth ATS Surveillance Initiative, build on the Surgeon General's Call to Action and provide guidance on improving comprehensive surveillance of youth ATS. The workgroup commissioned a systematic review of North American ATS surveillance in 2018, and the following year the National Academies of Sciences, Engineering, and Medicine (NASEM) published a consensus report recommending strategies for implementing actions to improve physical activity surveillance.⁵ Active travel to school is a crossover of two of the four priority topic areas outlined in that report: children and community supports for physical activity.

FIGURE 3
TIMELINE OF SELECTED MILESTONES IN U.S. PHYSICAL ACTIVITY SURVEILLANCE



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 describes existing surveillance of youth ATS and identifies measures that have been used to assess ATS. Research aims included identifying ongoing surveillance systems, evaluating attributes of ATS (acceptability, feasibility, representativeness, and availability), and cataloging ATS-related measures. After searching 10 research databases for peer-reviewed studies and grey literature reports addressing ATS in North America between January 1, 2004, and February 28, 2018, researchers identified 77 full-text articles to assess for eligibility; 15 unique ATS data sources were identified from these articles. Only four (three of which are Canadian) 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 (NHTS), Transport Tomorrow Survey, Quebec Longitudinal Study of Child Development, and Compass Survey.

The review had several conclusions. The first is few youth ATS surveillance systems exist in North America, and concurrent monitoring of other ATS-related features in these systems is limited (for the built environment) or non-existent (for supporting policies and programs such as Safe Routes to School). The second is incorporating questions related to ATS-related behaviors into other existing surveillance systems would enable more consistent monitoring of changes over time. The third conclusion is concurrently capturing information related to built environments and ATS policies and programs, along with behaviors, may help inform efforts to promote ATS and increase physical activity among youth. The full systematic review is available at <http://profpubs.com/index.php/jheal/article/view/24/48>, and selected findings from the NHTS are provided in the following section.

Metrics of Youth ATS in the National Household Travel Survey (NHTS)

The NHTS was the only U.S.-based surveillance system for youth ATS identified in the systematic review. It provides travel behavior data to support transportation policy and planning efforts and is a periodic national survey conducted by the Federal Highway Administration (FHWA) every 5–8 years since 1969. The most recent NHTS (2017) collected data on trips taken by all members (ages 5+) of participating households over a 24-hour period. Related to youth ATS, the NHTS provides information about the distance, time of day, travel mode, travel party size and composition, and how school trips fit into the overall day's activities.

Results from the 2017 NHTS indicated that most students ages 5–17 (54%) traveled to school by private vehicle, one-third (33%) traveled by school bus, 10% walked or biked, and about 2% used public transit or other means).⁶ The percentage walking or biking declined from nearly 14% in 2001, and the percentage traveling by private car increased (from 52%) since that time. The likelihood of walking or biking to school steadily decreases as the distance to school increases: approximately 81%, 56%, 25%, and 7%, and 0.9% of students walk or bike to schools <0.25, 0.25–0.50, 0.50–1, 1–2, or 2+ miles from home, respectively.

The 2009 NHTS included additional questions, which revealed that the average grade level at which parents would allow their child to walk or bike to school without an adult was 6th grade. They also revealed five factors that affected parent decisions about allowing their child to walk or bike to school: amount of traffic, speed of traffic, distance, weather or climate, and violence or crime.

The FHWA recently launched the NextGen NHTS, which updates the NHTS design to capture changes in travel behavior closer to real time (every 2 years). The updates allow the survey to better reflect rapid changes in transportation with the onset of Uber, Lyft, and e-scooters, and also to leverage new data sources such

as passive origin-destination (OD) data from location-based services and GPS sources. The core survey will collect data on households beginning in 2021, and the OD flow data will focus on individuals ages 16+ in all 50 states plus the District of Columbia across 582 zones based on metropolitan statistical area (MSA) or non-MSA zone structure.

Measurement of Youth ATS Behaviors, Environmental Supports, and Policy and Program Supports: Workshop Highlights

In light of the systematic review's finding of scarce data on youth ATS, particularly in the United States, NCCOR convened a workshop of ATS experts and relevant collaborators to begin addressing that gap. This section summarizes the workshop's proceedings.

NCCOR's virtual workshop on October 14–15, 2020, featured three presentations, each followed by discussant reflections and responses. Group discussions also occurred and focused on potential key metrics to include in youth ATS surveillance at various levels.

PRESENTATION 1: *Measurement of Youth ATS Behaviors for Public Health Surveillance*

PRESENTER: Karin Pfeiffer, Michigan State University

DISCUSSANT: Russell Pate, University of South Carolina

RECAP OF KEY POINTS

When choosing a tool to measure youth ATS behaviors for surveillance purposes, factors to consider include population characteristics, level of the desired data (e.g., individual vs. local- or national-level), sample size, cost, feasibility, and outcomes of interest. A number of ATS-related variables have been assessed in the literature: mode of transportation to school, distance to school, time spent traveling to school, and travel companions.

Other potentially relevant variables include availability of school bus travel, travel party size and composition, built environment details (e.g., quality or presence of sidewalks, safety, traffic), and school attended (neighborhood school or other school) or home and school address. Candidate methods or tools to measure ATS include surveys, interviews, trip or PA diaries, direct observations, GPS devices, accelerometers (in combination with another tool), or other combinations of these tools. Advances in technology may produce new methods that can capture multiple aspects of ATS and overcome limitations of current tools.

DISCUSSANT RESPONSE: RUSSELL PATE, UNIVERSITY OF SOUTH CAROLINA

It is desirable to have a comprehensive, integrated surveillance system with maximal granularity for measuring youth ATS behaviors. Three important contexts for measurement of youth ATS behaviors are listed below.

1. ATS, as an important component of total physical activity, is an important contributor to reducing population prevalence of childhood obesity.
2. Improving youth PA surveillance could be accomplished through a variety of strategies, including a comprehensive system that addresses the most important forms of youth PA, a comprehensive school physical activity program model that includes all physical activity related to school and after-school programs, or a system that focuses exclusively on youth ATS.
3. For surveillance of youth ATS to lead to better health behaviors and health outcomes at the population level, contextual factors that influence youth PA behaviors must be considered: built environment characteristics, supporting programs and policies, and child-level social cognitive and other social factors. This information can be provided by children, parents, and key school personnel.

PRESENTATION 2: *Measurement of Key Environmental Supports for Youth ATS*

PRESENTER: Brian Saelens, University of Washington

DISCUSSANT: Jordan Carlson, Children's Mercy Kansas City & University of Missouri Kansas City

RECAP OF KEY POINTS

Several perceived (i.e., based on child or parent report) and objective (i.e., based on spatial data such as sidewalk locations) environmental supports have been consistently associated with youth ATS. These include shorter distance to school; walkability and presence of walking and cycling infrastructure (e.g., sidewalk presence); less land use mix; higher levels of traffic safety, neighborhood safety, and personal safety; and lower traffic volumes.^{7,8} Existing surveillance systems include measures of both perceived and objective measures for some of these constructs, but the measures lack specificity and consistency across systems and no single system appears to capture all measures of interest. Furthermore, national surveillance is rarely representative of types of places and may not accurately estimate prevalence of environmental supports for ATS. Local or state surveillance may be better aligned with opportunities for improving environmental supports for youth ATS.

A major gap in existing surveillance of environmental supports for youth ATS is measurement of constructs along the route between a child's home and school, because the specific route traveled may include supports or barriers to ATS that differ from those in the neighborhood or community (the level at which such constructs are commonly measured). This gap could be addressed by embedding more perceived environmental support measures into individual or household-level child-focused surveillance systems and making them school route-specific, and by combining existing child-level and spatial data to create route-specific environmental support metrics. This would help identify combinations of environmental supports that may facilitate ATS.

DISCUSSANT RESPONSE: JORDAN CARLSON, CHILDREN'S MERCY KANSAS CITY & UNIVERSITY OF MISSOURI KANSAS CITY

Land use mix is an indicator that measures the average neighborhood-level diversity of destinations across a metropolitan area based on a mix of eight different employment types.⁹ Land use mix is generally positively associated with walking in a neighborhood but has been negatively associated with active transport to school (i.e., land use mix has been related to less active transport to school). Because land use mix is often part of walkability composites (e.g., EPA Walkability Index), researchers may consider removing this variable from those composites when using them for ATS surveillance or may elect to examine individual environmental features instead of composites. Most objective measures of environmental attributes that may affect ATS are from GIS-based or macroscale tools, but less is known about micro-scale attributes (e.g., street crossings, sidewalk quality) that are measured by neighborhood audits. Anecdotal evidence suggests that these types of attributes may be correlated with perceived safety, a factor that influences ATS.

PRESENTATION 3: *Measurement of Key Policy and Program Supports for Youth ATS*

PRESENTER: Michelle Lieberman, Safe Routes Partnership

DISCUSSANT: Jamie Chriqui, University of Illinois at Chicago

RECAP OF KEY POINTS

Local and state program supports for youth ATS include a wide range of education (e.g., pedestrian and bicycle safety trainings), encouragement (e.g., walking school buses, walk to school day events), and other programs collectively referenced as Safe Routes to School (SRTS) non-infrastructure programs. Policy supports range from local municipal and school district SRTS policies to other state- and local-level policies that support active transportation and student health more broadly, including Complete Streets, school siting, and school busing policies. Current and past efforts have assessed these policy and program supports that occur mainly at the local and state levels. Assessment of local-level supports have included walking school bus programs in public elementary schools, along with district policies;

existence of SRTS programs or similar initiatives; measurement of promotional material distribution to students or families on walking or biking to school (via CDC's [School Health Policies and Practices Study](#)); and school siting policies. Efforts to gather information on state-level program and policy supports include a state [SRTS-related laws database](#),¹⁰ the [SRTS Program Census Project](#), and the [Making Strides State Report Cards](#), which include some indicators relevant to ATS.

DISCUSSANT RESPONSE: JAMIE CHRIQUI, UNIVERSITY OF ILLINOIS AT CHICAGO

Sustained funding is imperative for implementation of key policy and program supports for youth ATS. These supports include SRTS policies (e.g., requirements for crossing guards or traffic control measures), Complete Streets policies, speed zones around schools, and longer minimum busing distances. At the local level, policies related to zoning and land use as well as strategies in master or comprehensive plans could help facilitate built environment infrastructure and features that support ATS, such as sidewalks, crosswalks, and bike lanes. The [Physical Activity Policy Research and Evaluation Network \(PAPREN\)](#) is collecting data on zoning and land use laws for the most populous 300 U.S. counties and will include markers for built environment supports for ATS that could be linked to GIS data or appropriately geocoded surveillance data. At the school district level, wellness policies could require or encourage safe routes to school and walking or biking to school and include measures of how many students engage in ATS. At the state level, the Making Strides State Report Card data could be converted into surveillance data, and information on state laws related to safe routes could be added to the National Cancer Institute's CLASS (Classification of Laws Associated with School Students) system.

Summary of Gaps in Existing Surveillance Systems

A number of gaps in existing surveillance systems were identified during the workshop presentations and subsequent discussions:

- **Overall, surveillance of youth ATS is limited in North America, and funding no longer exists to support systems that previously tracked relevant behaviors and school practices and policies.** The lack of sustained funding for such surveillance is a major barrier to implementation of policy and built environment changes. Ideally, surveillance should be frequent enough to capture changes in metrics of interest and include high-quality, age- or cohort-specific measures that are collected at multiple levels (e.g., national, state, local, school district) and are useful for informing policy and programmatic action. Surveillance should also consider the contexts (e.g., parent/child preferences and norms, local climate for racial equity) that drive ATS at the individual and community levels. Researchers and decision makers should consider proxy measures and combinations of measures across surveillance systems that could provide a more complete picture of youth ATS in the United States, including distinctions by school type (e.g., public, private, charter, home school).
- **Multiple sets of measures may be needed to assess ATS based on the variety of levels for which information is desired and the different purposes for which data will be used.** Some measures may need to be assessed at different time intervals than other measures, based on their frequency of change at various levels of collection.
- **The few North American surveillance systems that track youth ATS behaviors do not concurrently monitor supporting policies and programs, and they monitor limited ATS-related built environment features.** Perceived and objective measures of built environment constructs and of policy and program supports would help clarify which specific aspects of these domains are most beneficial in supporting youth ATS, which in turn would inform efforts to promote ATS and increase youth physical activity. Collaborators should identify combinations of tools and methods that work best to capture youth ATS behaviors and supports, including those

that leverage GPS-enabled apps and real-time data technologies. Incorporating questions about ATS-related behaviors, environmental supports, and policy and program supports into existing surveillance systems would enable more consistent monitoring of changes over time and is more feasible than requesting additional data collection at the school or school district level, for example. Another strategy is to coordinate performance metrics and reporting from local policies (e.g., Complete Streets) and plans (e.g., master/comprehensive plans) to collect metrics of interest for ATS, including those listed in the presentations and discussions above.

- **Existing surveillance of environmental supports for youth ATS does not typically assess the constructs specific to the route between a child's home and school.** Surveillance of environmental supports for youth ATS tends to assess these constructs at the neighborhood or community level, but the specific route traveled between a child's home and school, may include supports or barriers to ATS that differ from those in the neighborhood or community (e.g., a dangerous arterial in an otherwise safe county). One strategy to address this gap is to embed more perceived environmental support measures into individual/household-level child-focused surveillance systems and make them school route-specific. Another strategy is to enable combining or integrating existing child-level data (e.g., student home address matched to school address) and spatial data to create route-specific environmental support metrics. Examining combinations of environmental supports that increase ATS is important, because addressing single supports (or barriers) may not be enough to move the needle.
- **Appropriately geocoded data is lacking but critical to enable linking data on individual behaviors with data on environmental supports and policy and program supports.** Systematically measuring and geocoding information about ATS-related behaviors, environmental supports, and policy and program supports across the same

jurisdictional levels would enable linkage of constructs across these three domains. For example, an evaluation of the impact of municipal zoning and land use laws on ATS behaviors would likely require ATS behavioral data geocoded by municipal level. Moreover, data sources aggregated at the state level would not be useful for exploring micro-scale environmental supports for ATS (e.g., presence of sidewalks, bike racks, or crossing signals). There is a need to clarify the granularity of data (e.g., county, zip code, or block group level) available in state and national surveys in order to assess feasibility of linking individual behavior data to environmental and policy and program data.

- Equity considerations are not sufficiently incorporated into the metrics and methods used in existing surveillance systems, nor into the analysis of data collected. As an example, it would be helpful to assess how a policy integrates equity in its language and implementation. Regarding environmental supports, methods for assessing the presence or absence of features may be the same in a low- vs. high-income neighborhood, but an analysis of quality of features might reveal differences between those neighborhoods. In addition, both objective and perceived measures of safety are important environmental supports to examine because different racial and ethnic groups may perceive the safety of spaces differently based on their past experiences.
- **Socioeconomic and demographic information that is properly geocoded and linked to individual behavior metrics is critical to enabling analysis from an equity lens.** Equity is one of six "Es" that summarize the key components of comprehensive, integrated Safe Routes to School initiatives. Equity involves ensuring that SRTS initiatives benefit all demographic groups, with particular attention to ensuring safe, healthy, and fair outcomes for low-income students, students of color, students of all genders, students with disabilities, and others. In 2020, the Safe Routes partnership made an organizational decision to

replace the E for “enforcement” with “engagement,” elaborating that “All Safe Routes to School initiatives should begin by listening to students, families, teachers, and school leaders and working with existing community organizations, and build intentional, ongoing engagement opportunities into the program structure.” Enforcement as it relates to police presence created a barrier to ATS in some communities; furthermore, it was less strongly related to increasing physical activity compared with other E’s such as education, encouragement, and engagement.

Priority Metrics for Surveillance of ATS Behaviors, Environmental Supports, and Policy and Program Supports: Post-Workshop Survey

Survey Methods

In March 2021, the NCCOR Coordinating Center distributed a Qualtrics web-based survey to workshop participants of the October 2020 workshop, all of whom had professional experience with ATS. The goal of the survey was to inform next steps and recommendations for

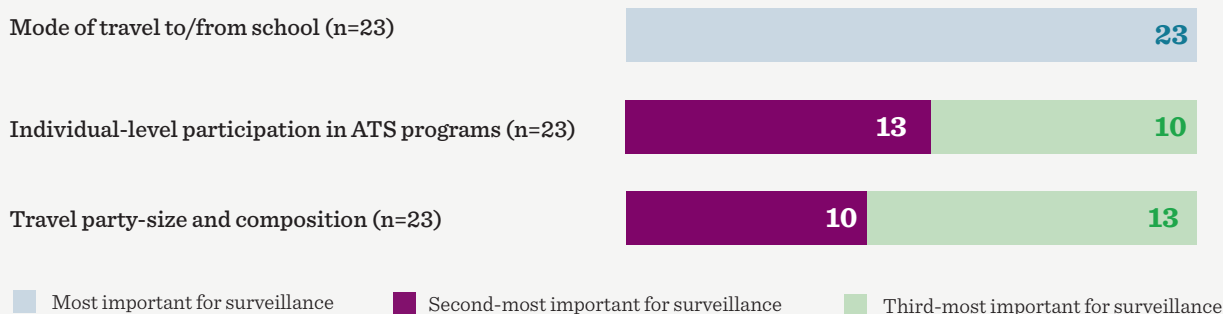
ATS surveillance. Respondents were asked to prioritize metrics/indicators of ATS behaviors, environmental supports, and policy and program supports that were discussed during the workshop, based on their professional expertise and opinions. They then ranked various methods of measurement for those metrics/indicators in terms of feasibility and quality.^a If respondents did not feel confident in their level of expertise to rank a given method of measurement, they could select “N/A” for the method. Respondents were also asked to identify contextual factors that have the greatest influence on ATS behaviors and therefore should be prioritized for surveillance.

Survey Results

Eleven of the 41 workshop attendees were not eligible for the survey because of their membership in the ATS workgroup (five attendees) or staff role in the NCCOR Coordinating Center (six attendees). Of the remaining 30 eligible attendees, 23 completed the survey (77% response rate).

The survey results are summarized in [Table 1](#) and explained in more detail in the following text and figures. Full survey results are included in table form in the Appendix section.

FIGURE 4. Survey respondents prioritized ATS metrics for surveillance



^aThe survey did not provide definitions of these terms, but feasibility was intended to refer to the metric/method being realistic and resource-efficient; quality was intended to refer to the ability of the metric/method to serve the information needs of intended users.

BEHAVIORS

METRICS/INDICATORS

Respondents ranked three metrics/indicators of ATS behaviors in order of importance for surveillance: mode of travel to/from school, individual-level participation in ATS programs, and travel party size and composition. Mode of travel to/from school was unanimously selected by all 23 respondents as the most important metric/indicator for surveillance. Slightly more respondents (n=13) selected individual-level participation in ATS programs (e.g., walk to school day, walking school bus) than travel party size and composition (e.g., siblings, caregivers) (n=10) as the second most important metric/indicator for surveillance.

METHODS OF MEASUREMENT

- Mode of travel to/from school (nine choices of methods): the three methods of measurement that respondents identified as having most feasibility were estimation^b parent-reported survey; and child survey. The three identified as having most quality were GPS-tracked devices, direct observation, and estimation.
- Individual-level participation in ATS programs (four choices of methods): respondents selected school administrator/personnel survey as the method with most feasibility, and direct observation as the method with most quality.
- Travel party size and composition (four choices of methods): respondents selected parent-reported survey as the method with most feasibility, and direct observation as the method with most quality.

CONTEXTUAL FACTORS

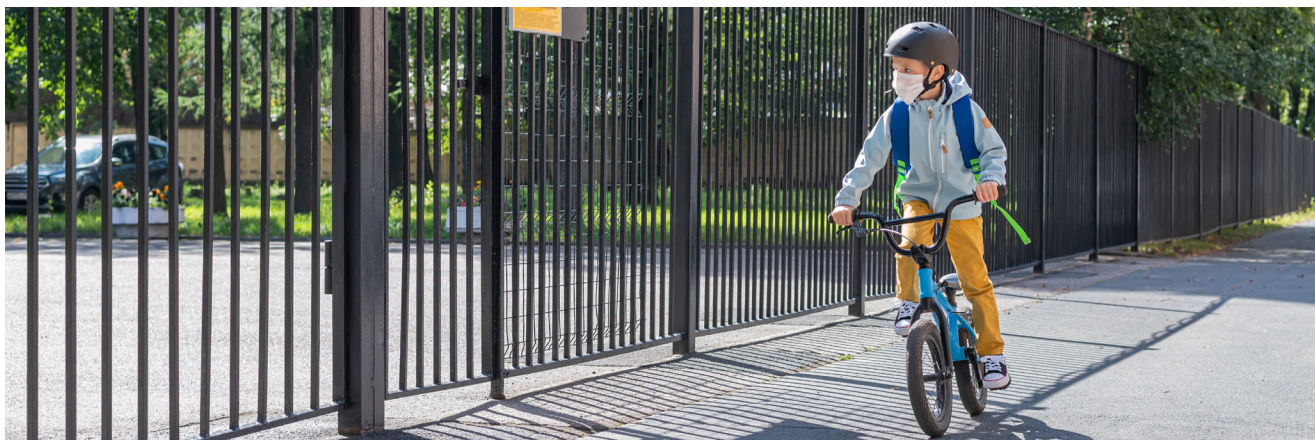
Respondents selected up to five (of 14) contextual factors that influence ATS behaviors and are most important to monitor through surveillance. The following contextual factors most often selected by respondents were parent/family demographics (e.g., employment status, work location, family structure and support, family income/SES) (17 respondents); child demographics (e.g., age, gender, race/ethnicity, one home/two home/home insecure) (16); parent/family behaviors (e.g., physical activity behaviors including active travel, attitude/buy-in toward those behaviors) (13); type of school attended (e.g., school of choice, neighborhood school, home school, magnet school) (13); community culture/norms related to driving and active transportation (10); violence or crime (along specific route and in the area generally) (10); and parent-reported barriers to ATS (9). The remaining seven choices of contextual factors were listed as most important by five or fewer respondents.

ENVIRONMENTAL SUPPORTS

METRICS/INDICATORS

Respondents selected up to five (of six choices) metrics/indicators of environmental factors that influence ATS and are most important for surveillance. The five included most often among respondents' selections were traffic/route safety (e.g., highway presence, traffic volume and speed) (23 respondents); distance from home to school (22); micro-scale built environment supports (e.g., presence of sidewalks and bike racks) (21); macro-scale built environment supports (e.g., land use mix, walkability, bikeability) (19); and time spent traveling to/from school (12).

^bEstimation is calculated as follows: (Total school population) – (children who travel by car or bus)



METHODS OF MEASUREMENT

Respondents ranked methods of measurement for the top five metrics/indicators described above.

- Traffic/route safety (four choices of methods): respondents selected speed limits near schools as the method with both most feasibility and most quality.
- Distance from home to school (five choices of methods): respondents selected school catchment areas and estimated distance (given student home address and school address) as the methods with most feasibility, and estimated distance (given student home and school address) and parent-reported survey as the methods with most quality.
- Micro-scale built environment supports (two choices of methods): respondents selected objective measures (e.g., Google Street View, audit tools) as the method with both most feasibility and most quality. The other method, perceived measures (survey), was a close second.
- Macro-scale built environment supports (two choices of methods): respondents selected objective measures (e.g., Google Street View, audit tools) as the method with both most feasibility and most quality. The other method, perceived measures (survey), was a close second.
- Time spent traveling to/from school (four choices of methods): respondents selected parent-reported survey as the method with most feasibility, and direct observation as the method with the most quality.

POLICY AND PROGRAM SUPPORTS

METRICS/INDICATORS

Respondents selected up to five (of 15) metrics/indicators of policy and program supports for ATS that are most important for surveillance. The five included most often among respondents' selections were adoption of Safe Routes to School and other programs (e.g., remote drop off locations) (20 respondents); zoning/land use policies establishing pedestrian-oriented communities and requiring sidewalks, crosswalk, and bike lanes (18); adult presence (e.g., crossing guards, corner captains, bike train leaders) (12); speed zones around schools (11); and state funding for AT/ATS programs (9). The remaining 10 choices of policy and program supports were listed as most important by eight or fewer respondents.

METHODS OF MEASUREMENT

The October 2020 workshop only briefly discussed methods of measurement for metrics/indicators of policy and program supports for ATS. Therefore, for each of the top five metrics/indicators listed above, respondents were asked to rank only the feasibility and quality of the metric/indicator itself ([Table 2](#)).

A similar proportion of respondents indicated that the five most important metrics/indicators of policy and program supports for ATS had high feasibility (42–73%) and high quality (41–70%). Speed zones around schools was the metric/indicator that was ranked as both high feasibility and high quality by the highest percentage of respondents (>70% ranked it as both high feasibility and high quality; see [Table 2](#)).

TABLE 1. Summary of prioritized metrics/indicators and associated methods of measurement for surveillance of ATS behaviors, contextual factors, environmental supports, and policy and program supports

ATS DOMAIN	MOST IMPORTANT METRIC/ INDICATOR(S) FOR SURVEILLANCE	METHOD(S) OF MEASUREMENT WITH HIGHEST FEASIBILITY*	METHOD(S) OF MEASUREMENT WITH HIGHEST QUALITY**
BEHAVIORS	Mode of travel to/from school	1. Estimation ^c 2. Parent-reported survey 3. Child survey	1. GPS-tracked device 2. Direct observation 3. Estimation
ENVIRONMENTAL SUPPORTS	1. Traffic/route safety	Speed limits near schools	Speed limits near schools
	2. Distance from home to school	1. School catchment areas 2. Estimated given student home address and school address	1. Estimated given student home address and school address 2. Parent-reported survey
	3. Micro-scale built environment supports	Objective measures (e.g., Google Street View, audit tools)	Objective measures (e.g., Google Street View, audit tools)
	4. Macro-scale built environment supports	Objective measures (e.g., Google Street View, audit tools)	Objective measures (e.g., Google Street View, audit tools)
	5. Time spent traveling to/from school	Parent-reported survey	Direct observation
POLICY AND PROGRAM SUPPORTS	1. Adoption of Safe Routes to School and other programs	N/A – see Table 2	
	2. Zoning/land use policies establishing pedestrian-oriented communities and requiring sidewalks, crosswalk, and bike lanes		
	3. Adult presence		
	4. Speed zones around schools		
	5. State funding for AT/ATS programs		
TOP FIVE CONTEXTUAL FACTORS INFLUENCING ATS BEHAVIORS, OF HIGHEST IMPORTANCE FOR SURVEILLANCE:			
1. Parent/family demographics		5. Community culture/norms related to driving and active transportation (tie)	
2. Child demographics		6. Violence or crime (along specific route and i n the area generally) (tie)	
3. Parent-family behaviors (tie)		7. Parent-reported barriers to ATS	
4. Type of school attended (tie)			

* Based on method(s) with the highest percentage of “high” feasibility responses

** Based on method(s) with the highest percentage of “high” quality responses



TABLE 2. Policy and Program Supports for ATS: Workshop Participants’ Feasibility and Quality Rankings for Priority Metrics/Indicators

METRIC/INDICATOR	RATED AS “HIGH” FEASIBILITY (%)	RATED AS “HIGH” QUALITY (%)
1. Adoption of Safe Routes to School and other programs	47	47
2. Zoning/land use policies establishing pedestrian-oriented communities and requiring sidewalks, crosswalk, and bike lanes	47	41
3. Adult presence	42	55
4. Speed zones around schools	73	70
5. State funding for AT/ATS programs	56	67

NOTE: % indicates percentage of survey respondents indicating high feasibility and high quality of the metric/indicator.

Recommendations for ATS Surveillance

Over the course of the October 2020 workshop and post-workshop prioritization survey, subject matter experts explored gaps in existing ATS surveillance and recommended potential solutions to help fill those gaps, including specific priority metrics and corresponding measurement methods. As shown in [Table 1](#) above, many of the methods of measurement for most of the priority metrics were ranked as both feasible and of high quality. For policy and program supports ([Table 2](#)), all of the priority metrics themselves were rated as having high feasibility and high quality by 42% or more of respondents.

[Table 3](#) summarizes recommendations for surveillance overall and recommendations for surveillance of specific ATS domains (behaviors, environmental supports, and policy and program supports). For the specific ATS domains, related priority metrics and measurement methods are listed for each. This information can guide researchers, school officials, and local and state government officials as they design studies, plan for surveillance activities, and prioritize funding for surveillance, for example. An important note is that the post-workshop prioritization survey was not exhaustive, therefore the priority metrics that it designated may be more accurately described as “core metrics.” Because context matters and varies locally, decision-makers (particularly at local levels) may tailor their surveillance priorities, for example, by linking to additional data sets to describe route attributes.

TABLE 3. Recommendations for ATS Surveillance

RECOMMENDATIONS FOR OVERALL SURVEILLANCE OF ATS (FROM WORKSHOP DISCUSSIONS)

- Sustain current and obtain additional funding for surveillance of youth ATS—including individual ATS behaviors, environmental supports, and policy and program supports—using high-quality, age- or cohort-specific measures or combinations of measures that can inform policy and programmatic action, collected at multiple levels with appropriate frequency to capture changes.
- Incorporate questions about ATS-related behaviors, environmental supports, and policy and program supports into existing surveillance efforts, such as the Youth Risk Behavior Survey, Behavioral Risk Factor Surveillance System, National Household Travel Survey, and American Community Survey.
- Create an online, possibly interactive toolkit with the most important metrics in key ATS domains that school districts, localities, or states can measure or include in their existing measurement systems.
- Create an online, possibly interactive toolkit to consolidate all available data collection tools related to ATS.
- Coordinate performance metrics and reporting from policies (e.g., Complete Streets) and plans (e.g., master/comprehensive plans) to collect metrics of interest for ATS.
- Measure ATS-related behaviors, environmental supports, and policy and program supports across the same jurisdictional levels to enable linking of data across the three domains.
- Incorporate equity considerations into the metrics and methods used in existing surveillance systems and into the analysis of data collected. Such analysis could be enabled by geocoding socioeconomic and demographic information and linking it to individual behavior metrics.

**RECOMMENDATIONS FOR SURVEILLANCE OF SPECIFIC
ATS DOMAINS (from workshop presentations)**
**RELATED METRICS OF MOST IMPORTANCE FOR
SURVEILLANCE (based on post-workshop survey results)**

BEHAVIORS	
When choosing a tool to measure youth ATS behaviors, consider how a candidate tool(s) relates to “must-have” data for a particular research application.	N/A
Recognize that combinations of methods may work best—even though they can cost more to implement—because they can help offset the limitations of individual tools and yield rich data as methods complement each other.	Consider combinations of methods to measure mode of travel to/from school, the behavior metric designated as highest priority for surveillance
Think outside the box when considering new ways to capture information. For example, broad youth smartphone ownership and the proliferation of GPS-enabled apps could be leveraged (perhaps along with ecological momentary assessment) to explore youth ATS behaviors and related factors. Privacy concerns need to be addressed to integrate into surveillance systems.	Focus on capturing information to measure mode of travel to/from school, the behavior metric designated as highest priority for surveillance

RECOMMENDATIONS FOR SURVEILLANCE OF SPECIFIC ATS DOMAINS (from workshop presentations)	RELATED METRICS OF MOST IMPORTANCE FOR SURVEILLANCE (based on post-workshop survey results)
ENVIRONMENTAL SUPPORTS	
Develop and implement surveillance using objective measurement of ATS environmental supports that are specific to routes between children's homes and their schools.	Focus on metrics of: • Macro- and micro-scale environmental supports
Embed more perceived environmental support measures into individual/household-level child-focused surveillance systems and make them school route-specific.	Focus on metrics of perceived: • Traffic/route safety • Macro- and micro-scale environmental supports
Enable the ability to combine/integrate existing child-level (e.g., student home address matched to school address) and spatial data to create route-specific environmental support metrics.	Focus on data combinations that provide information about: • Traffic/route safety • Distance from home to school • Macro- and micro-scale built environment supports • Time spent traveling to/from school
Examine combinations of environmental supports that increase ATS, because addressing single supports (or barriers) likely won't be enough to move the needle.	Focus on metrics of: • Traffic/route safety • Distance from home to school • Macro- and micro-scale built environment supports • Time spent traveling to/from school
PROGRAM AND POLICY SUPPORTS	
Determine which specific policy and program components will be most beneficial (based on their supportiveness of youth ATS) and realistic to measure at the local level.	Focus on metrics of: • Adoption of Safe Routes to School and other programs • Zoning/land use policies establishing pedestrian-oriented communities and requiring sidewalks, crosswalk, and bike lanes • Adult presence • Speed zones around schools • State funding for AT/ATS programs
Capture more detailed data from more programs across the United States (for local policy and program supports).	Focus on detailed data related to the supports listed above.
Expand indicators in the Making Strides State Report Cards to include ongoing surveillance around other Safe Routes to School-related laws (for state-level policy and program supports).	See above for the policy and program supports of most importance for surveillance.



NCCOR plans to publish an overview of the information in [Table 3](#) alongside further discussion of gaps and collaborator opportunities in a commentary in the scientific literature.

Conclusion

It is anticipated that the recommendations in this white paper will inform and advance ATS research and surveillance as a priority topic area in overall physical activity surveillance. Improved monitoring of youth engagement in ATS behaviors (including participation in ATS programs), along with built environment supports and policy and program supports for ATS, will help establish baseline data where needed and track implementation and evaluation of interventions, programs, and policies that aim to increase physical activity through ATS. NCCOR aims for these efforts, along with other strategic activities, to facilitate research and interventions that help reduce childhood obesity.

Abbreviations

ATS	active travel to school
FHWA	Federal Highway Administration
GIS	geographic information system
GPS	global positioning system
MSA	metropolitan statistical area
NHTS	National Household Travel Survey
PA	physical activity
SRTS	Safe Routes to School

References

- ¹ National Academies of Sciences, Engineering, and Medicine. Implementing Strategies to Enhance Public Health Surveillance of Physical Activity in the United States. Washington, DC: The National Academies Press. 2019. <https://doi.org/10.17226/25444>.
- ² U.S. Department of Health and Human Services. Step It Up! The Surgeon General's Call to Action to Promote Walking and Walkable Communities. Washington, DC: U.S. Dept of Health and Human Services, Office of the Surgeon General; 2015.
- ³ Fulton JE, Carlson SA, Ainsworth BE, et al. Strategies priorities for physical activity surveillance in the United States. *Med Sci Sports Exerc*. 2016; 48(10):2057-2069.
- ⁴ Pate RR, Berrigan D, Buchner DM, et al. Actions to Improve Physical Activity Surveillance in the United States. NAM Perspectives. Discussion Paper, National Academy of Medicine, Washington, DC. 2018. <https://doi.org/10.31478/201809f>
- ⁵ National Academies of Sciences, Engineering, and Medicine. 2019. Implementing strategies to enhance public health surveillance of physical activity in the United States. Washington, DC: The National Academies Press.
- ⁶ Kontou E, McDonald NC, Brookshire K, Pullen-Seufert NC, Lajeunesse S. U.S. active school travel in 2017: Prevalence and correlates. *Preventive Medicine Reports* (17);2020.
- ⁷ Ikeda E, Hinckson E, Witten K, et al. Associations of children's active school travel with perceptions of the physical environment and characteristics of the social environment: A systematic review. *Health & Place* 2018; 54:118-131.
- ⁸ Rothman L, Macpherson AK, Ross T, et al. The decline in active school transportation (AST): A systematic review of the factors related to AST and changes in school transport over time in North America. *Prev Med* 2018; 111:314-322.
- ⁹ U.S. Department of Transportation. Land Use Mix. Available at <https://www.transportation.gov/mission/health/land-use-mix>. Accessed October 4, 2021.
- ¹⁰ Chiqui JF, Taber DR, Slater SJ, Turner L, Lowrey KM, Chaloupka FJ. The impact of state safe routes to school-related laws on active travel to school policies and practices in U.S. elementary schools. *Health Place* 2012 Jan;18(1):8-15. doi: 10.1016/j.healthplace.2011.08.006.
- ¹¹ Safe Routes Partnership. The 6 Es of Safe Routes to School. Available at <https://www.saferoutespartnership.org/safe-routes-school/101/6-Es>. Accessed July 27, 2021.

Acknowledgements

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Workshop Agenda

Improving Surveillance of Youth Active Travel to School Virtual Workshop

PRE-WORKSHOP WEBINAR

Fri, Sept 25, 2020
11:00 a.m. – 12:00 p.m. ET

WORKSHOP SESSION 1:

Wed, Oct 14, 2020
11:00 a.m. – 12:30 p.m. ET

WORKSHOP SESSION 2:

Wed, Oct 14, 2020
2:00 – 3:30 p.m. ET

BREAKOUT SESSIONS:

Thurs, Oct 15, 2020
2:00 – 4:00 p.m. ET

Purpose:

Address key challenges related to measurement and surveillance of youth active travel to school (ATS) and related environmental, policy, and program supports. Participants will discuss the topics below to identify gaps in existing surveillance systems and needs of relevant stakeholders. Participants will propose solutions to address these needs and develop practical recommendations for strengthening surveillance of these topic areas. Broad agenda topics include the following:

- Measurement of youth ATS for public health surveillance
- Measurement of key environmental supports for youth ATS
- Measurement of key program and policy supports for youth ATS
- Strategies for linking behavioral measures with measures of environmental, program, and policy supports

Objectives:

- Summarize gaps in existing surveillance systems
- Explore/identify needs of relevant stakeholders
- Identify strategies to address these needs
- Identify and develop a set of metrics to measure youth ATS and related environmental, program, and policy supports
- Explore opportunities/identify ways to improve surveillance of youth ATS

WEBINAR – September 25, 2020

11:00 a.m. – 12:00 p.m. ET

11:00 – 11:15	Welcome and Introductions – Van Do, NCCOR Coordinating Center
11:15 – 11:30	Systematic Review of Active Travel to School Surveillance in North America – Noreen McDonald, PhD and Mary Wolfe, PhD, University of North Carolina at Chapel Hill
11:30 – 11:45	National Household Travel Survey & Active Travel to School – Daniel E. Jenkins, PE, Federal Highway Administration
11:45 – 11:55	Q&A – Van Do, NCCOR Coordinating Center
11:55 – 12:00	Closing Remarks – Van Do, NCCOR Coordinating Center

SESSION 1 – October 14, 2020

11:00 a.m. – 12:30 p.m. ET

11:00 – 11:10	Welcome and Introductions – <i>Kathy Watson, PhD, Centers for Disease Control and Prevention</i>
11:10 – 11:30	Measurement of youth active travel to school behaviors for public health surveillance – <i>Karin Pfeiffer, PhD, Michigan State University</i>
11:30 – 11:50	Measurement of key environmental supports for youth active travel to school – <i>Brian Saelens, PhD, University of Washington</i>
11:50 – 12:10	Measurement of key policy and program supports for youth active travel to school – <i>Michelle Lieberman, MURP, Safe Routes Partnership</i>
12:10 – 12:20	Discussion
12:20 – 12:30	Session 1 Closing Remarks – <i>Kathy Watson, PhD, Centers for Disease Control and Prevention</i>

SESSION 2 – October 14, 2020

2:00 – 3:30 p.m. ET

2:00 – 2:10	Welcome and Introductions – <i>Geoffrey Whitfield, PhD, Centers for Disease Control and Prevention</i>
2:10 – 2:20	Discussion: measurement of youth active travel to school behaviors for public health surveillance – <i>Russell Pate, PhD, Arnold School of Public Health, University of South Carolina</i>
2:20 – 2:30	Discussion: measurement of key environmental supports for youth active travel to school – <i>Jordan Carlson, PhD, Children's Mercy Kansas City & University of Missouri Kansas City</i>
2:30 – 2:40	Discussion: measurement of key program and policy supports for youth active travel to school – <i>Jamie Chiqui, PhD, MHS, School of Public Health and Institute for Health Research and Policy, University of Illinois at Chicago</i>
2:40 – 3:25	Open Discussion with all participants Discussion Questions - What are key metrics to include in ATS surveillance (behaviors, environmental supports, program/policy supports)? - What are proxies that can be measured for ATS behaviors, environmental supports, and program/policy supports? - What is potentially feasible?
3:25 – 3:30	Session 2 Closing Remarks – <i>Geoffrey Whitfield, PhD, Centers for Disease Control and Prevention</i>

BREAKOUT SESSIONS – October 15, 2020

2:00 – 4:00 p.m. ET

2:00 – 2:25	Welcome and Introductions, Summary of Previous Meetings – <i>Stephanie George, PhD, National Institutes of Health</i>
2:25 – 3:30	Breakout Sessions - School/district – <i>Sarah Sliwa, PhD, Centers for Disease Control and Prevention</i> - State/national – <i>Emily Ussery, PhD, Centers for Disease Control and Prevention</i> Discussion Questions - What metrics already exist? - What are potential key metrics and indicators for school/district level or state/national level surveillance of ATS behaviors, environmental supports, and program/policy supports? - What methods can be used to best measure ATS? - What are potential strategies for linking behavioral measures with measures of environmental, program, and policy supports? - Are there other solutions that were not considered? - What might be the key steps to enact the solutions?
3:30 – 3:35	Break
3:35 – 3:55	Report Out
3:55 – 4:00	Closing Remarks – <i>Stephanie George, PhD, National Institutes of Health</i>



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