



Tools of the Trade: Using NCCOR's Measures Registry Resource Suite in the Field

July 23, 2020

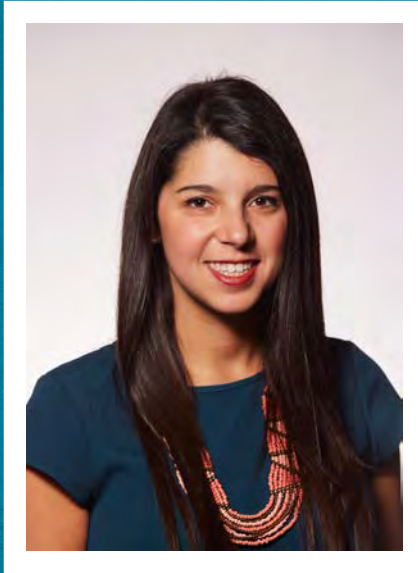
Society for Nutrition Education & Behavior 2020



Accelerating Progress to Reduce Childhood Obesity

Tools of the Trade: Using NCCOR's Measures Registry Resource Suite in the Field

PRESENTERS



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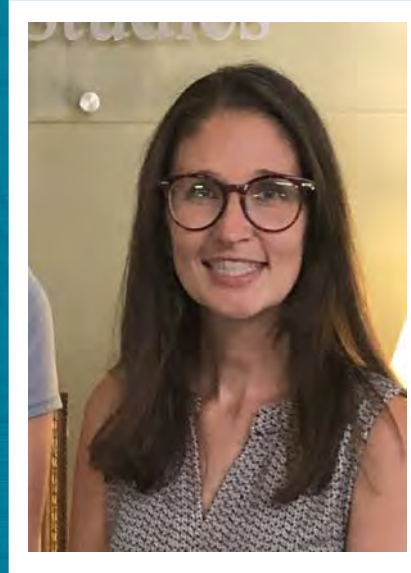
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Session Outline

- Overview of NCCOR
- Overview of NCCOR's Measures Registry Resource Suite
- Case Study: How to use the Measures Registry Resource Suite in a research project
- Case Study: How to use the Measures Registry Resource Suite in the classroom
- Other NCCOR resources
- Closing

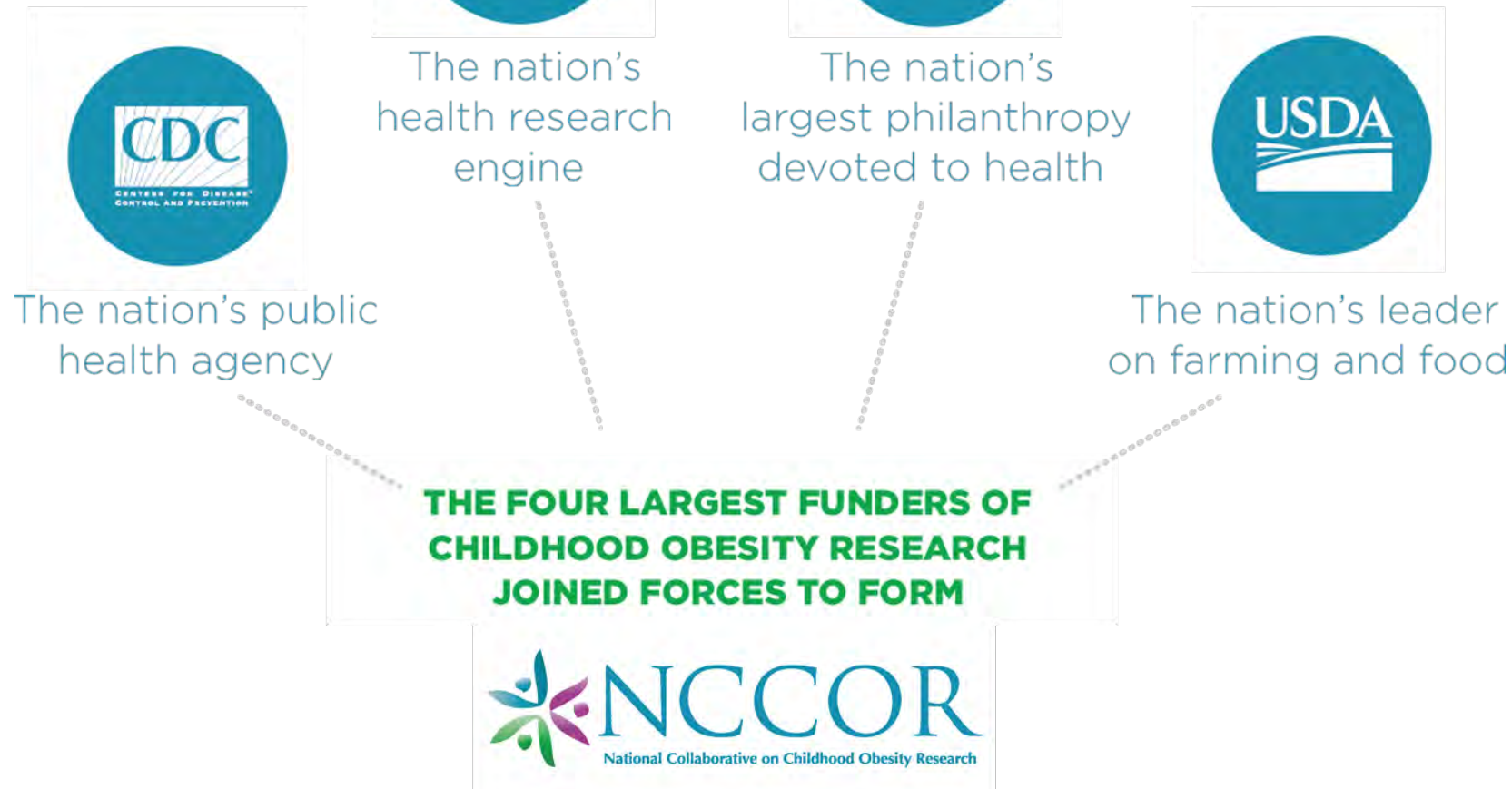
Learning Objectives

- By the end of the session, the participant will be able to apply the NCCOR Measures Registry Resource Suite to select appropriate measures of nutrition, physical activity, and environments to support their research and evaluation projects.
- By the end of the session, the participant will be able to describe three considerations for selecting a measure for research or evaluation projects related to nutrition, physical activity, or obesity to inform future research or evaluation efforts.
- By the end of the session, the participant will be able to select tools for evaluating different scenarios using the Measures Registry Resource Suite.



ACCELERATING PROGRESS TO REDUCE CHILDHOOD OBESITY







IDENTIFY, DESIGN, AND EVALUATE
INTERVENTIONS



INCREASE AND IMPROVE SURVEILLANCE



IMPROVE CAPACITY TO CONDUCT
RESEARCH AND PROGRAM EVALUATION



PROVIDE NATIONAL LEADERSHIP TO
ACCELERATE IMPLEMENTATION THROUGH
COMMUNICATION AND OUTREACH



WORK WITH NON-HEALTH PARTNERS TO
INTEGRATE CHILDHOOD OBESITY PRIORITIES

By building on each other's strengths and perspectives, NCCOR's unique public-private partnership demonstrates that it is possible to

**get more done more quickly—and have
a greater impact—working together**
than by working alone.



**BOLSTERING
EACH AGENCY'S
OUTPUT**



**GENERATING
HIGH RETURN
ON INVESTMENT**



**CREATING AND
MAXIMIZING
EFFICIENCIES**

NCCOR is raising the bar,

supporting scientists

*with tools to amplify
their work and findings*

Measurement tools in one place!



MEASURES REGISTRY



USER GUIDES



LEARNING MODULES

HOW TO USE THE RESOURCES SUITE



START with an overview of the domains by watching the **Measures Registry Learning Modules**



SELECT the domain(s) and review the corresponding **Measures Registry User Guides**



USE the **Measures Registry**, select the appropriate measure to address your research or evaluation question.

Domains



Measures Registry Learning Modules

- Four modules break down key measurement concepts in 15 minutes or less
- Include an introductory module on the series and four modules for each domain
- Each module domain includes a glossary, resources, and a case study to facilitate learning
- Ideal for users newer to research and evaluation in diet or physical activity
- Include short quizzes at the end of modules

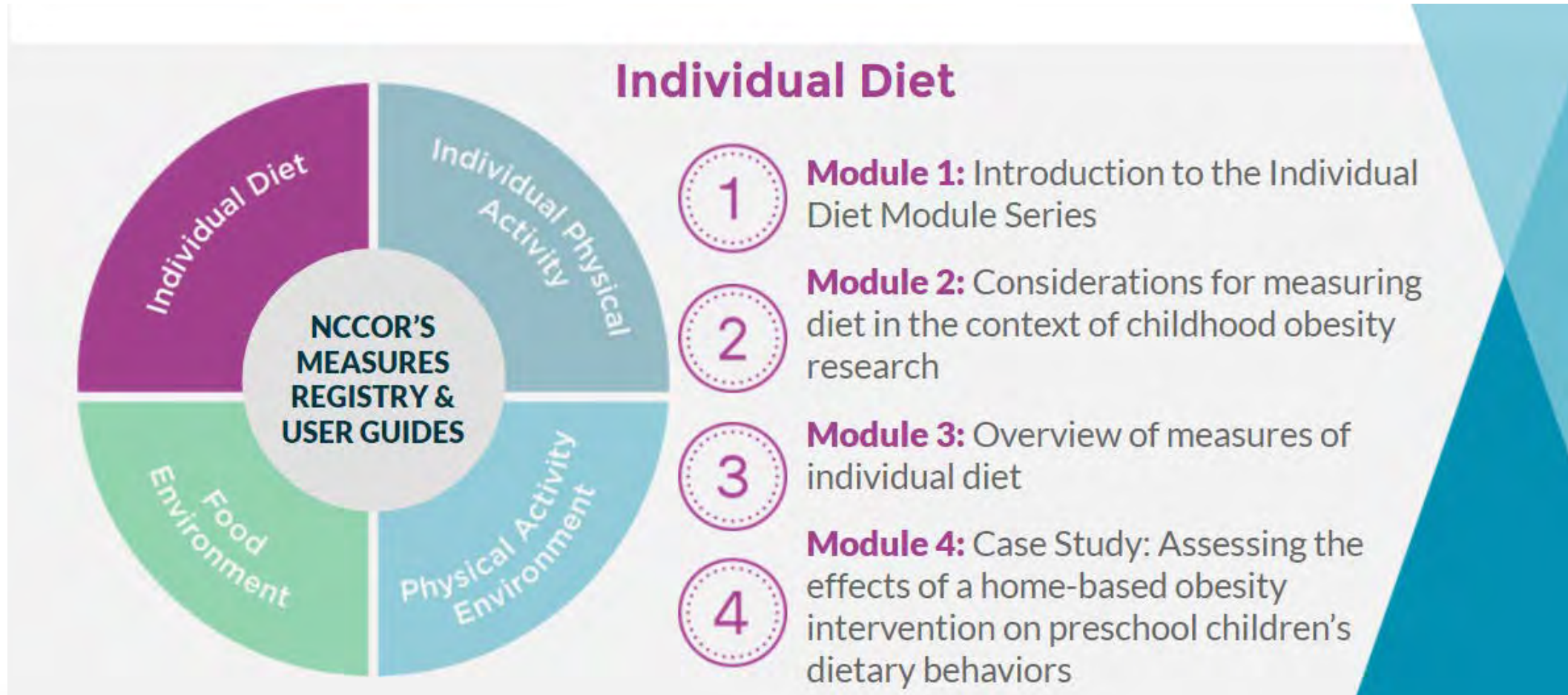
<http://www.nccor.org/mrlearningmodules/>



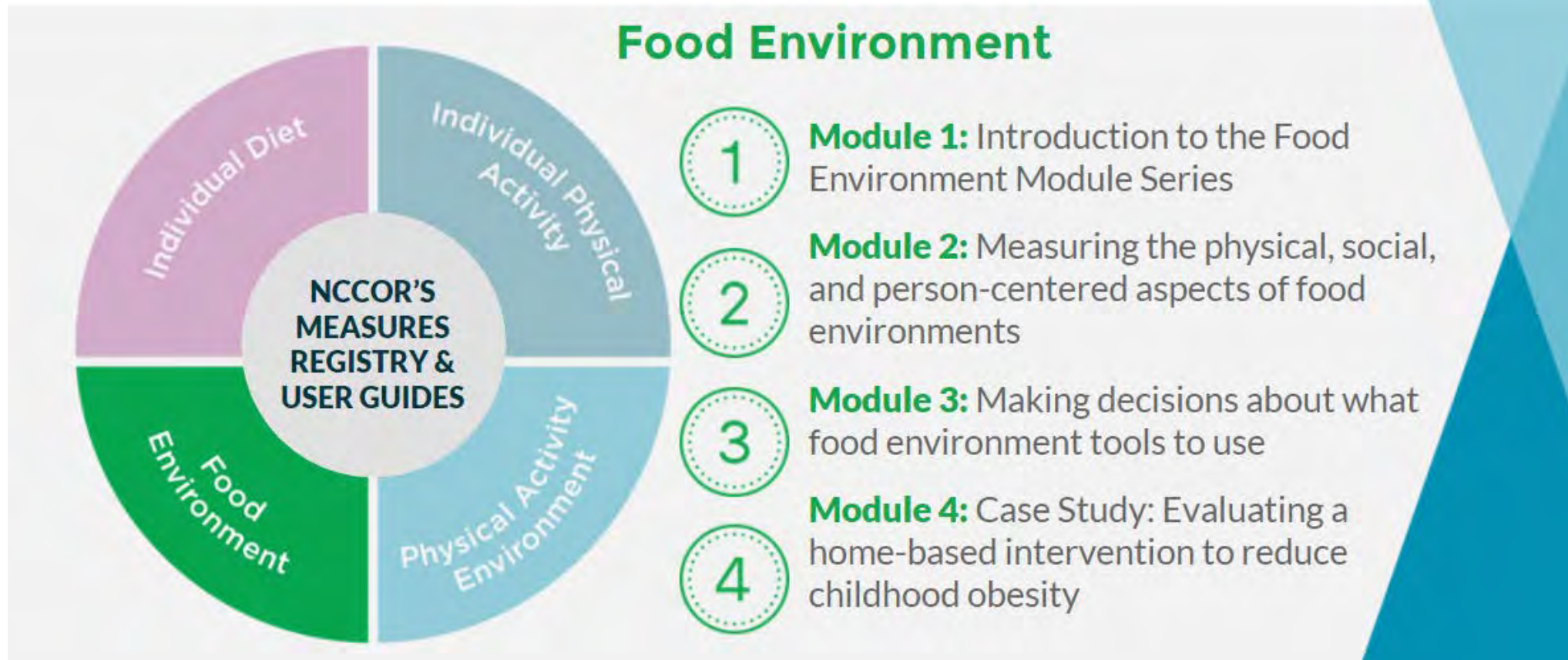
Measures Registry Learning Modules: Introduction



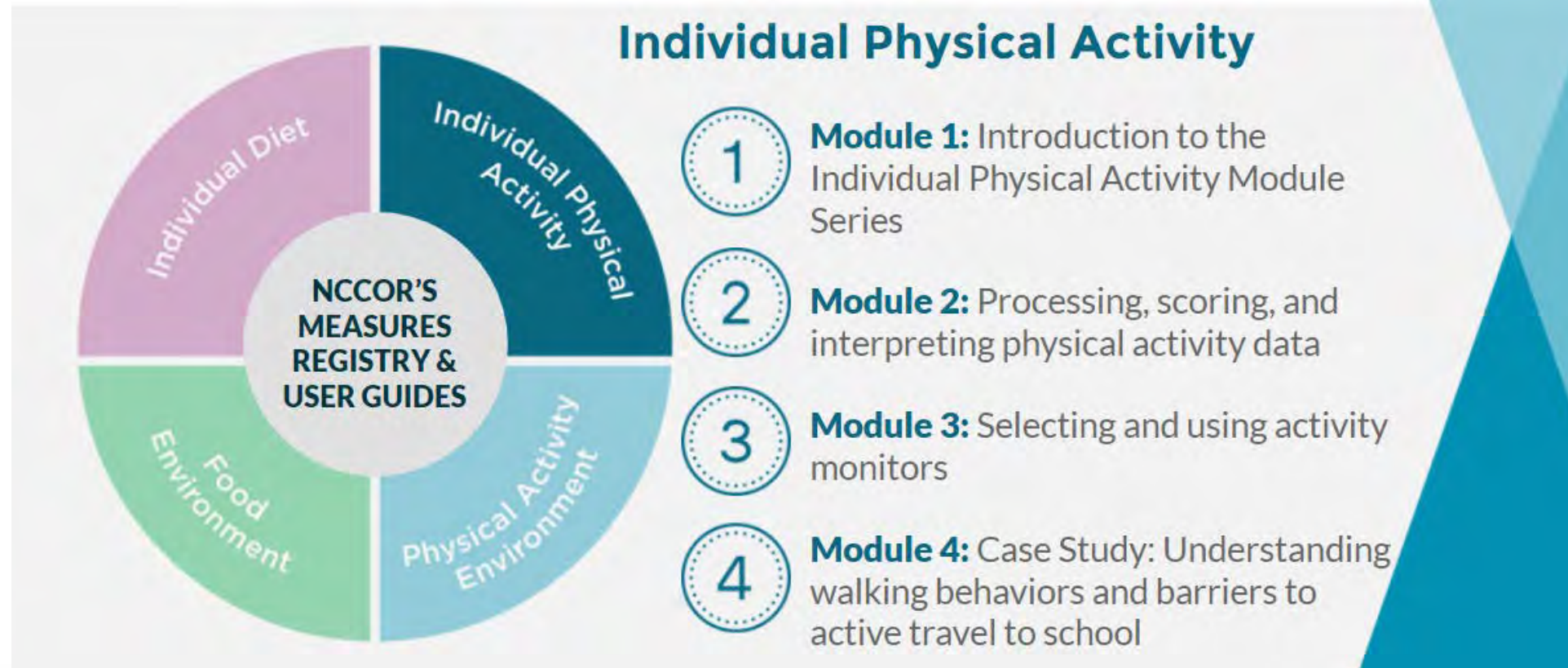
Measures Registry Learning Modules: Individual Diet



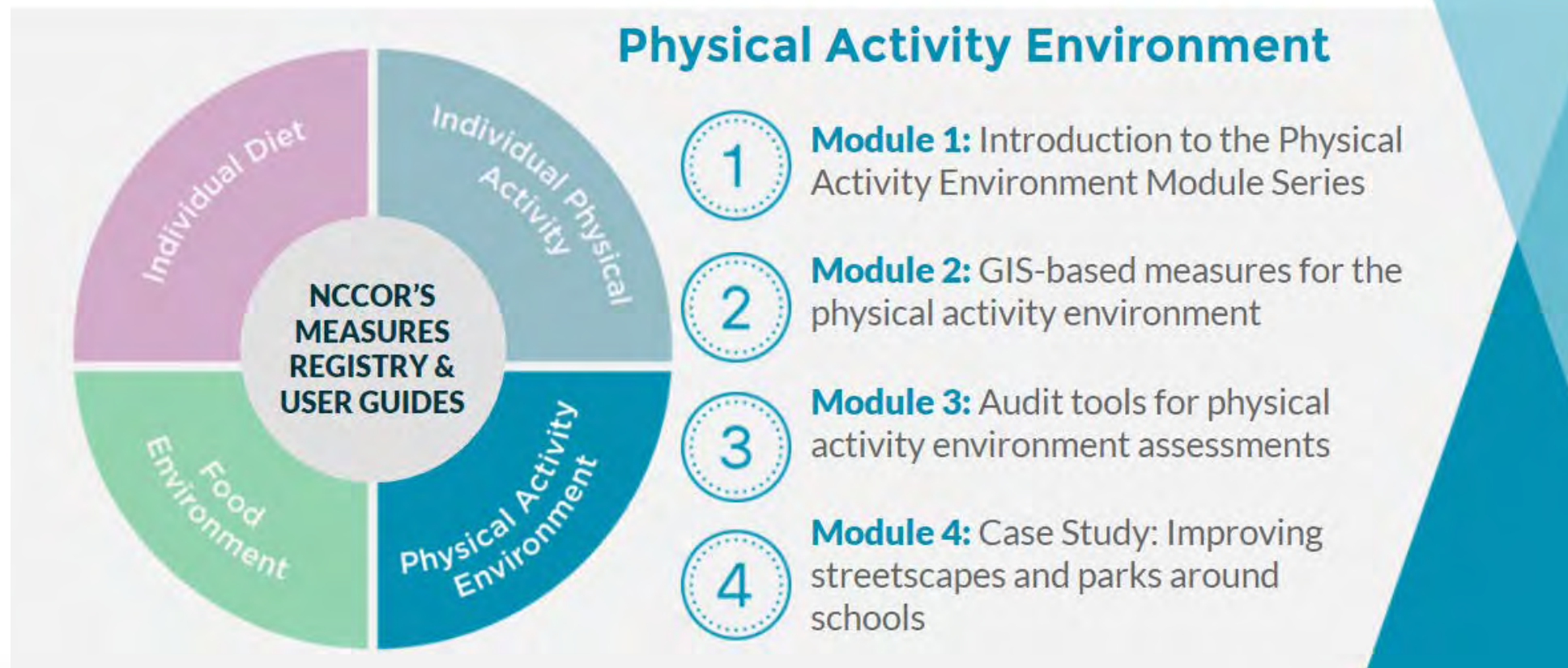
Measures Registry Learning Modules: Food Environment



Measures Registry Learning Modules: Individual Physical Activity



Measures Registry Learning Modules: Physical Activity Environment



Question 5 of 5

When selecting measurement tools for community program projects, it is important to consider the tools' validity and reliability.

- ☐ True
- ☐ False

CHECK ANSWER

Question 5 of 5

When selecting measurement tools for community program projects, it is important to consider the tools' validity and reliability.

- ☒ True
- ☐ False



YES, THAT IS CORRECT.

It is important to consider the validity and reliability of measurement tools selected for community program projects. However, the assessment of reliability and validity may need to be confirmed in the population group involved with the project. The NCCOR Measures Registry includes information on the reliability and validity of tools included as well as the population that was used to establish reliability and validity.

HOW TO USE THE RESOURCES SUITE



START with an overview of the domains by watching the **Measures Registry Learning Modules**



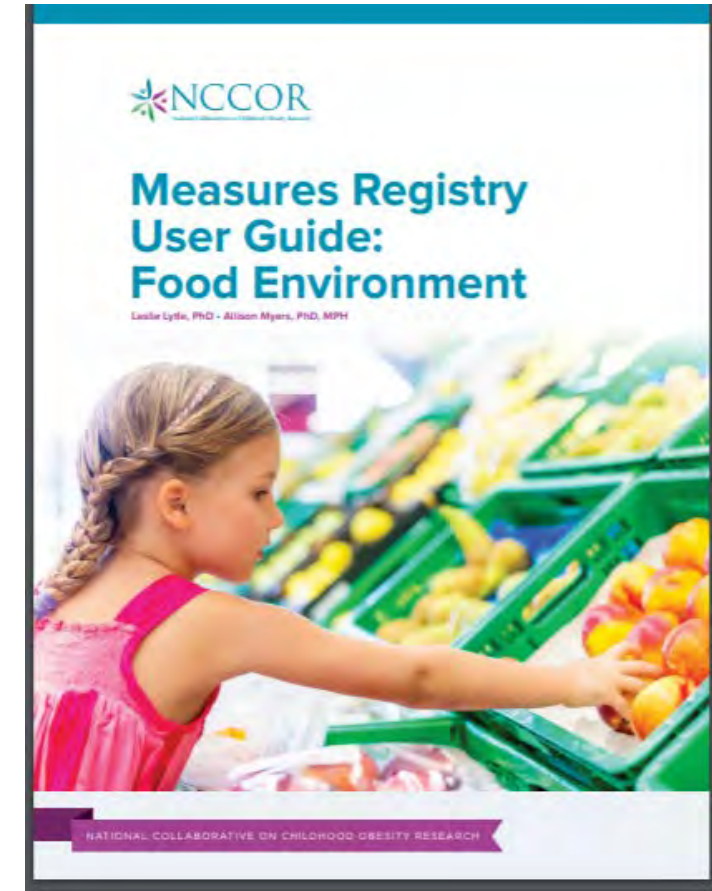
SELECT the domain(s) and review the corresponding **Measures Registry User Guides**



USE the **Measures Registry**, select the appropriate measure to address your research or evaluation question.

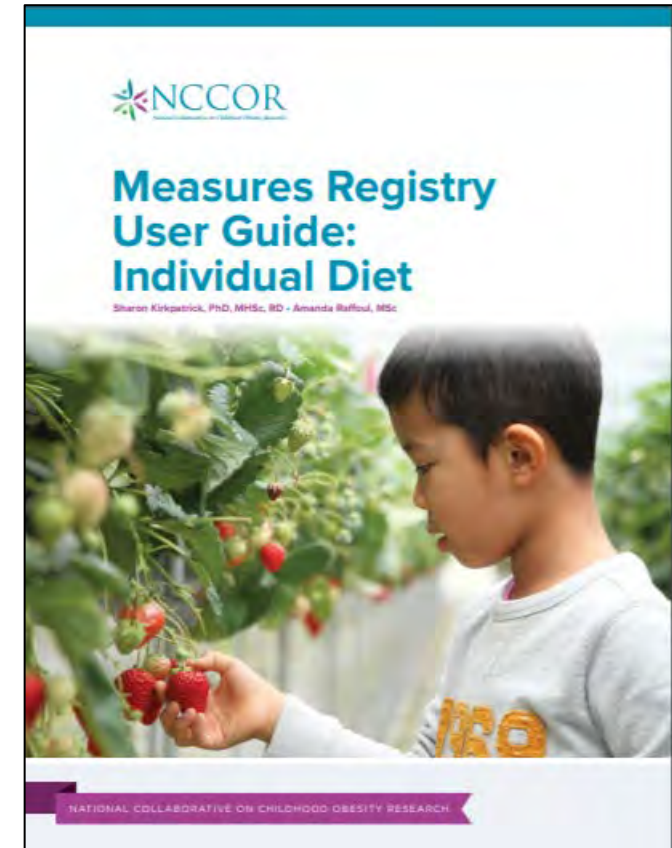
Measures Registry User Guides

- Designed to:
 - Provide an overview of measurement
 - Describe general principles of measurement selection
 - Present case studies to walk users through the process of using the Measures Registry to select appropriate measures
 - Direct researchers and practitioners to additional resources



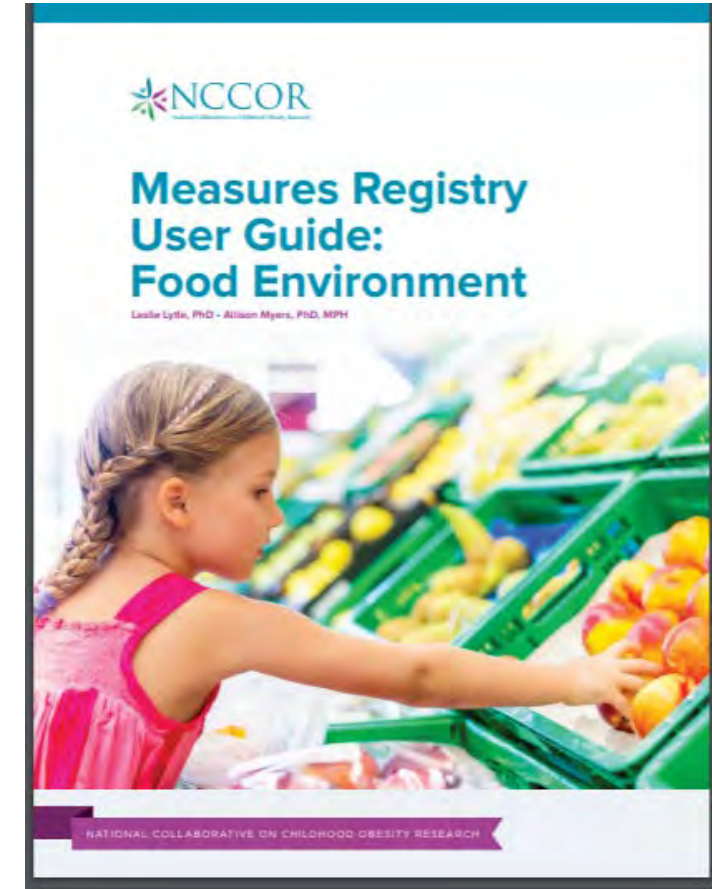
Individual Diet

- Overview of dietary behavior, which is primarily defined as dietary intake and related dietary behaviors (e.g., frequency of snacking, perceptions, and attitudes)
- Outline of the literature identifying links between diet and childhood obesity
- Concepts relevant to studying diet, including unique considerations regarding the quality of data collected in studies of children
- Methods and tools used to assess dietary intake and related dietary behaviors, including objective and self-report methods
- Principles related to psychometric properties of measures, along with random and systematic measurement error



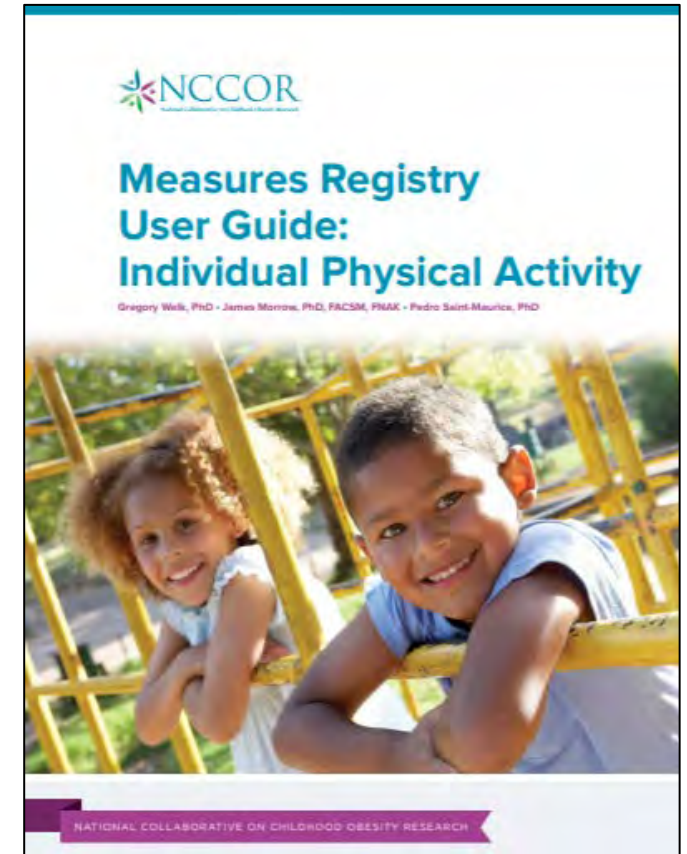
Food Environment

- Definitions for key food environment venues
- Concepts in food environment assessment
- Methods of food environment measurement across settings
- Principles related to psychometric properties of measures
- Distinctions between single and multi-item measures, response scales, and sensitivity to change



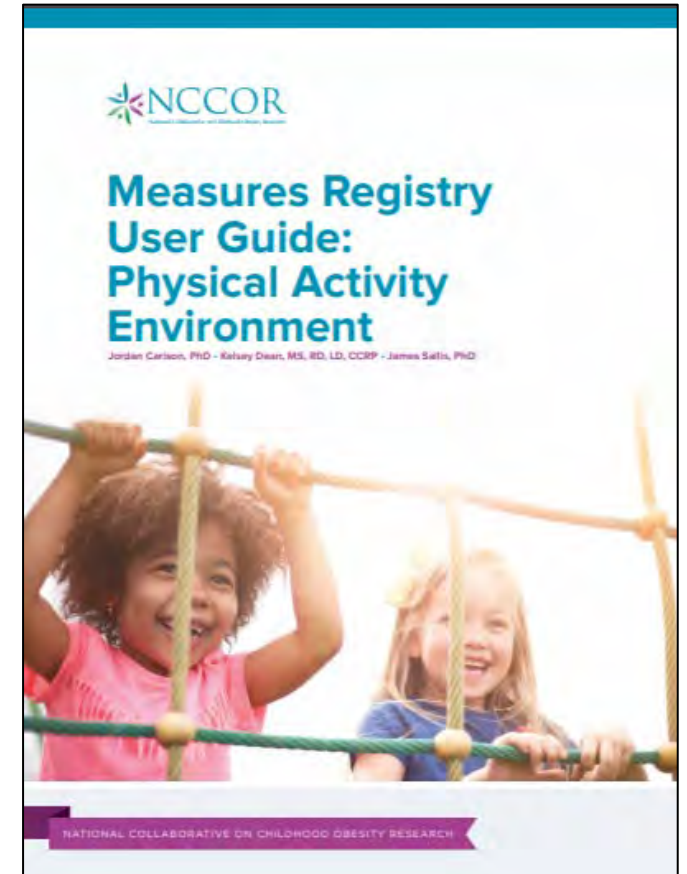
Individual Physical Activity

- A framework to understand the unique needs of different types of studies and an introduction to the various categories of physical activity assessment options
- A description of the complexities of quantifying physical activity
- The challenges involved in assessing a multi-dimensional and dynamic behavior
- Specific considerations for measuring physical activity in children
- Considerations related to calibrating activity monitors, interpreting differences in active versus sedentary behaviors, and using new monitoring and data collection technologies and more



Physical Activity Environment

- A rationale for assessing physical activity environments and defining the key physical activity environment settings
- Description of various methods for measuring the physical activity environment
- Methods of physical activity environment measurement across settings
- Principles related to psychometric properties of measures, along with distinctions between single and multi-item measures, response scales, and sensitivity to change



HOW TO USE THE RESOURCES SUITE



START with an overview of the domains by watching the **Measures Registry Learning Modules**



SELECT the domain(s) and review the corresponding **Measures Registry User Guides**

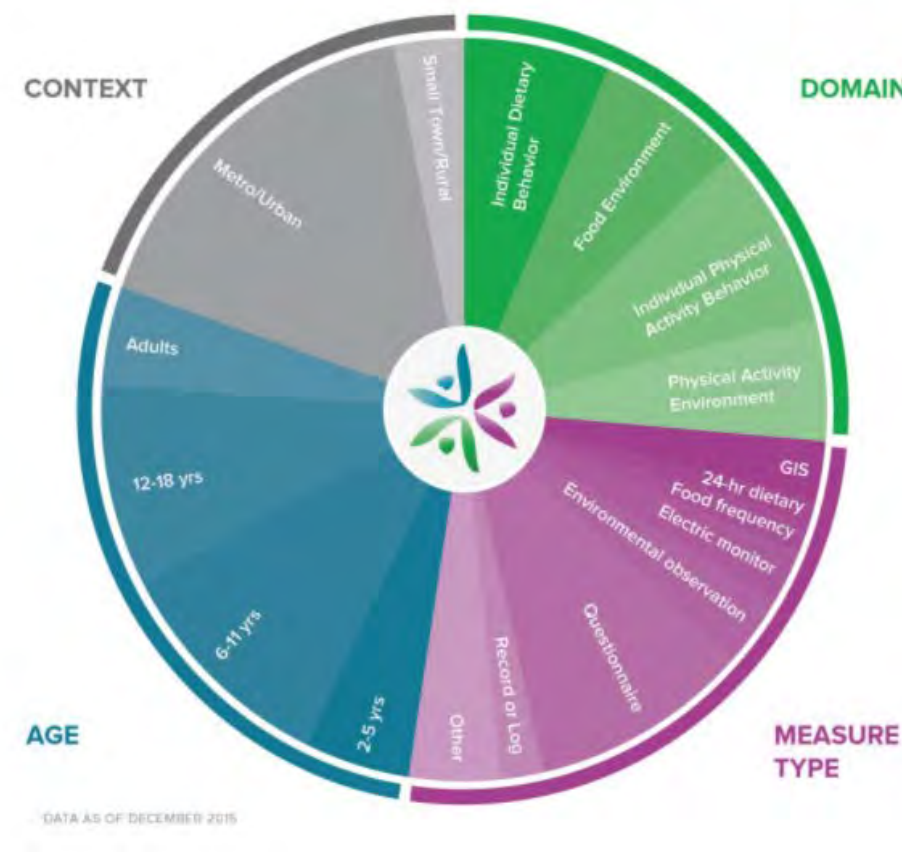


USE the **Measures Registry**, select the appropriate measure to address your research or evaluation question.

Measures Registry

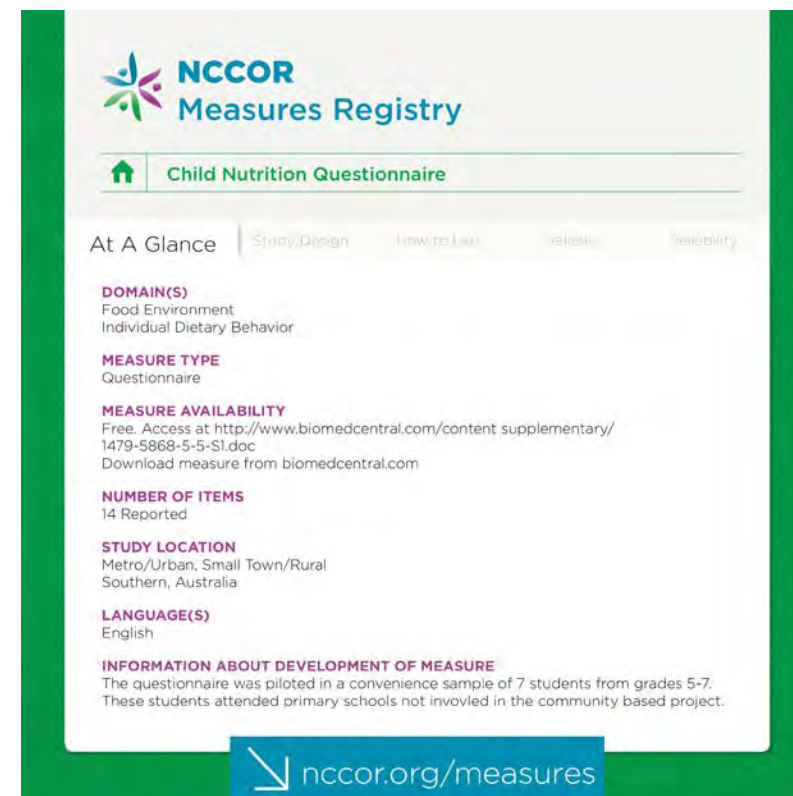
- Launched in 2011, the Measures Registry is a web-based portfolio of nearly 1400 studies using more than 100 discrete measures related to diet and physical activity.
- Search and Filter capabilities by:
 - Domain
 - Measures Type
 - Age
 - Urbanicity

www.nccor.org/measures/



At a glance

- The Measures Registry highlights
 - Type of measures available
 - Number of Items within measurement tools
 - Links to full text
- Measures are provided when available



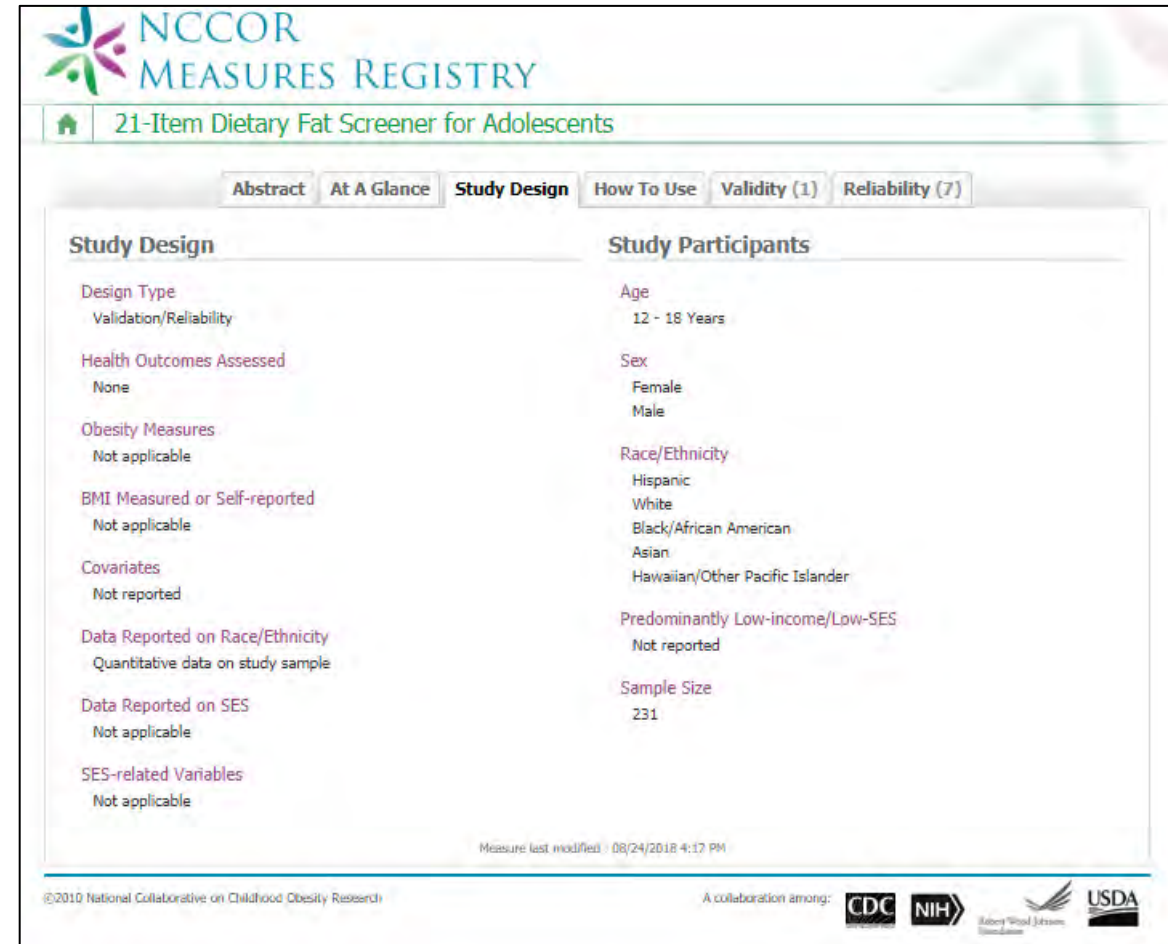
The screenshot shows the NCCOR Measures Registry interface. At the top is the NCCOR logo and the title 'Measures Registry'. Below this is a breadcrumb trail: 'Home > Child Nutrition Questionnaire'. A navigation bar contains tabs: 'At A Glance' (selected), 'Study Design', 'How to Use', 'Related', and 'Availability'. The main content area displays the following information:

- DOMAIN(S)**: Food Environment, Individual Dietary Behavior
- MEASURE TYPE**: Questionnaire
- MEASURE AVAILABILITY**: Free. Access at <http://www.biomedcentral.com/content/supplementary/1479-5868-5-5-S1.doc>. Download measure from biomedcentral.com
- NUMBER OF ITEMS**: 14 Reported
- STUDY LOCATION**: Metro/Urban, Small Town/Rural, Southern, Australia
- LANGUAGE(S)**: English
- INFORMATION ABOUT DEVELOPMENT OF MEASURE**: The questionnaire was piloted in a convenience sample of 7 students from grades 5-7. These students attended primary schools not involved in the community based project.

At the bottom right, there is a blue button with the text 'nccor.org/measures'.

Study Design

- Provides the following details on study design:
 - Design Type
 - Health Outcomes Assessed
 - Obesity Measures
 - BMI Measured or Self-Report
 - Covariates
- Further details study participants:
 - Age
 - Sex
 - Race/Ethnicity
 - Income level
 - Sample Size



The screenshot displays the NCCOR Measures Registry interface. At the top, the NCCOR Measures Registry logo is visible. Below it, the title "21-Item Dietary Fat Screener for Adolescents" is shown. A navigation bar includes tabs for "Abstract", "At A Glance", "Study Design" (which is selected), "How To Use", "Validity (1)", and "Reliability (7)". The main content area is divided into two columns: "Study Design" and "Study Participants".

Study Design	Study Participants
Design Type Validation/Reliability	Age 12 - 18 Years
Health Outcomes Assessed None	Sex Female Male
Obesity Measures Not applicable	Race/Ethnicity Hispanic White Black/African American Asian Hawaiian/Other Pacific Islander
BMI Measured or Self-reported Not applicable	Predominantly Low-income/Low-SES Not reported
Covariates Not reported	Sample Size 231
Data Reported on Race/Ethnicity Quantitative data on study sample	
Data Reported on SES Not applicable	
SES-related Variables Not applicable	

At the bottom of the page, there is a footer with the text "©2010 National Collaborative on Childhood Obesity Research" and "A collaboration among:" followed by logos for CDC, NIH, Every Child Matters, and USDA. A timestamp "Measure last modified: 08/24/2018 4:17 PM" is also present.

Additional information

- Reports on
 - How to Use the Measures
 - Including (when available) time required, training required, and data collection protocols, analysis instructions
 - Validity & Reliability
 - Including (when available) type, construct/subscale assessed, test/statistic used, and results

The screenshot shows the NCCOR Measures Registry interface. At the top is the NCCOR logo and the text "NCCOR MEASURES REGISTRY". Below this is a breadcrumb trail: "21-Item Dietary Fat Screener for Adolescents". A navigation bar contains tabs: "Abstract", "At A Glance", "Study Design", "How To Use", "Validity (1)", and "Reliability (7)". The "How To Use" tab is selected. The main content area is divided into two columns: "Administration" and "Data Analysis".

Administration	Data Analysis
Who Administered Self-administered	Data Collection/Analysis Costs Not available
How Administered In-person	Data Collection/Protocol Subjects completed the measure twice at an approximate interval of 2 weeks.
Time Required 5-10 minutes	Instructions on Data Analysis Instructions on analysis included in article
Training Required Not reported	
Instructions on Use Instructions on instrument use included in article	

At the bottom of the page, it says "Measure last modified : 08/24/2018 4:17 PM". The footer includes the copyright "©2010 National Collaborative on Childhood Obesity Research" and logos for "A collaboration among: CDC, NIH, Robert Wood Johnson Foundation, and USDA".

Examples of Included Measures

- Questionnaires
- Instruments
- Diaries
- Logs
- Electronic devices
- Direct observation of people or environments
- Protocols
- Analytic techniques

Additional Resources



Dr. Jordan Carlson Dr. Sharon Kirkpatrick Dr. Leslie Lytle Dr. Gregory Welk

MEASURES REGISTRY LEARNING MODULES:
Helping You Understand Measurement Concepts and Approaches for Diet and Physical Activity Research

WEDNESDAY, SEPTEMBER 18, 2019 | 3 - 4 PM ET

Individual Diet Fact Sheet

CASE STUDY EXAMINING IMPLICATIONS OF MODIFICATIONS TO FOODS OFFERED FOR SALE IN VENDING MACHINES WITHIN AN INSTITUTION

The following case study has been designed to illustrate considerations influencing the selection of the most appropriate measure(s) for a given study based on the research question, study design, and other characteristics. (See the full User Guide for additional case studies.)

Background: A project team wishes to assess intake of sugar-sweetened beverages and alternatives before and after changes to vending machine policies in an institution, such as a school, university, workplace, or recreation center. This is an intervention study involving swapping out of energy-dense choices within vending machines for more nutrient-dense options, including respecting local and energy drinks with water. Given a systems perspective, the intent may be to capture intake across settings to allow the project team to account for trade-off effects. For example, reduced consumption of sugary beverages at school may be offset by increased consumption in other settings.

Measure Selection: If the project team chooses a narrower focus, screeners could be used, which would reduce team and respondent burden but increase bias. This bias is less of an issue for items like sugar-sweetened beverages than for other dietary components (e.g., sugars, fruits, and vegetables) that are distributed throughout many contributing food and beverage sources. Screeners may be difficult for children, depending on cognitive abilities, to average intake over a long period of time.

If the team chooses a broader focus, a more comprehensive tool, such as 24-hour dietary recalls, food records, or food frequency questionnaires, is needed as such a tool allows interrogation of different aspects of the diet.

In this project, dietary intake is the outcome, and the study design is an intervention. As a result, respondents could potentially report differently after the intervention due to exposure to the intervention itself. However, given the environmental focus of the intervention (as opposed to nutrition education or counseling about reducing intake of energy-dense foods), this is unlikely unless the intervention is accompanied by an intensive marketing campaign. Nonetheless, the project team could complement the intake data with sales data from the vending machines. However, these data would be limited to the single setting within which the vending machines were modified; not to changes in consumption behaviors more broadly.

Considerations: The dietary behavior of interest could be conceptualized narrowly as intake of snacks and beverages, or broadly as the total diet. This would enable characterization of how the intervention relates to changes (if any) in sugar intake overall or diet quality more holistically. For example, reductions in soda consumption may be offset by increases in intake of juice or poultry in other foods or beverages.

In addition, intake could be conceptualized either as quantitative estimates, requiring weighing amounts consumed, or frequency of consumption of energy-dense snacks and beverages.

Depending on the target population within the institution of interest, investigators will need to consider whether self-reporting is possible. This will affect which measures can be selected. For example, self-administration is not possible for younger children.

May 2017 www.nccor.org • Email: measures@nccor.org

Individual Diet Resources

[Individual Diet User Guide](#)
[NCCOR Measures Registry](#)
[Using the Measures Registry](#)

[ASA24® Dietary Assessment Tool](#)

[ASA Method \(AMPM\)](#)
[Examination Survey \(NHANES\)](#)

Food Environment Glossary

Accelerometer: Instrument that captures motions by monitoring changes in acceleration.

BMI-z score: A value derived from the height and weight of an individual, often used to assess obesity risk. For assessing the height and weight of youth, a z score is used to facilitate comparison to a reference standard accounting for child age and sex.

Cohort design: A type of longitudinal study design used to collect measures from a cohort over time. A cohort is a single unit such as a group of people, a family, or a community.

Construct validity: The extent to which a measurement tool produces constructs that are related to other outcomes and constructs in ways that are consistent with theoretical expectations as they are existing and their perceptions.

...samples items from the full...

...produces data that agree with the accurate instrument (the...



INTRODUCING THE MEASURES REGISTRY USER GUIDE: FOOD ENVIRONMENT TEACHING SLIDE DECK

NCCOR
National Collaborative on Childhood Obesity Research

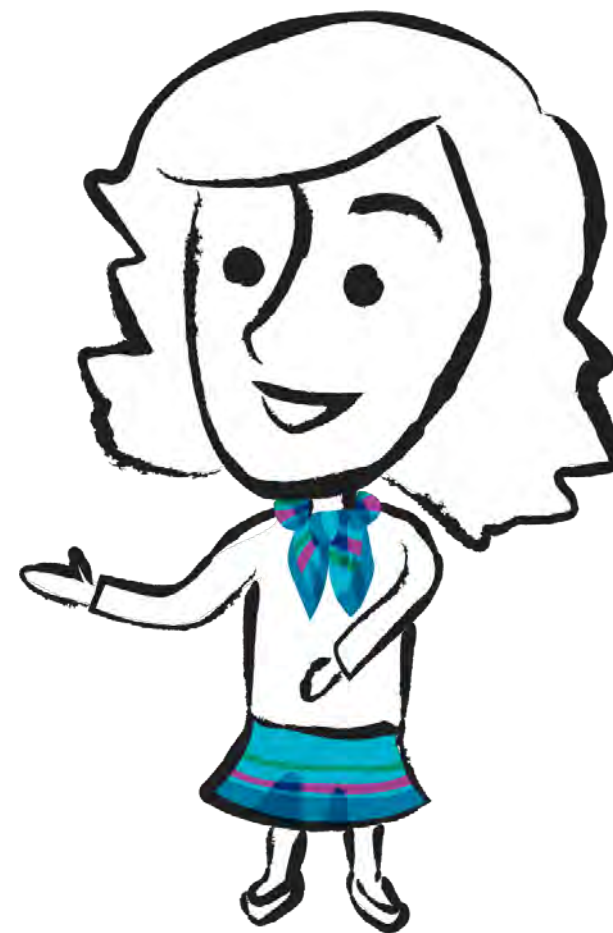
Questions?

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How to Use the Measures Registry in a Research Project

Nurgul Fitzgerald, PhD, RDN

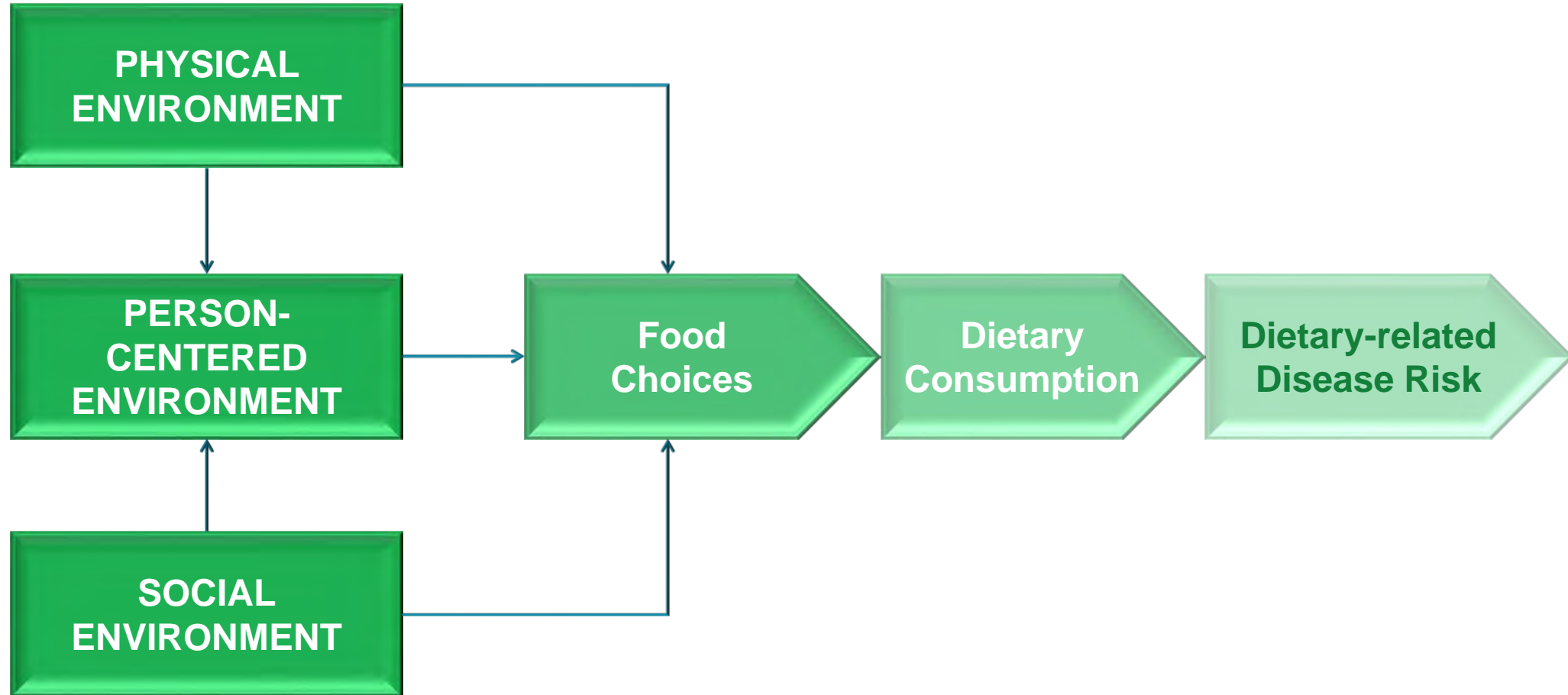
Associate Professor

Rutgers, The State University of New Jersey

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Conceptual Model of Environmental Factors Related to Dietary Disease Risk





PHYSICAL ENVIRONMENT

- Home
- Childcare, preschool, school, and community venues
- Stores and restaurants

1. How many and what types of food venues are present?
2. What foods are available?
3. What foods are accessible?
4. What health-related information is present?



SOCIAL ENVIRONMENT

- Youths – peers
- Parents
- Teachers
- Other adults

1. Social support for healthy food choices
2. Role modeling or social expectation of food choice, eating behavior
3. Food choice incentives or rewards
4. Policies, practices, or rules about eating behavior

PERSON-CENTERED ENVIRONMENT

1. Perceptions of the physical environment
 - Availability, access
 - Affordability
 - Acceptability of product
2. Perceptions of the social environment
 - Social norms
 - Social support
 - Perceptions of policies, rules
 - Perceptions of cultural appropriateness



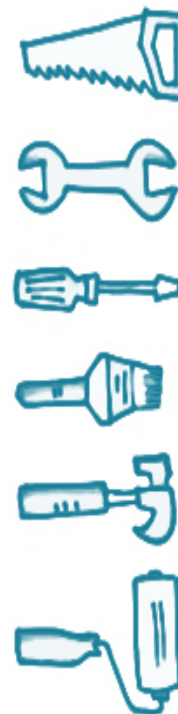
Measuring Food Environment

PHYSICAL ENVIRONMENT

SOCIAL ENVIRONMENT

PERSON- CENTERED ENVIRONMENT

- Geo-spatial analyses (GIS)
- Observational assessments (audits)
 - Example: NEMS
- Interviews, questionnaires
 - School Health Policy and Practice Survey
 - CATCH Health Behavior Questionnaire
 - Many others available



HOW TO USE THE RESOURCES SUITE



START with an overview of the domains by watching the **Measures Registry Learning Modules**



SELECT the domain(s) and review the corresponding **Measures Registry User Guides**



USE the **Measures Registry**, select the appropriate measure to address your research or evaluation question.

Before you begin the measurement selection in the Registry

Clear understanding of

- Project aim
- Population to study, sample size
- Logistics:
 - Access, staff availability, budget and time constraints
- Outcomes of interest

Measuring the physical, social, and person-centered aspects of the food environment

Physical, social, and person-centered aspects of the food environment

Assessing the physical environment: GIS

Assessing the physical environment: Observational scans

Assessing the physical environment: Opportunities and challenges

Other considerations: Reliability, validity, and age appropriate tools

Check Your Knowledge

Summary

Assessing the physical environment: Opportunities and challenges

Geographic Information Systems (GIS)



PROS

- Data collection is fairly objective
- Data can be pulled and aggregated efficiently
- Data can be portrayed visually in highly effective ways



CONS

- Analytic expertise is required
- Store and restaurant data are often outdated
- Data affecting availability and accessibility are not included
- Does not account for various factors that influence where people shop for food or eat
- Relationship between food availability and diet-related health is difficult to demonstrate

Observational scans



PROS

- Training data collectors is required, but is fairly easy to do
- Data analysis is straightforward
- Can provide feedback to stakeholders quickly



CONS

- May be difficult to find an existing scan to meet specific project needs
- Adapted scans or newly created scans will need to be evaluated for practicality, reliability, and validity

Before you begin the measurement selection in the Registry

Clear understanding of

- Project aim
- Population to study, sample size
- Logistics:
 - Access, staff availability, budget and time constraints
- Outcomes of interest
- Psychometric characteristics: reliability, validity

Two Critical Features of Measures

RELIABILITY

- Do two independent observers record data similarly?
(inter-rater)
- Consistency over time
(test-retest)
- Multiple questions designed to measure the same concept: do they?
(internal consistency)

VALIDITY

- Does the measure seem to assess the intended factor of interest?
(face validity)
- How does the measure perform in comparison to a gold standard?
(criterion validity)
- Does the instrument include all of the relevant aspects of the measure of interest?
(content validity)
- Is the measure related to other factors in the expected direction?
(construct validity)

Measuring the physical, social, and person-centered aspects of the food environment

Physical, social, and person-centered aspects of the food environment

▸ Assessing the physical environment

▸ Assessing the social environment

▸ Assessing the person-centered environment

Other considerations: Reliability, validity, and age appropriate tools

Check Your Knowledge

Summary

Other considerations: Reliability, validity, and age appropriate tools



- Abstract concepts will be difficult for many children
- Depending on reading level, surveys may need to be read
- Use the age filter in the Measures Registry
- Check the reliability and validity of tools

Reliability

Validity



[HOME](#) > [TOOLS](#) > MEASURES REGISTRY[A GUIDE TO METHODS FOR
ASSESSING CHILDHOOD
OBESITY](#)[CATALOGUE OF
SURVEILLANCE SYSTEMS](#)[MEASURES REGISTRY
RESOURCE SUITE](#)[YOUTH COMPENDIUM OF
PHYSICAL ACTIVITIES](#)

WHAT'S HAPPENING IN NCCOR NEWS

National Institutes of Health releases
strategic plan to accelerate nutrition
research over next 10 years

¡NUEVO! Traducción al Español del
Compendio de actividades físicas para
niños, niñas y adolescentes de NCCOR

NEW! Spanish Translation of NCCOR's
Youth Compendium of Physical
Activities

Childhood Obesity Resources Related
to COVID-19

Measures Registry

The Measures Registry is a searchable database of diet and physical activity measures relevant to childhood obesity research. Its purpose is to standardize use of common measures and research methods across childhood obesity research at the individual, community, and population levels.

Measures are tools and methodologies used to assess individuals' diet, physical activity, and the environments in which these behaviors occur. Examples of measures include questionnaires, instruments, diaries, logs, electronic devices, direct observations of people or environments, protocols, GIS and analytic techniques.

Even with the Measures Registry, however, it can be challenging for users to choose the most appropriate measures for their work. Therefore, to aid users in choosing measures for their work in childhood obesity, NCCOR developed the Measures Registry User Guides. Organized by the same four domains as the Measures Registry, the User Guides are designed to provide an overview of measurement, describe general principles of measurement selection, present case studies that walk users through the process of using the Measures Registry to select appropriate measures, and direct researchers and practitioners to additional resources and sources of useful information.

[SEARCH THE REGISTRY](#)[ACCESS THE USER GUIDES](#)

EXPLORE MORE RESOURCES

- [NCCOR Student Resources Guide](#)

Measures Registry

Filter options

[clear filter]

Search

Contains

Domain

- ☐ Individual Dietary Behavior (1)
- ☐ Food Environment (76)
- ☐ Individual Physical Activity Behavior (2)
- ☐ Physical Activity Environment (10)

Measure Type

- ☐ GIS (25)
- ☐ 24-hour dietary recall (0)
- ☐ Food frequency (0)
- ☐ Electronic monitor (0)
- ☐ Environmental observation (30)
- ☐ Questionnaire (11)
- ☐ Record or log (4)
- ☐ Other (27)

Age

- ☐ 2 - 5 Years (7)
- ☐ 6 - 11 Years (21)
- ☐ 12 - 18 Years (19)
- ☐ Adults (9)

Context

- ☐ Metro/Urban (68)
- ☐ Small Town/Rural (22)

Results

Showing all 76 matching measures

[Limit to 25 per page](#)

Measure Name 	First Author	Year Published	Compare
Analyses of Food Stores and Neighborhood Characteristics	Powell LM	2007	
 Availability and Quality of Foods in Grocery Stores	Kipke MD	2007	
BMI and Food Outlet Access Methodology	Sturm R	2005	
 Block Urban Area Market Basket Survey	Block D	2006	
China Urban Built Environment Scan Tool (CUBEST)	Su M	2014	
Community Supermarket and Other Food Stores Measure	Morland K	2006	
Community and Home Food Environments for 5 to 18 Year Olds	Ding D	2012	
Convenience Stores Surrounding Junior High and High Schools	Gebauer H	2011	
Corner Stores in Proximity to Schools Food Environment	Lucan SC	2010	
EURO-PREVOB Community Questionnaire for Food and Built Environments	Pomerleau J	2013	
Environmental Beverage Consumption Factors for School-Aged Children	Pabayo R	2012	
Farmers' Market Audit Tool (F-MAT)	Byker Shanks C	2015	
Fast Food Restaurant and Convenience Store Accessibility for Schools	Sánchez BN	2012	
Fast Food and Convenience Store Proximity to Schools	Smith D	2013	
Food Availability Survey	Horowitz CR	2004	
Food Costs for Adolescents	Powell LM	2011	
Food Environment Classification Tool for Newcastle upon Tyne	Lake AA	2010	
Food Environment Factors for 11 to 13 Year Olds	He M	2012	

Measures Registry

Filter options

[clear filter]

Search ?

Contains

Domain ?

- ☐ Individual Dietary Behavior (0)
- ☒ Food Environment (29)
- ☐ Individual Physical Activity Behavior (0)
- ☐ Physical Activity Environment (4)

Measure Type ?

- ☐ GIS (3)
- ☐ 24-hour dietary recall (0)
- ☐ Food frequency (0)
- ☐ Electronic monitor (0)
- ☒ Environmental observation (29)
- ☐ Questionnaire (1)
- ☐ Record or log (3)
- ☐ Other (8)

Age ?

- ☐ 2 - 5 Years (1)
- ☐ 6 - 11 Years (4)
- ☐ 12 - 18 Years (4)
- ☐ Adults (0)

Context ?

- ☒ Metro/Urban (29)

Results

Limit to 25 per page

Showing all 29 matching measures

Measure Name ▲	First Author	Year Published	Compare
 Availability and Quality of Foods in Grocery Stores	Kipke MD	2007	<input checked="" type="checkbox"/>
 Block Urban Area Market Basket Survey	Block D	2006	<input type="checkbox"/>
China Urban Built Environment Scan Tool (CUBEST)	Su M	2014	<input type="checkbox"/>
Corner Stores in Proximity to Schools Food Environment	Lucan SC	2010	<input type="checkbox"/>
EURO-PREVOB Community Questionnaire for Food and Built Environments	Pomerleau J	2013	<input type="checkbox"/>
Food Availability Survey	Horowitz CR	2004	<input type="checkbox"/>
Food Environment Classification Tool for Newcastle upon Tyne	Lake AA	2010	<input type="checkbox"/>
Food Environment Survey for Adolescents	Hua J	2014	<input type="checkbox"/>
Food Establishments Relative to Location of Schools (Spatial Analysis)	Kipke MD	2007	<input type="checkbox"/>
 Food Store Survey	Hosler AS	2006	<input type="checkbox"/>

Compare 6 measures



Nutrition Env...dy (NEMS) score	X
Frank L	2006
Nutrition Env...r Retail Stores	X
Glanz K	2007
Nutrition Envi...WIC Recipients	X
Andreyeva T	2012
Survey Tool for Food Stores	X
Hosler AS	2011
Price, Availab...and Vegetables	X
Winkler E	2006
Availability ... Grocery Stores	X
Kipke MD	2007



Comparing Measures

	X	X	X	X	X	X
Show empty rows	Availability and Quality of Foods in Grocery Stores ▶	Nutrition Environment Measures Study (NEMS) score ▶	Nutrition Environment Measures Study (NEMS-S) for Retail Stores ▶	Nutrition Environment Measures Survey in Stores (NEMS-S) Survey for WIC Recipients ▶	Price, Availability, and Variety of Fruit and Vegetables ▶	Survey Tool for Food Stores ▶
Domain						
Food Environment	✓	✓	✓	✓	✓	✓
Measure Type						
GIS	✓					
Environmental observation	✓	✓	✓	✓	✓	✓
Record or log				✓		
Other	✓					
Available Info						
Validity	✓	✓	✓	✓	✓	✓
Reliability	✓	✓	✓	✓	✓	✓
Instrument	✓		✓		✓	
Age						
Sex						
Race/Ethnicity						
Hispanic	✓					
Black/African American			✓			✓
Language						
English		✓	✓		✓	✓
Context						
Metro/Urban	✓	✓	✓	✓	✓	✓
Small Town/Rural				✓		



[Abstract](#) [At A Glance](#) [Study Design](#) [How To Use](#) [Validity \(2\)](#) [Reliability](#)

Citation

Glanz K, Sallis JF, Saelens BE, Frank LD. Nutrition Environment Measures Survey in stores (NEMS-S): development and evaluation. Am J Prev Med 2007 Apr;32(4):282-9.

Abstract

BACKGROUND: Eating, or nutrition, environments are believed to contribute to obesity and chronic diseases. There is a need for valid, reliable measures of nutrition environments. This article reports on the development and evaluation of measures of nutrition environments in retail food stores.

METHODS: The Nutrition Environment Measures Study developed observational measures of the nutrition environment within retail food stores (NEMS-S) to assess availability of healthy options, price, and quality. After pretesting, measures were completed by independent raters to evaluate inter-rater reliability and across two occasions to assess test-retest reliability in grocery and convenience stores in four neighborhoods differing on income and community design in the Atlanta metropolitan area. Data were collected and analyzed in 2004 and 2005.

RESULTS: Ten food categories (e.g., fruits) or indicator food items (e.g., ground beef) were evaluated in 85 stores. Inter-rater reliability and test-retest reliability of availability were high: inter-rater reliability kappas were 0.84 to 1.00, and test-retest reliabilities were .73 to 1.00. Inter-rater reliability for quality across fresh produce was moderate (kappas, 0.44 to 1.00). Healthier options were higher priced for hot dogs, lean ground beef, and baked chips. More healthful options were available in grocery than convenience stores and in stores in higher income neighborhoods.

CONCLUSIONS: The NEMS-S tool was found to have a high degree of inter-rater and test-retest reliability, and to reveal significant differences across store types and neighborhoods of high and low socioeconomic status. These observational measures of nutrition environments can be applied in multilevel studies of community nutrition, and can inform new approaches to conducting and evaluating nutrition interventions.

Full Text

The full text is available at <https://dx.doi.org/10.1016/j.amepre.2006.12.019>

Measure last modified : 08/24/2018 4:16 PM

[Abstract](#) [At A Glance](#) [Study Design](#) [How To Use](#) [Validity \(2\)](#) [Reliability \(4\)](#)

Domain(s)

Food Environment

Measure Type

Environmental observation

Measure Availability

Free. Access at the appendix to the article at [American Journal of Preventative Medicine](#).

[Download measure from riskfactor.cancer.gov](#)

Number of Items

93 Reported

Study location

Metro/Urban

Atlanta, GA, USA

4 neighborhoods (each a census tract)

Languages

English

Information about Development of Measure

Nothing to add

▼ Food Environment Variables

#	Type of Environment/Institution
88	Total Environments/Locations
64	Convenience/Corner Store
24	Grocery Store

Measure	objective	perceived
Affordability/Pricing	✓	X
Availability/Access	✓	X
Food Quality	✓	X

Food Group/Type of Food

Fruits and vegetables

Low-fat dairy

Whole grains

Foods of minimal nutritional value

Sweetened beverages

Meat/fish/poultry/eggs

Low-fat foods other than dairy

Measure last modified : 08/24/2018 4:16 PM

[Abstract](#)
[At A Glance](#)
[Study Design](#)
[How To Use](#)
[Validity \(2\)](#)

Study Design

Design Type

Validation/Reliability

Health Outcomes Assessed

None

Obesity Measures

Not applicable

BMI Measured or Self-reported

Not applicable

Covariates

Not reported

Data Reported on Race/Ethnicity

Quantitative data for community or area

Data Reported on SES

Quantitative data on study sample

SES-related Variables

Income

Study Participants

Age

Not applicable

Sex

Not applicable

Race/Ethnicity

Black/African American

Predominantly Low-income/L

Yes

Sample Size

Not Available

Measure last modified : 08/24/2018 4:16 PM

[Abstract](#)
[At A Glance](#)
[Study Design](#)
[How To Use](#)
[Validity \(2\)](#)
[Reliability \(4\)](#)

Administration

Who Administered

Researcher-administered

How Administered

In-person

Time Required

41.8 (SD 14.4) minutes for grocery stores and 14.4 (SD 5.3) minutes for convenience stores

Training Required

Yes, time reported: 2 days

Instructions on Use

Access at the appendix to the article at [American Journal of Preventative Medicine](#).

Data Analysis

Data Collection/Analysis Costs

Not available

Data Collection/Protocol

Not available

Instructions on Data Analysis

Access at the appendix to the article at [American Journal of Preventative Medicine](#).

Measure last modified : 08/24/2018 4:16 PM



Nutrition Environment Measures Study (NEMS-S) for Retail Stores

[Abstract](#)[At A Glance](#)[Study Design](#)[How To Use](#)[Validity \(2\)](#)[Reliability \(4\)](#)

Type of reliability	Construct/subscale assessed	Test/statistic used	Result
Inter-rater	Food availability	Kappas, percent agreement	Kappas were 0.83 to 1.00 and rates of agreement were from 92.9% to 100%
Inter-rater	Quality across fresh produce	Kappas, percent agreement	Kappas were 0.44 to 1.00 and rates of agreement were from 85.3% to 100%
Test-retest	Food availability	Kappas, percent agreement from 86.6% to 100%	Kappas were 0.73 to 1.00 and rates of agreement were from 90.2% to 100%
Test-retest	Quality across fresh produce.	Kappas, percent agreement	Kappas were 0.11 to 1.00 and rates of agreement were from 76% to 100%

In summary

1. Finding the appropriate measurement tool is essential in any research project or program evaluation.
2. Be certain the tool you choose meets the needs of your project and is appropriate for your population.
3. Look for one that has *some* demonstrated reliability and validity, and try to contribute to reliability and validity.
4. Choose a tool that will provide the most rigorous measure within your project resources.
5. There is no PERFECT tool! Do the best you can.

Sources: NCCOR Measures Registry Learning Modules and Teaching Slide Deck (www.nccor.org); Lyle & Myers (2017) Measures Registry User Guide.

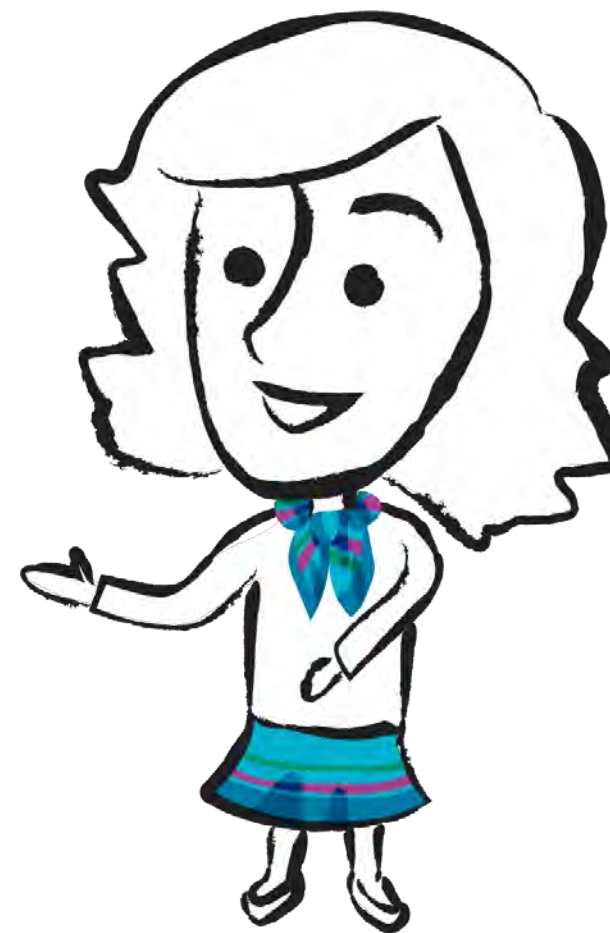
Questions?

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Using the Measures Registry Resource Suite in the Classroom

Alisha Farris, PhD, RDN

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Applicable *Courses* for the NCCOR Measures Registry

- Community Assessment
- Community Research



Case Study: Community Health Assessment Course

- Graduate level
- Course goal:
 - develop skills to *assess community health status and resources* in rural and global settings
- Selected course objectives:
 - utilize qualitative, quantitative, and mixed methods to conduct a health assessment on a county in North Carolina
 - assess current and future community-level needs for keeping the public healthy

County Health Assessment Project



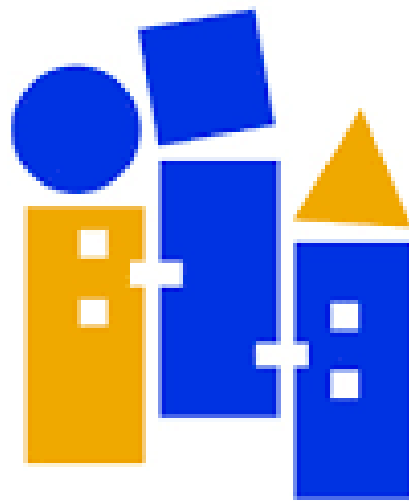
Photo from: <https://www.healthycommunities.org/resources/community-health-assessment-toolkit>

Community Health Assessment Assignment



COMMUNITY TOOL BOX

<https://ctb.ku.edu/en>



Association for
**Community Health
Improvement™**

<https://www.healthycommunities.org/resources/community-health-assessment-toolkit>

CASE STUDY CLASS ASSIGNMENT: COMPARING MEASURES OF PHYSICAL ACTIVITY ENVIRONMENT IN A LOCAL PARK.



INTRODUCING THE MEASURES REGISTRY USER GUIDE: FOOD ENVIRONMENT TEACHING SLIDE DECK



MEASURES REGISTRY, USER GUIDES, AND LEARNING MODULES A SUITE OF RESOURCES FOR PROFESSORS

Looking for tools and resources designed and developed by other experts in the field to make research and teaching easier? Look no further than NCCOR's Measures Registry, User Guides, and Learning modules—a suite of free tools that can support faculty within and outside of the classroom. The Measures Registry is an online database of articles with measures of individual diet and physical activity and their environments, and the User Guides and Learning Modules provide an overview of measurement and describe general principles of measure selection.



<https://www.nccor.org/wp-content/uploads/2016/09/A-Suite-of-Resources-for-Professors.pdf>



Two Critical Features of Measures: Important in Environmental Measures as Well!

RELIABILITY

- Do two independent observers record data on the environment in a similar way? (inter-rater)
- Is there consistency over time in how the environment is assessed? (test-retest)
- Are items designed to measure the same aspect of the environment correlated? (internal consistency)

VALIDITY

- Does the measure used seem to assess the factor of interest? (face validity)
- Is the measure used related to a gold standard measure of the environment? (criterion)
- Do the items used to assess the environment include all of the relevant aspects of the environment? (content)
- Is the environmental measure related to other factors in expected directions? (construct)

List of Included Case Studies

- **Case Study 1:** Study to Evaluate a **School**-based Intervention on its Ability to Positively Influence the School Food Environment
- **Case Study 2:** Study to Evaluate a **Family**-based Intervention on Its Ability to Reduce BMI-z Scores in Obese Children
- **Case Study 3:** Intervention to Improve Healthy Eating Behaviors in Independent **Neighborhood** Restaurants
- **Case Study 4:** Study on Implementing a **Farmers Market**-based Obesity Treatment Program to Change Purchase and Eating Behaviors for Women and Children Enrolled in WIC/SNAP

Community Health Assessment Assignment

- Part 1: Describe your NC county and identify stakeholders
- Part 2: Define the purpose, goals and objectives of the assessment
- Part 3: Collect secondary data, plan for primary data
- Part 4: Analyze and interpret the data
- Part 5: Disseminate and agree on identified health priorities

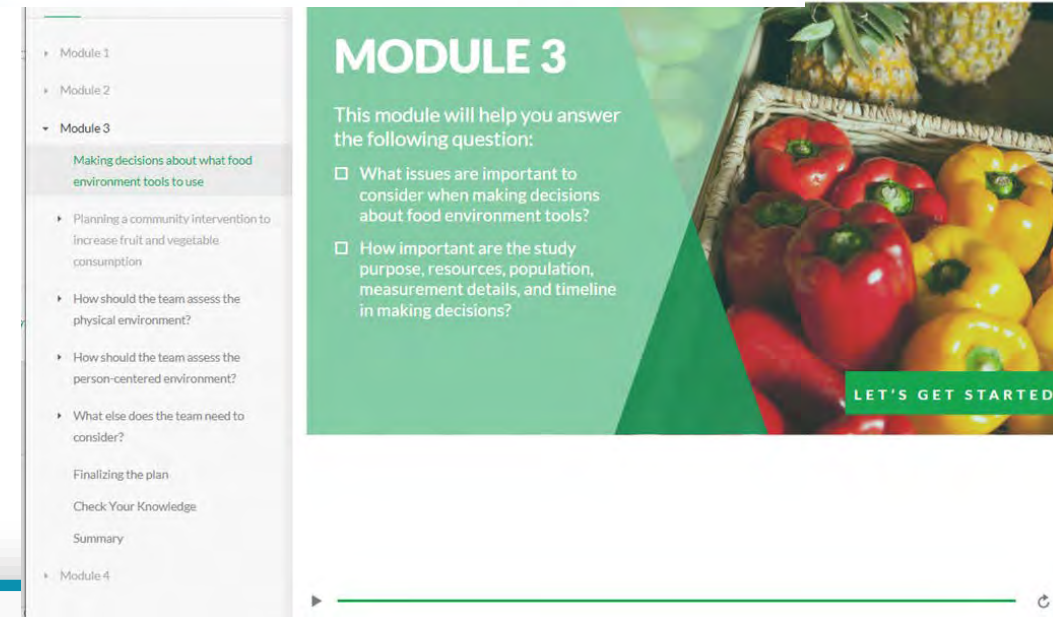
Part 3: Collect secondary data, plan for primary data

- Thorough review of secondary data
 - Surveillance systems, literature review
 - County, state, national levels
- Identification of gaps – what do they still need to know?
 - Plan for primary data collection

Part 3, Question 1:
What data do you still need to gather about your
NC County health issue/population?

Steps

- READ/WATCH:
 - Readings
 - NCCOR Measures Registry Video
 - NCCOR Food Environment, Module 3
 - https://www.nccor.org/wp-content/uploads/articulate_uploads/Food-Environment/story_html5.html



Part 3, Question 2 & 3:

Using the NCCOR website, find an appropriate tool for your population and health issue and list it below.

--Why did you choose this survey tool? Be sure to comment on:

- a) Validity and reliability
- b) Appropriate fit for your demographic
- c) Accessibility

- READ/WATCH:

- NCCOR Food Environment, Module 4
 - https://www.nccor.org/wp-content/uploads/articulate_uploads/Food-Environment/story_html5.html
- Dr. Farris, example using NCCOR



- Using the Registry
- Comparing potential measures
- Things to consider
 - Access and availability
 - Validity and reliability
 - Resources and time


MENU
TRANSCRIPT

Module 3

Module 4

- Evaluating a home-based intervention to reduce childhood obesity
- Case study introduction
- The focus of intervention strategies
- Assessing change in the food environment
- Using the Measures Registry**
- Comparing potential measures
- Decisions on measurement tools and other considerations
- Final study design
- Check Your Knowledge
- Summary

Using the Measures Registry to identify tools for assessing the home food environment



▶

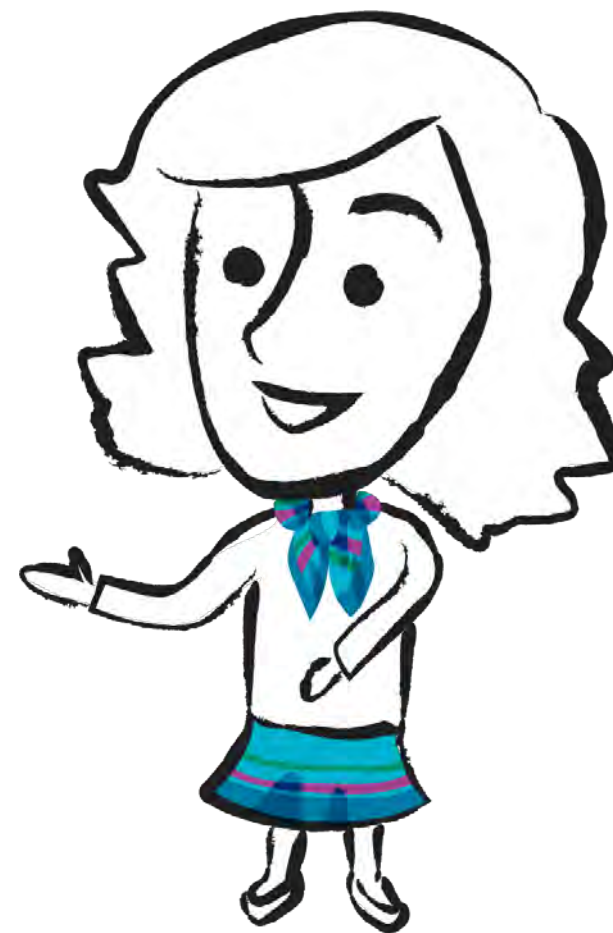
◀
▶
↺
◀ BACK

Adaptations

4. Did you include the whole survey or select only sections of it? Why or why not?
5. Are you planning on adapting the tool to fit your specific population needs? Why or why not?
6. How will you distribute this tool to your population? What things might you need to consider in reaching your population?

Questions?

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Appalachian State University
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NCCOR TOOLS

Our work is supporting researchers and practitioners with tools that help build the capacity for research and surveillance.



CATALOGUE OF SURVEILLANCE SYSTEMS

This interactive web tool provides one-stop access to a wide array of national, state, and local surveillance systems at multiple levels.

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Catalogue of Surveillance System



One-stop access to review, sort, compare over 100 surveillance systems relevant to childhood obesity research and the evaluation of policy and environmental interventions

- All offer publicly available data collected within the past 10 years in the U.S.
- Includes systems that contain data for evaluating policy and environmental interventions
- Makes manuscript development easier
- A great resource for teaching and for students
- Video overview of features and how to use
- Updated annually



Find the Catalogue at www.nccor.org/css

Youth Compendium of Physical Activities



A searchable tool of 196 common activities and the estimated energy cost associated with each activity

- Provides energy costs for sedentary activities, standing, household chores, playing in games and sports, walking, and running
- Reports energy expenditure levels in youth METs. A youth MET (METy) is a MET that has been adjusted to account for the unique physiological characteristics of children and adolescents.
- For use by a wide variety of people, including researchers, health care professionals, teachers and coaches, and fitness professionals
- Use for research, public health policy making, education, and interventions to encourage physical activity in youth
- Represents group-level estimates for energy expenditure



Find the Compendium at www.nccor.org/youthcompendium

Additional Resources



MEASURES REGISTRY LEARNING MODULES:

Helping You Understand Measurement Concepts and Approaches for Diet and Physical Activity Research

WEDNESDAY, SEPTEMBER 18, 2019 | 3 - 4 PM ET



Dr. Jordan Carlson Dr. Sharon Kirkpatrick Dr. Leslie Lytle Dr. Gregory Welk

Individual Diet Fact Sheet

CASE STUDY EXAMINING IMPLICATIONS OF MODIFICATIONS TO FOODS OFFERED FOR SALE IN VENDING MACHINES WITHIN AN INSTITUTION

The following case study has been designed to illustrate considerations influencing the selection of the most appropriate measure(s) for a given study based on the research question, study design, and other characteristics. (See the full User Guide for additional case studies.)

Background: A project team wishes to assess intake of sugar-sweetened beverages and alternatives before and after changes to vending machine policies in an institution, such as a school, university, workplace, or recreation center. This is an intervention study involving swapping out of energy-dense choices within vending machines for more nutrient-dense options, including respecting local and energy-dense items with water. Given a systems perspective, the intent may be to capture intake across settings to allow the project team to account for trade-off effects. For example, reduced consumption of sugary beverages at school may be offset by increased consumption in other settings.

Measure Selection: If the project team chooses a narrower focus, screeners could be used, which would reduce team and respondent burden but increase bias. This bias is less of an issue for items like sugar-sweetened beverages than for other dietary components (e.g., sugars, fruits, and vegetables) that are distributed throughout many contributing food and beverage sources. Screeners may be difficult for children, depending on cognitive abilities, to average intake over a long period of time.

If the team chooses a broader focus, a more comprehensive tool, such as 24-hour dietary recalls, food records, or food frequency questionnaires, is needed as such a tool allows interrogation of different aspects of the diet.

In this project, dietary intake is the outcome, and the study design is an intervention. As a result, respondents could potentially report differently after the intervention due to exposure to the intervention itself. However, given the environmental focus of the intervention (as opposed to nutrition education or counseling about reducing intake of energy-dense foods), this is unlikely unless the intervention is accompanied by an intensive marketing campaign. Nevertheless, the project team could complement the intake data with sales data from the vending machines. However, these data would be limited to the single setting within which the vending machines were modified; not to changes in consumption behaviors more broadly.

Considerations: The dietary behavior of interest could be conceptualized narrowly as intake of snacks and beverages, or broadly as the total diet. This would enable characterization of how the intervention relates to changes (if any) in sugar intake overall or diet quality more holistically. For example, reductions in soda consumption may be offset by increases in intake of juice or positivity in other foods or beverages.

In addition, intake could be conceptualized either as quantitative estimates, requiring weighing amounts consumed, or frequency of consumption of energy-dense snacks and beverages.

Depending on the target population within the institution of interest, investigators will need to consider whether self-reporting is possible. This will affect which measures can be selected. For example, self-administration is not possible for younger children.

May 2017 www.nccor.org • Email: measures@nccor.org

Individual Diet Resources

[Individual Diet User Guide](#)
[NCCOR Measures Registry](#)
[Using the Measures Registry](#)

[ASA24® Dietary Assessment Tool](#)
[ASA24® Method \(AMPM\)](#)
[Examination Survey \(NHANES\)](#)

Food Environment Glossary

Accelerometer: Instrument that captures motions by monitoring changes in acceleration.

BMI-z score: A value derived from the height and weight of an individual, often used to assess obesity risk. For assessing the height and weight of youth, a z score is used to facilitate comparison to a reference standard accounting for child age and sex.

Cohort design: A type of longitudinal study design used to collect measures from a cohort over time. A cohort is a single unit such as a group of people, a family, or a community.

Construct validity: The extent to which a measurement tool produces constructs that are related to other outcomes and constructs in ways that are consistent with theoretical expectations as they are existing and their perceptions.

...samples items from the full...

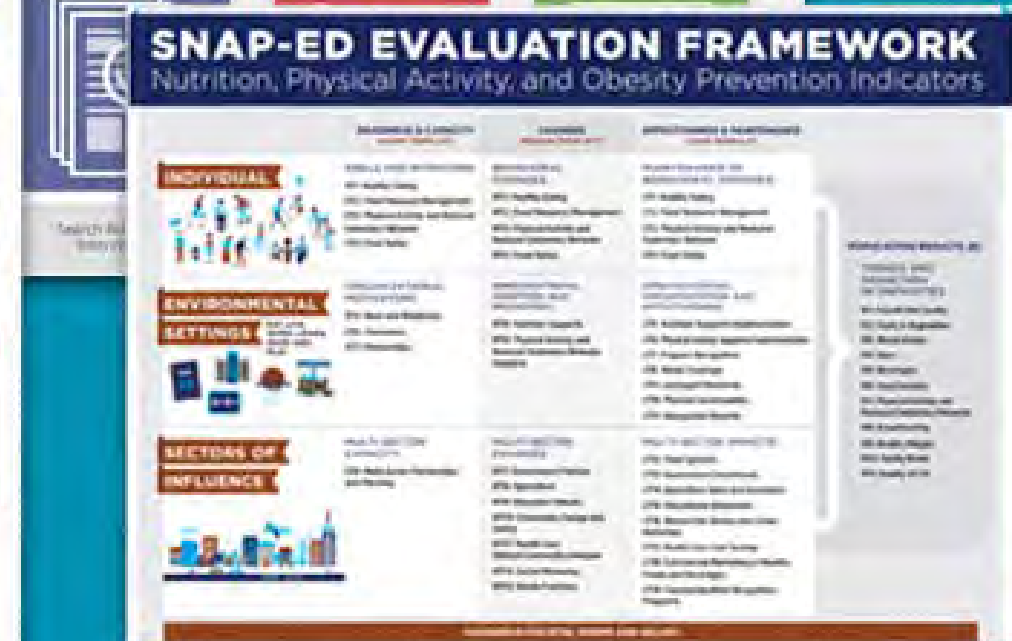
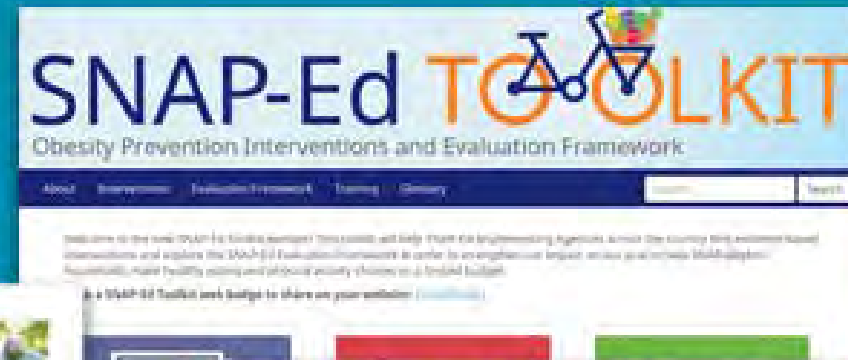
...produces data that agree with accurate instrument (the...

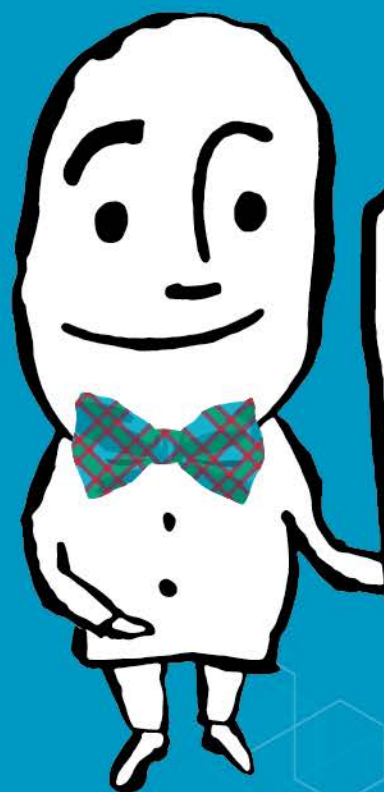


INTRODUCING THE MEASURES REGISTRY USER GUIDE: FOOD ENVIRONMENT TEACHING SLIDE DECK



NCCOR SNAP-Ed Resources





NCCOR

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**NCCOR's webinar series connects you
with experts and explores the latest
childhood obesity news and research.**



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#CONNECTEXPLORE

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the NCCOR
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THE NCCOR STUDENT HUB

Tools and resources for students studying diet and physical activity

Discover free tools and resources supported by CDC, NIH, USDA, and RWJF to help you with your coursework and research.

ADDITIONAL RESOURCES

- Student Resources Guide
- Professor Factsheet
- Q&A for Public Health Students

CHECK OUT THE NCCOR TOOLS

MEASURES REGISTRY RESOURCE SUITE

A suite of three tools: the Measures Registry, User Guides, and Learning Modules, that help users understand key measurement concepts and find appropriate measures for research and evaluation projects.


CATALOGUE OF SURVEILLANCE SYSTEMS

An easy to navigate, one-stop access to over 100 publicly available datasets relevant to childhood obesity research.

YOUTH COMPENDIUM OF PHYSICAL ACTIVITIES

A list of 796 common activities in which you participate and the estimated energy cost associated with each activity.

WATCH THE WEBINARS



NCCOR has a **Connect & Explore** webinar series that connects you with leading experts in the field on a variety of public health topics.


[See all webinars](#)

SIGN UP FOR THE STUDENT HUB

Our quarterly student e-newsletter connects you to free tools and resources that can support your schoolwork and research. Each newsletter will feature a case study of a student using one of the tools and will also share other childhood obesity events and resources.

Be sure to select **STUDENT** when signing up!

[Sign up for the e-newsletter](#)



SIGN UP for our student newsletter!
nccor.org/e-newsletter

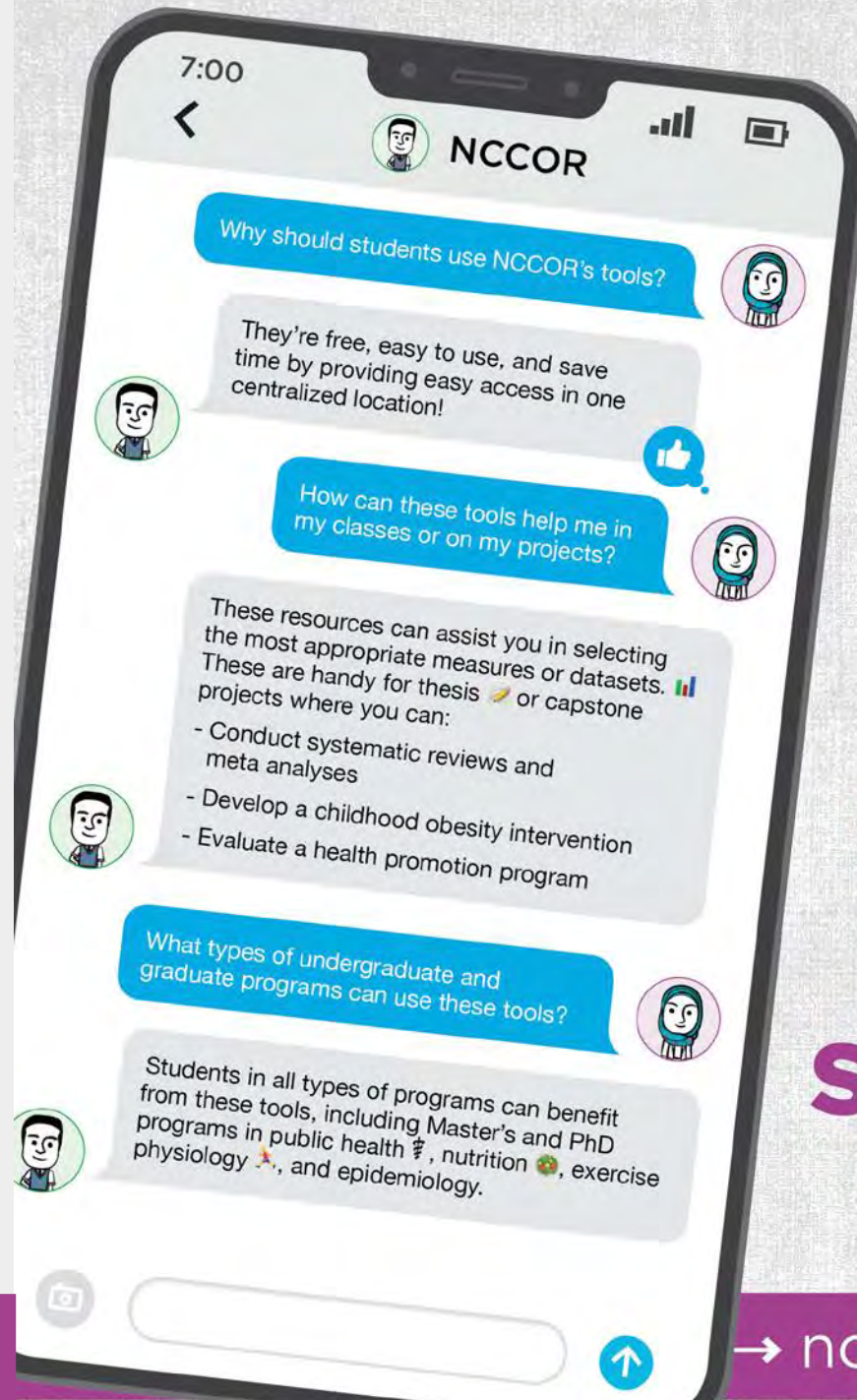
<https://www.nccor.org/student-hub/>

A high-angle photograph of three young children lying on their stomachs on a lush green lawn. The child on the left is a Black girl with a wide smile, wearing a pink and white striped shirt. The child in the center is a young girl with dark hair, also smiling, wearing a dark top. The child on the right is a white girl with her mouth open in a joyful expression, wearing a white shirt with black polka dots. The text 'Sign up!' is overlaid in large white letters at the top center.

Sign up!

NCCOR e-Newsletter

[NCCOR.org/enewsletter](https://nccor.org/enewsletter)



**Sign up for
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Student Hub!**

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NCCOR

National Collaborative on Childhood Obesity Research

Have you used any of NCCOR's tools?

- Let us know at nccor@fhi360.org and we may feature you in our next webinar or resource!



Questions?

