New and Upcoming Nutrition & Obesity Data Sets from CDC

State-of-the-Science Monthly Webinar
January 2022
CAPT Heidi Blanck, Branch Chief,
Chronic Disease Nutrition and Obesity Prevention and Control

New and Upcoming Nutrition & Obesity Data Sets from CDC -
A peak at what’s new

The findings and views presented are those of the presenters and do not represent the official views of CDC, DHHS, or the USPHS.
Data Modernization Initiative -- Clinical & Community Data Initiative (CODI)

Linking individual-level clinical & community data across time and space with privacy preserving linkages

- Health outcomes (obesity, diabetes) within EHRs
- Clinical & community interventions – captured through a variety of modes/platforms
- Community supports & services
- Social determinants of health (food insecurity)

→ Leading to new tools for research, evaluation, and surveillance
Longitudinal data

R package **growthcleanr** – cleans height and weight data from EHR systems

- **Utilizes algorithm by Carrie Daymont** et al.
- Identifies biologically implausible height and weight measurements
  - Based on longitudinal analysis & variations from published growth charts
  - Uses exponentially weighted moving average and additional techniques to classify errors for potential exclusion
  - Identifies true outliers and false inliers
  - Web-based interface; future User Guides to come in late 2022
- **Free/open source**: implementation guide, synthetic test data, tutorial development, [github.com/carriedaymont/growthcleanr](https://github.com/carriedaymont/growthcleanr)

*Daymont, C. “Automated identification of implausible values in growth data from pediatric electronic health records.” Journal of the American Medical Informatics Association*
### USE OF DYNAMO ALGORITHM 21.9M RECORDS OF CHILDREN'S HT/WT IQVIA

<table>
<thead>
<tr>
<th>Code</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
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<td>76.89%</td>
</tr>
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<td>4,355,358</td>
<td>19.89%</td>
</tr>
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<td>1.19%</td>
</tr>
<tr>
<td>EWMMA</td>
<td>229,750</td>
<td>1.05%</td>
</tr>
<tr>
<td>Exclude-Duplicate</td>
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<td>0.78%</td>
</tr>
<tr>
<td>Exclude-Too-Many-Errors</td>
<td>30,505</td>
<td>0.14%</td>
</tr>
<tr>
<td>Exclude-Max-Height-Change</td>
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<td>0.02%</td>
</tr>
<tr>
<td>Exclude-SD-Cutoff</td>
<td>4,874</td>
<td>0.02%</td>
</tr>
<tr>
<td>Exclude-Pair-Delta-17</td>
<td>2,606</td>
<td>0.01%</td>
</tr>
</tbody>
</table>

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**Tracking of obesity among 2- to 9-year-olds in an electronic health record database from 2006 to 2018**

David S Freedman, Alyson B Goodman, Raymond J King, Heidi M Blanck.
Morbidity and Mortality Weekly Report (MMWR), Sept. 17, 2021

Longitudinal Trends in Body Mass Index Before and During the COVID-19 Pandemic Among Persons Aged 2-19 Years –United States, 2018-2020

Samantha Lange, MPH; Lyudmyla Kompaniyets, PhD; David Freedman, PhD; Emily M. Kraus, PhD; Renee Porter, DNP; Heidi M. Blanck, PhD; Alyson B. Goodman, MD.
Methodology for stable estimates (CDC, NORC, MITRE, +)

Developing open source algorithms in SAS

for EHR estimates by:

State, 3-digit ZCTA, County & Local Geography – CODI

Provide researchers with data analysis options including:

Statistical Weights

Race/ethnicity Imputation

Age Adjustments

Adopted suppression criteria; https://www.cdc.gov/nchs/data/series/sr_02/sr02_175.pdf
Looking for the latest national and state data?

Data, Trends and Maps

- Interactive database with about 60 national and state-level health and behavior indicators and environmental or policy supports
- Nutrition Related Topics
  - Breastfeeding
  - Fruits and vegetables
  - Sugary drinks
  - Obesity and overweight
    - WIC: 0-2 high weight for length; 2-4 overweight and obesity
    - YRBS – Adolescent overweight & obesity; BRFSS – Adult obesity
- Data by demographics (sex, race/ethnicity, income, etc.)
Several ways to interact with our data

- Ready to use maps, bar charts, tables, comparison reports
- Download data or create your own graphics

Learn more about how to use this tool at Using this Site: Data, Trends and Maps | Data, Trends and Maps | DNPAO | CDC
Looking for more context about a topic?  
PSE + Behavior

State Indicator Reports

Breastfeeding  
Fruits/Vegetables  
ECE – Late 2022
The Research & Data subgroup reviewed the BRFSS Reactions to Race Module and identified opportunities to include additional questions. Below highlights the proposed questions, which are pending approval by OMB.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic stability</td>
<td>Lost employment or had hours reduced?</td>
</tr>
<tr>
<td>Food insecurity</td>
<td>Food you bought did not last, and you didn’t have money to get more?</td>
</tr>
<tr>
<td>Food assistance</td>
<td>Received food stamps or an EBT card?</td>
</tr>
<tr>
<td>Housing insecurity</td>
<td>Not able to pay your mortgage, rent or utility bills?</td>
</tr>
<tr>
<td>Housing insecurity</td>
<td>Electric, gas, oil, or water company threatened to shut off services?</td>
</tr>
<tr>
<td>Transportation</td>
<td>Lack reliable transportation kept you from medical appointments, meetings, work, or get things for daily living?</td>
</tr>
<tr>
<td>Social support</td>
<td>Get the social and emotional support you need?</td>
</tr>
<tr>
<td>Isolation</td>
<td>Feel isolated from others?</td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>Satisfied with your life?</td>
</tr>
</tbody>
</table>

1. Note: Questions have been shortened for presentation purposes. Questions are pending OMB approval.
The Research & Data subgroup reviewed the BRFSS Reactions to Race Module and identified opportunities to include additional questions. Below highlights the proposed questions, which are pending approval by OMB.

<table>
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<tr>
<th>Topic</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socially-assigned race</td>
<td>How do other people usually classify you in this country?</td>
</tr>
<tr>
<td>Race consciousness</td>
<td>How often do you think about your race?</td>
</tr>
<tr>
<td>Physical reaction</td>
<td>Physical symptoms as a result of how you were treated based on your race?</td>
</tr>
<tr>
<td>Emotional reaction</td>
<td>Emotionally upset as a result of how you were treated based on your race?</td>
</tr>
<tr>
<td>Health care</td>
<td>Seeking health care, do you feel your experiences were worse than, same, or better than people of other races?</td>
</tr>
<tr>
<td>Workplace</td>
<td>At work, do you feel you were treated worse than, same, or better than people of other races?</td>
</tr>
</tbody>
</table>

Up Next – Steve and Carrie

Help us keep America healthy and strong. See how at: cdc.gov/nccdphp/dnpao
Community Based Survey of Supports for Healthy Eating and Active Living (CBS-HEAL)

Stephen Onufrak, PhD
Epidemiologist, DNPAO, CDC

NOPREN State-of-the-Science Monthly Webinar: New and Upcoming Nutrition & Obesity Data Sets from DNPAO
January 10, 2022
Public Health Efforts for Nutrition and Physical Activity
Policy and Environmental Approaches

Selected IOM and CDC Strategies for Local Governments

- Support Healthy Food Retail
  - Zoning, Permitting, Incentives, Transportation Supports
  - Food Policy Councils
- Access to Farmers Markets
- WIC/SNAP Acceptance
- Nutrition Standards for Government Food Venues
- Free Drinking Water Access
- Breastfeeding Policies
- Built Environment to Support Active Transportation
- Access to Places for Recreational Physical Activity
CBS-HEAL Study Timeline

- 2010 – Convene Expert Panel of Local Government
- 2012 – Pilot CBS-HEAL Survey in Minnesota and California
- 2014 – 1st National CBS-HEAL Fielded
- 2019 – Planning begins for CBS-HEAL 2.0
- 2021 – CBS-HEAL 2.0 Fielded
- 2022 and beyond – Analyze CBS-HEAL 2.0 Data
2014 CBS-HEAL

- **CBS-HEAL Question Design**
  - Questions based largely on items from IOM and CDC reports with input from branches
  - Cognitively tested with potential survey respondents (city managers, planners, etc.)

- **CBS-HEAL Sample Design**
  - Sampling frame based on 2007 Census of Governments (COG) files
    - Minimum population size of 1,000
  - Stratified on census region and urban/rural status to create nationally representative
  - Survey of 4,484 municipalities from all 50 states
  - Response primarily through secure website with options for mailing paper survey
  - Final Sample = 2,232; Response Rate=50%
Selected Findings from 2014 CBS-HEAL

- 3% of US municipalities reported nutrition standards for foods sold or served by the government
- 56% had a community plan with a written objective to provide free drinking water in outdoor areas, and 59% had policies/budget provisions for free drinking water in parks/outdoor recreation areas
- 67% of municipalities reported incentives to support farmers' markets, 34% reported incentives to encourage opening new supermarkets, and 14% reported incentives to help existing convenience or corner stores
- 8% reported having a local or regional food policy council
- Of those with public transit, 33.8% considered food access in transportation planning.
2014 CBS-HEAL Manuscripts


2021 CBS-HEAL 2.0

- CBS 2.0 Question Revision
  - Questions revised based on 2014 results and SME input
  - New questions cognitively tested with potential survey respondents

- CBS 2.0 Sample Design
  - Same sampling methods as 2014 using 2017 Census of Governments
  - Survey sent to 4,417 municipalities
  - New ability to nominate colleagues to answer questions
  - Fielded June-September 2021; New Nomination Feature
  - Final Sample = 1982; Response Rate=45%
2021 CBS-HEAL 2.0

- Survey Content
  - Planning Documents and Objectives
  - Supports for Healthy Food Retail
  - Food Policy Councils
  - Supports for Farmers Markets
  - EBT for Farmers Markets
  - SNAP Incentive Programs for Healthy Foods
  - Food Service Guidelines
  - Drinking Water Access
  - Breastfeeding Supports
  - Public Transit/Transportation Supports for Healthy Food Access
  - Supports for Active Transport and Leisure PA
2021 CBS-HEAL 2.0

- Additional Linked Variables
  - Population size, region, rural/urban, education, race/ethnicity, income
  - Healthy food access (from USDA Food Atlas)
  - Commuting
  - Parks and Schools
  - Potential to link other external variables
Data Release Plans

- **Journal Supplement - 2022**
  - First batch of CBS-Heal 2.0 papers from CDC
  - Commentary from partner organizations

- **CBS-HEAL Webpage Coming**
  - Data will be available for public use approximately 2023

- **Stay Tuned for Research Opportunities Using 2021 CBS-HEAL Data!**
CDC PROJECT TEAM

Deborah Galuska/Latetia Moore/Ellen Yard (ADS Office)
Susan Carlson/John Omura/Jeff Whitfield (PAHB)
Carol MacGowan (Nutrition Branch)
Steve Onufrak (OPCB)
Thank You!

Steve Onufrak
seo5@cdc.gov
For more information please contact Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333
Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
Visit: www.cdc.gov | Contact CDC at: 1-800-CDC-INFO or www.cdc.gov/info

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.
THE IMPORTANCE OF EARLY CARE & EDUCATION (ECE)

- 21.1 million children birth to 5 years of age in US
- 12.5 million (3 in 5) are in care outside the home at least 1x week
- Center based care most common type
- Beneficial to understand policies and practices of ECE facilities for many reasons
- CDC funds and provides TA to state health departments for ECE activities
CDC-DNPAO SURVEILLANCE EFFORTS

- National Resource Center for Health & Safety in Child Care & Early Ed
  - Annual report: *Achieving a State of Health Weight (~2010-2020)*
  - Looks at how well state licensing regulations align with national obesity prevention recommendations for young children
  - CDC has created ECE Licensing Scorecards as a translation tool for states to understand their scores and areas for improvement
Early Care and Education State Indicator Report (2016, 2022)
A number of states (WA, NC, RI) have implemented their own surveys without consistent Q

The purpose of C-SAW

- Pilot a state-based surveillance system in ECE facilities (centers)
- Monitor and measure state-level progress in implementing nutrition, physical activity, and wellness policies
- Assess state lists, state engagement strategies, feasibility, response rates

Goal of C-SAW:

- To provide representative data for each state and provide CDC, federal partners, states, and others to track progress toward implementation of the national standards
- Identify gaps and successes in implementing national standards

Study population

- ECE center-based programs serving children 0-5 years in 4 states
• Contract awarded to Westat (2017) to get expert input, design & carry out a pilot survey in 4 states
• Survey was created and cognitively tested (2018-2019)
• OMB approved in 2019
• Sample drawn and scheduled to be in the field March 17, 2020 which was exactly when COVID was declared a global pandemic and thus delayed
• OMB approval expired and then re-approved in 2021
• Sample re-drawn
• In the field from April 15 to June 29, 2021 during the pandemic
A survey instrument was developed to collect information on nine topic areas:
- Program descriptors (e.g., ages served, number of children enrolled, full- and/or half-day program)
- Nutrition
- Physical activity
- Screen time
- Staff training
- Activities to improve nutrition and physical activity offerings
- Tracking developmental progress
- Discipline
- Impact of coronavirus (COVID-19) on the ECE program
PILOT STATES AND SAMPLE FRAME

- Four pilot states: Arizona, Florida, Ohio, and New York
- States selected purposely with different state licensing structures to maximize what can be learned from the pilot about sample frame construction
- C-SAW Team met with officials from each state (typically DOH) to engage them as partners in the pilot and request their assistance in obtaining an up-to-date list of ECE center based programs in each state
  - Number of lists varied by state – some only had 1 that was updated monthly and publicly available others had 4
  - Final sampling frame consisted of a complete list of all the eligible center based ECEs
- Stratified systematic sampling used to select survey participants;
  - Stratification was based on license status – licensed or legally operating but license exempt
  - With in the strata, the sampling units were sorted by urbanicity and enrollment capacity and selected with equal probabilities
- Data was weighted to be representative
SURVEY DISTRIBUTION

- EACH ECE SENT A RECRUITMENT LETTER AND LINK TO COMPLETE SURVEY ONLINE
- SENT A REMINDER POSTCARD 2 WEEKS LATER; 4 WEEKS LATER REMINDER AND PAPER COPY OF SURVEY
- STATE AGENCIES/PARTNERS ALSO SENT OUT MAILERS, EMAILS, SOCIAL MEDIA POSTS TO PROMOTE/ENCOURAGE ECES TO COMPLETE THE SURVEY (ACTIVITIES VARIED BY STATE)
### SAMPLE SIZE AND RESPONSE RATES

- 75% of respondents filled out web survey and 25% on paper
- Undeliverable
  - Sixteen of the 33 (48.5%) of the recruitment mailings to the Tribal HS/EHS programs and 5.9% of those sent to ECEs in states were returned as undeliverable
- 75% said they completed it in less then 30 min
- 92% said the survey was easy or very easy

<table>
<thead>
<tr>
<th>State</th>
<th>Sample Size</th>
<th>Completed Surveys</th>
<th>Ineligible*</th>
<th>Response Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AZ</td>
<td>289</td>
<td>77</td>
<td>1</td>
<td>27.0</td>
</tr>
<tr>
<td>FL</td>
<td>299</td>
<td>58</td>
<td>3</td>
<td>20.4</td>
</tr>
<tr>
<td>NY</td>
<td>400</td>
<td>56</td>
<td>0</td>
<td>14.0</td>
</tr>
<tr>
<td>OH</td>
<td>296</td>
<td>57</td>
<td>2</td>
<td>19.9</td>
</tr>
<tr>
<td>Tribal HS programs</td>
<td>33</td>
<td>1</td>
<td>0</td>
<td>3.0</td>
</tr>
</tbody>
</table>
PRELIMINARY DATA

- We had a mix of ECE sizes – AZ example: small (~32%), medium (46%) and large (20%)
- Public funding (public pre-k, subsidy, Head Start)
  - 81% in AZ
  - 84% in FL
  - 63% in NY
  - 69% in OH
- Participated in CACFP
  - 43% in AZ
  - 56% in FL
  - 42% in NY
  - 45% in OH
- Most common reason for not participating was that they had not heard of the program
- Majority provided the meals/snacks (vs being brought from home)
## KEY NUTRITION TOPICS

<table>
<thead>
<tr>
<th>Topic</th>
<th>AZ</th>
<th>FL</th>
<th>NY</th>
<th>OH</th>
</tr>
</thead>
<tbody>
<tr>
<td>No juice served last week</td>
<td>53%</td>
<td>40%</td>
<td>43%</td>
<td>40%</td>
</tr>
<tr>
<td>SSBs are not served at all</td>
<td>100%</td>
<td>91.5%</td>
<td>94%</td>
<td>97.4%</td>
</tr>
<tr>
<td>Fruits served 2 or 3 x day</td>
<td>61%</td>
<td>64%</td>
<td>66%</td>
<td>75%</td>
</tr>
<tr>
<td>Vegetables not served at all last week or not served every day</td>
<td>29%</td>
<td>18%</td>
<td>25%</td>
<td>16%</td>
</tr>
<tr>
<td>Sweet baked good served 1 or 2 times a week</td>
<td>29%</td>
<td>30%</td>
<td>28%</td>
<td>33%</td>
</tr>
</tbody>
</table>
FOOD SECURITY

- How often do you and other staff at this ECE program see children who do not appear to be getting enough food to eat at home?

<table>
<thead>
<tr>
<th>State</th>
<th>Never or rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>AZ</td>
<td>61%</td>
<td>35%</td>
<td>3%</td>
<td>1%</td>
</tr>
<tr>
<td>FL</td>
<td>62%</td>
<td>38%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>NY</td>
<td>81%</td>
<td>17%</td>
<td>3%</td>
<td>0%</td>
</tr>
<tr>
<td>OH</td>
<td>62%</td>
<td>31%</td>
<td>7%</td>
<td>0%</td>
</tr>
</tbody>
</table>
PRELIMINARY DATA FROM AZ

- Total physical activity time by age (see graph)

- In AZ 60% taking kids outdoors 2x day (range 52-87%)
SCREENTIME IN AZ

- Usual daily screen time for children at the ECE program, by age group

![Bar chart showing screen time by age group.](image)
COVID-19 QUESTION FINDINGS

• >66% of ECE programs were closed for one or more weeks in the past year due to the pandemic
• Some provided food assistance to families when they were closed (39% AZ, 11% FL, 24% NY, 29% OH)
• ~70-80% reported a decrease in enrollment from 1/2020 to 1/2021
• Many reported staff layoffs, furloughs, and/or pay cuts since the beginning of the pandemic.
LIMITATIONS OF PILOT

- Low response rate
- Although the data were weighted to account for selection probabilities and nonresponse, the state-level should be interpreted with caution due to the low response rate and the small number of completed cases
Lessons Learned

- Public health departments were extremely effective in serving as a point of contact and making needed connections between different state agencies to obtain needed lists to develop sampling frames.
- States had varying levels of ability to promote the survey.
- We tried to include tribal ECEs (in Arizona only) and the response rate was very low (1/33).
- Optional menu upload during the survey or at time of mail in was very positive.
  - Half of respondents provided menus (57 uploaded & 44 hardcopy).
- Even though response rates were low – provides CDC and pilot states data that was not previously available.
NEXT STEPS

• Data analysis for all states and report writing will be complete in Early 2022
• Continue to disseminate survey findings in pilot states and beyond
• Continue to share findings and lessons learned with other federal partners
• Provide a copy of the C-SAW survey instrument to anyone who is interested – including CDC recipients who could do the survey in their own state or other federal partners; there is also an accompanying teacher survey that was created but never cognitively tested
• CDC has started an Early Child Cross agency Workgroup and this group is interested in learning more about C-SAW
National Survey of Children’s Health

**What:** A national survey on physical and emotional health of U.S. children

**When:** Conducted annually

**Who:** National and state-level estimates for children 0 – 17 years of age

**What’s new?**
- CDC partnered with HRSA’s National Survey of Children’s Health to add 5 NEW questions to the 2021 and 2022 survey for children 1 – 5 years:
  - Fruit, vegetable, and sugar-sweetened beverage consumption, and outdoor play
  - Existing questions include topics such as breastfeeding, food security, screen-time, sleep
THANK YOU

For more information, contact: Carrie Dooyema igb7@cdc.gov
Email me for a copy of any of the materials discussed today.

Help us keep America healthy and strong. See how at: cdc.gov/nccdphp/dnpao
Upcoming Work Group Meetings

**COVID-19 Food and Nutrition**: January 20th @ 2pm EST
Contact Jessica Soldavini ([jessica6@live.unc.edu](mailto:jessica6@live.unc.edu)) for more details.

**Drinking Water**: January 26th @ 12:30pm EST
Contact Abigail Colburn ([atcolbur@asu.edu](mailto:atcolbur@asu.edu)) for more details.

**Early Childhood**: No January meeting
Contact Alison Tovar ([alison_tovar@uri.edu](mailto:alison_tovar@uri.edu)) for more details.

**Food Policy Council**: January 14th @ 1pm EST
Contact Abiodun Atoloye ([abiodun.atoloye@uconn.edu](mailto:abiodun.atoloye@uconn.edu)) for more details.

**Food Security**: January 24th @ 12pm EST
Contact Kaitlyn Harper ([kharpe14@jhu.edu](mailto:kharpe14@jhu.edu)) for more details.

**Food Service Guidelines**: January 25th @ 2pm EST
Contact Bethany Williams ([bethany-williams@ouhsc.edu](mailto:bethany-williams@ouhsc.edu)) for more details.

**Healthy Food Retail**: No January meeting
Contact Caitlin Lowery ([clowery@unc.edu](mailto:clowery@unc.edu))

**Rural Food Access**: January 20th @ 12pm EST
Contact Kyle Busse ([kybusse@live.unc.edu](mailto:kybusse@live.unc.edu)) for more details.

**School Wellness**: January 11th @ 2pm EST
Contact Deb Olarte ([dao2113@tc.columbia.edu](mailto:dao2113@tc.columbia.edu)) or Marisa Tsai ([marisa.tsai@berkeley.edu](mailto:marisa.tsai@berkeley.edu))
Join for the next State-of-the-Science webinar on February 14th @ 12pm EST
NIH Nutrition Roadmap (Holly NiCastro)

Want to learn more about NOPREN or join the network?
Visit https://nopren.ucsf.edu or contact NOPREN@ucsf.edu