

Supplemental Table 4. Methods and Tools Used to Capture Objective Environmental Factors Related to Breastfeeding, Healthy Eating, and Physical Activity in Rural Communities

Breastfeeding		Healthy Eating		Physical Activity	
Method/Tool	Number of Sources	Method/Tool	Number of Sources	Method/Tool	Number of Sources
Academy of Lactation Policy and Practice (ALPP) records.	1. Blair et al., 2020	Recording beverage machine content (Adachi-Mejia et al., 2013)	1. Adachi-Mejia et al., 2013	System for Observing Play and Leisure Activity in Youth (SOPLAY)	1. Findholt et al., 2011
International Lactation Consultant Association (ILCA) records	1. Blair et al., 2020 2. Grubestic & Durbin, 2017	Food Environment Atlas data	1. Ahern et al., 2011 2. Deller et al., 2015 3. Katapodis et al., 2019	System for Observing Fitness Instruction Time (SOFIT)	1. Bevans et al., 2010
Infant Feeding Resources Tool (InFeed)	1. Houghtaling et al., 2020	U.S. Department of Agriculture Traditional Planning System menu documentation	1. Graves et al., 2008	U.S. Census Data	1. Fan et al., 2015, 2017 2. Hill et al., 2012 3. Nelson et al., 2006 4. Poulsen et al., 2019 5. Wells & Yang, 2008
International Board-Certified Lactation Consultant (IBCLC)	1. Ray et al., 2019	Food store survey/observations	1. Creel et al., 2008 2. Hanawa Peterson & Procter, 2019 3. Hosler, 2009 4. Hosler et al., 2006, 2008 5. Izumi, 2015 6. Martínez-Donate et al., 2015	Environmental System Research Institute (ESRI) and the StreetMap USA data	1. Fan et al., 2015, 2017

National Immunization Survey and the Infant Feeding Practices Survey	1.	Uscher-Pines et al., 2020	USDA School Nutrition and Meal Cost Study audit tool	1.	A. Gustafson et al., 2017	Esri ArcGIS data	1.	Fan et al., 2015, 2017
							2.	Jilcott Pitts et al., 2017
							3.	Wells & Yang, 2008
							4.	Wilson et al., 2004
Administrative data on the number of births at baby-friendly hospitals	1.	Kaczynski et al., 2020	Census of Population and Housing and Zip Code Business Patterns to measure access to food retailers	1.	Blanchard & Lyson, 2006	National Land Cover Database tree canopy density data	1.	Fan et al., 2015, 2017
	2.	Wende et al., 2020		2.	Gibson, 2011			
			2007 Agricultural Census data direct farm sales	1.	Ahern et al., 2011	Walk Score®	1.	Jilcott Pitts et al., 2017
			Nutrition Environment Measurement Survey (NEMS)	1.	Ahmed & Byker Shanks, 2017	Modified Sidewalk Assessment Tool	1.	Griffin et al., 2011
				2.	Anderson Steeves et al., 2015			
				3.	Byker Shanks et al., 2015			
				4.	Fretts et al., 2018			
				5.	Gantner et al., 2011			
				6.	A. Gustafson et al., 2017			
				7.	Hill et al., 2012			
				8.	Hublely, 2011			
				9.	Jilcott Pitts, Wu, Truesdale, et al., 2018			
				10.	Ko et al., 2018			
				11.	Lu et al., 2016			
				12.	McGuirt et al., 2015			
				13.	Pereira et al., 2014			
				14.	Thatcher et al., 2017			

		15.	Thomson, 2020		
Nutrition Environment Measures-Stores-Revised (NEMS-S-Rev)	1.	McGuirt et al., 2015	National Centers for Education Statistics data	1.	Kaczynski et al., 2020
				2.	Wende et al., 2020
Store Food Availability Checklist (SFAC)	1.	Anderson Steeves et al., 2015	Standard Industrial Classification (SIC) codes	1.	Nelson et al., 2006
Windshield tours	1.	Atkinson et al., 2010	Windshield tours	1.	Atkinson et al., 2010
	2.	McGuirt et al., 2011, 2015		2.	McGuirt et al., 2011
Food Store Observation Form and the Food Retail Outlet Survey Tool (FROST)	1.	Bardenhagen et al., 2017	Irvine Minnesota Inventory	1.	Dalton et al., 2011
U.S. Census Bureau's ZIP Code Business Patterns Data, North American Industry Classification System (NAICS) codes	1.	Creel et al., 2008	Street Segment Assessment (SSA)	1.	Hafoka, 2017
	2.	Gibson, 2011		2.	Hege et al., 2017
	3.	A. A. Gustafson et al., 2012		3.	Robinson et al., 2014
	4.	Sharkey & Horel, 2008			
ReferenceUSA data	1.	Rigby et al., 2012	PA Resource Assessment (PARA)	1.	Findholt et al., 2011
				2.	Hill et al., 2016
				3.	Wallace et al., 2019
Ground truthing	1.	Bustillos et al., 2009	Rural Active Living Assessment (RALA)	1.	Hafoka, 2017
	2.	Jithitikulchai et al., 2012		2.	Hege et al., 2017
	3.	Sharkey et al., 2010, 2011		3.	Perry et al., 2015
	4.	Sharkey & Horel, 2008		4.	Robinson et al., 2014
	5.	Thatcher et al., 2017		5.	Thomson et al., 2019b, 2019a

	6.	Yeager & Gatrell, 2014		6.	Yousefian et al., 2010
A two-part observational survey	1.	Creel et al., 2008	Federal Bureau of Investigation Uniform Crime Reporting data	1.	Kaczynski et al., 2020
				2.	Nelson et al., 2006
				3.	Wende et al., 2020
Community Food Security Assessment Toolkit	1.	Findholt et al., 2011	Neighborhood Environment Walkability survey (NEWS-A)	1.	Hill et al., 2016
Esri ArcGIS	1.	Barnes et al., 2016	Town-wide Assessment (TWA)	1.	Perry et al., 2015
	2.	Dalton et al., 2011		2.	Robinson et al., 2014
	3.	Gantner et al., 2011		3.	Thomson et al., 2019b
	4.	Jilcott Pitts et al., 2017			
	5.	Ruelle et al., 2011			
	6.	Sharkey & Horel, 2008			
Food Retail Environment Index (mRFEI)	1.	Jilcott Pitts et al., 2017	National Outdoor Recreation Supply Information System (NORSIS)	1.	Michimi & Wimberly, 2012
School Food and Beverage Marketing Assessment Toolkit	1.	Findholt et al., 2011	Digital street and property parcel data	1.	Moore et al., 2013
Farmers' market vendor data	1.	Flamm, 2011	Community Park Audit Tool (CPAT)	1.	Thomson et al., 2019b
Google Application Programmable Interface (API)	1.	Jilcott Pitts et al., 2015	The Environmental Assessment of Public Recreation Spaces (EAPRS)	1.	Perry et al., 2011
U.S. Department of Agriculture Traditional Planning System menu documentation	1.	Graves et al., 2008	County Health Rankings data	1.	Kaczynski et al., 2020
				2.	Wende et al., 2020

Dun and Bradstreet data	1. Poulsen et al., 2019 2. Powell et al., 2007	Department of Transportation data	1. Poulsen et al., 2019
School meal checklist/audit	1. Nanney et al., 2019	Community Audit of Social, Civil, and Activity Domains in Diverse Environments (CASCADDE) tool	1. Poulsen et al., 2018
Students Now Advocating to Create Healthy Snacking Zones	1. Izumi, 2015	National Walkability Index	1. Kaczynski et al., 2020 2. Wende et al., 2020
U.S. Department of Agriculture data	1. Kaczynski et al., 2020 2. Rigby et al., 2012 3. Wende et al., 2020	Rural Pedestrian Environment Audit Instrument	1. Scanlin et al., 2014
Texas Nutrition Environment Assessment of Retail Food Stores (TXNEMS-WIC) instrument	1. Lu et al., 2016	System for Observing Play and Recreation in Communities (SOPARC)	1. Carlton et al., 2017 2. Shores et al., 2010
Vending machine audits	1. Mann et al., 2015, 2017 2. Nollen et al., 2009	Mapquest data on street connectedness	1. Bungum et al., 2009
Census Zip Code Business Pattern (ZBP)	1. Michimi & Wimberly, 2010	InfoUSA data	Bungum et al., 2009
Bridging the Gap Food code/Policy Audit	1. Mayo et al., 2013	Structured Physical Activity Survey (SPAS)	1. Carlton et al., 2017
MyChoice Scorecard	1. McCormack et al., 2019	Active Neighborhood Checklist (ANC)	1. Comstock et al., 2016
Washington State Department of Information Resources Management	1. McDermot et al., 2017	Physical assessment of trail access locations	1. S. M. Davis et al., 2014

School Health Profiles Principal Survey	1.	Nanney et al., 2013	The Nutrition and Physical Activity Environment Assessment	1.	Demment et al., 2015
School meal payment data	1.	Nanney et al., 2019	Physical Activity Resource Assessment (PARA)	1.	Comstock et al., 2016
Store Visit Process Evaluation form (SVPE)	1.	Novotny et al., 2011			
U.S. Census data	1.	J. Davis et al., 2019			
	2.	Fan et al., 2017			
	3.	Poulsen et al., 2019			
	4.	Powell et al., 2007			
	5.	Rivera et al., 2018			
The modified Nutrition Environment Measures Survey-Corner Stores (mNEMS-CS)	1.	Rushakoff et al., 2017			
Nutrition Environment Measures Survey NEMS-CS	1.	Thomson, 2020			
Store mapping	1.	Thatcher et al., 2017			
Rudd Center Revised Nutrition Environmental Measure Survey in Stores (NEMS-S Rudd)	1.	Thatcher et al., 2017			
Data available through geographic resource mapping at CommunityCommons.org	1.	Wallace et al., 2019			
Network analysis	1.	Yeager & Gatrell, 2014			
Bridge the Gap Food Store Observation Form	1.	Zenk et al., 2015			
Food availability survey by a trained surveyor	1.	Bustillos et al., 2009			
Healthy Hospitals Environmental Scan	1.	Amerson et al., 2014			
InfoUSA data	1.	Barnes et al., 2016			

	<ol style="list-style-type: none"> 2. Bower et al., 2014 3. Poulsen et al., 2019
U.S. Department of Agriculture Food Environment Atlas data	<ol style="list-style-type: none"> 1. Deller et al., 2015 2. Rivera et al., 2018
Bridging the Gap Community Obesity Measures Project (BTG-COMP) Food Store Observation Form	<ol style="list-style-type: none"> 1. Bardenhagen et al., 2017 2. Jilcott Pitts, Wu, McGuirt, et al., 2018
Brazos Valley Food Environment Project health assessment data	<ol style="list-style-type: none"> 1. Creel et al., 2008 2. Dunn et al., 2011, 2012 3. Sharkey et al., 2010, 2011 4. Sharkey & Horel, 2008
Google Distance Matrix application	<ol style="list-style-type: none"> 1. Jilcott Pitts, Wu, McGuirt, et al., 2018
Photo observations to audit lunch trays	<ol style="list-style-type: none"> 1. Bontrager Yoder et al., 2014
Fruit and vegetable total phenolic (TP) concentration measured using the spectrophotometric Folin-Ciocalteu reagent method	<ol style="list-style-type: none"> 1. Ahmed & Byker Shanks, 2017
Food production records	<ol style="list-style-type: none"> 1. Askelson et al., 2019
Food store observations	<ol style="list-style-type: none"> 1. D'Angelo et al., 2017

School lunchroom observations	1.	M. M. Davis et al., 2017
Arizona Department of Transportation (ADOT) road data	1.	J. Davis et al., 2019
Open Street map data	1.	J. Davis et al., 2019
The nutrition and physical activity environment assessment tool	1.	Demment et al., 2015
Direct observation	1.	Escaron et al., 2016
Process evaluation	1.	Honeycutt et al., 2012
Customer bag-checks	1.	Jilcott Pitts, Wu, McGuirt, et al., 2018
