Validity of Secondary Retail Food Outlet Data

A Systematic Review

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Appendix A

Evidence acquisition approach to identify studies examining evidence for validity of secondary retail food data

Search	
•	Literature search was conducted through December 31, 2012
•	Searched for key words in the study's title or abstract ^a
•	Searched multiple databases and publication listings ^b
•	Examined references cited in each of the studies included
Screenir	ng
•	Peer-reviewed
•	Research article
•	Study compared secondary retail food outlet data source (e.g., InfoUSA) to primary data sources (i.e., field
	observations) for accuracy of identifying the type and location of retail food outlets
Exclusio	n criteria
•	Studies that used only multiple secondary sources in an effort to compile a comprehensive list, compared multiple secondary data sources to verify a list, or calculated percentage agreement between secondary data
	sources and did not include a comparison to primary data ^c
•	Studies that collected primary data and used secondary data but did not report evidence for validity for secondary
	data sources used ^d
•	Studies that focused only on accuracy of outlet classifications ^e
Included	
•	Gathered from each article: citation, secondary data sources examined, primary data-gathering approaches,
	retail food outlet examined, geographic and sociodemographic characteristics, analysis, outcomes, study costs,
	identified strengths and limitations of the study, and recommendations for research and practice
•	When needed for clarification purposes, study authors were contacted

^a Key words searched were: ground-truthing, field validation of food sources, validation, reproducibility of results, measurement, secondary data sources, intermediate data sources, food environment, local environment, neighborhood environment, food environment health, environmental health, food outlet, fast food, fast-food, fast food restaurant, fast food outlet, restaurant, quick service restaurant, full service restaurant, full-service restaurant, family restaurant, limitedservice restaurant, grocery store, supermarket, supercenter, chain food store, corner store, convenience store, dollar stores, pharmacies, farmer's markets, farmers' market

^b PubMed (MEDLINE); Web of Science; ScienceDirect; CINAHL; Education Resources Information Center (ERIC); SPORTDiscus; Google Scholar; the U.S. National Cancer Institute's Food Environment Database (riskfactor.cancer.gov/mfe); and grants awarded and published papers listed on Active Living Research (<u>www.activelivingresearch.org/</u>) and Healthy Eating Research (<u>www.healthyeatingresearch.org/</u>), which are both national programs of the Robert Wood Johnson Foundation

° Examples of excluded studies:

Pearce J, Blakely T, Witten K, Bartie P. Neighborhood deprivation and access to fast-food retailing: a national study. Am J Prev Med 2007;32(5):375–82;

Maddock J. The relationship between obesity and the prevalence of fast food restaurants: state-level analysis. Am J Health Promot 2004;19(2):137-43;

Fraser L, Edwards K. The association between the geography of fast food outlets and childhood obesity rates in Leeds, UK. Health Place 2010;16(6):1124–8;

Pearce J, Hiscock R, Blakely T, Witten K. A national study of the association between neighbourhood access to fast-food outlets and the diet and weight of local residents. Health Place 2009;15:193-7;

Simon PA, Kwan D, Angelescu A, Shih M, et al. Proximity of fast food restaurants to schools: Do neighborhood income and type of school matter? Prev Med 2008;47:284–8;

Zenk S, Schulz A, Israel B, James S, Bao S, Wilson M. Neighborhood racial composition, neighborhood poverty, and the spatial accessibility of supermarkets in Metropolitan Detroit. Am J Public Health 2005;95:660–7;

Hoehner C, Schootman M. Concordance of commerical data sources for neighborhood-effects studies. J Urban Health 2010;87(4):713–25;

Jilcott S, McGuirt J, Imai S, Evenson K. Measuring the retail food environment in rural and urban North Carolina counties. J Public Health Manag Pract 2010;16(5):432–40; and

Wang M, Gonzalez A, Ritchie L, Winkleby M. The neighborhood food environment: sources of historical data on retail food stores. Int J Behav Nutr Phys Act 2006;3:15.

d Examples of excluded studies:

Hee Lee S, Rown M, Powell L, et al. Characteristics of prepared food sources in low-income neighborhoods of Baltimore City. Ecol Food Nutr 2010;49(6):409–30;

Lopez-Class M, Hosler A. Assessment of community food resources: a Latino neighborhood study in upstate New York. J Poverty 2010;14(4):369–81;

Franco M, Diez Roux A, Glass T, Caballero B, Brancati F. Neighborhood characteristics and availability of healthy foods in Baltimore. Am J Prev Med 2008;35(6):561–7;

Liese A, Weis K, Pluto D, Smith E, Lawson A. Food store types, availability, and cost of foods in a rural environment. J Am Diet Assoc 2007;107:1916–23;

Jilcott S, Wade S, McGuirt J, Wu Q, Lazorick S, Moore J. The association between the food environment and weight status among eastern North Carolina youth. Public Health Nutr 2011;14(9):1610–7; and

Block J, Christakis N, O'Malley A, Subramanian S. Proximity to food establishments and body mass index in the Framingham Heart Study offspring cohort over 30 years. Am J Epidemiol 2011;174(10):1108–14.

e Examples of excluded studies:

Kersten E, Laraia B, Kelly M, Adler M, Yen I. Small food stores and availability of nutritious foods: a comparison of database and in-store measures, Northern California, 2009. Prev Chronic Dis 2012;9:E127; and

Ohri-Vachaspati P, Martinez D, Yedidia M, Petlick N. Improving data accuracy of commercial food outlet databases. Am J Health Promot 2011;26(2):116–22.

Appendix B

Specific definitions and classification schemes used for retail food outlets examined (n=19)

Study	Retail food outlet definitions and classification schemes used
Own definition(s) or classificat	tion system
Clarke (2010) ³¹	Examined the food environment (e.g., supermarkets, fast food, restaurants, and liquor stores)
Cummins (2009) ²⁷	Included all national "multiple-owned" supermarkets and only a random sample of nonmultiple retail food outlets
Hosler (2010) ²³	Defined a food store as a retail outlet that sold at least one of the following items: milk;
	bread (not including doughnuts, bagels, or pastries); and fruits or vegetables that were fresh, frozen, or canned. A food store could be operated seasonally and be stationary or movable. Food stores located inside the access-restricted area of an office building were regarded as nonfood stores.
Lake (2010, 2012)21,22	Conducted a literature review and relied on classification systems used by commercial
Lake (2010, 2012)	organizations such as the Yellow Pages and the classification system used by the local authority
McGuirt (2011) ²⁰	Classified fast-food restaurants on the basis of national or regional chain-name recognition
	and included all establishments that had designated drive-through windows or provide most of their business as take-out service or do both. Grocery stores and supermarkets were also included, if present, as were farmers' markets or produce stands.
Rossen (2012) ²⁴	Used government-created categories and created a separate category for corner stores
	within the outlets listed as grocery stores, defined as small-scale, independently owned stores that sell a limited selection of foods that are typically pre-packaged. Fast-food outlets were extracted that offered primarily counter service. Gas stations were coded separately. Full-service restaurants were excluded.
Rundle (2011) ³²	Included food and street vendors (e.g., licensed food carts)
Toft $(2011)^{17}$	Defined retail food outlets as those serving primarily pizza: burgers: pommes frites (French
()	fries): sausages: barbeque food: or shawarma/kebab AND having at least two of the
	following characteristics: take-away food, customers pay before eating, limited or no table
	service, and limited furnishing. Fast food served at gas stations was not included since the
	study was focused on fast food consumed for dinner (the evening meal).
North America Industry Classi	fication System (NAICS) or Standard Industrial Classification (SIC) system,
including modifications and th	nose who did not list specific NAICS or SIC codes
Powell (2011) ¹²	Used the following store classifications (Dun & Bradstreet SIC codes and InfoUSA SIC/NAICS codes): convenience stores (541102, 55410000, 55419901, 55419903 and 541103, 554101, 554102, 554103); supermarket (541101 and 541101, 541102, 541104, 541105, 541106, 541107, 541108, 541108); grocery stores (54110, 541109, and same as supermarket); specialty food stores (5421, 5431, 5441, 5451, 5461, 5499, except for 54990103, 54990205, 54999905; and 5421, 5431, 5441, 5451, 5461, 5499, except for 549902, 549902, 5499904, 549906, 549925); fast-food restaurants (581203, except for 58120304, including pizza 58120601, 58120602, and 722211, 581206, 581208, 581219, 581229 including 581222); full-serve restaurants (581200, 581201, 581204, 581205, 581206, 581207, 581208, 581209, except for 58129903, 58129906, and 722110); and specialty restaurants (581202, 58120304, and 722213, 581214, 581226, 581230, 581234). In the field, food store outlets were classified as follows: specialty food stores (bakeries, meat or fish stores, fruit or vegetable stores, candy or nut stores, coffee and tea stores); convenience stores (nonspecialty food stores with two or fewer cash registers, no fresh meat, and fewer than ten varieties of fresh fruits and vegetables); supermarkets (stores with a minimum of four cash registers, fresh meat, at least 20 varieties of fresh fruits or vegetables and at least two of the following three features: butcher, deli, or bakery); grocery stores (food stores that were not a specialty food store, convenience store, or supermarket); specialty restaurant (coffee shops, donut shops, ice cream parlors, pretzel shops, banquet halls, and bakeries); fast-food restaurants (restaurants where patrons ordered and paid for their food at the counter); and full-service restaurants (patrons did not order and pay at the counter) that were not specialty
Fleischhacker (2012) ¹⁸	Included 445, 4451, 445110, 445120, 4452, 445210, 445220, 445230, 445291, 445292, 445299, 447, 447110, 72, 722, 7221, 722110, 7222, 722211, 722212, 722213, 4299, 452910, 452990, 452112, and 446110

Study	Retail food outlet definitions and classification schemes used
Liese (2010) ¹³	Included 445110, 445120, 446110, 447190, 452112, 452910, 4452990, 445210, 445220, 4455230, 4455291, 445292, 453998, 722110, 722212, 722211, and 722213, and excluded 722410 and 445310
Bader (2010) ²⁸	Included 446110, 4453110, 722410, 445120, 447110, 722211, 722110, 722213, 311811, 445110, 445210, 445220, and 445230
Gustafson (2012) ³⁰	Used 452990, 445100, 446110, 447110, 722212, and 722213. Farmers' markets and produce stands were identified through departments' listings of such vendors.
Sharkey (2008) ¹⁴	Explained that food stores retail a general line of food products and include supermarkets; full-line grocery stores; convenience stores or food marts (with and without gasoline pumps); discount stores (general merchandise and some perishable and nonperishable foods); beverage stores (with some perishable and nonperishable foods); pharmacies and drug stores (with some perishable and nonperishable foods); and specialty food stores (e.g., meat markets, fish and seafood markets, fruit and vegetable markets, and markets with bakeries not for immediate consumption) that are fixed or mobile.
Longacre (2011) ¹⁹	Classified outlets as either food markets, consisting of six specific outlet categories (i.e., general store, convenience store, supermarket/grocery store, specialty food store, big box store, seasonal and year-round fixed location farm/produce stand) or eating establishments, consisting of two outlet categories (i.e., fast-food restaurants, defined as any food outlet where the patrons order food at a counter or window; and full-service restaurants). General stores are defined as local retailers with a broad selection of merchandise, including grocery items, hardware, and gardening supplies. Big box stores included warehouse membership clubs (e.g., BJ's, Sam's Club) and large retail supercenters, provided they contained packaged food/grocery sections. Specialty food stores included food outlets that exclusively sold a specific type of food, such as meat or fish markets. Food markets housing a fast-food business were counted as two distinct outlets if, based on in-store observations, the fast-food section had a separate name or logo, entryway, cash register, or employee.
Seliske (2012) ²⁵	Used NAICS to obtain multiple categories of food service places from the InfoCanada database, including full-service restaurants, limited-service restaurants, snack and non- alcoholic beverage bars, and convenience stores. For Yellow Pages, used the following keywords: restaurant, convenience store, ice-cream and frozen desserts, sandwiches, and donut-retail
Paquet (2008) ²⁶	Indicated the following subcategories were chosen for food store establishments: convenience stores (i.e., establishments selling food but no fresh fruits/vegetables); fruit and vegetable stores; specialty markets (e.g., butcher shops, cheese stores); pastry and bakery shops; grocery stores; megamarkets (i.e., very large food stores with large selections of food products); natural food and supplement stores; and small/ethnic markets. The study did not consider restaurants or cafes even when takeout was available, or retail stores selling food (e.g., Walmart or Dollar Stores).
Nutrition Environment Measu	res Survey (NEMS), including modifications
Fleischhacker (2012) ¹⁸	Used NAICS codes for two commercial data sources in addition to a modified NEMS approach for classifying food outlets gathered from both secondary and primary data sources. Classifications included: store cannot determine specifically its type, member-only supercenter, supercenter, grocery store, convenience store, convenience store with gas, mass merchant, dollar store, pharmacy, alcoholic beverage store with food, specialty market, flea market, farmers' market, food bank or soup kitchen, other, smaller grocery store, restaurant cannot determine specifically its type, general/mixed/American, burgers, chicken, sandwiches, pizza, bagels plus, biscuits, donut shops, bakery/pastry shops/sweets, coffee or tea outlets plus, ice cream/frozen yogurt/smoothies, seafood, BBQ, steakhouse, bars/pubs, Asian, Chinese, Thai, Japanese, Mexican, Italian, French, Indian, Greek/Middle Eastern, soul food, Ethiopian, vegetarian, Spanish. hot dog stand. or other.

Appendix C

Study geographic characteristics and analyses reported (n=19)

	n (% of total)	References
Country		
Canada	2 (10)	25,26
Denmark	2 (10)	17,29
Scotland	1(5)	27
United Kingdom	2 (10)	21,22
U.S.	12 (63)	12-14,18-20,23,24,28,30-32
Urbanization		
Rural	3 (16)	U.S.14,19,30
Urban	9 (47)	Canada ²⁶ ; Denmark ^{17,29} ; Scotland ²⁷ ; United
		Kingdom ²² ; U.S. ^{23,24,28,31,32}
Various Levels	7 (37)	Canada ²⁵ ; Denmark ¹⁷ ; United Kingdom ²¹ ; U.S. ^{12,13,18,20}
Urbanization measures		
Commission for Rural Communities		
Classification Framework ^a	2 (10)	United Kingdom ^{21,22}
Located in urban areas	7 (37)	Canada ²⁶ ; Denmark ^{17,29} ; Scotland ²⁷ ; U.S. ^{23,31,32}
Rural-urban commuting areas	3 (16)	U.S. ^{23,31,32}
Population density ^b	4 (21)	U.S. ^{12,14,20,28}
Population size (Canada and U.S.)	3 (16)	Canada ²⁵ ; U.S. ^{19,24}
Geographic unit of analysis		
Canadian census tracts	1 (5)	26
School districts/buffer around schools	2 (10)	Canada ²⁵ ; Denmark ²⁹
Danish grid cell system (250 x 250 m)	1 (5)	17
United Kingdom, Lower Super Outlet areas	2 (10)	21,22
United Kingdom, city	1 (5)	27
U.S. city blocks or block segments	3 (16)	28,31,32
U.S. Census block groups	2 (10)	14,20
U.S. Census tracts	3 (16)	12,24,30
U.S. ZIP codes	1 (5)	23
U.S. Census state-designated tribal statistical	1 (5)	18
areas	1 (5)	19
U.S. towns	1 (5)	13
U.S. counties		

^aLake et al.²¹ defined rural as small towns, villages, and hamlets with <10,000 residents using the Commission for Rural Communities Classification Framework.

^bSharkey et al.^{9,14} defined population density as people/km², and an area with a low population density was an indicator of a high degree of rurality. Powell et al.¹² defined urbanized areas as areas with a densely populated area with \geq 50,000 people and \geq 1000 people per square mile; suburban areas were located inside of an urban cluster with \geq 2500 but <50,000 people; and rural areas were not an urbanized area or urban cluster. McGuirt et al.²⁰ defined urban as having core census-block groups with a population density of \geq 1000 people per square mile, and surrounding census-block groups with an overall density of \geq 500 people per square mile; rural was defined as areas outside of urban areas.

Appendix D

Study sociodemographic characteristics and analyses reported (*n*=19)

	<i>(6)</i> 6 .	- <i>i</i>
	n (% of total)	References
SES		
Various levels	11 (58)	Canada ²⁶ ; Scotland ²⁷ ; United Kingdom ²¹ ; U.S. ^{12,14,20,23,24,28,30,32}
SES measures		
Carstairs-Morris DEPCAT (deprivation category; United Kingdom) ^a Disadvantage scale (U.S.) ^b Federal poverty level (U.S.) Index of Multiple Deprivation (United Kingdom) ^c Median household income (U.S.)	1 (5) 1 (5) 1 (5) 1 (5) 3 (16) 2 (10)	27 28 32 21 12,20,23 14 30
Neighborhood Deprivation index (U.S.) ^e Neighborhood SES variables (U.S.) ^e Socioeconomic Index (Canada) ^f	1 (5) 1 (5)	24 32
Race/ethnicity		
American Indian	1 (5)	18
Various race/ethnicities	6 (32)	Canada ²⁶ ; U.S. ^{12,14,23,24,28}
Race/ethnicity measures		
Minority composition (U.S. Census data) ^g Official household language (Canada) U.S. Census state-designated tribal statistical areas	5 (26) 1 (5) 1 (5)	12,14,23,24,28 26 18

^aSevenfold measure of social deprivation derived from four variables in the British Census: percentage overcrowding, percentage male unemployment, percentage low social class, and percentage no car

^bTook the mean of the *z*-score values of the following variables: percentage of households with annual incomes <\$15,000, percentage of households with annual incomes of ≤\$50,000, percentage of families living in poverty, percentage of households receiving public assistance, percentage unemployed, percentage of female-headed households, percentage of never-married people, and percentage of owner-occupied households

°Compound measure of SES, combining aspects of employment, health, crime, living environment, education, housing, and income at the Lower Super Outlet area in England

^dSharkey et al.^{9,14} constructed an index using neighborhood unemployment (those aged \geq 16 years in the labor force who were unemployed and actively seeking work); poverty (those with incomes below the federal poverty level); low education attainment (those aged \geq 25 years, with a <10th-grade education); household crowding (occupied households with more than one person per room); public assistance (households receiving public assistance); vehicle availability (occupied housing with no vehicle available); and telephone service (occupied housing with no telephone service). Gustafson et al.³⁰ created an index based on eight U.S. Census variables collected from American Community Survey 5-year estimates 2005–2009: percentage of individuals with income in 2009 below poverty level; percentage of families with female-headed households with no husband present and children aged <18 years; percentage of households with incomes <\$30,000/year; percentage of households with public assistance income; percentage of people aged \geq 16 years in civilian labor force currently unemployed; percentage of men in management; percentage of people aged \geq 25 years with a <high school degree; and percentage of households with more than one person per room.

ePercentage below the federal poverty level, percentage with a high school degree or lower, median household income, and number of vacant housing units

^fBased on 36 sociodemographic variables from the Canadian Census and utilized in a principal component analysis for which the first three factors were retained: (1) income (e.g., median income and percentage of residents below low-income cut-off); (2) ethnic composition (e.g., official language spoken within households [French or English]); and (3) education (e.g., percentage of residents with a university degree).

^gRossen et al.²⁴ focused on percentage who were non-Hispanic black; Bader et al. used percentage non-Hispanic white and a Hispanic/foreign-born scale, which is the mean of the *z*-score values of the percentage of Hispanics and percentage foreign born.

Appendix E

By secondary data source examined, evidence for validity of secondary retail food data reported $(n=19)^{a}$

		General		Specialty	
	Convenience	merchandise		markets and	
	stores ^b	stores	Grocery stores ^d	shopse	Restaurantsf
Commercial sources (n=	=9 studies) ^{12,13,18,20}),25,26,28–30			
Percentage	Substantial to	Slight to almost	Moderate to	Moderate to	Moderate to
agreement	almost perfect		almost perfect	almost perfect	almost perfect
	0.6720,11	0.2030	0.4950	0.4313,1	0.46 ^{20,11} 0.6913.i
	0.7225	0.86 ^{29i,j}	0.7726,j	0 7112,i	0.7625
	0.76 ^{12,i}	0.91 ^{18,i}	0.8228	0.77 ^{26,j}	0.83 ^{12,i}
	0.77 ^{26,j}		0.86 ^{29,i,j}	0.86 ^{29,i,j}	0.86 ^{29,i,j}
	0.79 ^{18,i}		0.92 ^{13,i}		0.8728
	0.82 ^{13,i}		0.94 ^{18,i}		0.88 ^{18,i}
	0.86 ^{29,i,j}		1.00 ^{20,h}		0.9330
	0.92 ²⁸		0 1 1 1 1 1 1 1 1 1 1	Estate states	Manda sa ta ta
Sensitivity	Moderate to	Slight to almost	Substantial to	Fair to almost	Moderate to
	0 5512,i	0 2030	0 6912,i	0 3913,i	0 5813,i
	0.59 ^{18,i}	0.37 ^{13,i}	0.74 ^{13,i}	0.42 ^{18,i}	0.60 ^{12,i}
	0.72 ^{13,i}	0.90 ^{18,i}	0.84 ^{26,j}	0.50 ^{12,i}	0.64 ^{18,i}
	0.84 ^{26,j}	0.90 ^{29,i,j}	0.88 ^{18,i}	0.84 ^{26,j}	0.88 ³⁰
	0.90 ^{29,i,j}		0.90 ^{29i,j}	0.90 ^{29,i*}	0.90 ^{29,i,j}
Positivo prodictivo	0.99 ³⁰ Moderate to	Substantial to	0.99 ³⁰ Moderate to	Fair to almost	0.98 ³⁰ Moderate to
	almost perfect	almost perfect	almost perfect	rail to aimost	almost perfect
value	0 4418,i	0 7818,i	0 59 ^{12,i}	0.3912,i	0.5018,i
	0.60 ^{12,i}	0.92 ^{13,i}	0.75 ³⁰	0.80 ^{18,i}	0.72 ^{12,i}
	0.6530	0.94 ^{29,i,j}	0.81 ^{13,i}	0.90 ^{13,i}	0.84 ^{13,i}
	0.74 ^{13,i}	1.0030	0.90 ^{26,j}	0.90 ^{26,j}	0.8830
	0.90 ^{26,j}		0.94 ^{29,i,j}	0.94 ^{29,i,j}	0.94 ^{29,i,j}
Oshania Kanaa	0.94 ^{29,i,j}	Madavata		Es:u	Madavata ta
coefficient	Fair 0.3618i	Moderate	Slight to Moderate	Fair 0.2018i	Moderate to
COEITICIEITI	0.3028	0.44-0,	0 1 2 18.i	0.30-0,1	0 / 218.i
	0.00		0.4428		0.7028
Concordance	Fair to almost	Substantial to	Moderate to	Slight to almost	Moderate to
	perfect	almost perfect	almost perfect	perfect	almost perfect
	0.36 ^{18,i}	0.75 ^{18,i}	0.54 ^{12,i}	0.14 ^{18,i}	0.46 ^{18,i}
	0.44 ^{12,i}	0.94 ^{29,i,j}	0.78 ^{18,i}	0.32 ^{12,i}	0.50 ^{12,1}
Covernment courses (n	0.94 ^{29,1,]} -10)1314171820-24	27 29 30 k	0.9429,1,1	0.94 ^{29,1,1}	0.9429,1,1
Percentage	Moderate to	Slight to almost	Substantial to	Moderate to	Substantial to
agreements	almost perfect	perfect	almost perfect	almost perfect	almost perfect
a.B. oomone	0.47 ¹³	0.05^{13}	0.64 ^{14,j}	0.50 ¹³	0.64 ^{29,j}
	0.64 ^{14,j}	0.40 ^{18,i}	0.64 ^{29,j}	0.64 ^{14,j}	0.70 ^{21,j}
	0.64 ^{29,j}	0.64 ^{14,j}	0.70 ^{21,j}	0.64 ^{29,j}	0.76 ¹⁷
	0.70 ^{21,j}	0.64 ^{29,j}	0.76 ¹³ ,	0.66 ^{18,i}	0.76 ^{18,i}
	0.80 ^{18,i}	0.70 ^{21,j}	0.85 ^{24,j}	0.70 ^{21,j}	0.85 ^{24,j}
	0.85 ^{24,j}	0.85 ^{24,j}	0.86 ^{23,i,j}	0.86 ²³ i,j	0.98 ¹³
	0.86 ^{23,i,j}	0.86 ²³ i,j	0.88 ²⁷		
			0.98 ^{18,i}		
Sensitivity	Fair to almost	Moderate to	Moderate to	Fair to almost	Moderate to
	perfect	almost perfect	almost perfect	perfect	almost perfect
	0.3018,1	0.46 ^{23,i,j}	$0.46^{23,i,j}$	0.4018,1	0.47 ^{18,i}
	0.4020,0	0.0010,	0.7515	0.44-5	0.7523,

	Convenience	General merchandise		Specialty markets and	
	stores ^b	stores	Grocery stores ^d	shops ^e	Restaurantsf
	0.50 ¹³	0.75 ^{29,j}	0.75 ^{29,j}	0.46 ^{23,i,j}	0.8217
	0.75 ^{29,j}	0.84 ^{22,j}	0.84 ^{22,j}	0.75 ^{29,j}	0.84 ^{22,j}
	0.84 ^{22,j} 0.85 ^{24,j}	0.85 ^{24,j}	0.85 ^{24,j} 0.90 ^{18,i}	0.84 ^{22,j}	0.85 ^{24,j} 0.86 ¹³
Positive predictive	Fair to almost	Moderate to	Substantial to	Slight to almost	Fair to almost
value	perfect	almost perfect	almost perfect	perfect	perfect
	0.22 ^{18,i}	0.51 ^{18,i}	0.80 ^{18,i}	0.20 ^{18,i}	0.36 ^{18,i}
	0.81 ^{29,j}	0.81 ^{29,j}	0.81 ^{29,j}	0.81 ^{29,j}	0.81 ^{29,j}
	0.89 ^{23,i,j}	0.89 ^{23,i,j}	0.89 ¹³	0.89 ¹³	0.88 ¹³
	0.91 ¹³	0.92 ^{22,j}	0.89 ^{23,i,j}	0.89 ^{23,i,j}	0.9217
	0.92 ^{22,j}		0.92 ^{22,j}	0.92 ^{22,j}	0.92 ^{22,j}
			0.96 ¹³		
Concordance ^{29,j}	Fair	Fair	Fair	Fair	Fair
	0.23	0.23	0.23	0.23	0.23
Local directories source	es (n=7) ^{14,18,19,22,25}	26,29			
Percentage	Fair to almost	Fair to almost	Moderate to	Fair to	Moderate to
agreement ^g	perfect	perfect	almost perfect	substantial	almost perfect
	0.28 ^{19,j} 0.6414 i	0.32 ^{19,j}	0.4919,	0.2219,	0.43 ^{13,j}
	0.04-35 0.6526.i.j	0.04-% 0.7129,j	0.6526,i,j	0.55	0.8118
	0.71 ^{29,j}	0.8218	0.71 ^{29,j}	0.65 ^{26,i,j}	0.8825
	0.7318		1.0018	0.71 ^{29,j}	
	0.8625				
Sensitivity	Moderate to	Fair to	Moderate to	Moderate to	Moderate to
	substantial	substantial	substantial	substantial	substantial
	0.4818	0.2118	0.52 ^{22,1,J}	$0.52^{22,i,j}$	0.52 ^{22,1,j}
	$0.52^{22,1,1}$	$0.52^{22,i,j}$	$0.66^{20,1,j}$	0.5918	0.6118
	0.00 ^{20,i} 0.7429,i	0.7423,	0.89 ¹⁰ 0.7429,i	0.00 ^{20,i,j} 0.7429,i	0.7423,
Positive predictive	Fair to almost	Slight to almost	Substantial to	Fair to almost	Moderate to
value	perfect	perfect	almost perfect	perfect	almost perfect
	0.3618	0.1818	0.6118	0.2918	0.4718
	0.81 ^{22,i,j}	0.81 ^{22,i,j}	0.81 ^{22,i,j}	0.81 ^{22,i,j}	0.81 ^{22,i,j}
	0.95 ^{29,j}	0.95 ^{29,j}	0.95 ^{29,j}	0.95 ^{29,i}	0.95 ^{29,j}
Canaardanaa ²⁰ i	0.98 ^{26,1,j}	Foir	0.98 ^{26,1,J}	0.98 ^{26,1,j}	Foir
Concordance ^{23,j}	Fair 0.27	Fair 0.27	Fair 0.27	Fair 0.27	Fair 0.27
	0.21	0.21	0.21	0.21	0.21
Omnidirectional sources	s (n=6) ^{18,19,24,29,31,3}	32			
Percentage	Fair to almost	Fair to	Moderate to almo	ost Fair to	Fair to almost
agreementg	perfect	substantial	perfect	substantial	perfect
	0.28 ^{19,j}	0.32 ^{19,j}	0.49 ^{19,j}	0.22 ^{19,j}	0.36 ³²
	0.69 ^{24,j}	0.69 ^{24,j}	0.69 ^{24,j}	0.7829,	0.43 ^{19,j}
	$0.78^{23,1}$	0.7823,	0.7823,		0.69 ^{24,j} 0.7829.j
	0.92**		0.94**		0.9131
Sensitivity ^{29,j}	Almost perfect	Almost perfect	Almost perfect	Almost	Almost perfect
	0.81	0.81	0.81	perfect	0.81
				0.81	
Positive predictive	Almost perfect	Almost perfect	Almost perfect	Almost	Almost perfect
valuezali	0.95	0.95	0.95	perfect	0.95
Cohen's Kanna	Slight		Slight	0.95	Fair
coefficient ³¹	0.06		0.10		0.34
Concordance ^{29.j}	Almost perfect	Almost perfect	Almost perfect	Almost	Almost perfect
	0.87	0.87	0.87	perfect	0.87
				0.87	

^aLevels of agreement for all evidence for validity findings reported were interpreted using the Landis and Koch criteria (<0.00 poor, 0.00–0.20 slight, 0.21–0.40 fair, 0.41–0.60 moderate, 0.61–0.80 substantial, and 0.81–1.00 almost perfect). See Appendix F for evidence for validity by specific secondary data source examined (e.g., InfoUSA). ^bIncludes convenience stores with and without gas stations and pharmacies

Includes dollar stores and discount department stores that do not have a full grocery section, such as Kmart, Target, and Walmart

dIncludes grocery stores, supercenters, and supermarkets

elncludes meat markets, produce stands, donut shops, and ice cream shops

^fIncludes fast food, fast-casual, full-service, pizza parlors, and coffee shops

^gFrequencies or dispositions percentages, when necessary, were used to calculate a percentage agreement ^hComparisons were made between results generated using primary versus secondary data for fast-food density and proximity, convenience store proximity, and food deserts.

Average findings reported across a combination of data sources (e.g., ReferenceUSA and Dun & Bradstreet or multiple government sources)

Not all studies reported evidence for validity by specific data source (e.g., Sharkey¹⁴ grouped local/area telephone directories, Internet telephone directories, and a list of Current Food Establishment Group Firms from the Texas Department of Agriculture) or by food outlet type, so the total evidence reported was used for each data source examined and food outlet examined.

^kGustafson et al.³⁰ used only a government source to identify farmers' markets and produce stands.

Appendix F

By specific secondary data source examined, evidence for validity of secondary retail food data sources reported $(n=19)^{a}$

Convenience stores* merchanolise correst stores* Specialty markets and shops* Restaurants/ Commercial source: Dun & Bradstreet (US), re-3 studies/12.13.8 Substantial almost perfect Substantial to almost perfect Substantial to almost perfect Substantial to 0.6213 Overation to 0.6213 Overatio 0.6213 Overation to 0.6213 O			General			
Instruction Stores ¹ Grocery stores ¹⁰ and shops ¹⁰ Restaurants ¹ Commercial source: Dun & Bradstret (US, <i>In</i> , ¹⁰ and ¹¹		Convenience	merchandise		Specialty markets	
Commercial source: Dur & Bradstreet (U.S.; <i>n=3</i> studies) ^{12,13,359} Percentage Substantial 0, 7,142 Amost perfect Substantial 0, 0,6313 Moderate to Substantial 0, 0,6313 Or,7814 0,9514 0,9514 0,6313 0,6614 0,6313 0,6313 Sensitivity Fair to substantial 0, 0,6313 Substantial to 3,0614 Substantial to 3,0614 Substantial 0,0513 0,314 0,5012 0,8814 0,6313 0,5123 0,3814 0,5512 0,3814 0,5512 0,3814 0,5512 0,3814 0,5512 0,3814 0,5512 0,3814 0,5512 0,3814 0,5512 0,3814 0,5512 0,3814 0,6512 0,3814 0,6512 0,3814 0,6512 0,312 0,7214 0,6512 0,7143 0,8713 0,7143 0,6612 0,7143 0,8713 0,9814 0,7143 0,8713 0,914 0,1464 0,15 0,19 0,19 0,19 0,116 0,116 0,116 0,116 0,116 0,116 0,116 0,116 0,116 0,116 0		stores ^b	storesc	Grocery stores ^d	and shops ^e	Restaurantsf
Percentage agreements Output 0.7112 Almost perfect 0.8213 Substantial to almost perfect 0.9518 Moderate to 0.9518 Substantial to 0.9318 Moderate to 0.613 Substantial 0.8312 Sensitivity Fair to substantial 0.9218 Substantial to 0.8218 Substantial to 0.8618 Substantial to 0.9318 0.6014 0.9318 0.3218 0.8018 0.3218 0.9913 0.3218 0.5512 0.3218 0.6313 0.3218 0.5512 0.5512 0.9918 0.6513 0.5512 0.9918 0.5512 0.5512 0.9918 0.5512 0.5512 0.6612 0.3112 0.7513 0.8713 0.8713 Coheri S Kappa Coefficient 5 Slight to Fair 0.2018 Substantial to 0.2018 0.514 0.3112 0.7218 0.7218 0.7218 0.7218 Coheri S Kappa Coefficient 6 Slight to Fair 0.2018 Substantial to 0.2018 0.541 0.3112 0.7218 0.7218 Coefficient 5 0.3219 O.541 0.3218	Commercial source:	Dun & Bradstreet (U.S	5.; <i>n</i> =3 studies) ^{12,13,18}			
agreements 0.71±2 0.82±3 almost perfect substantial almost perfect 0.78±3 0.95±8 0.65±2 0.44±3 0.63±3 0.63±3 Sensitivity 0.32±2 0.89±8 0.93±8 0.72±2 0.89±8 0.96±3 0.72±2 0.89±6 0.89±6 0.89±6 0.89±6 0.66±3 0.66±6 0.19±6 0.89±6 0.39±6 0.39±6 0.66±3 0.68±6 0.73±2 0.89±6 0.43±2 0.43±2 Positive predictive 0.74±8 0.81±6 0.52±2 0.09±8 0.66±2 0.71±3 0.83±3 0.72±8 0.31±2 0.79±3 0.29±6 0.71±3 0.83±5 0.72±8 0.31±2 0.79±3 0.25±2 0.71±3 0.54± 0.31±2 0.79±3 0.25±2 0.49±3 0.25±2 0.49±3 0.25±2 0.49±3 0.25±2 0.49±3 0.25±2 0.49±3 0.25±2 0.49±3 0.25±2 0.49±3 0.25±2 0.49±3 0.25±2 0.49±3 <td>Percentage</td> <td>Substantial</td> <td>Almost perfect</td> <td>Substantial to</td> <td>Moderate to</td> <td>Substantial to</td>	Percentage	Substantial	Almost perfect	Substantial to	Moderate to	Substantial to
0.7818 0.9518 0.6512 0.4413 0.6313 Sensitivity Fair to substantial 0.3218 Substantial to 0.6913 Substantial to 0.7713 Substantial to 0.7713 Substantial to 0.7724 Substantial to 0.	agreementg	0.7112	0.8213	almost perfect	substantial	almost perfect
0.7813 0.7934 0.6018 0.8312 Sensitivity Pair to substantial Substantial to Substantial O.8019 O.913 0.3248 O.3348 0.6913 0.6913 0.6913 0.7613 0.3213 0.3214 O.4312 Positive predictive 0.7413 0.814 0.7212 0.913 0.6612 0.713 0.3110 O.7613 0.3110 0.7913 0.6612 0.713 0.814 0.7218 0.3112 0.7913 0.7913 Cohen's Kappa Slight Moderate Slight 0.7913	-	0.7818	0.9518	0.6512	0.4413	0.6313
Sensitivity Fair to substantial 0.32 ¹⁸ 0.50 ¹² Outstantial 0.68 ¹³ O.72 ¹² 0.68 ¹³ O.72 ¹² 0.69 ¹³ O.80 ¹⁸ 0.50 ¹² Positive predictive value Fair to substantial 0.24 ¹⁸ Substantial to almost perfect 0.53 ¹² 0.63 ¹² 0.63 ¹³ 0.39 ¹³ 0.43 ¹³ 0.35 ¹² 0.43 ¹³ Positive predictive value Fair to substantial 0.53 ¹² Substantial to almost perfect 0.53 ¹² Moderate to 0.74 ¹⁸ Substantial 0.72 ¹⁸ O.87 ¹³ 0.79 ¹³ Cohen's Kappa Concordance Slight to Slight to Fair 0.20 ¹⁸ O.74 ¹⁸ 0.52 ¹² 0.091 ⁸ 0.66 ¹² Concordance Slight to Fair 0.20 ¹⁸ 0.74 ¹⁸ 0.31 0.15 0.19 Concordance Slight to Fair 0.20 ¹⁸ 0.71 ¹⁸ Slight to Fair 0.31 0.49 ¹² 0.21 ¹⁸ 0.49 ¹² Percentage agreement ⁸ Substantial to almost perfect Slight to almost perfect Moderate to 0.66 ¹³ 0.49 ¹² 0.25 ¹² 0.43 ¹² 0.81 ¹² 0.92 ¹⁸ 0.66 ¹² 0.71 ¹³ 0.88 ¹² 0.46 ¹⁸ 0.71 ¹³ 0.80 ¹⁸ 0.87 ¹⁸ 0.85 ¹³ 0.70 ¹² 0.83 ¹²		0.7813		0.9318	0.6018	0.8312
Sensitivity Fair to substantial 0.32 ¹² 0.6913 Substantial to 0.6913 Substantial to 0.2915 Substantial to 0.4937 Substantial to 0.6915 Substantial to 0.6915 Concerta to 0.4937 Substantial to 0.4937 Moderate to 0.4937 Substantial to 0.4937 Moderate to 0.4937 Substantial to 0.4937 Moderate to 0.4215 Substantial to 0.4937 Sub				0.9813	0.7212	0.8918
0.3218 almost perfect moder perfect Moderate 0.3818 0.6913 0.6813 0.6312 0.1914 0.5013 0.5512 Positive predictive Fair to substantial Substantial to Moderate to Slight to almost Fair to substantial Value 0.2418 almost perfect Substantial perfect 0.2913 0.6612 0.7113 0.8313 0.7218 0.3212 0.7913 0.6612 0.7713 0.8313 0.7718 0.3112 0.7913 0.311 Cohen's Kappa Slight to Fair Substantial Moderate to Slight to Fair 6.091 Concordance Slight to Fair Substantial Moderate to Slight to Fair 6.0218 0.3812 0.7118 substantial 0.4912 0.2512 0.4312 0.3812 0.3812 0.4912 0.2512 0.4312 0.4326 0.8018 0.8718 Moderate to Slight to Fair Perfect almost perfect 0.4213 0.46260 0.4312	Sensitivity	Fair to substantial	Substantial to	Substantial to	Slight to	Fair to Moderate
0.50 ¹² 0.68 ¹³ 0.63 ¹² 0.19 ¹⁸ 0.50 ¹³ Positive predictive value Fair to substantial 0.53 ¹² 0.86 ¹³ 0.76 ¹³ 0.39 ¹³ 0.55 ¹² Opsitive predictive value C24 ¹³ almost perfect 0.53 ¹² 0.74 ¹⁸ 0.52 ¹² 0.09 ¹⁸ 0.66 ¹² 0.71 ¹³ 0.83 ¹³ 0.72 ¹⁸ 0.31 ¹² 0.79 ¹³ 0.79 ¹³ Cohen's Kappa Concordance Slight 0.20 ¹⁶ Moderate 0.20 ¹⁶ 0.31 0.15 0.19 Concordance Slight to Fair 0.20 ¹⁶ Substantial 0.38 ¹² Noterate 0.49 ¹² 0.25 ¹² 0.43 ¹² Commercial source: InfoUSA or ReferenceUSA (n=9) ^{12,13,18,20,28,30} Woderate to almost perfect Moderate to 0.66 ³⁰ Moderate to almost perfect Moderate to substantial 0.49 ³¹² Moderate to almost perfect Moderate to almost perfect Moderate to 0.66 ¹² Moderate to 0.49 ³⁰ Moderate to almost perfect Moderate to almost perfect Moderate to almost perfect Moderate to 0.69 ³⁰ 0.69 ¹² 0.49 ¹³ 0.49 ¹³ 0.49 ²¹³		0.3218	almost perfect	almost perfect	Moderate	0.3818
0.69 ¹³ 0.86 ¹³ 0.76 ¹³ 0.43 ¹² 0.55 ¹² Positive predictive value Fair to substantial 0.24 ¹⁸ Substantial to almost perfect 0.74 ¹⁸ Moderate to substantial 0.74 ¹⁸ Slight to almost 0.74 ¹⁸ O.99 ¹⁸ 0.66 ¹² 0.29 ¹⁸ O.171 ¹³ 0.83 ¹³ 0.72 ¹⁸ 0.31 ¹² 0.79 ¹³ 0.86 ¹² Cohen's Kappa Coefficient ¹⁸ 0.17 0.54 0.31 0.15 0.19 Concordance Slight To Fair 0.20 ¹⁸ Substantial 0.31 ¹² 0.49 ¹² 0.27 ¹⁸ 0.15 Concordance Slight to Fair 0.20 ¹⁸ Substantial 0.31 ¹² 0.49 ¹² 0.25 ¹² 0.43 ¹² Percentage agreement ¹⁸ Substantial to 0.67 ²⁰ Substantial to 0.67 ²⁰ Substantial to 0.67 ²⁰ Moderate to substantial to almost perfect 0.67 ²⁰ Moderate to almost perfect 0.67 ¹³ 0.48 ²³ 0.48 ²³ 0.48 ²³ Sensitivity Moderate to 0.67 ¹³ Slight to almost perfect Substantial to almost perfect 0.87 ¹⁸ 0.85 ¹³ 0.70 ¹² 0.87 ¹³ 0.80 ¹² 0.68 ¹³ 0.71 ¹³ 0.86 ¹² 0.75 ¹³		0.5012	0.6813	0.6312	0.1918	0.5013
O.8118 O.8312 Positive value Fair to substantial 0.2413 Substantial almost perfect Moderate to substantial 0.5312 O.7413 O.7414 O.7214 O.7214 O.7313 O.7613 O.7913 O.6612 Cohen's Kappa Slight 0.7113 0.8313 0.7214 0.3112 0.7913 0.6612 Cohen's Kappa Slight 0.17 0.54 0.31 0.15 0.19 Concordance Slight to Fair Substantial Moderate to Slight 0.2718 0.2018 0.2718 0.2018 0.2718 0.2112 0.2118 0.2018 0.2718 0.2018 0.2718 0.2018 0.2718 0.2018 0.2718 0.2718 0.2718 0.2718 0.2718 0.2718 0.2718 0.2718 0.2718 0.2019 0.4312 0.4213 0.46241 0.7113 0.4630 0.4213 0.46241 0.7113 0.8718 0.8218 0.7113 0.8218 0.7113 0.8218 0.7113 0.8218 0.7113 0.8218 0.7513 0.2030		0.6913	0.8618	0.7613	0.3913	0.5512
Positive predictive value Fair to substantial 0.53 ¹² Substantial almost perfect 0.71 ¹³ Moderate to substantial 0.72 ¹⁸ Slight 0.72 ¹⁸ Fair to substantial 0.52 ¹² Sperfect 0.73 ¹³ Slight 0.73 ¹³ Cole 1.23 ¹⁶ Cohen's Kappa Coefficient's 0.17 0.54 0.31 0.15 ²¹ 0.73 ¹³ 0.87 ¹³ Concordance Slight 0.20 ¹⁸ Moderate Fair 0.20 ¹⁸ Slight 0.71 ¹⁸ Slight 0.71 ¹⁸ Slight 0.71 ¹⁸ Slight 0.49 ¹² 0.25 ¹² 0.43 ¹² Commercial source: InfOUSA or ReferenceUSA (n=6) ^{12,13,18,20,283 0.49¹² 0.25¹² 0.43¹² Percentage agreements Substantial to 0.67²⁰ 0.06¹³ 0.49²⁰ 0.25¹³ 0.46²⁰ 0.69²⁰ 0.20³⁰ 0.82²⁸ 0.41¹⁸ 0.42²³ 0.42²³ 0.69²⁰ 0.20³⁰ 0.82²⁸ 0.41³⁸ 0.42³⁰ 0.75¹³ 0.80¹⁴ 0.87¹⁴ 0.86¹² 0.71¹³ 0.58¹² 0.65¹² 0.80¹⁴ 0.92¹⁸ 0.92¹⁸ 0.75¹³ 0.89¹³ 0.93¹³ almost perfect}				0.8118	0.4312	
value 0.24 ^{1/8} almost perfect substantial perfect 0.29 ^{1/8} 0.71 ^{1/3} 0.71 ^{1/3} 0.72 ^{1/8} 0.31 ^{1/2} 0.79 ^{1/3} Cohen's Kappa Slight Moderate Fair Slight 0.71 ^{1/3} Cohen's Kappa Slight to Fair Slight to Fair Slight to Fair 0.71 ^{1/8} 0.66 ^{1/2} Concordance Slight to Fair Substantial Moderate to Slight to Fair 0.43 ^{1/2} Commercial source: Info to All 0.71 ^{1/8} Substantial 0.66 ^{1/2} 0.25 ^{1/2} 0.43 ^{1/2} Percentage Substantial to Slight to almost Moderate to Substantial perfect agreement ³ Slight o Slight to almost Adserate to Substantial perfect 0.69 ^{3/0} 0.22 ^{3/8} 0.49 ^{3/8} 0.70 ^{1/8} 0.85 ^{1/3} 0.70 ^{1/8} 0.80 ^{1/4} 0.72 ^{1/8} 0.85 ^{1/3} 0.70 ^{1/8} 0.85 ^{1/3} 0.70 ^{1/8} 0.80 ^{1/4} 0.72 ^{1/8} 0.85 ^{1/3} 0.70 ^{1/8} 0.83 ^{1/8} 0.93 ^{1/8}	Positive predictive	Fair to substantial	Substantial to	Moderate to	Slight to almost	Fair to substantial
0.53 ¹² 0.74 ¹⁸ 0.52 ¹² 0.09 ¹⁸ 0.66 ¹² 0.71 ¹³ 0.83 ¹³ 0.72 ¹⁸ 0.31 ¹² 0.79 ¹³ Cohen's Kappa Slight Moderate Fair Slight Slight Concordance Slight to Fair Substantial Moderate to Slight to Fair O.19 Concordance Slight to Fair Substantial 0.49 ¹² 0.25 ¹² 0.43 ¹² O.70 ¹³ 0.38 ¹² 0.71 ¹³ 0.49 ¹² 0.25 ¹² 0.43 ¹² Commercial source: InfoUSA or ReferenceUSA (<i>n</i> =6) ^{12.13.18.2028.3 U Moderate to Moderate to Moderate to algreements Substantial to Slight to almost Moderate to Moderate to Moderate to 0.63²⁰ 0.20²⁰ 0.26¹² 0.48²⁰ 0.42¹³ 0.42²⁰ 0.63²⁰ 0.20²⁰ 0.82²⁸ 0.64¹⁸ 0.75¹³ 0.82²⁸ 0.81²¹ 0.06³¹ 0.91²⁸ 0.81²² 0.81²² 0.81²² 0.81¹² 0.20³⁰ 0.82¹⁸}	value	0.2418	almost perfect	substantial	perfect	0.2918
0.7113 0.8313 0.7218 0.3112 0.7913 Cohen's Kappa Slight Moderate Fair Slight 0.15 0.19 Concordance Slight to Fair Slight to Fair Slight to Fair 0.15 0.19 Concordance Slight to Fair Substantial Moderate to Slight to Fair 0.2718 Concordance Slight to Fair Substantial 0.4912 0.2512 0.4312 Commercial source: Information and the almost perfect substantial 0.4912 0.2718 0.4213 agreements almost perfect almost perfect almost perfect substantial perfect almost perfect 0.6720 0.6813 0.7118 0.8283 0.7012 0.8372 0.8278 0.6418 0.7513 0.2030 0.8283 0.6418 0.7513 0.2030 0.8283 0.6418 0.7513 0.2030 0.8212 0.6618 0.6173 0.7113 0.5812 0.6512 0.6512 0.7513 0.2030 0.7512 0.6618 0.9118		0.5312	0.7418	0.5212	0.0918	0.6612
Cohen's Kappa Coefficient ^{1/8} Slight 0.17 Moderate 0.54 Fair 0.31 O.8713 Concordance Slight 0.17 0.54 0.31 0.15 0.19 Concordance Slight 0.17 Substantial 0.38 ¹² Moderate to substantial 0.49 ¹² Slight 0 Fair 0.06 ¹⁸ O.27 ¹⁸ Commercial source: InfOUSA or ReferenceUSA (n=6) ^{12,13,18,20,28,37} 0.70 ¹⁸ 0.49 ¹² 0.25 ¹² 0.43 ¹² Percentage agreements Substantial to almost perfect 0.67 ²⁰⁰ Slight to almost perfect Moderate to almost perfect Moderate to 0.49 ³⁰ 0.42 ¹³ 0.46 ^{20,h} 0.67 ²⁰⁰ 0.06 ¹³ 0.49 ²⁰ 0.70 ¹² 0.83 ¹² 0.83 ¹² 0.87 ¹³ 0.87 ¹⁵ 0.85 ¹³ 0.70 ¹² 0.83 ¹² 0.83 ¹² 0.87 ¹³ 0.92 ²⁸ 0.94 ¹⁸ 0.75 ¹³ 0.23 ³⁰ 0.33 ³⁰ 0.92 ²⁸ Jongta Jongta Jongta Jongta Jamost perfect 0.39 ³⁰ 0.86 ¹⁸ 0.92 ³⁰ Jongta Jongta Jongta Jongta Jongta 0.75 ¹³		0.7113	0.8313	0.7218	0.3112	0.7913
Cohen's Kappa Coefficient ^{1/8} Slight 0.17 Moderate 0.54 Fair 0.31 Slight 0.15 Slight 0.19 Concordance Concordance Slight to Fair 0.20 ¹⁸ 0.54 0.31 0.15 0.19 Concordance Slight to Fair 0.20 ¹⁸ Substantial 0.21 ¹⁸ Moderate to substantial 0.49 ¹² Slight to Fair 0.25 ¹² 0.21 ¹⁸ 0.26 ¹⁸ 0.27 ¹⁸ Commercial source: InfUSA or Reference/USA (n=6) ^{12,13,18,20,28,30} Woderate to substantial Moderate to almost perfect Moderate to almost perfect Moderate to substantial Moderate to almost perfect Moderate to almost perfect Moderate to almost substantial Moderate to almost perfect Moderate to almost perfect Moderate to almost perfect Slight to almost substantial Moderate to substantial Moderate to almost perfect 0.81 ¹² 0.81 ¹² 0.82 ¹⁸ 0.70 ¹² 0.83 ¹² 0.82 ¹⁸ 0.92 ²⁸ 1.00 ²⁰ h 0.94 ¹⁸ 0.79 ¹³ 0.82 ¹⁸ 0.71 ¹⁸ 0.92 ²⁸ 0.61 ¹² 0.06 ¹³ 0.71 ¹³ 0.58 ¹² 0.65 ¹² 0.75 ¹³ 0.20 ³⁰ 0.75 ¹³ 0.94 ¹⁸ 0.91 ¹				0.7813	0.8713	
Coefficientis 0.17 0.54 0.31 0.15 0.19 Concordance Slight to Fair 0.2016 Substantial 0.2016 Substantial 0.2018 Moderate to substantial 0.4912 Slight to Fair 0.0512 Fair to Moderate 0.2718 O.618 0.2718 Commercial source: InfoUSA or ReferenceUSA (n=6)12.13.18.20.28.30 U Moderate to 0.6913 Moderate to 0.67206 Moderate to 0.67206 Moderate to 0.67206 Moderate to 0.6730 Moderate to 0.618 Moderate to 0.4213 0.4620.h 0.8112 0.8713 0.8512 0.7012 0.8312 0.8512 0.8726 0.9228 1.0020.h 0.3913 almost perfect 0.6618 0.6512 0.6618 0.6512 0.6512 0.7513 0.2030 0.713 0.5812 0.6618 0.6713 0.9930 0.9930 0.9930 0.9933 0.9918 0.9918 0.9918	Cohen's Kappa	Slight	Moderate	Fair	Slight	Slight
Concordance Slight to Fair 0.2018 Substantial 0.7118 Moderate to substantial O.0618 O.2718 Commercial source: InfoUSA or ReferenceUSA (r=6)12.13.18.20.28.30 0.2512 0.4312 Percentage agreements Substantial to almost perfect Slight to fair o.6720h Moderate to almost perfect 0.4213 0.4620.h 0.8112 0.8018 0.8718 0.8513 0.7012 0.8312 0.8212 0.8713 0.92418 0.8930 0.9330 0.9228 1.0020.h 0.9313 almost perfect 0.9330 0.6012 0.0613 0.7113 0.5812 0.6512 0.512 0.6613 0.713 0.230 0.7513 0.9939 0.9930 0.9830 Positive predictive value Substantial Almost perfect 0.6612 0.3216 0.7114	Coefficient ¹⁸	0.17	0.54	0.31	0.15	0.19
0.2018 0.7118 substantial 0.0618 0.2718 0.3812 0.4912 0.2512 0.4312 0.7018 0.7018 0.7018 Commercial source: InfoUSA or ReferenceUSA (n=6)12.13.18.20.28.30 Moderate to Moderate to almost perfect o.7018 agreements almost perfect perfect almost perfect o.4930 0.4213 0.4620.0 0.6630 0.2030 0.8228 0.6448 0.7513 0.8312 0.8112 0.8718 0.8513 0.7012 0.8312 0.8122 0.8718 0.9418 0.8818 0.8278 0.8228 0.6614 0.8343 0.9300 0.9330 Sensitivity Moderate to almost perfect almost perfect 0.9313 almost perfect 0.9330 0.6012 0.0613 0.7113 0.5842 0.6512 0.6512 0.7513 0.2039 0.7512 0.6619 0.6713 0.6814 0.8216 almost perfect almost perfect 0.9930 0.9930	Concordance	Slight to Fair	Substantial	Moderate to	Slight to Fair	Fair to Moderate
0.38 ¹² 0.49 ¹² 0.70 ¹⁸ 0.25 ¹² 0.43 ¹² Commercial source: InfoUSA or ReferenceUSA (n=6) ^{12,13,18,20,28,30} Moderate to almost perfect Moderate to substantial 0.42 ²¹³ 0.46 ^{20,n} 0.67 ³⁰ 0.06 ¹³ 0.49 ³⁰ 0.42 ²¹³ 0.46 ^{20,n} 0.80 ¹⁵ 0.87 ¹³ 0.82 ²⁸ 0.64 ¹⁸ 0.75 ¹³ 0.81 ¹² 0.86 ¹² 0.87 ¹⁸ 0.88 ¹⁸ 0.87 ¹⁸ 0.87 ¹³ 0.92 ²⁸ 1.00 ^{20,n} 0.93 ³⁰ almost perfect 0.92 ²⁸ 0.06 ¹³ 0.71 ¹³ 0.58 ¹² 0.65 ¹² 0.75 ¹³ 0.20 ³⁰ 0.75 ¹³ 0.93 ³⁰ almost perfect 0.93 ³⁰ 0.86 ¹⁸ 0.95 ¹⁸ 0.94 ¹⁸ 0.91 ¹⁸ 0.91 ¹⁸ 0.91 ¹⁸ 0.61 ² 0.65 ¹⁰ 1.00 ¹³ 0.66 ¹² 0.32 ¹⁸ 0.71 ¹⁸ </td <td></td> <td>0.2018</td> <td>0.7118</td> <td>substantial</td> <td>0.0618</td> <td>0.2718</td>		0.2018	0.7118	substantial	0.0618	0.2718
O.70 ¹⁸ Commercial source: InfoUSA or ReferenceUSA (n=6)12.13.18.20.28.30 Percentage agreement# Substantial to almost perfect 0.67 ^{20h} Slight to almost perfect 0.06 ¹³ Moderate to almost perfect 0.42 ¹³ Moderate to substantial Moderate to perfect Moderate to almost perfect Moderate to substantial Moderate to perfect 0.69 ³⁰ 0.20 ³⁰ 0.82 ²⁶ 0.64 ¹⁶ 0.75 ¹³ 0.80 ¹⁸ 0.87 ¹⁸ 0.85 ¹³ 0.70 ¹² 0.83 ¹² 0.81 ¹² 0.94 ¹⁸ 0.88 ¹⁶ 0.72 ²⁸ 0.87 ¹³ 0.92 ²⁸ 1.00 ^{20,h} 0.93 ³⁰ 0.88 ¹⁸ 0.92 ²⁸ 1.00 ^{20,h} 0.39 ¹³ almost perfect 0.60 ¹² 0.61 ¹³ 0.71 ¹³ 0.58 ¹² 0.65 ¹² 0.75 ¹³ 0.20 ³⁰ 0.75 ¹² 0.66 ¹⁸ 0.91 ¹⁸ 0.86 ¹⁴ 0.95 ¹⁸ 0.94 ¹⁸ 0.91 ¹⁸ 0.91 ¹⁸ 0.86 ¹² 0.21 ⁸ almost perfect 0.66 ¹² 0.71 ¹⁸ 0.86 ¹³ 0.92 ¹³ almost perfect 0.66 ¹² 0.93 ¹³		0.3812		0.4912	0.2512	0.4312
Commercial source: InfoUSA or ReferenceUSA (n=6)1243.18.20.28.30 Percentage Substantial to agreements Substantial to agreements Silght to almost berfect Moderate to almost perfect Moderate to substantial Moderate to substantial Moderate to perfect 0.67 ^{20h} 0.06 ¹³ 0.49 ³⁰ 0.42 ¹³ 0.46 ^{20h} 0.80 ¹⁸ 0.80 ¹⁸ 0.82 ²⁸ 0.64 ¹⁸ 0.75 ¹³ 0.81 ¹² 0.81 ¹² 0.86 ¹² 0.87 ¹⁸ 0.82 ¹² 0.87 ¹³ 0.94 ¹⁸ 0.88 ¹² 0.87 ¹⁸ 0.88 ¹² 0.87 ²⁸ 1.00 ^{20h} 0.93 ³⁰ 0.88 ¹⁸ 0.93 ³⁰ Sensitivity Moderate to almost perfect slight to almost perfect slubstantial to almost perfect 0.66 ¹² 0.39 ¹³ almost perfect 0.60 ¹² 0.20 ³⁰ 0.75 ¹² 0.66 ¹⁸ 0.67 ¹³ 0.94 ¹⁸ 0.99 ³⁰ 0.99 ³⁰ 0.93 ³⁰ 0.93 ³⁰ 0.93 ³⁰ Positive predictive value Substantial 0.82 ¹⁸ almost perfect slubstantial to 0.66 ¹² 0.75 ¹³				0.7018		
Percentage agreements Substantial to almost perfect 0.67 ^{20h} 0.69 ³⁰ Slight to almost perfect Moderate to almost perfect 0.69 ³⁰ Moderate to perfect Moderate to substantial Moderate to substantial Moderate to perfect 0.67 ^{20h} 0.80 ¹⁸ 0.69 ³⁰ 0.20 ³⁰ 0.82 ²⁸ 0.64 ¹⁸ 0.75 ¹³ 0.80 ¹⁸ 0.87 ¹⁸ 0.85 ¹³ 0.70 ¹² 0.83 ¹² 0.81 ¹² 0.86 ¹² 0.87 ²⁸ 0.93 ³⁰ 0.92 ²⁸ 0.94 ¹⁸ 0.85 ¹³ 0.70 ¹² 0.83 ¹² 0.92 ²⁸ 0.94 ¹⁸ 0.85 ¹² 0.93 ³⁰ 0.93 ³⁰ Sensitivity Moderate to almost perfect slight to almost perfect Substantial to almost perfect 0.93 ³⁰ 0.60 ¹² 0.06 ¹³ 0.71 ¹³ 0.58 ¹² 0.66 ¹² 0.51 ² 0.86 ¹⁸ 0.95 ¹⁸ 0.94 ¹⁸ 0.91 ⁸ 0.91 ⁸ 0.91 ⁸ 0.99 ³⁰ 0.95 ¹⁸ 0.94 ¹⁸ 0.91 ⁸ 0.98 ³⁰ 0.98 ³⁰ 0.86 ¹² 0.71 ¹³ 0.82 ¹⁸ almost perfect almost perfect 0.98 ³⁰	Commercial source:	InfoUSA or Reference	JSA (n=6) ^{12,13,18,20,28,}	30		
agreements almost perfect perfect almost perfect substantial perfect 0.6720h 0.0613 0.4930 0.4213 0.4620.h 0.6930 0.2030 0.8228 0.6418 0.7513 0.8018 0.8718 0.8612 0.8312 0.8312 0.8112 0.8612 0.8612 0.8378 0.8713 0.9418 0.8816 0.9330 0.9228 1.0020.h 0.9330 0.6512 0.6012 0.0613 0.7113 0.5812 0.6512 0.6012 0.0613 0.7113 0.5812 0.6512 0.7513 0.2030 0.7512 0.6618 0.6713 0.7513 0.2030 0.7512 0.6618 0.918 0.9930 0.9930 0.9830 0.918 0.918 0.9930 0.9930 0.7512 0.6618 0.7118 0.9930 0.9930 0.7530 0.4612 0.7148 0.9930 0.9930 0.9218 0.9131	Percentage	Substantial to	Slight to almost	Moderate to	Moderate to	Moderate to almost
0.67 ^{20h} 0.06 ¹³ 0.49 ³⁰ 0.42 ¹³ 0.46 ^{20,h} 0.69 ³⁰ 0.20 ³⁰ 0.82 ²⁸ 0.64 ¹⁸ 0.75 ¹³ 0.80 ¹⁵ 0.87 ¹⁸ 0.85 ¹³ 0.70 ¹² 0.83 ¹² 0.81 ¹² 0.86 ¹² 0.87 ²⁸ 0.87 ²⁸ 0.87 ²⁸ 0.92 ²⁸ 0.94 ¹⁸ 0.93 ³⁰ Sensitivity Moderate to almost perfect substantial to perfect Fair to substantial almost perfect 0.93 ³⁰ 0.60 ¹² 0.06 ¹³ 0.71 ¹³ 0.58 ¹² 0.65 ¹² 0.75 ¹³ 0.20 ³⁰ 0.75 ¹² 0.66 ¹⁸ 0.67 ¹³ 0.86 ¹⁸ 0.95 ¹⁸ 0.94 ¹⁸ 0.91 ¹⁸ 0.91 ¹⁸ 0.99 ³⁰ 0.99 ³⁰ 0.98 ³⁰ 0.98 ³⁰ 0.98 ³⁰ Positive predictive Substantial Almost perfect Substantial to Substantial to value 0.64 ¹⁸ 0.82 ¹⁸ almost perfect 9.93 ³⁰ 0.99 ³⁰ 0.68 ¹² 1.00 ¹³ 0.66 ¹² 0.32 ¹⁸ 0.71 ¹⁸ 0.90 ¹³	agreementg	almost perfect	perfect	almost perfect	substantial	perfect
0.69 ³⁰ 0.20 ³⁰ 0.82 ²⁸ 0.64 ¹⁸ 0.75 ¹³ 0.80 ¹⁸ 0.87 ¹⁸ 0.85 ¹³ 0.70 ¹² 0.87 ²⁸ 0.81 ¹² 0.86 ¹² 0.87 ²⁸ 0.87 ²⁸ 0.83 ¹⁸ 0.92 ²⁶ 1.00 ^{20,h} 0.93 ³⁰ 0.93 ³⁰ Sensitivity Moderate to almost perfect Slight to almost Substantial to almost perfect 0.39 ¹³ almost perfect 0.75 ¹³ 0.20 ³⁰ 0.71 ¹³ 0.58 ¹² 0.66 ¹² 0.66 ¹² 0.75 ¹³ 0.20 ³⁰ 0.71 ¹³ 0.58 ¹² 0.66 ¹² 0.91 ¹⁸ 0.99 ³⁰ 0.99 ³⁰ 0.99 ³⁰ 0.99 ³⁰ 0.98 ³⁰ Positive predictive value Substantial Almost perfect Substantial to 91 ¹⁸ 0.66 ¹² 0.21 ¹⁸ 0.99 ³⁰ 0.75 ³⁰ 0.46 ¹² 0.71 ¹⁸ 0.68 ¹² 1.00 ³⁰ 0.75 ³⁰ 0.46 ¹² 0.71 ¹⁸ 0.90 ¹³ 0.68 ¹² 0.35 ¹⁸ -0.07 ¹⁸ 0.42 ¹² 0.79 ¹² 0.90 ¹³ 0.66 ¹²		0.67 ^{20h}	0.0613	0.49 ³⁰	0.4213	0.46 ^{20,h}
0.8018 0.8718 0.8513 0.7012 0.8312 0.8112 0.8612 0.8728 0.8728 0.8713 0.9418 0.9330 Sensitivity Moderate to almost perfect Slight to almost perfect Substantial to almost perfect Fair to substantial Substantial to 0.6012 0.0613 0.7113 0.812 0.6512 0.7513 0.2030 0.7512 0.6618 0.6713 0.930 0.9930 0.9518 0.9418 0.9118 0.9830 0.9930 0.7512 0.6618 0.6713 0.8612 0.9930 0.9518 0.9418 0.9830 0.9930 0.6612 0.6618 0.9118 0.9830 value 0.6415 0.8218 almost perfect perfect almost perfect 0.6812 1.0030 0.7530 0.4612 0.7118 0.9013 Cohen's Kappa Fair to moderate Fair 0.6418 0.6418 0.7028 Concordance Moderate 0.3218 0.4618 0.7028 <td></td> <td>0.69³⁰</td> <td>0.2030</td> <td>0.8228</td> <td>0.6418</td> <td>0.75¹³</td>		0.69 ³⁰	0.2030	0.8228	0.6418	0.75 ¹³
0.81 ¹² 0.86 ¹² 0.87 ²⁸ 0.92 ²⁶ 1.00 ^{20,h} 0.83 ¹³ Sensitivity Moderate to almost perfect Slight to almost perfect Substantial to almost perfect Fair to substantial 0.39 ¹³ Substantial to almost perfect 0.60 ¹² 0.06 ¹³ 0.71 ¹³ 0.58 ¹² 0.65 ¹² 0.75 ¹³ 0.20 ³⁰ 0.75 ¹² 0.66 ¹⁸ 0.67 ¹³ 0.86 ¹⁶ 0.95 ¹⁸ 0.94 ¹⁸ 0.61 ¹⁸ 0.91 ¹⁸ 0.99 ³⁰ 0.99 ³⁰ 0.91 ¹⁸ 0.91 ¹⁸ 0.91 ¹⁸ 0.99 ³⁰ 0.99 ³⁰ 0.91 ¹⁸ 0.91 ¹⁸ 0.91 ¹⁸ 0.99 ³⁰ 0.99 ³⁰ 0.91 ¹⁸ 0.98 ³⁰ 0.98 ³⁰ Positive predictive value Substantial Almost perfect Substantial to Fair to almost Substantial to 0.66 ¹² 0.61 ¹³ 0.66 ¹² 0.32 ¹⁸ 0.71 ¹⁸ 0.71 ¹⁸ 0.66 ¹² 1.00 ³⁰ 0.75 ³⁰ 0.46 ¹² 0.79 ¹² 0.71 ³⁰ 0.76 ¹³ 0.56 ¹⁸ 0.32 ¹⁸ 0.90 ¹³ <td></td> <td>0.8018</td> <td>0.8718</td> <td>0.85¹³</td> <td>0.7012</td> <td>0.8312</td>		0.8018	0.8718	0.85 ¹³	0.7012	0.8312
0.8713 0.9418 0.8818 0.9228 1.0020.h 0.930 Sensitivity Moderate to almost perfect Slight to almost perfect Substantial to almost perfect Fair to substantial Substantial to almost perfect 0.3913 almost perfect 0.3913 almost perfect 0.6612 0.6512 0.6512 0.6512 0.6512 0.6512 0.6713 0.9918 0.9918 0.9918 0.9918 0.9918 0.9918 0.9918 0.9930 0.9931 0.9931 0.9931 0.9931 0.8930 0.99313 0.8830 0.9013		0.8112		0.8612		0.8728
0.92 ²⁸ 1.00 ^{20.h} 0.93 ³⁰ Sensitivity Moderate to almost perfect 0.60 ¹² Slight to almost perfect 0.60 ¹² Substantial to almost perfect 0.60 ¹² Slight to almost perfect Substantial to almost perfect 0.75 ¹³ Slight to almost perfect Substantial to 0.75 ¹³ Almost perfect 0.99 ³⁰ O.89 ¹³ O.89 ¹² O.66 ¹² O.66 ¹² 0.75 ¹³ 0.20 ³⁰ 0.75 ¹² O.66 ¹⁸ O.67 ¹³ O.91 ¹⁸ 0.99 ³⁰ 0.99 ³⁰ 0.99 ³⁰ O.99 ³⁰ O.98 ³⁰ O.98 ³⁰ Positive predictive value Substantial 0.64 ¹⁸ Almost perfect Substantial to 0.82 ¹⁸ Fair to almost Substantial to perfect Substantial to 0.98 ³⁰ 0.68 ¹² 1.00 ³⁰ 0.66 ¹² O.32 ¹⁸ O.71 ¹⁸ O.90 ¹³ 0.68 ¹² 1.00 ³⁰ 0.75 ³⁰ O.46 ¹² O.79 ¹² O.90 ¹³ 0.66 ¹⁸ 0.35 ¹⁸ -0.07 ¹⁸ O.46 ¹⁸ O.64 ¹⁸ O.64 ¹⁸ 0.56 ¹⁸ 0.44 ²⁸ 0.70 ²⁸ O.70 ²⁸ O.70 ²⁸ O.70 ²⁸ Concordance Moderate 0.50 ¹²		0.8713		0.9418		0.8818
SensitivityModerate to almost perfectSlight to almost perfectSubstantial to almost perfectFair to substantialSubstantial to almost perfect 0.6012 0.0613 0.7113 0.3913 almost perfect 0.6012 0.0613 0.7113 0.5812 0.6512 0.7513 0.2030 0.7512 0.6618 0.6713 0.8618 0.9930 0.9930 0.9930 0.9930 Positive predictive valueSubstantialAlmost perfectSubstantial to 0.6530 Substantial to 0.6530 Fair to almost 0.6612 0.3218 0.7118 0.9930 0.7530 0.4612 0.7118 0.6812 1.00^{13} 0.6612 0.3218 0.7118 0.6812 1.00^{30} 0.7530 0.4612 0.7912 0.7613 0.3518 0.9913 0.8830 0.3918 0.9013 0.8830 0.3918 0.9013 Cohen's Kappa coefficientFair to moderate 0.3288 0.3518 0.4428 0.7028 ConcordanceModerate 0.5012 Substantial 0.7918 0.6012 0.2218 substantial 0.6012 0.3913 0.6418 0.6418 0.6418 0.6418 0.5012 0.7918 0.6012 0.3912 0.5612 0.5118 0.7918 0.8718 0.6418 0.6418 0.6012 0.3912 0.5612 0.6418 0.6012 0.3912 0.5612 0.6418 0.5012		0.9228		1.00 ^{20,h}		0.9330
almost perfect perfect almost perfect 0.39 ¹³ almost perfect 0.6012 0.0613 0.7113 0.5812 0.6512 0.7513 0.2030 0.7512 0.6618 0.6713 0.8618 0.9518 0.9418 0.9118 0.9830 0.9930 0.9930 0.9930 0.9830 Positive predictive value Substantial Almost perfect Substantial to 9.930 0.6530 1.0013 0.6612 0.3218 0.7118 0.6812 1.0030 0.7530 0.4612 0.7912 0.7613 0.8918 0.9013 0.8830 0.9013 Cohen's Kappa Fair to moderate Fair Substantial 0.9013 Concordance Moderate Substantial 0.4428 0.7028 Concordance Moderate Substantial 0.6012 0.3912 0.5614 0.5118 0.5118 0.6012 0.3912 0.5612 0.6612 0.5118 0.5012 0.7918 almost per	Sensitivity	Moderate to	Slight to almost	Substantial to	Fair to substantial	Substantial to
0.60 ¹² 0.06 ¹³ 0.71 ¹³ 0.58 ¹² 0.65 ¹² 0.75 ¹³ 0.20 ³⁰ 0.75 ¹² 0.66 ¹⁸ 0.67 ¹³ 0.86 ¹⁸ 0.95 ¹⁸ 0.94 ¹⁸ 0.91 ¹⁸ 0.98 ³⁰ 0.99 ³⁰ 0.99 ³⁰ 0.99 ³⁰ 0.98 ³⁰ 0.98 ³⁰ Positive predictive Substantial Almost perfect Substantial to Fair to almost Substantial to value 0.64 ¹⁸ 0.82 ¹⁸ almost perfect perfect almost perfect 0.99 ³⁰ 0.65 ³⁰ 1.00 ¹³ 0.66 ¹² 0.32 ¹⁸ 0.71 ¹⁸ 0.71 ¹⁸ 0.68 ¹² 1.00 ³⁰ 0.75 ³⁰ 0.46 ¹² 0.79 ¹² 0.76 ¹³ 0.84 ¹³ 0.93 ¹³ 0.88 ³⁰ 0.56 ¹⁸ 0.35 ¹⁸ -0.07 ¹⁸ 0.46 ¹⁸ 0.64 ¹⁸ 0.56 ¹⁹ 0.35 ¹⁸ -0.07 ¹⁸ 0.46 ¹⁸ 0.64 ¹⁸ 0.50 ¹² 0.79 ¹⁸ almost perfect 0.22 ¹⁸ substantial 0.51 ¹⁸ 0.79 ¹⁸ almost perfect 0.22 ¹⁸		almost perfect	perfect	almost perfect	0.3913	almost perfect
0.75 ¹³ 0.20 ³⁰ 0.75 ¹² 0.66 ¹⁸ 0.67 ¹³ 0.86 ¹⁸ 0.99 ¹⁸ 0.94 ¹⁸ 0.91 ¹⁸ 0.91 ¹⁸ 0.99 ³⁰ 0.99 ³⁰ 0.99 ³⁰ 0.98 ³⁰ 0.98 ³⁰ Positive predictive Substantial Almost perfect Substantial to Fair to almost Substantial to value 0.64 ¹⁸ 0.82 ¹⁸ almost perfect 0.32 ¹⁸ 0.71 ¹⁸ 0.68 ¹² 1.00 ¹³ 0.66 ¹² 0.32 ¹⁸ 0.71 ¹⁸ 0.68 ¹² 1.00 ³⁰ 0.75 ³⁰ 0.46 ¹² 0.79 ¹² 0.76 ¹³ 1.00 ³⁰ 0.84 ¹³ 0.93 ¹³ 0.88 ³⁰ 0.76 ¹³ 0.35 ¹⁸ -0.07 ¹⁸ 0.46 ¹⁸ 0.64 ¹⁸ 0.56 ¹⁸ 0.35 ¹⁸ -0.07 ¹⁸ 0.46 ¹⁸ 0.64 ¹⁸ 0.50 ¹² 0.51 ¹⁸ 0.44 ²⁸ 0.70 ²⁸ 0.70 ²⁸ Concordance Moderate Substantial 0.60 ¹² 0.2 ²¹⁸ substantial 0.51 ¹⁸ 0.51 ¹⁸ 0.60 ¹² 0.39 ¹² 0		0.6012	0.0613	0.7113	0.5812	0.6512
0.86 ¹⁸ 0.95 ¹⁸ 0.94 ¹⁸ 0.91 ¹⁸ 0.93 ³⁰ Positive predictive Substantial Almost perfect Substantial to Fair to almost Substantial to value 0.64 ¹⁸ 0.82 ¹⁸ almost perfect perfect almost perfect almost perfect almost perfect almost perfect almost perfect 0.32 ¹⁸ 0.71 ¹⁸ 0.65 ³⁰ 1.00 ¹³ 0.66 ¹² 0.32 ¹⁸ 0.71 ¹⁸ 0.88 ³⁰ 0.68 ¹² 1.00 ³⁰ 0.75 ³⁰ 0.46 ¹² 0.79 ¹² 0.76 ¹³ 0.89 ¹⁸ 0.90 ¹³ 0.88 ³⁰ 0.89 ¹⁸ 0.93 ¹³ 0.88 ³⁰ 0.90 ¹³ Cohen's Kappa Fair to moderate Fair Poor to Moderate Moderate Substantial 0.56 ¹⁸ 0.35 ¹⁸ -0.07 ¹⁸ 0.46 ¹⁸ 0.64 ¹⁸ 0.70 ²⁸ Concordance Moderate Substantial Moderate to Fair Moderate to 0.51 ¹⁸ 0.79 ¹⁸ almost perfect 0.22 ¹⁸ substantial 0.51 ¹⁸		0.75 ¹³	0.2030	0.75 ¹²	0.6618	0.6713
0.9930 0.9930 0.9930 0.9830 Positive predictive value Substantial 0.64 ¹⁸ Almost perfect 0.82 ¹⁸ Substantial to almost perfect Fair to almost perfect Substantial to almost perfect 0.65 ³⁰ 1.00 ¹³ 0.66 ¹² 0.32 ¹⁸ 0.71 ¹⁸ 0.68 ¹² 1.00 ³⁰ 0.75 ³⁰ 0.46 ¹² 0.79 ¹² 0.76 ¹³ 0.84 ¹³ 0.93 ¹³ 0.88 ³⁰ 0.89 ¹⁸ 0.39 ¹⁸ 0.90 ¹³ Cohen's Kappa coefficient Fair to moderate 0.38 ²⁸ Fair Poor to Moderate 0.46 ¹⁸ Substantial 0.46 ¹⁸ 0.64 ¹⁸ Concordance Moderate 0.50 ¹² 0.79 ¹⁸ Moderate to almost perfect Fair Moderate to 0.22 ¹⁸ substantial 0.50 ¹² 0.79 ¹⁸ 0.60 ¹² 0.39 ¹² 0.56 ¹² 0.51 ¹⁸ 0.79 ¹⁸ almost perfect 0.22 ¹⁸ substantial 0.51 ¹⁸ 0.60 ¹² 0.39 ¹² 0.56 ¹² 0.64 ¹⁸ Commercial source: Info Canada (n=1) ^{25,g} U U U U Percentage		0.8618	0.95 ¹⁸	0.9418		0.9118
Positive predictive valueSubstantial 0.6418Almost perfect 0.8218Substantial to almost perfectFair to almost perfectSubstantial to almost perfect0.6530 0.6812 0.76131.00130.6612 0.75300.32180.7118 0.79120.76130.0812 0.76130.0300.7530 0.89180.4612 0.93130.7912 0.9013Cohen's Kappa coefficientFair to moderate 0.5618Fair 0.3518Poor to Moderate 0.4428Moderate 0.4618Substantial 0.6418 0.7028ConcordanceModerate 0.5012 0.5118Substantial 0.7918Moderate to almost perfectFair 0.2218 0.3912Moderate to 0.5612 0.3912Commercial source:Info Canada (n=1)25.gVertice VerticeVertice VerticeSubstantial SubstantialSubstantial SubstantialPercentageSubstantialSubstantialSubstantialSubstantial Substantial		0.9930		0.9930		0.9830
value 0.64 ¹⁸ 0.82 ¹⁸ almost perfect perfect almost perfect 0.65 ³⁰ 1.00 ¹³ 0.66 ¹² 0.32 ¹⁸ 0.71 ¹⁸ 0.68 ¹² 1.00 ³⁰ 0.75 ³⁰ 0.46 ¹² 0.79 ¹² 0.76 ¹³ 0.84 ¹³ 0.93 ¹³ 0.88 ³⁰ 0.89 ¹⁸ 0.90 ¹³ 0.88 ³⁰ Cohen's Kappa Fair to moderate Fair Poor to Moderate Moderate 0.56 ¹⁸ 0.35 ¹⁸ -0.07 ¹⁸ 0.46 ¹⁸ 0.64 ¹⁸ 0.56 ¹⁸ 0.42 ²⁸ 0.70 ²⁸ 0.70 ²⁸ Concordance Moderate Substantial Moderate to Fair 0.50 ¹² 0.79 ¹⁸ almost perfect 0.22 ¹⁸ substantial 0.50 ¹² 0.79 ¹⁸ almost perfect 0.22 ¹⁸ substantial 0.51 ¹⁸ 0.60 ¹² 0.39 ¹² 0.56 ¹² 0.51 ¹⁸ 0.60 ¹² 0.39 ¹² 0.56 ¹² 0.51 ¹⁸ 0.60 ¹² 0.39 ¹² 0.64 ¹⁸ 0.64 ¹⁸ 0.64 ¹⁸	Positive predictive	Substantial	Almost perfect	Substantial to	Fair to almost	Substantial to
0.65 ³⁰ 1.00 ¹³ 0.66 ¹² 0.32 ¹⁸ 0.71 ¹⁸ 0.68 ¹² 1.00 ³⁰ 0.75 ³⁰ 0.46 ¹² 0.79 ¹² 0.76 ¹³ 0.84 ¹³ 0.93 ¹³ 0.88 ³⁰ 0.6er's Kappa Fair to moderate Fair 0.00 ¹³ 0.90 ¹³ Cohen's Kappa Fair to moderate Fair Poor to Moderate Moderate Substantial coefficient 0.38 ²⁸ 0.35 ¹⁸ -0.07 ¹⁸ 0.46 ¹⁸ 0.64 ¹⁸ 0.56 ¹⁸ 0.35 ¹⁸ -0.07 ¹⁸ 0.46 ¹⁸ 0.64 ¹⁸ 0.50 ¹² 0.50 ¹² 0.79 ¹⁸ 0.42 ¹⁸ substantial 0.50 ¹² 0.79 ¹⁸ almost perfect 0.22 ¹⁸ substantial 0.51 ¹⁸ 0.60 ¹² 0.39 ¹² 0.56 ¹² 0.64 ¹⁸ 0.51 ¹⁸ 0.60 ¹² 0.39 ¹² 0.56 ¹² 0.64 ¹⁸ Commercial source: Info Canada (n=1) ^{25,g} 0.64 ¹⁸ 0.64 ¹⁸ 0.64 ¹⁸ Percentage Substantial Substantial 0.64 ¹⁸ 0.64 ¹⁸	value	0.64 ¹⁸	0.82 ¹⁸	almost perfect	perfect	almost perfect
0.68 ¹² 1.00 ³⁰ 0.75 ³⁰ 0.46 ¹² 0.79 ¹² 0.76 ¹³ 0.84 ¹³ 0.93 ¹³ 0.88 ³⁰ 0.89 ¹⁸ 0.90 ¹³ 0.90 ¹³ Cohen's Kappa coefficient Fair to moderate source Fair Poor to Moderate source Moderate source Substantial source Concordance Moderate source Substantial source Moderate source Substantial source Moderate source Substantial source Commercial source: Info Canada (n=1) ^{25,g} V V V V Percentage Substantial Substantial Substantial Substantial		0.65 ³⁰	1.00 ¹³	0.66 ¹²	0.32 ¹⁸	0.71 ¹⁸
0.76 ¹³ 0.84 ¹³ 0.93 ¹³ 0.88 ³⁰ Cohen's Kappa Fair to moderate Fair Poor to Moderate Moderate Substantial coefficient 0.38 ²⁸ 0.35 ¹⁸ -0.07 ¹⁸ 0.46 ¹⁸ 0.64 ¹⁸ 0.56 ¹⁸ 0.56 ¹⁸ 0.44 ²⁸ 0.70 ²⁸ 0.70 ²⁸ Concordance Moderate Substantial Moderate to Fair Moderate to 0.50 ¹² 0.79 ¹⁸ almost perfect 0.22 ¹⁸ substantial 0.51 ¹⁸ 0.60 ¹² 0.39 ¹² 0.56 ¹² 0.51 ¹⁸ 0.60 ¹² 0.39 ¹² 0.56 ¹² 0.51 ¹⁸ 0.60 ¹² 0.39 ¹² 0.64 ¹⁸ Commercial source: Info Canada (n=1) ^{25,g} Percentage		0.68 ¹²	1.00 ³⁰	0.75 ³⁰	0.46 ¹²	0.79 ¹²
Cohen's Kappa coefficientFair to moderate 0.3828 0.5618Fair 0.3518Poor to Moderate -0.0718Moderate 0.4618Substantial 0.4618ConcordanceModerate 0.5012 0.5118Substantial 0.7918Moderate to almost perfectFair 0.2218Moderate to substantial 0.6012 0.8912Fair 0.6418Commercial source: Info Canada (n=1)25,gPercentageSubstantialSubstantial		0.76 ¹³		0.84 ¹³	0.93 ¹³	0.88 ³⁰
Cohen's Kappa coefficientFair to moderate 0.3828 0.5618Fair 0.3518Poor to Moderate 0.0718 0.4428Moderate 0.4618Substantial 0.6618ConcordanceModerate 0.5012 0.5118Substantial 0.7918Moderate to almost perfectFair 0.2218Moderate to substantial 0.6012 0.8718Commercial source:Info Canada (n=1)25,gVertical source:Info Canada (n=1)25,gSubstantialPercentageSubstantialSubstantialSubstantial				0.8918		0.9013
coefficient 0.38 ²⁸ 0.35 ¹⁸ -0.07 ¹⁸ 0.46 ¹⁸ 0.64 ¹⁸ 0.56 ¹⁸ 0.56 ¹⁸ 0.44 ²⁸ 0.70 ²⁸ 0.70 ²⁸ Concordance Moderate Substantial Moderate to Fair Moderate to 0.50 ¹² 0.79 ¹⁸ almost perfect 0.22 ¹⁸ substantial 0.51 ¹⁸ 0.60 ¹² 0.39 ¹² 0.56 ¹² 0.87 ¹⁸ 0.64 ¹⁸ 0.64 ¹⁸	Cohen's Kappa	Fair to moderate	Fair	Poor to Moderate	Moderate	Substantial
0.56 ¹⁸ 0.44 ²⁸ 0.70 ²⁸ Concordance Moderate 0.50 ¹² Substantial 0.79 ¹⁸ Moderate to almost perfect Fair Moderate to substantial 0.51 ¹⁸ 0.60 ¹² 0.39 ¹² 0.56 ¹² 0.60 ¹² 0.87 ¹⁸ 0.64 ¹⁸ Commercial source: Info Canada (n=1) ^{25,g} Percentage Substantial	coefficient	0.3828	0.3518	-0.07 ¹⁸	0.4618	0.6418
Concordance Moderate 0.50 ¹² Substantial 0.79 ¹⁸ Moderate to almost perfect Fair Moderate to substantial 0.51 ¹⁸ 0.60 ¹² 0.39 ¹² 0.56 ¹² 0.87 ¹⁸ 0.64 ¹⁸ Percentage Substantial		0.5618		0.4428		0.7028
0.5012 0.7918 almost perfect 0.2218 substantial 0.5118 0.6012 0.3912 0.5612 0.6418 Commercial source: Info Canada (n=1) ^{25,g} Percentage Substantial Substantial	Concordance	Moderate	Substantial	Moderate to	Fair	Moderate to
0.51 ¹⁸ 0.60 ¹² 0.39 ¹² 0.56 ¹² 0.87 ¹⁸ 0.64 ¹⁸ 0.64 ¹⁸ Commercial source: Info Canada (n=1) ^{25,g} Substantial Substantial		0.5012	0.7918	almost perfect	0.2218	substantial
0.8718 0.6418 Commercial source: Info Canada (n=1) ^{25,g} Substantial		0.5118		0.6012	0.3912	0.5612
Commercial source: Info Canada (n=1) ^{25,g} Percentage Substantial				0.8718		0.6418
Percentage Substantial Substantial	Commercial source:	Info Canada (n=1) ^{25,g}				
	Percentage	Substantial				Substantial

	Convenience stores ^b	General merchandise stores ^o	Grocery stores ^d	Specialty markets	Restaurantsf
agreement	0.72	010100			0.76
Commercial source:	Krak Denmark (web-b	ased search engine; r)=1) ^{29,i}		
Percentage	Substantial	Substantial	Substantial	Substantial	Substantial
agreementg	0.80	0.80	0.80	0.80	0.80
Sensitivity	Almost perfect 0.88	Almost perfect 0.88	Almost perfect 0.88	Almost perfect 0.88	Almost perfect 0.88
Positive predictive	Almost perfect	Almost perfect	Almost perfect	Almost perfect	Almost perfect
value	0.90	0.90	0.90	0.90	0.90
Concordance	Almost perfect 0.89	Almost perfect 0.89	Almost perfect 0.89	Almost perfect 0.89	Almost perfect 0.89
Commercial source:	Stockman Company (Denmark retail food cl	hains; <i>n</i> =1) ^{29,i}		
Percentage	Almost perfect	Almost perfect	Almost perfect	Almost perfect	Almost perfect
agreement ^g	0.91	0.91	0.91	0.91	0.91
Sensitivity	Almost perfect 0.93	Almost perfect 0.93	Almost perfect 0.93	Almost perfect 0.93	Almost perfect 0.93
Positive predictive	Almost perfect	Almost perfect	Almost perfect	Almost perfect	Almost perfect
value	0.98	0.98	0.98	0.98	0.98
Cohen's Kappa	Almost perfect	Almost perfect	Almost perfect	Almost perfect	Almost perfect
concordance	0.98	0.98	0.98	0.98	0.98
Commercial source:	Tamec Inc. (Canada; I	7=1) ^{20,1}	Cubatantial	Cubatantial	
Percentage					
Sensitivity	0.77 Almost nerfect		Almost nerfect	Almost nerfect	
B	0.84		0.84	0.84	
Positive predictive value	Almost perfect 0.90		Almost perfect 0.90	Almost perfect 0.90	
Government source:	City Health Departme	nt ⁱ (n=4), Scotland, ²⁷	UK, ^{21,22} U.S. ²⁴		
Percentage	Fair to almost	Fair to almost	Fair to almost	Fair to substantial	Fair to almost
agreementg	perfect	perfect	perfect	0.3422	perfect
	0.3422	0.3422	0.3422	0.7021	0.3422
	0.70^{21}	0.70^{21}	0.70^{21}		0.70^{21}
	0.8524	0.8524	0.85 ²⁴ 0.88 ²⁷		0.8524
Sensitivity	Almost perfect	Almost perfect	Almost perfect	Almost perfect	Almost perfect
	0.84^{21}	0.84^{21}	0.8421	0.8421	0.8421
	0.8422	0.8422	0.8422	0.8422	0.8422
Positivo predictivo	0.0024 Almost perfect	Almost perfect	Almost perfect	Almost perfect	Almost perfect
value	0 8221	0 8221	0 8221	0 8221	0 8221
Value	0.9222	0.9222	0.9222	0.9222	0.9222
Government source:	County Health Depart	tment (U.S.; n=1)18			
Percentage	Almost perfect	Slight	Almost perfect	Almost perfect	Almost perfect
agreement ^g	0.81	0.00	0.97	0.83	0.85
Sensitivity	Fair	Almost perfect	Almost perfect	Moderate	Almost perfect
D 111	0.35	0.98	0.91	0.47	0.91
Positive predictive	Fair	Almost perfect	Almost perfect	Fair	Substantial
Value Cohon's Kanna	0.26 Slight	0.86 Boor	0.81 Modorato	0.23 Modorato	0.70 Modorato
coefficient					0.56
Concordance	Fair	Almost perfect	Substantial	Slight	Substantial
Seneeraanoo	0.21	0.83	0.78	0.16	0.64
Government source:	State Department of	Agriculture (U.S.; <i>n</i> =5)	14,18,20,23,30k		
Percentage	Substantial to	Substantial	Almost perfect	Moderate to almost	Substantial
agreement ^g	almost perfect	0.64 ^{14,i}	0.64 ^{14,i}	perfect	0.6718
	$0.64^{14,1}$	0.8018	0.072211	0.5018	
	0.79 ¹⁸ 0.872311	U.8/ ^{23,1,]}	U.8/ ^{23,1,J} 1 0018	0.64 ^{14,1}	
Sensitivity	Fair	Slight to Fair	Fair to almost	Fair	Slight
Conditivity	0.26	0.19 ¹⁸	perfect	0.33 ^{23,i,j}	0.03 ¹⁸

		General				
	Convenience	merchandise		Specialty markets		
	stores ^b	stores	Grocery stores ^d	and shops ^e	Restaurantsf	
	0.33.j	0.33 ^{23,i,j}	0.33 ^{23,i,j} 0.88 ¹⁸	0.3418		
Positive predictive	Slight to almost	Slight to almost	Substantial to	Slight to almost	Slight	
value	perfect	perfect	almost perfect	perfect	0.0218	
	0.1918	0.1618	0.7818	0.1718		
	0.87 ^{23i,j}	0.87 ^{23,i,j}	0.87 ^{23,i,j}	0.87 ^{23,i,j}		
Cohen's Kappa	Slight	Poor	Poor	Slight	Slight	
coefficient ¹⁸	0.14	-0.01	-0.14	0.18	0.00	
Concordance18	Slight 0.15	O.15	Substantial 0.76	Slight 0.12	Slight 0.02	
Government source:	state-authorized WIC	retailers (U.S.; n=1) ²³	,i			
Percentage	Almost perfect	Almost perfect	Almost perfect	Almost perfect		
agreementg	1.00	1.00	1.00	1.00		
Sensitivity	Slight	Slight	Slight	Slight		
Decitive predictive	0.06 Almost norfoot	0.06	0.06	0.06		
Positive predictive	Almost perfect	Almost perfect	Almost perfect	Almost perfect		
Covernment courses	1.00 State Department of	1.00 Toyotion and Einance	(IIS: n=1)23.i	1.00		
Percentage	Substantial	Substantial	Substantial	Substantial		
agreement ^g	0.78	0.78	0.78	0.78		
Sensitivity	Substantial 0.76	Substantial 0.76	Substantial 0.76	Substantial 0.76		
Positive predictive	Substantial	Substantial	Substantial	Substantial		
value	0.78	0.78	0.78	0.78		
Government source:	State Department of	Health (U.S.; n=1)13				
Percentage	Moderate	Slight	Substantial	Moderate	Almost perfect	
agreement ^g	0.47	0.05	0.76	0.50	0.98	
Sensitivity	Moderate 0.50		Substantial 0.73	Moderate 0.44	Almost perfect 0.86	
Positive predictive	Almost perfect		Almost perfect	Almost perfect	Almost perfect	
value	0.91	410	0.96	0.89	0.88	
Government source:	State Liquor Authorit	$y (0.5.; n=1)^{23,1}$	Almost porfost	Almontrat		
Percentage	Almost perfect	Almost perfect	Almost perfect	Almost perfect		
Soncitivity	0.90 Moderate	0.90 Modorato	0.96 Moderate	0.90 Modorato		
Sensitivity	0.58	0.58	0.58	0.58		
Positive predictive	Almost perfect	Almost perfect	Almost perfect	Almost perfect		
	0.96	0.96	0.96	0.96		
Government source:	State-authorized lott	ery ticket retailers (U.S	$(n=1)^{23,1}$	Almontrat		
Percentage	Almost perfect			Almost periect		
Sensitivity	Moderate	Moderate	Moderate	Moderate		
	0.51	0.51	0.51	0.51		
Positive predictive	Almost perfect	Almost perfect	Almost perfect	Almost perfect		
	U.S1	0.81	0.81	0.81		
Government source: USDA- authorized						
Porcontago	Almost perfect	Almost perfect	Almost perfect	Almost parfact		
agreementg	0 98	0 98	0 98	Annost perfect		
Sensitivity	Substantial	Substantial	Substantial	Substantial		
	0.73	0.73	0.73	0.73		
Positive predictive	Almost perfect	Almost perfect	Almost perfect	Almost perfect		
value	0.98	0.98	0.98	0.98		
Government source:	Country Food Admini	stration (Denmark; <i>n</i> =	1) ¹⁷			
Percentage					Substantial	
agreement ^g					0.76 Almost perfect	
Sensitivity					Almost perfect	

	Convenience	General merchandise		Specialty markets	
	stores ^b	stores	Grocery stores ^d	and shops ^e	Restaurantsf
Positive predictive value	National Tay Dedicts	(Donmoriu n-1)29i			Almost perfect 0.92
Bercentage	Substantial	Substantial	Substantial	Substantial	Substantial
agreementg	0.64	0.64	0.64	0.64	0.64
Sensitivity	0.75	0.75	0.75	0.75	0.75
Positive predictive value	Almost perfect 0.81	Almost perfect 0.81	Almost perfect 0.81	Almost perfect 0.81	Almost perfect 0.81
Concordance	Fair 0.23	Fair 0.23	Fair 0.23	Fair 0.23	Fair 0.23
Local directories sou	irces: online (n=6)14,1	^{8,19,22,25,26} ; Canada41	1 (Canada) ⁴³ ; Google ((Canada) ⁴³ ; Montrealp	olus (Canada) ⁴³ ;
Pagesjaunes (Canad	la) ⁴³ ; Toutmontreal.co	om (Canada) ⁴³ ; uniden	tified Internet telephon	e directories (U.S.)14;	Yahoo! Yellow Pages
(U.S.) ³⁶ ; and Yellow	Pages (Canada, ⁴² Uni	ted Kingdom, ³⁹ U.S. ³⁵))		
Percentage agreement ^g	Fair to almost perfect 0.28 ^{19,i} 0.5922,i 0.64 ^{14,i} 0.65 ^{26,i,j} 0.73 ¹⁸ 0.86 ²⁵	Fair to almost perfect 0.32 ^{19,i} 0.59 ^{22,i} 0.64 ^{14,i} 0.82 ¹⁸	Moderate to almost perfect 0.49 ^{19,i} 0.59 ^{22,i} 0.64 ^{14,i} 0.65 ^{26,i,j} 1.00 ¹⁸	Fair to substantial 0.22 ^{19,i} 0.53 ¹⁸ 0.59 ^{22,i} 0.64 ^{14,i} 0.65 ^{26,i,j}	Moderate to almost perfect 0.43 ^{19,i} 0.59 ^{22,i} 0.81 ¹⁸ 0.88 ²⁵
Sensitivity	Moderate to substantial 0.48 ¹⁸ 0.51 ^{22,i} 0.66 ^{26,ij}	Fair to moderate 0.21 ¹⁸ 0.51 ^{22,i}	Moderate to substantial 0.51 ^{22,i} 0.66 ^{26,i,j} 0.69 ¹⁸	Moderate to substantial 0.51 ^{22,i} 0.59 ¹⁸ 0.66 ^{26,i,j}	Moderate to substantial 0.51 ^{22,i} 0.61 ¹⁸
Positive predictive value	Fair to almost perfect 0.36 0.79. ⁱ 0.98. ^{i,j}	Slight to substantial 0.18 ¹⁸ 0.79 ^{22,i}	Substantial to almost perfect 0.61 ¹⁸ 0.79 ^{22,i} 0.98 ^{26,i,j}	Fair to almost perfect 0.29 ¹⁸ 0.79 ^{22,i} 0.98 ^{26,i,j}	Moderate to substantial 0.47 ¹⁸ 0.79 ^{22,i}
Cohen's Kappa coefficient ¹⁸	Fair 0.21	Slight 0.00	Poor -0.22	Fair 0.33	Fair 0.23
Concordance ¹⁸	Fair 0.29	Slight 0.17	Moderate 0.60	Slight 0.20	Moderate 0.43
Local directories sou	rces: telephone Book	(s); <i>n</i> =3) ^{14,22,29} ; Teled	anmark (Denmark Tele	phone Company) ⁴⁶ ; u	nidentified local/area
telephone directorie	s (U.S.) ¹⁴ ; and Yellow	Pages (United Kingdor	n) ³⁹		
Percentage agreement ^g	Moderate to substantial 0.49 ^{22,i} 0.64 ^{14,i} 0.71 ^{29,i}	Moderate to substantial 0.49 ^{22,i} 0.64 ^{14,i} 0.71 ^{29,i}	Moderate to substantial 0.49 ^{22,i} 0.64 ^{14,i} 0.71 ^{29,i}	Moderate to substantial 0.49 ^{22,i} 0.64 ¹⁴ⁱ 0.71 ^{29,i}	Moderate to substantial 0.49 ^{22,i} 0.71 ^{29,i}
Sensitivity	Moderate to substantial 0.52 ^{22,i} 0.74 ^{29,i}	Moderate to substantial 0.52 ^{22,i} 0.74 ^{29,i}	Moderate to substantial 0.52 ^{22,i} 0.74 ^{29,i}	Moderate to substantial 0.52 ^{22,i} 0.74 ^{29,i}	Moderate to substantial 0.52 ^{22,i} 0.74 ^{29,i}
Positive predictive value	Almost perfect 0.82 ^{22,i} 0.95 ^{29,i}	Almost perfect 0.82 ^{22,i} 0.95 ^{29,i}	Almost perfect 0.82 ^{22,i} 0.95 ^{29,i}	Almost perfect 0.82 ^{22,i} 0.95 ^{29,i}	Almost perfect 0.82 ^{22,i} 0.95 ^{29,i}
Concordance ^{29,i}	Fair 0.27	Fair 0.27	Fair 0.27	Fair 0.27	Fair 0.27
Omnidirectional sou	rce: Google Earth (U.S	6.; n=2) ^{19,31}			
Percentage agreement ^g	Fair to almost perfect 0.28 ^{19,i} 0.92 ³¹	Fair 0.32 ^{19,i}	Moderate to almost perfect 0.49 ^{19,i} 0.94 ³¹	Fair 0.22 ^{19,i}	Moderate to almost perfect 0.43 ^{19,i} 0.91 ³¹
Cohen's Kappa	Slight		Slight		Fair

	Convenience stores ^b	General merchandise storesº	Grocery stores ^d	Specialty markets and shops ^e	Restaurantsf
coefficient ³¹	0.06		0.10		0.34
Omnidirectional sour	rce: Google Street Vie	w (U.S.; <i>n</i> =3) ^{18,24,32}			
Percentage agreement ^g	Substantial 0.69 ^{24,i}	Substantial 0.69 ^{24,i}	Substantial 0.69 ^{24,i}		Fair to substantial 0.36 ³² 0.69 ^{24,i}
Omnidirectional Sou	rce: Google Maps Der	nmark (<i>n</i> =1) ^{29,i}			
Percentage agreement ^g	Substantial 0.78	Substantial 0.78	Substantial 0.78	Substantial 0.78	Substantial 0.78
Sensitivity	Almost perfect 0.81	Almost perfect 0.81	Almost perfect 0.81	Almost perfect 0.81	Almost perfect 0.81
Positive predictive value	Almost perfect 0.95	Almost perfect 0.95	Almost perfect 0.95	Almost perfect 0.95	Almost perfect 0.95
Concordance	Almost perfect 0.87	Almost perfect 0.87	Almost perfect 0.87	Almost perfect 0.87	Almost perfect 0.87

^aLevels of agreement for all evidence for validity findings reported were interpreted using the Landis and Koch criteria (<0.00 poor, 0.00–0.20 slight, 0.21–0.40 fair, 0.41–0.60 moderate, 0.610.80 substantial, and 0.81–1.00 almost perfect).

blncludes convenience stores with and without gas stations and pharmacies

clncludes dollar stores and discount department stores that do not have a full grocery section, such as Kmart, Target, and Walmart

dIncludes grocery stores, supercenters, and supermarkets

elncludes meat markets, produce stands, donut shops, and ice cream shops

flncludes fast food, fast-casual, full-service, pizza parlors, and coffee shops

^gFrequencies or dispositions percentages, when necessary, were used to calculate a percentage agreement. ⁱComparisons were made between results generated using primary versus secondary data for fast-food density and proximity, convenience store proximity, and food deserts.

Not all studies reported evidence for validity by specific data source (e.g., Sharkey¹⁴ grouped local/area telephone directories, Internet telephone directories, and a list of Current Food Establishment Group Firms from the Texas Department of Agriculture) so the total evidence reported was used for each data source examined.

Average findings reported across a combination of data sources (e.g., ReferenceUSA and Dun & Bradstreet or multiple government sources)

^kGustafson et al.³⁰ used only a government source to identify farmers' markets and produce stands.

USDA, U.S. Department of Agriculture; WIC, U.S. Department of Agriculture's Special Supplemental Nutrition Program for Women, Infants, and Children

Appendix G

By levels of urbanization, evidence for validity of secondary retail food data reported $(n=19)^{a}$

	Commerical sources ^b	Government sources°	Local directories ^d	Omnidirectional sources ^e
Rural (n=9)12-14,18-21,25,	30			
Percentage agreement	Substantial 0.72 ³⁰ 0.77 ^{25,i}	Moderate to almost perfect 0.50 ³⁰ 0.64 ^{14,h} 1.00 ^{20g}	Fair to almost perfect 0.37 ^{19,h} 0.64 ^{14,h} 0.88 ^{25,i}	Fair 0.37 ^{19,h}
Sensitivity	Substantial to almost perfect 0.66 ^{18,f} 0.80 ^{13,f} 0.96 ³⁰	Moderate to substantial 0.42 ^{18,f} 0.50 ³⁰ 0.64 ¹³ 0.79 ²¹	Substantial 0.69 ¹⁸	
Positive predictive value	Moderate to substantial 0.48 ^{18,f} 0.70 ³⁰ 0.73 ^{13,f}	Fair to almost perfect 0.30 ^{18,f} 0.82 ²¹ 0.85 ¹³ 1.00 ³⁰	Moderate 0.49 ¹⁸	
Cohen's Kappa coefficient ¹⁸	Moderate 0.46 ^f	Fair 0.24 ^f	Fair 0.38	
Concordance	Fair 0.28 ^{12,f} 0.40 ^{18,f}	Fair 0.26 ^{18,f}	Moderate 0.42 ¹⁸	
Urban (<i>n</i> =15) ^{12,13,18,20-2}	29,31,32			
Percentage agreement	Substantial to almost perfect 0.77 ^{25,i} 0.77 ²⁶ 0.86 ^{29,f} 0.88 ²⁸	Fair to almost perfect 0.34 ²² 0.64 ²⁹ 0.75 ^{20,f} 0.76 ¹⁷ 0.85 ²⁴ 0.86 ^{23,f} 0.88 ²⁷	Moderate to almost perfect 0.54 ^{22,f} 0.65 ^{26,f} 0.71 ²⁹ 0.88 ^{25,i}	Fair to almost perfect 0.36 ³² 0.69 ²⁴ 0.78 ²⁹ 0.92 ³¹
Sensitivity	Moderate to almost perfect 0.50 ^{18,f} 0.80 ^{13,f} 0.84 ²⁶ 0.90 ^{29,f}	Fair to almost perfect 0.32 ^{18,f} 0.46 ^{23,f} 0.62 ¹³ 0.75 ²⁹ 0.82 ¹⁷ 0.84 ²² 0.85 ²⁴ 0.88 ²¹	Slight to substantial 0.12 ¹⁸ 0.52 ^{22,f} 0.66 ^{26,f} 0.74 ²⁹	Almost perfect 0.81 ²⁹
Positive predictive value	Fair to almost perfect 0.36 ^{18,f} 0.83 ^{13,f} 0.90 ²⁶ 0.94 ^{29,f}	Fair to almost perfect 0.22 ^{18,f} 0.81 ²⁹ 0.83 ²¹ 0.89 ^{23,f} 0.92 ²² 0.92 ¹⁷ 0.92 ¹³	Slight to almost perfect 0.09 ¹⁸ 0.81 ^{22,f} 0.95 ²⁹ 0.98 ^{26,f}	Almost perfect 0.95 ²⁹
Cohen's Kappa coefficient	Poor to moderate -0.48 ^{18,f} 0.48 ²⁸	Slight 0.05 ^{18,f}	Poor -0.91 ¹⁸	Fair 0.21 ³¹

	Commerical sources ^b	Government sources ^c	Local directories ^d	Omnidirectional sources ^e
Concordance	Fair to almost perfect 0.34 ^{18,f} 0.44 ^{12,f} 0.94 ^{29,f}	Fair 0.21 ^{18,f} 0.23 ²⁹	Slight to fair 0.08 ¹⁸ 0.27 ²⁹	Almost perfect 0.87 ²⁹
Sonsitivity	Substantial	Eair to	Modorato	
Sensitivity	0.61 ^{18,f} 0.65 ^{13,f}	substantial 0.40 ^{18,f} 0.74 ¹³	0.52 ¹⁸	
Positive predictive value	Moderate to substantial 0.50 ^{18,f} 0.80 ^{13,f}	Fair to almost perfect 0.32 ^{18,f} 0.92 ¹³	Moderate 0.42 ¹⁸	
Cohen's Kappa coefficient Concordance	Slight 0.06 ^{18,f} Moderate 0.42 ^{18,f} 0.46 ^{12,f}	Fair 0.27 ^{18c} Fair 0.27 ^{18,f}	Fair 0.22 ¹⁸ Fair 0.35 ¹⁸	
Large Town (<i>n</i> =2) ^{13,18}				
Sensitivity	Substantial 0.66 ^{18,f} 0.80 ^{13,f}	Moderate to substantial 0.42 ^{18,f} 0.64 ¹³	Moderate 0.46 ¹⁸	
Positive predictive value	Moderate to substantial 0.50 ^{18,f} 0.79 ^{13,f}	Fair to almost perfect 0.32 ^{18,f} 0.90 ¹³	Fair 0.35 ¹⁸	
Cohen's Kappa coefficient	Fair 0.40 ^{18,f}	Fair 0.23 ¹⁸	Slight 0.15 ¹⁸	
Concordance	Moderate 0.44 ^{18,f}	Fair 0.28 ^{18,f}	Fair 0.30 ¹⁸	

^aSeven studies examined various levels of urbanization and where possible their rural and urban evidence for validity was distinguished.^{12,13,17,18,20,21,25} Levels of agreement for all evidence for validity findings reported were interpreted using the Landis and Koch criteria (<0.00 poor, 0.00–0.20 slight, 0.21–0.40 fair, 0.41–0.60 moderate, 0.61–0.80 substantial, and 0.81–1.00 almost perfect).

^bFindings for averages reported on data from Dun & Bradstreet (U.S.); InfoUSA or ReferenceUSA; InfoCanada; Krak Denmark (web-based search engine); Stockman Company (chain food addresses); and Tamec, Inc.

•Findings for averages reported on data from City Health Department (United Kingdom and U.S.); County Health Department (U.S.); State Department of Agriculture (U.S.); State Department of Health–authorized WIC retailers (U.S.); State Department of Taxation and Finance (U.S.); State Department of Health (U.S.); State Liquor Authority (U.S.); stateauthorized lottery ticket retailers (U.S.); U.S. Department of Agriculture–authorized Supplemental Nutrition Assistance Program (SNAP) retailers; Country Food Administration (Denmark); and National Tax Registry.

^dFindings for averages reported on data from the variety of online and local telephone directories examined ^eFindings for averages reported on data from Google Earth (U.S.); Google Street View (U.S.); and Google Maps Denmark ^fFindings for averages reported from data across a combination of sources (e.g., ReferenceUSA and Dun & Bradstreet or multiple government sources)

#Findings for averages reported for only farmers' markets and produce stands

^hNot all studies reported evidence for validity by specific data source (e.g., Sharkey¹⁴ grouped local/area telephone directories, Internet telephone directories, and a list of Current Food Establishment Group Firms from the Texas Department of Agriculture), so the total evidence reported was used for each data source examined. Includes overall findings for non-urban (<10,000 people) and urban areas (>10,000 people)

WIC, U.S. Department of Agriculture's Special Supplemental Nutrition Program for Women, Infants, and Children

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