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Development of a Data Management Toolkit for Cooking Matters Kids and Teens

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Degree to be awarded: MPH
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Development of a Data Management Toolkit for Cooking Matters Kids and Teens

By

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Bachelor of Arts
Oberlin College
2012

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An abstract of
A thesis submitted to the Faculty of the Rollins School of Public Health of Emory University
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Executive Summary

Development of a Data Management Toolkit for Cooking Matters Kids and Teens

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The growing body of research surrounding child and adolescent obesity presents upstream determinants of overweight and obesity as well as individual and environmental factors that contribute to excess weight gain. Various types of nutrition education and health promotion programs have shown to be effective in reducing rates of childhood obesity and in reducing the likelihood of developing obesity later in life. However, few of these interventions provide longitudinal intervention or follow up. Nutrition and cooking education programs, such as Cooking Matters curricula developed by Share Our Strength, serve as one such route of obesity prevention. Nutrition and cooking education programming must provide accurate, specific data tracking change over time to demonstrate effectiveness. Strong data management also provides organizations with the evidence needed to appeal for private or public funding opportunities. The development of a data management toolkit for Open Hand Atlanta, a local non-profit organization and executor of Cooking Matters Kids and Teens (CMKT) programming in Georgia, provides systems for data collection, validation, maintenance, and analysis. Recommendations include guidance for implementation and long-term database management so that Open Hand may continue to expand their CMKT programming across Georgia.

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When people ask me how my experience at Rollins has been, I respond with "this is, far and away, the best experience of my academic career." While Dr. Webb-Girard, Emilie McClintic, and Theresa Nash play large parts in my experience, all my experiences with Rollins faculty, staff, and students have been overwhelmingly positive. Let this serve as a heartfelt thank you to all my professors, colleagues, and mentors at Emory.

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Even from a young age, I strived to choose a path that would make my parents proud. I could not be happier to say that this path to an MPH is one we can all be proud of. My Mom and Dad taught me everything I know about hard work, persistence, perseverance, and taking on life's challenges with strength and grace. Thank you both so much for helping me grow into the person I am today.

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Introduction

Pediatric Overweight and Obesity Trends in the United States

Child and adolescent obesity, defined as sex and age-specific BMI at 95% or above, is of growing concern worldwide (May et al., 2013; Ng et al., 2014; Hales et al., 2018). Significant increases in obesity have been observed across all age groups for both sexes in the United States since the 1980s (Hales et al., 2018). Evidence links pediatric overweight and obesity with elevated risk of developing chronic noncommunicable diseases including cardiovascular disease, dislipidemia, hypertension, and diabetes (Li et al., 2015; Pantalone et al., 2017). Additionally, adult chronic disease represents a growing percentage disease burden globally: in assessing global prevalence of overweight and obesity, Ng et al. found that the obese population in the United States made up 13% of all obese people worldwide in 2013, and the United States also lands in the top fifteen countries in regards to increase in obesity among men and women (Ng et al., 2014). Health outcomes in childhood and adolescence have long-term impacts on adult health status, which is why it is important to consider the connection between child and adolescent nutrition and obesity prevalence and adult nutrition and obesity prevalence. For example, an assessment of Add Health Study cohort participants over the 13-year period of the study demonstrated significant weight gain from adolescence to adulthood, regardless of adolescent weight status (an increase of 5.1 BMI units for those who did not develop severe obesity and 14.2 BMI units for those who developed severe obesity) (Morales, Gordon-Larsen & Guilkey, 2016). A similar relationship between weight status in childhood and adulthood was observed in the Bogalusa Heart Study, which initially assessed a group of 2617 participants in childhood and then again in adulthood, with an average of 17 years between exams: 77% of children who fell into the 95% BMI or higher continued to have BMIs at or above 30 in adulthood (Freedman et

al., 2001). This connection is further illustrated in a recent analysis of the Global Burden of Disease Study 2017 conducted by the Lancet: chronic diseases were identified as key reasons for an increased life expectancy but decreased healthy life expectancy (HALE) in most countries, thus highlighting some negative long-term impacts of overweight and obesity. Recommendations focused on the bolstering of noncommunicable disease prevention efforts as well as addressing "upstream determinants of health" (GBD 2017 DALYs and HALE collaborators, 2018).

The United States is experiencing a mounting public health challenge with the proliferation of childhood overweight and obesity across all demographic subgroups. Overwhelmed health systems and national challenges to school and community-based nutrition education and outreach are but a few consequences of this public health issue. The most recent estimate of childhood and adolescent obesity prevalence in the United States is 18.5% for ages 2-19 years, though Hispanic and non-Hispanic black youth have significantly higher rates of obesity than their White and non-Hispanic Asian counterparts (NCHS Data Brief, October 2017). When following obesity prevalence for youth and adults from 1999-2000 up to 2015-2016, a significant trend of increasing obesity rates is present: youth obesity prevalence during the 1999-2000 NHANES cycle was an estimated 13.9% which is significantly lower than the 18.5% prevalence observed during the 2015-2016 cycle (NCHS Data Brief, October 2017). Similar racial disparities in adult obesity prevalence have been reported with overall adult obesity prevalence at 39.8%, Hispanic adult prevalence was 47.0%, and non-Hispanic black adult prevalence at 46.8% for the 2015-2016 NHANES cycle (NCHS Data Brief, October 2017). Not only are prevalence rates significantly higher for racial minorities, positive response to obesity interventions are significantly lower, with measurable differences by race present from preschool on (Byrd, Toth

& Stanford, 2018).

Prevalence of comorbidities such as type 2 diabetes, sleep apnea, hypertension and asthma are also on the rise in both pediatric and adult populations (Freedman et al., 2001; Wang & Dietz, 2002). Higher rates of noncommunicable disease in childhood increases stress placed on the United States healthcare system, both physically and economically. For example, when comparing national hospital discharges for patients age 7-16 years old during 1979-1981 to 1997-1999, instances of primary diagnosis of obesity as well as secondary diagnosis of obesity with a primary diagnosis of asthma or certain mental disorders all markedly increased (Wang & Dietz, 2002). Discharges for diabetes and gall bladder disease – both considered obesity-associated diseases – also were on the rise during that time frame. When increased prevalence of obesity diagnoses and obesity-associated diseases are taken into consideration along with the increase in duration of hospital stay associated with those same hospital discharges, pediatric obesity-related hospital costs increased from 0.43% of all hospital costs nationally during 1979-1981 to 1.7% of total hospital costs during 1997-1999, thus demonstrating a substantial increase in economic burden of obesity on the US healthcare system (Wang & Dietz, 2002). Even larger economic burden is placed on the US healthcare system when adult obesity-associated disease treatment is assessed (Li et al., 2015; Su et al., 2015).

Subsequent sections of this introduction will discuss childhood obesity in the United States, individual and environmental contributions to child and adolescent nutrition, current nutrition education and behavior change programming that addresses obesity and dietary practices, and the need for improved data collection and management for CMKT programs. This review spotlights individual as well as environmental factors that contribute to development and

persistence of obesity in the US pediatric population. Contextualization of the challenge of obesity and overweight in children and adolescents in Georgia is followed by a discussion of relevant policies and nutrition education/health promotion/obesity prevention initiatives. A discussion of effectiveness of policy changes examine the extent to which policies have aided or hindered progress in child and adolescent nutrition. Programs that share characteristics with Share Our Strength's Cooking Matters curricula will also be examined for effectiveness. Current demands for data collection and reporting by Open Hand to Cooking Matters Kids and Teens funders will be used to introduce the rationale for development of a data management toolkit for Open Hand Atlanta's Cooking Matters Kids and Teens programs.

Obesity Determinants: Individual Factors

Dietary Intake

8,390 child and adolescent dietary recalls from 2005-2010 NHANES data were assessed using the HEI-2010 (Healthy Eating Index 2010) due to its resemblance to the 2010 DGA (Dietary Guidelines for Americans). Results of this analysis showed that children and adolescents in all age groups scored significantly lower on the HEI-2010 than the recommended 80 points out of 100 for disease prevention. Mean HEI-2010 scores for children aged 4-8 years were 52.11, children aged 9-13 years averaged 46.85, and adolescents aged 14-18 years scored an average of 43.59 out of 100. The inverse relationship that appears between age and total HEI-2010 score is also reflected in the intake of empty calories – nutrient-poor foods and beverages that provide minimal nutritional value – where adolescents between 14 and 18 years old consume significantly more empty calories than children between four and eight years of age (Banfield et al., 2016).

Dietary guidelines set out by the US Department of Agriculture and the US Department of Health and Human Services describe key features of a healthy diet to include a variety of fruits, vegetables, whole grains, lean protein, and low-fat dairy. The 8th Edition of DGA 2015-2020 brings special focus to healthy eating patterns and healthy lifestyle choices overall as opposed to prescribing Americans meet certain nutrient quotas in their daily diet. Current DGA are reiterated in various forms by numerous national organizations that serve as public references for health information including the American Cancer Society, American Diabetes Association, American Heart Association, and the Centers for Disease Control and Prevention. In order to better understand the underpinnings of the Cooking Matters Kids and Teens (CMKT) curricula, a discussion of individual level obesity determinants incorporates supporting evidence surrounding dietary intake and health behaviors – both of which are addressed in CMKT classes.

Differences in intakes of nutrient-dense foods, such as fruits and vegetables, versus energy-dense foods, such as sugar-sweetened beverages and processed snack foods, are key components to understanding the importance of dietary intake for obesity prevention efforts. NHANES data from 1999-2008 was used to explore empty calorie consumption and to assess for presence of disparities in sugar sweetened beverage consumption by race, parental education level, socioeconomic status, and age (Han & Powell, 2013). Han and Powell utilized logistic regression as well as multivariate models in analysis, though they do not state exactly which variables were controlled for in their final analysis: findings of this study stated that Black and Hispanic children and adolescents, children from low-income households, and adolescents with low-education parents all had greater odds of sugar sweetened beverage consumption than their White, high-income, or high-parental education counterparts (2013).

Fruit and vegetable intake among adolescent participants in Project EAT, a Minnesota-based intervention, were most heavily influenced by taste preference and availability of fruits/vegetables in the home (Neumark-Sztainer et al., 2003). In a prospective cohort study observing fruit and vegetable intake over time for children aged 9-14, no statistically significant associations between BMI and fruit and vegetable consumption were observed, but about 75% of participants did not meet the recommended daily servings of fruits and vegetables (Field et al., 2003). Fruit and vegetables also act as a necessary source of fiber; it is hypothesized that diets high in fiber are linked to lower rates of obesity as fiber may have satiating effects so that children and adolescents snack less between meals (Kim, 1995). With persistence of habits established in childhood into adulthood, it is important to also consider that fruit and vegetable intake is associated with lower obesity prevalence in adults (Tohill et al., 2004).

Consumption of whole grains and dairy products are another important facet of nutrient intake in the American diet. Dairy intake is linked to positive relationships with height-for-age in adolescents as well as inverse associations with pediatric adiposity; multiple studies present similar consistent findings, thus pointing to dairy intake as a dietary practice that is potentially protective against overweight and obesity (Dror, 2014; Nezami et al., 2016; Chen et al., 2012; Keast et al., 2015). In some cases, disaggregated results by type of dairy product showed milk consumption, specifically, to have a protective effect against overweight and obesity in children and adolescents (Koca et al., 2017). Likewise, consumption of whole grain cereals appears to lower risk of obesity, diabetes, and cardiovascular disease (Williams, 2014).

Consumption of sugar sweetened beverages has been identified in numerous studies to be associated with overweight and obesity in youth and adults (Lugwig, Peterson & Gortmaker, 2001; Bleich et al., 2009; Woodward-Lopez, Kao & Ritchie, 2010; Lasater, Piernas & Popkin, 2011). An analysis comparing nationally representative data collected via NHANES III from 1988-1994 and via NHANES from 1999-2004 determined that the average quantity of sugar sweetened beverages consumed daily and the contribution of calories from sugar sweetened beverages to daily energy intake increased significantly across all demographic subgroups – sex, race/ethnicity, education, income, body weight status, and weight loss intention – though the biggest increase occurred among young adults (Bleich et al., 2009).

Conversely, another study that analyzed NHANES data from 1999-2008 showed consumption of sugar sweetened beverages in the United States decreased overall: "Non-traditional" sugar sweetened beverages, such as sports/energy drinks and fruit juice drinks, increased, while soda remained the most heavily consumed beverage (Han & Powell, 2013). Another study examined NHANES data for a similar time frame – 1999-2010 – also found there to be a decrease in consumption of sugar sweetened beverages during that time (Kit et al., 2013). These studies' conclusions are in the minority, however, as a review and meta-analysis of peer-reviewed literature that was published between 1970 and 2010 concluded, "the currently available evidence is extensive and consistently supports the hypothesis that sweetened beverage intake is a risk factor for the development of obesity and has made a substantive contribution to the obesity epidemic experienced in the USA in recent decades" (Woodward-Lopez, Kao & Ritchie, 2010). In fact, of the studies reviewed, 75-80% of those rated as having the "highest quality"

design and methods demonstrated a statistically significant positive association between sweetened beverage consumption and weight gain (Woodward-Lopez, Kao & Ritchie, 2010).

It is well-documented that consumption of fast food, as well as other energy-dense foods and snacks, has a substantial positive relationship with BMI, total daily sodium intake, and total daily fat intake in children and adolescents (Niemeier et al., 2006; Schmidt et al., 2005; Phillips et al., 2004; Huang et al., 2004; Costa et al., 2018). Adolescents may be at even higher risk for weight gain based on these eating habits as fast food and high energy-density food consumption increases in adolescence are reflected in higher consumption of the same foods in young adulthood (Niemeier et al., 2006; Phillips et al., 2004). An analysis of longitudinal data collected from the Add Health Study exposed a statistically significant link between fast food meal consumption and overweight and obesity in young adulthood (Morales, Gordon-Larsen & Guilkey, 2016). Conversely, consumption of low energy-density foods - such as fruits and vegetables, described above - is protective against development of overweight/obesity at all ages. The juxtaposition of evidence supporting consumption of low energy-density foods and discouraging consumption of high energy-density foods and beverages presents a foundation for nutrition interventions for children and adolescents.

Health Behaviors

In conjunction with programmatic implementation, studies ranging from longitudinal cohort studies to cross-sectional examinations have been conducted to enhance our understanding of health behaviors that may contribute to child and adolescent overweight and obesity. Regular breakfast consumption, adequate sleep, balanced screen time, and limited sedentary leisure

activities are all behaviors with documented contributions to maintenance of healthy weight in children (Olson et al., 2016; Traub et al., 2018; Amigo-Vasquez et al., 2016; Koca et al., 2017; Williams, 2014). In fact, skipping breakfast may have more detrimental effects on child and adolescent weight status than even regularly consuming two breakfasts (Wang et al., 2017).

Complimentary analyses of snacking trends among children and adults in the United States were conducted by Dunford and Popkin in 2018 and 2017, respectively (Dunford & Popkin, 2017; Dunford & Popkin, 2018). Analysis of trends from eight nationally representative samples of children aged 2-18 highlighted significant increases in daily energy intake across all demographic subgroups; children of low socioeconomic status and low household education levels experienced over 100% increase in snack consumption from 1977-2014, thus highlighting another instance where social determinants of health underlie nutrition outcomes (Dunford & Popkin, 2018). Utilizing similar methods, assessment of adult snacking trends from 1977-2012 showed significant increase in daily energy intake from snacks; consumption of sugary and/or salty snacks increased for all demographic groups with Non-Hispanic Black Americans having the highest consumption rates of both salty snacks and sugar-sweetened beverages (Dunford & Popkin, 2017). (Dunford & Popkin, 2018).

Obesity Determinants: Environmental Factors

Environments that encourage healthful dietary choices and behaviors serve as supportive mechanisms to limit the negative effects of individual obesity determinants for children and adolescents. This section examines environment factors that reach beyond the individual and out into home, school, and community environments.

Social Determinant of Health

A discussion of obesity-related environmental factors must be first established with the pillars of the underlying social determinants of health – including socioeconomic status, community safety, community health resources, residential segregation, household education level, gender, and race. These determinants and others appear throughout the peer-reviewed literature as correlational or predictive factors of overweight and obesity in the United States.

For instance, a county-level assessment of obesity prevalence in the United States found that community health status and community socioeconomic status were the most powerful predictors of adolescent obesity prevalence (Kramer et al., 2016). Self-reported dietary intake significantly improved for adults in the United States from 1999-2012, as evidenced by a 2016 retrospective cross-sectional investigation conducted by Rehm et al. using 24-hour diet recall data collected during 7 cycles of the National Health and Nutrition Examination Survey (NHANES). Diet recalls were analyzed for changes in overall diet quality using the American Heart Association (AHA) 2020 continuous diet scores to characterize diets ranging from "poor" – less than 20 points out of the 50 point maximum AHA 2020 score – to "ideal" – a score of greater than 39 out of 50 points. Results of this study also showed that dietary patterns improved overall for adults, but only modest improvements were observed for those of lower socio-economic status and/or low education level as well as for Hispanic American and Non-Hispanic Black American adults (Rehm et al., JAMA, 2016). Rossen and Talih conducted an analysis of weight disparities among children and adolescents using NHANES data from 2001-2010; the focus of the study was to assess social determinants of weight differences. Upstream

determinants of health, including residential segregation and neighborhood disadvantage, were found to be significant for increased prevalence of child and adolescent obesity (Rossen & Talih, 2014). These findings accompany numerous other study results that focus on continued disparities among racial subgroups of American adults.

Home Food Environment

Family involvement in child and adolescent dietary intake, diet quality, and food preparation are important environmental factors related to obesity prevalence in youth (Flynn et al., 2006; Shier, Nicosia & Datar, 2016). Children and adolescents that have more family meals show better dietary patterns than those who do not share as many meals with family (Videon et al., 2003; Horning et al., 2017). Adolescent girls, specifically, appear to benefit from more family meals as it is linked to lower risk of eating disorders and obesity: findings are mixed when it comes to the relationship between frequency of family meals and obesity in adolescent boys, but results from numerous studies point to improved long-term dietary intake for boys and girls (Fiese, Hammons & Grigsby-Toussaint, 2012; Haghighatdoost et al., 2017). An increased level of child and adolescent involvement in food preparation and cooking at home is linked to retention of cooking knowledge and skills as well as positive effects on diet quality (Lavelle et al., 2016).

Household food security encompasses the level of stability of food presence in the home as well as the consistent ability of families to obtain healthy foods. A growing body of evidence demonstrates a strong relationship between increased food insecurity and poor diet quality and obesity. Food insecurity has been linked with up to five times higher odds of children being obese, more frequent snacking, and diets high in fats and sugars but low in fiber and vegetables

(Knol et al., 2005; Kral, Chittims & Moore, 2017; Fram et al., 2015; Ma et al., 2015). However, there is also evidence that food security has little to do with weight status in pediatric populations (Rossen & Kobernik, 2016). Food insecurity is also associated with increased parental pressure for children to eat when food is present, which may result in children developing practices of overeating in absence of hunger (Conlon et al., 2015; Focus on food insecurity in adolescence for females is necessary as weight gain trends persist into adulthood: adult women who are food insecure are significantly more likely to be overweight or obese than their male counterparts, irrespective of race, with Hispanic and non-Hispanic white women at greatest risk of being overweight/obese when food insecure (Hernandez, Reesor & Murillo, 2017; Drewnowski & Specter, 2004).

Neighborhood & Surrounding Community

There is a statistically significant difference between the prevalence of severe obesity (characterized by BMI at greater than 120% of the 95% percentile) in non-urban areas – 9.4% - and small or medium and large urban areas – 5.3% and 5.1%, respectively (Ogden et al., 2018). The inverse relationship between urbanization level and severe obesity mirrors differences observed in the United States adult population, suggesting a strong relationship between increased risk for severe obesity and residing in non-urban areas (Hales et al., 2018). Statistically significant differences in obesity and in severe obesity prevalence were observed by age and household head education level as well, with combined prevalence of obesity and severe obesity being highest for adolescents aged 12-19 (29%) and for youth aged 2-19 living in a household whose head of household had a high school diploma or less (30%). Presence of obesity and severe obesity were also significantly more prevalent in Non-Hispanic Black and Hispanic youth

than in Non-Hispanic Asian or White youth (Ogden et al., 2018).

Hales et al. also utilized NHANES data (2001-2016 cycles) to examine obesity prevalence among adults living in different levels of urban/non-urban areas (2018). Identified trends include an inverse correlation with age-adjusted obesity prevalence and women's urbanization level (non-urban, small, medium, or large metropolitan areas), with women in large metropolitan areas having a 37.1% obesity prevalence and women living in non-urban areas having a 47.2% obesity prevalence; and a statistically significant increase in age-adjusted prevalence of obesity and severe obesity across all ages and urbanization levels (Hales et al., 2018). A nationally representative cohort study of adolescents explored whether residential characteristics, like neighborhood walkability and neighborhood crime indices, played a role in predicting obesity in early adulthood. Findings demonstrated that positive neighborhood amenities were linked with significantly low obesity status for both women and men while lack of consideration of place of residence yielded predictions that vastly overestimated prevalence (Morales, Gordon-Larsen & Guilkey, 2016).

Policies, Programs, and Effectiveness

Roughly 72% of students nationally participate in the National School Lunch Program (NSLP) and 59% participate in the School Breakfast Program (Vaudrin et al., 2018). Changes in school lunch nutrition requirements as well as adjustments to availability of and quality of competitive foods (i.e. vending machines, auxiliary food access points) have contributed to a slowly improving food environment at the school level. The NSLP was first introduced in 1946 under the Truman Administration with the goal of providing food to all students. The SBP and Summer

Food Service Program (SFSP) were introduced in 1966 with the signing of the Child Nutrition Act (Hopkins & Gunther, 2015). As child obesity and overweight became growing problems in recent decades, updated Dietary Guidelines for Americans were released, but subpar nutrition environment persisted in schools across the United States (Hopkins & Gunther, 2015).

National standards for school meals were recently updated, via the Healthy Hunger-Free Kids Act of 2010, to incorporate more vegetables and fruits into daily options for students, and states are following suit by updating their school meal policies. Some scale-up efforts appear to be more effective than others in implementing obesity prevention interventions in schools. For example, Jain and Langwith examined the perceived effectiveness of an obesity intervention involving collaboration of school nurses and wellness coordinators across 100 schools in 6 southern state districts: they identified flexibility in timing of implementation and a dedicated role for a "single change agent" as necessities for success of interventions that are scaled-up from pilot phase to multi-school district implementation (2013). Other best practices for successful implementation of programs include involvement of community stakeholders in implementation process and securing long-term, sustained resources for programs so that meaningful evaluation of long-term impact can take place (Flynn et al., 2006).

Multiple initiatives have since been put in place to improve healthiness of school environments. One such program conducted in Kearney, Nebraska, implemented multiple evidence-based strategies to encourage physical activity and healthy eating habits among kindergarten-fifth graders in a rural Nebraska community (Heelan et al., 2015). In regards to school lunch environment, observations of whether school lunches meet nutrition standards have varied over

time. A 2009 analysis of meals served in United States public schools showed that meals aligned with the 2005 Dietary Guidelines for Americans in regards to protein, vitamins, and minerals but fell short in the categories of maximum sodium content, total fat or saturated fat in lunches, and minimum fiber recommendations (Crepinsek et al., 2009). Another analysis of public school lunches was conducted in 2017 after new school lunch guidelines were put in place; the study found that school lunches were significantly more nutritious than lunches that students obtained from elsewhere (Vernarelli et al., 2017). In conjunction with improvement of lunches available in school cafeterias, more stringent requirements on beverages and snacks available in vending machines were introduced with the goal of decreasing unhealthy options available to students (Micah et al., 2018).

From increased family involvement in child diet to adjustments to in-school food options to community-based nutrition and exercise promotion, various programs and policies have been instituted to halt and reverse the epidemic of obesity in United States' children and teens. Recommendations for effective interventions to improve fruit and vegetable consumption include improving children's taste preferences, having interventions that are multi-component in nature, and basing interventions in schools or in the community (Blanchette & Brug, 2005). Recent federal policies, namely the Healthy Hunger-Free Kids Act, compliment programmatic interventions that are proven to be effective in mitigating obesity prevalence. In the five years following the passing of the Healthy Hunger-Free Kids Act in 2010, positive progress in regards to youth access to more fruit and vegetable options, more whole-grain options, and reduced sodium in meals at school has been documented (Hager & Turner, 2016). To further explore evidence-based nutrition interventions, pilot evaluation studies of select nutrition-related

interventions for youth are detailed below. One purpose of providing such snapshots is to introduce programs that share aspects with Cooking Matters Kids and Teens, which are the after-school nutrition education and cooking programs implemented across the state of Georgia by a non-profit organization called Open Hand Atlanta.

Even with implementation of these policy and programmatic changes, current fruit and vegetable consumption by children and teens remain below recommended levels, thus pointing to the need to scale-up evidence-based interventions that address multiple aspects related to child and adolescent obesity prevention (Banfield et al., 2016). As chil dren age, they are more likely to consume even fewer fruits and vegetables and opt for even more nutrient-poor (high sugar, high fat, and high sodium) meals and snacks. With multiple factors working against children's and teens' healthy diets – household food insecurity, easy access to energy-dense foods, family meal habits, parental eating patterns and BMI, and lack of food preparation knowledge and skills – it is necessary to provide long-term support for programs that seek to address these factors and mitigate their impacts on child and adolescent weight gain in the United States.

Cook It Up! - a pilot intervention in Ontario - is 15-month program that involved 8 at-risk youth in cooking classes, food literacy training, and exposure to local agri-business as well as to food preparation and serving professionals. Classes met twice monthly, and participants went on field trips to complement what was learned in class sessions. Formative evaluation methods included a pre-post questionnaire, in-depth interviews as well as Photovoice documentation with youth in the program, and interviews with supporting program staff and volunteers. Results of the formative research supported the multi-dimensional nature of the Cook It Up! Program in

regards to improving youth nutrition literacy and cooking skills (Thomas & Irwin, 2011).

Another pilot evaluation of a nutrition intervention was conducted for Kids Café, a national nutrition education program sponsored by Feeding America. Assessment of the six-session program was held at four Boys and Girls Clubs where the Kids Café Program was conducted. Key points for improvement were provided by program participants including moving away from a lecture-based format and towards a more interactive one as well as potentially identifying a new time to hold the sessions, as participants cited dislike of having another class after being in school all day (Dave et al., 2018).

Georgia Context

County-level estimates of obesity prevalence from 2007-2011 show two regions in the United States that have the highest rates of obesity – Central Appalachia and the Deep South (Kramer et al., 2016). As Georgia falls into the Deep South region, overweight and obesity prevalence in this state appears to be higher than the national average. In fact, Georgia consistently ranks in the top 20 states in regards to obesity prevalence with about 17% of youth being obese (Burke et al., 2014). Several national organizations, such as Share our Strength and HealthMPowers, as well as regional or local organizations, like Children's Healthcare of Atlanta (CHOA) and Open Hand Atlanta, work with schools and communities in Georgia to promote healthy eating habits and provide healthy food options for kids and teens. The HealthMPowers program is multi-faceted with the goal of altering the entire school environment to be healthier for students; 40 schools that worked with the program during the 2012-2013 school year saw marked improvements in student knowledge, behaviors, fitness, and BMI as well as improvement to school policies

(Burke et al., 204). Positive results were also identified in a recent evaluation of CHOA's Strong4Life Clinic initiative which demonstrated maintenance or reduction of BMI for patients that participated for at least a 6-month period (Walsh et al., 2014).

Share Our Strength, Open Hand Atlanta, and Cooking Matters Kids and Teens

The outreach programs of interest, Cooking Matters Kids and Teens (CMKT), are implemented in Georgia by a non-profit organization called Open Hand Atlanta. Open Hand Atlanta is a non-profit organization working to improve dietary intake, nutrition knowledge, and food security to combat chronic illness in Metro Atlanta and the state of Georgia. They are responsible for implementation of multiple food security and nutrition education initiatives in the Atlanta area and across the state of Georgia including Cooking Matters Kids, Cooking Matter Teens, Cooking Matters WIC, and the Wayfield Foods Healthy Retail Program. Open Hand has partnered with Share Our Strength, a national organization, to implement and monitor a cooking and nutrition education curriculum called Cooking Matters.

Share Our Strength is a national organization that strives to ensure all people can access quality foods and produce healthy meals for themselves and their family on a budget. The base Cooking Matters curriculum is adapted to best serve the cohort audience, which ranges from families to adults to children to teens. A curriculum for each age group incorporates cooking activities that are age and resource appropriate; curricula are accompanied by recommended survey tools that vary by age group. These survey tools include indicator questions for direct reporting out to SNAP-Ed. Share our Strength also requires implementing partners nationwide, like Open Hand Atlanta, to report data from pre-class and post-class surveys annually.

Statement of Purpose and Objectives

The Cooking Matters Kids and Teens (CMKT) programs focus on improving dietary intake of fruits and vegetables as well as educating participants about basic cooking and nutrition skills. The number of sites where Open Hand hosted CMKT modules more than tripled from 2017 to 2018. The amount of data collected since December 2017 is unprecedented for Open Hand's CMKT programming. To maintain a strong relationship with Share our Strength, to report on data needed for federal funding in a timely manner, and to maintain a robust internal database, a Data Management Toolkit was developed to streamline the program's many data-related procedures.

While Open Hand manages Cooking Matters operations in Georgia, they are also responsible for reporting data collected in pre-class and post-class surveys to their funders, Share Our Strength and SNAP-ED. Managing data collected from CMKT sites across Georgia is an important step in reporting data to these entities as it helps ensure continued federal funding for CMKT programs.

Forty-one CMKT classes were conducted by Open Hand between October 2017 and June 2018 (CMK=21, CMT=20; total participants=627). Both CMK and CMT programs experienced marked increases in the number of sites and participants from the previous implementation cycle: for comparison, per 2015-2016 cohort records, only 14 CMKT classes took place between January 2015 and June 2016 (CMK=7, CMT=7; total participants=160). A systematic data management plan is necessary for Open Hand to maintain a clean database that allows for easy data collection, extraction, and analysis.

Objectives:

1. To develop an internal system for data entry and cleaning of CMKT surveys to ensure smooth transition of workload from current graduate research assistants and Emory Evaluation Team to Open Hand Cooking Matters Program Manager.
2. To present Open Hand Atlanta with options for electronic data collection that would limit costs associated with printing and sharing paper surveys, costs of secondary data entry, and data discrepancies that may arise during secondary data entry.
3. To propose improvements to current CMKT survey tools that may be used as indicators for a monitoring and evaluation system for CMKT programs.
4. To introduce Open Hand to aspects of REDCap, a viable long-term database alternative to Microsoft Excel.

Data Management Toolkit Description and Development

This section will review the methods of development for deliverables of the Data Management Toolkit for CMKT. Subsections are disaggregated by deliverable for purposes of illustrating the separate processes of development for each tool. Each subsection incorporates a description of the tool(s) as well as rationale for tool development.

Data Entry Protocol (Appendices I & II)

Establishing a consistent data entry protocol will decrease the amount of time needed for data entry, standardize the format in which data is received from sites, and provide a specific process for performing quality checks on data entered in REDCap, ultimately ensuring a high level of data accuracy and quality.

The need for consistent data sharing and data entry processes became clear as disorganized scans of pre-class and post-class paper surveys were shared with the Emory Evaluation Team. The extra hours of time devoted to reprinting and reorganizing surveys for each cohort as well as the extra cost of reprinting scanned versions of paper surveys indicated the necessity of a more streamlined process. To ensure that scanned surveys sent by CMKT facilitators will not require reprinting and reorganizing each time new cohort data is submitted for entry, a Facilitator Training presentation (see Appendix I) was developed per request of Open Hand for clarification of data sharing needs. After initial concerns about current time-consuming data entry preparation processes, a PowerPoint was created to be used for CMKT facilitator training and reference. This presentation was shared with Open Hand, and a conference call was conducted to discuss plans for implementation.

The Data Entry Protocol (see Appendix II) was developed to keep track of incoming cohort data and individual participant information. Accompanying Excel tracking documents that are referenced in the protocol are available on Dropbox. The tracking documents aim to foster a transparent process for tracking data entry and double checking data in REDCap for data entry discrepancies. Development of these Excel spreadsheets was a result of the lack of a system to keep track of CMKT cohort data.

Both the Facilitator Training and Data Entry Protocol deliverables were created by observing the needs for data entry management and scaffolding documentation to meet those needs. These tools not only provide efficient and effective means to collect and manage program data, but they

are also cost-saving measures as adherence to these procedures will result in a substantial decrease on time and money spent managing CMKT data entry.

Data Cleaning Protocol (Appendix III)

SNAP-ED is one of Open Hand's key funders for CMKT, and thus Open Hand is responsible for periodic reporting of SNAP-ED indicators to maintain federal funding. The Emory Evaluation Team was tasked with producing midterm reports for Open Hand of SNAP-ED indicators collected via CMKT surveys. The formatting standards provided by Open Hand for midterm SNAP-ED reporting were spread across multiple documents and poorly communicated, resulting in unnecessary reproduction of efforts in completion of the first round of midterm reporting. Multiple documents detailing formatting specifications were consolidated into one CMKT Codebook spreadsheet that links current REDCap coding with SNAP-ED required coding. The Data Cleaning Protocol (see Appendix III) is a narrative guide on how to use the CMKT Codebook and REDCap data exports to produce properly formatted SNAP-ED midterm data reports.

Survey Improvements (Appendices IV & V)

Open Hand has expressed the desire to build a robust internal monitoring and evaluation framework for CMKT programming; one key component of such a system is a set of indicators that allow for comparison across groups and over time. Changes in wording of SNAP-ED indicator measures, new survey items, and incorporation of metadata are each addressed for suggested survey improvements.

Collection of metadata, or information collected about the environment surrounding survey

completion, is an important component of sustainable data management that is not currently happening within CMKT surveys. Collecting metadata at the time of survey administration will allow for comparison of participant records by county, instructor, length of class, or time of year class was administered. These geographic and temporal variables would not otherwise be readily linked with participant survey results.

Along with the introduction of metadata collection, rewording of certain questions and introduction of a select few new survey items would make CMK and CMT survey results more comparable. Consideration of alternate question wording, as described in Appendix IV: SNAP-ED Indicator Measures, or even inclusion of a second question to assess the same SNAP-Ed Indicator could result in a survey with easier to interpret questions and built-in internal validation of participant responses. Suggestions for survey improvement are detailed in Appendices IV (SNAP-Ed Indicator Measures) and V (Proposal for New Survey Items).

Electronic Survey Options (Appendices VI)

There are pros and cons to collecting data via online/electronic methods. Online data collection decreases the number of steps in the data collection and entry process, saves the organization money on paper copies or costs of paying someone to enter data, saves time due to the elimination of distributing, collecting, and sending paper forms and ensures that the data recorded is of high quality. However, foregoing paper forms in favor of online data collection may prove difficult if required supplies and technology are limited or if internet access is unreliable. As a program increases the amount of data it records, the benefits of online survey tools begin to quickly outweigh the costs.

To encourage an efficient transition from paper-based to online survey forms, CMKT survey tools were built for data collection and forms were deployed for review and piloting using two free software programs - Google Forms and KoboToolbox. These online survey construction tools were determined to be the best free options for Open Hand use after review of numerous online survey sites, including Survey Gizmo and Survey Monkey.

REDCap, the database that currently houses the CMKT data, also has a function that allows for online survey generation. The current CMKT REDCap online survey generation capabilities were explored via study of REDCap tutorials, REDCap-related online forums, and correspondence with Emory's REDCap administrator, Sean Mann.

While other online survey tools are always available for exploration, Google Forms, KoboToolbox, and REDCap tools for CMK and CMT surveys are already available for Open Hand use. A brief comparison of these three online survey tool options can be found below, and links to survey tools and select REDCap video tutorials can be found in Appendix VI (Electronic Survey Tool Options).

Table 1: Comparison of Three Online Survey Tools

Name of Tool/Software	***Pros***	***Cons***
Google Forms	• Easy-to-use interface for building, editing surveys • Can easily include illustrations • Responses update in real time (no need to download raw data) • Cost: Free	• Responses are recorded as words in Google Sheets • Would need to manually re-code for data analysis, use of data analysis software • No built-in data analysis capabilities • Information saved on Google Drive is considered proprietary information of

		Google, so record of potentially sensitive data should not occur in this system
KoboToolbox	• Able to collect data even when device is offline • Question responses can be coded within the survey so raw data corresponds with desired coding system • Some reporting capabilities are included • Advanced ability to tailor survey font, color, question logic (skip patterns, etc.) • Cost: Free	• Building/editing forms is not as user-friendly as Google Forms - some xls coding knowledge may be needed for more complex question formats • Raw data has to be downloaded all at once (currently no capabilities to export a subset of data)
REDCap	• Able to collect data even when device is offline via REDCap Mobile App • Data syncs directly with already existing database • No need to recode to match data entered from paper/PDF forms • Ability to build reports for data analysis & data export • Data export options: ○ SPSS, SAS, STATA, R	• Auto generation of Record ID may require adding new secondary ID variable • Public web link: passcode and individualized link generated to complete post-survey • Cost: $300 per year through Emory; non-profit packages are available, but REDCap would need to be consulted for details

Discussion

The purpose of this section is three-fold: the goals are (1) to share valuable insights regarding lessons learned in the development of the data management toolkit for CMKT, (2) to provide recommendations for Open Hand in regards to settling on a method of data management, and (3) to delineate next steps for Open Hand's implementation of the data management toolkit and the transition of CMKT data from the Emory Evaluation Team to the Open Hand Cooking Matters Team.

Recommendations for next steps, by deliverable:

CMKT Facilitator Training: Data Collection Procedures (see Appendix I)

Consider incorporating this PowerPoint presentation into the current CMKT facilitator training, providing a hard copy/electronic copy to each facilitator for reference after initial training. Alternatively, incorporate a concise checklist for the order of paper forms to be scanned, and include this checklist with a clean attendance sheet for facilitators at the beginning of a new CMKT cohort. As Open Hand currently uses paper forms for survey collection, adopting a more consistent practice of organization, scanning and sending of documents saves time and money. For example, when sending data via email, scanning pages in correct order saves 2-3 hours of paid work per cohort as the person receiving the data no longer would have to print scanned documents to reorder, match pages by participant, manually check that all pages are present, and manually confirm that all participants are accounted for.

Note: sending encrypted emails is a best practice when sharing data with participant information, such as names or location of CM classes.

Data Entry and Data Cleaning Protocols (see Appendices II & III)

Portions of this data entry protocol are translatable to multiple database management options, but Appendices II and III are written to align with the existing REDCap database established by the Emory Evaluation Team, under the direction of Dr. Amy Webb Girard and Emilie McClintic, MPH, for CMKT data entry and management. It is recommended that Open Hand staff members utilize the Data Entry and Data Cleaning Protocols to orient themselves to REDCap as well as Excel documents developed to maintain a high level of data quality and systematically track

timelines for data receipt from CMKT cohorts.

From a broader programmatic perspective, clarifying data management and analysis plans before data collection begins/before next round of cohorts launch for CMKT is imperative so as to avoid replication of efforts and to limit the number of times that analysis/cleaning is repeated to match different formats (i.e. those required by SNAP-ED versus those required by Share Our Strength). Standardized data management will also streamline reporting procedures, decrease spending on human resources, and ensure a higher level of data quality. Additionally, well-structured data management and analysis protocols will support Open Hand's development of a more robust internal monitoring and evaluation system for Cooking Matters programs, thus allowing for ease of reporting as well as potential to track change in program outcomes over time and utilize such documentation to appeal to additional sources of programmatic funding.

Survey Improvements: SNAP-ED Indicator Measures (see Appendix IV)

It is recommended that Open Hand consider adjusting the wording of survey items specified in Appendix IV so that CMK and CMT surveys are in closer alignment. Altering these certain questions, as outlined in Appendix IV, may provide less wordy survey items that address SNAP-ED approved indicators. This appendix illustrates other viable survey question options for reporting out on SNAP-ED indicators that can be considered in lieu of, or as secondary validation of, current CMKT questions. Furthermore, restructuring of the CMK and CMT surveys to increase the number of questions the two surveys have in common will provide Open Hand with a set of food and drink consumption indicators that can be used to support the development of a more robust monitoring and evaluation system.

Survey Improvements: Proposal for New Survey Items (see Appendix V)

As described above, introduction of indicators that are collected across CMK and CMT cohorts will support a more robust monitoring and evaluation system for Open Hand's CMKT program. The new survey items proposed in this appendix can be used as indicators to track environmental determinants of child and adolescent diets: analysis of such determinants will help Open Hand better understand the communities in which they provide CMKT programming and may assist in identifying best geographical areas to focus CMKT efforts in the future. Therefore, it is recommended that Open Hand consider this proposal for incorporation of two new survey items for CMKT surveys.

Electronic Survey Options (see Appendix VI)

It is recommended that these appendices be used by Open Hand staff responsible for survey dissemination and data management to familiarize themselves with two free online survey options for data collection as well as with REDCap's electronic survey options. Links to survey tools on Google Forms and KoboToolbox as well as links to helpful REDCap tutorials are centrally located in Appendix VI: Electronic Survey Options. Implementation of electronic data collection for CMKT will limit data entry errors that comes the secondary data entry as well as provide further cost savings for Open Hand (i.e. savings on printing costs, mailing/scanning costs, human resources/time savings, space savings as there would be no need to keep original paper records).

Further Database Recommendations

Moving beyond Excel

Utilization of Excel as the preferred database method, while usable for now, is not a sustainable long-term solution for Open Hand's data needs. There are numerous benefits to consider when making the decision of whether to move beyond Excel for database management. More robust database options are more user-friendly than Excel (after initial training), especially when it comes to data entry and export into formats that are compatible with multiple statistical analysis packages. Along with being user-friendly, long-term database options alternative to Excel are cost effective due to time saved with automated reporting options, improved data quality due to mechanisms such as built-in validation and aids for data quality checks, and time saved in staff onboarding because all data and corresponding data management tools are organized in the central database.

Open Hand should prioritize identification and implementation of a database that can not only meet current programming needs, but can keep pace with expansion and scale-up efforts of their programs. Factors, such as learning curve and ease of data migration, need to be considered when constructing a timeline for implementation of a new database. In the long run, migration to a more powerful database will make for more streamlined processes surrounding data collection, management, and analysis.

The case for REDCap

REDCap is a great choice for Open Hand when considering long-term database options: the database build-out by the Emory Evaluation Team is already complete for CMKT, including reports for SNAP-ED Measures and full CMK/CMT surveys that are ready for data export in real

time. If the plan for CMKT programs is to continue expanding/scaling up, then REDCap can accommodate growth of database entries and adjustment of program tools. Likewise, the single project instance that currently exists in REDCap can accommodate multiple "forms," meaning that Open Hand would have the ability to introduce a new set of survey tools into the same REDCap database. Thus, the current database can expand to support multiple Open Hand programs in data collection, long-term data management and analysis.

The cost of maintaining the REDCap runs at about $300 per year. Benefits of utilizing REDCap, such as amount of time saved by utilizing automated features (such as auto-generated reports) and HIPAA-compliant data privacy/security provided through the REDCap system, likely outweigh the financial cost of an annual REDCap license. Another database capability to keep in mind is the amount of data the database can support. Thousands of participant records can be held in REDCap without slowing down the system. This large capacity is suitable to house long-term data for all Open Hand programs.

Finally, the transition of the REDCap database from Emory to Open Hand control would be smooth and consume minimal time as Open Hand would have access to the Emory Evaluation Team as a resource for database questions, onboarding, and handover. Additionally, video tutorials provided by REDCap are also straightforward and helpful for first-time users.

Long Term Considerations for Next Steps

To establish concrete goals for scale-up of CMKT programming and determine impact of CMKT over time, Open Hand needs to clarify the theory of change surrounding CMKT. By constructing a Theory of Change flowchart or Logic Model, Open Hand will begin the process of developing

a monitoring and evaluation plan specific to CMKT. Some of the many benefits of having a clear monitoring and evaluation plan include consistent tracking of program reach by grant cycle, identification of key indicators to include in cohort monitoring, and strong assessment of outcomes and impacts of CMKT in Georgia. After completion of a Theory of Change or Logic Model flowchart, it is recommended that Open Hand build a monitoring and evaluation plan suitable to their programmatic and funding needs.

Initial steps include review the following documents prior to development of a monitoring and evaluation plan:

- Share our Strength Theory of Change/Logic Model, if available
- CMKT curricula
- CMKT facilitator training documents
- Any current Open Hand monitoring and evaluation documents/system

Then, after careful consideration of current monitoring and evaluation efforts:

- Consider completing the Logic Model DIY template (DIYtoolkit.org)
- Determine which online survey option is most viable (Google Forms, KoboToolbox, REDCap), given personnel and budget constraints
- Decide whether to keep REDCap database, as built out by Emory Evaluation Team
    - If yes, plan for these next steps:
        - Budget for $300 per year to maintain access
        - Determine handover process
        - Identify who will manage training of current and future OH staff via REDCap online tutorials, data entry and cleaning process documents, meetings with Emory evaluation team staff

- If no, plan for these next steps:
    - Determine which form of data management is feasible for long-term collection and analysis
    - Options to consider include building out Excel-based database that allows for easy/automated data queries or free database options like CS Pro, MySQL
    - Determine which changes, if any, to make to CMKT surveys and develop a timeline for implementation.

Conclusion

The Data Management Toolkit for Cooking Matters Kids and Teens was developed to present Open Hand with options for consistent practices in regards to data collection, entry, cleaning, and analysis. While some tools are already used by the Emory Evaluation Team, others require evaluation by Open Hand to determine a desired path for CMKT data management. This presentation of the Data Management Toolkit aims to encourage Open Hand's adoption of consistent data management practices and to ease the eventual transition of CMKT data management from the Emory Evaluation Team back to Open Hand. In closing, it will be to Open Hand's benefit to consider the following: "What has already been implemented?" and "Which recommendations should be prioritized?"

What has already been implemented?

As discrepancies with incoming survey forms resulted in extra hours spent reorganizing paper surveys prior to initial data entry by the Emory Evaluation Team, the Facilitator Training PowerPoint (see Appendix I) was shared with Open Hand in May 2017. Electronic survey

options for Open Hand to choose from have been built in Google Forms and KoboToolbox (see Appendix VI for links), and the recommended additional survey items for food security screening and family meal frequency are being piloted with a Cooking Matter Families cohort that began in early October. Open Hand's Cooking Matters Program Manager, Gabriela Granados, attended the thesis defense presentation in July 2017; presentation slides were subsequently shared with Ms. Granados for reference.

Additionally, the database for CMKT programs has already been established in REDCap by the Emory Evaluation Team, and REDCap has been populated with all data, including metadata, from 2017-2018 CMKT cohorts. It is important to note that collecting metadata is key to tracking long-term progress of programs. For ease of eventual transition of the CMKT database from the Emory Evaluation Team to Open Hand Atlanta, metadata was retroactively added to survey data in REDCap. Specifically, the format of participant IDs was updated to simple numbers and fields were added for site code, course code, congressional district, start date, cohort size (start), end date, cohort size (end), and contact name/instructor name. Communication of these updates with Open Hand yielded new versions of attendance sheets that incorporate all metadata variables and will be used with future CMKT cohorts.

Which recommendations should be prioritized?

While Open Hand and the Emory Evaluation Team are still collaborating on CMKT data management, it is paramount that Open Hand's Cooking Matters Team take time to familiarize themselves with this Data Management Toolkit. This is the first and most time-sensitive recommendation because Open Hand will benefit from having close correspondence with the Emory Evaluation Team should they decide to adopt any, or all, of the toolkit deliverables for their future CMKT data management practices.

Should Open Hand be interested in moving forward with adopting a database option other than Excel, the highest priority recommendation is to decide on which database option meets the needs of CMKT (and potentially other Open Hand programs). In making this decision, Open Hand should take into consideration long-term affordability of the database as well as an implementation timeline for database introduction and historical data migration (if applicable).

If Open Hand is most interested in moving forward with recommendations that deal with long-term impact first, it is advised that they create and follow through on a clear monitoring and evaluation plan. This will position Open Hand to implement a sustainable monitoring and evaluation system that utilizes the CMKT database to track not only indicators required for Share Our Strength and SNAP-ED, but also monitor and evaluate progress of CMKT expansion in Georgia. This will allow Open Hand to leverage CMKT data for future grant proposals and funding opportunities that may arise beyond Share Our Strength and SNAP-ED funding.

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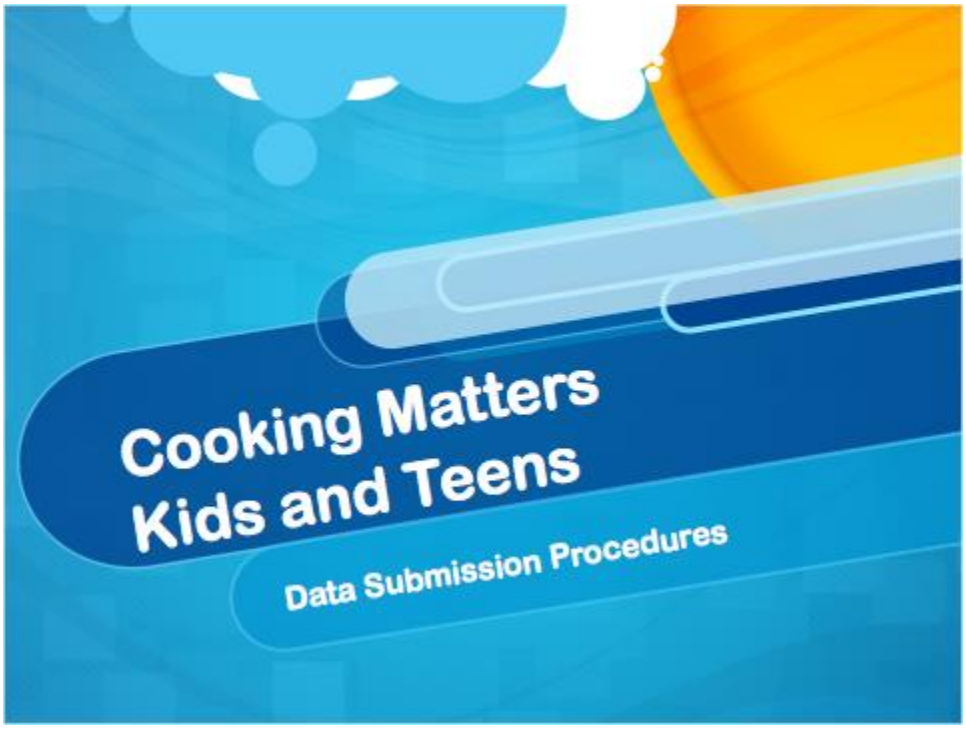
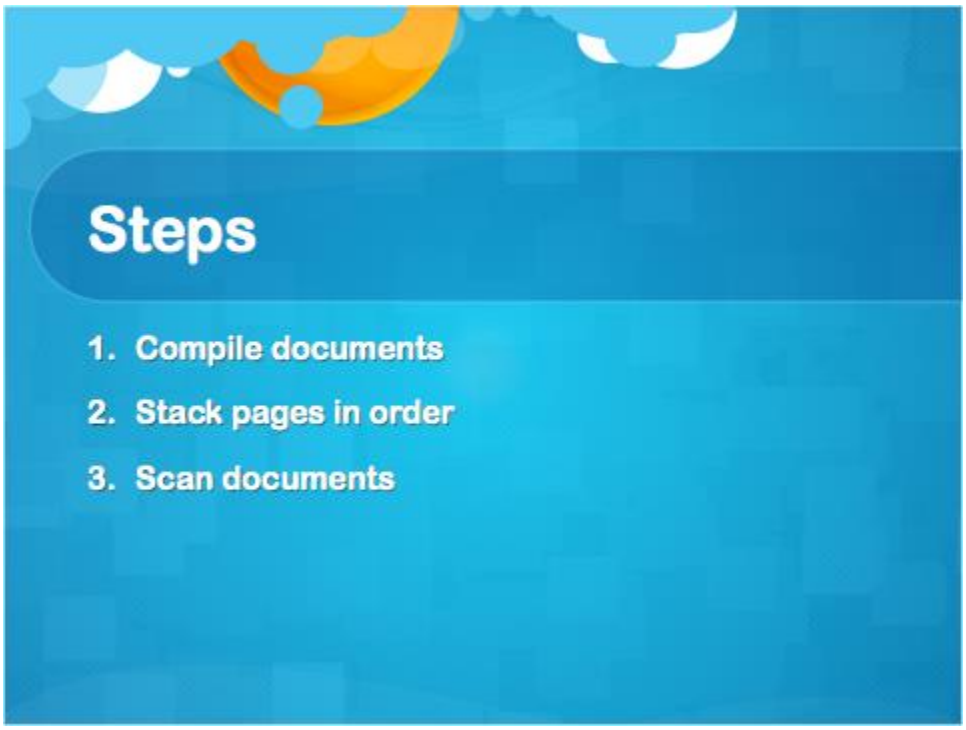
I. Appendices

- ***a.*** Appendix I: CMKT Facilitator Training: Data Collection Procedures
- ***b.*** Appendix II: Data Entry Protocol
- ***c.*** Appendix III: Data Cleaning Protocol
- ***d.*** Appendix IV: Survey Improvements: SNAP-ED Indicator Measures
- ***e.*** Appendix V: Survey Improvements: Proposal for New Survey Items
- ***f.*** Appendix VIa: Google Forms - Cooking Matters Teens: Deployed Survey
- ***g.*** Appendix VIb: Google Forms - Cooking Matters Teens: Coding Example
- ***h.*** Appendix VIIa: KoboToolbox - Cooking Matters Kids: Deployed Survey
- ***i.*** Appendix VIIb: KoboToolbox - Cooking Matters Kids: Coding Example
- ***j.*** Appendix VIII: Generating Online Surveys on REDCap - Illustrated Guide

Appendix I
CMKT Facilitator Training: Data Collection Procedures





Compile documents: Which pages do I need to send?

- Here's what needs to be sent:
  - FY2017 Participant Survey (demographics page)
  - Before Course Survey (Kids-4 pages; Teens-2 pages)
  - Pre-class fruit & vegetable questions (1 page)
  - After Course Survey (Kids-4 pages; Teens-3 pages)
  - Post-class fruit & vegetable questions (1 page)

What about other documents we get from participants?

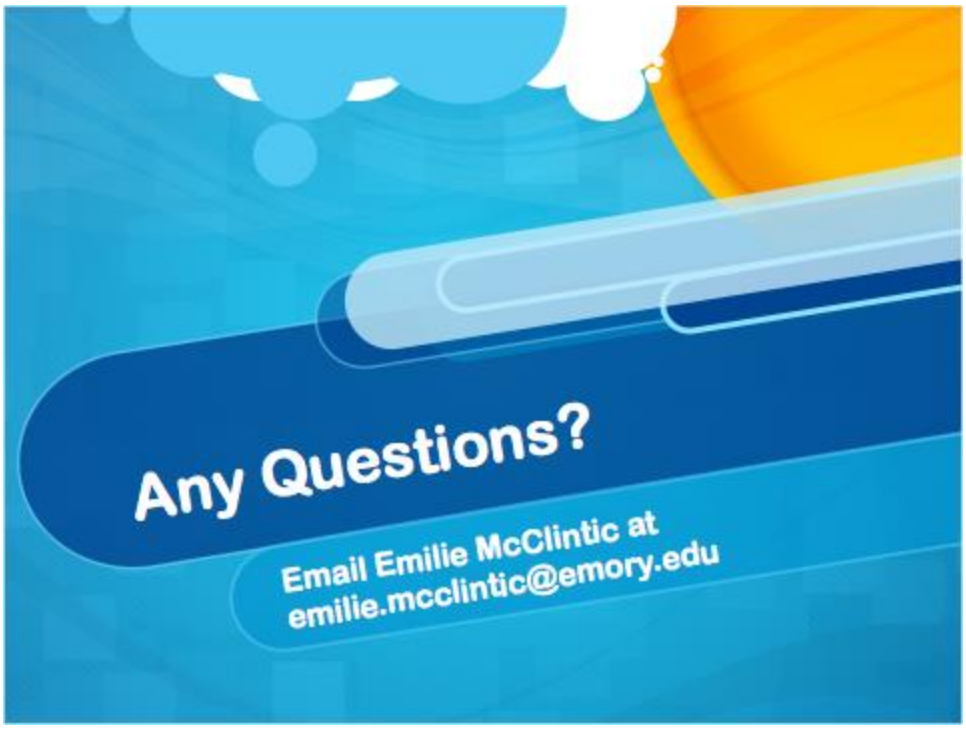
- You DO NOT need to send anything else!
- That means the waivers, the enrollment forms & the signed class expectations can all stay in your records

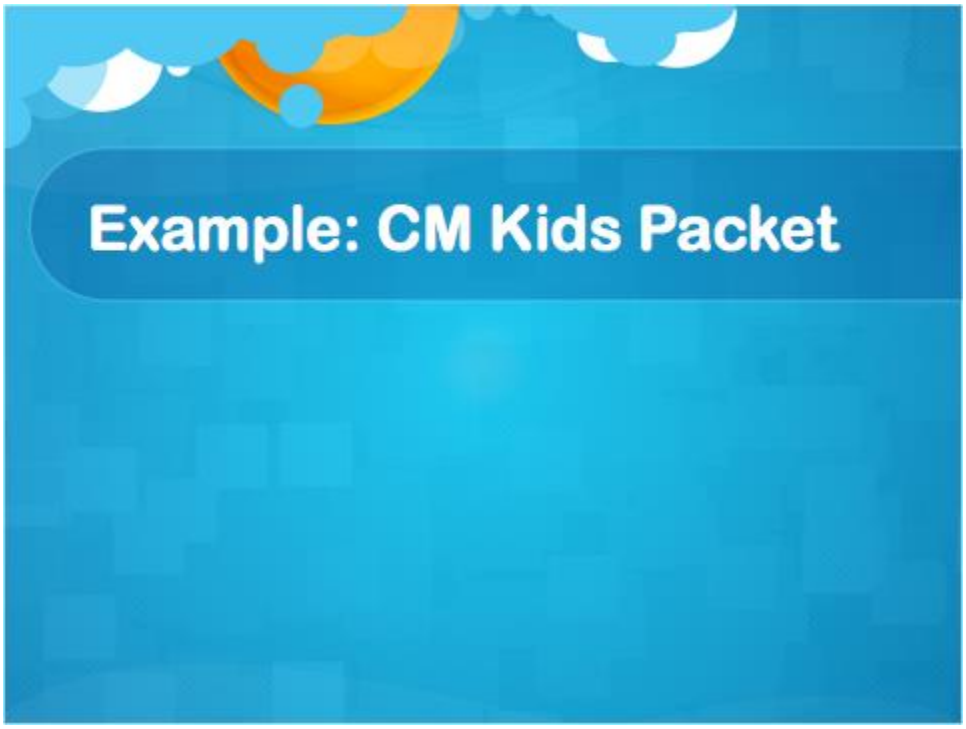
Stack pages in order

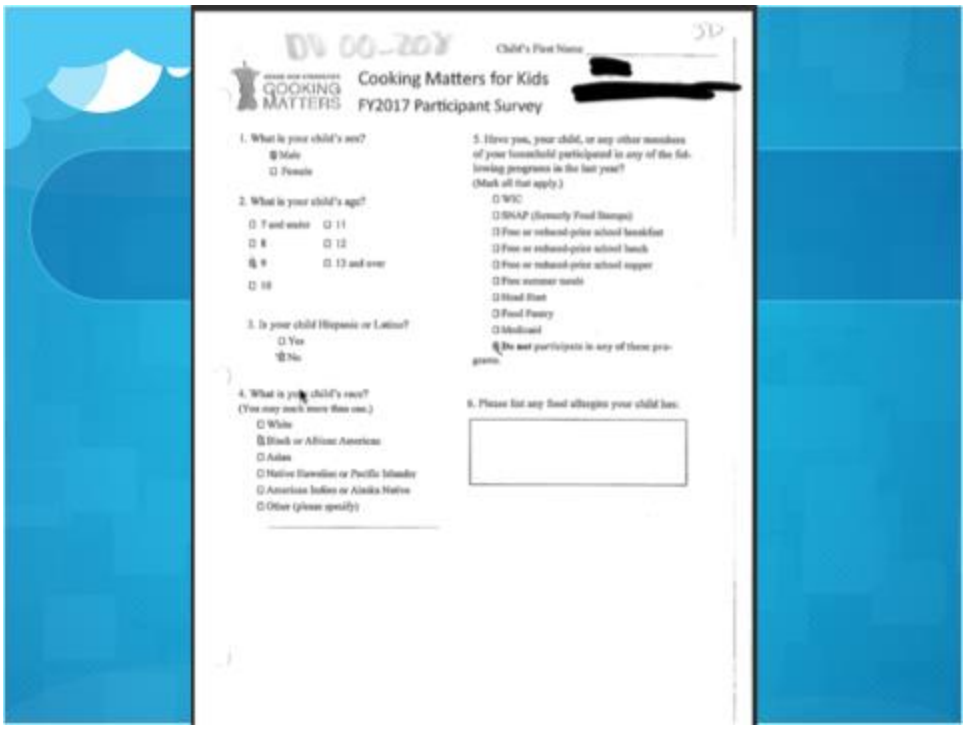
- Order of participants is *the same order* as the Attendance Tracking Form
- Order of documents (for each participant):
  - **FY2017 Participant Survey** (demographics page)
  - **Before Course Survey** (Kids-4 pages; Teens-2 pages)
  - **Pre-class fruit & vegetable questions** (1 page)
  - **After Course Survey** (Kids-4 pages; Teens-3 pages)
  - **Post-class fruit & vegetable questions** (1 page)

Scan documents: Any tips or reminders?

- Make sure all pages are facing in the same direction
  - Right side up, NOT upside down
  - Horizontal pages can face either way
- Double check scans before sending for missing pages
- If pages are missing from the original scan:
  - Scan the stack again
  - If that is not possible, send missing pages as separate scan
    - Save in this format: LastName_FirstInitial_preORpost_SiteName)
    - Example: Doe_Jane_post_MercyCare


Any Questions?
Email Emilie McClintic at
emilie.mcclintic@emory.edu


Example: CM Kids Packet



Child's First Name [redacted]

Cooking Matters for Kids
FY2017 Participant Survey

1. What is your child's sex?
- [x] Male
- [ ] Female

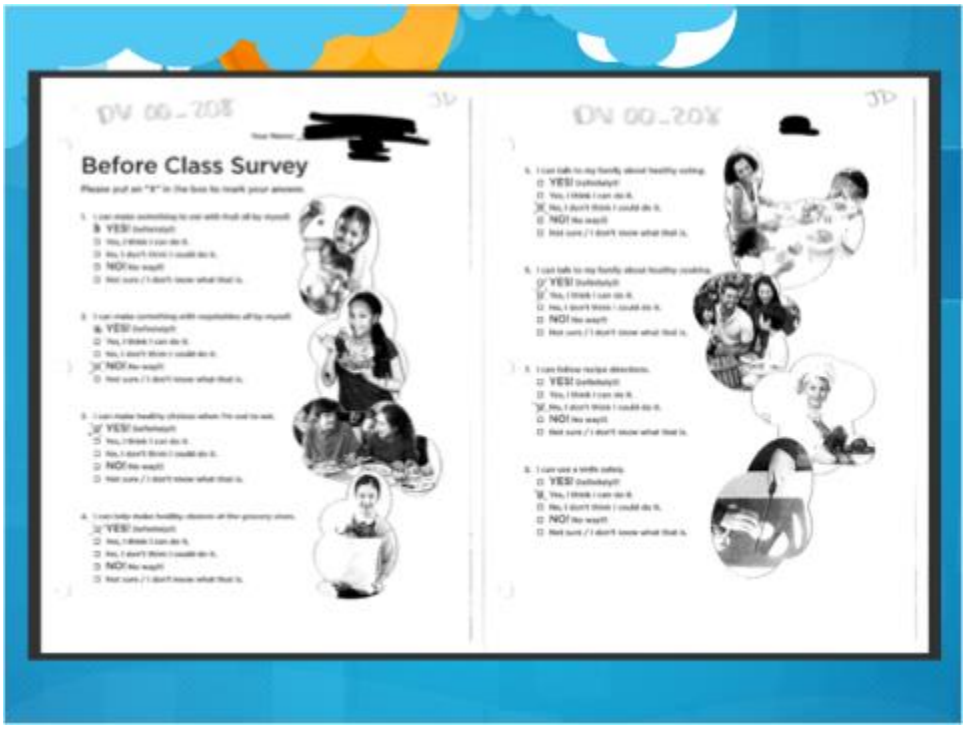
2. What is your child's age?
- [ ] 7 and under
- [ ] 8
- [x] 9
- [ ] 10
- [ ] 11
- [ ] 12
- [ ] 12 and over

3. Is your child Hispanic or Latino?
- [ ] Yes
- [x] No

4. What is your child's race?
(You may mark more than one.)
- [ ] White
- [x] Black or African American
- [ ] Asian
- [ ] Native Hawaiian or Pacific Islander
- [ ] American Indian or Alaska Native
- [ ] Other (please specify)

5. Have you, your child, or any other members of your household participated in any of the following programs in the last year?
(Mark all that apply.)
- [ ] WIC
- [ ] SNAP (formerly Food Stamps)
- [ ] Free or reduced-price school breakfast
- [ ] Free or reduced-price school lunch
- [ ] Free or reduced-price school supper
- [ ] Free summer meals
- [ ] Head Start
- [ ] Food Pantry
- [ ] Medicaid
- [x] Do not participate in any of these programs.

6. Please list any food allergies your child has:



Your Name: [redacted]

Before Class Survey

Please put an "X" in the box to mark your answer.

1. I can make something to eat with fruit all by myself.
- [x] YES!
- [ ] Yes, I think I can do it.
- [ ] Yes, I don't think I could do it.
- [ ] NO! No way!!
- [ ] Not sure / I don't know what that is.

2. I can make something with vegetables all by myself.
- [x] YES!
- [ ] Yes, I think I can do it.
- [ ] Yes, I don't think I could do it.
- [x] NO! No way!!
- [ ] Not sure / I don't know what that is.

3. I can make healthy choices when I'm out to eat.
- [x] YES!
- [ ] Yes, I think I can do it.
- [ ] Yes, I don't think I could do it.
- [ ] NO! No way!!
- [ ] Not sure / I don't know what that is.

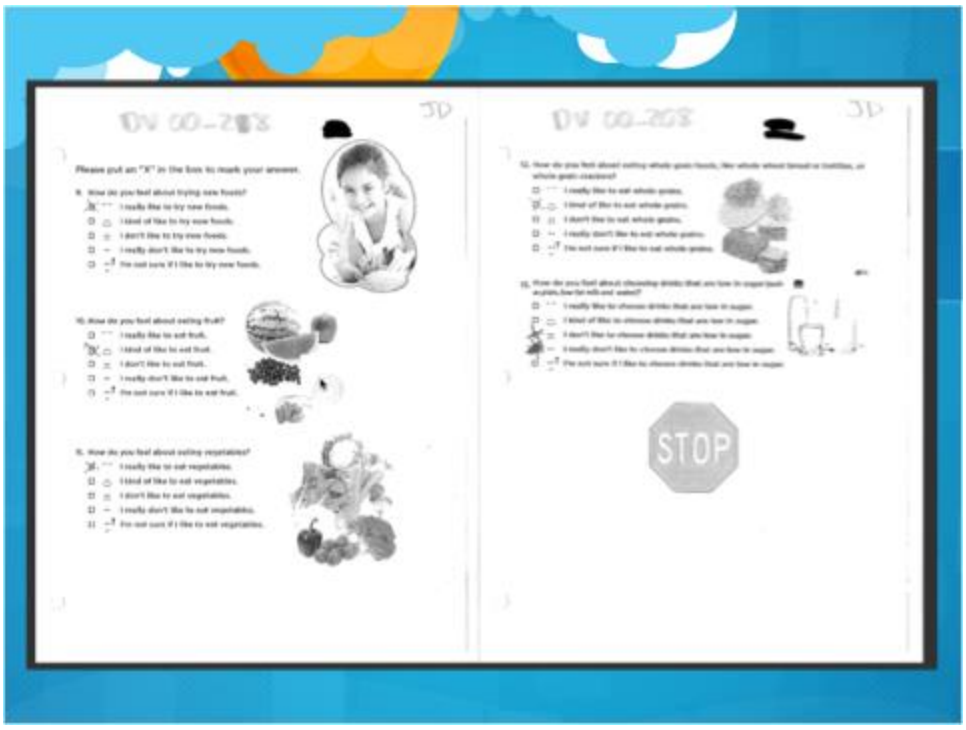
4. I can help make healthy choices at the grocery store.
- [x] YES!
- [ ] Yes, I think I can do it.
- [ ] Yes, I don't think I could do it.
- [ ] NO! No way!!
- [ ] Not sure / I don't know what that is.

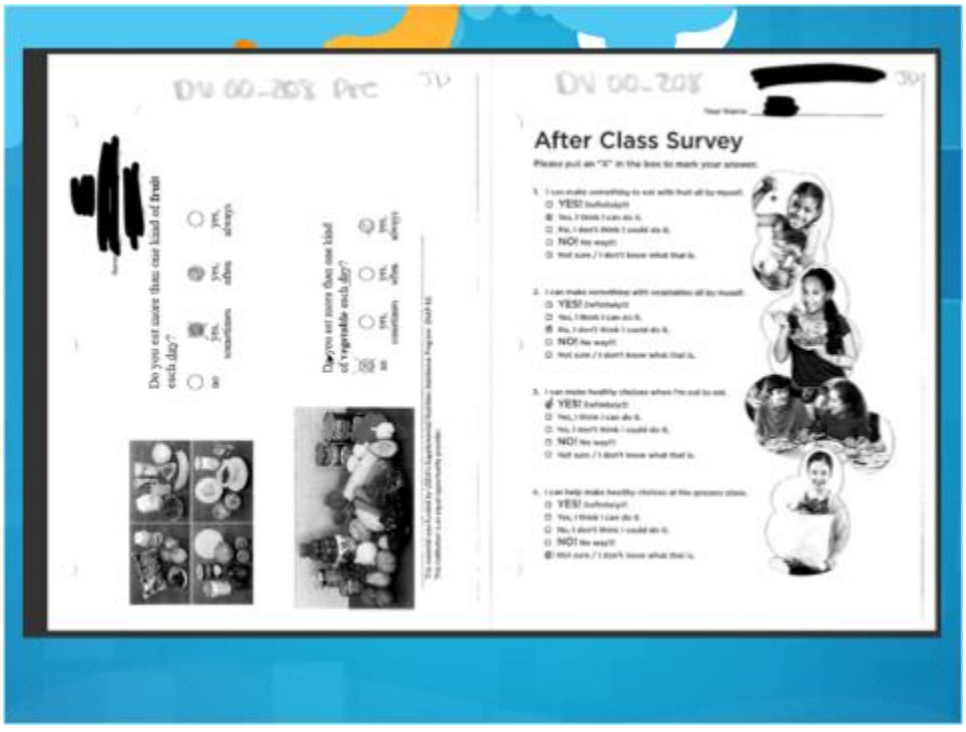
5. I can talk to my family about healthy eating.
- [ ] YES!
- [ ] Yes, I think I can do it.
- [x] Yes, I don't think I could do it.
- [ ] NO! No way!!
- [ ] Not sure / I don't know what that is.

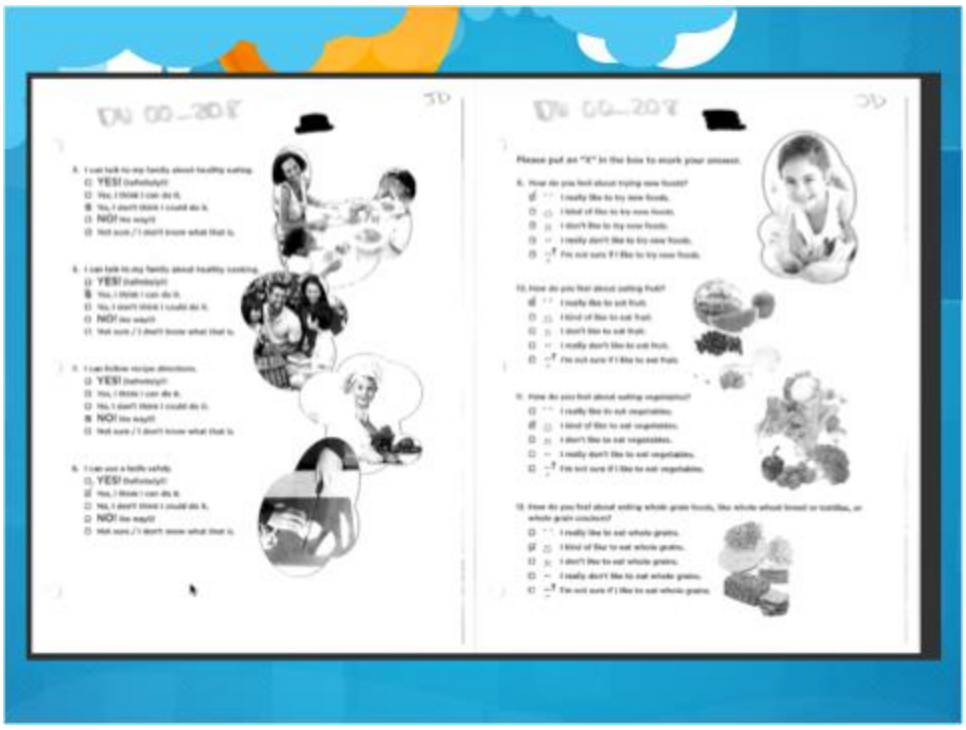
6. I can talk to my family about healthy cooking.
- [x] YES!
- [ ] Yes, I think I can do it.
- [ ] Yes, I don't think I could do it.
- [ ] NO! No way!!
- [ ] Not sure / I don't know what that is.

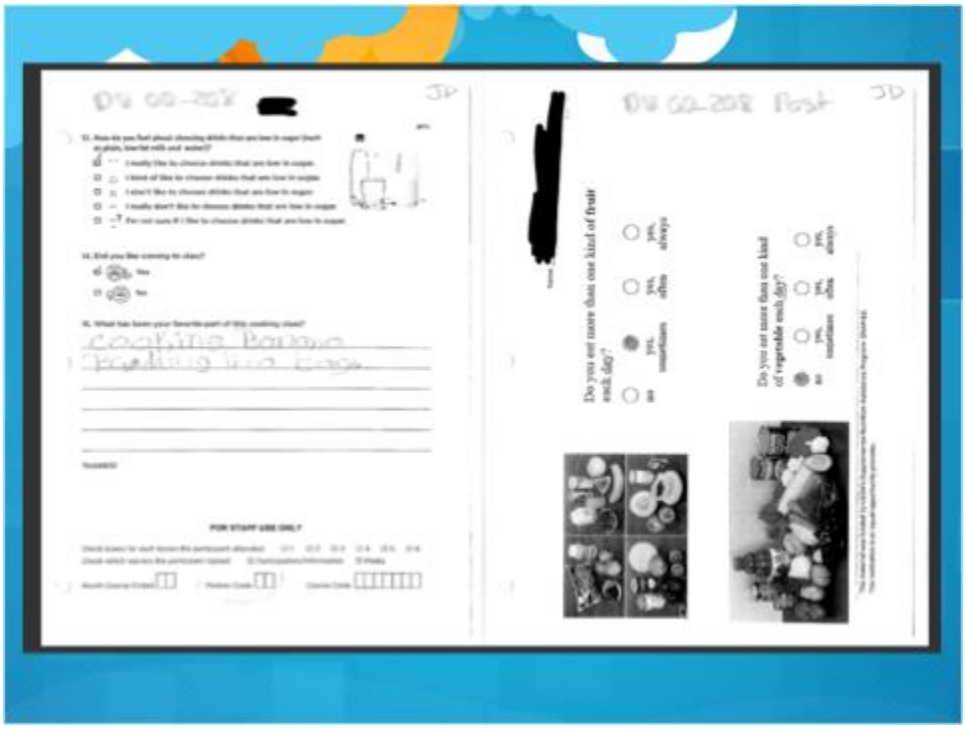
7. I can follow recipe directions.
- [ ] YES!
- [ ] Yes, I think I can do it.
- [x] Yes, I don't think I could do it.
- [ ] NO! No way!!
- [ ] Not sure / I don't know what that is.

8. I can use a knife safely.
- [ ] YES!
- [x] Yes, I think I can do it.
- [ ] Yes, I don't think I could do it.
- [ ] NO! No way!!
- [ ] Not sure / I don't know what that is.

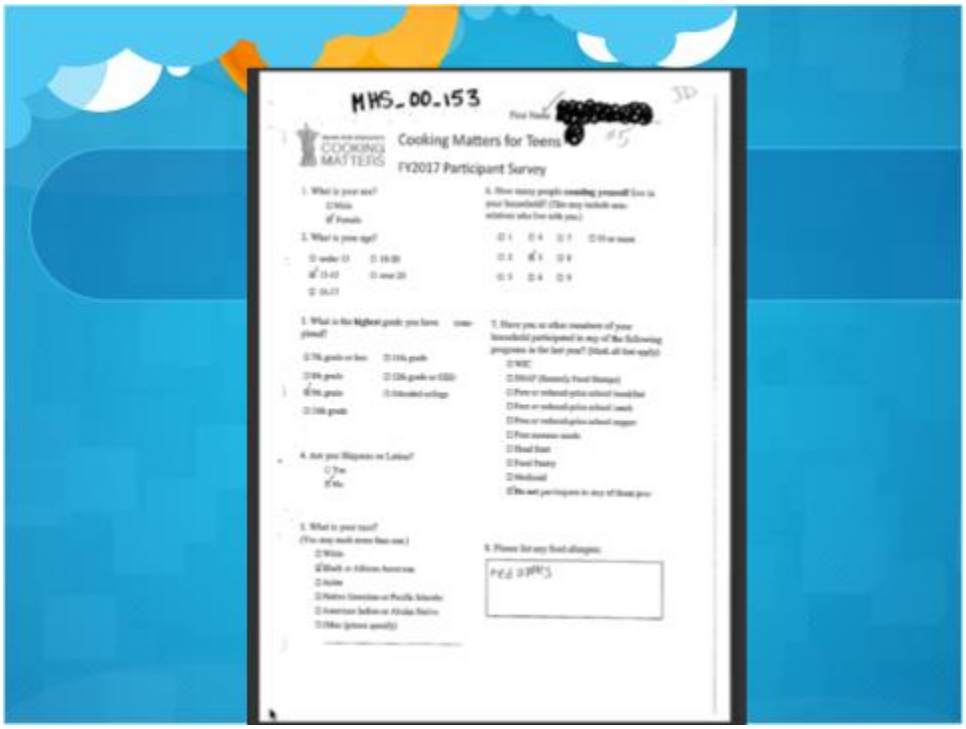

STOP

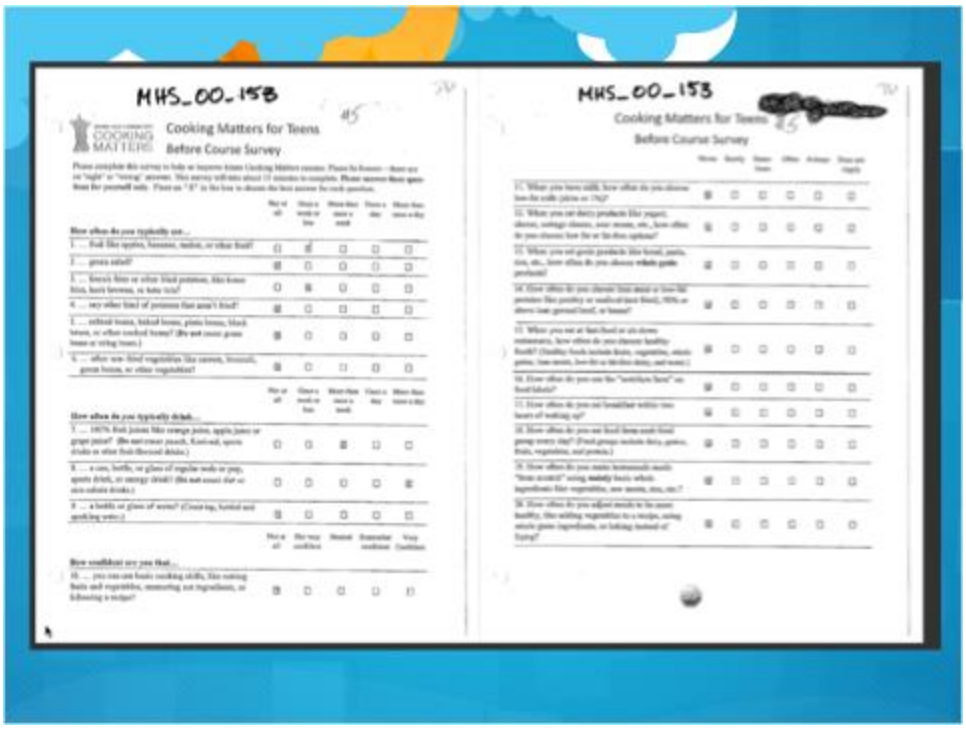

After Class Survey





Example: CM Teens Packet





MHS_00_158

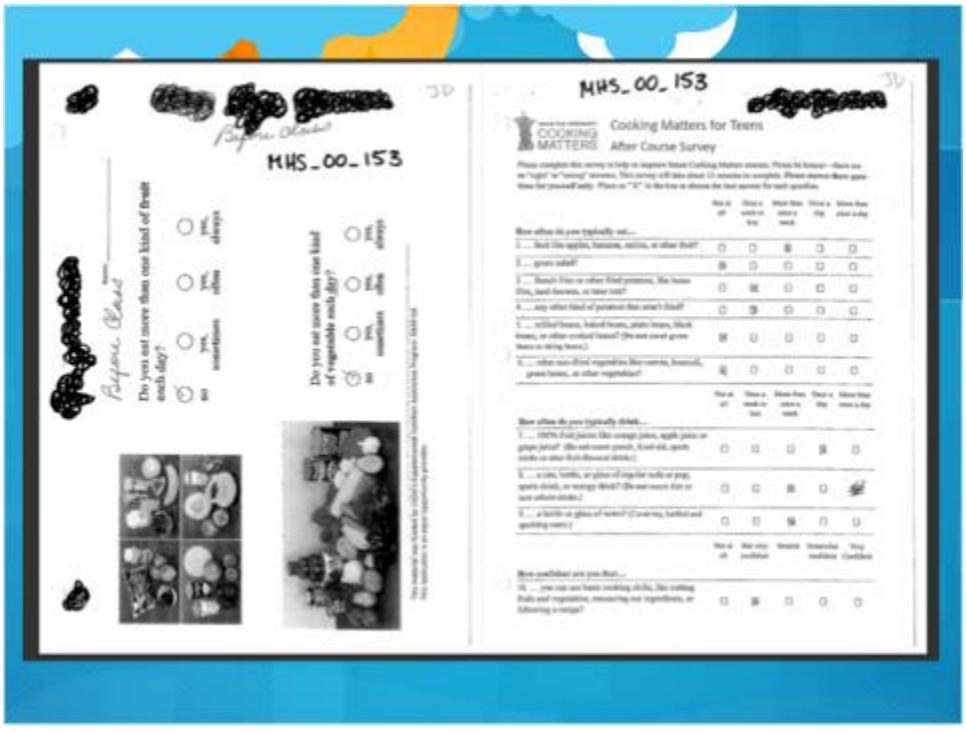
Cooking Matters for Teens

Before Course Survey

MHS_00_153

Cooking Matters for Teens

Before Course Survey



MHS_00_153

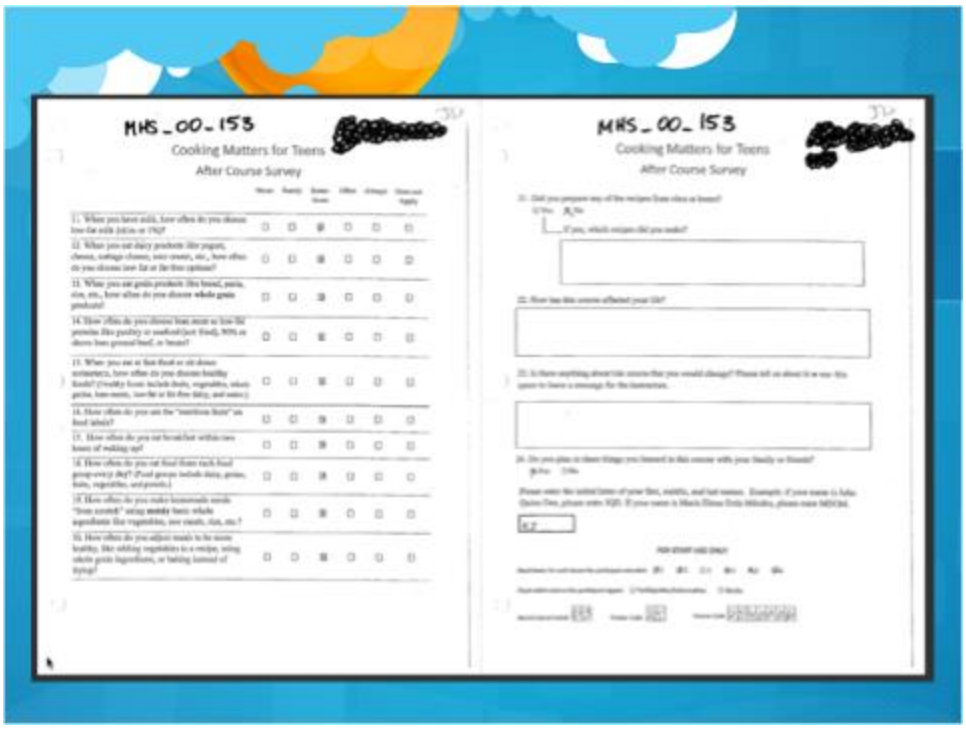
Do you eat more than one kind of fruit each day?

Do you eat more than one kind of vegetable each day?

MHS_00_153

Cooking Matters for Teens

After Course Survey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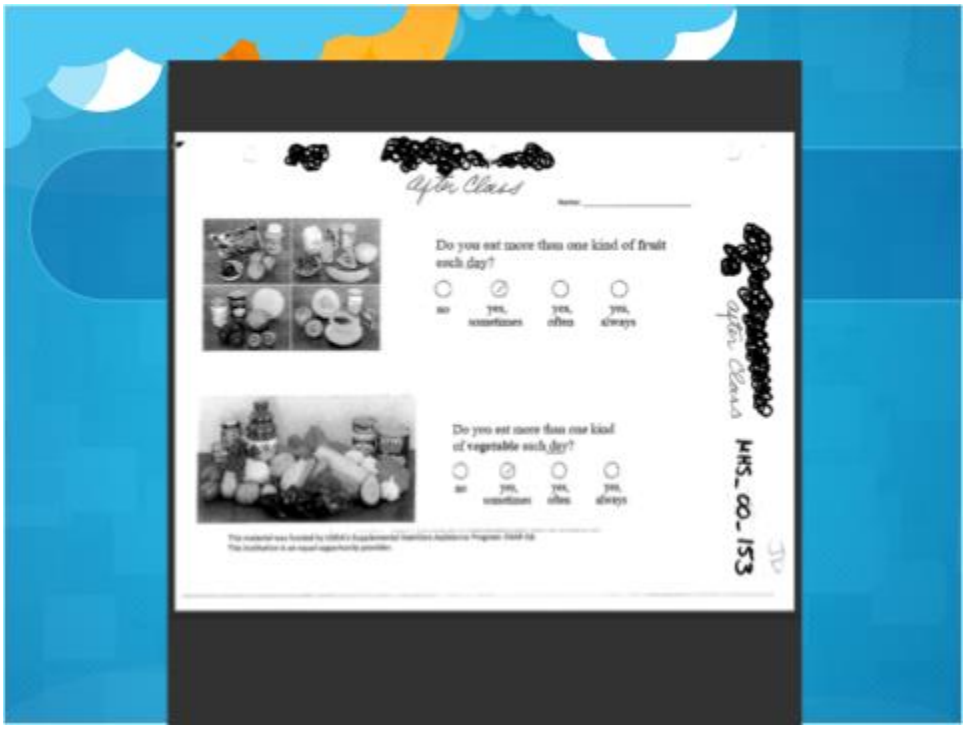
Cooking Matters for Teens
After Course Survey
MHS_00_153
Cooking Matters for Teens
After Course Survey


After Class
Do you eat more than one kind of fruit each day?
no
yes, sometimes
yes, often
yes, always
Do you eat more than one kind of vegetable each day?
no
yes, sometimes
yes, often
yes, always
MHS_00_153

Appendix II
Data Entry Protocol

Section 1: Orientation to Excel spreadsheets

- **"CMKT_2018 Course Schedule"**
  - Dropbox pathway: Open Hand Evaluation > CMKT > Data > CMKT_2018 Course Schedule.xlsx
  - Document Purpose: use to track class progress and receipt of data from CMKT sites
  - How each column is used:
    - Month Begin – the month in which a site's CM class starts
    - Start Date – the date of the first CM class for that cohort/site
    - End Date – the date of the last CM class for that cohort/site
    - Location – the site where the CM class is taking place
    - Kids or Teens? – CMK for Kids, or CMT for Teens
    - Does Emory have data? – "Yes" means that Emory has received data
    - Date data received – the date Emory received data from Open Hand
    - Class Progress (DD/MM) – this column is updated with class status based on the date the column is updated. Be sure to update the date in the column heading each time the class progress information changes.
  - Color coding:
    - Green = class is finished, Emory has received data
    - Blue = class is in progress or finished, Emory has NOT received data
    - Red = class has not started

Month Begin	Start Date	End Date	Location	Kids or Teens?	Does Emory have data?	Date data received	Class Progress (4/5)
March	5/29/18	6/1/18	Osborne High School (added)	CMT	Yes	6/20/18	Complete
June	6/4/18	6/8/18	Mercy Care	CMT	Yes	6/20/18	Complete
June	6/4/18	6/20/18	Summerhill (added)	CMK	Yes	7/16/18	Complete
June	6/11/18	6/15/18	CO Simpson	CMK	No		Complete
June	6/11/18	6/15/18	Seven Courts	CMT	Yes	Date received?	Complete
June	6/11/18	6/22/18	FBNEGATK	CMK	Yes	Date received?	Complete
June	6/18/18	6/22/18	CPACS	CMK	No		Complete
June	6/12/18	6/28/18	Butler Elementary	CMK	Yes	Date received?	COmplete
June	6/13/18	6/29/18	Gould Elementary	CMK	No		Complete
June	6/25/18	6/29/18	Trestle Tree	CMT	No		Complete
July	7/9/18	7/9/18	CPACS	CMK	No		Complete
July	7/9/18	7/13/18	Safe Harbor Children's Center	CMT	No		Complete
June	*6/4/18*	*7/16/18*	*CO Hightower & Kingsley*	*CMT*	*No*		*Not started*
June	*6/5/18*	*7/17/18*	*Yells*	*CMT*	*No*		*Not started*
June	*6/8/18*	*7/20/18*	*Girls Inc.*	*CMT*	*No*		*Not started*

- **"ID_List_CMKT.Students&Schools"**
  - IMPORTANT: Student names are recorded here. Therefore, this spreadsheet is locked. The passcode for access is "cmkt2018."
  - Dropbox pathway: Open Hand Evaluation > CMKT > Data > School and student codes > Copy of ID_List_CMKT.Students&Schools.xlsx
  - Document Purpose: secured spreadsheet that links student names with participant IDs; used to track missing pages/sections from paper surveys
  - How each column is used:
    - ID – assign and record unique participant ID here

- Name – record participant name here (blacked out for this protocol for confidentiality purposes)
- Site Name – name of site the CM class took place
- School Code – the two-to-three letter code assigned to the site
- Program – CMK for Kids, or CMT for Teens
- Demographics – "Y" means present, "N" means blank or missing
- Pre-survey – "Y" means present, "N" means blank or missing
- Pre-FBC – "Y" means present, "N" means blank or missing
- Post-Survey – "Y" means present, "N" means blank or missing
- Post-FBC – "Y" means present, "N" means blank or missing
- Packet complete? – "Y" means there are no missing pages or sections in the original paper survey packet
- De-identified? – "Y" means original paper survey has had participant name and initials blacked out on every page it is present
- In binder? – "Y" means original paper survey is in binder
- Comments – space for comments/notes/actions, if needed

ID	Name	Site Name	School Code	Program
00_359	[redacted]	Seven Courts	SC	CMK
00_360		Seven Courts	SC	CMK
00_361		Seven Courts	SC	CMK
00_362		Seven Courts	SC	CMK
00_363		Seven Courts	SC	CMK
00_364		Seven Courts	SC	CMK
00_365		Seven Courts	SC	CMK

E	F	G	H	I	J	K	L	M	
Program	Demographics	Pre-survey	Pre-FBC	Post- Survey	Post-FBC	Packet complete?	De-identified?	In binder?	Comments
CMK	Y	Y	Y	Y	Y	Y	Y	Y	
CMK	Y	Y	Y	Y	Y	Y	Y	Y	
CMK	Y	Y	Y	Y	Y	Y	Y	Y	
CMK	Y	Y	Y	Y	Y	Y	Y	Y	
CMK	Y	Y	Y	Y	Y	Y	Y	Y	

- "Data Entry Record"
  - Dropbox pathway: Open Hand Evaluation > CMKT > Data > Entry & Analysis > Data Entry > Data Entry Record 05.12.18_CKB.xlsx
  - Document Purpose: use to track data entry issues/discrepancies between what is presented on paper or PDF surveys and what data is entered on REDCap
  - How each column is used (on CMK *and* CMT sheets):
    - "Person Entering Data" – record name of person doing the data entry
    - "Survey ID" – enter participant ID of survey with data discrepancy
    - "Survey Form" – enter which form the data discrepancy takes place (dem = Demographics, pre = Before Class Survey, post = After Class Survey)

- "Question #" – enter the number of the question that has a data discrepancy (use FBC is discrepancy occurs on Food Behavior Checklist)
- "Issues" – state reason to record the data discrepancy
- "Action taken" – state what was done to fix the data discrepancy
- "Person running double check" – record name of person who takes a second pass at the data discrepancies
- "Comments, if action changed" – complete only if a different action than the original resolution is taken
- "Resolved?" – enter "Yes" if double check is complete, "No" is double check has not been completed OR if there is still an outstanding discrepancy that needs to be addressed after the double check

Person Entering Data	Survey ID	Survey Form	Question #	Issues	Action taken	Person running double check	Comments, if action changed	Resolved?
M Laird	RCE 00_58	post		no form	left all blank	C Bursuc	Updated status of form to "Complete"	Yes
M Laird	RCE 00_59	post		no form	left all blank	C Bursuc	Updated status of form to "Complete"	Yes
M Laird	RCE 00_60	Pre	11 - 13	unanswered	left blank	C Bursuc		Yes
M Laird	RCE 00_60	post		no form	left all blank	C Bursuc	Updated status of form to "Complete"	Yes
M Laird	RCE 00_61	post		no form	left all blank	C Bursuc	Updated status of form to "Complete"	Yes
M Laird	RCE 00_62	pre, post		no form, no FBC form	left all blank	C Bursuc	Updated status of pre-survey form to "Cc	Yes
M Laird	HE 00_73	post	15	wrote: valintines, penut, helathy	corrected to: valentines, peanut, healthy	C Bursuc		Yes
C Bursuc	HE 00_73	post	7	selected two answers, appears to cross one off	Record "Yes! Definitely!!!"	C Bursuc		Yes
C Bursuc	HE 00_74	post	13	selected two answers	Left blank	C Bursuc		Yes
M Laird	HE 00_74	post	15	wrote: rilley	corrected to: really	C Bursuc		Yes
C Bursuc	HE 00_75	pre	4	selected two answers, appears to cross one off	Record "Yes, I think I can do it."	C Bursuc		Yes
C Bursuc	HE 00_75	pre	8	selected two answers, appears to cross one off	Record "Yes, I think I can do it."	C Bursuc		Yes
M Laird	HE 00_77	post	FBC	no form	left all blank	C Bursuc		Yes

- Data QA sheet – this form is used for recording periodic quality checks on data entry by choosing a random sample of newly entered surveys. An illustration of this sheet is included later in this protocol, along with the directions on how to conduct data quality assurance checks. See section titled "Steps for conducting Data QA Checks."

Section 2: Paper Survey Submission Training for Facilitators

This resource can be found in Appendix I: "CMKT Facilitator Training: Data Collection Procedures." The purpose of this tool is to establish a clear, systematic way of filing and sending paper survey results for data entry so as to cut down time and money wasted by re-printing and re-organizing disorganized scans of paper surveys prior to beginning manual data entry on REDCap.

Section 3: Steps for entering data in REDCap

1. If working with original paper surveys:
   a) Make sure pages are in order.
   b) Assign each participant on the attendance sheet an ID number (see ID FORMAT).
   c) Record Participant ID in spreadsheet "ID_List_CMKT.Students&Schools."
   d) Record any missing pages, sections, and/or participants in same spreadsheet.
   e) Send email with missing data information to Open Hand.
   f) De-identify surveys by writing the Participant ID at the top of each page and blacking out any instances of the participant's name.

2. If working with PDF files:

a) Make sure pages are in order.
b) If pages are not in order, consider printing and re-ordering the pages.
c) Record any missing pages, sections, and/or participants.
d) Assign each participant on the attendance sheet an ID number (see FORMAT ID).
e) Record Participant ID in spreadsheet "ID_List_CMKT.Students&Schools."
f) Record any missing pages, sections, and/or participants in same spreadsheet.
g) Send email with missing data information to Open Hand.

3. Once paper/PDF surveys are prepared:

a) Log in to REDCap.
b) Select "Project Open Hand CMKT."
c) In the left-hand column, find the "Data Collection" heading and select "Add/Edit Records."
d) If entering new data for a new participant:
    1. Locate row for "Enter a new or existing Participant ID."
    2. Select the form that corresponds with CMK or CMT ("Arm 1: Cooking Matters Kids" or "Arm 2: Cooking Matters Teens").
    3. Type Participant ID into box to the right.
    4. Enter data into REDCap.
    5. Use the "Data Entry Record" spreadsheet to record any data discrepancies such as missing values, two questions answered where only one response is needed, unclear markings, etc.

e) If entering or checking data for an existing participant:
    1. Use either the "Choose an Existing Participant ID" or "Enter a new or existing Participant ID" row.
    2. Select the form that corresponds with CMK or CMT ("Arm 1: Cooking Matters Kids" or "Arm 2: Cooking Matters Teens").
    3. Either use the dropdown menu to find the desired Participant ID or type Participant ID into box to the right.
    4. Enter data into REDCap.
    5. Use the "Data Entry Record" spreadsheet to record any data discrepancies such as missing values, two questions answered where only one response is needed, unclear markings, etc.

4. Once a full class of data is entered, double check any data discrepancies recorded in the "Data Entry Record" spreadsheet and record the result of the double check (Resolved = Yes/No).

Section 4: Steps for conducting data QA checks

Periodically (suggested once every 50-80 participants entered), run a QA (quality assurance) check on a random subset of surveys that have yet to be included in a QA check. Refer to steps below and the "Data QA" sheet on the "Data Entry Record" document for details on running QA checks. The "Data QA" sheet resembles the screenshot below.

Person conducting QA check	Date	Participant ID	Discrepancies?	Survey Section	Question #	Resolution	Notes	Description of Calculations, Next Step
Data Quality Check for Participants #1-89: 20% random sample = 18 participant records (demographics, pre & post surveys)								
C Bursuc	3/27/18	76	No					
C Bursuc	3/27/18	72	Yes	dem	6	updated Demographics #6 to "3" to match paper form		
C Bursuc	3/27/18	73	No					
C Bursuc	3/27/18	37	No					
C Bursuc	3/27/18	9	No					**Calculations:** 3/18 participant records
C Bursuc	3/27/18	20	No				Post-survey #7 updated to "blank," but not c	with data entry errors: 16.67%; 3/54
C Bursuc	3/27/18	51	No					forms with data entry errors: 5.5%.
C Bursuc	3/27/18	2	No					**Next Step:** conduct 2nd round of data
C Bursuc	3/27/18	22	No					quality checks on a different group of
C Bursuc	3/27/18	85	No					randomly selected participant records
C Bursuc	3/27/18	46	No					that represent 20% of remaining
C Bursuc	3/27/18	53	No					participant records between #1&89.
C Bursuc	3/27/18	45	No					*Ensure that data entry error % for forms*
C Bursuc	3/27/18	87	No					*is below 5%.*
C Bursuc	3/27/18	41	Yes	post	3	Post-survey #3 updated to "No, I don't think I could do it" to match paper form		
C Bursuc	3/27/18	47	No					
C Bursuc	3/27/18	59	Yes	pre	FBC	Pre-survey FBC for fruit updated to "yes, always" to match paper form		
C Bursuc	3/27/18	5	No				Post-survey #21 & 22 updated to reflect text	

a) Open the "Data QA" sheet on the "Data Entry Record" Excel spreadsheet.
b) Record your name in the "Person conducting QA check" column and the date.
c) Identify the Participant ID where the last QA check left off – the next step for QA procedures will always be stated in the "Description of Calculations, Next Step" column on the right.
d) Count the number of participants with newly entered data.
e) Divide that number by 5 and round up – this is the number of participants you will have in your 20% QA check sample.
f) To identify which participants to sample, use a random number generator to choose Participant IDs that add up to the number needed for a 20% QA check sample.
g) Record each of these Participant IDs in the "Participant ID" column.
h) Retrieve original surveys needed for that particular range of Participant IDs.
i) Retrieve, one at a time, the data record on REDCap for each Participant ID.
j) Compare each response recorded in REDCap with the response on the original survey.
k) If a response differs, update so that the original survey response is recorded in REDCap.
l) Then, mark "yes" in the "Discrepancies?" column.
m) Record the section of the survey the response differed in the "Survey Section" column, the "Question #" column, and write the action you took to resolve the difference between REDCap and the original survey in the "Resolutions" column.
n) Repeat steps (i) and (m) until all Participant IDs identified with the random number generator are checked. Use the "Notes" column, if needed, to track your progress.
o) Refer to the "Description of Calculations, Next Step" column on the right. Merge all cells in that column that correspond with the Participant IDs you just checked.
p) Calculate the percentage of participant records with data entry errors *and* the percentage of forms with data entry errors. Record these results in the "Description of Calculations, Next Step" column.
q) If the percentage of forms with data entry errors exceeds 0.05 (5%), conduct a second round of data quality checks on a different group of randomly selected

participant records that represent 20% of the remaining participant records for the range that you are checking. Be sure to record this action as your "Next Step" in the "Description of Calculations, Next Step" column.

r) Repeat steps (f) –(q) until the error rate for data entry forms is below 5%. Record that result in the "Description of Calculations, Next Step" column, with the % recorded in green. Another data quality assurance check is not needed until 50-80 more participant records are created. See the "Description of Calculations, Next Step" column in the screenshot below for an example of how you would record your progress.

Data Quality Check for Participants #1-89, round 2: 20% random sample of remaining= 13 participant records								
C Bursuc	3/29/18	66	No					
C Bursuc	3/29/18	42	No					
C Bursuc	3/29/18	21	No					
C Bursuc	3/29/18	23	No					
C Bursuc	3/29/18	12	No					
C Bursuc	3/29/18	13	Yes	pre	2	updated #2 on pre-survey to "once a week or less" from a blank space		
C Bursuc	3/29/18	34	No					
C Bursuc	3/29/18	14	No					
C Bursuc	3/29/18	10	No					
C Bursuc	3/29/18	81	No					
C Bursuc	3/29/18	84	No					
C Bursuc	3/29/18	39	No					

Calculations: 1/13 participant records with data entry errors = 7.7%; 1/39 forms with data entry errors = 2.6%
Next Step: Track number of new participant records, conduct next round of QA once database Participant numbers fall between #139&169.

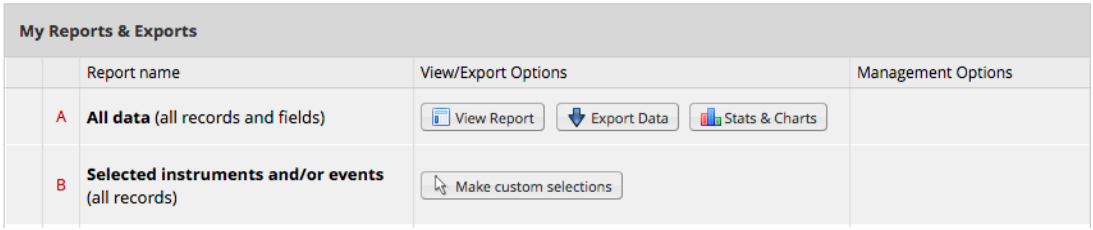
Appendix III
Data Cleaning Protocol

The purpose of this protocol is to provide guidelines for a standardized, systematic process to reformat the raw CMKT data so it can more efficiently and accurately be used for indicator reporting and data analysis. This protocol includes a detailed step-by-step process for cleaning raw data output from REDCap for the purposes of reporting out on indicators required by SNAP-ED. Maintaining a systematic process for data cleaning will also help prepare data for upload to statistical software, such as SAS or SPSS, for more complex statistical analysis.

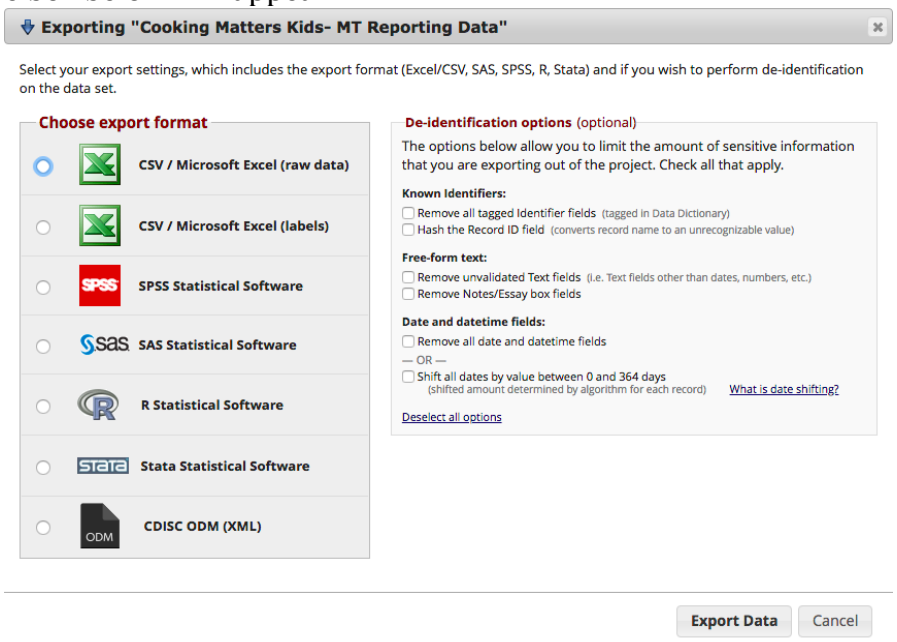
Section 1: Exporting Data

Steps to export **all data** that exists in this REDCap project (these steps are the same for exporting sub-sets of data as well- see *NOTE* below):

- Locate the "Applications" subheading on the left-hand side of the home page.
- Click on "Data Exports, Reports, and Stats."
- The first report option is titled "All data." Click on "Export Data" under the "View/Export Options" column.



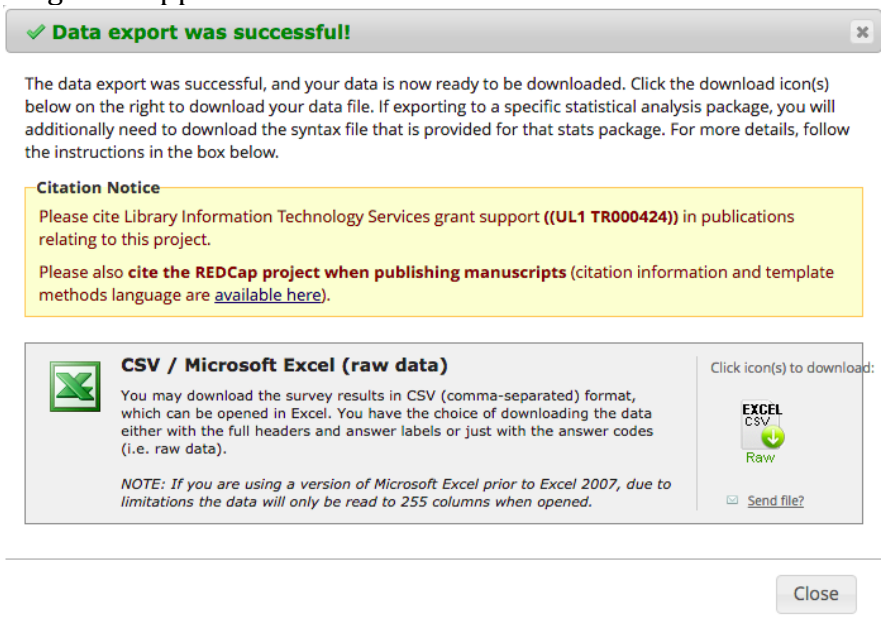
- The box below will appear.



- Select a report export format. It is recommended to export into Excel first for

quick review prior to importing data into a statistical software: it is important to become familiar with the way REDCap exports certain question formats, variable names, etc.

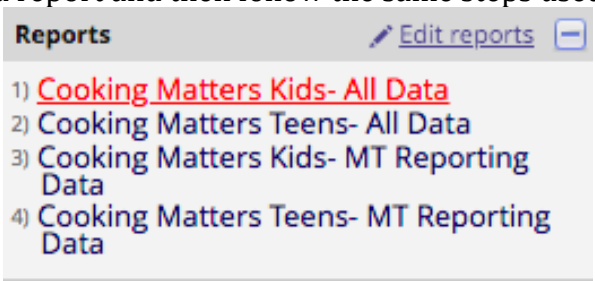
- After selecting an export format, click on the "Export Data" button. The following message will appear.



- Click on the "EXCEL CSV" icon to download and view the exported data.

NOTE: There are a couple of options to choose from when exporting data:

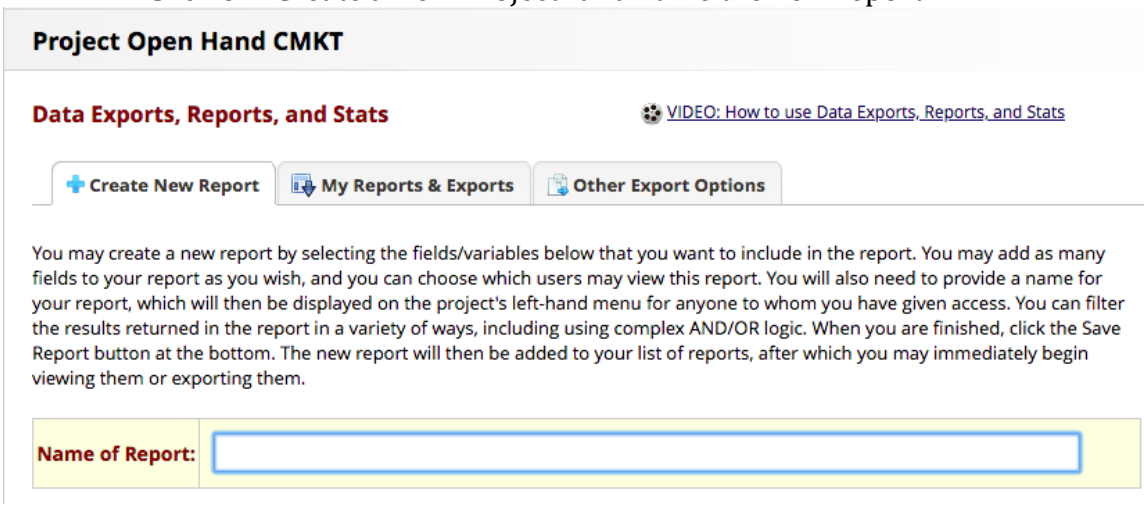
1. The REDCap "Project Open Hand CMKT" instance has the option to export all data (detailed directions above).
2. There are reports built for export of certain subsets of data. These reports can be found under the "Reports" subheading on the left-hand side of the project home page. The image below illustrated the reports currently available, with the "Cooking Matters Kids- All Data" report selected for export. To export data for a single report, select the desired report and then follow the same steps used for exporting all data.



Section 2: Building Reports for Data Export

REDCap allows for sub-sets of raw data to be exported via reports built in "Project Open Hand CMKT." To build a new report, follow these steps:

- Locate the "Applications" subheading on the left-hand side of the home page.
- Click on "Data Exports, Reports, and Stats."
- Click on "Create a New Project" and name the new report.



- There are 4 steps to complete in creating a new report:
    1. User Access
    1. Fields to include in report
    1. Filters (optional)
    1. Order the Results (optional)
- Use the drop-down menus in each step to make selections. If questions arise, utilize the built-in tutorials by clicking on the ? icons.
- Once selections are complete, click on "Save Report" at the bottom of the page.
- The new report will now appear in the "Reports" subheading on the left-hand side of the home page.
- Reports can be edited, copied, or deleted at any time.

Section 3: Cleaning Data Export for SNAP-ED Reporting

- Export data reports titled "Cooking Matters Kids- MT Reporting Data" and "Cooking Matters Teens- MT Reporting Data."
- Pull up the CMKT Codebook for reference. This document was built to limit the need for cross-referencing of multiple Excel spreadsheets to identify coding and values needed for SNAP-ED reporting requirements. The first sheet of the "CMKT Codebook" Excel document includes the following columns:
    - "Label in REDCap": The exact wording of the question in REDCap
    - "Variable Name, REDCap": The variable name/column heading used when data is exported from REDCap
    - "Values, REDCap": The values that reflect individual participant answers

for that question in REDCap
    - "Value Meanings": The exact wording of each answer option in REDCap
    - "SNAP-ED reporting values": The values SNAP-ED requires for individual participant answer options
    - "SNAP-ED Variable Name (if applicable)": The SNAP-ED required variable name for certain questions from the CMKT survey tools
    - "SNAP-ED Evaluation Tool": The name of the SNAP-ED evaluation tool where that certain question came from

CMKT Codebook excerpt:

Label in REDCap	Variable Name, REDCap	Values, REDCap	Value Meanings	SNAP-ED reporting values	SNAP-ED Variable Name (if applicable)	SNAP-ED Evaluation Tool
Please list any food allergies your child has:	allergies_kids	text	text value for "food allergies"			
What is your sex?	sex_teens	1	male	1	Sex	CM Pre-Post Survey
		2	female	2		
What is your age?	age_teens	1	under 13 years	2	Agecat	CM Pre-Post Survey
		2	13-15 years	2		
		3	16-17 years	2		
		4	18-20 years	3		
		5	over 20 years	3		
What is the highest grade you have completed?	education_teens	1	7th grade or less			
		2	8th grade			
		3	9th grade			
		4	10th grade			
		5	11th grade			
		6	12th grade or GED			
		7	Attended college			

- Remove the following columns from the exported data:
    - redcap_event_name
    - age_group
    - demographics_complete
- Refer to the second sheet of the "CMKT Codebook" - titled "MT Report Order" - for the required column order for SNAP-ED reporting.
- Reorder all columns in the REDCap data export Excel document that correspond to demographic and pre-class survey data to match the SNAP-ED required column order.
- Following the pre-class survey data columns, reorder all post-class survey data columns to match the SNAP-ED required column order for MT indicators.
- Insert one row below each participant record (this is so that pre-class and post-class results can be stacked).
- Copy and paste the data for each participant's post-class responses below the corresponding pre-class responses (ie. paste Participant #25's post-class response for MT1c directly under Participant #25's pre-class response for MT1c).
- Rename columns: change the variable names from REDCap to the corresponding SNAP-ED variable names.
- Insert two columns after the "Ethnicity" column; title them "Time" and "Match".
- For the "Time" column, populate each cell to reflect whether the row data is "pre" or "post."
- For the "Match" column, enter "1" in pre- and post- rows for each participant that has data for both time points (data is "matched"). Enter "0" in pre- and post-

rows for each participant that only completed data for one time point (data is "unmatched").

- Insert one column after each SNAP-ED variable.
- Title each new column as "SNAP-EDvarname_TOOL"; for example, "MT1c_TOOL."
- Populate each row of the new columns with the number that corresponds to the tool used to collect that SNAP-ED variable data. This information can be found on the first sheet of the "CMKT Codebook" in the column titled "SNAP-ED Evaluation Tool Code."
- Data is now ready for SNAP-ED submission.

Appendix IV
Survey Improvements: SNAP-ED Indicator Measures

Table 1: Current and Alternate SNAP-ED Indicator Survey Items for Cooking Matters Kids

SNAP-ED Indicator	Cooking Matters Kids Survey		Alternate Survey Tool*	
	Question	**Response (coding)**	**Question**	**Response (coding)**
MT1c: Ate more than one kind of fruit throughout the day or week	FBC: Do you eat more than one kind of fruit each day?	No (0) Yes, sometimes (0) Yes, often (1) Yes, always (1)	POC (Youth): How often do you eat more than one KIND of fruit a day?	Always (1) Sometimes (0) Never (0)
MT1d: Ate more than one kind of vegetable throughout the day or week	FBC: Do you eat more than one kind of vegetable each day?	No (0) Yes, sometimes (0) Yes, often (1) Yes, always (1)	POC (Youth): How often do you eat more than one KIND of vegetable a day?	Always (1) Sometimes (0) Never (0)
MT1h: Drinking fewer sugar-sweetened beverages frequency	#13: How do you feel about choosing drinks that are low in sugar such as plain, low-fat milk or water?	I really like to choose drinks that are low in sugar (1) I kind of like to choose drinks that are low in sugar (0) I don't like to choose drinks that are low in sugar (0) I really don't like to choose drinks that are low in sugar (0) I'm not sure if I like to choose drinks that are low in sugar (0)	POC (Youth): How often do you drink sugary beverages?	Always (1) Sometimes (0) Never (0)
MT1g: Drinking water frequency	N/A	N/A	POC (Youth): How often do you drink plain water?	Always (1) Sometimes (0) Never (0)

**Alternate survey items from POC (Youth) come from an assessment tool used for youth who partake in the Power of Choice curriculum, developed by Alabama A&M University (Paddock JD, Dollahite J. P25: Improving Nutrition*

Program Quality Through a Structured Site Visit Process. Journal of Nutrition Education and Behavior. 2008 40(4): S53. doi: 10.1016/j.jneb.2008.03.085.)

Table 2: Current and Alternate SNAP-ED Indicator Survey Items for Cooking Matters Teens

SNAP-ED Indicator	Cooking Matters Teens Survey		Alternate Survey Tool**	
	Question	**Response (coding)**	**Question**	**Response (coding)**
MT1c: Ate more than one kind of fruit throughout the day or week	FBC: Do you eat more than one kind of fruit each day?	No (0) Yes, sometimes (0) Yes, often (1) Yes, always (1)	[Each week/typically...] I eat more than one kind of fruit.	0 days (0) 1-3 days (0) 4-6 days (1) 7 days (1)
MT1d: Ate more than one kind of vegetable throughout the day or week	FBC: Do you eat more than one kind of vegetable each day?	No (0) Yes, sometimes (0) Yes, often (1) Yes, always (1)	[Each week/typically...] I eat more than one kind of vegetable.	0 days (0) 1-3 days (0) 4-6 days (1) 7 days (1)
MT1g: Drinking water frequency	How often do you typically drink a bottle or glass of water? (Count tap, bottled and sparkling water.)	Not at all (0) Once a week or less (0) More than once a week (0) Once a day (1) More than once a day (1)	[Each week/typically...] I drink plain water.	0 days (0) 1-3 days (0) 4-6 days (1) 7 days (1)
MT1h: Drinking fewer sugar-sweetened beverages frequency	How often do you typically drink a can, bottle, or glass of regular soda or pop, sports drink, or energy drink? (Do not count diet or zero calorie drinks.)	Not at all (1) Once a week or less (1) More than once a week (0) Once a day (0) More than once a day (0)	[Each week/typically...] I drink sugary beverages (like soda, fruit, drinks, or sports drinks).	0 days (0) 1-3 days (0) 4-6 days (0) 7 days (1)

MT1i: Consuming low-fat or fat-free milk (including with cereal), milk products (e.g. yogurt or cheese), or fortified soy beverages frequency	#11: When you have milk, how often do you choose low-fat milk (skim or 1%)? #12: When you eat dairy products like yogurt, cheese, cottage cheese, sour cream, etc., how often do you choose low fat or fat-free options?	Never (0) Rarely (0) Sometimes (0) Often (1) Always (1) Does not Apply (0)	What type of milk do you drink most of the time?	Regular (whole) milk (0) Low-fat or fat-free milk (1) Soy milk, almond milk, rice milk, or other milk (blank) I don't drink milk (blank) I don't know (blank)
MT2b: Read nutrition facts labels or nutrition ingredients lists	#16: How often do you use the "nutrition facts" on food labels?	Never (0) Rarely (0) Sometimes (0) Often (1) Always (1)	N/A	N/A

**Alternate survey items come from the tool listed as "YBS (grades 6-12) and Adult Behavior Survey" on SNAP-Ed data reporting templates provided by Open Hand. Questions appear to be adapted from the Youth Risk Behavior Survey from the Centers for Disease Control and Prevention, which can be found at https://www.cdc.gov/healthyyouth/data/yrbs/overview.htm.*

Appendix V
Survey Improvements: Proposal for New Survey Items

Proposal for Two New Survey Items: Food Security Screener and Family Meals Frequency

This proposal is meant to introduce and justify the inclusion of two survey items that will allow Open Hand to gain a better understanding of family involvement and home environment for children and adolescents that participate in Cooking Matters programming.

One purpose of CMKT is to empower kids and teens with the knowledge and abilities needed to make healthy choices. Gathering data on related factors of food security and frequency of eating meals with family will equip Open Hand with contextual knowledge about the communities they serve.

Assessing for food security

Food security status questions will provide Open Hand with an indicator for home food environment, obesity risk, and potential physical or emotional stress on kids and teens[1,4,5]. It is proposed that the two-question survey items for kids and teens be incorporated in the demographics section of the original CMKT surveys. The CMK food security questions come from the Hunger Vital Sign tool that has been widely validated for parental use in English and Spanish[1]. Likewise, the CMT food security questions are the first two questions of a longer 9-item food security questionnaire that has been validated for use with children that are 12 years or older[3].

Cooking Matters Kids: Food Security Screener

1. Within the past 12 months, we were worried whether our food would run out before we got money to buy more.

- o often true
- o never true
- o sometimes true
- o don't know/refused

2. Within the past 12 months, the food we bought just didn't last and we didn't have money to get more.

- o often true
- o never true
- o sometimes true
- o don't know/refused

Cooking Matters Teens: Food Security Screener

The following questions are about the food situation in your home during the last month. Please circle the answer that best describes you. Do not put your name on the paper. Your answers will

remain a secret.

1. Did you worry that food at home would run out before your family got money to buy more?
   - o a lot
   - o sometimes
   - o never

2. Did the food that your family bought run out, and you didn't have money to get more?
   - o a lot
   - o sometimes
   - o never

Assessing for family meal frequency

Incorporation of a question that assesses weekly family meal frequency will also yield data that helps paint a picture of home food environment as well as family involvement in kids' and teens' lives. High frequency of meals eaten as a family has been associated with high rates of fruit and vegetable consumption as well as healthy levels of food intake and healthy eating patterns in children and adolescents[6-9]. It is proposed that the one-question survey item about family meal frequency be included in the pre-class and post-class surveys for kids and teens to ensure that participants, not parents, are completing this question. The wording of this question comes from the Project EAT (Eating Among Teens) Survey[8,9]. A suggested adaptation for the CMK survey that mimics question format for current CMK survey items is included.

It is also recommended that these family meal frequency questions be tested for reliability and validity prior to being incorporated in the CMKT tools permanently, as literature validating family meal frequency questions is minimal. An article by Auld et al., "Confirming the Reliability and Validity of Others' Evaluation Tools Before Adopting for Your Programs," may serve as a useful guide for validation of tools prior to use in CMKT surveys[2].

<u>Cooking Matters Kids: Family Meal Frequency</u>

How often do you and your family eat meals together?

Options for response:

- o Yes! Always!!!
- o Yes, sometimes we do.
- o No, not really.
- o No! No way!!!
- o Not sure/ I don't know what that is.

Alternate options for response:

- o Always
- o Sometimes
- o Never

<u>Cooking Matters Teens: Family Meal Frequency</u>

During the past seven days, how many times did all, or most, of your family living in your house eat a meal together?

- never
- 1-2 times
- 3-4 times
- 5-6 times
- 7 times
- more than 7 times

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Appendix VI
Electronic Survey Tool Options

This appendix serves as reference to online tools created for Open Hand use. Pertinent information for accessing online surveys as well as helpful tutorial video links are also provided.

The hyperlinks below provide access to view and edit online CMK and CMT survey tools created using Google Forms and KoboToolbox. There are 4 forms total: 2 CMK and 2 CMT (one each for in Google Forms and KoboToolbox).

Google Forms
Cooking Matters Kids : https://goo.gl/forms/Mn5qTKgtqaxX5aIy1
Cooking Matters Teens : https://goo.gl/forms/IOauUW6H4OhBTT182

To edit the Google Forms survey tools, click on the blue pencil icon in the top right corner of the webpage. To transfer ownership of Google Forms and data generated from these forms, please contact Courtney Bursuc at courtney.konow@gmail.com.

KoboToolbox
Cooking Matters Kids : https://kf.kobotoolbox.org/#/forms/aQoAE6WfYJZf66U2bBvEhT
Cooking Matters Teens : https://kf.kobotoolbox.org/#/forms/aD7ftbRChsDSPhXQ3QguEb

To edit KoboToolbox survey tools, click on the pencil icon in the upper right toolbar. Note: once changes are made to these forms, the survey must be "redeployed" for changes to appear for participants completing the survey. Further troubleshooting tips and helpful resources can be accessed through the KoboToolbox Community forum at https://community.kobotoolbox.org/. To transfer ownership of KoboToolbox surveys or to gain full-access log-in credentials for KoboToolbox, please contact Emilie McClintic at emilie.mcclintic@emory.edu.

REDCap
The hyperlinks below are REDCap specific. Video tutorials for orientation to REDCap's online survey capabilities as well as an overview of the REDCap system. All tutorial videos are property of REDCap and can be accessed via online search or from the "Help and Information" section of the REDCap instance. To transfer the current REDCap system access to Open Hand, please correspond with the Emory Evaluation Team and REDCap to clarify transfer details and potential associated costs.

REDCap Overview : https://web.vanderbilt.edu/clients/video-player/player.php?dir=redcap&file=redcap_overview03.mp4

This video provided a detailed overview of REDCap system functions.

REDCap Online Surveys : https://web.vanderbilt.edu/clients/video-player/player.php?dir=redcap&file=redcap_survey_basics02.mp4

This video provides a brief description and orientation of how to launch an online survey through the REDCap instance.

REDCap Mobile App : https://web.vanderbilt.edu/clients/video-player/player.php?dir=redcap&file=app_overview_01.mp4

This video is an introduction the REDCap Mobile App, the separate application that is needed to collect electronic REDCap surveys offline.